OMNITREND'S

UNIVERSE

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INTRODUCTION

HISTORY OF THE LOCAL GROUP

History

During the latter part of the First Stellar Expansion, it became evident that the technology from planets in the Home Cluster could not support the ever expanding colonization effort.

The hyperdrive had opened an era of fast, economical travel between the stars. Journeys that used to consume decades could be made in a matter of days. However, the hyperdrive was not without its problems. Its unrefueled maximum range was a major limitation. After 3 or 4 hyperjumps, the ship would be completely out of the inhabited regions, with nowhere to refuel. Its fuel capacity was also part of the second limitation: the so-called "Mass Limit." Stated simply, the mass limit sets a severe limit on the maximum size of a spacecraft that can enter hyperspace. Because of these limitations, the experts were predicting an end to the rapid expansion that had previously characterized Earth's emergence as an interstellar civilization.

In 2105, a research ship travelling through the far reaches of the Tau Ceti starsystem discovered a huge alien artifact. Entire scientific communities came to study the artifact and, several years later, the purpose of the great machine was discovered. It was a hyperspace booster. It had the capability to "push" spacecraft not tens but thousands of lightyears. Since the booster itself did not enter hyperspace, ships up to the mass limit could travel a thousand lightyears with minimal power use.

Years of research continued. Why had the aliens abandonded the booster? Where had they gone? The scientists were unable to say. The booster contained a mapping system depicting millions of stars but very few of them had received any special mention.

Finally, the control system was deciphered and test flights were made. They proved the machine to be fully functional and technician's knowledge of the control system adequate enough to allow regular use.

The Second Stellar Expansion started.

You are in a cluster of stars known as the Local Group. The LG is unable to communicate with Earth because travel using the booster is strictly one-way. Packages from Earth arrive every 25 days, with examples of the the latest developments in technology. They appear somewhere in orbit around Axia, your home planet and the first colony of the Local Group. Although progress has been swift during the 200 years history of the Local Group, the colonies still lag behind Earth's level of development; the packages are vital. Some of the planets in the LG haven't even progressed as far as Axia because of environmental and cultural differences. Your own planet was specially noted by the aliens who built the booster and there is evidence that there were colonists on the planet before the humans arrived.

All is not well now in the Local Group. There are many documented cases of slave trading, oppresive governments, and piracy around some of the less developed worlds. But far worse is the distressing news from Axia that for the past 80 days, not a single package has arrived from Earth. None of the previous communications had mentioned any difficulties on Earth or with the booster. Rumors about what has happended to the booster are rampant. Some suggest that the Earth was attacked by aliens, or that the booster has broken down, or the originals owners returned to take their machine. Whatever the reason may be, the Local Group is now on the verge of complete panic.

HISTORY OF THE LOCAL GROUP

Only 15 days ago, the Axian Central Educational Institute announced that it had evidence pointing to the presence of a second hyperspace booster – somewhere in the Local Group.

Your mission: locate the hyperspace booster. Your ship and crew aren't free, however, so during the course of your search, you are going to have to earn a living.

Be the first to find the second hyperspace booster and your fortune is made. Fail, and a civilization encompassing 21 inhabited planets and 20 billion people will fall. The need for a hero has never been greater.

GETTING STARTED

Technical Questions

Should you experience a problem in running this software on your computer, Omnitrend Software, Inc. provides telephone assistance several times per week. You may call (203) 658-6917 to find out the current assistance schedule. We regret that we cannot answer any questions regarding the play of the game or provide hints.

Should you run across a bug in the program, please drop us a note. Be sure to include the version number of the game (this can be found on the title screen after the scrolling text sequence in Construction) as well as a description of the computer you are using. All correspondence regarding the game should be mailed to:

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M/S 11
P.O. Box 3
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Willful violations of the Copyright Law of the United States can result in civil damages of up to $50,000 in addition to actual damages, plus criminal penalties of up to one year imprisonment and/or a $10,000 fine.

HOW TO USE THIS MANUAL

The size and complexity of Omnitrend's Universe can be quite imposing at first glance. However, it is not necessary to know many of the details in order to start the game. Much of the manual covers equipment and maneuvers which you will not need to know until much later in the game. This section of the manual deals with the material that you will need to start the game.

Recommended Reading List

1) Spacecraft Systems
2) Navigation and Orbits
3) The On-Board Computer
4) Commerce in the Local Group
5) Using Menus
6) Sound Effects & Their Meanings
7) Running Universe On Your Computer

After you have read these sections, flip to the sample game. This will lead you through the construction of a spacecraft and a trading voyage. If you have any problem with the terms used, check the Glossary for details.

The chapters Construction, Flight, and Starport explain how to run the program, while Playing Universe explains the overall theory behind the various systems on your spacecraft and how they work in concert. Use the Appendix to find a particular piece of information, such as the minimum orbit radius for Kiskismok, for example.

Special Manual Notations

Whenever the manual refers to a certain key on a keyboard, the following notation is used:

If the Key Is the Same for All Computers – it is written like this: [Q]. This means that you would press the letter 'Q' to perform a particular function.

If the Key Is Different for Each Computer – it is written like this: [start/Q/F1]. This means that if you have an Atari you would press start, if you have an Apple you would press Q, and if you have an IBM you press F1. The key codes are always presented in the order Atari, Apple, IBM.

RUNNING UNIVERSE ON YOUR COMPUTER

Atari XE/XL

System Requirements

Atari 800, Atari 800XL, Atari 1200XL, Atari 65XE, or Atari 130XE, 1 or more disk drives.

Starting Omnitrend's Universe

Omnitrend's Universe comes on 4 disk sides: Construction, Flight 1, Flight 2, and Starport. During play, a fifth disk is created called the Player Disk. To start the Construction, Flight 1, or Starport disks, place it in drive 1 and switch your computer on. If you have an XL or XE, you must hold down the *option* key while turning the power on. Release the *option* key after 2 seconds.

Using Universe With Two Drives

With the Construction disk – Boot the Construction disk as you normally would and begin playing. The program will ask you if you want to use 2 drives after the section where you purchase a spacecraft. Leave the Construction disk in drive 1 and put the Player disk in drive 2. Press *option*. When the computer asks you to insert a different disk, (ex. Please Insert the Starport Disk) use drive 1. The Player disk should always remain in drive 2.

With the Flight 1 & Flight 2 disks – Put the Flight 1 disk side into drive 1. Boot the computer. When the "Insert Player Disk and Hit Return" display appears, place the Player disk into drive 1 and the Flight 2 disk side into drive 2. Hold down the *start* key and at the same time, press *return*. Do not release the *start* key until the computer beeps.

With the Starport disk – Boot the starport disk. When the "Insert Player Disk and Press Return" display appears, place the Player disk in drive 1 and the Straport disk in drive 2. Hold down the *start* key and at the same time, press *return*. Do not release the *start* key until the Customs display appears. Both disks will remain in their respective drives.

Making Backup Disks

Omnitrend's Universe is not copy protected. Be sure that you make copies of the disks and store the originals in a safe place.

Apple //

System Requirements

Apple][, Apple][+, Apple //c, Apple //e, or Apple //gs with at least 48K memory and 1 or more disk drives.

Starting Omnitrend's Universe

Omnitrend's Universe comes on 4 disk sides: Construction, Flight, Flight 1, and Starport. During play, a fifth disk is created called the Player Disk. To start the Construction, Flight 1, or Starport disks, place it in drive 1 and switch your computer on.

One and Two Drive Use

Universe may be played with 1 or two drives. It is recommended that two drives be used.

When you boot the Flight or Starport disks, the computer will ask you to select one or two drives. You will then be prompted to insert the correct disks at the correct time.

Making Backup Disks

Omnitrend's Universe is not copy protected. Be sure that you make copies of the disks and store the originals in a safe place.

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IBM

System Requirements

Any IBM computer or IBM compatible, 192K memory, CGA or equivalent.

Starting Omnitrend's Universe

Omnitrend's Universe comes on 2 disks: Starport and Flight. The Starport disk contains the programs CONSTRUC and STARPORT. The Flight disk contains the FLIGHT program. Both disks contain several data files used throughout the game.

Whenever the manual refers to booting a particular program, simple run the appropriate file. Program and data files must reside on the same disk, and this disk must be the PC-DOS default drive.

Players with two drives will want to use drive A for the Starport and Flight disks and drive B for a disk containing Player files. One drive users follow the same system, except that drive B is "imaginary". This means that one drive players will be prompted to swap the Player and Starport or Flight disks.

In both single and dual drive modes, users should prefix their Player file name with "B:".

Making Backup Disks

Omnitrend's Universe is not copy protected. Be sure that you make copies of the disks and store the originals in a safe place.

PLAYING UNIVERSE

This is a sample game that you can play in order to learn more about Universe. This sample game is by no means the best or only way to play and after playing it, you may want to create a new ship and start over, doing things your own way.

This sample game is a step-by-step guide which covers everything from getting a loan to trading products on at another planet.

Beginning the game

Boot the Construction disk. Turn to the section "Running Universe On Your Computer" if you do not understand how to do this. The game logo will appear, some messages will scroll by, and the theme music will play. After the music, the copyright notice and game version will be displayed.

Next, you will be ushered into the office of the Axian Central Bank and confront a loan officer who will coerce you into a loan. The only thing you need to do here is to select the number years in which you want to pay off your loan. Start high ... say 10 years. After the red tape is out of the way, you will end up at the shipyard where you will have to select a ship design.

At the shipyard, you should purchase the cheapest design with the most hull space (every penny counts!). Here's how: Press the [select/E/F2] key. The screen will clear and you will be asked for a design number. If you are playing on an Apple // enter 2, on the the Atari and IBM you should enter 3. After typing in any numbers, you should press [return].

After this, your ship's data will have to be stored. On the Apple // and Atari versions, you will have to create a Player disk. Just follow the directions on the screen. The IBM/Zenith version stores the data in a Player file. You will be asked to enter a name for the Player file, for example, "B:SAMOYA". The file name must be in upper case letters and it must not have a suffix (the program will do that for you).

Now that a Player disk (or file) has been created, you can run Flight.

Building Your Ship

Atari players should boot the Flight 1 disk. Apple // player should boot the Flight disk. IBM/Zenith player should run the FLIGHT program. IBM/Zenith players will be aksed to enter the name of the player file. The Apple // and Atari players will have to swap a few disks. Just follow the instructions on the screen.

Now you are at the Main Flight Menu. The menu entry we are interested in right now is Docking Control. Use the [option/W/F3] key to move the arrow to Docking Control and press the [select/E/F2] key enter that section.

The screen will blank out and then show you the docking maneuver. When you have safely arrived, you will be presented with a menu of three options. The first is Place Parts. This is where you will build your ship from the items in the loan package. Use the [option/W/F3] key to move the pointer to Place Parts and press the [select/E/F2] key to enter that section.

The next screen will show you your ship's skeleton and a guided tour of each of its sections. The ship you have purchased has six sections, each capable of holding a pre-determined number of hulls.

To place hulls in the skeleton of your ship, first enter the section number, then the number of hulls to place in the section and then press [return]. Place all 31 hulls in section 4. WHen all the hulls are in place, press [start/Q/F1] to store them there permanently.

Placing Parts on Your Ship

Notice that each part has a size. The size represents the number of hulls it takes to store that part. Thus, a part of size 5 would not fit in a ship section that only has 3 hulls installed. The parts provided in the loan package will take all 31 hulls.

To place parts, enter the section number where you want the part to go and then lock it in place by pressing [select/E/F2]. Continue in this manner until all of the parts have been stored on the ship (the last one is the Skandis Mass Storage unit). After you place the part, it will remain on the screen as though it didn't "take". This is Universe's way of telling you that it's the last part. Lock all of your selections in place by pressing [start/Q/F1]. You will be returned to the Drydock Menu at this point.

Look at the bottom of the screen. You should see "Undistributed Parts: 0" and "Undistributed Hulls: 0" (Apple // and IBM versions only). If you don't see zeroes after each of the items, you haven't placed all of your hulls or parts. Select Place Parts again and the computer will show you what you forgot to place.

There are 3 parts you received with your Merchant's Loan Package which are very energy inefficient. These are: the Sub-light Ion Drive, the Manx Orbital Scanner, and the Quentrix Shuttle. Since there are better parts on the market that you can afford right now, you'll want to sell these. To do this, use the [option/W/F3] key to move the pointer next to Parts Removal and press the [select/E/F2] key to enter the section.

Inside Parts Removal, you'll see the names of all the items on your ship. Use the [select/E/F2] key to move the pointer to item #1 (Ion Sub-light Drive) and press the [space bar] to change its status (at the bottom of the screen) from "maintain" to "sell". Sometimes you'll get credits for the item and sometimes not. It all depends on the sophistication of the part. Do the same thing for the scanner and the shuttle. When you've changed the status of the 3 parts from "maintain" to "sell", press the [start/Q/F1] key to return to the Drydock Menu.

Now use the [option/W/F3] and [select/E/F2] keys to enter Purchase Items. On the Purchase Items display, you'll see 8 boxes with different categories of items for sale. The pointer starts off in the Parts box. Press the [select/E/F2] key to activate this box. You are going to purchase 3 parts to replace the ones you just sold in Parts Removal. The sub-light drive you'll want is system number 1 and part number 5 so enter 1 in the System Section and 5 in the Part # section. The computer will automatically fill in the quantity and compute the price. When the price is displayed, press the [select/E/F2] key to purchase the part. If you wish to abort a purchase, press the [option/W/F3] key.

Use the same process to purchase system 7, part 28 and system 28, part 72. Press [return] to exit the Parts box. Press [option/W/F3] to move the pointer to the Ore 4 box. Press [select/E/F2] to activate the box and enter 20,000 to purchase 20,000 units of Ore 4 (do not use a comma). There is a small handling charge on all Ore 4 purchase. When the price for the Ore 4 is displayed, press [select/E/F2] to purchase the ore and then press [return] to exit the Ore 4 box. Now move to the Programs box. Activate the box and purchase programs 6 and 9 (Shuttle Control and Market). All programs cost the same amount. Remember to press [return] to exit the box.

Every ship needs a crew, so move to and activate the Crew box. Your ship has accomodations for 40 crewmen, but you don't need that many to operate it at this point. Hire 15 (the union scale is quite steep!), pressing [select/E/F2] and then [return] to exit the box.

You are going to need to feed your crew, so activate the Provisions box and purchase 2000 provisions (remember, no comma). Exit the Provisions box and then press [start/Q/F1] to exit the Purchase Items section.

At the bottom of the Drydock Menu screen, you should see "Undistributed Hulls: 0" and "Undistributed Parts: 3" (Apple // and IBM/Zenith only). That's right! You have just purchased 3 parts, so you're going to have to place them before you leave the drydock. Enter the Place Parts section. Place the parts as you did before (enter the section number and then press [select/E/F2] to place them). When the last part has been placed, press [start/Q/F1] to return to the Drydock Menu. Make sure "Undistributed Parts: 0" appears (Apple // and IBM/Zenith only). Now press [start/Q/F1] to exit the drydock and return to the Main Flight Menu.

Setting Up Your Ship's Computer Operations

Now enter the Program Control section. In Program Control, you'll see 3 columns titled "Priority", "Status", and "Loading". Use the [option/W/F3] key to move from column to column. Move to the Status column. Use the [up arrow] and [down arrow] ([I] and [M] on older Apple //'s) to select different program names. When the pointer is at Shuttle Control (number 6), press [select/E/F2] to change its status to Run, press [option/W/F3] to move to the Loading column, and then press [select/E/F2] to change the loading status to Auto. Now do the same for Sub-light Navigation (number 7) and Market (number 9). Press the [start/Q/F1] key to exit Program Control and go to Save Game. Press [select/E/F2] to enter this section to save your game up to this point. As you've seen, getting started takes quite a while, so it's a good idea to save your game at this point. Now, if something awful happens, you won't have to go through these steps again.

Make a back-up copy of your Player disk (or Player file). Apple // players can use COPYA to duplicate the Player disk. Atari players can use the built-in disk duplicator in the Save Game section to copy the Player disk. IBM/Zenith players can use the normal file copy command to copy the Player file (make sure that you change the file extension).

Now on with the game!

Changing the Planetary Orbit and Launching Your Shuttle

Run Flight again. When the Main Flight Menu appears, select Drive Systems. Then select the Sub-light drive section. Press [option/W/F3] to switch your view to Planetary Scale. Now press [select/E/F2] to start a planetary scan. The computer will scan the planet a generate a polar view map.

In order to land a shuttle on the planet, you need to get as close to it as possible so that the shuttle doesn't run out of fuel and crash. The closest you can approach any planet is 1.05 times the planet's radius. Axia has a radius of 6300 km, thus the minimum orbit radius is 6615 km (1.05 x 6300 = 6615). You can look up a planet's minimum radius orbit in the Appendix on the Planet List.

When the planetary scan is completed, a cursor will appear next to the "R:" (radius or rho). Enter 6615 and press [return]. Enter zeroes for the next 3 values (E, TE, and T). You will receive the message "Manual Entry". Press [select/E/F2] to calculate the transfer's energy/ore requirements and press [select/E/F2] again to execute the transfer (a transfer is the process of changing the spacecraft's orbit). When "Solar Scale" appears at the bottom of the screen, press [start/Q/F1] to return to the Main Flight Menu.

Enter Trade Systems and from there select Launch Orbiters. Although the Launch Orbiters screen looks confusing, it's really very simple. Press [select/E/F2] to load energy into Shuttle 1. Enter 30. This meanus that you have fueled the orbiter to 30% of its total capacity. Now press the [option/W/F3] key to move the pointer to the crew section and press [select/E/F2] to load the shuttle crew. Pressing [option/W/F3] again would allow you to load ore and passengers, but since you're just starting out, you've done all you can. Press [start/Q/F1] to launch the shuttle. If you wish to abort a shuttle's descent and have it return to the ship, press the number key corresponding to the shuttle's number (ex., shuttle 3 is 3).

After the launch, your altitude will displayed at the bottom of the screen. This will decrease until you reach the surface, at which time it will change to "A: Arrived". In addtion to youyr altitude, energy usage and shuttle damage point level will be displayed.

When you arive at the starport, you will be told to proceed directly to Customs.

You must now boot the Starport disk (or run the Starport file). See the section Running Universe On Your Computer if you do not understand how to do this.

Once in the Starport, you will be run through Customs. Since you aren't carrying any products, it will let you proceed directly to the Starport Menu.

First things first, let's get some passengers. Enter the Traveler's Terminus section. This works the same way as the Flight Menu.

Once you are in the Traveler's Terminus, enter [L] to load passengers. You will be asked which orbiter to load them on and how many you wish to load. Your shuttle can only hold 5 passengers at a time, so ask for 5. When you've loaded the shuttle with passengers, press [escape] to exit.

Buying Merchandise and Loading It on Your Shuttle

Here's where the fun starts.

Enter the Buyer's Board. You will be presented with a confusing array of products, which are constantly changing. The idea is to select items you can afford and to make sure that you don't buy more items than your shuttle can carry. The shuttle you have can carry a load of up to 150 cargo units in size, so watch your cargo units, which are displayed at the bottom of the screen. Be careful not to buy something too large. If you do, you will not be able to place that item in your shuttle and it will be lost when you leave.

Buying products takes a quick eye. The products are given numbers from 0 (top line) to 9 (bottom line). When you see a product you want to purchase, quickly press its corresponding number. As you purchase products, your credit total will decrease and the cargo size will increase. Watch these values carefully. Save at least 3,500 credits for emergency ore purchases. Try to buy at least one or two "big ticket" products (say from 8,000 to 10,000 credits each). These will bring you some nice profits!

When you have purchased all you want and you are sure that it will all fit on the shuttle, press [escape]. The flow of products will stop. Do not press [escape] again!

You are now at the Portmaster's, where you can load cargo into your shuttle. Use the [up arrow] and [down arrow] to move the pointer. Press [L] to load items onto your shuttle. Do this until the list is blank. Do not exit Portmaster's until you have loaded all your purchases. If you do, you

will lose both the products and the credits paid for them.

When everything has been loaded, press [escape] to exit Portmaster's.

Now enter Departures. Press [L] to launch the shuttle (you are automatically loaded onto the shuttle). After docking with you ship, you will be told to run or boot Flight.

What the Heck Did I Buy?

Run Flight again. Select Trade Systems and then select Cargo Manifest.

The Market program (which is running) will give us a breakdown of the cargo. Use [option/W/F3] to move the pointer through the list of products. At the top of the screen are the type and sophistication for the currently selected product. Type is important information that will serve you well later in the game when you have enough fuel and money to travel to other starsystems. For now, only the price, name, and product sophistication are important. When you have finished looking at the cargo manifest, return to the Main Flight Menu and then enter Program Control. In Program Control, change the status of programs 6 and 9 to Halt and switch program 8 (Hyper Navigation) to a Run and loading to Auto. Press [start/Q/F1] to exit. Now we're ready for hyperdrive.

Hyperdrive and Getting There

Enter Sub-light Drive so that we can leave orbit. Use [option/W/F3] to choose Planetary Scale and [select/E/F2] to start the scan. When the scan is completed and the cursor is next to the "R:", enter 25000. Enter zeroes for the other 3 factors. This will place you in an orbit far enough away from the planet so that hyperdrive will work. If you're too close to the planet, you may scrap your hyperdrive. You must be at least 20,000 kilometers from the planet. Press [select/E/F2] twice to execute the transfer.

When you are back to the Solar Scale, press [start/Q/F1] to return to the Drive Systems Menu and then select Hyperdrive.

