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OUTPOST GUIDE

Version 1.5

THE OUTPOST MANUAL IS HERE FOR YOU

Outpost is modeled on a complex system, and must be experienced to be completely understood. Nevertheless, you will need basic information in order to know what is expected of you. This manual is our attempt to provide you with this information in an orderly and beneficial fashion.

- Chapter 1 describes the *Outpost* plot, and the goals for winning the game.
- Chapter 2 covers installation, saving games, and all manner of matters technical.
- Chapter 3 provides information and details on the beginning of your journey. Learn how to pack for the trip to give yourself a decent chance at survival in the harsh, new world that awaits you. Discover how to "win" *Outpost*.
- Chapter 4 finds you on your new planet trying to build and sustain your colony. The game's mechanics and the features are discussed in great detail. This chapter is separated into basic needs and higher-order needs, organized in alphabetical order where appropriate.
- Chapter 5 covers very special topics: reports and information, starting secondary colonies, macromanagement, morale, research, and terraforming.
- Chapter 6 relates many effective and efficient game play strategies and tips.
- Chapter 7 discusses common problems and simple solutions.
- Chapter 8 explores some advanced strategies.
- Chapter 9 presents a comprehensive, yet brief tutorial that will bring you up through the beginning colony setup stage.
- Chapter 10 encompasses protocols and practices to constantly keep in mind while playing *Outpost*.
- Chapter 11 shows crucial game screens indicating progress and status.
- Chapter 12 provides the details you need to know if you ever need or want Sierra's helpful customer service and technical support.

The appendices include some fairly detailed hints on research trees. The exact text of the game's Help buttons for the new features found in *Outpost* 1.5 is provided as well. Finally, resource priorities for the many *Outpost* structures are provided.

HELP WHEN YOU NEED IT

Outpost contains an extensive internal help system. At the bottom left of the *Outpost* screen is a globe icon. This is your Artificial Intelligence (AI). Left-click on this icon, and you will be presented with a list of options, one of which is Help. A right-click on any part of the main game screen, when the the game's main window (Tile Map) is displayed, will give you a dialogue box with a context-sensitive Help option. Context-sensitive Help sends you directly into the portion of the Help system that relates to the part of the screen you clicked on.



If you come to a part of the game that you do not understand, try getting some help. For ready reference and ease of play, some of the information imparted by the various help screens is included in this manual.

Helpful charts, tables, and illustrative screenshots from the game are provided throughout the manual. A tutorial is provided in Chapter 9.

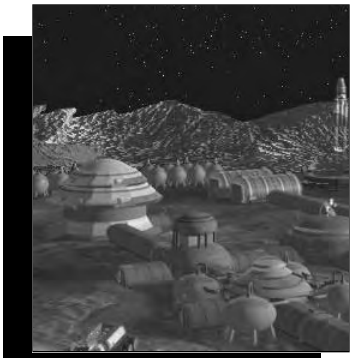
So, Commander, now you have everything you need to determine the fate of humanity. Sit back, relax, take the helm, and pray that fate is kind.

CHAPTER 1
Ballyhoo

WHAT IS OUTPOST?

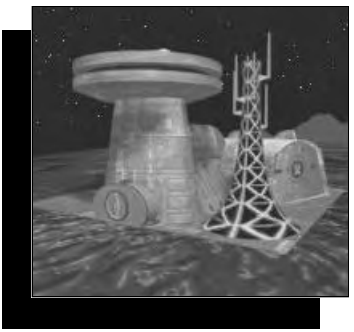
Outpost is a realistic simulation of what it would take to build a self-contained colony on a hostile planetary surface. This strategy game is based on current NASA research, and is designed by former NASA-Ames Research Center Systems Manager Bruce Balfour. Balfour also designed the award-winning *Neuromancer*, and Sierra On-Line's *The Dagger of Amon Ra*.

You must rescue humanity from certain doom, choose a new planet from a galaxy of possibilities, and establish a colony on the planet's surface. This colony will be the final *Outpost* of humanity, and your competence as the leader of this *Outpost* will determine whether our species will survive. The colony must be managed as though it were any other city on Earth: short-term goals include continuing the building program, keeping the rabble employed and happy, exploiting planetary resources, recycling waste, and dealing with random events. Eventually you may want to pursue long-term goals such as advancing the civilization, researching new technologies, establishing terraforming operations, and creating trade between colonies. How you proceed in pursuit of your self-established objectives is up to you; you're in command.



Outpost is based on fact, but it's also a game, which means that there are bits of humor and the occasional dramatized event for your amusement. A reasonable amount of scientific progress over the next 50 years is also assumed. However, the underlying model, the technologies, and the science have been extensively researched. Most planet types are based on planets in our very own solar system; they may not be exactly the same, but they're similar.

The model used in *Outpost* is a complex system of the real world, so poking the model in one spot will have an effect on everything else. Events will invariably occur that you cannot anticipate, and no two



games will be exactly the same. Keep in mind that *Outpost* is a strategy game, and is not played in real time. You can take a half a moment or a week and a half to make your move, so feel free to think about it. And whatever you do, don't try to grow your colony too fast, since this will usually lead to death for your colonists.

The Plot

It is the early part of the 21st century. Government funding of NASA has continued to shrink since the 1990s, leaving the space program in the hands of a few multinational conglomerates. Now it appears there's a slight problem, and it's hurtling toward Earth.

An enormous asteroid, which the media name Vulcan's Hammer after an old science fiction novel, is headed right for Earth, with an excellent chance of striking the planet with a billion megatons' worth of destruction. Only one company responds to the threat by building a colonization starship. The starship is assembled in Earth orbit, and is then fueled from the atmosphere of Jupiter. By the time fueling has begun, pandemonium reigns on our home planet, but by then it's too late to build another starship. Utter destruction of Earth means two things: that your colony will be the last bastion of humanity, and that you can't turn to other survivors for assistance if your colony falters. There aren't any other survivors.

Your colonist population is limited to 200 people, most of whom have the skills required to rebuild civilization. You'll be asleep for most of the 50-year (average) trip to your destination of choice; while you nap, any probes you may have sent ahead of the starship will start sending back data when they arrive at your target star system. You'll evaluate the data to select the appropriate planet for your colony. If you don't feel that the probes have given you enough data to make a good decision, you can allow the ship's computer to make a guess.

When you land, a certain element of the population feels that your leadership is lacking, and that two colonies will have a better chance of survival than one. These rebels abscond with up to half of your colonists and resources to start their own colony. You'd like to deal with it, but you're too busy trying to survive. In the meantime, the rank and file are watching your every move to see what kind of leader you are. When you screw up, morale goes down. When morale goes down too far, colonists begin leaving for the rebel colony. So don't screw up.

That's the situation you find yourself in at the beginning of the game. You'll find more interesting facts and fascinating details in Chapter 3, "The Journey Begins."

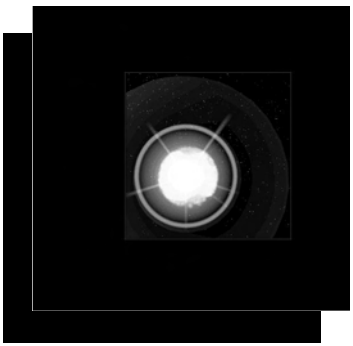
"Winning" Outpost

Outpost is about control. We've set out to create a strategy game that you can customize according to your preferences. You determine when to end the game, and what the goal is. If you'd like to work toward a specific goal, you can build up your space program to the extent that you can build a new colonization starship. You can also work toward the worthwhile goals of developing nanotechnology or terraforming technology. Or, if you're a people person, you can make your colonists so blissfully happy that even the rebels come to stay.

Outpost is a true test of your ability to survive in an alien world. If you wish, any particular game can be played indefinitely. The possibilities and combinations for building and maintaining a successful colony at the various difficulty levels on the available planets will keep you occupied for hundreds of hours.

As mentioned above, for those of you who wish a more concrete objective, there are two ways to "win" a particular game: terraform the planet, or build and launch a spaceship. Both goals require extensive research, planning, and conservatively estimating, from about 800 to 10,000 game turns.

If your colony is completely abandoned due to colonist defections, you will find that your colony is suddenly an inactive ghost town, and you are unable to get reports by clicking on your structures. An AI message will inform you that your colony is abandoned. At this point, you still have access to the AI interface News Briefs, which will give you the final news reports from your colony.



When things haven't gone well, this is what happens to your colony!

CHAPTER 2
Installation and Setup

Installing Outpost

1) Start your PC and launch Windows.
2) Insert your *Outpost* CD or diskette #1 in the appropriate drive.
3) From the Windows FILE menu, select RUN.
4) If installing the floppy disk version, type **a:\setup** (assuming your floppy drive is **a:**) and click OK. If installing the CD version, type **d:\setup** (assuming your CD drive is **d:**) and click OK.
5) Follow the on-screen instructions.

Saving Games

Running a single turn is accomplished by left-clicking on the small planet icon in the lower right-hand corner of the main game screen. This screen is the only place where games can be saved.

Note that games can be saved only from the main game screen where you see the diamond-shaped map.

Occasionally, you may have trouble saving the current state of your game. If this happens, you will be unable to select the inactive Save menu item in the File menu. To remedy this, try running another turn before you again select the Save Game option. This will permit the internal processing steps required so that you can save the current state of the game.

After loading a saved game, the mines on the main screen will all appear red and not indicate their true status. There will also be no turn number under the lower-right globe. You must run a turn for the mines to change to the proper status color and for the turn number to update.

Improving Game Performance

Preferences for Speed

To improve the performance of *Outpost* on slower machines, choose the Preferences button on the control panel that starts the game, or right-click on any area outside the Tile Map diamond when you're playing the game. Select Control, then Preferences. Click on the boxes for each option you wish to de-select. If the box has no "X" in it, the option is turned off. Press the OK button to return to the normal game screen.

If you're looking for a hardware solution, the CD version animated sequences will run best on CD-ROM drives that are double-speed or faster. Increasing your amount of system RAM to 8 Megabytes or more will also improve game performance.

We also recommend that you run *Outpost* using a Swap File under Windows. To do this, you need to launch Windows in Enhanced mode. For more information about creating a swap file and launching Windows in Enhanced mode, consult your Windows documentation. If you continue to run into problems, a good troubleshooting technique is to increase the size of your swap file.

Micro Solutions to Macro Problems

Problem: After installing *Outpost*, I double-click on the game icon but all I see is a black screen.

Solution: Use the ALT-TAB function to find the Midi Sequencer window. Make sure the "Don't display this warning in future" box is checked and then select OK. Make sure to restart Windows so the changes can take effect.

Problem: The animated sequences are all distorted when I run in 32,000- or 16 million-color modes.

Solution: Some video cards may experience graphics distortion if run in high color mode. Selecting a 256-color driver will remedy this problem.

Problem: Some of the text within the dialog boxes or buttons appears to be cut out. How do I solve this problem?

Solution: Make sure you are selecting a video driver that uses small fonts. Windows video drivers that have a Large Font option will display an incomplete text message within *Outpost* dialog boxes. For information about changing your video driver, consult your video card or Windows documentation.

Playing the CD Version Outpost Soundtrack

The orchestrated *Outpost* soundtrack is the classic "Mars, the Bringer of War" movement from the Gustav Holst symphony, "The Planets." You can listen to this dramatic soundtrack by inserting the CD into any handy CD player, or by using the Windows Media Player on the CD-AUDIO setting to play it from your CD-ROM drive. Skip to Track 2 and play the theme. (The score to "The Planets" is copyrighted by G. Schirmer, Inc.)

OTHER CD-ROM VERSION NOTES

We highly recommend that you disable your screen savers while playing *Outpost*. If you are in the middle of game play and your screen saver kicks in, you may experience audio break-ups and/or video break-ups. You will also want to disable any audio enhancement utilities such as Whoop-it-up, Icon hear-it, or others, as they may cause audio problems during simulation play.

AUDIO BREAK-UP QUESTIONS

If you experience audio cutouts during the game you may need to alter the audio buffer size of the MSCDEX driver located in your AUTOEXEC.BAT file. You can do this by adjusting the /m:AUDIOSIZE parameter. We recommend that this value be set to at least 10. If you experience slow movement or audio cutouts consistently, you may wish to lower the size of this buffer. For more tips, please refer to the "OTHER NOTES" section.

GENERAL QUESTIONS

Q: What resolutions does the game run in?

A: *Outpost* will support most Window video drivers but requires a 640x480 256-color driver or better.

Q: I've got an SVGA video card, but *Outpost* does not appear to be running in 256 colors.

A: You may not be running in 256-color display mode. Check this by going to the MAIN program group and double-clicking on the Windows Setup icon to see your current display mode. "VGA" indicates that you're running in 640 x 480 in 16-color. To run in SVGA's 256-color mode, the SVGA display driver would need to be loaded. These SVGA drivers are provided by the video card company rather than by Microsoft. Most 256-color video drivers do not come standard with Windows, so you may need to contact your hardware or your video card manufacturer to obtain the specific drivers for your video card. If you're unfamiliar with installing these drivers, consult your video card manual or your dealer for more information.

Q: What's the difference between BASE and EXTENDED sound cards?

A: The basic difference between the two is with the number of instruments and notes that each can play. Examples of sound cards that often run in BASE MIDI mode include the original Sound Blaster®, Thunderboard, and Pro Audio Spectrum™ cards. BASE level MIDI cards are configured to use channels 13 through 16 in the MIDI Mapper.

Examples of EXTENDED MIDI devices include the Roland® MT-32™, CM-32, LAPC-I™, and various General MIDI devices such as the Roland Sound Canvas and the Wave Blaster. Many of the newer FM sound cards such as the Soundblaster 16 and the Pro Audio Spectrum 16 may also use

a special EXTENDED MIDI mapper setting which enables them to play in EXTENDED MIDI mode. EXTENDED level MIDI cards are configured to use channels 1 through 10 in the MIDI Mapper. If you have an FM Synthesis card, choosing EXTENDED MIDI might not dramatically improve the music you hear within the game.

Q: The music is fine but the audio and/or voice volume is low, or vice-versa. What can I do?

A: Many sound cards also come with Windows mixer software that can adjust the SYNTHESIZER and DAC volume levels separately. Try running this utility and adjusting the input levels of the various devices.

Q: The music is fine, but the voices hesitate or skip. What can I do?

A: Basically, the audio will hesitate or skip if played during an animated sequence. Waiting for the audio to finish before running the animated sequence, or vice-versa, will normally remedy this problem.

Q: I've got a Roland MT-32 (or a Sound Canvas, or a General MIDI device) and a Sound Blaster. The speech is okay, but the music and sound effects are incorrect. What can I do?

A: Quit the game, reset the EXTENDED sound device, then restart the game. This will flush the odd sounds that may have been loaded by a previous game or MIDI play option. If you have a Roland MT-32, try using the specific MID file created for this device.

OTHER NOTES

If you are experiencing random lockups, make sure that you are using the latest Microsoft CD-ROM extensions driver, version 2.23. MSCDEX 2.23 is also shipped with MS-DOS 6.2 or above and should be found in your DOS directory. Contact Microsoft or your local dealer if you need the latest Microsoft CD-ROM driver.

If you have any random problems running under Windows, you may be running third party shells such as HP's Dashboard, Norton Desktop, PC-Tools or Kids Desk. Please refer to their documentation for troubleshooting tips.

If the audio still skips after trying the suggestion outlined in the first section of this section, try the following troubleshooting steps:

1) On most CD-ROM drives, there is a /M:X stock buffers parameter for the MSCDEX line in your AUTOEXEC.BAT. Adding /M:20 should help to eliminate audio skipping and choppy video segments.

Example of AUTOEXEC.BAT line:

LH C:\DOS\MSCDEX.EXE /D:MSCD001 /V /M:20

NOTE - the above line is provided only as an example. Your MSCDEX statement will most likely be different than the example noted above. Your path and switches might be different. In any case, the /M:X value can be added at the end of the MSCDEX line.

2) In the SYSTEM.INI file found in your WINDOWS directory, try increasing the DMABufferSize line to 256. If your SYSTEM.INI file does not contain this line, you may add it to the end of the [386ENH] section. This line will appear in the [386ENH] section of this file and should read as follows:

DMABufferSize=256

As with other Windows applications, installing *Outpost* will update your SYSTEM.INI and WIN.INI files. If you want to immediately restore your system environment after installing *Outpost* CD-ROM, we took the added precaution of backing up your original WIN.INI and SYSTEM.INI files into the \WINDOWS directory. The WIN.INI file is renamed WIN.OPS, and SYSTEM.INI is renamed SYSTEM.OPS. Normally there is no need to restore these files, since these files are constantly updated every time you use Windows. Do not copy and/or rename these files in your WINDOWS directory after installing *Outpost*, or you'll lose any changes made during the initial *Outpost* setup.

CHAPTER 3
The Journey Begins

Getting Started

Welcome to *Outpost*, a realistic strategy simulation of space colonization. Your mission is to colonize a hostile planet in a distant star system. You'll begin by selecting the star systems you'll consider calling home. You will send out VLBI* probes to four star systems to determine which one is most likely to contain habitable planets. This information will arrive at Jupiter while you are fueling up for your trip, allowing you to choose one of the four star systems to colonize. At this time, if you've packed them, you can send out ULBI satellites for information on planets in your star system of choice.

If you don't trust yourself to make a decision at this point, click on the "AI Select" button to let the computer decide.

*What's VLBI? It's a probe with a very long baseline interferometer. Perhaps this would be a good time to mention that there is a glossary in the back.

Difficulty Level

When you start a game, you'll choose a difficulty level: Beginner, Easy, Medium, or Hard. Many of *Outpost*'s internal conditions are affected by your choice. Planetary Hostility, and a variety of other issues are affected by the difficulty level you select. The difficulty level also affects the numbers and types of supplies the rebels take from a starship when they leave, how critical your population is with regard to your decisions, the types of star systems chosen by the AI as your destination when you choose "AI Select," and the frequency of explosive accidents for your Tokamak Power structure, Hot Lab, and nanotechnology facilities.

New *Outpost* players should use the Beginner difficulty level to learn how things work in the game without the added stress of resource management. This level gives you most of the nanotechnology from the beginning of the game, even though you haven't officially "earned" it through proper research. (However, you still have to research the nanotechnology areas to gain the other available benefits.) Nanotechnology gives you almost infinite resources.

Because of this, you have no mined resource restrictions, allowing you to learn how to construct your colony, control morale, use power, and manipulate your population without limitations on new construction. Your colonists will still die through accidents and old age, and

they will still require food to eat and air to breathe, but they won't be dying from a lack of mined resources.

As your experience increases, increase the level of difficulty of future games. At the highest difficulty level, trying to colonize a hostile planet, *Outpost* is extremely challenging.

Once a game has been started, the player cannot change the difficulty level. To change the level, you must start a new game. Saved games retain their previous difficulty settings.

Packing for the Trip

So, Commander, you've got the money, the weight restrictions, and the colonization plan. It's time to choose the cargo you need to take with you to your new home. Unfortunately, you can't take everything. The starship's propulsion system can push only so much cargo up to a reasonable speed to arrive at the destination within a reasonable amount of time. Will you take an extra 50 colonists, or pack an additional unit of food? Should you favor one satellite over another? What will the weather be like? You can't phone ahead, and you have only one chance. You'd better make the right choices.

Certain items will automatically be included. You must, for example, take 100 colonists. At the point when you begin packing additional materiel and personnel, you will have 172 remaining funds, and a remaining weight maximum of 78 units. The cargo chart on page 13 provides additional details.

Probes and Satellites

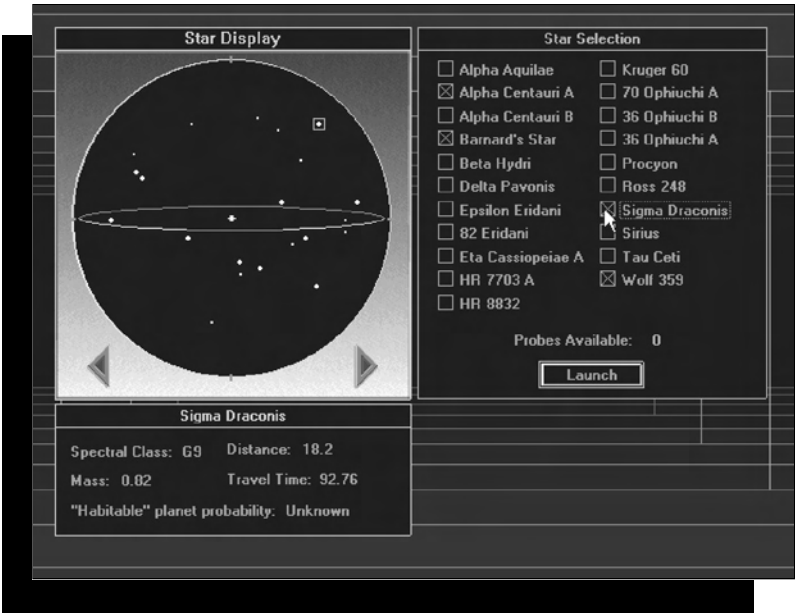
In choosing which probes and satellites to pack, you should give careful consideration to the types of data you'll need to make intelligent decisions on your new planet. The starship itself can provide enough basic survey data about topography, chemistry, and geology for your AI to determine the best possible landing site. Satellites and probes provide more information than the starship can, however, and will enable you to make an even more informed decision as to the landing site. Additionally, satellites and probes remain in use and perform an ongoing function. Keep this in mind while considering the tradeoffs of various types of cargo.



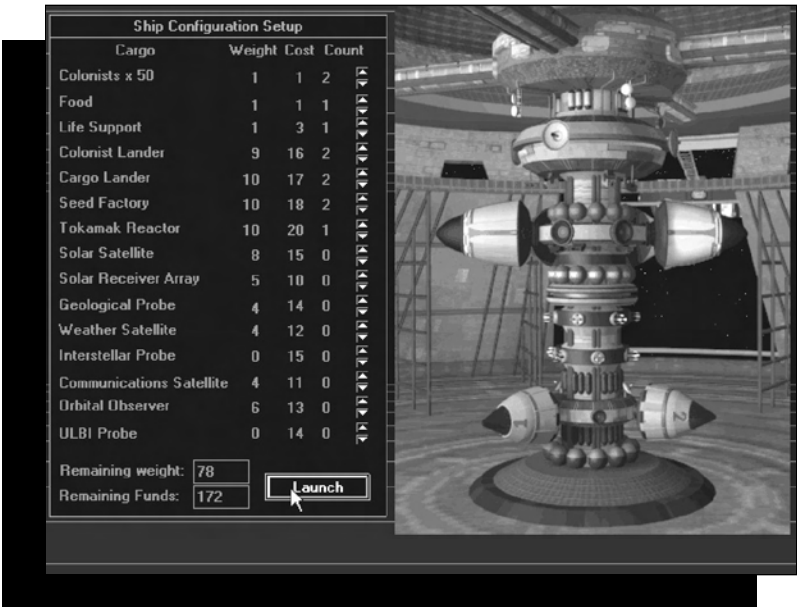
If you have packed ULBI probes, data will begin arriving while you are between Jupiter and your star system of choice. These data will provide information about specific planets within the star system. Since you can't change your mind if you drop down to a planet and decide it looked more hospitable from orbit, you'll need to make the right decision the first time about which planet to colonize. ULBI data can be very helpful.

CARGO	WT	COST	ADVANTAGES OF CARGO
Colonists (50)	1	1	Colonists will operate facilities upon arrival (Colonist Landers are required to move them)
Food	1	1	One unit will feed 10 colonists per turn while the agricultural dome is being built
Life Support	1	3	Used to keep colonists alive until a CHAP facility is built
Colonist Lander	9	16	One lander will transport **50 colonists**, one way, to the new planet's surface
Cargo Lander	10	17	One lander will transport a cargo weight value of 20, one way, to the new planet's surface
Seed Factory	10	18	Provides basic power, robots, resource processing, or temporary residences until Residential Units are built
Tokamak Reactor	10	20	Provides most power needs on most planets
Solar Power Satellite	8	15	Provides safe power for planets near stars (Also requires Solar Receiver Array)
Solar Receiver Array	5	10	Receives power from Solar Power Satellite
Geological Probe	4	14	Collects data to determine best landing site
Weather Satellite	4	12	Collects data on local weather
Interstellar Probe	0	15	Sends back detailed data on possible new planets
Communications Satellite	4	11	Enables robots to find their way around a planet without the use of Communications Towers
Orbital Observer	6	13	Works like a spy satellite to keep an eye on other colonies
ULBI Probe	0	14	Provides specific data about a target star system

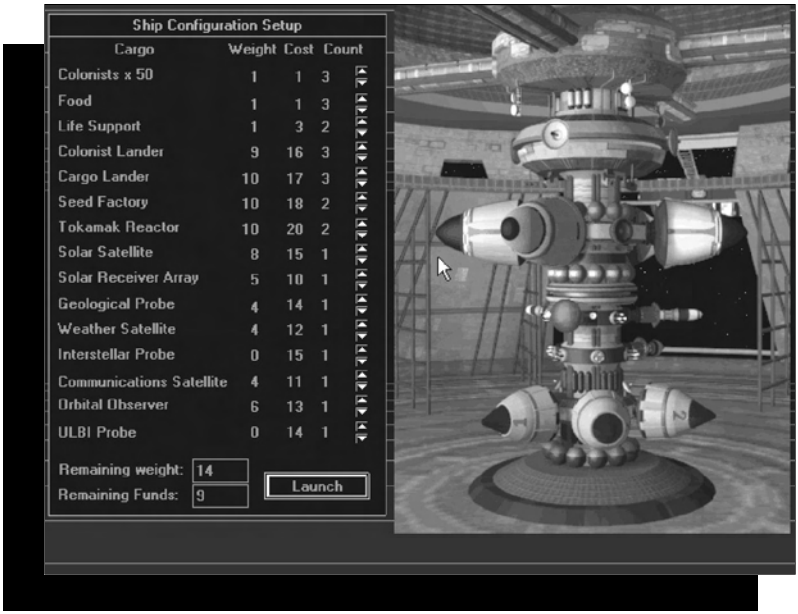
The tutorial in Chapter 9 walks you through the launch sequence and contains recommended levels for each cargo item.



Once you've chosen which planet looks the most promising, you can send out an interstellar flyby probe if you've packed one. An interstellar flyby probe will provide detailed information about the planet you've selected. A planet with a low hostility level can have as many as 25 possible landing sites; hostile planets can have as few as one.



Before packing!



After packing!

When you arrive in orbit at your destination, you'll launch the satellites and probes you brought with you. If you drop everyone down to the planet without deploying your probes and satellites, they won't launch themselves. Don't forget to launch them before you leave the starship forever, or you'll have wasted your resources and your colonists will think you're an idiot.

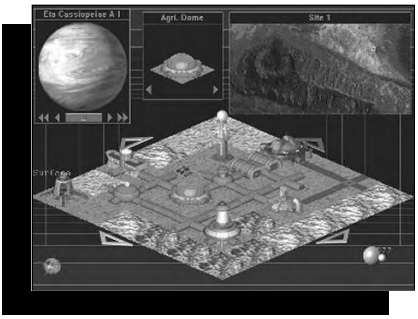
What You Get Is What You See

Now that you've finally made your decision as to which planet to colonize, the top left corner of your screen shows the planet you'll call home. If you right-click within the planet window, you will be able to replace the default planet name with one of your own choosing. Click on the center button for a stationary view of the planet. Possible landing sites are shown on the planet as tiny rectangles. These have the best geography, potential mining locations, and environment for colony placement. When you click on one of these rectangles, you have chosen a possible site for your first colony.

After you've made an informed or not-so-informed decision about a landing site, two more windows will appear on the screen. The middle window, or "Tile Picker," shows a Seed Factory tile. The top right window shows your chosen landing area from an orbital perspective. The red dots you see are potential mining locations. This window is called

the “Site Map.” You can right-click here and rename your site, view the Elevation Map, or close the Site Map. You can study up to four Site Maps at once.

When you find a good location for your new colony on the Site Map, near a group of potential mine locations or beside a single mine, left-click on that spot. The small square box that formerly appeared in the top left corner of the landing Site Map will now move to that location. The diamond-shaped Tile Map that takes up most of your screen shows the specific area highlighted on the Site Map by the small square.



The four arrows around the Tile Map will move you in any direction within the confines of your landing site. This will allow you to make small steps to put tiles down on the perfect terrain. Larger moves should be made on the Site Map, but the Tile Map is where you’ll spend most of your time, since it shows the structures you’ve built or are currently building.

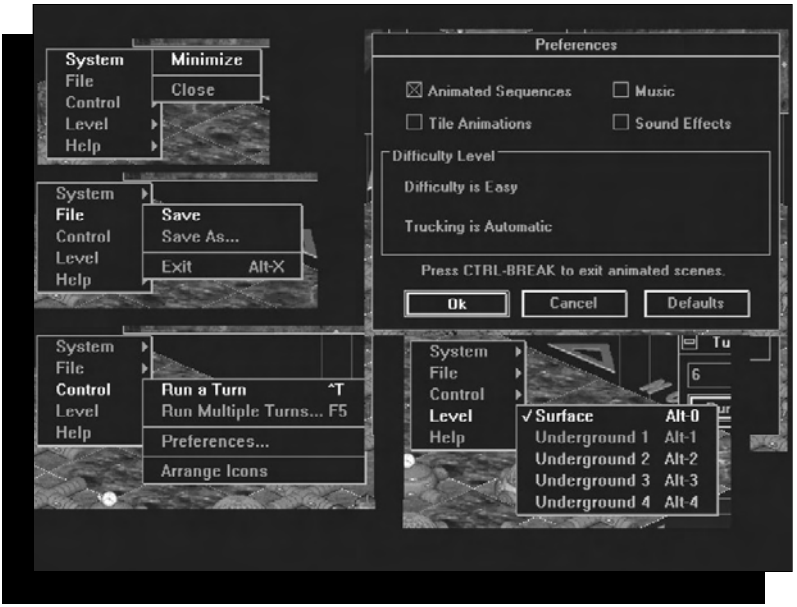
When selecting a plot to land the Seed Complex, the main thing to remember about the false color Elevation Map is that black areas represent clear terrain. You can reach the Elevation Map if you right-click on the Site Map, then select the Tools and Elevation Map options. The best area to start your colony is black with a red diamond (mine marker) nearby.

After you land, colored markers identify locations on the Site Map. Red diamonds mark potential mines, white diamonds mark depleted mines, light blue dots mark your colonies, and a dark blue triangle marks the rebel colony. If you don’t have an Orbital Observer Satellite, a rebel colony will remain invisible on your Site Map unless it becomes abandoned, in which case the marker will change into a light blue dot.

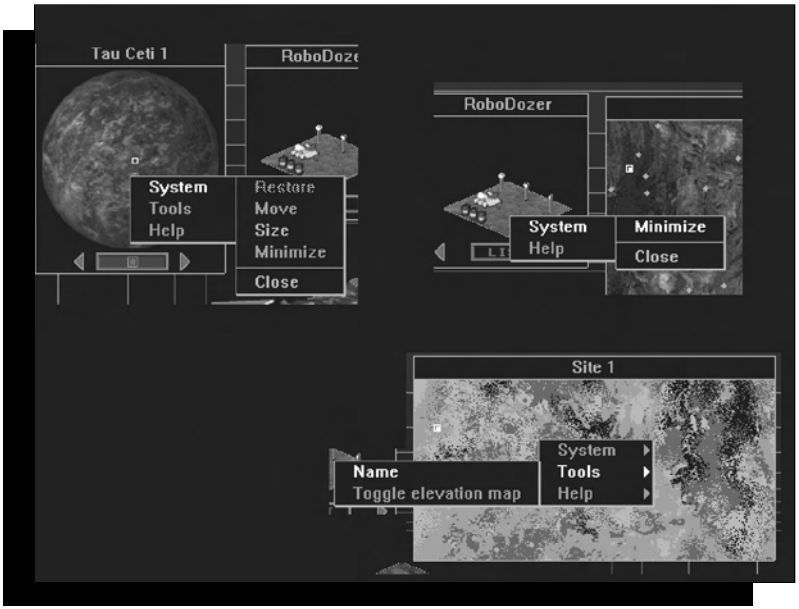
Mouse Clicking

Clicking on windows will become second nature as you play *Outpost*, but here’s a crash course on what your mouse can do. Right-clicking anywhere in the main screen window will display a default dialogue box.

Selecting System permits you to do a normal Windows Minimize or Close of the game, which will give you the option to exit. If you select File, a standard windows Save or Save As will be presented, as well as Exit, which is the same as Close under the System menu.



Under Control, you can run a single or multiple turns, arrange icons, and make personal game operating choices if you select Preferences. The Preferences box will enable you to turn on or off the animated sequences, animations of individual tiles, music, and sound effects. You can view the surface or underground levels you have developed by selecting Level.

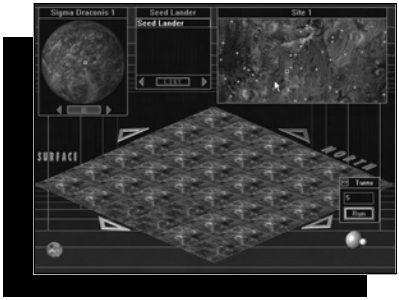


A right-click on the Planet Display Window will enable you to Move, Minimize or Close the window. Selecting Tools permits you to rename the Planet, toggle the Elevation Map, or get Help.

When you right-click on the Tile Picker window, you'll be able to Minimize or obtain Help.

Right-clicking on the Site Map will open a System menu similar to the ones discussed above. Selecting Tools gives you the ability to rename the site, and Help is self-explanatory.

Your First Move: The Seed Factory



When you've located a spot you think is suitable for building, click on the Seed Factory in the Tile Picker window. The arrow cursor will change into a diamond-shaped cursor. Now you can position the cursor on the Tile Map, and left-click the mouse. The Seed Factory Landing Marker will appear on your Tile Map. Nothing else will appear on the Tile Picker screen.

A Seed Factory is an automated, unmanned manufacturing facility capable of making more factories. When the Seed lands, four robots (a robominer, a robodigger, a robodozer, and an explorer) roll off and begin working without your intervention. If you have disabled Automatic Trucking from the difficulty screen, you will also start with four trucks. After a turn, the digger, miner, and dozer become available to you. You can set these robots down to do your bidding at a site of your choice.