On the screen will be all of the starsystems in the Local Group. Your current location is the Hope starsystem (notice the "Yes" in the Visited column). Use the [down arrow] to move the pointer to Prisa and press [select/E/F2] for the jump data. Press [select/E/F2] again to start the hyperdrive countdown.

After the hyperjump (whew!) you will be returned to the list of starsystems. Press [start/Q/F1] to go back to the Drive Systems Menu.

You have now made it to the Prisa starsystem ... onward to the planet Zeath!

Sub-light Navigation on a Solar Scale

Since we do not know where we are in this starsystem, press [select/E/F2] to activate the solar scan. The first object identified is ourselves. Press [option/W/F3] to identify the other objects on the display. When you find Zeath, press [select/E/F2] to calculate a transfer and then press [select/E/F2] again to execute it.

Now you are orbiting Zeath. Press [option/W/F3] to get the planetary scale and then press [select/E/F2] to start the planetary scan. When a cursor appears next to the "R:", press [return] to bypass manual entry. Continue pressing [option/W/F3] until the drydock appears. Press [select/E/F2] twice to calculate and execute a transfer to the drydock. Go back to the Main Flight Menu and select Docking Control. Once you are inside the drydock, go to Purchase Items and buy at least 3,000 units of ore IV.

Go back to Sub-light Drive. Press [option/W/F3] and then [select/E/F2] to get a planetary scan. In the Planet List (Appendix) Zeath's minimum orbit radius is listed as 6,301 km. So after the planetary scan is complete, enter 6301 at the "R:" prompt and enter zeroes for the next three factors. Press [select/E/F2] twice. Once you are back to the solar scale, press [start/Q/F1] twice to return to the Main Flight Menu.

Now enter Program Control and change the status of program 8 (Hyper Nav) to Halt and the status of program 6 (Shuttle Control) to Run. Press [start/Q/F1] to exit.

Enter Launch Orbiters and prepare the shuttle for launch. Be sure to load at least 25% energy. You also have passengers, so load them too. Press [start/Q/F1] to launch the shuttle.

Unloading Passengers

Welcome to Zeath! To unload your passengers, enter the Traveler's Terminus and note how much Zeath is offering for immigrants. Press [escape] and re-enter the Terminus several times until you see their top offer. Accept a high price and press [U] to unload the passengers. Enter the orbiter number and the number of passengers to unload. Press [escape] to exit.

Selling Your Cargo

Now to dump, uh, sell your cargo. Enter the Seller's Board. In the Seller's Board, you place a product on the board and wait for someone to purchase it. The trick here is to set the price to an amount at which you make a nice profit and still be able to sell the product.

The first thing you have to do is add products to the board. Do this by pressing [A]. You can do this until you have 10 products on the board or you have run out of products to put up.

Now to price each product. Press [P] and a cursor will appear where the product's oldd price was. Enter your selling price. Remeber that most buyers are smart and they won't buy a product if it is outrageously priced. Once you have priced all of the products, start the bidding by pressing [S]. The products will now be put up for sale. If you notice that some of the products are not selling, press [H] to halt the sales and then change the prices on the slow-moving products. Do this until you have sold all of your products and then press [escape] to return to the Starport Menu.

Departing Notes

Before leaving the Zeath Starport, enter the Money Exchange and exchange some of your credits for more ore IV. Be sure to leave enough credits for buying products on Axia.

Now, having unloaded your passengers and sold all of your cargo, it's time to leave. Zeath, being a less sophisticated planet, has nothing to offer Axia. So enter Departures and return to your ship.

Head back to Axia. At this point, you should have enough funds to purchase the more expensive (and thus more profitable) products to bring back to Zeath. In about 4 trips, you should have enough cash to buy more shuttles or to refit your ship a pirate or mining vessel.

From here on, it's up to you. Just one thing ... don't forget about that banker waiting for here money at the Axia drydock!

SPACECRAFT SYSTEMS

This section of the manual illustrates the functions of the various components (or *systems*) of a spacecraft constructed *circa* 2330 AD.

All systems have several common characteristics. They are:

Damage Points (DP) – This is a measure of the amount of damage that a part can take before it is destroyed. The higher the damage point level, the more likely the part will survive an attack.

Size – The measurement of a part's bulk. The larger the part, the more room it will take to fit it in a section.

Visibility – The measurement of how likely a part is to be hit during an attack. This is based upon two factors, the part's size and the visibility modifier of the spacecraft section the part is inside. The lower a section's visibility, the less likely that parts inside of it will be hit during an attack.

Sophistication – This is the same as the sophistication of the drydock where the part was purchased. Only the high sophistication drydocks can repair the most sophisticated parts. Typically, the high sophistication parts are the best (and costliest).

Drive and Energy Systems

Hyperdrive – Used for interstellar travel. The only way to move from one starsystem to another is to use the hyperdrive. The hyperdrive is too inaccurate to use for moving from planet to planet.

Sub-light Drive – Used to travel between planets within a starsystem. Unable to propel your spacecraft faster than light, the sub-light drive is too slow to be used for moving between starsystems.

Accumulators – Stores energy units made by the converter. This system is primarily used when another system, such as the hyperdrive, requires a large amount of energy at a rate much faster than the converter can produce. Essentially a large collection of batteries.

Converter – A power generator that transforms Ore IV into energy units.

Inertial Compensator – Generates gravity for environmental and protective purposes. The inertial compensator will also protect you from acceleration caused by the sub-light drive.

Ore Storage – Holds the 4 different types of ore (I - IV).

Command and Support Systems

Bridge – The command center of your ship. If the bridge is destroyed, the game ends.

Crew Quarters – The living quarters and off-duty stations for your crew.

Computer – The central computer for your spacecraft. It is very powerful, but not a true machine intelligence.

Mass Storage – Holds program cartridges for the computer.

Autodoctor – An automatic medical repair unit, used for raising you and your crew's health percentage.

Cryogenic Vault – A cold-storage unit for transporting passengers. The process is dangerous and you should expect to lose a certain percentage of the passengers upon revival.

SPACECRAFT SYSTEMS

Cargo Hold – Stores cargo that you purchase down at the starports or that you capture from enemy vessels.

Orbital Scanner – Scans the starsystem you are in or the planet that you are currently orbiting.

Orbital Shuttle – Used to travel to and from starports, which are found on the surface of almost all of the habitable planets.

Weapon Systems

High Definition Scanner – Provides a detailed scan of any spacecraft within your range. In addition, the high definition scanner functions as a radiocomm receiver, picking-up any radio messages in a starsystem.

Missile Launcher – Powers and launches missiles at enemy ships.

Missile Rack – The system of racks and conveyors used to store missiles and load them into the Missile Launcher.

Laser – An extremely destructive laser weapon.

Shield Generator – Generates a sphere of disruptive gravity waves around your spacecraft, lessening the effect of laser or missile hits.

Docking Adapter – Used only for docking and boarding an enemy spacecraft. The adapter will adhere to the other spacecraft's hull and, if marines are deployed, burns a breach right through it.

Electronic Countermeasure (ECM) – A variety of jamming equipment which reduces the odds of being hit by incoming missiles.

Assault Capsule – A lander used on habitable planets with a population sophistication of 40 or greater when you wish to mine ores illegally. The capsules are similar to the orbital shuttles, but they carry marines, are covered with armor, have a cannon mounted on top, and can land almost anywhere.

Mining Systems

Ore Processor – Another lander, this one greatly resembles a flying off-shore oil rig of the 20th century. Used to mine ore on habitable and airless planets.

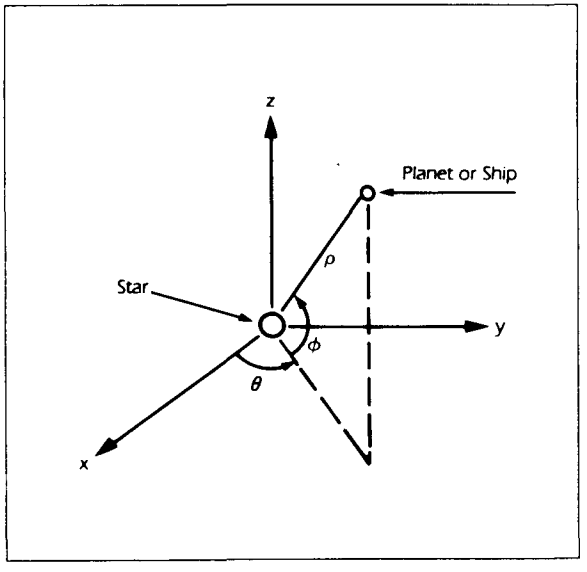
Resource Scanner – Scans the surface of habitable or airless planets for the best available mining site.

Additional Spacecraft Parts

Crew Armor – Used during boarding combat and assault capsule combat.

Navigation from star to star is accomplished using hyperspace. The X, Y, and Z coordinates of your destination are fed to the hyperspace navigation program and the rest is handled by the computer. A hyperspace jump, regardless of the distance, takes 6.8 days.

Navigation within a solar system is accomplished using sublight engines. In order to move from planet to planet, you need to feed the sublight navigation program the current coordinates of the planet. Since planets move, their locations cannot be presented in a table. Rather, the current coordinates of a destination planet can be obtained from the solar scan in the sublight drive section. The coordinates for a planet are given in spherical coordinates, with one slight modification. Here is a diagram illustrating solar coordinates:



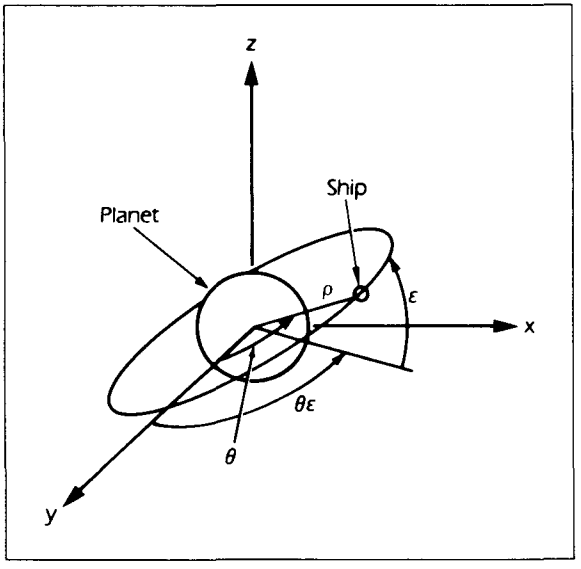
Where ρ = distance from the star (rho)

θ = angle in the plane of the ecliptic (theta)

ϕ = angle from the plane of the ecliptic (phi)

When arriving at a planet, you are placed into a standard orbit which is to be defined as an orbit with a radius four times the radius of the planet. All other coordinates for the orbit are zero.

Changing planetary orbits is also accomplished using sublight engines. For planetary orbits, it is necessary to feed the sublight navigation program the coordinates for the new orbit. Planetary orbits are defined as follows:



Where ρ = distance from the center of the planet (rho)

θ = angle in the orbit (theta)

ε = inclination of the orbit (epsilon)

θε= angle in the plane of the ecliptic where the inclination of the orbit is maximum (theta-epsilon)

Note that ρ (rho) is equal to the radius of the orbit. Keep in mind that this value is measured from the center of the planet and not the

surface. This means that if you are orbiting a planet that has a radius of 7000 kilometers, the minimum orbit you can establish is 7350. The 350 kilometers above the 7000 is to allow for atmosphere. This amount will vary from planet to planet and can be calculated by the formula: minimum orbit = planet radius x 1.05

The Planet List section of the Appendix lists the minimum orbit radius for all of the planets in the Local Group, so it is not necessary to calculate them on your own.

COMMERCE IN THE LOCAL GROUP

In the Local Group, the basic currency is the credit. The credit is fixed by the Interworld Trade Commision as being equivalent in value to one unit of Ore IV. This frees the interstellar trader from the problems of barter and exchange difficulties usually found between currencies. Since Ore IV is a common substance but tedious to refine, it provides a stable monetary base.

One of your primary goals, as an interstellar merchant, is to earn money. The four major sources of revenue available to you are: mining, trade in products, passenger transport, and piracy.

Mining

Mining is a fairly straightforward way of earning or actually producing money. It requires at least one ore processor, a resource scanner, a resource program for your computer, and many crewmen. In addition, depending how intent you are in your pursuit of ore, you may need a few assault capsules and their various operating paraphenalia.

Once the ore has been mined and refined, you bring it to a starport money exchange where it is converted into credits.

The disadvantages of mining are numerous. The success of a trip out to a mining world depends on how rich the deposits of ore are. The process of mining the ore is very dangerous and tedious. The worst disadvantage for the beginning merchant is the enormous start-up cost. The equipment required for a reasonably profitable mining expedition comes to well over 50,000 credits.

Trading

The object of trading is to buy an item on a world where it is commonplace and relatively inexpensive and bring it to a world with a slightly lower sophistication and run the price up 250%. Multiply that by the 80 products you can carry at a time and you can see the amount of profit involved in a successful trip.

A Starport will offer products only within the range of numbers that have the same tens digit as the port's sophistication. Example, if Grotto's starport has a sophistication of 76, it will offer products that range in sophistication from 70 to 79 (notice these all start with the same tens digit: 7).

The cost of a product is based on its sophistication and its base price (a value you will never know exactly). If the product has a base price of 7000 and a sophistication of 73, on Grotto (sophistication 76) it would sell for approximately 6500 credits. Contrawise, if a product has a base price of 7000 and a sophistication of 79, it would sell for about 7500.

Other merchants at a starport will buy products that are up to 9 sophistication points greater than the starport's sophistication. For example, if you place a product for sale on the Seller's Board that has a sophistication of 84, merchants at the Grotto starport will buy it.

The best method of trading is to buy products with a sophistication slightly less than the sophistication of the starport you are at. For example, merchants on Grotto are trying to get rid of a product with a sophistication of 73, because on Grotto it's not current technology. You buy that product for a reduced price and bring it to the Stowe starport (sophistication = 67) where it's suddenly the latest thing! Plan on a making a 250% profit.

You must take into account a planet's culture as well as its sophistication. On Rouvchorra (culture = 4, Formation of Aristocratic States), for example, many product types are illegal and will be confiscated if you try to bring them to the starport. Consult the Culture List to make sure

none of the types of products you bring down to a planet are illegal.

Passenger Transport

Some planets in the Local Group have a surplus of people. Other planets are rapidly expanding and need all the manpower they can get. The object of passenger transport is to take people from a planet in the former category and take them to a planet in the latter.

Planets that need people will pay you for immigrants. The problem is that many cultures do not accept transportees and all of them want people who are at least 1 and no more than 10 sophistication points greater than that of the planet.

Transport captains can expect over 1000 credits per passenger on a well-planned run.

Piracy

In orbit above many of the planets, complete anarchy is the rule. Properly armed, you can profit from this situation. To capture another spacecraft, however, is a long and dangerous process. You must carefully analyze your target and be able to outmaneuver it into a forced docking. Your troops must be stonger and better equiped than your target's to successfully capture it.

Once captured, though, the ship's entire crew are your prisoners, all their credits and ore are yours, and all their cargo ... but only if you live.

The Flight and Starport disks are "menu driven". This means that all sections are accessed by selecting the section from a menu (or list) of sections on the screen. When a menu is displayed on the screen, you will see a pointer that points to one of the sections on the menu. This pointer may be moved from section to section by pressing the [option/W/F3] key. To run a section, you must first use the [option/W/F3] key to move the pointer to that section. Pressing the [select/E/F2] key will enter the section. To exit a menu and return to the previous menu (if any), press the [start/Q/F1] key. This procedure is used for all menus in the game.

SOUND EFFECTS & THEIR MEANINGS

There are two major sound effects that are used throughout Universe. They are:

Ship Under Attack

Every time the ship is hit by an enemy weapon, you will hear a sound that resembles an explosion. When this sound occurs, one of the parts aboard your ship may take some damage or be destroyed. Upon hearing this noise, you should either transfer to a different orbit (in an attempt to escape the attacker) or fire back.

Ore Converters In Use:

Whenever the ore converters run, you will hear a whirring sound. This sound will last from a few seconds to as long as a minute, depending on how much ore is being converted. A few short beeps will sound if you run out of ore IV during the conversion process.

Note

The IBM/Zenith version of Universe does not have sound effects when run on a Zenith Z-100 series computer.

CONSTRUCTION

Here is where the game begins. In order to purchase a ship and supplies, you need money. Since stealing is out of the question (morals are assumed here), you must take out a loan. The Central Bank of Axia, so you hear, is the easiest to borrow from. In fact, they don't even do a credit check!

The Merchant Loan Package

The bank, being located at the commercial center of the Local Group, sees a lot of your type looking to buy a ship. Thus, they have devised loan called the "Merchant's Loan Package". The total value of this package is 223,000 credits and includes the following:

Part#	Size	Sys#	System Name	Type	Quantity	Cost
0	5	0	hyperdrive	Quantum Div	1	35,000
4	5	1	sub-light drive	Ion	1	20,000
11	4	2	bridge	Xorconn	1	3,500
14	1	3	accumulators	AlkisGroup	8	8,000
17	2	4	converter	Fuel cell	1	10,000
88	1	36	processor	AE3504	1	10,000
93	1	37	mass storage	Skandis	1	5,000
27	2	7	orbital scanner	Manx	1	10,000
49	2	13	shield generator	Koto Co	1	8,000
68	1	26	cryogenic vault	Ageless Ind	1	7,000
71	1	27	orbital shuttle	Quentrix	1	10,000
79	5	33	ore storage	Baynus	1	2,000
82	1	34	crew quarters	Kraakobinir	1	2,000
n/a		n/a	fuel	ore IV	15,000	15,000
n/a		n/a	hulls	standard	31	77,500
			Total Cost (if purchased separately)			223,000
			Package Cost			173,000

The part number and system number of the items in the package are given so that you may use appendix to look up the specifics on the parts listed.

Paying the Loan

You must, of course, eventually pay back the loan. The payback period is quite flexible. You may choose any period between five and sixteen years.

Payment of the loan is done entirely at the end of the period. The bank officer will tell you what year the loan is due based on your decision. If, for instance, the officer informs you that the loan is due in 112, you must pay the loan between 112.00 and 112.99. Since you are paying interest on the loan, the longer the payback period you select, the more credits you will eventually have to pay. The bank officer will give you the current interest rate and the amount that will be due at the end of the loan period.

To pay back the loan, you must visit the Axia drydock within the due year. The customs agent will guide you over to a bank official and give you the opportunity to pay the loan.

You will also be required to give your name and the name of your ship to the bank officer. This is recorded on your loan agreement in the event that the bank needs to locate you. You should enter your last name only.

BUYING A SHIP

The goods will be sent to the Axia drydock where you can later place them on your ship. When you have finished obtaining your loan, you will be ushered over to the drydock to select a ship design.

Purchasing a Ship

Once you have secured a loan from the bank, it is time to purchase a ship. You may use part of the 177,000 credits remaining from your "Merchant's Loan Package" to pay for the ship.

You find yourself in the drydocks of Axia, talking with Zefrep, the sales manager. He will lead you over to a terminal from which you can view the current selection of ten ships. It is important to remember that these ships are merely framework, and that you must fill it with hulls and parts in order to make it operational.

A menu of ship names will appear on the screen. To obtain information on one of the designs, type the number corresponding to the name and then press the return key. The terminal will go blank for a few seconds while it accesses the proper information, then display the first of three screens of information on the ships. The top half of the screen will give you an angled view of the ship. The bottom half will relate the specifications of the ship. For screen one, the specifications are defined as follows:

Designation - The model name for the design.

Company - The company who constructed the ship.

Year - The year construction was completed.

Price - Current cost of purchase.

Length - Overall length of the ship in meters.

Beam - Overall width of the ship in meters.

Draught - Overall height of the ship in meters.

When you are finished reviewing the data on the screen, press the return key and the computer will obtain the data for the next screen. Screen two will display a top-down view of the ship, plus the following data:

Mass - Mass of the ship in millions of kilograms.

Max. Hulls - The maximum number of hulls the ship can hold.

Visibility - The overall visibility of the ship (this is a number between 0 and 99, the higher the number, the more visible the ship is to other ships.).

Integrity - The overall structural integrity of the ship (this is a number between 0 and 99, the higher the number, the more structurally sound the ship is.).

When you are finished reviewing this data, press the return key and the computer will access the last screen of information. Screen three will display a side view of the ship in addition to a brief description of the design.

When you are finished reading this screen, hit the return key and you will find yourself back at the selection menu. You may now select another design to review.

You can obtain additional information on the ships from Appendix. This will list the size and visibilities for each of the sections on the ship. Ships are divided into a maximum of eight different sections. Each section is capable of holding a paticular number of hulls. Hulls are the main measure of a parts size. The larger sections will be able to hold more hulls, therefore more parts.

Sections also have a visibility factor. This is a measure of how visible the individual section is to

another ship. This is a value between one and ten inclusive. The higher the value, the more visible the section is. The more visible sections have the greatest chance of being hit by enemy fire. A good strategy is therefore to place vital parts in the sections with the lower visibility factors.

Once you are finished reviewing ship designs, yo you may purchase a ship by pressing [select/E/F2]. Zefrep will then ask you which ship you want to purchase. To do this, press the number corresponding to the ship you want, then press the return key. The cost of the ship will automatically be deducted from the credits you have. The ship will be moved from the storage area to the drydock area so that you will later be able to place your hulls and parts aboard your ship.

Creating the Player Disk or File

This section will create the player's disk for the game. This is the disk (or file) that is used throughout the game to keep track of all the data on your ship.