Turns

You'll find an icon on the bottom right corner of the screen. You will left-click on this icon, a planet with an orbiting moon, when you want *Outpost* time to advance one unit. Time advancement will allow mines to be excavated, food to be harvested, roads to be built, factories to be constructed, and other types of progress to be made. Time advancement also furthers plagues,

natural disasters, and the decay of your manmade resources; what's more, morale will drop if your population feels that progress isn't being made quickly enough. Advance a turn only when you've done all you can during the current move.

When tiles are available for placement on the Tile Map, they appear in the Tile Picker window. When you have made all the moves allowable in one "turn," an unspecified unit of time, no tiles will appear in the window, and a message reading "None Available" will appear. When this happens, you must advance time by clicking on the icon at the bottom right of the screen. This will advance the number of turns, and hence the units of time, by one.

CHAPTER 4 Playing to Survive

Your first goal is quite simple. It is to avoid being killed by plague, famine, lack of oxygen, exposure—you get the idea. In order to survive, you must have the following: mined resources to build and operate your structures; CHAP facilities to provide air to your buildings; Agricultural Domes (AgriDomes) for food; energy; and protected underground residential areas. You must also connect all of these structures with tubes so that air, water, people, and recyclables can pass between them. Later in the game, you'll play to thrive, but for right now, you're doing great if you live through the next turn.

CONSTRUCTION

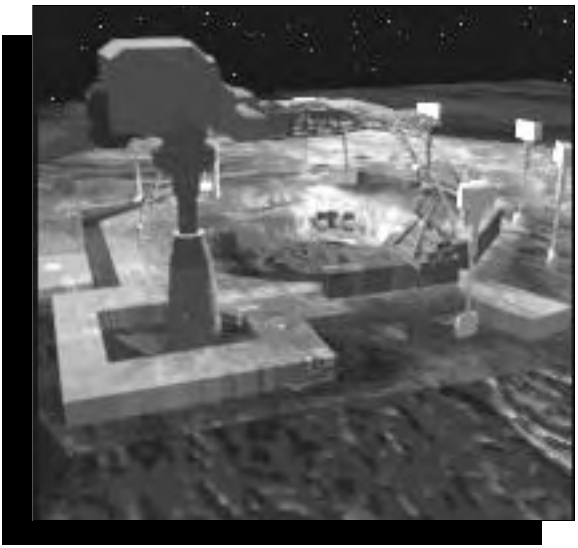
Build facilities for your colonists at the first opportunity. They'll really think you're the greatest if, early on, you provide them with a place to live and food to eat. You should build your first structures in this order: Agricultural Dome, CHAP, Residential Units, Storage Tanks, and Power Facility. Later, as their lower-order needs are met, your colonists will demand Medical Facilities, Research Labs, and Parks. There are a lot of buildings to choose from in *Outpost*. What does each one do? When it's time to construct some buildings, use this handy guide showing your building options. For additional information about each facility, use the Help system.



TILE	DESCRIPTION
SURFACE STRUCTURES:	
Agricultural Dome	Provides Food
CHAP Facility	Produces life-support gases and water
Command Center	Allows colony-building to commence
Communications Tower	Extends communications
DIRT Facility	Helps minimize damage from catastrophes
Factory	Produces robots, road material, etc.
Hot Laboratory	Houses potentially dangerous experiments
Mass Driver	Launches payloads into orbit
Mine	Provides ore for building
Monorail	Carries ore, resources, or passengers
Monorail Intersection	Carries ore, resources, or passengers
Monorail Power	Powers the Monorail
Monorail Station	Acts as required terminal for Monorail line
Nanotechnology Facility	Eliminates reliance on resources
Police	Reduces crime level, improves morale
Road	Allows transportation of resources
Robot Command	Communicates with robots, orders repairs
Seed Factory	Produces robots and processes ore
Smelter/Ore Processor	Changes ore into processed resources
Solar Powersat Receiver Array	Produces power from orbiting powersats
Spaceport	Launches cargo and satellites into orbit
SPEW Facility	Recycles wastes
Storage Tanks	Acts as delivery points for processed resources
Terraforming Facility	Creates breathable atmosphere for planet
Tokamak Fusion Reactor	Creates safe, reliable fusion energy
Trade Mission	Allows trade–built by trade partner
Tube	Provides a supply line between buildings
Warehouse	Stores medicine, fuel cells, robots, etc.

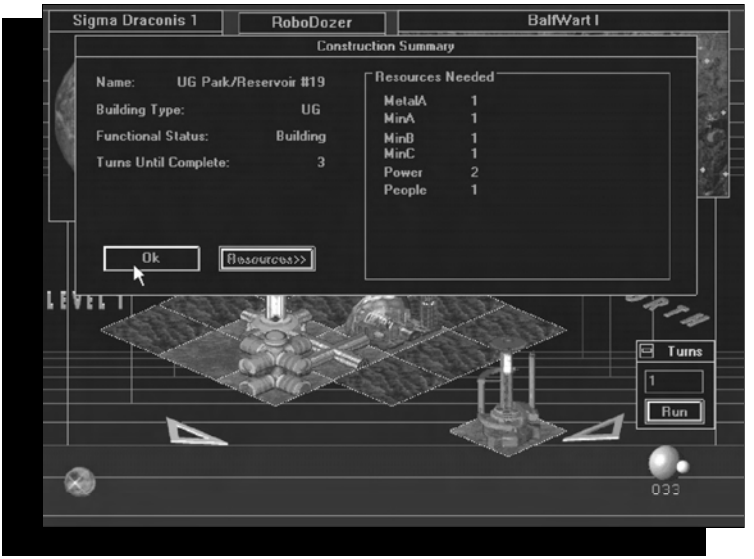
# PEOPLE TO OPERATE	# TURNS TO BUILD	MORALE EFFECT	PRODUCTION RESULT	CHANCE OF BREAKDOWN
1	5	+1	Food	20
4	6	0	LSA, LSB, LSC	10
1	3	0		50
1	2	0		5
2	5	+1		0
1	6	0	Robots, Parts, Roads, Fuel Cells	10
2	5	-1	Research	20
4	9 per segment	0		20
1	7	0	Mined ore	30
1	7 per segment	0		30
1	12 per segment	0		30
0	6	0		30
1	6	0		30
2	5	+1	No resources requirements	20
2	4 surface	+1 or -1		20
0	2	0		0
1	3	0		30
0	2	0	Robots	0
3	7	0	Processed resources	10
1	4	0	Power	20
4	7	0		30
2	8	+1	MPG (Multi-Purpose Goo)	40
0	2	0		0
4	9	+5	Breathable air	20
1	2 if brought, 9 if built	0	Power	5 if brought, 30 if built
1	2	0	Trade	0
0	1	0		0
1	2	0		5

TILE	DESCRIPTION
UNDERGROUND STRUCTURES:	
Administration	Provides administration site
Commercial	Acts as a retail outlet for luxury items
Geothermal Power Plant	Provides a clean source of energy
Laboratory	Allows “safe” experiments to take place
Light Industry	Produces luxuries, clothing, or medicine
Medical Facility	Reduces population attrition from disasters
Mine Shaft	Provides mine access (built by robominer)
Park/Reservoir	Provides safe environment to play in
Police	Reduces crime level, improves morale
Recreational Facility	Provides colonists with entertainment
Red Light District	Provides colonists with entertainment
Residential	Houses colonists
Tokamak Containment	Contains reactor (built along with reactor)
University	Educates the rabble



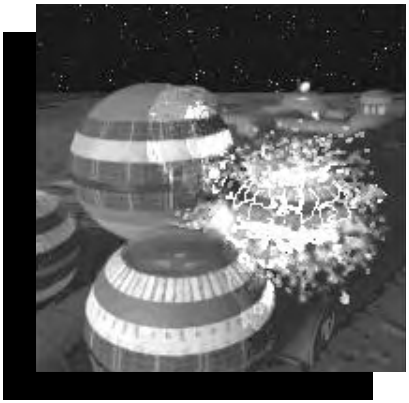
Construction can go forward because the colony possesses enough power, resources, and people.

# PEOPLE TO OPERATE	# TURNS TO BUILD	MORALE EFFECT	PRODUCTION RESULT	CHANCE OF BREAKDOWN
1	2	0	Increase in productivity	10
2	3	+1		10
1	9	0	Power	20
2	4	0	Research	20
2	4	0	Luxuries, Clothing, Medicine	20
2	4	0	Life extension	20
0	varies by terrain	0	Mined ore	0
0	3	+1 per turn	Entertainment	10
2	3 underground	+1 or -1		20
1	4	+1 per turn	Entertainment	20
2	4, or spontaneous	+2 per turn	Entertainment	0
1	3	+1 or -1		10
0	varies by terrain	-1 to 0		0
2	4	+1 per turn	Education	20



EMERGENCIES

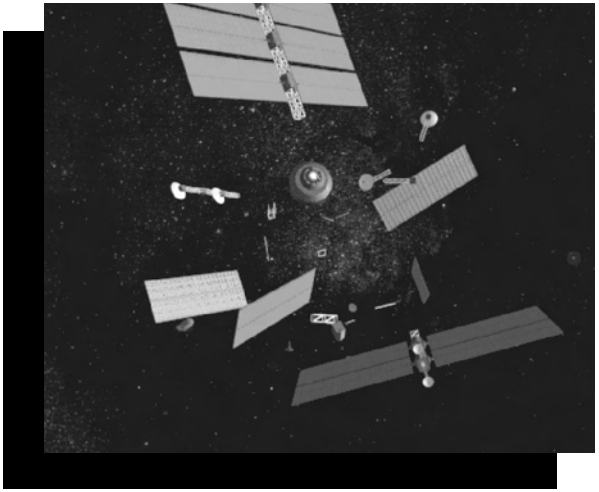
Crises are a foregone conclusion on your new planet. The variable is your competence in handling such emergencies. Plus, your colonists will be watching to see how you handle yourself, and morale will increase or decrease based on your leadership ability. Such problems are almost nonexistent at the Easy and Beginner levels.



A DIRT (Disaster Instant Response Team) Facility will minimize damage from unpredicted events that occur to your structures. The DIRT response area is limited; on average, the DIRT can protect structures within a five-tile radius. The closer a structure is to a DIRT team, the likelier it is to survive catastrophes with minimal damage.

PLAGUE

No matter how many times your colonists gargle, they won't be able to avoid the space-germs that cause plague. When there's an outbreak you'll have about 20 turns to respond to the threat. If you've had the good sense to establish a Medical Facility, which will double your response window to about 40 turns, or had scientists working on an antidote in one of your Research Facilities, your colony might survive. Keep in mind that Monorails



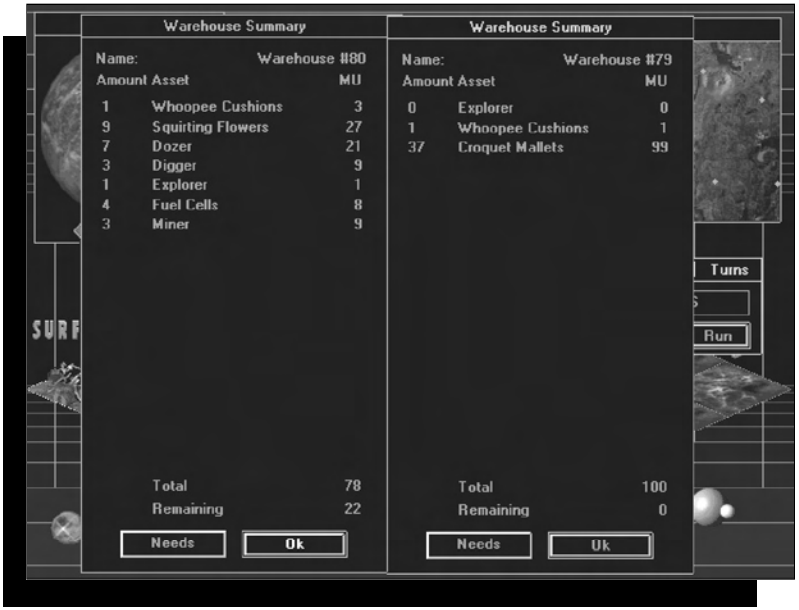
do a very effective job of carrying the plague, so you'd better be ready to cut your losses by bulldozing sections of rail line. If you respond soon enough, you may be able to isolate the plague to just one colony. The chance of a plague striking your colony increases according to your chosen level of difficulty.

FACTORIES

Since you couldn't bring everything with you from Earth, you had the foresight to bring materials you would need to create factories. In these factories you can manufacture items you require to survive, and later, to thrive.

There are two major categories of factories: **light industry factories**, which are clean and non-polluting and which can operate under the planet's surface; and **surface factories**, which require much more in terms of raw resources and energy, and which are placed on the surface so that they won't contaminate the environment below.





The factories have been busy, as these two Warehouses are almost full.

Light Industry Factories provide three commodities:

- Medicine is produced at the rate of one unit per turn. When a medical emergency strikes the colony, stored medicine is automatically used. If there is no medicine in storage, colonists will die. One hundred units of medicine can be stored in a warehouse.

- Clothing is produced at one unit per turn, and is distributed in Commercial structures. Thirty-three units of clothing can be stored in a warehouse.

- Luxury items are produced at the rate of one unit per turn per factory, and are distributed in Commercial structures. Distribution of luxury items is the primary means of manipulating the morale of your colonists, and Commercial structures draw luxuries at a rate of one per turn as long as there are luxury units available. You must choose which luxury items you wish to produce, from a list that includes fuzzy dice and wax lips.

Surface Factories build four basic products:

- Road Material is a combination of dense and sturdy components used to form a durable roadbed on a bulldozed surface. Road Material is produced at the rate of one unit per turn per factory.



- Fuel Cells, used to power robots, are produced at the rate of one every 10 turns. Fuel Cells die after 200 turns of use. Each Fuel Cell takes two mass units of storage, so you can store 50 of them in a warehouse.

- Trucks, used to move resources from the mines to the smelter, are produced at a rate of one every five turns.

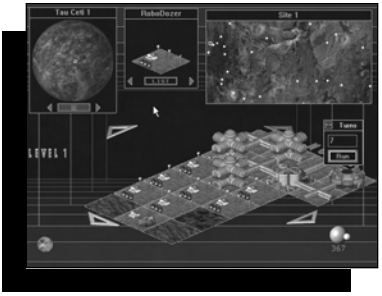
- Robots are manufactured in the Seed Factory when you arrive at your new home, but a regular Surface Factory can build the full range of robots, including the new types you're able to develop through scientific research. A factory can produce only one robot type at a time, which you select, and can build them at the rate of one every five turns. Robot storage at a Surface Factory is limited to 10, after which production stops until the robots are deployed or stored in a warehouse. Warehouses can store 20 robots with fuel cells.



In addition to these Surface Factories, there are five "special" factory types. Each produces one type of product. Note that the Terraforming Facility is only available after suitable research has been performed.

The Agricultural Dome produces food. Each dome produces 10 units of food per turn, assuming the dome receives enough resources per turn, and any research resulting in a new food source increases the amount of food produced. The storage available at a dome is 1000 mass units, after which dome food production is shut down until the stored food is consumed. No other storage for food is available. One unit of food feeds 10 humans per turn.

The smelter processes ores into pure, useful resources. In the smelter, ores produce half their weight in processed metals, and minerals lose nothing. Fusion elements are also processed at a one-to-one ratio. One entire transported load of ore is processed in one turn, after which the processed resources are shipped to colony Storage Tanks to become

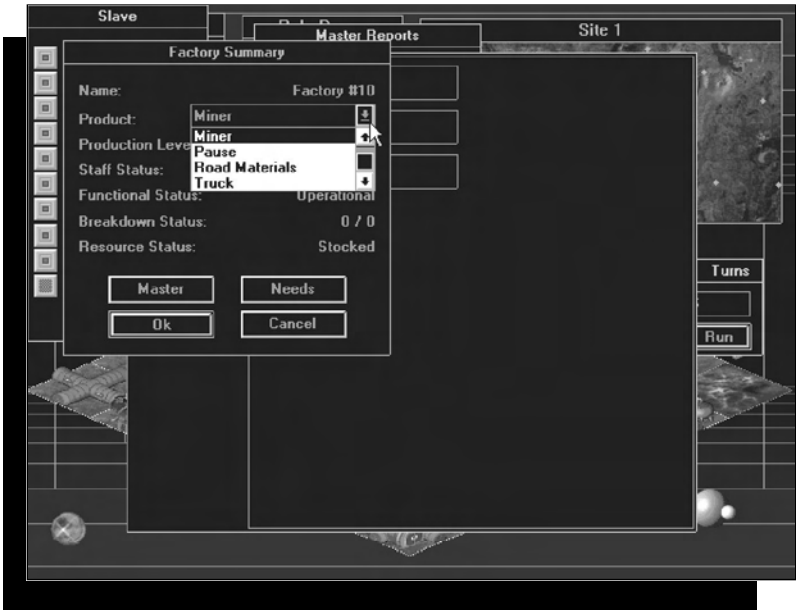


A huge amount of terrain is being dozed, thanks to an efficient surface factory.

available for use. Smelter storage is limited, so processing will cease if maximum storage capacity has been reached.

The CHAP (Closed Habitat Atmospheric Production) Facility produces a breathable environment for most of the colony structures. This differs from the Terraforming Facility, which allows an atmosphere to be generated for the entire planet. One CHAP is sufficient to generate the breathable gases for a large colony, but having multiple CHAPs reduces the likelihood of losing your atmosphere production capacity in the event of a catastrophe.

The SPEW (Sewage Processing and Environmental Waste) Facility recycles basic wastes and building materials from structures you've chosen to destroy. Recycling improves morale and enables you to reuse resources. Recycled buildings produce MPG (Multi-Purpose Goo), a special synthetic that can be used to replace any other resource required to maintain the functional status of an existing structure.

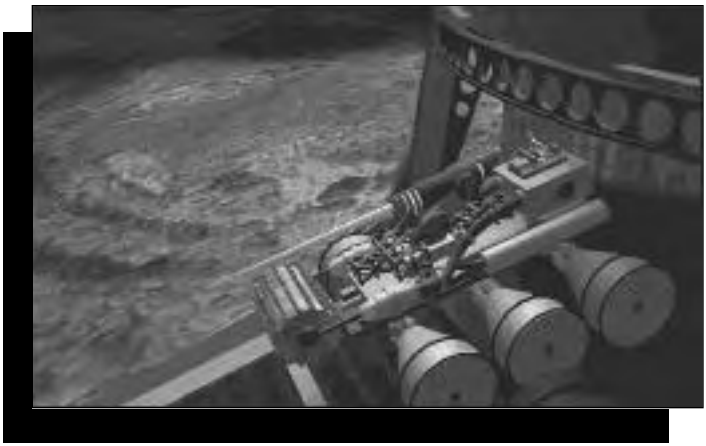


Selecting an item for a factory to produce.

Terraforming Facilities are generated through extensive scientific research. They allow you to create a breathable atmosphere on certain planets. Success with terraforming has a significant positive effect on the morale of your colonists.

MINING

In *Outpost*, the mining of local resources is necessary to the survival of your colony. Each planet type has a different composition of ores, reflected in the value called Planetary Hostility. If you select a planet with a high



Hostility rating, the offsetting characteristic of the planet will be a greater abundance of mined resources.

On average, any mine will have a mixture of ores, with life support, metals, and minerals being most common, followed by fusion elements (see the chart on page 31). In general, Metal Ores A and Minerals A are more common than B-grade ores, which are more common than C-grade ores.



Gathering Resource Information

You can gather information about resources on your planet in several ways.

From orbit, your starship will provide pertinent but basic information about the hostility level of your new planet, surface mineral deposits indicating reasonable mine locations, and basic planetary data. The AI will then generate landing Site Maps with the red dots that indicate potential mine locations.

You can launch a geological surface penetrator from orbit. The AI will then provide you with the maximum digging depth for your miners and diggers, an estimated total number of mining locations.

Explorer robots investigate potential mining sites identified from the starship. Explorer robots will also mark any potential mining locations with a red dot.

Mining and Processing Ore

Mines will produce ore for 100 to 400 turns, depending on the digging depth of the planet. If the storage maximum of 500 units is reached, the mine will shut down temporarily, but otherwise production from an active mine will be continuous. See the section on transportation for more information about moving mined resources.

When mined ore reaches the smelter, production of processed ore begins. Metal ores will generate processed metals at a ratio of two to one; minerals and fusion elements are processed into purified minerals at a rate of one to one.



MINED AND PROCESSED RESOURCES

Several categories of resources must be mined for survival. For simplicity's sake, *Outpost* resources are grouped. They are:

- Precious metals extracted from mineral ores by smelting.
- Raw resources shown with an "ore" prefix, such as OreMinA.

GROUP	PROVIDES	CONSISTS OF
Metal	Building materials	OreA, OreB, OreC, OreD, MetalA, MetalB, MetalC, MetalD
Fusion	Reactor fuel, other fuel	OreFusionA, OreFusionB, OreFusionC, FusionA, FusionB, FusionC
Mineral and Precious Metal	Raw materials such as gold	OreMinA, OreMinB, OreMinC, MinA, MinB, MinC, PrecA, PrecB

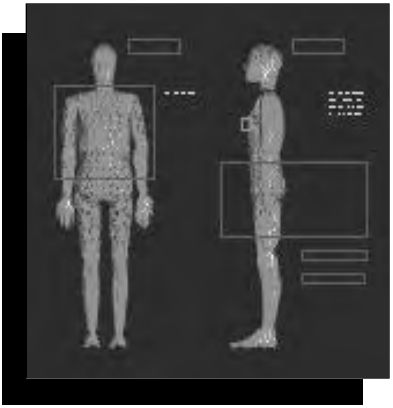
OTHER RESOURCES

Besides mined materials, other resources are generated by your colonists. These are:

- Food, produced in Agricultural Domes. Production is enhanced through scientific research.
- Luxury Items, manufactured in your light manufacturing facility, and distributed in commercial facilities.
- Population, which is increased by, well, the population. Morale level affects the rate of reproduction.
- Power, which is created by the Seed Factory and the other power facilities.
- Breathable Atmosphere, which is created by the CHAP for your buildings.

PEOPLE

One of your goals should be an ever-increasing population. Another is to keep this population contented so that they will be productive and not creep off in the night to the rebel colony. A good rule of thumb is to keep them reproducing, especially in the beginning.



During the first 60 turns on your new planet, the fatality rate will be high. Realistically, however, this hardship will produce a human race which is tougher than it was. Morale will drop when people die, just as it will rise when a birth occurs. Reproduction will take place at a tremendous pace: during the first 60 turns, your colonists average six children per couple, although low morale will cause a lower birth rate and higher mortality rate.

After the first 60 turns, reproduction will drop to four children per couple. When birth and mortality rates have stabilized at a lower level, you can begin making plans for the long-term growth of your colony.

POWER

The colony's ability to expand and thrive depends in large part on access to, and exploitation of, available sources of power. You can generate power through several means:

POWER SOURCE	PROS	CONS
Fuel Cells	Simple, immediately available	Limited to robots
Geothermal Energy	Cheap, clean	You may not find a fumarole
Seed Power	Immediately available	Extremely limited
Solar Power Satellite	Generates up to 2000	No more than two receiver arrays per satellite
Tokamak Fusion Reactor	1000 units of power per turn, efficient	Requires maintenance

ROBOTS

Robots are important to your colony. They perform tasks that would otherwise have to be performed by the human population. When your colonists must perform menial tasks, morale drops. Additionally, when robots are performing the less glamorous functions, humans are able to perform higher-order jobs such as research, which enables your colony to progress and thrive.



Factories produce robots at a rate of one every five turns, and Fuel Cells at a rate of one every 10 turns. One Fuel Cell will operate one robot for 200 turns.

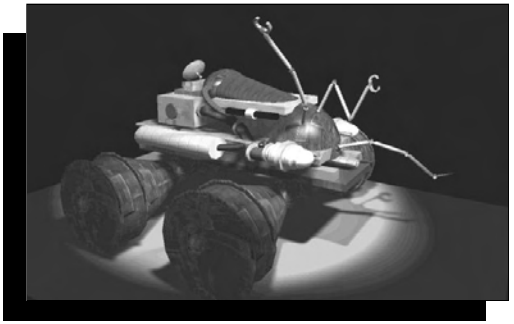
Robot Command

Robot Command facilities communicate with field robots. Sometimes you'll lose contact with field robots because they've been lost in rough terrain. Unfortunately, you cannot avoid losing robots; just keep building robots to replace those that will inevitably be lost.

Robot Types

Here are the types of robots available to you, and a brief description of their uses:

Robodozer: Prepares a foundation for building both on the planet surface and underground. The number of turns required to prepare terrain for building depends on the condition of the terrain. Robodozers can also create dirt roads by bulldozing in a straight line, at which point paved roads can be laid down.



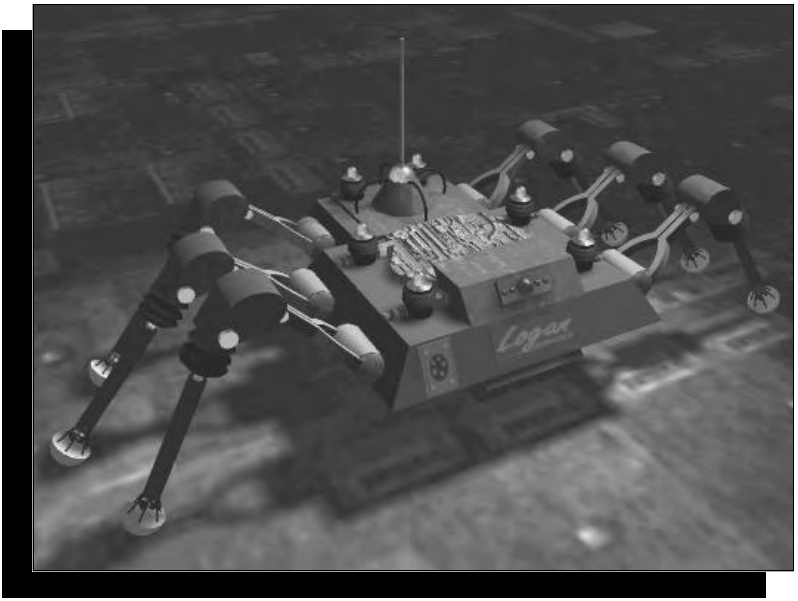
Robominer: Digs mine shafts, locates mineral deposits, builds ore elevators, and caps the mines with storage facilities. The number of turns required to dig a mine depends on the condition of the terrain. Homes in only on existing mine beacons.

Robodigger: Creates underground residences. It can dig either horizontally or vertically. The area dug out will be visible to the player, while the unexplored surrounding area will remain black.

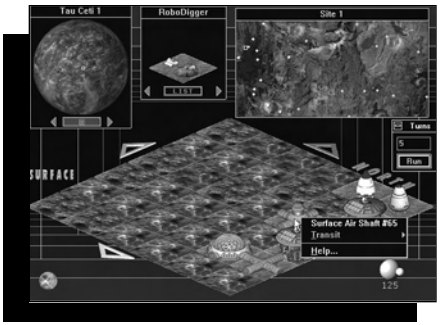
Roboexplorer: Wanders the surface of the planet seeking new mines. The number of turns required to locate new mines varies by mine prevalence on your chosen planet.

Repairbot: If there is an existing supply of fuel cells, Repairbots can replace Fuel Cells on "dead" robots. Repairbots are generated through research into robotics.

Humanoid Worker: Performs labor so that a human can be reassigned to a scientific research job if one is available. Humanoid workers are generated through research into robotics, and will show up in the population details report once you start building them.



This Robot Command is busy doling out chores for its 10 robots.



Getting Shafted

If you're having trouble digging deeper mine shafts or air shafts, keep these hints in mind:

- To extend a mine shaft to a deeper level on planets where this is possible, place a robominer directly on an existing underground mine shaft.

- To extend an air shaft to a deeper level on planets where this is possible, place a robodigger directly on an existing underground air shaft.

When Robodiggers Dig

On the surface of the planet, a robodigger can dig a new level only when it starts next to a surface tube connecting it to its home colony. Because the robodigger constructs the air shaft for the underground levels, the tube connection is required to carry air and power to underground structures.

Exploding Robodiggers

If you find that you've built your colony in an area surrounded by impassable terrain, don't give up hope. Place a robodigger on the impassable location of your

choice and set it to "Self-Destruct." As if by magic, the robodigger will destroy itself and leave clear terrain in its place next turn. However, the contained explosion of the robodigger will also destroy any underground structures on the eight tiles immediately surrounding it.

STORAGE

Two types of facilities are used as storage on your new planet.

Storage Tanks are used to store processed resources. If the resource comes from the smelter, it must go to the Storage Tank rather than a warehouse. Storage Tanks can store 1000 units of processed resources.

Warehouses store everything but processed resources. Each of these items requires a specific mass unit of storage, and each warehouse can accommodate 100 mass units of storage. Warehouse storage is provided for:

Clothing	**3 mass units**
Fuel Cells	**2 mass units**
Luxury Items	**3 mass units**
Medicine	**1 mass unit**
Road Materials	**3 mass units**
Robots with Fuel Cells	**5 mass units**
Trucks	**6 mass units**

Without storage facilities to house resources, all factory production will be unavailable. Always make sure a storage facility is built simultaneously with a factory to house the output.

TRANSPORTATION

An effective transportation system on your new planet is critical to your survival. What good are ores if you can't get them to the smelter and the colony? How can you establish efficient trade if you can't move trade goods?

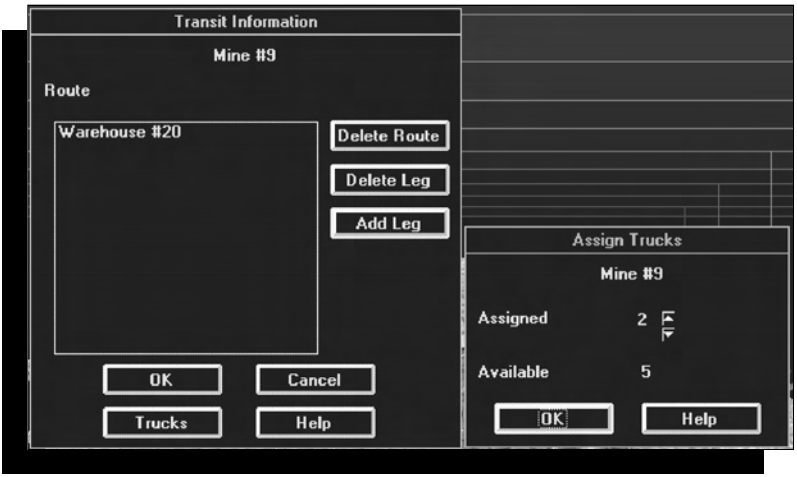
There are but two safe methods of motor transportation in *Outpost*. Resources and people are transported via either semi-automated Trucks or a Monorail System, and there are pros and cons to each.

TRUCKS

Trucks can travel over any terrain that's not impassable, but it's more efficient to drive over dirt or paved roads. Dirt roads are created by bulldozing a terrain tile. After a section is bulldozed, a paved road can be laid if the road materials have been produced by your factories. It takes

two turns for a road crew to complete a section of paved road. If a road crew takes more than two turns to pave a road, it's probably because there isn't enough road material available from your Warehouses. Trucks travel much faster over paved roads. For each game turn, a Truck can cross over one rough terrain tile, three clear terrain tiles, four dirt road tiles, or five paved road tiles.

An active mine can store up to 500 units of ore. If the mine reaches this limit, however, the mine will shut down until the ore is removed. Trucks can carry 100 units of ore from a mine to a smelter. After the raw materials are processed they will automatically be moved into storage. Once the processed ore is placed in a storage facility, it is available for use by the colony.



If you're playing on the Beginner difficulty level, or if you've loaded a saved game from a previous version of *Outpost*, all trucking will occur automatically. Other difficulty levels give you the option of Manual or Automatic Trucking. Under the Automatic Trucking option, the transportation of ore and resources will occur behind the scenes. Manual Trucking forces you to establish individual routes and shipments for your Trucks.

Trucks travel on terrain, either rough or clear; and roads, either dirt or paved. Dirt roads are simply bulldozed. After a section is bulldozed, a paved road can be laid; paving takes two turns to complete.

Generally, within the bounds of a particular colony, Trucks will automatically move resources from the smelters to Storage Tanks, and from factories to Warehouses.

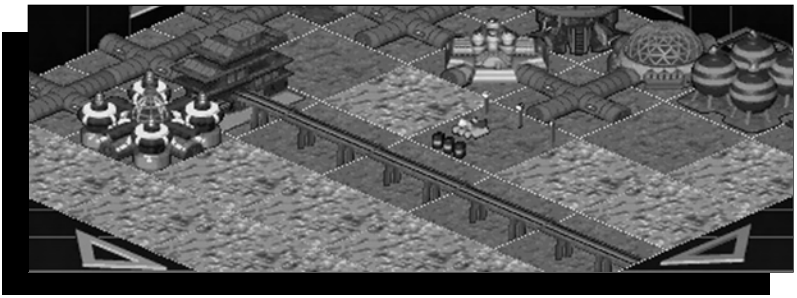
MONORAILS

Monorails move at a continuous speed of six tiles per turn, and can carry 500 units of ore to the smelter. Once the Monorail line is built, terrain has no effect on it, and Monorail lines can be set on continuous loops to connect sites that have frequent contact.

Monorails do have drawbacks, however. They are costly and time-intensive to build, and any stops must have Monorail Stations. Plagues travel with great efficiency on Monorail lines, and if you rely solely on this mode of transport, a plague can either wipe out your colony or bring your entire planet's transportation system to its knees when you sever the lines to save the colony. On the other hand, if you're a diabolical killer, you can also send a little gift of the plague over to a colony of rebels with whom you've established a trade agreement.

A Monorail System has five components: the Monorail Station, the Monorail Power Transformer, the Monorail (track), the Monorail (track) Intersection, and the standard Tube connecting the Power Transformer to a colony.

The Monorail Power Transformer can be built only at the end of a Tube connection. The colony supplies life



support, power, and the workers to operate each Monorail section.

Monorail (track) tiles connect to Monorail Stations. Monorail Stations can only be placed next to a Monorail Power Transformer or a Monorail (track) tile.

A Monorail (track) or a Monorail (track) Intersection can only be placed next to a Monorail Station or another Monorail (track).

When a complete Monorail System has been established between two stations, and the power/resource connections have been made, the Monorail line will become active.

Power interruptions or line breaks can bring Monorails to a halt.

A Monorail can establish a round trip or one way trip to each station, allowing for circuits that don't follow round trip. If two lines are connected, it becomes a circuit with only one train running.

The Monorail Power Transformer tile connects tube to Monorail Station in any direction. Every Monorail Station requires one. This tile has the same building and operating stats as a tube, except it requires one unit of power to operate, and it takes two turns to build instead of being instantly placed like a tube.