While Zefrep is moving your ship into the drydock area, he will ask that you assist the computer in creating the player disk. You will be asked to remove the Construction disk from the disk drive, then press [return]. (If you are playing the IBM/Zenith version, please skip ahead to Player Disk or File Completion.)

You will need a blank disk to use as the player disk. The computer will ask you to place this disk in the disk drive and press [return] to begin formatting. The format procedure will take almost a minute. If the format is successful, the computer will ask you to replace the Construction disk. The format may fail if the disk proves to be defective. In this case, the computer will allow you to place a different disk in the drive and try again.

When you get a sucessful format and have replaced the Construction disk, the computer will the begin the process of moving data onto the player disk. This process will use the Construction, player, and Starport disks. Simply follow the instructions the computer gives for inserting disks. Several disk insertions will need to be made during this process. Above all, be patient! Universe is a complex game that requires over three-quarters of the space on the player disk for data.

Player Disk or File Completion

Zefrep will inform you when the process is complete. At this point, your ship, parts, and hulls are in position and you are ready to boot the computer with the Flight 1 (Flight for Apple and IBM) disk.

After booting the Flight 1 (Flight for Apple and IBM) disk, you must proceed directly to Docking Control (this is a selection on the Flight Menu). You must then select Place Parts (this is a section on the Docking Control Menu). This section will allow you to place the parts included in the loan onto your ship. After placing the parts, you must select Purchase Items (also on the Docking Control Menu). Here, you will need to purchase at least 10 crew members (you may wish to buy at least 15 if you plan to use orbital shuttles) and enough provisions to last them until you return to a drydock.

This procedure must be followed in the given order. If you fail to do so, you may find yourself sitting in your ship with no parts or crew. This will end the game rather abruptly.

FLIGHT

This section will allow you to use the sublight and hyperspace drives to move from star to star, planet to planet, or change your planetary orbit. This section requires that the sublight navigation program be running to use the sublight engines, or the hyperspace navigation program be running to use the hyperspace engines.

After selecting Drive Systems from the Flight Menu, the computer will display the Drive Systems Sub-menu. Select Sublight Drive for planet to planet or orbital transfers, or Hyperdrive for star to star transfers.

Hyperdrive

The computer will display a list of star names, their coordinates, and a visit flag which displays "Y" if you have visited there before, or "N" otherwise. Use the [up arrow] and [down arrow] keys to select the starsystem you wish to visit. Near the top of the screen is an area for entering coordinates manually. This is used if the distance to your destination is too great for your hyperdrive and you must make several jumps. Enter coordinates here by moving the starsystem pointer up to the manual entry line (use the [up arrow] key).

After positioning the starsystem pointer, you may then jump to or obtain data on that system. At the far right hand side of the screen you will see a "visited" indicator that is set to "Y" if you have been to that system before, or an "N" if you have not. If the indicator is set to "Y", you may obtain data on the planets orbiting that star by pressing the [option/W/F3] key. The planetary data will include the planet name, the sophistication levels of the drydock and starport (including of course whether or not the planet has a starport or drydock), and the type of planet. You may return to the starsystem list by pressing the [start/Q/F1] key. You may choose a star as your destination by pressing the [select/E/F2] key. If the starsystem pointer is on the manual entry line, you will need to enter the proper coordinates. To do this, press the [option/W/F3] key and a small cursor will appear after the "X:". Enter the X, Y, and Z coordinates, pressing [return] after each. Then you may press the selection key to selet those coordinates as your destination. You will now see the Local Group map as the hyperspace navigation program plots the appropriate coordinates. The source coordinates will be displayed on the left, while the destination is displayed on the right. The distance between the two locations is given at the center of the map, measured in light years. The amount of energy needed for the jump is displayed at the bottom of the map. To make the jump, press the [select/E/F2] key. To abort the jump, press the [option/W/F3] key and you will return to the starsystem list. If the computer beeps when you press the [select/E/F2] key, the hyperspace navigation program has rejected the jump due to insufficient energy or an illegal jump distance. Once the hyperspace navigation program has accepted a valid jump, the computer will begin calculating, fueling, and sequencing for the jump. Don't be alarmed if you see strange patterns of light on the screen. This is simply sensory distortion due to the hyperspace effect. Providing you obeyed the orbital radius minimum for a hyperspace jump, you will find yourself at the destination. If you were too low in the orbit (less than 20,000 kilometers), you will find that you did not move. You may also have damaged your hyperdrive. To return to the drive system Menu, you must first have the starsystem list displayed on the screen. Pressing the [start/Q/F1] key from this point will return you to the drive system Menu.

Sublight

At the bottom of the screen is the status area. This is where the computer displays the current scale, coordinates, selected object, and status. Upon entering the Sublight Drive section, you will be in the select scale mode. Use the

[option/W/F3] key to toggle between solar and planetary scales. The [select/E/F2] key will activate that scale. The [start/Q/F1] key will return you to the Drive Systems Menu.

Solar Scale

If you select the solar scale, the computer will begin by doing a solar scan. This scan will look for all planets and stars for your current location. The star, if present, will be displayed at the center of the display area. Planets will appear as dots, and your ship will appear as a dot with a box around it. The computer will switch to the destination select mode.

To select your destination, use the [option/W/F3] key. One of the dots will begin to blink, indicating the current object. Information on this object can be seen at the bottom of the screen. These objects are always planets, with the exception of the one object which is your ship. The data on the object includes the object name and its coordinates, displayes as rho, phi, and theta respectively. All angles are displayed in degrees. Pressing the [option/W/F3] key again will select the next object. Continue pressing the [option/W/F3] key until the destination planet you want is displayed. At this point, press the [select/E/F2] key to choose the current object as your destination, or the [start/Q/F1] key to return to the select scale mode.

After selecting your destination, the sublight navigation program will make the appropriate computations. At the bottom of the screen you will see the following information:

Time - Time in minutes needed for the transfer.
Ore - The amount of ore IV needed for the transfer. This may be 0 if your sub-light drive is of a type which only uses energy.
Energy - The amount of energy needed for the tranfer.

Press the [select/E/F2] key to begin the transfer, or the [start/Q/F1] key to abort. If the computer beeps after you press the [select/E/F2] key, the sublight navigation program has rejected the transfer. This is due to either insufficient energy, ore, or the number of gravities of thrust needed for the maneuver is too great. During the transfer, time will be speeded up to approximately 500 game minutes per 1 second of real time. After the transfer, you will return to the select scale mode.

Planetary Scale

If you choose the planetary scale, the computer will begin by doing an orbital scan, then a planetary scan. A polar view of the planet will appear at the center of the display. If your ship is within the range of the orbital beacon for the type of orbital scanner you have, one or more dots will appear, indicating objects in orbit. The computer will switch to the destination select mode and a cursor will appear in the "rho" coordinate. Now the computer is waiting for you to enter the coordinates of your destination.

The coordinates are as follows: rho, epsilon, theta-epsilon, and theta. To enter the coordinates, simply type in the numbers, entering all angles in degrees. A radius or angle that is too small or large will be rejected. The minimum radius will be 5% greater than the radius of the planet. For example, the minimum orbital radius around Axia would be 6616 kilometers. The minimum radius figure can be found in the Planet List in the Appendix. The maximum radius will be around ten times the radius of the planet. Press [return] for the radius without entering a number if you do not wish to manually enter coordinates. If you have entered coordinates, you press the [select/E/F2] key to select those as your destination. Otherwise, press [option/W/F3] to display the coordinates of the objects in orbit. You may select an object as a destination by pressing [select/E/F2] when the

object's data is at the bottom of the screen. Due to the physics of planetary orbits and the limitations of sublight engines, you will not be able to select a destination whose orbital radius is within 500 kilometers of your ship's orbital radius.

Objects other than an orbital drydock or your ship appear with the description "HRS#". This is a hi-resolution scanner contact number. It is usually another spacecraft in orbit. In order to determine what a contact is, you must run the hi-resolution scanner section and enter the appropriate contact number. In order to do this, the contact must be within range of the scanner, so you may wish to first transfer to the contact's location.

In order for your orbital scanner to pick up other objects in orbit you must be within range of the orbital beacon. The becon is a ring of satellites surrounding the planet at an orbital radius equal to five times the radius of the planet. To be within range, the difference between your orbital radius and that of the beacon must be less than the maximum range of your orbital scanner.

After selecting a destination, the sublight navigation program will compute the course and resources needed. The following data will be displayed:

Time - Time in minutes to complete the transfer.
Ore - Amount of Ore IV needed to complete the transfer.
Energy - Amount of energy needed to complete the transfer.

If you press the [option/W/F3] key, a "V" will appear at the end of the status line indicating that the transfer will be "visual". This means that you will be able to watch the maneuver on the screen. This will be interesting to watch since the transfer uses real formulas, however it will take considerably longer than a "non-visual" transfer. To select a non-visual transfer, press the[option/W/F3] key again. This will turn off the "V" on the screen. At this point, you may press [select/E/F2] to begin the transfer, or [start/Q/F1] to abort the transfer. After the transfer, you will return to the select scale mode.

WEAPON SYSTEMS

The Weapon Systems screen is comprised of 6 parts. They are, from top to bottom: the tactical view window and the tactical display, the strategical view window and the stategical display, the damage control display, and the text area. The tactical displays provide you with information on the ship you are attacking. The strategical displays have data on your relative position in orbit and your defense systems, and the damage control will give information on damaged sections during battle.

If the message "High Definition Scan Required" is displayed upon entering Weapons, you must run your high definition scanner before entering the weapons section. If the message, "weapon program not running," appears, you may have to raise the program priority in Program Control before running this section. Now you may enter a command.

If you are still in the Weapon Systems section at this point, the text area will go blank. This means that the computer is waiting for a command. The possible commands are:

Select Target

Press [T] to begin this section. The computer will then ask you for a target. Use the "HRS #," and set the magnification the same way you did in High Definition Scanners. The computer will then display a picture of your target in the tactical display window (upper left-hand corner). Next, the computer will ask "Visual damage?". If you press [Y] at this point, the computer will flash sections of your ship on the damage control display if they are hit. The disadvantage of this option is that it is rather slow on some computers. Type any other key to avoid this [option/W/F3]. The computer will confirm your selection of visual damage by putting a small "F" in the bottom of the strategical data area. Your target is now selected.

Important: You must select a target before firing a weapon.

Fire Laser

To begin the laser firing sequence, press [L]. The computer will then ask for a lock-on confirmation. Press [C] to confirm. The laser will charge and then fire.

Fire Missiles

To select missile firing, press [M]. The computer will then list all your current missile loading status. Choose a missile type by pressing its corresponding number key (0-9). The computer will then ask you for the salvo size. This is the number of missiles to fire at once. Type in a number up to the maximum and press [return]. The computer will then ask for a lock-on confirmation and a firing confirmation. Press [C] both times, if you wish to fire. The computer will then display details on your salvo's fate.

Emergency Systems (Overload and Rescue Pods)

To use the emergency systems, press [E]. The computer will then display a Menu in the text area. To overload your hyperdrive, press [O] or to launch rescue pods, press [R].

Docking and Boarding

To forcibly dock and board another ship, press [D]. The ship must be within 1000 kilometers and you must have destroyed the target's engines. After you have docked, the computer will ask for the number of boarders to send over. This number should not exceed the total number of armor suits you own. Now the

computer will erase your ship from the damage control screen and draw the target's ship. The computer will display your current forces and the target's current forces. If your men are winning the battle, successive sections of the target ship will turn red, signifying that you have captured it. If things are not going well, press [R] to retreat. If you are able to control the entire ship, then you have captured it. The computer will then transfer the booty onto your ship. (Booty is the reason why you did this, right?).

Autodoctor and Docking Adapter

Both of these systems are used automatically in Weapon Systems. The autodoctor will repair a percentage of the battle casualties, if you have one. The docking adapter allows you to dock with other ships, when you are attempting to board them.

Leaving Weapon Systems

Press [start/Q/F1] to exit.

DOCKING CONTROL

The dock system allows you to dock your ship with a drydock, then disembark and trade in parts, crew, provisions, hulls, armor, ore IV, programs, and weapons. You may also remove parts from your ship in order to sell them or to move them to another section. Parts moved from section to section are also repaired.

Once you have performed an orbital transfer to a drydock, your ship will be in position to dock. Docking with a drydock manuvers your ship into a berth and connects the airlocks. There are three sections to the drydock: Parts removal, Purchase Items, and Place Parts.

At the bottom of the drydock Menu screen is a value which indicates the number of parts you have in the holding area. These are the parts you have either purchased or removed from your ship. Upon entering the drydock, this value will always be zero. As you move from section to section in the drydock, this value may change. You should never leave the drydock Menu unless this value is zero. If you do, the parts in the holding area will be lost. The exception to this rule occurs when you have purchased more parts than your ship can hold, and you cannot place them on your ship.

Parts Removal

This area of the drydock is for removing parts from your ship. There is a charge for part removal, based on the size and value of the part to be removed. You may also sell parts in this area. The drydock personnel will determine how much the part is worth (not always to your satisfation.) Removal charges include re-installation and repair costs, so that you may later place the part in another section of your ship free of charge.

The parts removal screen will display all 38 ship systems and the make (company name) of the part you currently own. A blank space will appear after the system number for systems you do not have installed. Below the systems list the computer will display the amount of credits you have. Below the credits is the status line. The system pointer is the small arrow which points to a system number. When you first enter this section, the system pointer points to system zero. To move the system pointer to the next system, press the [select/E/F2] key. To move the pointer back one system, use the [option/W/F3] key. If you move the pointer backward from system zero, it will point to system thirty-seven. If you move the pointer forward from system thirty-seven, it will point to system zero. The pointer selects which part's status will be displayed on the status line at the bottom of the screen.

To change the status of a part, move the system pointer to the part's system number. The status line at the bottom of the screen will show the current selection for the part. There are three possible selections: Maintain, Sell, and Remove.

If a part has the selection "maintain", the part will not be removed from your ship. Note that this is the normal selection for all the parts when entering this section. You may change the selection for a part by pressing the space bar. Successive taps on the space bar will "roll" you through all three selections.

If you change a part's selection to "sell", the net worth value at the bottom of the screen will display the amount the drydock is willing to give you for the part. If you change a part's selection to "remove", the net worth value will display the charges for removing the part, repairing all damage, and re-installing the part in another section of the ship. Note that if you remove a part from your ship, you may not sell that part until after you re-install it aboard your ship. If the sophistication of the drydock is less than that of the part you are removing, the drydock will be unable to repaire the part. In this case, the removal charge will not include repair costs.

Once you have set the selection status for each part you wish to change, you may return to the dock Menu by pressing the [start/Q/F1] key. No removal or sales of parts will take effect until you press this key.

Purchase Items

This is the main trading area of the drydock. This area is where you purchase parts and other items for your ship. All products purchased here are new and have their full complement of damage points. The price of hulls and parts includes the installation charge for placing the product aboard your ship.

The Purchase Items screen is divided into eight trading sections. The section pointer points to the section you wish to trade in. This is a small arrow just to the left of the section name. The amount of credits you own is displayed at the top of the screen.

You may move the section pointer to the next section by pressing the [option/W/F3] key. Once you have positioned the pointer at the section you want, press the [select/E/F2] key to activate trading. The name of the section will be highlighted to indicate that you are currently trading in that section. Here is a deatailed description of the trading in each section:

PARTS:

To purchase a part, you must first enter the system number of the part. Press return after entering this number. Next you must enter the part number. Both the system and the part number can be obtained from appendix A. If you [select/E/F2] a system for which you already have a part, or you [select/E/F2] a part which has a sophistication greater than the drydock's, the computer will delete you entry. When purchasing missile racks or accumulators, you must also specify the quantity. The computer will compute and display the cost. To purchase the part, press the [select/E/F2] key. To abort the purchase, press the [option/W/F3] key. To exit the parts section, press the return key in response to the system number.

ORE IV:

You may purchase ore IV by entering the amount of ore you want. The computer will compute the cost (there is a small handling fee.) To purchase the ore, press the [select/E/F2] key. To abort, press the [option/W/F3] key. To exit the ore IV section, press return in response to the ore IV quantity.

HULLS:

To purchase hulls, enter the quantitiy of hulls you want. If you enter a value that is greater than the amount of free space on your ship, the computer will reject it. Once you have entered a valid quantity, the computer will compute the cost. Hulls cost 2,500 credits each. To purchase the hulls, press the [select/E/F2] key. To abort the purchase, press the [option/W/F3] key. To exit the section, press return in response to the hull quantity.

PROGRAMS:

You may purchase programs by entering the number of the program you want. The computer will not allow you to purchase a program you already have, or to purchase a program that will exceed the free space in your mass storage unit. Programs cost 1,500 credits each. To purchase the program, press the [select/E/F2] key. To abort the purchase, press the [option/W/F3] key. To exit the section, press return in response to the program number.

WEAPONS:

Weapons are purchased by entering the number of the weapon you wish to purchase. Following the weapon number, you will need to enter the quantity of that weapon you want. You will not be allowed to purchase weapons whose missile size units exceeds that of your missile rack. The computer will calculate the cost and display it on the screen. To purchase the weapons, press the [select/E/F2] key. To abort the purchase, press the [option/W/F3] key. To exit the section, press the return key in response to the weapon number.

CREW:

You may purchase crew for your ship by entering the quantity of crew you wish to hire. You will not be allowed to exceed the current crew capability of your ship. The computer will display the cost for hiring. To hire the crew, press the [select/E/F2] key. To abort the transaction, press the [option/W/F3] key. You may exit the section by pressing the return key in response to the crew quantity.

PROVISIONS:

To purchase provisions for your crew, simply enter the quantity of provisions you desire. You will not be able to purchase more than 100 provisions per crew accomodation. This means that if you own a Kraakobinir crew quarters (which can accomodate 40 crew) the maximum amount of provisions you can carry is 100 X 40 or 400 provisions. The computer will calculate the cost of the provisions (1 man-day of provisions costs 3 credits.) To purchase the provisions, press the [select/E/F2] key. To abort the purchase, press the [option/W/F3] key. You may exit the section by pressing return in response to the provision quantity.

ARMOR:

To purchase armor for your crew, enter the number of the armor type you want. You will then need to enter the quantity of that type of armor you wish to purchase. You may not own more than one suit of armor per crew member, thus the limit on total armor quantity is your current complement of crew. The computer will calculate and display the cost of the armor. To make the purchase, press the [select/E/F2] key. To abort the purchase, press the [option/W/F3] key. You may exit the section by pressing return in response to the armor number. To exit the Purchase Items section, press the [start/Q/F1] key. You may only exit when you are not in an active trading section (no section name is highlighted.)

Place Parts

This is the area of the drydock that all hulls and parts are sent to upon purchase in the main trading area. Drydock personnel will place hulls and parts aboard your ship free of charge (the cost of placement was included in the purchase price or the removal cost.)

In this area, you will select the section number of the ship that parts and hulls will be placed. The top half of the screen is a three-dimensional view of your ship. If you have hulls in the holding area, proceed to "hull placement", otherwise proceed to "parts placement".

Hull Placement

The bottom half of the screen will display the hull placement data. Here you will see a list of the sections of the ship. Immediately following the section number is the size of the section. This is the maximum number of hull units that can be contained in the section. Following that value you will see the current number of hulls that are

in the section. Near the bottom of the screen you will see the quantity of hulls that are in the holding area.

The computer will begin by flashing each section while the arrow in the bottom half of the screen points to the section number being flashed. This will help to familiarize you with the sections and how they are numbered. Once the computer has run through each section, you will be ready to distribute the hulls.

Hulls are placed on the ship by first entering the section number you wish to place hulls in. The section you have selected will be highlighted on the top half of the screen. The computer will then request the quantity of hulls you want to add to that section. You will not be able to add a quantity of hulls that exceeds the maximum number of hulls that the target section can contain. The amount you have distributed to that section will then appear on the section list following the current number of hulls value. You may "undo" a distribution by entering a negative number in response to the quantity to add to the section. Note that you will not be able to enter a negative number that is greater than the quantity of hulls you have distributed, even though there may be more hulls in the section placed during a previous drydock visit. This is due to the fact that hulls, once place, cannot be removed from the framework of the ship. When you distribute hulls, they are not actually placed on the ship until you are finished. Once all the hulls have been distributed, press the [start/Q/F1] key to exit.

Part Placement

The bottom half of the screen will display a list of sections. Following the section number, you will see the total number of hulls currently attached to the section. Following that, you will see the number of hulls currently being used in that section. To compute the number of free hulls in a section, subtract the total number of hulls used from the number of hulls in the section. Near the bottom of the screen, you will see the system name, type, and size of a part in the holding area.

To place a part in a section of the ship, enter the section number you wish to place the part in. The size of the part will appear in the "item" column of the section number you selected. You may then move on to the next part in the holding area by pressing the [select/E/F2] key. When you reach the last part in the holding area, pressing the [select/E/F2] key will have no effect. You may move back to a previous part by pressing the [option/W/F3] key. The computer will display the size of the part in the "item" column for the section you placed the part into. You may change the location of the part by entering a new section number. To move a part back to the holding area (remove it from the section you have selected to place it in), enter zero for the section number. Once you have finished placing the parts, you may exit the area by pressing the [start/Q/F1] key.

HIGH-DEFINITION SCANNER

The High Definition Scanner will create a detailed picture of an enemy vessel as well as providing data on its fighting capability and most possible configuration. It has the additional capability to receive radiocomm messages, which are relayed by the orbital beacons above any planet.