CHAPTER 5
Playing to Thrive

So now your colony is developing at a healthy rate. You want to move to the big time: to perform scientific research, increase morale, delegate tasks, and spy on rival colonies, just like leaders did back on good old Earth. In a word, you wish to thrive.

Information and Reports

You need information to make intelligent decisions, and there are plenty of sources in *Outpost*. Your AI will provide you with a variety of reports at any time. If you would like an overview of your planet, the Executive Summary Report is available either through your AI or through the Command Center. This information includes the total number of active mines, the current pool of available resources, and how many Agricultural Domes are producing food, among other things. There is also a Detail button under the Population entry, which will provide you with a breakdown of your population categories. (See Chapter 11 for details.)

A left-click on most buildings will give you a report on that facility. These include individual mining reports, factory production summaries, warehouse and resource storage reports, and laboratory research reports. A request for a lab report will also enable you to choose which area of research that lab should pursue.

You can reach the Help file either by right-clicking on the chrome ball in the bottom left-hand corner of your screen or by clicking on any part of the main game screen when the Tile Map is displayed. This will give you a dialogue box with a context-sensitive Help option. Context-sensitive Help will send you directly into the portion of the Help system that relates to the part of the screen you clicked on.

The *Outpost Evening Star*, your colony's newspaper, disseminates information to the colonists. Your AI then condenses news items into briefs as an Executive Summary. The newspaper is a good way for you to gauge the opinion of the person on the street; or the person in the tube, as they say on your planet.



Starting Secondary Colonies

When your original colony has reached a reasonably stable condition, extra resources will start to pile up until you've reached the conditions that allow you to start a secondary colony. You will know when this condition has been reached if you watch for a new Command Center to appear as an option in the Tile Picker window at the top center of the main game screen. If surplus conditions change and reserves drop below minimum, the Command Center option will disappear from the Tile Picker window.

The surplus resources required to start a new colony are as follows:

2 Robodiggers, 2 Robodozers, 2 Robominers, 2 Trucks

100 units each of Metals A, B, C and D
40 units each of Precious Metals A and B
50 units each of Minerals B and C
30 units each of Fusion A, B and C

70 units of Mineral A
100 units of Food

2 unemployed colonists

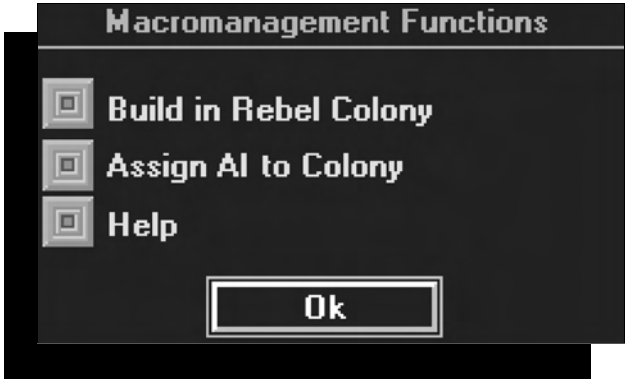
Once a new Command Center is placed on a new colony site, the items listed above are transported as a basic package used to start the new colony.

To monitor the conditions in your new colony, remember to left-click on the Command Center in the new colony to view its Executive Summary Report. Then, if you want to switch back to the control of your main colony, click on your home Command Center.

Macromanagement Through Artificial Intelligence

The chrome ball icon at the bottom left of your screen represents your Artificial Intelligence, or AI. Your AI will serve many critical functions, including warning you of impending disasters and allowing you access to a general help file. When your research in the field of computer science has developed sufficiently, you can switch from micromanagement to macromanagement through the use of multiple AI managers.

You've been overseeing every aspect of colony management since you started the game, which can be a logistical nightmare when dealing with multiple colonies. Multiple AI managers can handle some of the administrative tasks so that you won't have to worry about every clogged toilet on the planet.



Please note that when multiple AI managers are first made available to you, they may be unstable. You must do sufficient research into AI personalities to ensure that your AI managers will respond to your commands in an appropriate way. If you are dealing with an unstable AI, you may tell him to build Agricultural Domes for 200 turns, only to find after 200 turns that he's been building Communications Towers. And if your AI screws up, you can be sure that in this, as in all things, your population will blame you.

With macromanagement capability, you have the ability to specialize an individual colony's function. With the basic necessities of life and connections to a few good mines, a colony can become a power center, a recycling center, a smelting complex, a storage complex, a bedroom community, or a shopping mall. As long as these specialized colonies are connected by trucking or a good Monorail network, then you have a powerful method of management available to outwit your competition.

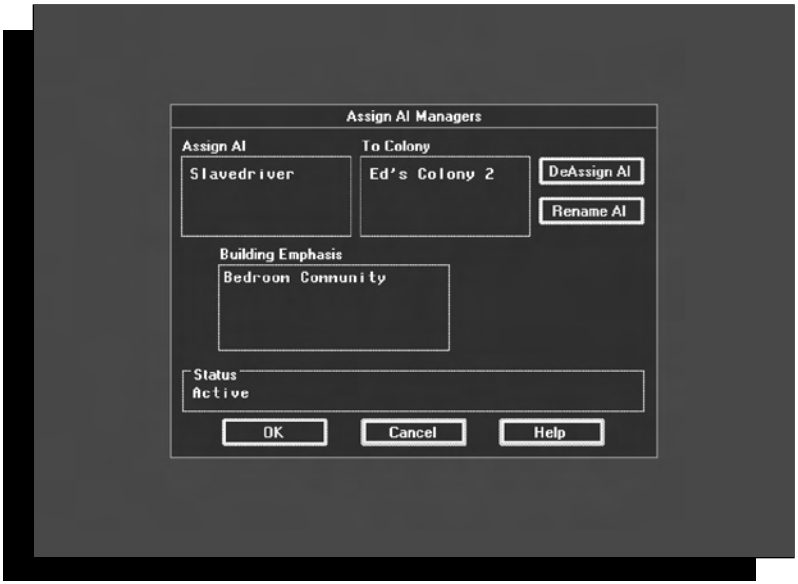
Once the multiple AI personality research has been completed, one new personality will be generated approximately every 100 turns.

Assigning Work to a New AI

Once you've started a new colony in the normal manner, and you've done the research that generates multiple AI personalities, the AI interface will become available.

When you click on the "Assign AI to Colony" button under Macromanagement, all your available AI personalities are listed by name in the "Assign AI" column. Click on an AI name, then choose a colony name from the "To Colony" column.

Now you want to tell the AI you've assigned to the colony how you want the building program managed. This is done by selecting one of the options from the "Building Emphasis" column, such as Agricultural Center or Storage Complex. If you choose the Deassign option, the AI assigned to that colony will halt any current building program there and wait for further instructions, conserving resources in the meantime.



If an AI personality assigned to a colony turns out to be unstable, you can Deassign it. Once you have done the research to solve AI Personality Problems, all AI's will be updated.

MORALE

In *Outpost*, as in life, the morale of the population is dependent on many factors. Significant rises in morale mean you're doing a good job; they lead to a higher birth rate, a lower death rate, and increased production. Drops in morale mean you're a failure as a leader; they result in a lower birth rate, a higher death rate, decreased production, and colonist defections to the rebel colony. Of course, if your colony's morale soars, rebels will defect to you. It's that kind of capricious behavior on the part of the colonists that makes your political life uncertain, and makes the morale model too complicated to explain.

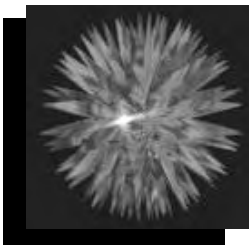
When trying to determine how your population will react, think how you would feel in a given situation. If, for example, someone forgot to tell you to evacuate the surface during a solar flare, you might get a little grouchy. On the other hand, if your leader provided you with sophisticated Luxury Items such as whoopie cushions, your morale would rise. Okay, maybe that isn't such a good example. Play with the model. Poke it and see what happens.

Morale has a direct effect on factory production quantities, so you must try to keep it as high as possible. The best way to directly manipulate morale is through providing colonists with Luxury Items. The planet's hostility level will have an effect on morale, as will the crime rate. Technological advances will also have a positive effect, so perform scientific research and bulldoze old factories to make way for new, improved factories. And whatever you do, don't make the mistake a certain 1980s presidential candidate made and assume you can get away with anything. They're out there. They're watching you. And they know every move you make.

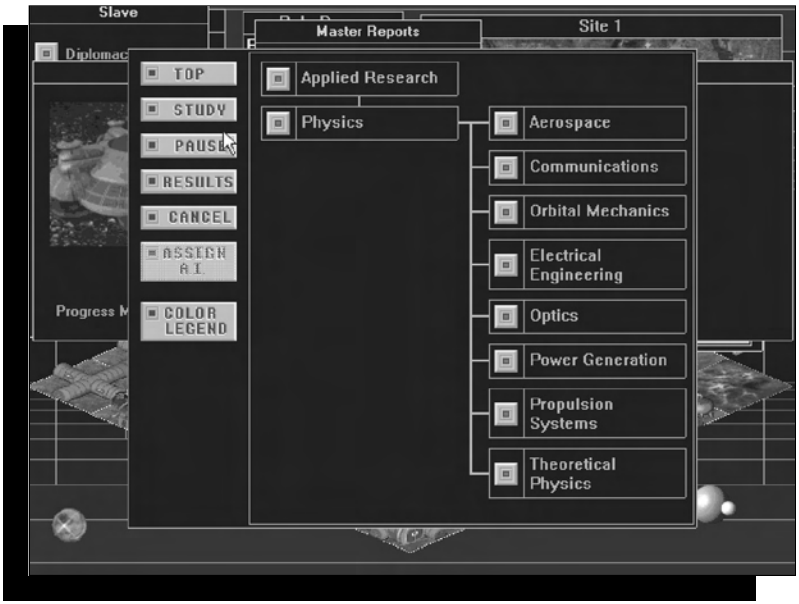
Tiles enhancing morale are: AgriDome, DIRT Facility, Nanotechnology Facility, SPEW Facility, Terraforming Facility, Commercial Structure, Park/Reservoir, Recreational Facility, Red Light District, and University. Tiles detrimental to morale are: Tokamak Containment, Hostile Police Station, and Hot Lab. The next chapter discusses morale in more depth.

RESEARCH AND LABS

Research is a means to an end, and should be pursued with vigor. One measure of victory is establishment of a space program for your colony, and this cannot be achieved without a lot of research in every field. You must also do research to engage in terraforming, improve the quality of life for your colonists, and increase their morale.



Scientific research is the key to your continued survival and the advancement of your civilization. A lot of scientists think they're too good to work in the SPEW. You should put them to work doing research in active labs as quickly as possible, to keep their morale high. Just as their morale is affected by their positions on your colony, the rate of research progress will be affected by your colony's overall morale.

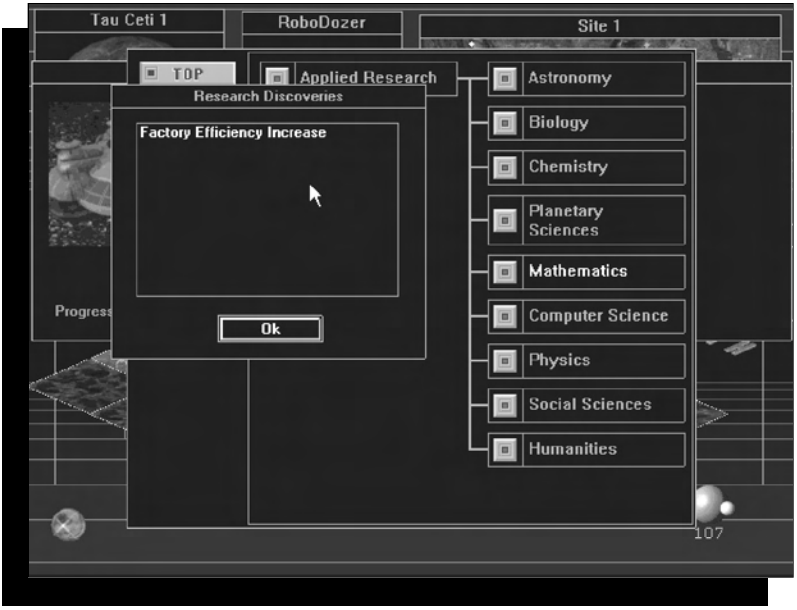


Deciding what to research in the Physics discipline.

When you click on an active lab, you'll get a lab report. This report will tell you of any operating problems the lab might have, what its current line of research is, and how much progress has been made. The report will also give you the opportunity to assign the lab to a research area.



A fully-stocked and operating research lab.



Your research has paid off. The major topics you can research are listed.

Basic Research will accelerate all current research after about 100 turns. AIs assigned to Basic Research labs do not affect the rate of progress. AIs can, however, make a difference when assigned to specific Applied Research.

When you have completed a given area of Applied Research, the result benefits the colony. Some areas of research were mastered on Earth, but because you brought only the basic necessities of life with you on the starship, technology must be reestablished or subjects rethought from your new planetary perspective. The number of turns required to make progress in Applied Research varies, and can be positively affected by the presence of an AI.

TERRAFORMING

Terraforming is the process of making an Earth-type environment on another world. Obviously, if you could manipulate the climate of your new home in such a way as to make it more like your old home, that would be a good thing. Your colonists would certainly like being able to breathe the air, and morale would go up accordingly. You can't just start terraforming, however. You'll have to do extensive research, and even then some planets just aren't appropriate for transformation into replicas of good old Earth. Mars-type planets are the likeliest candidates, a fact which should influence your choice of a planet destination if you wish to engage in terraforming.



CHAPTER 6 Game Mechanics and Strategies

You've managed to survive on your new planet, and you're even thriving. Now you'd like to develop some subtlety to your play, perhaps delve a bit deeper into *Outpost*'s model and gain insights into this complex and involving strategy simulation. Or maybe you'd just like to know how to cheat. Either way, this chapter offers tiny glimpses into certain aspects of the game. If you don't want to know, read no further.

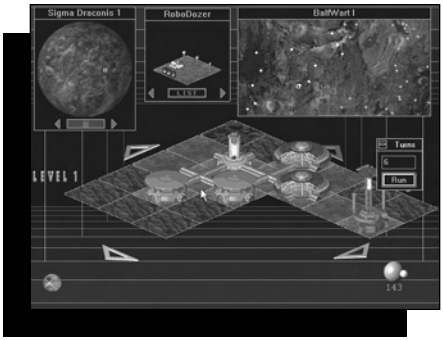
MORALE

In an attempt to maintain a realistic feel to *Outpost*, we've made the people as fickle and capricious as possible. As you are the leader of the colony, you bear the brunt when morale is low. The good news is that morale in your new home is like morale here on Earth. If you're an effective politician, you can manipulate it to your benefit.

You must always try to keep the morale of your population as high as possible. Morale has a direct effect on factory production, population production, the death rate, research, and the defection rate. The most effective way to manipulate morale is to provide the colonists with Luxury Items. The more Luxury Items your colonists have, the happier they are.

Police have an effect on morale. You can define the attitude of the police yourself. Are they hostile toward the population? Then morale will be affected negatively. But hostile police also reduce the crime rate significantly, which affects morale in a positive way. Benevolent police, while impacting morale positively, don't have much of an effect on the crime rate.

A Red Light District has an effect on morale as well. This is an unusual structure, because you can place it on the Tile Map, or it can generate spontaneously because of a high crime rate. The Red Light District increases morale and the birth rate, but draws two luxury units per turn from the storage area which might otherwise have been distributed to the population. If the crime rate remains high, more and more of your residential areas will turn into Red Light Districts. You can reduce the number of Red Light Districts by building more Police Stations near trouble areas.



Double your pleasure, as morale soars from two Red Light Districts.

Humanoid robot workers increase the morale level. Your population is composed mostly of scientists, and they feel they are overqualified for factory work. They want to work in research labs, but someone must work in the factories. If you can provide robot workers for factories, freeing the colonists to work in research facilities, you'll affect morale in a positive way.

TRADE

Let's say that the rebel colony has managed to thrive since you landed. You may recall that they stole personnel and supplies from the starship. Now perhaps you'd like to bury the hatchet and establish trade with them for mutual benefit. When you initiate diplomatic relations with the rebel colony, your trade partner will build a Trade Mission in their colony for you. This building, which has both a surface and an underground level, costs you nothing in supplies, and requires one staff member from your own colony. As soon as the Trade Mission is built, you can engage in unlimited free trade with that colony. Legally, this is all you can do with it.

Trade relies on a barter system. Once diplomatic contact and a trade agreement have been established with the assistance of your artificially intelligent assistant, you will make an offer to trade something of yours. Your trade partner will offer something of theirs in return. You can trade surplus resources, people, and assets (such as robots you have produced in your factories).

The "comparative advantage theory" states that a country should produce and sell to other countries the products it produces most efficiently and effectively, and should buy from other countries those products it can't produce as efficiently or effectively. On another planet, trade between colonies, which act as countries, allows you to apply this theory for mutual survival.

The value of your trade items is affected by the current exchange rate. The initial exchange rate is based on the difficulty level you selected at the beginning of the game, but it will fluctuate based on your previous trading successes or failures, and surplus resource levels in each trading colony.