High Definition Scanning

The computer will ask you for a target to scan (if any). The target number is based on the "HRS #" numbers which appear on the Planetary Scan in Sub-light Drive. The notation stands for High Resolution Sighting Number.

For example, if you rendezvous with HRS #1 (in Sub-light Drive), to obtain a picture of that ship, select scanning target 1.

Next, if the target ship you have selected is within range, the computer will ask you for a viewer magnification. This will determins the size of the picture. The value may range from a minimum of 20% to the maximum magnification of your hi-def scanner. To change the value, press [up arrow] to increase it by 10% or [down arrow] to decrease it by 10%. Press [return] when you are finished. If you are fairly close to the target, as you are after a rendezvous, do not set the magnification too high or only a few of the ship's lines will appear.

At the bottom, the computer will display some data on the currently targeted ship. All of the information is very accurate except for the crew size (it is difficult to determine).

To continue, press [start/Q/F1]. The computer will ask you if you want to scan another ship. Press [Y] to do so again or [N] to return to the Main Flight Menu.

Note: If you return are using the high definition scan prior to an attack, you must make a new scan every time you move your ship.

Radiocomm Messages

Your high definition scanner also operates as a long-range radiocomm message receiver. Whenever a new incoming message is detected, the computer will display it for you automatically. You will only receive these messages when using your high definition scanner.

Important: Radiocomm messages do not occur until some time after year 105. The spacing between messages may be several years, so be patient. Some of the messages may lead you on to other clues concerning the location of the hyperspace booster.

Mining Systems can provide you with a ready source of income and an inexhaustable supply of fuel. Although the intial cost of mining is great, finding a planet rich in ore can make mining the most profitable of the professions available to you.

The Ore Processors resemble giant off-shore oil rigs. They have electrogravitic engines, a large crew capacity, on-board refining systems, and large payload areas. They can only be operated on relatively flat and hard surfaces, making the supply of landing sites limited on most worlds. During their descent to the surface, you will have to decide, based on readings from their radar, whether or not they will land. This can sometimes be fatal, in terms of lives and equipment, if your decisions are bad.

The Assault Capsules are giant armored troop carriers, armed with two or more Voigt-effect cannons. Use them to control an area prior to mining. These have the same landing limitations as ore processors.

Ore Processors

The computer will scan the surface of the planet below (if possible). The planet must not be a gaseous type. You must be within the resource scanner's range, have the program running, and have sufficient power to run the scanner. The computer will then present you with a series of possible mining sites.

Use [option/W/F3] to move between the mining sites and use [select/E/F2] to choose one. If the sophistication of the site is above 39, the computer refers you to assault capsules and will exit the back to the Mining Systems Menu.

Next, the computer will display all available ore processors and their loading states. Press the corresponding number (1-5) to change the state of an orbiter. Example, orbiter 2 is unloaded. Press [2] and it changes to loaded, if there is enough energy and crew to man it. The computer may indicate that you have insufficient energy to load although ore storage is full of ore IV. This is not an error. Your accumulator's energy capacity must be equal to or greater than the energy required to fill the ore processor. Press [L] to launch or [escape] to return to the Mining Systems Menu.

If you have launched, the computer will display a three-dimensional grid. On the grid, the computer will place one triangle for every lander. Then it will draw a line starting from the center of each triangle toward the top of the screen. This is your altitude indicator. It will slowly shrink (move toward the center of the triangle) as your ore processor descends. At the bottom of the screen is the ore processor status line. Each ore processor's display will be in its corresponding spot. For example, processor 5's status area is on the far right. It contains information on ship's energy (percent), current damage level, and direction of travel.

As captain, your main concern at this point is to ensure that the ore processors all land on safe sites. To gather information for your decision, you must get surface reports. To get a report from a processor, press the letter directly underneath its corresponding number key (Q=1, W=2, E=3, R=4, T=5). For example, press [Q] if you have an ore processor #1. The computer will print something like "PRCSR #1 Ancient Seabed." In this case, it is a safe landing site. On the others, you are going to have to use your own judgement as to whether or not it is safe to land.

Note that each ore processor will land on a different site. Reports from a single ore processor may vary. This occurs when the processor downward scanner gets a false reading. The frequency of false readings is directly proportional to the hostility of the landing site. Therefore, you must take several

readings from each ore processor and decide whether or not each one is going to land.

Mining Ore

Once you have landed all your the processors that are going to land, the computer will switch you to the mining screen. The mining screen has four major parts. They are, from top to bottom, ore concentrations, mining status boxes, mining indicators, and the ore processor status displays.

The ore concentrations are the concentrations for the current site, not the planet. Each ore processor that is on the ground gets a mining status box. The box shows current ore holdings (the green horizontal line near the top is the maximum mark for each type). All are percentages. The "E" stands for current energy percentage. When it is down to the minimum needed to return, the ore processor will automatically take-off (with all the others). The mining indicators show which ore is currently being mined. A "5" denotes the ore processor is standing idle (using no energy). The ore processor displays are the same as the descent type except that these also list the efficiency of the processor in recovering ore.

To tell a particular processor what ore to mine, press [C] until the two triangles surround the single number below the status box of the proper ore processor. Press the corresponding key for each ore (1-4) and [5] to make the processor stand idle. When you wish to have the processors return to the main ship, press [L] and they will all leave at once.

Assault Capsules

Now the computer will display all the available assault capsules. They are loaded in the same fashion as ore processors. Press the corresponding number key to fill an assault capsule (1-5). Press [L] to launch or [escape] to exit.

If you have pressed [L], the computer will draw the descent grid, and place on it all the planet's ground forces (hollow orange sqaures). Now it is your turn to decide where your assault capsules will ground. In the center of one of the grid sqaures is a dot. That dot is your positioning cursor. To move it, use the four arrow keys. You do not need to hold [shift] or [ctrl] when moving the cursor. When you have found a suitable landing site (it must be empty), press [select/E/F2]. This will place your first assault capsule in the grid square. Your assault capsule will be represented by a hollow blue square.

After you have placed all your assault capsules, the computer will start to fill in empty grid squares adjacent to the enemy units in red. Then it will fill in empty squares adjacent to yours in blue. These filled in squares represent "zones of control." The zones give a rough approximation of the tide of the battle. During the course of the battle, these zones may change hands frequently. Each zone is controlled by only one base unit (a hollow square) and the same holds true for yours. As a zone is hit, the attack factor of its controlling unit is reduced. When a unit is totally destroyed, its zones are cleared off the board too.

The attack factor ("AF") of each assault capsule is indicative of its strength. When a capsule's attack factor is zero, it is destroyed and removed. It is a good idea to recall a capsule near 0 by pressing its corresponding number key. It will leave the battle field and return to the ship. All of its abandonded zones will disappear.

If you successfully wipe out all the ground forces, you will be returned to the ship. The site where you fought is now clear for ore processors.

This section allows you to view the items you currently have in the cargo hold, and to launch your orbital shuttles down to a starport. You will also be able to move products to and from your cargo hold and orbiters.

Cargo Manifest

The cargo manifest is a list of the products in your cargo hold. This list includes the size, name, and price paid for each item in the hold. If your computer has the market program, you may also obtain information on the type and sophistication of each item.

After selecting the cargo manifest selection from the trade systems Menu, the computer will display the list of products. At the top of the screen you will see the amount of free space in each of your orbiters and the cargo hold. These values appear below the large red numerals and the word "Hold" respectively. Note that numerals will not appear on the screen for orbiter you do not have.

Directly below the free cargo space you will see the market program status line. This line displays information on the status and readout of the market program. The status for the program will be displayed as one of the three following values:

NA - Program is not available (not in mass storage).
Halt - Program is in a halt state.
Run - Program is running.

The readout of the program is the type and sophistication of the product pointed to by the row pointer (the row pointer is the small arrow just to the right of the manifest number.) The readout will be active only when the market program is running.

The row pointer may be moved up and down the display by using the [up arrow] and [down arrow] keys. You may also scroll the manifest up and down by using the [option/W/F3] and [select/E/F2] keys respectively. By using these four keys, you may access any product in the manifest.

To move a product from one place to another, you must first move the row pointer to the product you wish to move. Then, press one of the number keys from "1" to "5" to move the product to orbiters one through five respectively, or press "0" to move the product to the cargo hold in your ship. The computer will give you a warning signal if you try to move the product to a place where there is insufficient space.

To exit the cargo manifest, press the [start/Q/F1] key.

Launch Orbiters

Orbiters are the only method of transportation to a starport. Orbiters may be launched when in a fairly low orbit around a planet with a starport. Just how low an orbit depends on the gravity of the planet, the amount of energy your orbiters can hold, and the amount of energy you fill the orbiter with. Obviously, the greater the orbital radius, the farther away you are from the starport and the greater the amount of energy you need. Planets with high gravity will force you to use more energy.

Control of the descent of orbital shuttles is accomplished in this section. You will need to fuel and load your orbiters with crew, passengers, and ore. When this process has been completed for each orbiter that is to be launched, you will be allowed to board an orbiter and the countdown will begin. All orbiters will be launched simultaneously. From your orbiter you may control all others via radio communications.

TRADE SYSTEMS

Before using this section, you should first make sure you are orbiting a planet that has a starport. Since orbiters can only land at starports, you will lose all orbiters that reach the surface of a planet and cannot locate a starport. Since you will be in one of these shuttles, this will end your career, your life, and the game.

The orbiter control screen is divided into five columns, one for each orbiter aboard the ship (five is the maximum number of orbiters, you will not necessarily have all five at a given time.) The current amount of energy in the accumulators will be displayed at the top of the screen. The rows on the screen are defined as follows:

Energy – Percent of full energy capacity (100% is a full load of energy).
Crew – Status of crew "unloaded" or "loaded" (there are 5 crew members per orbiter).
Ore – Quantity of Ore types I through IV loaded on the orbiter.
Pasngr – Number of passengers on the orbiter.
Status – Current status (this will be explained later).
A – Altitude of the orbiter in kilometers.
D – Number of damage points for the orbiter.

Before launching the orbiters, you must load them with energy, crew, passengers, and ore. The screen will begin with the row "energy" for orbiter one highlighted. Press [select/E/F2], and a cursor will appear under the row name. Enter the percent capacity of energy for the orbiter.

After entering the energy, press the [option/W/F3] key to move on to the next row for orbiter one. The row "crew" will now be highlighted. The [select/E/F2] key will toggle the status of the crew between "load" and "unload". You must have crew loaded on the orbiter before launching. The status will not toggle if you do not have enough crew on the ship. Since you must leave at least ten crew aboard your ship, you must have at least fifteen crew members on the ship for this value to toggle.

The next four rows are for ore types I through IV. Use the [option/W/F3] key to move through these rows. If you wish to load a quantity of ore aboard the orbiter, press the [option/W/F3] key until the proper ore type appears highlighted. Now press the [select/E/F2] key and a cursor will appear on the appropriate row. Enter the quantity of that type of ore you wish to load.

After moving through the four ore types by using the [option/W/F3] key, the "pasngr" row will be highlighted. If you wish to load passengers into the orbiter, press the [select/E/F2] key. A cursor will then appear under the row name. Enter the number of passengers you wish to load.

If you have more than one orbiter, pressing the [option/W/F3] key again will highlight the "energy" row for the next obiter you have. If you only have one orbiter, the "energy" row will again light up for that orbiter.

Once you have finished preparing the orbiters, you may begin the countdown to launch by pressing the [start/Q/F1] key. You will then board whichever orbiter has a row name highlighted (you should move the highlight onto the column for the orbiter you want to be on prior to pressing the [start/Q/F1] key.) If you wish to abort the launch before pressing the [start/Q/F1] key, you may do so by pressing the [escape] key.

Once the orbiters have launched, you will see the altitude indicator for each orbiter begin to decrease. During the descent, you will be in radio contact with the other orbiters. Depending on the atmospheric conditions, you will periodically lose contact with other orbiters. During this period of loss, you will be unable to obtain altitude and damage status from the orbiter. This is indicated by a "LOS" status.

If you feel that you wish to abort the descent for an orbiter (due to excessive damage or lack of sufficient fuel) you may do so by pressing the numeric key corresponding to the orbiter number. If you have temporarily lost contact with the orbiter, you will be unable to abort the orbiter until contact is re-established. An aborted orbiter will reverse direction and ascend to your ship. If you abort the orbiter you are in without aborting the others, they will be lost.

Once you have arrived at the starport, you will be able to boot up the Starport disk (or run the Starport file) and proceed to customs.

REPORT STATUS

Report Status allows you to examine a system's current damage level, energy usage, visibility, and its special functions. It also allows you to check coordinates and supplies.

The Report Status screen will list all of your currently operating systems along with the miscellaneous catagory and the exit marker. The small arrow on the outer left column can be pointed at any of the functional systems by pressing the [option/W/F3] key. To display the status of a particular system, move the arrow until it is to the left of the name and press [select/E/F2]. The computer will display the status of that system. Press [start/Q/F1] to return to the list of systems.

The miscellaneous catagory area will display the ship's current coordinates. Press [start/Q/F1] to continue. Next, it will display your supply status. Press [start/Q/F1] again. Finally, it will list your current contractual obligations. Press [start/Q/F1] to exit.

When the computer displays the status of one of the systems (as opposed to the miscellaneous catagory), it will display information on the three "functions." "Functions" are the values for the special features of each system. For example, in the Parts List (Appendix), a hyperdrive has only one special piece of descriptive data, its range in lightyears. Range in lightyears, therefore, would be function 1. The other functions would be nulls. Number them from left to right, starting with 1.

To exit this section, move the arrow to the "* * EXIT * *" area and press [select/E/F2].

PROGRAM CONTROL

The program control section allows you to view and change the priority, status, and load state of your computer programs.

The screen will display all computer programs you currently have in mass storage. In addition, at the bottom of the screen, the type of computer processor and the free computer space are displayed.

The up and down arrows on the keyboard will move the row pointer to select the program number to change. Note that it is not necessary to hold the shift key down when moving the pointer. The [option/W/F3] key will move the column pointer to select the value to change. Using the up, down, and [option/W/F3] key will allow you to select any of the three values you may change for any program you currently have.

To change the value pointed to by the row and column pointers, use the [select/E/F2] key. In the case of status and load state, the [select/E/F2] key will toggle between halt/run and auto/manual respectively. Note that the [select/E/F2] key will not select a program to run if there is not enough timeshare space in the computer.

In the case of priority, the [select/E/F2] key will increase the priority of the program by one. If you press [select/E/F2] when the priority is at its maximum of nine, the value will change to zero.

To return to the flight Menu, press the [start/Q/F1] key.

SAVE GAME

Save Game will save the current game on the Player disk so that you may restart the game from the same position at a later date. For versions that use a Player disk, this feature will also allow you to make backups of the Player disk in the event you wish to resume the game from previous positions.

Select the save game selection from the Main Flight Menu. The computer will automatically save all necessary data onto the disk or file. To restart a saved game, boot the Flight 1 disk (Flight for Apple players and the Flight program for MS-DOS 2.X players) and proceed as normal.

You may find it desirable to make a copy of the Player disk or file. If at a future point in the game decide you wish to return to that position, you can do so by using the copy. This can come in handy if some catastrophic event occurs (such as death!).

STARPORT

CUSTOMS

Customs is the section of Starport where the planet's customs officers search for any illegal import items within the cargo you have brought down to the surface. It is automatically executed upon booting and may not be avoided.

The computer will make a "chirping" sound while it is searching through the cargo in the landers you have brought to the surface. If any illegal items are found, the computer will destroy them and subtract the fine from your credits. If you do not have enough credits for the fine, the computer will randomly destroy additional legal items as a penalty.

BUYER'S BOARD AND PORTMASTER

Each line of products is broken up into four sections: the product number, its name, price, and cargo size. To select a product, press the key that matches its product number (0-9). The elapsed time display is in the minutes/seconds format.

Your stay at the Buyer's Board will end if you press [escape] or purchase your tenth product. If you have purchased anything before pressing [escape], you will be transfered to Portmaster.

At the top of the Portmaster screen is an area listing the load status for all the orbiters on the ground. Next to the one of the orbiter's identification numbers will be a black dot. This indicates the current active orbiter. Cargo, loaded by pressing [L], goes into the active orbiter. To change the active orbiter, press [C] and then the number of your new active orbiter. You may not choose an orbiter which is not currently on the ground. Use the [up arrow] and [down arrow] keys to select the product to be loaded into the active orbiter. Press [L] to load the selected product into the active orbiter.

Warning

If you exit Portmaster without having placed all the purchased products on one or more orbiters, the unplaced products will be lost.

THE SELLER'S BOARD

The Seller's Board is broken into three regions. In the top region is the numbered products list. This is where your products that are currently on sale are displayed. It is broken up into the number, item name, and the asking price columns. The middle region displays the elapsed time and your current cash holdings. The bottom region is a menu of the available commands.

To add items to the list, press [A]. The computer will choose the next product which is not currently being displayed and place it on the first free line of the product list. If there are not any products left to add to the list, the "Item Addition" display is erased and the computer is ready for another command. The computer will take products from all the landers which are loaded and at the starport. If you keep cycling through the products, you will eventually come upon products which were previously displayed. The shorter the total number of products brought down to the starport, the faster they will all be cycled.

To remove an item from the list, press [R]. The computer will ask you for the number of the item to be removed. Press any number from 0 to 9 and the corresponding product will be erased. Note that the product is merely removed from the list, not from your possesion.

To price an item, press [P]. The computer will then ask you for the number of the item to be priced. Press the corresponding number key. The computer will then erase the selected item's price and place a cursor at the beginning of column. You will now be able to enter a new asking price. Press [return] when you are finished.

To begin the sales, press [S]. The computer will make a high chirping sound. If your items for sale have been priced equitably, the other buyers will select them and the computer will remove tham from your list and credit you with their sale.

To halt sales, press [H]. The computer will stop allowing other buyers to bid on your items.

To exit this section, press [escape]. The Starport authorities will charge 1 credit for every minute of stay on the Seller's Board and deduct a 7.5% sales tax from your sale earnings.

Pricing Items

If you are trying to sell a product whose sophistication is one greater than (but not more than 9 greater than) the starport's sophistication, you can charge almost 275% of the price you paid for it.

If the product is of the same sophistication as the starport, you can expect sales up to 150% of you paid for it.

Selling a product of a sophistcation lower than the starport will yield no more than 100% of what you paid for it. Obviously, this is not a recommended practice.

Any item, which is priced at approximately 15% of the amount you paid for it, will also sell. While there isn't a good reason to sell a product for so little, bargain hunters are always alert.

THE MONEY EXCHANGE

The Money Exchange is a place where you can exchange between ore and credits or transfer ore between orbiters.

At the side of the starport nearest your landers are the terminals for exchange. Here miners turn their ores into credits and transport captains turn their credits into Ore IV.

The Money Exchange screen is broken up into four sections. The topmost section lists the surcharges for exchanging ore and transfering it between your orbiters. In the second section, information on an orbiter exchanging ore or two orbiters transfering ore is displayed along with your current credit holdings. The third section is for any entry of any additional information a function may need. The bottom section lists the some of the commands availible.

Exchanging Ore and Credits

To exchange ore or credits, press [E]. The computer will then ask you which orbiter will be doing the exchange. Enter a number between 1 and 5. If the orbiter you selected is at the starport, the computer will then display the ore loading for the orbiter. Next, you will be asked whether to exchange ore-to- credits/credits-to-ore [1] or ore-to-ore [2].

If you have selected [1], the computer will then ask whether you wish to exchange credits-to-ore [C] or ore-to-credits [O]. If you select credits-to-ore, the computer will need the number of credits to be exchanged and the type of ore desired. If you select ore-to-credits, the computer will ask you which type of ore and how many units to be exchanged. Both credits-to-ore and ore-to-credits will store your ore and credits in their appropriate places, minus the exchange surcharge.

If you have selected [2], the computer will then ask which ore you wish to exchange. Enter a number between 1 and 4. Next, the computer will ask you which ore you want. Enter a number between 1 and 4. Next, the computer will ask for the number of units to be transfered. Enter the amount. The computer will exchange your ore minus the surcharge for exchanges.

Transfering Ore Between Orbiters

The computer will need to know from which orbiter you are transferring the ore. Enter a number between 1 and 5. If the orbiter you have selected is valid, the computer will then display the ore loading for the orbiter. Now the computer will ask for the receiving orbiter. Enter a number between 1 and 5.

Next, enter the number of units to be transferred. The computer will transfer the ore minus the transfer surcharge. The computer will not transfer the ore if the receiving ship does not have a large enough ore storage capacity.

Important: When exchanging a less expensive ore for a more expensive one, make sure you have at least enough of the lower cost ore to make one unit of the higher priced ore. For example, if you exchange 970 units of Ore IV for Ore I, the computer will credit you with 0 units Ore I and subtract the 970 units from your Ore IV holdings.

Exchange Rates

At the first meeting of the ITC (Interworld Trade Commission), the relative values of all the ore were set and the credit was established as a universal currency in the Local Group. The following is a table of the exchange rates. Note that these exchange rates are subject to starport surcharges, etc.

Ore Exchange Rates

FROM		Ore I	Ore II	Ore III	Ore IV
T O	Ore I	1	10	100	1000
	Ore II	.1	1	10	100
	Ore III	.01	.1	1	10
	Ore IV	.001	.01	.1	1

1 Credit = 1 Ore IV = .1 Ore III = .01 Ore II = .001 Ore I
Note: All values are in units of ore.

THE CONTRACT HOUSE

The Contract House represents a planet's Business Cooperative. Companies belonging to the Cooperative place orders for off-planet products and supplies (usually of slightly higher sophistication). The Contract House generally offers higher profits on products brought to them.