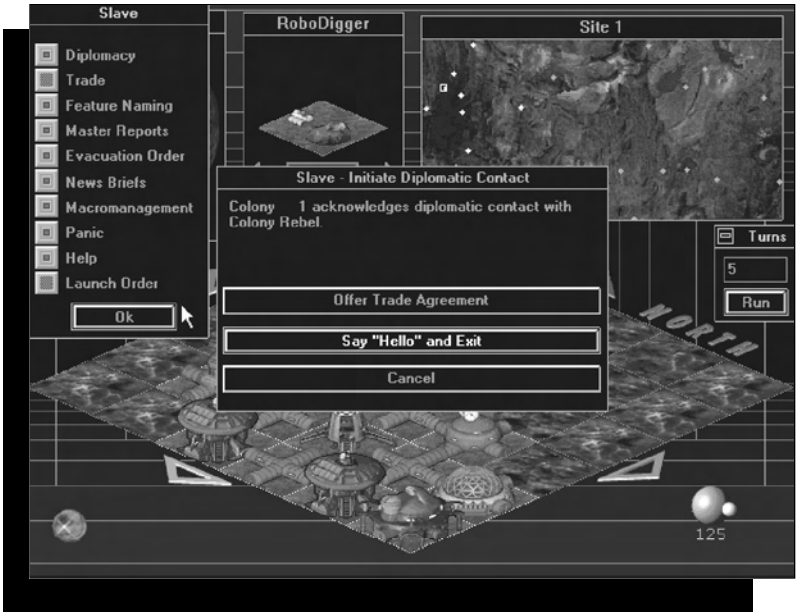
If you have a surplus in a commodity another colony requires, you can dominate the trading session, demand a high price for your resources, and eventually gain a surplus balance of trade. Unfortunately, the same is true in the other direction; if this happens, you will have a deficit balance. Avoid a deficit and your trading posture will be better, allowing you to dominate the negotiations.

Trade Diplomacy

Your handy AI helper monitors conditions in your colony. When your colony seems stable enough to begin interacting with the rebels or another colony, the Diplomacy button will allow you to initiate diplomatic relations.

When you left-click on the Diplomacy button, your AI helper will ask which colony you'd like to contact to establish diplomatic relations. Select a colony name from the menu. The current Diplomatic Status is also shown at this point:

"No Diplomatic Contact" means that you have either made no attempt to establish contact with the target colony, or that contact has been broken and enough time has passed so that you can try again.



"Trade Agreement" means that you are currently in a position to trade with the target colony because you have already established a trade agreement with them.

"Hostile" means that the rebel colony remembers how devious you were the last time they had a trade agreement with you, and you took advantage of them by building extra structures to undermine the economy in their colony.

Depending on the difficulty level of your game, you have a reasonable chance of establishing diplomatic relations with the other colony unless they've had previous unpleasant dealings with you. As mentioned previously, if you had a trade agreement with them, then built several structures in their colony, they may have kicked you out of their colony and broken off diplomatic relations. In this case, if you try to re-establish relations too soon, they will refuse your devious diplomatic approaches.

If you receive a message that "diplomatic communication is not available at this time," it means that your colony resources are not currently in a position where you can safely trade with someone else. It can also mean that something horrible happened to the rebel colony.

If you successfully establish diplomatic contact, you can offer them a trade agreement, silently break off communications, or say "hello" and break off communications. If you break off communications here, you will leave them feeling confused. If you offer them a trade agreement, they have the option of accepting or rejecting it, based on their feelings toward you. If they accept your offer of a trade agreement, they will build a Trade Mission in their colony for you, which will take about two turns, assuming they have no problem with the necessary resources. When the Trade Mission is finished, you may trade with them by left-clicking on the Trade button in the AI interface.

When you select "Initiate Trade Session," the AI will ask you, through the trade interface, to identify which of your colonies is going to trade resources ("Trade for") and which colony will be your victim ("Trade with"). At this point, you can also check your Diplomatic Status with that colony.

If you have a trade agreement with the target colony, you can Offer Trade. Select the commodity you wish to trade. You will be shown what amount of that commodity is available for trade, then asked what quantity you wish to trade. When this offer is made, your trading partner will probably make a counteroffer. This offer and counteroffer process of negotiation will continue until someone is satisfied with the trade or gives up in disgust.

When you accept your trading partner's offer, the trade session will come to an end. Remember that transportation by Truck or Monorail is not required to move the traded commodities between the two colonies.

There may be times when the counteroffers from your trading partners seem odd. You should keep in mind that a number of factors determine the value of the items being traded, such as the current exchange rate, your chosen level of game difficulty, trade advantage, and research into the social sciences related to trade negotiation (specifically, these are: Social Sciences—-Economics, Social Sciences—-Political Science, Social Sciences—-Psychology—-Trade Negotiation).

TRANSFERS

Another aspect of the trade interface allows you to transfer resources directly between the colonies you own. This transfer of goods does not involve bargaining. You can't transfer items between one of your colonies and the

rebel colony unless it has been abandoned and you have assumed ownership. If you choose one of your own colonies to trade with when you enter the trade interface, you will automatically enter the transfer interface instead. The transfer interface can also be reached by right-clicking on specific buildings and selecting Transfer from the menu.

Accessing the transfer interface from a specific building shows you which assets are available at that location, as well as the quantity. Click on the asset you wish to transfer, then use the up and down arrows to select the quantity you wish to move. When you click on the OK button, you will enter the Transit Information interface so that you can assign Trucks or Monorails to move the assets you've chosen to a new location.

Accessing the transfer interface from the trade interface shows you which of your colony assets are available to be moved to a different colony. The rest of the interface works the same way as a building to building transfer within your colony (described above).

The Rebel Colony

Activating an Abandoned Rebel Colony

When the rebel colony has been abandoned, the dark blue triangle changes into a light blue dot, just like the one that marks your home colony. You can assume ownership of the rebel colony by left-clicking on the Site Map where the rebel colony is located, then left-clicking on the rebel Command Center. You will then be able to see the rebel colony executive report. When multiple colonies are available, clicking on any Command Center makes that the active colony. Until another colony's Command Center is selected, all reports you see will relate to the active colony only.

When you assume the operation of a rebel colony, you will have the capability of bulldozing their structures and rebuilding the colony, or starting to build new structures right away using standard building methods.

A right-click on any friendly Command Center will bring up the Move Colonists interface. This little box asks for the number of colonists you'd like to move, which colony you'd like to move them from, and which colony you'd like to move them to. After you fill in your responses, run a turn to move that portion of your population.

Defections

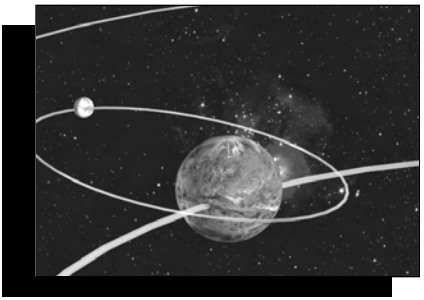
Defections will occur when morale in a colony drops below 200 for an extended period of time. Your colonists will defect to the rebel colony at an increasing rate for every turn in which morale is below 200. If morale hits zero, the colony will empty out quickly.

The reverse of this is also true. If your colony's morale rises above 800 for a prolonged period, rebel colonists will defect to your colony. The rate of immigration will increase as your morale gets closer to 1,000. Naturally, all of these immigrants will have to be housed and fed, just like your regular colonists; otherwise morale will start dropping.

Defections can result in a "ghost town" ending for your colony, as well as the ability to assume ownership of the abandoned rebel colony. Both possibilities are described elsewhere.

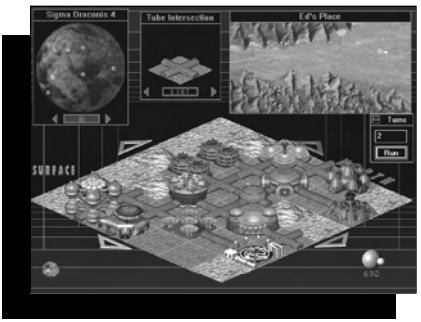
Planetary Resources

You began mining as soon as the starship touched down, but the digging depth on this hostile planet is limited, and the mines play out quickly. What should you do? Build a SPEW facility as quickly as possible. SPEWs will provide you with the miracle element MPG (Multi-Purpose Goo), which you can use as a substitute for other resources.



Space Program

If you want to develop your own space program, you'll have to do extensive research in the areas of astrophysics, extraterrestrial mining, celestial mechanics, standard propulsion spacecraft, mathematics, wind tunnels, and spacecraft testing and analysis. Then, when your research has been completed, you must build the technological elements that you've discovered. When you're ready to launch, you can do so at that time and thus end the game, or you can hold off launch and continue to play. Launching the starship will be your last official act as commander of the colony.



Technological Advancement

Your factories work fine, but the Tile Picker has just offered a new factory type. Should you replace your factories with these newer ones? When you have a chance to advance the technological level of a factory, bulldoze the old factory and build a new one to produce the same items. The newer factory

will work more efficiently and have fewer breakdowns, and you can use the old materials to make Multi-Purpose Goo. Your workers will produce more because they appreciate the new facility. When raw resources are low, or if you want to focus your available resources into certain areas for a few turns, you can also shut down production at some of your lower-priority facilities.

CHAPTER 7 Common Problems... Simple Solutions

At the Outset

Seed Factory and Robominer Placement

Use the Elevation Map on the Site Map window to choose a landing area. The clear terrain is marked in black, so the best locations are black with red dots (which mark potential mines identified from orbit).

When you place the Seed Factory, a red "X" will appear on the diamond-shaped Tile Map. Run a turn by left-clicking on the small planet in the lower right-hand corner of the screen. The turn number will appear below the planet. When you see the Seed Lander on the map (in place of the red "X"), you can start running turns to get the Seed Factory started. Construction tiles and pre-fabricated tubes will appear.

While the Seed Factory is building itself, place a robominer from the Tile Picker window on one of the red mining beacons nearby. If you don't see a mining beacon, scroll to that position on the map by clicking on the Tile Map arrows and watch the box on the Site Map to line it up with a red dot. When you place a robominer on the red mining beacon, you will see the robot replace the beacon. It will take several turns for the first level of the mine to be dug, after which resources can be moved to the Seed Smelter.

As you run your first turns, keep using the robodozer to clear terrain around your Seed Factory. Also place a robodigger at the end of one of the tubes at the Seed Factory construction site so that it can start digging your first underground level. When the robodigger is finished digging, the robodigger on the map will be replaced with the top of an air shaft.

Building with Tubes

Tubes carry air and power from your CHAP and power facilities. For most structures, a tube connection is required to physically connect them to your existing network of buildings and tubes. Since construction also requires a tube connection on a tile adjacent to your intended building site, you may find that nothing is

available in your Tile Picker window except for robots and tubes.

After placing a tube on a bulldozed section of the diamond-shaped Tile Map, structures will then appear in the Tile Picker window if resources are available to build new structures. When your colony is just starting, tubes will not be available in the Tile Picker window until you have brought down your first Colonist Lander.

If the Tile Picker Window Is Empty

During construction of your colony, there may be times when the Tile Picker window is empty. This means that all the robots are actively assigned to tasks on the Tile Map, and that no resources are currently available to construct new buildings. Running a few turns will remedy this situation.

Early Construction

In the "Construction" section of the manual, it is suggested that you build your first few structures in this order: Agricultural Dome, CHAP, Residential Units, Storage Tanks, and Power Facility. If your morale is falling fast, you may want to build a Park/Reservoir or two to slow the fall of morale before you build a power facility (since the Seed provides power for about 150 turns).

During the first 50 turns or so, you should build SLOWLY—-allow each of your first structures to finish building before starting a new one. While structures are building, you can always bulldoze, mine, and tunnel horizontally or vertically with your robodiggers (assuming you have these robots available when you want them).

Because a SPEW facility provides resources from the sewage generated by residential units, this is also a good structure to build early on, along with a warehouse and a Robot Command facility to make use of robots built by your Seed Factory. Gradually add more mines to keep your resources flowing.

Remember that an operating SPEW will generate MPG, which will take the place of any resources you may temporarily be missing. MPG is stored at the SPEW facility and used automatically when necessary to maintain existing structures. You can check the amount of MPG you have in storage by left-clicking on the SPEW facility to get its report.

Seed Factory Collapse

Remember also that you will lose your Seed Factory units (power, smelter, robot factory) after 150 turns, so you must build structures to account for this loss if you want to maintain those functions.

Before the Seed Factory units collapse, make sure that your tube connections will be maintained between structures. Tubes are required to carry power and air, both for construction of new buildings and maintenance of those buildings. You need a constant physical connection of buildings and tubes to keep supplying power and air to all of your structures, so there must be tubes that bypass your Seed Factory units by the time the units collapse.

Using the Robots That Landed with Your Seed Factory

Your Seed Factory landed with four robots on board: a robodozer, a robominer, a robodigger, and an explorer. While the Seed Factory is building itself, these robots can be assigned to tasks on the diamond-shaped Tile Map that dominates your screen. When available, these robots are visible in the Tile Picker window at the top center of your screen.

When you first place your robots, it's wise to place a robodigger adjacent to one of the tube openings that are part of the Seed Factory complex. The robodigger will then start digging a shaft to create your first underground level.

Place a robodozer beside one of the other tube openings to prepare a building site. Place the robominer on a red mining beacon (described in the "Seed Factory and Robominer Placement" section). When you have placed all of these robots, the Tile Picker window will be empty. You must run turns to complete the current activity by those robots. As each robot completes an activity, it will reappear in the Tile Picker window for reassignment to a new task.

Explorer robots perform their function automatically. Each explorer is capable of finding new mines, assuming they have not all been discovered yet. The starship locates a large portion of a planet's potential mine sites; the geological penetrator probes discover more potential mine sites; and the explorer robots can find the mine sites that are the most difficult to locate. On the easy difficulty level, 10 explorers are sufficient to discover the remaining mine sites.

Building Robots with Your Seed Factory

Once the construction of your Seed Factory is completed, you can use it to build additional basic robots. Left-click on each of the finished units to read the report that identifies its individual function.

When you select the robot factory portion of the Seed Factory, you can start building additional robots. A text entry area on the robot factory report has a small arrow to its right. Clicking on the arrow button will pull down the robot production menu. The Seed Factory can only produce these types of robots. By selecting one of these robot types and closing the report, you have set the factory to produce one of those robots every five turns. After you've built one or more of a single robot type, you can go back to this same report and reset production to build a new robot type.

New robots must be stored in a warehouse. Usually, one warehouse is sufficient to handle robot storage for a long time, since active robots in the field require no storage. Active robots will last for 200 turns, which is the limit of their Fuel Cell capacity. You must have at least one warehouse to store the robots that your Seed Factory is building, otherwise nothing will happen. Then, to activate the robots from your warehouse, you must also build a Robot Command center (described below). Each Robot Command center can run 10 robots in the field.

Building New Robots without the Seed Factory

The Seed Factory can keep producing robots right up to the end of its lifetime, which occurs around turn 151. For this first phase of the game, Seed Factory robot production will often be sufficient for your robot needs. However, at some point you may decide to build more. A Surface Factory is required to build more robots. After turn 151, this is your only option for building new robots. Active robots have a life of 200 turns before their Fuel Cells die, so you'll start losing them after turn 200, if you haven't already lost any through accidents.

Activating New Robots with Robot Command

However they are produced, new robots need to be stored in a warehouse, from which they are available to Robot Command units. Each Robot Command facility can operate 10 robots. If you want to operate 11 robots, you will need to build a second Robot Command facility.

If a robot factory has produced robots, and a warehouse exists to store the robots, and at least one Robot Command facility exists to operate 10 of the robots, they will appear in your Tile Picker window so that you can place them on the Tile Map. If all the currently available robots are active, no robots of that type will appear in the Tile Picker window.

The radius of a Robot Command area is unlimited if you have a Communications Satellite in orbit (assuming you packed one when you left Earth). If you have no Communications Satellite, Communications

Towers must be built to extend the range of your robominers and other robots. Each Robot Command facility and each Communication Tower have a communications radius of 30 tiles.

Robodiggers and Robominers

To extend a mine shaft to a deeper level on planets where this is possible, place a robominer directly on an existing underground mine shaft. This will not affect the functioning of the existing mine.

To extend an air shaft to a deeper level on planets where this is possible, place a robodigger directly on an existing underground air shaft.

When Robodiggers Dig

On the surface of the planet, a robodigger can dig a new level only when it starts next to a surface tube connecting it to its home colony. Because the robodigger constructs the air shaft for the underground levels, the tube connection is required to carry air and power to underground structures.

When People Are Dying Too Fast after Landing

It is often wise to leave your colonists in orbit for the first 20 turns while your Seed Factory and its robots are doing their jobs to get the colony started. This number will vary somewhat depending on how much life support and food you brought with you on the starship (you packed it at the Ship Configuration screen before leaving on the trip to the new planet).

After you bring your first Colonist Lander down to the surface of the planet, you have fewer than 20 turns in which to make sure that a CHAP facility is built. Some people may die in the meantime through accidents or old age, depending on the hostility level of the planet you've chosen.

When Buildings Go Idle

Buildings go idle because of lack of resources, power, or people. In the case of laboratories, they can also go idle if they are not assigned a specific line of research.

If a particular structure's report shows its status as "idle," you can find out what resources it needs by clicking on the Needs button at the bottom of the report. (In the case of the CHAP facility, the CHAP facility report is reached through the Executive Summary Report buttons.)