The Contract House screen is divided into three sections. At the top is the current contract bonus. This is the amount of money you will make above the base price of the item. In the center of the screen is the availible contracts list. Each item in the list has a contract number, description, and due date. The last section of the screen has two functions. When you enter the Contract House, the computer will print "Searching for FULFILLED and OUTDATED contracts." After the search is complete, the computer will ask you for a contract number.

To select a contract, press the corresponding number key. To avoid selecting any contracts, press [escape].

The contract must be returned on or before the due and on the appropriate planet for payment. Any overdue contracts will be erased automatically at any planet. No more than sixteen contracts may be held at one time. Payment automatically occurs when a product that fulfills the contract is on the planet (in a shuttle) within the due date and the user enters the Contract House. No contract is binding and failure to fulfill it does not carry any penalty.

Note: The contract repayment percentage is based on the product's base price, not the price which you paid for it. This means that your profit will not be 300% of the price you paid for it, rather, 300% of the product's base price. So if you purchase a product for a contract and pay a premium price for it, you not realize any profit at all.

THE TRAVELER'S TERMINUS

In the Traveler's Terminus you can receive and discharge passengers.

The Traveler's Terminus screen is broken up into five sections. In order, from top to bottom, they are: prefered immigrants area, the current offering area, current orbiter loading area, carried-passenger average sophistication, and the partial command list area.

When you first enter the Traveler's Terminus, you have the choice of either loading or unloading travelers. To load travelers, press [L]. To unload travelers, press [U].

Loading Travelers

After pressing [L], the computer will need to know into which orbiter you want to load travelers. Next, you will have to enter the number of passengers desired. The computer will then add the travelers to your current load and average them in with your current average sophistication. Note: This will change the value of your current passenger loading downward, if the new travelers are of a lower sophistication than your current average.

Unloading Travelers

After pressing [U], the computer will need to know which orbiter to unload. Next, you will need to enter the number of passengers to unload. The computer will subtract the passengers and add you commision, if any.

Transporting Passengers

When you return to the main ship, any passengers on your shuttle will automatically be unloaded and placed into the cryogenic vault. Once you have the passengers, take them to a world that needs immigrants. Consult the Culture List and the Planet List in the Appendix to find a suitable planet.

Exiting Traveler's Terminus

Press [escape] to return to the Starport menu.

DEPARTURES

Departures allows you to repair and refuel your shuttles and then return to the main ship in orbit above the planet.

Departures is divided into two sections. The first is pre-flight, the second, ascent and docking.

Pre-flight

The pre-flight screen is broken up into three sections. From top to bottom they are: orbiter status area, user input area, and the command list area.

To repair an orbiter, press [R]. The computer will then ask you for an orbiter. Enter a number between 1 and 5. The computer will display the orbiter's type, maximum energy, minimum energy, maximum damage, and current damage, if the lander selected is on the ground. Next, the computer will need the number of damage points to be repaired. If the port sophistication is high enough and you have enough credits, the orbiter will be repair.

To fuel an orbiter, press [F]. The computer will then ask you for an orbiter. Enter a number between 1 and 5. The computer will display the orbiter's type, maximum energy, minimum energy, maximum damage, and current damage, if the lander selected is on the ground. Next, the computer will need the amount of energy to be put into the orbiter. Enter a positive number up to the displayed maximum. If there is room and sufficient funds, the computer will store the energy in the orbiter.

To board an orbiter, press [B] and then press the corresponding number key of the orbiter you want to board. Boarding an orbiter is necessary so that the computer knows where you are in case of an orbiter crash. If you neglect to choose an orbiter before launching, the computer will select an orbiter for you automatically.

To exit back to the Starport Menu, press [escape].

To launch the orbiters, press [L].

Important: Do not try to refuel an orbiter until you are ready to leave. Starport regulations prohibit fully-fueled spacecraft that are not immediately ascending to orbit. If you do purchase fuel and then exit Departures, you will be charged but the fuel will not be placed on any of the orbiters.

Ascent To Orbit

After [L] is pressed, the computer switches screens and begins the automatic countdown. The countdown may not be aborted.

After the countdown and launch, the screen will clear and up to five areas will fill in with data on each of the orbiters. Each section of the screen will have data on: orbiter number, current altitude, target altitude (docking altitude), current damage, and fuel. The fuel supply is represented by a horizontal bar beneath each of the active orbiter displays. The last 25% of the bar is red, as a low fuel warning. The bar will slowly shrink as fuel is consumed.

An orbiter status can be changed by pressing the corresponding the number key. For example, if orbiter #4 has an "ascending" status, pressing [4] will change it to "aborted," (descending). Pressing [4] again would change the status back to "ascending." Once a ship has landed or docked, its status may not be changed.

If an orbiter's status changes to "LOS," this means that you have lost contact with that orbiter. During an "LOS" status, you are unable to send commands or receive data from that particular orbiter. Your own orbiter will not go to "LOS" status, as you are on it and able to give commands in person. The frequency of "LOS" occuring is directly proportional to a planet's hostility.

APPENDIX

Starsystem Name	Star Type	Hyperdrive Coords X	Y	Z
Ce Ente Calad	Giant	-2	13	-10
Clytios	Giant	8	-7	-3
Deimos	Nuetron	-10	18	-5
Douglas-Ouyang	Main Sequence	4	21	13
Eros	Main Sequence	-29	-9	13
Evrytion	Giant	1	-10	-11
Godel	Main Sequence	12	4	-7
Hope	Main Sequence	0	0	0
Icharr	Main Sequence	4	5	4
Kochab	Main Sequence	-6	0	0
Nilock	Main Sequence	-1	-9	9
Phobos	Main Sequence	-11	19	-4
Prisa	Main Sequence	2	-1	-3
Pyxis	Main Sequence	-1	5	-3
RCJ 2336ß	Giant	2	-5	8
Toascella	Main Sequence	-7	-2	-10
Twain	Main Sequence	8	-7	3
Vromus	Main Sequence	9	-4	-7
Zhisou	Main Sequence	16	7	13
Zworzkyn's Star	Dwarf	1	2	-18

PLANET LIST

Habitable Planets

Planet Name	Starsystem	Radius	Min Radius	Soph	Culture	Starport	Drydock
Arbest	Eros	5,800	6,091	99	7	Yes	Yes
Aurei Ise	Douglas-Ouyang	5,800	6,091	24	1	No	No
Axia	Hope	6,300	6,616	88	7	Yes	Yes
Bahnir	Pyxis	5,100	5,356	65	8	Yes	Yes
Baliolsol	Nilock	4,800	5,041	60	5	No	No
Benison	Zhisou	6,500	6,826	66	6	Yes	Yes
Beurn	Icharr	4,500	4,726	49	9	Yes	No
Cetus Amicus	Icharrt	4,800	5,041	85	7	Yes	Yes
Fevvel	Pyxis	6,400	6,721	74	7	Yes	No
Grotto	Pyxis	5,000	5,251	79	6	Yes	No
Ivilose	Prisa	5,100	5,356	31	1	Yes	No
Miga Kambut	Douglas-Ouyang	6,950	7,299	56	8	Yes	No
Milokarr	Toascella	6,800	7,141	56	9	Yes	No
Myl	Pyxis	4,100	4,306	37	3	Yes	No
Rouvchorra	Toascella	5,000	5,251	31	4	Yes	No
Schrelos	Phobos	4,100	4,306	29	4	Yes	No
Serendip	Kochab	6,200	6,511	70	7	Yes	Yes
Sirrial	Douglas-Ouyang	4,300	4,516	64	3	Yes	No
Stowe	Twain	6,400	6,721	72	2	Yes	No
Vromus Prime	Vromus	6,700	7,036	91	7	Yes	Yes
Zeath	Prisa	6,000	6,301	84	7	Yes	Yes

Gaseous and Airless Planets

Planet Name	Starsysem	Type	Radius	Min Radius
Aquiesca	Evrytion	Gaseous	65,000	68,251
Au Cassabo	Ce Ente Calad	Gaseous	24,000	25,201
Austiberg	Godel	Airless	7,100	7,456
Baines	Nilock	Gaseous	65,000	68,251
Clyde	RCJ 2336B	Airless	5,100	5,356
Diftalpa	Deimos	Airless	9,900	10,396
Echawwa	Nilock	Gaseous	16,900	17,746
Feredkor	Douglas-Ouyang	Airless	5,200	5,461
Gialia	Hope	Airless	12,000	12,601
Hsiang Bao'	Toascella	Airless	8,700	9,136
Jembam Touk	Toascella	Airless	12,000	12,601
Kiskismok	Vromus	Gaseous	50,000	52,501
Maelstrom	Phobos	Airless	9,100	9,556
Miunbieter	Vromus	Gaseous	9,800	10,291
Oba Autuahn	Phobos	Gaseous	12,560	13,189
Pelador	Ce Ente Calad	Gaseous	9,200	9,661
Pechallia	Eros	Airless	8,900	9,346
Philos	Hope	Airless	7,800	8,191
Raya Alba	Hope	Gaseous	9,900	10,396
Schnorr	Vromus	Gaseous	64,500	67,726
Selpichuk	Eros	Airless	13,500	14,176
S'romoka	Godel	Airless	9,000	9,451
Temblon	Twain	Airless	6,000	6,301
Thor	Godel	Gaseous	6,500	6,826
Trygieve	Kochab	Gaseous	6,900	7,246

PART LIST

Hyperdrive
System 0

#	Type	Damage Points	Size	EU per LY	Visibility	Range in LY	Soph	Cost
0	Quantum Divsn	15	5	10,000	8	7	70	35,000
1	Cee Squared	15	6	30,000	9	9	80	40,000
2	Interspace Prod	16	6	45,000	9	11	85	45,000
3	Jonisiodal D2	17	7	50,000	10	14	85	55,000

EU per LY – Energy units used per lightyear.
Range in LY – Hyperdrive range in lightyears.

Sub-light Drive
System 1

#	Type	Damage Points	Size	EU per Grav/Min	Visibility	Gravs Max	Ore IV per Min	Soph	Cost
4	Ion	15	5	.200	7	2	1	45	20,000
5	Rynox Disprsmnt	15	5	.274	6	5	0	60	20,000
6	Fission	12	4	.326	7	30	4	50	24,000
7	Fusion	16	5	.350	4	100	2	65	29,000
8	Induced Gravity	20	2	.500	10	300	0	80	36,000
9	Thruster	18	8	.600	12	500	0	90	38,000
10	Picametric	20	10	1.300	8	1000	0	95	48,000

EU per Grav/Min – Energy units per gravity or acceleration per minute.
Gravs Max – Gravities of acceleration maximum.
Ore IV per Min – Units of Ore IV consumed per minute of acceleration.

Bridge
System 2

#	Type	Damage Points	Size	Visibility	Soph	Cost
11	Xorconn	4	4	4	60	3,000
12	Blathchzeck	5	4	4	65	5,000
13	Trentificus	9	6	5	75	9,000

Accumulators
System 3

#	Type	Damage Points	Size	EU per Module	Visibility	Modules/ Hull	Soph	Cost
14	Alkis Group	5	1	10,000	1	8	45	1,000
15	Zeus Storage	7	1	20,000	1	6	50	1,500
16	Voltac Group	10	1	45,000	2	3	80	1,800

EU per Module – Energy stored per accumulator module.
Note: No more than 24 modules of any type may be carried on board your ship.

Converter
System 4

#	Type	Damage Points	Size	EU per Second	Visibility	EU per Ore IV	Soph	Cost
17	Fuel Cell	8	2	5,000	1	3	55	10,000
18	Fission	10	4	9,000	3	4	45	8,000
19	Fusion	12	5	12,000	4	8	60	15,000
20	Mass Conversion	16	8	25,000	8	17	95	35,000

EU per Second – Energy units produced per second.
EU per Pre IV – Energy units produced per unit of Ore IV.

Docking Adapter
System 5

#	Type	Damage Points	Size	Visibility	Soph	Cost
21	Toloollo	8	4	7	55	2,500
22	Koto Company	10	4	7	60	3,000

Inertial Compensator System 6

#	Type	Damage Points	Size	EU per Grav/Sec	Visibility	Gravs Max	Soph	Cost
23	Franklin Lab	1	3	10	1	5	70	17,500
24	Gelt Industries	2	3	60	2	10	80	19,000
25	Vromus	5	6	100	2	300	80	22,000
26	Athik Technical	4	4	300	5	1000	90	30,000

EU per Grav/Sec – Energy units used per gravity of acceleration per second.
Gravs Max – Gravities of acceleration maximum.

Orbital Scanner System 7

#	Type	Damage Points	Size	EU per Scan	Visibility	Range	Soph	Cost
27	Manx	3	2	1,500	4	30,000	55	10,000
28	Hai' Systems	4	2	750	4	65,000	70	13,000
29	Psion	7	3	1,000	3	100,000	85	18,000

EU per Scan – Energy units used per scan.
Range – Scanner range in kilometers.

Resource Scanner System 8

#	Type	Damage Points	Size	Scan	EU per Visibility	Range	Scan Error	Soph	Cost
30	Petroscan	1	1	2,000	2	500	20%	55	12,000
31	NDT Inc.	3	2	2,000	3	1,000	25%	65	13,000
32	Rosisnski	3	2	2,500	3	5,000	20%	70	16,000
33	Agean Technical	4	2	1,500	4	5,000	15%	80	18,000
34	Axian Corprate	6	3	1,000	3	10,000	15%	85	20,000
35	Psion	9	5	2,000	5	10,000	5%	90	23,000

EU per Scan – Energy units used per scan.
Range – Scanner range in kilometers.
Scan Error – Percentage error in concentrations as reported by scanner.

High Definition Scanner
System 9

#	Type	Damage Points	Size	EU per Scan	Visibility	Range	Max Mag	Soph	Cost
36	Rosisnski	2	3	2,000	5	10,000	250%	70	17,000
37	Axian Corprate	3	2	1,500	4	15,000	380%	75	17,000
38	Psion	1	1	1,500	2	28,900	510%	85	20,000

EU per Scan – Energy units used per scan.
Range – Range in kilometers.
Max Mag – Maximum image magnification.

Missile Rack
System 10

#	Type	Damage Points	Size	Visibility	MSU/Rack	Max Racks	Soph	Cost
39	Standard	5	1	2	20	20	55	5,000

MSU/Rack – Missile size units held per rack.
Max Racks – Maximum number of racks that can be placed in the ship.

Missile Launcher
System 11

#	Type	Damage Points	Size	EU per Salvo	Visibility	Missiles Per Salvo	Soph	Cost
40	Woden Arma	5	1	100	5	2	55	11,000
41	Woden II	7	1	125	5	4	60	12,500
42	Giaperelli	10	2	400	9	8	70	21,000

EU per Salvo – Energy units to launch a salvo.
Missiles per Salvo – Maximum number of missiles per salvo.

Laser Projector
System 12

#	Type	Damage Points	Size	Pulse	EU per Visibility	Range	Delay	Pulse Damage	Soph	Cost
43	Zeus	10	4	15,000	8	5,000	20	4	60	11,000
44	Woden Boltfire	12	4	17,500	8	5,000	18	8	65	13,000
45	Sunstorm	8	5	20,000	10	10,000	7	10	70	14,000
46	Franklin IV	10	5	25,000	10	5,000	3	20	75	17,000
47	Sunstorm HF	11	6	31,500	12	10,000	6	25	85	19,000
48	Franklin VI	13	7	30,000	13	15,000	10	35	90	24,000

EU per Pulse – Energy units required to fire laser.
Range – Laser range in kilometers.
Pulse Delay – Recharge delay between firings in seconds.
Damage – Damage inflicted by laser.

Shield Generator
System 13

#	Type	Damage Points	Size	EU per DP Blocked	Visibility	Max DP Blocked	Soph	Cost
49	Koto Co	10	2	1,000	1	3	65	8,000
50	Hai' Systems	14	2	1,200	1	4	70	9,500
51	Repellent	11	3	1,800	2	8	75	18,000
52	Axian Corprate	20	4	1,700	3	14	85	20,000
53	Voltac Group	15	4	2,000	2	14	80	18,000
54	Woden Plate	25	5	1,900	4	20	90	23,000

EU per DP Blocked – Energy units per damage point blocked.
Max DP Blocked – Maximum number of damage points blocked.

Electronic Countermeasure (ECM) System 14

#	Type	Damage Points	Size	EU per Missile	Visibility	Effective	Soph	Cost
55	Voltac Group	2	1	2,000	1	5%	65	7,000
56	Entrohaad	3	1	1,500	1	11&	70	13,000
57	Woden Confusior	5	2	6,000	2	18%	85	19,000

EU per Missile – Energy units used per missile in attempted blocking.
Effective – Percentage of effective jamming attempts.

Assault Capsule Systems 15–19

#	Type	Damage Points	Size	EU for Launch	Visibility	SAF	Crew	Soph	Cost
58	Woden I	20	1	100,000	5	175	6	65	11,000
59	Koto Conqrer	27	1	175,000	5	250	11	70	17,000
60	Woden II	30	1	270,000	6	290	18	75	20,000
61	Voltac Group	42	1	400,000	7	315	17	80	28,000
62	Woden Assault+	60	1	1,000,000	9	400	24	90	30,000

EU for Launch – Energy units required for launching.
SAF – Surface attack factor.
Crew – Crew required for launching.

Ore Processor Systems 20-24

#	Type	Damage Points	Size	EU for Launch	Visibility	Ore Capacity	Crew	Effici	Soph	Cost
63	Columni	10	1	75,000	5	25,000	20	27%	70	16,000
64	Datar Grubber	15	1	100,000	6	75,000	23	36%	75	22,000
65	Voltac Group	20	1	150,000	8	135,000	18	71%	85	24,000
66	Dirtmaster	30	1	240,000	9	200,000	8	93%	90	29,000

EU for Launch – Energy units required for launching.
Ore Capacity – Total ore capacity.
Effici – Ore recovery efficiency.

PART LIST

Cargo Hold
System 25

#	Type	Damage Points	Size	Visibility	Soph	Cost
67	Standard	5	2	2	50	5,000

Cryogenic Vault
System 26

#	Type	Damage Points	Size	Revival Energy	Visibility	Capacity	Loss	Soph	Cost
68	Ageless Ind.	3	1	250	1	100	77%	60	7,000
69	Proxima	2	1	325	1	250	89%	65	9,000
70	Kintopir'tern	5	1	200	1	270	98%	75	14,000

Revival Energy – Energy required to revive one passenger.
Capacity – Maximum passenger capacity.
Loss – Percentage of passengers who survive the revival process.

Orbital Shuttle
Systems 27–31

#	Type	Damage Points	Size	EU for Launch	Visibility	Max Passenger	Max Cargo	Max Ore	Soph	Cost
71	Quentrix	20	1	10,000	4	3	100	180,000	65	10,000
72	Columni	25	1	25,000	5	5	150	360,000	70	15,000
73	Datar	30	1	30,000	7	11	200	600,000	70	17,000
74	Icarus	30	1	37,000	7	20	230	750,000	75	20,000
75	Axian Corprate	35	1	48,000	8	56	300	1,000,000	85	25,000

EU for Launch – Energy units required for launching.
Max Passenger – Maximum passenger capacity.
Max Cargo – Maximum cargo size units capacity.
Max Ore – Maximum ore capacity.

Autodoctor
System 32

#	Type	Damage Points	Size	EU per Healing	Visibility	Cure Rate	Soph	Cost
76	Salven	2	1	1,000	1	65%	60	6,000
77	Primile	3	1	1,400	1	75%	70	9,000
78	Trithens	1	2	9,000	2	90%	90	13,000

EU per Healing – Energy units used per attempted healing.
Cure Rate – Percentage of successful healing.

Ore Storage
System 33

#	Type	Damage Points	Size	Visibility	Max Ore Capacity	Soph	Cost
79	Baynus	5	5	5	900,000	40	2,000
80	Datar	5	7	7	1,250,000	45	4,000
81	Voltac Group	8	9	9	2,000,000	50	7,000

Max Ore Capacity – Maximum ore storage capacity.

Crew Quarters
System 34

#	Type	Damage Points	Size	Visibilty	Max Accom	Soph	Cost
82	Kraakobinir	2	1	1	40	50	2,000
83	Vromus	4	2	2	65	55	4,000
84	Pullenmot	7	3	3	128	55	5,000
85	Axian Corprate	9	3	4	213	65	7,000

Max Accom – Maximum crew accomodated.

Rescue Pod
System 35

#	Type	Damage Points	Size	EU for Launch	Visibility	Max Crew per Pod	Soph	Cost
86	Colli	8	1	10,000	3	50	55	1,500
87	Baynus	4	2	30,000	5	200	70	2,000

EU for Launch – Energy units required for launching.
Max Crew per Pod – Maximum crew per rescue pod.

Computer
System 36

#	Type	Damage Points	Size	Visibility	Program Capacity	Soph	Cost
88	AE 3504	1	1	1	10	65	10,000
89	Alkis 2	1	1	1	12	75	12,000
90	AF 2198	2	1	1	15	85	13,000
91	CA 6605	2	2	2	17	90	17,000
92	GF 8738	3	2	2	22	95	20,000

Program Capacity – Maximum program capacity.

Mass Storage
System 37

#	Type	Damage Points	Size	Visibility	Timeshare Capacity	Soph	Cost
93	Skandis	2	1	1	25	60	5,000
94	Datar	3	1	1	35	65	6,000
95	Dictonne	5	1	1	40	75	8,000

Timeshare Capacity – Maximum capacity in timeshare units.