CHAP facilities and power facilities are at the top of the priority list when resources are scarce, allowing you time to react to the resource shortage. Bulldoze unnecessary structures, particularly if you have an operational SPEW facility to recycle the bulldozed building materials. Make sure you have operating mines, an operating smelter, and sufficient space in your Storage Tanks to handle the processed resources coming into your colony.

If buildings are idle only because of a lack of people to operate them, you can bulldoze unnecessary structures to free up employed workers, or wait for your population to grow and age so that you have a larger available workforce. They will all age as you run each turn.

Population Distribution

In the Executive Summary Report, you'll find a Details button in the population section. Clicking on this button shows you the current breakdown of your population by category: infant, student, worker, scientist, or retired.

You will witness population explosions on occasion. This will be apparent when you see more infants and/or students than workers or scientists. workers and scientists are required to operate your facilities, so this is a limiting factor to your colony expansion. Only time will age your young people to the point where they become workers and scientists. Universities help to shift the student and worker groups into the scientist group by bringing up the general educational level of the population.

It is not possible to assign the adult population to specific tasks. One of the limits on building new structures is whether enough colonists are available to build them and staff them. If they are available, they will be assigned to those structures automatically when you build them.

If the worker population drops below zero because of starvation, any students will move into the worker population until the crisis has passed (usually when the students get old enough to become permanent workers). After the permanent worker group is above one again, the student worker group will return to the student category to finish their studies. It's just a survival thing where they try to keep the CHAP, one mine, one power supply, and an AgriDome operating.

Why People Die

People die naturally from old age or by accident. These deaths will occur no matter what you do. Deaths also occur by starvation or lack of air, and these are the deaths you can do something about.

When you receive a death message after running a turn, it may not mean you're doing anything wrong. Check to make sure that you have enough food being produced by your agricultural domes (one unit feeds 10 people), and that your structures are getting enough air. If you have handled those requirements, then you know their deaths are due to old age or accident.

After Turn 60, deaths by old age or accident are reduced because the first part of the colony has been built, the weakest people who survived the trip have already died in the hostile environment, and construction accidents are fewer because the workers have learned safer techniques.

Resource Movement from Mines to Colony Smelters

Automatic Trucking

Mined ores are stored at each mine shaft until a full load is ready to be moved by the Truck assigned to that mine. When built, each mine has one Truck to automatically move ores to the Seed Factory smelter or to the high-capacity smelter you can build yourself. Storage Tanks are also required to receive the smelted resources and make them available to the colony. You won't see these Trucks operating, but they're on the job.

Trucks

Automatic Trucking

Trucks can be produced by your Surface Factories to move resources between the mines and the smelters. These Trucks are not affected by the Robot Command facility limit of 10 robots each. Internally, a Truck is created to serve each mine when new mines are built. Any Trucks you build will remain in your Warehouses until they're needed, at which time they will be used automatically. On the Easy difficulty setting, it is possible to get through most or all of a game using only a few of these Trucks.

CHAPTER 8 Advanced Strategies

One CHAP Is Enough

A successful colony needs only one CHAP to provide sufficient air, so long as the interconnecting tubes actually link all structures (tiles).

Terrain

The harshness of the terrain plays an important role in the orderly construction of your colony. If the colony is surrounded by hostile, or worse, impassable terrain, development will be rendered awkward and impracticable to the point where that particular game may need to be abandoned.

After landing on a planet, build the colony on and adjacent to as benign a terrain mix as possible. That way, a dozer can do its job on such terrain in one turn, rather than the three to four it might take for hostile terrain. Minimizing the number of turns to accomplish important tasks should be a number one priority of any colony administrator.

Build a University Early

Educated colonists become scientists, able to perform the advanced functions required by the colony to succeed. A University, which lasts only about 100 turns, goes a long way to increasing the educational level of colonists for this purpose.

Monitor Resources

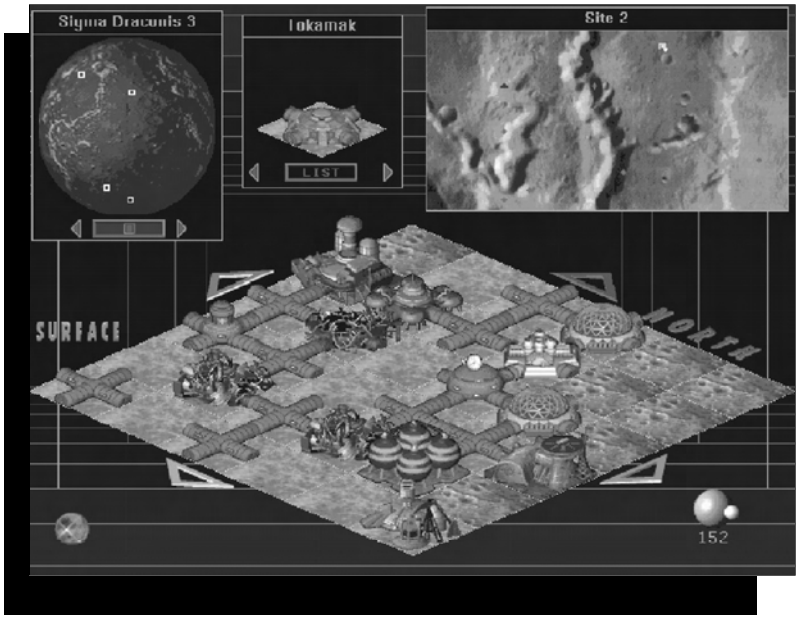
Nothing is more discouraging than having an entire colony grind to a halt. This can result from overextending your resources, power, or people. Become accustomed to carefully balancing the need to better the colony through construction and maintaining an orderly resource structure. Also, resist the urge to go "whole hog" even when the Executive Summary Report seems to show unlimited resources. Analyze your resources, and prosper!

Research Your Brains Out

There is no way to overemphasize the need for complete and absolute research in every major research tree permitted in the Applied Sciences. Enhanced structures, facilities, morale, and all other matters that affect the colony cannot be built or improved upon until the necessary research has been completed. If you get bogged down by the bewildering array of research possibilities, simply use the handy chart in the appendices to give you a clue to the paths available.

Prepare for Disaster

Disaster in *Outpost* can take many forms. Some tiles have specific turn limits (not to be confused with term limits). Do not be caught with your tiles down. If a structure is to be demolished, start construction on another



to pick up the slack. Probably the most dramatic attrition disaster is the total destruction of the Seed Complex around Turn 150. Plan ahead, and make sure that life-giving tubes connect what you have built around the complex, in preparation for the destruction.

CHAPTER 9 Quick Start and Comprehensive Tutorial

If you're having trouble getting your first colony started, start a new game, and follow the steps in this tutorial to build a stable foundation for a colony on a Mars class planet. In this way, you can develop a relatively steadfast colony that will give you a springboard to future success. At the same time, you will be actually playing the game, and gaining familiarity with the game controls.

Since you will be playing a dynamic simulation game, the numbers given in the reports in this tutorial may vary when compared with the numbers you get when playing the actual game. Deaths and other results will also vary , so the numbers given in this tutorial should be taken as a guideline only.

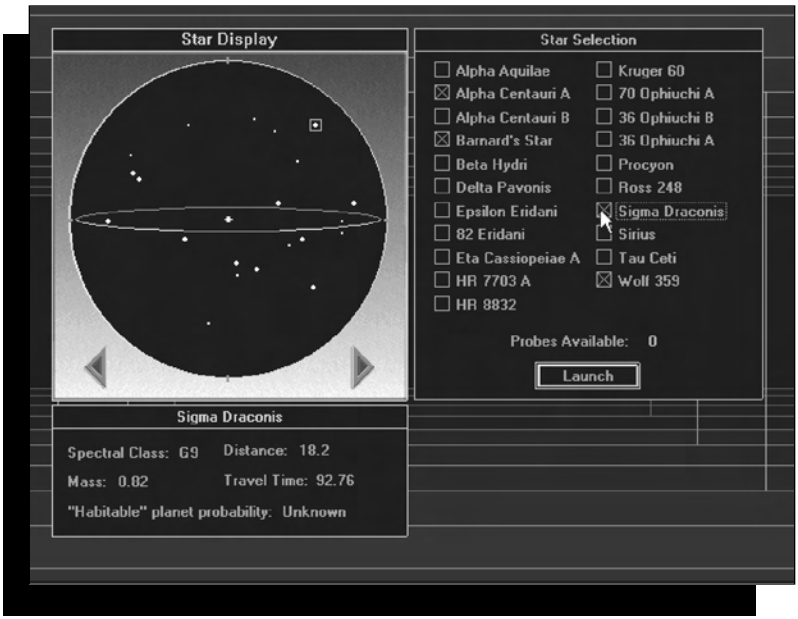
The saved *Outpost* game, **TUTOR.OPS**, is a generic example of a burgeoning colony that can be generated by following the steps in this tutorial. Again, because of the dynamics of the simulation, the numbers in the saved game may be different each time you follow the tutorial steps. If you wish, you can also load this saved game and play starting from Turn 81.

Also keep in mind that there are differences between the CD and Floppy versions of *Outpost*. If you see a reference to a sound in this tutorial that you aren't hearing in the Floppy version of the game, that's because it isn't there.

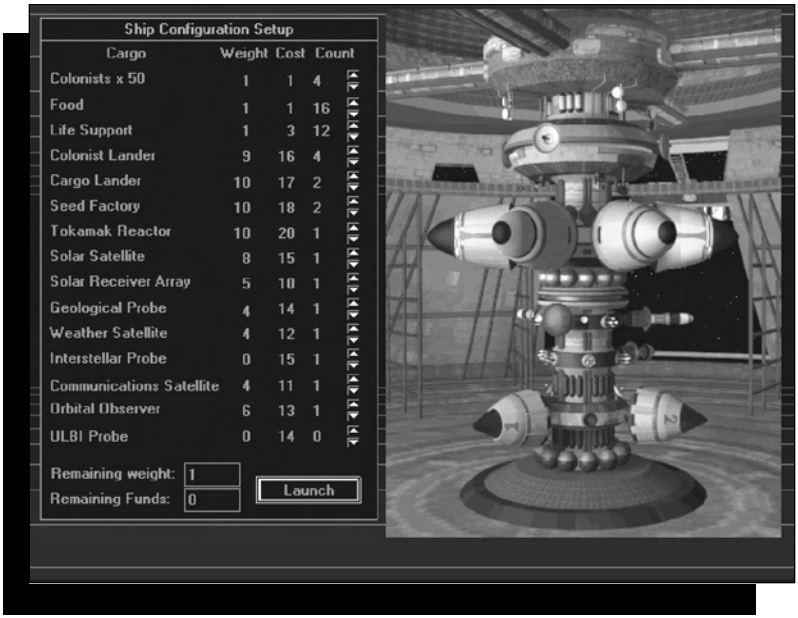
Another way to use the tutorial is to simply read it carefully, without playing the game simultaneously. This will give the new player a broad overview of what can be expected in the way of dynamic game events and the specifics of game control and mechanics. After reading the tutorial, the player can then jump right in and play a new game based on the concepts learned, referring back to the tutorial where needed.

PREPARATION FOR YOUR JOURNEY

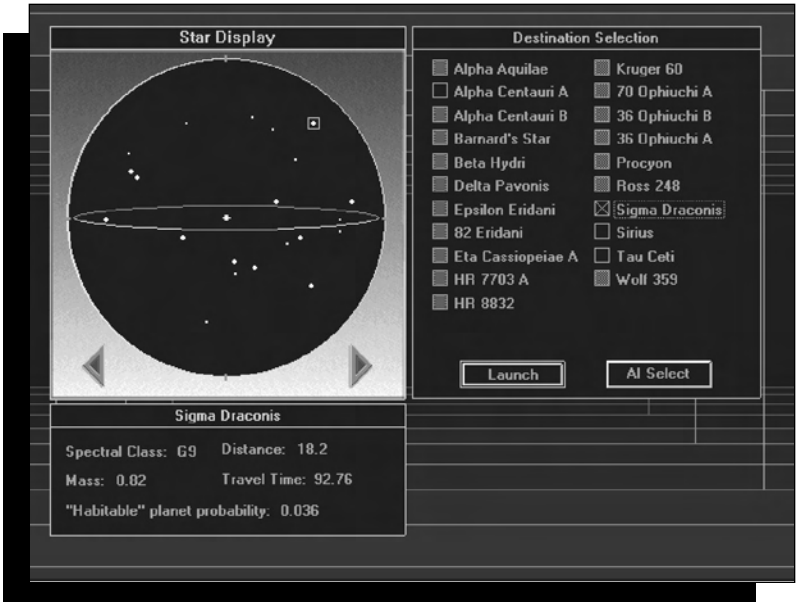
This game assumes a chosen difficulty level of Easy with Auto Trucking on. The first probes (VLBI) were targeted on Alpha Centauri A, Barnard's Star, Sigma Draconis, and Wolf 359.



Probe Targeting



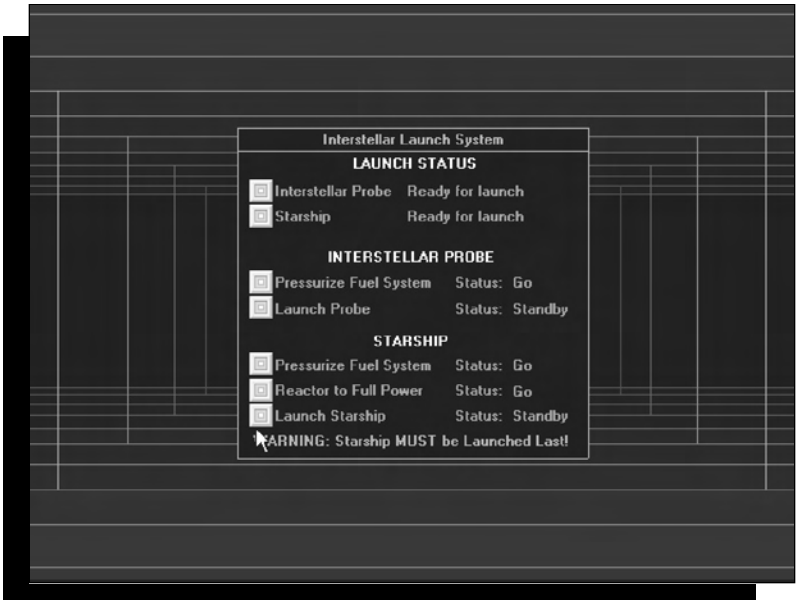
Standard packing selections for the long trip ahead.



VLBI probe data regarding star system Sigma Draconis

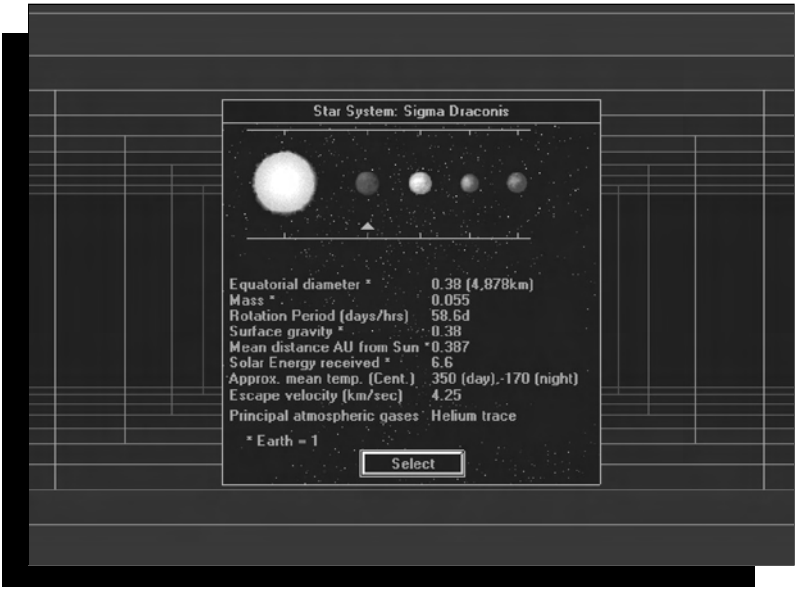
Destination Selection - Select Sigma Draconis and press the Launch button.

Interstellar Launch System - Press the Interstellar Probe button. As the other buttons light up, press them in sequence. Do the same with the Starship button sequence. In the CD version, when you click on two of the Launch



Starship buttons, the sounds you hear are portions of a NASA recording made of the communications between the ground and capsule during the launch of Freedom 7.

Interstellar probe data on the first planet in the Sigma Draconis star system.



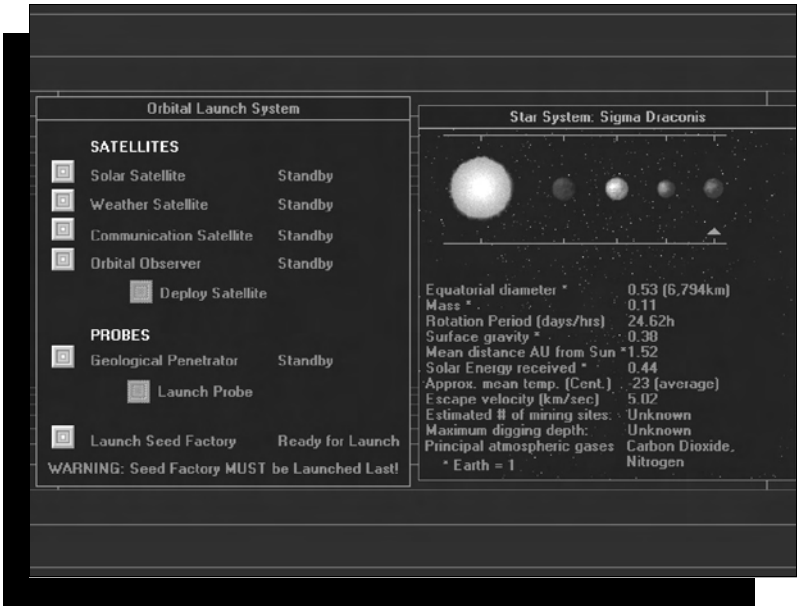
(Clicking on each planet in the display gives you the statistics on that planet. When you're ready to select a planet, click on the Select button at the bottom of the display.)