#	Program Name	Timeshare Units	Description
0	Weapon	5	Weapons tracking and lauch control
1	Autofire	2	(Not implemented)
2	Ground Assault	4	Controls assault capsule attacks
3	Defense	5	Reduces incoming missile accuracy by 6%
4	Resource	2	Scans planets for ore
5	Docking	4	Controls ship to ship docking
6	Shuttle	1	Controls ascent and descent of orbital shuttles
7	Sub-C Nav	5	Controls sub-light navigation
8	Hyper Nav	5	Controls hyperspace navigation
9	Market	4	Product analysis

Notes:

- All computer software costs 1,500 credits per program.
- The autofire program does not perform any functions.

WEAPON LIST

Missiles

#	Type	MSU	Range	Accu	Damage	Soph	Cost	Effect
0	DNT	1	15,000	97%	5	50	1,000	General damage
1	Fission	3	15,000	96%	10	50	1,500	General damage
2	Fusion	4	15,000	96%	20	55	2,000	General damage
3	Neutron	3	10,000	92%	5	55	2,000	Mostly anti-personnel
4	Field Effect	8	10,000	90%	0	70	2,700	Only anti-personnel
5	Proton	10	7,500	93%	50	65	3,000	General damage
6	Empulse	13	10,000	73%	0	85	5,000	Burns out computers
7	Ptarki	6	7,500	68%	10	85	5,000	Avoids shield/general damage
8	Stealth	5	10,000	85%	30	80	5,000	Negates enemy ECM effects
9	Nova	20	7,500	47%	150	95	20,000	General damage

MSU – Missile size units.
Range – Range in kilometers.
Accu – Base missile accuracy percentage.
Damage – Damage points of damage inflicted.

Armor

#	Type	Attack Factor	Soph	Cost
0	Pan'tra	2	58	100
1	Kevex	3	67	200
2	Woden Gyfal	5	79	300

Product	Type	Csize	Soph	Description
Quentwir	food	10	20	Calegrain ale.
Quartzwood	semi	255	20	Favorite wood for containers that flavor their contents.
Oyabeno	life	9	20	A noisy, hyperactive, lemur-type animal.
Chips	narc	25	20	Katoroc stone ashes, very addictive.
Gi	furn	20	20	Hollowed gourd used for furniture.
Pssht' Ooof!	food	2	20	A melon with very high internal pressure.
Tryperian Centhrax	life	32	20	A dangerous carnivore that fears nothing.
Dechum's Eesvogel	life	34	20	A flying reptile that enjoys eating peple.
Neasca GB Infudibula	life	8	20	Half plant/animal, draws food in by suction.
Mafcafas	educ	1	20	A hunting game for children.
Fiike	weap	3	20	Tri-pronged hunting spear.
Nayo Kiloir Ofradit	furn	8	20	A sleeping box filled with Ghan down.
Entellegor	bogu	2	20	A crystal used to foretell the future.
Dyd Doete Carra	weap	3	20	Tube-sword, w/ gutting ridges, heavily jeweled.
Tekdaefo Mortuis	life	38	20	Commonly called the "Executioner Fish".
Flamoid	life	54	21	Large jelly-like beast, ignites spontaneously.
Ollooloo	entr	5	21	A powerful horn of the Kre islanders.
Gagaku	entr	4	21	Drovippian-style drums.
Acoplogina	arti	3	21	Pafiboria dynasty pottery, early Xirae.
Hinterfreth	life	4	21	A vicious poison-spitting creature.
Nosa-Oore	misc	2	21	An urn for storing embers.
Burnak'fof	misc	2	21	A vegetable oil lamp.
Kunkuuko	medi	2	21	A very sticky substance used for sealing wounds.
Dryweio	tool	6	21	Molds used for pottery making.
Vizvia	furn	6	22	Stiff-back chair made of dense vegetable matter.
Mohdeuo	semi	41	22	An alloy of Ores II and III.
Sloboe	arti	2	23	Miniature hand pumped instrument.
Eefkikizoo	life	8	23	Fruit plant, grows 6 1-kilogram fruits a month.
Skrots	life	4	23	A homely yet amusing creature, quite intelligent.
Lortl	life	3	23	Appears very similar to a rabbit.
Gavvo Pods	food	20	23	Excreant pods from the Gavvo bush, sweet smelling.
Shanook	life	12	24	A sponge-like animal that excretes sugar.
LipprynWare	pers	6	24	A complete collection o fcookware.
Horrent Beast	life	6	24	Terrifying animal, used in ritual first-bloodings.
Quatu	life	2	24	An aquatic mammal that is mostly transparent.
Sorodaw	entr	2	24	A musical instrument made of kipperwood.
SesLails' Proofs	info	1	24	A reference guide for geometry.
Si Nieps	tran	12	24	A wooden boat, similar to the ancient Egyptian.
Dolfam	furn	3	24	Low table, for eating, much like Japanese tables.
Hichese	food	16	24	A thick paste made of crushed Gavvo pods and wine.
Surne	narc	2	24	Slows down synaptic transfer speeds.
Ghan Eggs	pers	3	25	Edible depilatory, tasty.
Wenklan's Tiarra	jewl	1	25	Intricately jeweled headpiece.
Sea Conquerer Mask	arti	1	25	A mask for important social events.

PRODUCT LIST

Product	Type	Csize	Soph	Description
Sesile Bogtche-eez	life	105	25	A livivng compost heap.
Bogtche-eez Shell	atri	88	25	Carved shell usually used as a room of a house.
Mobius Curls	jewl	27	25	Crystal that grows in a Mobius loop.
Hi Wan'tul	food	1	25	A fried patty made of Wan'tili bugs.
Lein Sword	weap	1	25	A crystal handled sword.
Globe Gem	jewl	60	25	A hollow crystalline globe, 1 meter in radius.
Enobract	arti	1	25	A clear dodecahedron with a red liquid core.
Citopontwir	life	8	25	A wet-climate pack beast, always hungry.
Saa' Joof (Cromen)	arti	1	25	Star maps of carved wood.
Zorprochaz	arti	6	25	A mosaic made of metal shavings.
Hafendig	food	12	25	A thin, clear liquid, distilled Katberry jiuce.
Sulti-Reslo	life	65	25	Used to move large objects around.
Lenihmeud Juice	medi	2	25	Relieves a myriad of symptoms.
Cawnta Baba	food	2	26	A mixture of boiled leaves and fungus.
Golry Cloth	clth	24	26	The flattened underbark of the Frestra plant.
Vigugrett	medi	3	26	Vigugrett oil for small wounds (1 um).
Nuh-eylehe	clth	3	26	Clothing composed entirely of knotted fabric.
Noosafia Wood	semi	240	26	A low density wood, highly resistant to rotting.
Gomapard	arti	2	27	Musical instrument, difficult to use, expressive.
Monocorder	entr	3	27	Tallstring instrument, Baj'ami chord divisions.
Uorotoas	slav	7	27	Seemingly passive, quite intelligent.
Heie' Didi-zif	info	2	27	An abacus made from coral.
Bogsa	arti	4	27	Carpet w/ portaits of personalities on them.
Lu Onodasto	life	25	28	Liquid black colored, feeds on solar energy.
Eicerne	tran	3	28	A sedan chair for 4 passengers.
Zotmoesa	food	2	28	Charred skin of an Executioner fish.
Fubre usu Modli	entr	2	28	Similar to Parcheesi.
Latze	pers	3	28	Full length mirror, mounted on a wooden frame.
Potio Linnavasu	bogu	12	28	Powder with limb-regenerating properties.
Kheff	narc	2	29	A hallucenogenic drug.
Fencre	pers	24	29	All-purpose abalstibate mix.
Wefjona	weap	2	29	A rapid-fire crossbolt launcher.
Oiseboac	life	2	29	Slow but poisonous to the extreme.
Swords and Sticks	entr	1	29	Hand painted playing cards.
Lennauzah	educ	1	29	Astronomer's astrolabe.
Taoge Wotodo Pisirna	medi	5	29	Foot-operated medical drill.
Tercius Koftnu	food	1	30	A vegetable paste, very sweet tasting.
Chance Stone	jewl	1	30	Fragile explosive rock.
Trapezia Wine	food	10	30	The best grey wine in the Local Group.
Ank	jewl	1	30	Emits human pheromones.
Poi-toosh-bador	food	6	30	Broiled Oppangi fruit.
Opichuk	weap	8	30	Large-scale arbalest w/ 2 meter bolts.
Manual Fleen	arti	6	31	Old-style oscillating polisher.
Supniy	narc	1	31	Wax from an Ozsepe plant, absorbed through skin.

Product	Type	Csize	Soph	Description
Tukgey	life	8	31	Macromolecule strands, float on air currents.
Hipprothabamide	medi	1	31	A folk remedy, panacea, large doses often fatal.
Jera Razor	pers	4	31	Razor for shaving facial hair.
Miakkatt	medi	12	31	Rack used to hold patients during operations.
Tetauf	weap	2	31	Long, curved-blade sword, similar to a scimitar.
Bah Truf	food	1	32	A rare spice, irresistable taste.
zatreum-Poihijek'ur	life	2	32	Slow witted, commonly used as a footrest.
Tweevle	life	10	32	Anderson's last find, extremely rare.
Jasazay	arti	1	32	Ornately carved seal-rings from spacesuits.
Mopue Sap	semi	98	32	Used in primitive elastomer production.
Bewsage	jewl	1	33	Fissioning crystal, if broken, it duplicates.
Umi-os-Ora	slav	6	33	Short, strong, with a substantial life span.
Aonabeal	weap	5	33	A mineral poison, administered chiefly in drink.
Goalhuuns	food	3	33	Throns from a Jivo tree, boiled and salted.
Dr. Tortmann Bread	food	2	33	Encourages good health in both young and old.
Nesselett Tauvo	arti	2	33	Religious inspirational art.
Tigel's Pence	life	5	33	Food plant w/ eatable seeds which are coin-shaped.
Propapedo's Findai	life	87	34	Used as a war-animal for riding and pulling.
Dro-dox	tool	3	34	Shaping tool for mud bricks of high quality.
Fepenbi	food	1	34	Spice derived from Gucelis bush berries (Conicae).
Pogrep Knock	food	1	34	Sausto geljuice fermented for 75 Standard years.
Triele Caspiregeus	furn	9	34	A roofed couch, converts into a bed.
Zilcastri	slav	18	34	Huge and docile but very weary of oppression.
Osu' Gurusve	entr	4	34	Primitive dirt-bowling game.
Aayns	clth	2	34	Headpiece worn in similar style as a turban.
Solifue	educ	2	34	A rod used to encourage dilatory students.
Zueafah	medi	3	34	Bandages that use the leaves of the Pilgrim plant.
Eilist	misc	5	34	Paper for writing (3 reams).
S'rerper	medi	1	34	Slows down respiration rate by 80% in humans.
Kaefi	life	2	34	Playful, it enjoys clinging to walls and jumping.
Verotan Baliset	entr	1	35	A talented musical instrument maker.
Ydrbat	clth	4	35	Fine natural cloth.
Benick's Beer	food	15	35	A mildly alchoholic chocolate drink.
Mek'Zahka	narc	5	35	A chewing leaf, similar to Terran Betel leaves.
Werdfansa	food	15	35	Amorphous mineral-based food.
Crob'biat	clth	6	35	A D'vreeshni purdah outfit for women.
Opp Riucurus Box	pers	1	35	Carried by all the snuff-snorting dandies.
M'rocken	entr	2	35	Musical Kechab beads covered with Ore III.
Dirlad	arti	1	35	A bar covered with sharp Ore I shavings, lethal.
Loimehan	tran	21	35	A steam-powered tricycle.
Toulryis	entr	5	35	Chess w/ different pieces & some differing moves.
Kobbid's Tables	info	3	35	A huge table of mathematical formulae.
Reth os Rulid	pers	1	35	Comb set for grooming.
Meiot	life	5	35	A bird grown for food that enjoys eating garbage.

PRODUCT LIST

Product	Type	Csize	Soph	Description
Aocoaz	furn	1	35	A wardrobe with many drawers and hanging posts.
Jymroppa	medi	21	36	Bark dipped in water and eaten for anesthesia.
Grogglemach	food	57	36	Soured goozjhobie seeds.
Rettle	food	5	36	Potent ale, known to be the downfall of many.
Fodah Hadoht	weap	32	36	A large cannon that uses any type of explosive.
Bledgett	food	255	36	Mush, staple food of many peasants.
Ptmerik Uubpotchi	pers	2	37	A musk-plant, emits odors varying w/ temperature.
Tassrygma	educ	2	37	Primer of common alphabets.
Uniguiculus	life	8	37	Violent beast, single claw on fore-braincase.
Uolungor (Parthried)	life	21	37	Almost extinct due to a desirable white pelt.
Taay	food	3	37	A bitter-flavored plant rind.
Robisogg	slav	12	37	Able to withstand high temperature.
Pierrce Coach	tran	38	37	passenger coach, requires 4 horses/equivalent.
fet-Evyre ausChuk	medi	3	37	Medical kit contains no drugs proscribed by CGMD.
Er Eods	weap	4	37	Primitive chemical explosive bomb.
Tozetwaiu (Keglor)	furn	25	37	Throne with gold Tassis hide backing.
Lenlaw Peacekeeper	weap	4	38	Cyclic projectile thrower.
Vepru Yellow	semi	25	38	Used as skin dye, a sign of aristocratic wealth.
Mawick Marwanda	life	2	38	A furry 5-legged animal used as a child's pet.
Rolled Phyciez	food	67	38	Crispy animals, aquatic, rolled over small fruits.
Zose	misc	5	38	Waste disposal unit.
Musoveono	tool	5	38	Metal plow w/ exchangable blades.
Tafo'ok	furn	8	38	A chair, cone-shaped, supported on 3 crossed bars.
Pauvao Magic Stove	furn	3	38	A cast iron stove, very functional in design.
G'taplin	misc	200	38	Special soil for growing ornamental plants.
Uk Sa-rasarn	clth	4	38	Heavy leather coat for cold climates.
Bavardo	life	10	39	Roving bushcreepers, they attack other plants.
Seiesial Cavortus	life	2	39	Very playful, similar to a cat, difficult to grow.
Vegamite	clth	2	40	Extruded vegetable-based cloth.
Mashonyagger	weap	105	40	Mobile death machine.
Wor Beast	life	143	40	An immense fighting animal.
Jo	tran	100	40	A 10 passenger dirigible.
Popismoqueftic	food	15	40	An extremely popular Gasen beverage.
Wan T'uul	food	6	40	Animated soup, very much like protoplasm.
Blar sha'Addavi	pers	5	40	A fine drinking glass set.
Brajuus	slav	5	40	Tall, thin, and easily frightened.
Nusuk al Vellezzi	misc	40	40	Tent frame for nomadic vassals/warriors.
depra-Rezona 'Os	furn	4	40	Folded wooden chair with leather support strips.
Mizali evet Doekis	pers	1	40	A flesh scraper popularized by Doekis.
Nifri-ir	slav	2	40	Low intelligence, can carry great weight on back.
Huflobbis	life	5	40	Used to root-out salve vine.
Salve Vine	medi	1	40	Aides in fighting parasitic infection.
Izzard As A First	entr	1	41	A bound book by Jacinth Jaxatres, philisophical.
Muyet's Boad	weap	3	41	A compressed-gas dart launcher.

Product	Type	Csize	Soph	Description
Grov Tractor	tran	56	41	Multi-use tractor for dirt farming.
Cryuus 'Auk	narc	13	41	Increased visual sensitivity.
Cieffae Cal Fay	tran	18	41	legged packbeast with a poor disposition.
Sakjo	entr	3	41	A drum with many tiny bells attached.
De'ur Knid	entr	3	42	A musical instrument played with one's fingers.
7 Great Cycles:Book1	entr	1	42	The diary of D'Haajaddis the Smiter.
Serato	arti	3	42	Acid-etched pottery.
Horire	medi	1	42	A potion, best consumed hot.
Latafo	weap	1	42	Razor-edged hurlbeads, cast from a wrist sling.
Dutis Typannus Beta	life	5	42	The drumbug, capable of imitating any sound.
Vuruya	food	1	42	Amino acids in crystaline coatings.
Indrusegg	pers	5	43	Used for removing befundi flechettes.
A'ana	jewl	80	43	Gem symbolic of political freedom on many planets.
Ytabbury	clth	1	43	A dress colored with smeared oils.
ed-Writain	semi	221	43	A vaporous sealant.
Csedda	food	3	43	Cheese made from the underfat of a Hevichet tree.
Dyjal	slav	6	43	Kept in a suggestible state with drugs.
Etlievob	pers	1	44	A mechanical wrist chronograph, low accuracy.
Adrofiet	food	34	44	Tiroagar bandywine.
The 7th and Last	bogu	1	44	Pirate copy of last of the Book of Cycles.
Pteumus	narc	2	44	Creates a dream-like trance.
Millitiesias	food	1	45	Seeds excrete a potent natural food preservative.
Ecaz	narc	5	45	Incense made from wood (depressant).
Shosi Climbers	life	230	45	Rapid-growth trees for reforestation.
Electrocycle	tran	200	45	Electrically powered tricycle.
KushKushen	slav	50	45	Semi-intelligent creature used as a slave.
Aaargh	pers	2	45	Small animal-shaped storage boxes.
Shaye Orlth BZS121	info	25	45	A primitive mechanical tabulator.
Ixoitop	food	5	45	Soup with Ixoitop nodules.
Eiribot	semi	255	45	Wood with a dense calcium core.
Fiffeasio Membrane	arti	4	45	Casts colored images when placed in white light.
Writ evet Lievo	entr	1	45	The poetry of Lievo including "Syngirif."
Odna' Aona	weap	1	45	A multifunction knife with carbon steel parts.
Zetafer	life	1	45	Unicelled animal, grows up to 10 cm in length.
Ija Esilo Jose Capy	food	2	45	Smoked treefish in chevasil and butter.
Dilof	pers	1	45	A beckonning whistle.
Aejaze	food	2	45	Clumpberries, poisonous if eaten stewed.
Laged	semi	4	45	Thin sheets of Ore II and Ore IV alloy.
Lothui Inspirational	arti	84	45	A tapestry depicting the life of Lothui et Savair.
Pindivlo	educ	1	45	For basic skills in the 3 R's (case of 100 books).
Wert	misc	2	46	A scented candle, fumes have antiseptic qualities.
Futoa	tool	1	46	A multipurpose knife, used for stripping wire.
Kohahha	educ	9	46	A chalkboard and stand.
Ronuoru's Bones	info	2	46	A mechanical sequential differential calculator.

PRODUCT LIST

Product	Type	Csize	Soph	Description
ninin Facebius zef	medi	1	46	Aids in fighting bacterial infection.
Hesalfa Pickles	food	8	46	Soured cucumbers in Hesalfa sauce.
Floine-sond	semi	3	47	A mineral base for many perfumes.
Tixituu	arti	21	47	Resosnant crystals that play a pre-set tune.
Beberi	life	1	47	Similar to a porcupine except quills can be shot.
Sylbayzo	clth	6	47	A unisex outfit, very drab.
Beggel's Tintuncture	bogu	1	47	Supposedly relieves any illness.
penet-Autuple	arti	67	48	Light sculptures named after the artist.
Kirweit	entr	3	48	A three scale harmonia.
Fude Aoki	tran	25	48	An aluminum framed boat.
Vosan	entr	7	48	An extremely tall 7-stringed instrument.
Il-V'puru	weap	3	48	A small rocket-launcher, anti- personnel.
Dirt of Hinles	misc	20	48	Very dry snuff.
Oil of Ophidia	bogu	10	48	A bogus panacea.
Preffis' Expiditer	tran	74	49	A wheeled road transport, uses petroleum fuel.
Tusuoze	semi	80	49	A natural plastic base extruded from Dormir plant.
Kuvlatua	entr	1	49	The illustrated cautionary tales.
Dukse Cinta	tool	35	49	A ground vehicle repair kit.
Delegroob	furn	34	49	A petroleum-fueled home heating system.
Col. Clyde's Nakis	food	2	49	Pressure-cooked nakis w/ crumb coating.
Verga Leaves	medi	1	50	A valuable heart stimulant.
Oblimite	semi	10	50	Fiborous concrete, thermal setting.
Calkulon 4040	info	20	50	A large, slow computer.
Piroxycistine	medi	1	50	A radiation exposure treatment.
Farh'n Piece #4	semi	58	50	Modular shelter parts.
Ddolo	clth	3	50	A multipurpose uniform.
Grotog Britesource	misc	3	50	A portable thermopowered lightwand.
LichtenWand	misc	3	50	A portable radiopowered lightwand.
Pan'tra Kaw'retna	tool	10	50	A portable telescope.
Ilshan & Terni	food	4	50	Popular waterpolic and zessu fish dinner.
Ordij RadComp	pers	2	51	Portable radiation counter, crude but accurate.
Sildeo	food	50	51	White crystalline bread.
Oktevhuerex	info	25	51	A low speed computer.
Vetschor	tran	20	52	A boat with an alchohol motor (Wasserkraft).
Kebrnoha	tool	2	52	An electronically controlled fluid valve.
Sirux Sycora	tran	208	52	Reaction-jet propelled aircraft, a lifting body.
Grapon Hallivice	weap	1	52	Multi-barrel contrarotating-breach slug thrower.
Juf	clth	2	52	Stiff cloth worn over head and arms.
Nikcohoz	pers	2	52	A personal travel case.
Thephilliasurpranfa	life	1	53	Selectively bred cachebs, commonly called "Thils."
Polyvend	misc	5	53	Multiple product vending machine.
Verifon	tool	1	53	A stress analyzer.
Prodsphere	tran	128	53	Cargo tank for liquids and powdered solids.
Geihre	info	1	53	A motion detector, broadcasts alarm.

Product	Type	Csize	Soph	Description
Toce ev Dzartmius	arti	16	54	Touch sculpture by the master Dzartmius.
Bouir Fete PaDaphour	clth	21	54	Trestle-dress with 100 meter floaters behind it.
Paradas	semi	57	54	Self-adhering wire strips.
Dynics' Lampra	tran	10	55	An all-terrain groundcar.
Dentebrite	pers	1	55	Tooth polish.
Farh'n Piece #1	semi	100	55	Modular shelter parts.
Farh'n Piece #2	semi	186	55	Modular shelter parts.
Farh'n Piece #3	semi	202	55	Modular shelter parts.
Onte	info	15	55	A comp/recorder unit.
Booka	tool	2	55	A very complicated sound generator.
Tranzlex	tool	1	55	A handheld language translator.
Powered Fleen	tool	12	55	An oscillating polisher.
Anderson's Swampi	life	6	55	A friendly creature w/ an affinity for Verga Leaf.
Pivogation	tool	209	55	Center pivotal irrigation system.
Ultraphotometer	tool	21	55	Able to detect a single incoming photon.
Fahr'n Frame #12	semi	8	55	Colapsable frame used for all-climate shelters.
Lasod Naibe Adpiele	tran	30	55	Computer controlled sailing ship.
Leten Teego	pers	1	55	Infant pacifier, uses natural sounds of prebirth.
Halflange	food	12	55	A sour drink with a sweet aftertaste, 168 proof.
Mexe	pers	12	56	A personal exersise machine.
Erdute	info	108	56	An energy management computer.
Baelhovpus Lifters	semi	176	56	Reusable solid fuel booster components.
Stratocum Air 15	info	126	56	Hydrazine fueled, soaring, weather research probe.
Nunucad	tool	86	56	Food processor that dries and vacuum stores.
Insta-shelter	misc	20	57	Portable lightweight all-climate shelter.
Lumi-panel	furn	5	57	A lighting panel.
Augma Rock	jewl	2	57	Teardrop shaped orbital debris, a common souvenir.
Moeh	pers	200	57	Depilatory cream.
Stridor H2/VO	tran	250	57	Long range water transport with hydrogen engines.
Keskavalchi	medi	4	57	Portable bio-lab capable of accurate diagnosis.
Redpuxer	misc	8	57	Food storage device.
Urt-traine 981CW	medi	2	57	Kabort's disease vaccine, dangerous to use.
Fanalsi	food	9	58	Livestock feed-cracker.
Literjon	pers	2	58	Heavy flexi-plastic liquid container w/ straps.
Transconn Cable	misc	5	58	Spool of 100 meters of data cable.
Escribvox	tool	2	58	Dictating machine using voice interpretation.
Covmekko	semi	25	58	Solid state crystal lasers (package of 14).
Za Pazii	arti	12	58	Insertion art form.
GHRFI Sedofiin	medi	1	58	Eliminate the need to sleep more than 2 hours/day.
Orumeiser's Compound	medi	5	58	Used to treat heat and chemical burns.
Zifel Ceav	arti	4	58	Statues of forced-growth onyx.
Woden Warrior+	weap	18	58	Armored, high-powered exoskeleton for combat.
Farh'n Envio #3	semi	4	58	Portable environmental control unit.
Stylex	info	1	58	Spray carbon stylus.

PRODUCT LIST

Product	Type	Csize	Soph	Description
Vel'dran	pers	2	59	Portable high intensity light source.
Lorta	furn	3	59	Behavior alteration lamp.
Comfo-chair	furn	4	59	Subsonic relaxation chair.
NoWeight Sweets	food	10	59	Candy uses levo-rotatory sugar, edible but inert.
Abalatrix	semi	56	59	Heat-shield coating for reentry craft.
Sroikan	tran	53	59	Personal reaction belt, chemically fueled.
Furry	clth	1	59	A rain suit by Brobo Doshniva.
Lugfot	educ	4	59	Fax-book teaching basic cooking techniques.
Dabrio Eternity	tool	21	59	Hydrogen resonance clock, 1 nanosecond accuracy.
Devog Meodu Oxnaube	tool	106	59	Produces liquid gases extracted from atmosphere.
Xorcomm Lasercomm	info	28	59	Ground-to-space laser communications system.
Jotuslutu	tran	21	59	High-powered 4 wheel land vehicle.
Trope Kleersheet	educ	5	60	Writing pad with permanent clear property.
Rug Beasts	furn	1	60	Moss-like growth, used as a natural carpet.
Esperon	medi	1	60	Reduces the metabolic rate by 50% in humans.
Spielter	life	5	60	Mutable play-animal.
BHanRT Viri	weap	3	60	Pandemic with 64.3% mortality rate amoung humans.
Woden Avenger	weap	4	60	Rifle blaster.
Seiuos Holovideo	entr	28	60	Stereo-video projection tank.
Droobleberry	food	2	60	Popular juice berry for mixed drinks.
Pocket Comm	info	1	60	Portable communications device.
The Maths #1	educ	45	60	Crystal coded math texts.
Opticolor	pers	1	60	Human iris coloring kit.
Arpaddatys Aegees	info	5	60	Personal use computing device.
Lyran Hyperviewer	bogu	243	60	Non-functional long-range viewer.
Traegel Mix	misc	175	60	High energy chemical fuel.
Skweenz	clth	9	60	All climate hand protection.
Tranzlex 2	tool	1	60	Superior handheld language translator.
The Locator	info	2	60	Holovid map of entertainments in the Local Group.
Control'em	misc	2	60	Hypersonic pest control system.
Dinhkel Doogan	entr	3	60	Child's pet robot.
Henold Compound	narc	1	60	General stimulant (case of 30 vials).
Pippenjax	arti	200	60	Wall panels that emit harmless colored gasses.
Eanretings	misc	1	60	Electronic eating utensils.
Opton	educ	1	60	Displays crystal recordings on a flat screen.
Ficcehot	life	2	60	Also known as a water puppy, very friendly.
Grubricke's Dalifax	jewl	2	61	Chromatic properties, read his Guide for more.
Dre'jkid Durf	tool	1	61	Holographic image recorder.
Robo-Kleen	misc	3	61	Automatically cleans a given area.
Dyfridwy	furn	20	62	Shape-conforming seat, melts by body heat.
Nuhg	pers	15	62	Reversable static field shower.
Krendsingolanon	entr	5	63	Music synthesizer.
Replent 433-435	misc	20	63	A food preservative.

Product	Type	Csize	Soph	Description
Ghip	tran	10	63	Steam-powered truck, low maintenance.
Hofgae	entr	3	63	Child's game played with rods and levers.
Lecton	educ	2	63	Reads crystal recordings.
Derata Coat	misc	12	64	Energy absorbant paint (case of 10 cans).
Eilselb Gremac 3	narc	5	64	Time-dilation narcotic.
Derfi	entr	2	64	Holographic adult action game.
Cemesgy	info	23	64	A genetic structure analyzer.
Unkuza	tran	18	64	Human powered sport aircraft.
Nemininis	life	9	64	A tall primitve plant, similar to the fern.
CarriesBan	medi	2	65	Tooth decay inoculation.
Sensonics Sensar	entr	15	65	Sensory manipulation device.
Hip Fog	clth	1	65	Field-controlled gas cloud worn on lower body.
Durasene	tool	4	65	Clear preservative coating for climate resistance.
Slowglass	furn	3	65	Delayed output glass.
Ascomyocin	medi	1	65	The broad-range antibiotic.
Library of Tenti	entr	57	65	Crystal storage library, conservative style.
Heat Hangings	furn	7	65	Temperature storage/distribution material.
Past-Scope	bogu	80	65	Another bogus time machine.
Globeterm	info	15	65	World database network terminal.
DWC Adhesive	tool	2	65	Universal bonding material.
Quasisonic	entr	5	65	A light and sound entertainment device.
Vibroblade	weap	5	65	A powered blade knife.
Perstun	weap	15	65	Low-powered field effect grenades.
Lambrotherm	entr	102	65	A holovideo entertainment center.
Hypnovid	pers	3	65	A sleep-inducing pattern generator.
Gen'towk AV/FI383	weap	5	65	Guided projectile launcher, anti-personnel.
Nutro 522	food	60	65	Emergency rations, tastes like Sesile Bogtch-eez.
Photoweld	tool	3	65	Hand-held laser welder and cutter for soft metals.
Igbiggis	life	25	65	A furry ball, uses globs of saliva as arms.
Moosip Replicator	bogu	200	65	Supposedly replicates objects by atomic resonance.
Dempis Fog Leaf	pers	2	65	A single leaf can warn of high radiation levels.
Sonarep	weap	1	65	A hand-held sonic stunner.
Tubsiub-hoego	life	217	65	Huge, sticky, red-orange, and has a poor temper.
Grotog EPP	misc	3	65	Emergency Power Pack, piezeoelectric generator.
Qui-bieh Kiff-dro	clth	3	66	Blood-dyed garment, a rage on high soph planets.
Colli Bio Scanner	medi	2	66	Portable medical scanner.
VoluVue	misc	25	66	Transparent hostile lifeform container.
S'defer	food	6	66	Levortine flesh.
LGDT's Refuselaser	furn	4	66	Local Group Disposal Technology's waste destroyer.
Cadrizan	food	1	66	Brotenic bug paste, salty tasting.
Aften Frata-zon	tran	90	67	Nerve impulse controlled land vehicle.
Porta-clense	pers	1	67	Portable shower (20 applications).
Yoverdiscathdo	furn	17	67	Genetically created, grows into a long-seat.

PRODUCT LIST

Product	Type	Csize	Soph	Description
Aflatoxoid Cabbo	weap	1	67	A fungus that produces air-borne carcinogens.
Welkinfa	tool	1	67	Personal radiation detector.
Risivett's Somnus	medi	2	67	The popular safe tranquilizing agent.
Tloika Prudate IX	weap	9	67	Self-propelled, self-shielded Voigt-effect cannon.
Dufad	medi	34	67	Repellor stretcher for emergency evacuations.
Rebel of High Night	entr	1	67	Crystalfax of the rebel Z'perio.
Coldweld	tool	105	70	High volume room-temperature welder.
Dreamdust	narc	1	70	Hallucenogenic.
Swizleskid	tran	28	70	Repulsor sled.
Stroon	medi	1	70	Potent life extension drug.
Niu Crystal Dei	educ	64	70	Crystal storage library, Niu Faze, controversial.
Defiantance Craft	tran	255	70	Mach 6 personal aircraft/groundcraft.
Tangoan	tool	20	70	Robotics General multipurpose robot.
Bolow Marta	weap	3	70	Electrical impulse scrambler.
Electropro	pers	12	70	Personal bodyguard robot.
Kirlmar-D	weap	1	70	Small electrostatically activated explosive.
Squantz	slav	5	70	A semi-intelligent marsupial.
Pullarts	food	11	70	Capsules of Aaves sap.
Wevedweed	life	21	70	Ornamental plant requires sugar in diet.
Siletax	weap	8	70	Disrupts crystal storage systems.
Allisor	life	2	70	Child's pet, rahter uncoordinated.
Suiger	arti	5	71	An ancient Xirae frequency control substance.
Pertrak Sensor	info	2	71	Scans heat and radiopotassium to locate humans.
Orget	pers	2	71	Decorative body paint, non-allergenic.
Ged a Vakar	medi	18	71	Neural pathway stimulator.
D'Viper Slenep	weap	10	72	Duelling stunner.
Wromeisser CrysFax	semi	12	72	Widely-used holographic recording crystals.
Jehjeso	food	4	72	Sap-nuts from a Millionleaf tree.
Ceare Fasteners	semi	50	72	Used to secure high-stress components (10000 case)
Lyran Invisibility	bogu	60	73	A 'Brooklyn Bridge' invisibility machine.
Juntana! Kirtan	info	9	73	Compound AA13 based storage wafers.
Kentra Probe	misc	20	73	Multi-purpose sublight planetary probe.
Hemis	life	1	73	Moves by exhaling downward rapidly.
Sworup Plaemaet C1	educ	12	73	Computer engineering laboratory for beginners.
Cahuvest	pers	5	73	Repellor-levitated luggage.
Klimiru DCS-#1015	semi	220	73	An anti-magnetic plastic.
Zeffeppa	misc	4	74	A viodroidic rectifier/expolator.
Baefiscz	food	185	74	Grak'narka Fig-Beef in sheeted form.
W'reun	arti	78	74	Ancient irregular octagonal stones found in space.
Leyir Transmax	tran	255	74	Capable of extended-range skip orbits.
Tyror Membrane	pers	1	74	Pressure-activated oxygen filter.
Febarl Aart	arti	5	74	Uses the broken perspective style.
Sicklar Myn'raan	tool	153	74	Autocontrolled borer used for shuttle tunnels.

Product	Type	Csize	Soph	Description
Nopolvo	furn	1	74	Selectively ionizes and collects dust.
Warafed Aales	slav	5	74	Symbiotic, 1 part is the brain, the other a hand.
Sworup Plaemaet G1	educ	18	74	Computerized genetics laboratory for beginners.
Uhali MagBomb	weap	18	74	Magnetic pulse bomb which disables fusion reactors.
Omtud-rou	clth	3	74	Inflated Barth-plastic.
Grak'narka Spreader	life	18	74	Grows rapidly, providing figs after 7 years.
Zone Refiner	tool	250	75	Column refinement process.
Null Boat	tran	105	75	Repulsor wagon.
The Maths #2	educ	45	75	Crystal coded advanced math texts.
Pemexin Parts	semi	5	75	Rapid-hardening shape- conforming parts.
Anopticon	misc	1	75	Gravfield controlled mirco/telescope.
Gubricke's Guide	entr	3	75	The spacetraveler's tales.
Radiotope Furnace	furn	90	75	Radio-isotope powered generator for home heating.
Qwenor'dlart	tool	69	75	Weather alteration satellite.
Maxtil-metal	semi	255	75	Duraluminum with saphire crystal reinforcement.
Ikseolo	tool	5	75	Electromagnetic steel forging unit.
Book of Space	entr	1	75	Crystalfax compendium of space history.
Orrel Aart	arti	12	75	Expanded to 3 dimensional broken perspective.
Brozru	food	5	75	Brozru slices for wrapping Jehjes morsels.
Bioformaide	medi	20	76	Used for limb self-regeneration.
Frentizine	medi	1	76	Semi-spectrum immunization drug.
Fax Lick	narc	1	76	A dangerous stimulant, often causing confusion.
Vocrates	info	3	76	Superconducting matrix-element computer.
Rozzer	life	2	76	Slender pig-like animal used for racing.
Gauro Itseafo	info	1	76	Molecular storage cartidge.
Ulsyminia	entr	12	76	Sound generator w/ emotion additive capacity.
Deca-oube	info	1	77	Holographic communications terminal.
So'ovimic	clth	1	77	Shoes made of liquid-filled plastic.
Nisodji Jecto-web	weap	12	77	Projectiles break into metalic webs (case of 3).
Vortricle	semi	2	78	Cryptographic scrambler.
Tentepaxtoline	medi	2	78	Only cure for Imbolious fever.
Wy Sodoo	slav	2	78	Very unintelligent, used a pack-beast.
Palepez	clth	5	78	A sheer body stocking, exteremely stretchable.
Ousoudar	entr	5	78	A musical game with subtle mathematical insights.
Ihkone Hailfire	weap	1	78	Pistol-style blaster.
Heretos	tran	31	78	A short-ranged null-field transport.
Wecokus SynthBlood	medi	50	78	Artificially created blood.
F'pejte Incubator	tool	165	78	Used to grow biocomp components.
CVM Wetra	clth	4	78	Shields body radiations from detection.
Vorovortricle	semi	2	79	Cryptographic scrambler superior to a vortricle.
Tagalong	tran	20	79	An electronic wheelbarrow.
Wocago	semi	210	79	Concrete with magnetically-aligned elements.

PRODUCT LIST

Product	Type	Csize	Soph	Description
Mour's Fingerpiece	jewl	1	80	A delicate series of relief-carvings.
Deklersonlana	semi	20	80	Comber-metal in block form.
Aiugh	educ	7	80	Automated opponent for Benitr-stempo trainees.
B. Doshniva's Tyna	clth	3	80	Brobo Doshniva's latest Axian Fashion Craze.
Himoleve	medi	15	80	Causes organs to regenerate.
Affedule	tran	48	80	Self-contained magshuttle for use on track only.
Exorgue	pers	21	80	Skin surface stimulator.
Sylso Fusel	tool	5	80	Shielding unit for work on radioactives.
Zheezni	life	5	81	Bioengineered child's pet.
Goof Light Pump	tool	5	81	Gravitationally removes light from a volume.
T'tar's Gravitramp	furn	112	81	Creates local zones of differing gravity.
Condamine	medi	1	81	Mild euphoric used in treatment of mental illness.
Pupbapy	food	1	81	Roams an eating area to find the best singer.
Mabrofon Dispensor	weap	3	81	Powerful portable particle beam projector.
BioManufac's Livera	life	2	81	Engineered for high oxygen expiration.
L'nurgi	arti	2	81	Primitive regressionism art.
Hoaten	food	1	81	Stuffed cuseegu with brenep & elo chives.
Adaz-maloe	bogu	156	81	Miniature hyperspace booster doesn't work.
KCLA Lambate	arti	2	82	From the art-tech of Vowlotan.
Optistensor	pers	1	82	Increases the user's visual spectrum.
Sarim Wattil	educ	2	82	A crystalfax of ancient Xirae history.
Tenthor	pers	20	83	Robotics General valet robot.
Nullgravs	tool	5	83	Repellor attachments to carry heavy objects.
Enwantaqualsza	misc	52	83	A low-orbit networking satellite.
Protoplaser	medi	1	83	A laser suture device.
Voltac Group ARB-151	tool	254	83	Gravity controlled grower of molecular chain.
Wecokus Plastiskin	medi	1	83	Artificial skin, causes real skin to grow over it.
Virus	weap	1	84	Bacteria that eats plastics.
Afrasiyab Memoirs	educ	2	84	Crystal-coded memoirs of the baasra-Afrasi.
Vechtoblimir's DHT	tool	35	84	A DiBec Hardcast Tempering machine.
F989 Dedo Warmaster	weap	247	84	Semi-ballistic hypersonic interceptor.
Gof Tugia	entr	200	84	A small diving-bell.
Koto Co. PortShield	weap	7	84	A portable shield generator, very low power.
Jongske-aiz	semi	1	84	0 ohm resistors.
Noheaweak Progus 4	info	18	84	Personal computer w/ Telsan capability.
Esperstone	arti	8	85	Psionic message stored in stone for Xiraen.
Datar Infomind	info	220	85	A communications terminal for finance.
Domm Jumpbuggy	tran	214	85	A repellor ship capable of low orbital flight.
Svengali	life	1	85	A gelid creature that emits a euphoric scent.
Niu Dei Crystalist	entr	1	85	Group-wide publication of Niu Dei Faze work.
Abidac Screen	furn	13	85	Controls speed of molecules crossing screen.
Oivar	tran	100	85	Repellor levitation ground transport.
Consuetrudes Awide	entr	2	85	Viz's book of customs about the L.G. in 46 AA.

Product	Type	Csize	Soph	Description
Aisemaar	clth	5	85	Sprayed clothing that hardens on the body.
Indoubul Domraples	life	5	85	Very agressive, dislikes human children.
Mangle	tool	2	86	Used to fill spaces.
Prepleppo Galinule	life	90	86	Capable of soaring flight constantly.
Grobmez	tool	21	86	A microelectronic welder.
Woden Gen4 SSSNU	weap	18	86	Small Scale Shield Nullification Unit.
Het Bilovaine	semi	188	86	Low-temperature plastic base (7 tonne container).
Rednat Dou Avlimbo	semi	133	86	An ultradense silopolymer fluid.
Gretsebe	tool	65	87	Generated gravity welder.
Wewush: Gastrologica	entr	3	87	Wewush's crystalfax of the great foods of the L.G.
W'reled	clth	5	87	Haphazard assemblage of diaphonous material.
Sokabe Dresmodo	furn	12	87	Krosebbet spheres, designed after Dresmodo's art.
Psion GDS	info	189	87	A Gravitic Displacement Scanner.
987 Dedo Cormancer	tran	253	87	Semi-ballistic hypersonic aircraft.
Matrix Electronics	educ	2	87	A definitive text by Kelvin Zarbor (Eng. UoCSoLS).
Supercondamine	narc	1	87	A euphoric that is too powerful to use.
Zu Mataya	medi	1	87	Extremely rare metabolism alteration drug.
GravCon's AtomicGyro	misc	98	87	A gyroscope that uses atoms for zero-precession.
Sisem	info	5	87	A natural language programmable computer.
Yuride Foptex	info	9	87	Low powered computer.
Foceocilo	arti	8	87	Sculpture by Eiolo in the new Viewist style.
Avloh Teleporter	bogu	38	87	A fake teleportation unit.
Mondinolm	clth	3	87	Light-variant fabric in a halfkilt design.
Nik Foon	info	4	87	A demographics analyzation device.
Idiop Pidio	entr	4	87	High speed repellor sticks used for riding.
Krincus	life	1	88	Eats metal and excretes powerful corrosives.
Zoquier	semi	56	88	Rapid-hardening metal/plastic.
Megent Lokuet	semi	3	88	A crystal for molecular memory computers.
Voltac Group DCCS-sB	tool	213	88	Creates metallic hydrogen by gravity compression.
Ti Fusio	entr	74	88	A spiron storage unit.
Edico Khave	weap	5	88	Forced close-range microfusion.
Shk-tar	food	1	89	An artificial animal eaten alive.
Skandis Burlatron	info	255	89	A short-duration Strong Nuclear Force generator.
Myb'Kuta	jewl	1	89	Glowing yellow gem, artificially unreproducable.
Korom's Defeck	misc	13	89	A sophisticated food preparation device.
Sevdaney Stressors	semi	84	89	Distorts space for nuetronium creation.
Hietiweis Forfurn	furn	6	89	A furniture constructed of pure force.
DECO	medi	1	90	Life extension drug.
The Maths #3	educ	48	90	Crystal coded Niu Science mathematics.
Worldchange Unit	tool	255	90	Environment alteration device.
Null Suit	clth	50	90	All environment suit composed of energy fields.
Intellink	info	1	90	Human/Computer thought interface (C/Fe).
Betelbo +Sense	medi	1	90	Gives the user additional senses.

PRODUCT LIST

Product	Type	Csize	Soph	Description
Esayundizuirde	semi	4	90	Used in light-activated hydrogen gas production.
Alotetel	tran	84	90	Self-guided low-orbit gleeder.
Apbenioa	arti	51	90	Blank internally-imaging Tecchion sculpture.
Ohgreoris	life	10	90	Very similar to the Vyrco Warbler.
Auromorissen	educ	3	90	An interactive mathematical tool.
Duquediu	arti	52	90	Rock slab with differing radioactive decay regions
Eik	pers	1	90	Implanted door access keys.
Azoovolovy	furn	13	90	Local external climate controller.
Prauvduwiese	pers	1	90	Removes natural skin leaving transparent coating.
Eystia	pers	1	90	An expensive pheromone scent.
Belo J	narc	8	90	An impulse feedback system.
Caspander	tool	21	90	Automatic housing expander.
Dipladicus Frenta	life	1	91	Rare heat generating animal used in cold climates.
Arbist PECIL	info	5	91	Arbist's top of the line Ustar-effect computer.
Thanotil	life	5	91	A nurturing beast, usually checkered.
Lvain kij Wropuesto	entr	2	91	A very fast game of skill.
Hearninock	entr	31	91	A past-event active-tensing simulator.
Lelasob	slav	3	92	A surly creature, usually sold with a Motivator.
Shifs	arti	3	92	Elemental art with active perspective.
Iaala's Seezle	entr	201	92	A game with chess-like pieces and moves.
Gilret Zes	pers	1	92	Personal electronic cleanser.
Cadsus Syr	medi	105	92	Memory recording/imaging system.
Xenolythene	semi	10	92	Organic building material.
Yerwui	educ	5	92	Shared-intellect educational system.
Mellatic Crystaels	educ	9	93	Best text on communication systems as of 78 AA.
Aest	life	1	93	A human symbiote that absorbs toxins.
Eseryvli	food	5	93	2 meter strands of sweet/sour crunchiness.
Rocinel Quisa	arti	1	93	Memory/shape cooperative art.
Hexarine	food	2	94	Engineered fruit, a Wewushian favorite.
Riuglete	food	2	94	A root engineered for sweet/sour flavor.
Notizu	life	3	94	Living balloon, bioengineered eats pneumoplankton.
Tena Huanu	misc	24	94	A phased shield that can selectively pass people.
Cyboad	info	5	94	Multi-purpose circuit analyzation device.
Wheva	life	58	94	A valuable meat-beast.
Drezuda	furn	8	94	A matter-permeated energy bed.
Bethay Edumate	educ	5	94	Able to answer complex question on many subjects.
Jeoxloxy	entr	105	94	The multiplayer version of Grouscotti.
Pookla Yoravarre	life	1	94	Eats many harmful parasites.
Rodflednec	furn	21	94	Controlled gravity bedroom, allows user to drift.
Zonis DiSpace Gnrtr	bogu	12	94	Fails to generate unlimited power using hyperspace
Watila Rueva	entr	1	94	A mutable rule game.
Kypt Destroyer	weap	20	94	Space/time disruption warhead.
Moleculon Cubonics	semi	50	94	Self-configuring electronic cube.

Product	Type	Csize	Soph	Description
Rethiofall	entr	21	94	Gravity and light game.
Entri Bonef	bogu	3	94	Bogus time-stopping device.
Ee-ahh-twonk!	food	1	94	An eatable robot, very noisy.
Anoorscope	info	255	95	Microscope based on gravitic displacement principle.
Kypt Intressor	info	5	95	Powerful molecular memory computer w/ intellink.
Paracompass	info	1	95	Gravitic smart compass adjusts to any L.G. planet
Kefout den Lous	arti	1	95	Gravitationally suspended particle sculpture.
Anotei	clth	3	95	Irridescent ribbon w/ discharging electric coils.
Ov'yenbugrus	misc	51	95	Controlled quark destruction.
Trecellfavire Outis	furn	5	96	Energy cushioned couch, a projected field volume.
Uster Iggy TAE	info	2	96	A small Uster-effect computer made by Uster.
Siza/Eopos	info	5	96	Multiple user Intellink access system.
Labmutbraghfla	food	1	96	Skin-absorbent nourishment, grape-flavored.
Cadsus Pevio	weap	45	96	A cortex reintegration stimulator.
Brookif	arti	18	97	Stochastic art.
Emvuevo	furn	1	97	Causes air within a volume to shed light.
Caeriket	food	2	97	A solid grey mass that changes flavor constantly.
Astos	info	6	97	Implanted Intellink unit.
Comments on the Past	educ	2	97	Compendium of historical crystalfaxes from Arbest.
Plorsym Base 8989	tran	205	97	Gravtube base generator.
InfineCalc	info	24	97	Flexible high-level multi-evaluational computer.
Traibietur	medi	230	98	Produces any body material in quantity.
Deierd	entr	12	98	An optical harmonic induction unit.
Voasotex	medi	1	98	Enhanced intelligence drug, very dangerous.
Aesdeson Creator	tool	65	98	Produces microscopic black holes.
Olnusiddo	misc	239	98	Produces self-sustaining gravitic vortices.
Peraxi	weap	229	98	Causes rapid proton decay within 100 m radius.
Kipprodividoc	tool	54	98	Interweaves materials by molecular reorganization.
Edia om CC Casoeph	clth	4	98	Skirt-like, bends light around user to conceal.
Pyafui	tran	221	98	A connector for gravitic tubeways.
ZeedisTech Hypercomp	info	245	99	Uses Uster/D'Amato relays.

Guide Abbreviations

Csize – Cargo size units.
Soph – Product sophistication.
Food – Foodstuffs.
Arti – Art or artifacts.
Semi – Semi-finished products.
Life – Lifeform.
Narc – Narcotic.
Furn – Furniture.
Medi – Medical supplies.
Jewl – Jewelry.
Pers – Personal products.
Tool – Machine tools.
Weap – Weapons.
Misc – Miscellaneous products.
Bogu – Bogus or non-functioning products.
Entr – Entertainment products.
Educ – Educational products.
Slav – Slaves.
Info – Information products.
Clth – Clothing
Tran – Transportation.

CULTURE LIST

All cultures go through a distinct evolution. This evolution can be broken up into 9 parts or *culture types*. They are:

Culture Type 1
Pre-Cultural – Clans and tribes. No universal political authority. No organized Art, Religion or Science.

Culture Type 2
Fuedalism – Warriors and the Priesthood in power. Art as a response to Nature.

Culture Type 3
Breakdown of Fuedalism – The Reformation. Early types of art disappear.

Culture Type 4
Formation of Aristocratic States – Growing political absolutism. Art begins to mature along with Philosophy. The rise of puritanical religions to oppose the new absolutism.

Culture Type 5
Absolutism – The Aristocracy is controlled by the King and the Middle Class. Art becomes intellectual. The great conclusive Philosophies. The zenith of Mathematical thought.

Culture Type 6
Revolution and Napoleonism – The Middle Class combats alliance of the Aristocracy and King. The victory of Money over Blood. Exhaustion of Art forms.

Culture Type 7
Contending States – Dominance of Money. Rational social ethics replace Religion. Conceptual Art. Final Thought in Mathematics.

Culture Type 8
Caesarism – The victory of Force Politics. Nations decay into a formless mass, soon to be forged into an Imperium of gradually increasing despotism. Archaic, exotic Art.

Culture Type 9
The Final Political Form – The world as a Spoil. Barbarians at the borders. Political control falls into a permanent rut of ineffectual leaders. Primitive human conditions thrusting up into the highly civilized way of living.

Illegal Imports By Culture

Culture	Immigrants Legal?	Illegal Product Types:
1	Yes	(None)
2	No	Art/Artifact, Educational, Information
3	Yes	Art/Artifact, Narcotics, Jewelry, Entertainment, Personal
4	No	Art/Artifact, Educational, Narcotic, Clothing, Personal, Furnishings, Food
5	Yes	Weapons
6	No	Educational, Weapons, Transport, Information
7	Yes	Narcotic, Slave, Bogus
8	No	Educational, Weapon, Bogus
9	No	(None)

ZM–110

Section	Hull Capacity	Visibility Factor
1	3	6
2	6	7
3	96	10
4	6	2
5	12	4
6	6	2
7	16	6

Explorer 6A

Section	Hull Capacity	Visibility Factor
1	108	7
2	96	4
3	108	7
4	16	4
5	48	6

Ignia

Section	Hull Capacity	Visibility Factor
1	25	10
2	21	1
3	21	5
4	21	5
5	12	4
6	16	7

Al Vexan

Section	Hull Capacity	Visibility Factor
1	6	7
2	3	4
3	4	5
4	32	8

T'ul Edur

Section	Hull Capacity	Visibility Factor
1	24	10
2	7	1
3	2	3
4	2	3
5	6	8
6	6	8
7	15	3
8	3	7

DN-300

Section	Hull Capacity	Visibility Factor
1	4	8
2	6	6
3	16	6
4	6	4
5	36	7
6	2	6

DN-310

Section	Hull Capacity	Visibility Factor
1	9	6
2	48	7
3	52	3
4	52	7
5	52	7
6	22	5

SHIP DESIGN DATA

Horizon II

Section	Hull Capacity	Visibility Factor
1	5	5
2	60	8
3	5	3
4	31	5
5	4	5

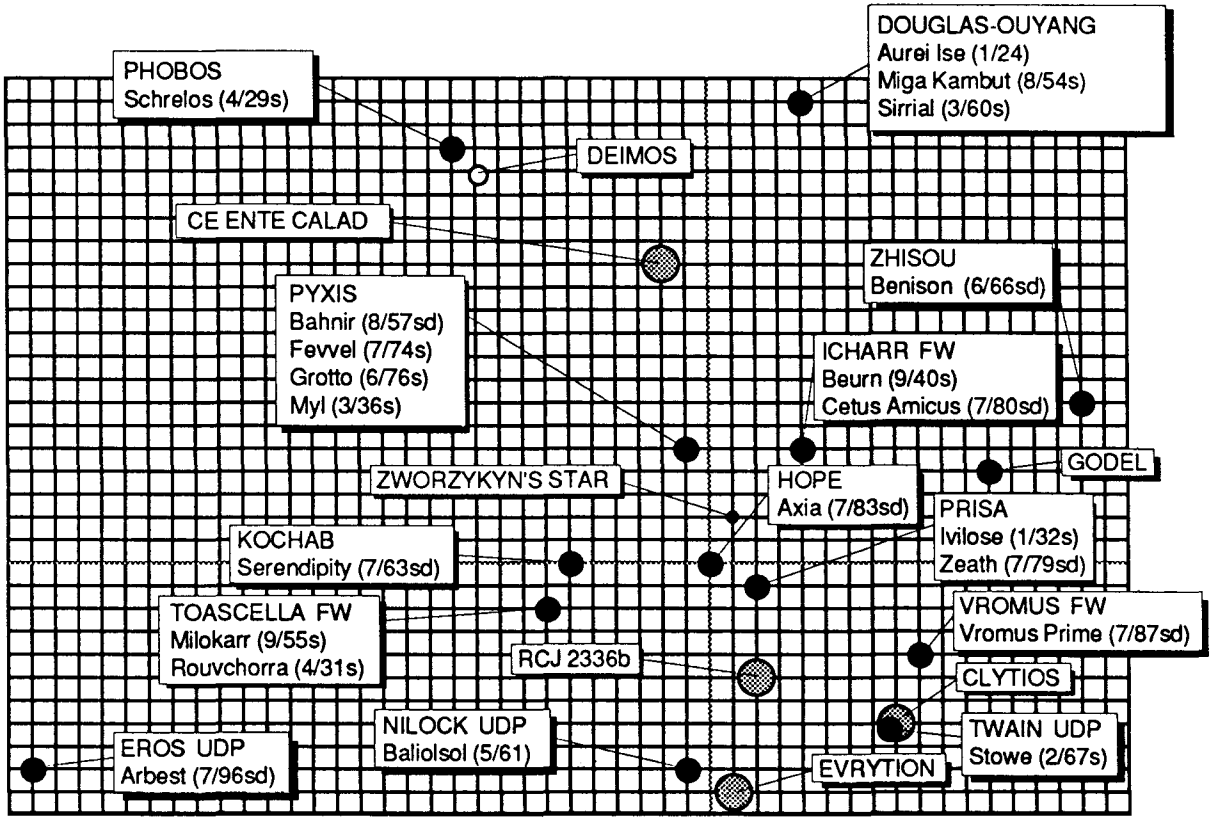
Kosygin

Section	Hull Capacity	Visibility Factor
1	31	7
2	24	5
3	8	5
4	9	3

Radpo'ol

Section	Hull Capacity	Visibility Factor
1	18	8
2	6	1
3	24	3
4	17	7
5	17	7
6	4	6

LOCAL GROUP DIAGRAM



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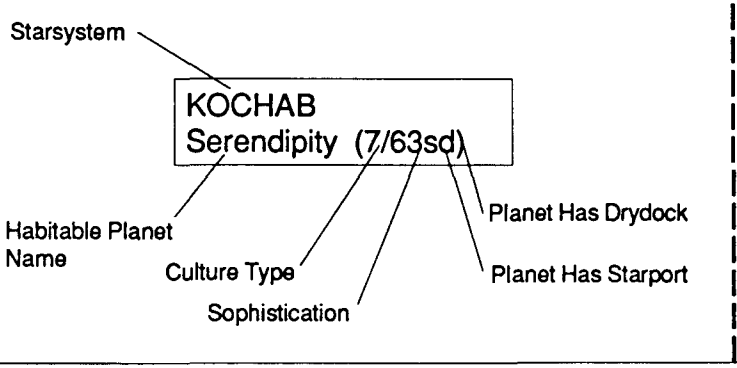

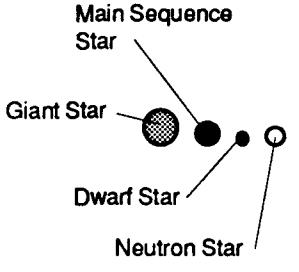

GLOSSARY

Accumulator – Stores energy, essentially a large battery. Accumulators are necessary because a converter does not release energy at a high enough rate of speed for *hyperspace* jumps.

Airless – A planet which lacks a breathable atmosphere.

Armor – The self-powered suits crew members use on *assault capsule* missions and boardings. They enhance the wearer's senses and give increased mobility and strength.

Assault Capsule – A shuttle-type troop carrier with small attack capabilites of its own. Usually used to clear a hostile area prior to deployment of *ore processors*.

Autodoctor – An automated surgeon able to diagnose and treat simple illnesses and injuries.

Bridge – The command area of the spacecraft.

Cargo Hold – The area of the ship where cargo is stored. A cargo hold may not have more than 80 different items in it.

Converter – Transforms *Ore IV* into energy.

Crew Quarters – A section of the spacecraft which contains sleeping, food preparation, recreation, and sanitary facilities for the crew.

Cryogenic Vault – Low temperature storage for passengers.

Crystal Fax – Information burned into a crystal, used as a lasting storage medium.

Dimension-Set – Any object in *normalspace* occupies three physical and one time dimension. These four defining dimensions are called a dimension-set.

Docking Adapter – Attached to the exterior of the ship, it seals around the outside of another ship's airlock. With a docking adapter, transfer of goods and personnel can be conducted without using breathing equipment. A docking adapter is not necessary to dock with a *drydock*.

Drydock – A huge spacestation orbiting above many of the more sophisticated planets in the *Local Group*. A drydock houses tens of thousands of people. It is a place where spacecraft can be repaired and crew hired.

Ecliptic – Imaginary plane on which all of the planets in a *starsystem* ride.

ECM – See *Electronic Countermeasure*.

Electronic Countermeasure – The process of interfering with missile guidance and detection systems. Use of an ECM greatly reduces the odds of being hit by an enemy missile during a battle.

Fax-Sheet – Any hardcopy from a computer. A facsimile.

Franklin Laboratories – A major industrial force behind the space effort. FL holds all of the major patents for the *hyperdrive* any many other essential spaceflight components. Its virtual monopoly during opening years of starflight enabled it to a gain a hold in every aspect of the spacing industry.

Gaseous – A planet whose atmosphere is much too dense/poisonous to breathe. They typically lack a stable surface, due to extensive amounts of ice and gravity. Uninhabitable.

Habitable – A planet which can support human life without breathing gear.

Habitable Zone – Theoretical band around a star where planets which can support human life are found.

High Definition Scanner – Creates a detailed picture of the object being scanned. Usually used for spacecraft identification.

Hyperdrive – Propulsion system that allows atravel at faster-than-light speeds by "kicking" the spacecraft into a new *dimension-set* called *hyperspace*. Once in hyperspace, the spacecraft can reenter a point in normalspace many lightyears away in just 6.8 days.

Hyperspace – A space that co-exsists with *normalspace*. Access is possible only through the expenditure of enormous amounts of energy. Hyperspace is believed to be completely empty except when spacecraft are "kicked" into it. No matter/energy artifacts have ever been found there, not even debris left over from *hyperdrive* propelled-spacecraft.

Hyperspace Booster – Discovered near the end of the First Stellar Expansion, the hyperspace booster increases the range of mankind's exploration because of its ability to add to the *hyperspace* entry energy of a spacecraft, allowing greater than normal distances to be traversed. One of the chief disadvantages of the booster is that booster-assisted travel in strictly one-way.

Inertial Compensator – Creates a localized gravity field, which isolates the occupants of a spacecraft from the effects of acceleration.

Kleptnir – The ancient Dormir (*Xirae*) phrase meaning "awaiting your return." Farewell, goodbye. See "Old Xirae" in Ruetter's, Xirae: Dialogues With the Past.

Lander – Generic term referring to any type of vehicle used for transport between a planet's surface and low orbit.

Mass Limit – Anything above a certain mass cannot enter *hyperspace*: mass limit refers to this value.

Mass Storage – A peripheral device for the computer which stores programs.

Missile Launcher – The device which releases the missile and provides the intial course guidance.

Missile Rack – The system of racks, conveyors, and lifts used to bring the missile from the storage area into firing position.

Normalspace – An abbreviation for normal space/time, which is the space of everyday experience. Einsteinian space.

Orbital Scanner – A sophisticated scanning system which creates an image of the solar system and planet the spacecraft is orbiting.

Orbital Shuttle – Used to transport personnel and cargo to and from the surface of habitable planets. Commonly referred to as an *orbiter* or *lander*.

Ore Processor – A small mining ship which can land on the surface of *habitable* and *airless* worlds. It has little defense capability and the site on which it mines must be relatively flat and hard.

Ore Storage – The area in the ship where ore is stored.

Part – A device which is used aboard a spacecraft. A *system*.

Processor – Same as computer.

Product – Any of the items available for purchase on a Buyer's Board. An item from the Buyer's Board.

Rescue Pod – A large plastic bubble with a 2 hour air supply for up to 20 people. Used by pirates to transfer personnel from a disabled ship without docking.

GLOSSARY

Resource Scanner – Used to scan planet surfaces in search of valuable mining sites.

Shield Generator – Has limited capability to repel matter and energy. Used to protect a ship from attack or other hazards.

Size – The bulk of a particular part, the number of hulls it takes to place the part on the ship.

Starport – A giant landing field and trading post. A starport is usually the economic center of a planet. Many services are available at a starport, ranging from trade to orbiter maintenance and refuelling. The only place where an orbital shuttle may safely land.

Starsystem – The total collection of planets orbiting a star. The volume of space defined by the orbit of the outermost planet around a star.

Sub-c – See *Sub-Light.*

Sub-Light – Below the speed of light. Usually refers to travel between planets in the same *starsystem.*

Sub-Light Drive – The engines a spacecraft uses to travel in *normalspace.* A sub-light drive cannot propel a spacecraft faster-than-light. In this age, they are used soley for maneuvering inside *starsystems.*

System – A device which is used aboard a spacecraft. A *part.*

Visibility – The measurement of relative size. A system may take up 5 hulls (size 5) but because it is in a section of the ship which is surrrounded by other sections (which means the section itself has a visibility lower than 5) it is very difficult for a theoretical outside observer to see. A lower visibility means a part will stand less of a chance of being hit by enemy fire.

Xirae – Native inhabitants of the planet Baliolsol. They are the only native sapient race in the Local Group. The Xirae are an ancient race, whose past high culture was destroyed by unknown forces over 100,000 years ago.

Xiraen – Of or pertaining to *Xirae.*

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