(As a reference point for these number entries, Earth = 1.0)
Equatorial Diameter: 0.53 (6,794 km)
Mass: 0.11
Rotation Period: 24.62 hours
Surface Gravity: 0.38
Mean Distance (in Astronomical Units, AU) from the primary star: 1.52
Solar Energy Received: 0.44
Approximate Mean Temperature (Centigrade): -23 (average)
Escape Velocity (km/second): 5.02
Principal atmospheric gases: Carbon Dioxide, Nitrogen

Of the available planets, the fourth planet looks best because its equatorial diameter is about half that of Earth's diameter, the rotation period is about the same as Earth's, the solar energy received by the planet is good enough to get some use out of the solar power satellite packed for the trip, there is a trace of an atmosphere, and the approximate mean temperature is the mildest of the planets in the Sigma Draconis system.

On Arrival at the New Planet

As you enter orbit around the chosen planet, the Orbital Launch System appears. Additional entries on the planet information section refer to "Estimated number of mining sites: Unknown," and "Maximum digging depth: Unknown." Launching the geological probe to fill in that information shows you detailed information on mining sites and digging depths.



Launch all other satellites, finishing with the launch of the Seed Factory.

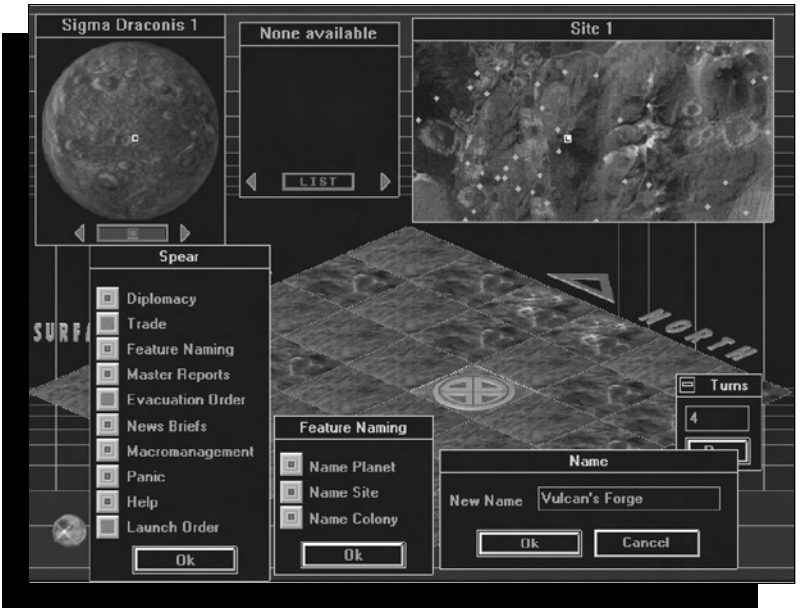
The planet display window appears, identifying the planet as Sigma Draconis 4. To have a stationary view of the planet, click on the center button at the bottom of the window, then look at different landing sites by clicking on the little squares on the planet's surface (you can view a maximum of four landing sites at once).

To evaluate each landing Site Map, right-click on the Site Map, then choose Tools and Elevation Map from the menu. Black areas = Clear terrain, Red areas = Rough terrain, Green areas = Hostile terrain, Yellow-Green area = Impassable terrain, Bright Red diamonds indicate potential mining locations.

If you don't see enough black terrain on the Site Map, right-click on the Site Map, then choose System and Close to close that Site Map. When you find a Site Map you

like, close the others, then left-click on a black area near one or more red diamonds. The large, diamond-shaped Tile Map should show a lot of clear terrain, which you can check by right-clicking on the Tile Map and reading the terrain type message. If you're near a mine, you may see the red mining beacon on the Tile Map.

Left-click on the chrome ball AI icon in the lower left corner of the game screen. Press the Feature Naming button, then press the Name Site button. Enter the name you'd like for your Site Map, such as "Vulcan's Forge" in the sample game, and click OK. Do the same for Name Colony later in the game once the colony has gotten started.



Place the Seed Factory by left-clicking on it in the top center Tile Picker window, moving the clear diamond cursor to a location on the Tile Map that's at least two spaces away from a red mining beacon, and left-clicking the cursor on that location. If you're successful, a landing marker appears.

Run one turn by left-clicking on the planet/moon icon in the lower right hand corner of the screen. Turn "001" will appear under this "completed turn" planet icon.

At this point, it's a good idea to Save the game, just in case you want to start over again without going all the way back to the probe launching and ship configuration screens.

On the Planet

You should now see the Seed Lander on the Tile Map in place of the landing marker. The Seed Lander is surrounded by four tube sections and four "under construction" tiles (buildings). A left-click on each construction tile tells you the building type, status, and the number of turns until the structure is completed. The seed units will finish building in this order: Power, Smelter, Robot Factory, Command Facility.

Before running a second turn, place a robominer on a mining beacon (left-click on the Tile Map scrolling arrows to move around, or hold down the Shift key while you click on a scrolling arrow to jump five spaces in your chosen direction).

Before you run a second turn, place a robodozer at a tube opening and a robodigger at another tube opening. The empty Tile Picker window now says, "None Available." Run one turn, and the robodozer will reappear in the Tile Picker window because it is finished bulldozing the terrain tile where you had it assigned.

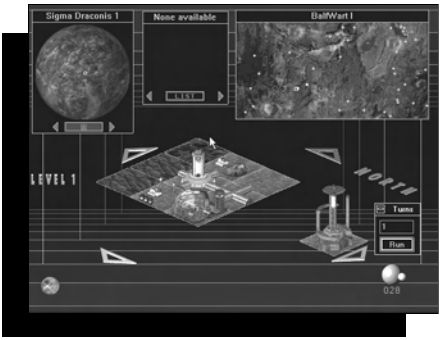
The idea is to keep your robodozers dozing, your robodiggers digging, and your robominers mining, as you run turns to complete new structures. Place the robodozer next to another tube opening and run another turn. Place the dozer again next to some terrain that has already been bulldozed and run another turn.

On Turn 4, the completed seed power unit will appear in place of its construction tile. A left-click on the power unit will show you its report: staff status is full because it's automated, the product is power, and the production level is 50 units per turn. The Resources button is shaded out so that you can't push it because this facility is automated and draws no resources.

As you build your Seed Factory, you may notice a dark blue triangle on the Site Map. This is the rebel colony and you will only see it if you have an Orbital Observer satellite in orbit.

Place a dozer, run a turn. Follow this pattern two more times and the air shaft cap will appear where the robodigger was working. The robodigger is available again, so it appears back in the Tile Picker window.

At Turn 8, if you left-click on the air shaft cap, you will descend to your first underground (UG) level. You can see which level you're on by the level indicator at the left of

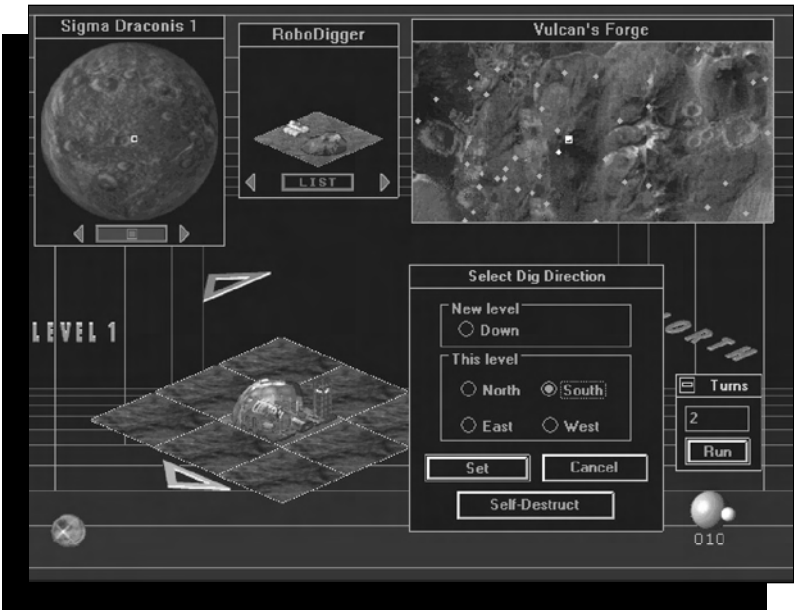


A whole new level to develop, Underground 1.

the Tile Map, which now says "Level 1." The lower portion of the air shaft and the underground terrain tiles immediately surrounding it are visible. The extra tiles are visible because the robodigger excavated a one tile area around the base of the air shaft to allow for tube connections. No terrain tiles are visible around the mine shaft because the robominer builds an enclosed shaft that has no need of tube connections.

This might be a good time to place your robodigger on an air shaft to create a second underground level. If you do this while underground structures are all connected to the air shaft, you would disconnect the air and power underground for several turns, which could be very distressing to your colonists.

Place a robodozer beside an air shaft tube connector opening. Place a robodigger on an underground terrain tile between the air shaft and the invisible terrain that surrounds it. When you place the robodigger, you get a control interface:



Choose a direction toward one of the invisible areas next to the location where you've placed the robodigger, then click on Set. The robodigger appears and starts working. Also place a robominer on the mine shaft that is visible at this level (scroll to it with the arrows if necessary).

Run one turn and you'll be on Turn 9. You'll see that the robodigger's UG work area has appeared. Run one turn and place a robodozer, then run two turns, place a robodozer beside an already dozed tile, and run two more turns. Repeat this step once more. (If you wish, you can run multiple turns by pressing the F5 key, entering the number of turns you'd like to run, and clicking on Run.)

On Turn 16, after your first mine shaft reappears, place the Robominer on another mine beacon.

The Seed Complex, which includes the Command Center, is completed. Left-click on the Seed Robot Factory to see this report:



Since no products have been set, the production level is at zero, but at least it is fully automated and doesn't need people to run. Functionally, it is operational (otherwise it would say "idle"), and there is no chance of breakdown once you're up and running.

Clicking on Master produces the Master Factory Report for the colony, and selecting Needs gives you the Seed Factory Structure Summary. Cancel would exit the report, and OK would set production and also exit the report.

Left-click on the down arrow beside the Product entry, then select Dozer from among the options listed (Digger Dozer Miner Pause Truck), and click on OK to set production and exit this report. Run one turn.

At Turn 17, the Cargo Lander, Colonist Lander, Robodigger, and Robodozer are now all available in the Tile Picker window. Select Cargo Lander and place within five spaces of seed on terrain that is out of the way (diagonal to the seed smelter, for example) and that has not been bulldozed yet (it's okay to land on bulldozed terrain, but it's not necessary). The landing marker appears.

Choose the Colonist Landers and place them the same way. Run one turn. In the CD version, you see the Colonist Lander leave the starship (if the CD animations are turned on) and hear Neil Armstrong's "small step" speech from the Apollo 11 moon landing. This is where you'll usually get a message that says "Colony 1 has lost 1 colonist(s)," but this may vary.

The List button on the Tile Picker window can be selected to switch from the graphics mode of the Tile Picker to the text list of available structures and robots.

The Tile Picker only shows currently available robots and structures that can be built with the currently available numbers of people, power, and smelted resources.

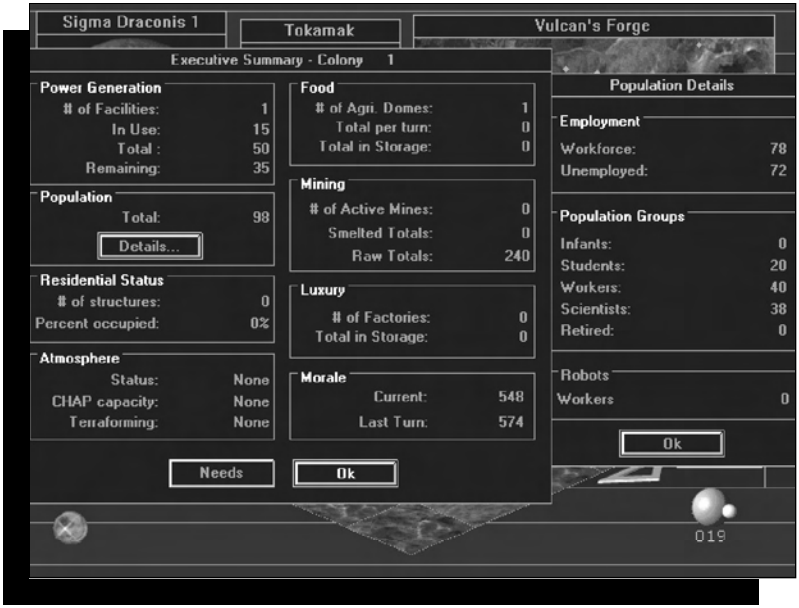
By Turn 18, you can choose an Agricultural Dome and place it beside a tube opening on a bulldozed tile. A construction tile appears on the map. A left-click on the construction tile shows five turns are needed to complete it. If you push the report's Resources button, you'll see that the "Resources Needed" list entries are all green and available. Red entries would indicate resources currently unavailable on that turn. Click OK to close the report.

Place a tube intersection between any structure or tube and the next bulldozed terrain tile you'd like to build on. Place a CHAP on bulldozed terrain at the tube opening adjacent. Run one turn.

The "Colony 1 has lost 1 colonist(s)" message at this point is a death due to old age and the stress of living on a new planet.

At Turn 19, click on the Command tile to get the Executive Summary Report. (The CHAP also shows this report when it is built.) Power, Population, Residences, Atmosphere, Food, Mining, Luxury, and Morale levels are shown in this report, which is probably your best source of information.

EXECUTIVE SUMMARY REPORT



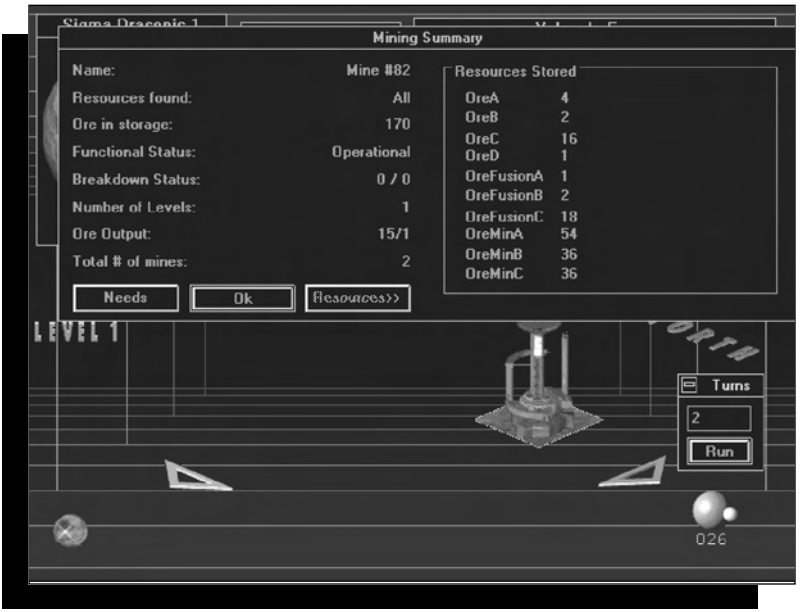
Right now, population and morale numbers are the most important. Morale dropped from 574 to 548. You need to slow down the decline. There are 0 Residential Units because everyone is stuffed in the Command Facility.

Click on the air shaft cap to reach UG level 1. Place a dozer and a digger. Run one turn. You should now be on Turn 20. There are only tubes in the Tile Picker window because you have not previously placed a tube underground. All the robots are working. Run six turns while dozing and while connecting tubes to the base of the air shaft.

On Turn 26, return to the surface and see the finished AgriDome.



Run one turn and place a dozer. Place the miner on another Beacon. Place the digger and set the direction. Run another turn. Click on the mine shaft top to see the Mining Summary.



In this case, the Resources button shows the resources that are stored at this mine. Clicking on Needs, then Resources, shows the mine's operating requirements of

Power 5 and People 1. Both are green so everything is okay. Red would mean something is missing.

Place a Residential Unit at UG level 1 on Turn 28. You need the CHAP for air, Residential Units for space and morale improvement, and the AgriDomes to make food and morale improvements.

Some important points to remember here are: anything above 200% in residential occupancy is a problem for morale. Build more Residential Units underground until you duck under the limit. Always make sure that the CHAP is operating at full capacity. You can feed 100 people per turn per AgriDome, so when your population nears 100, it's time to build another. Mines need Storage Tanks for their output.

On Turn 32, place a Storage Tank, and run three turns to move the internal Truck from the mine to the smelter, if automatic trucking is selected. (You won't see it moving, but it's moving.) Now resources will move from the smelter to the Storage Tank. See the sections "Trucks and Monorails" for more information.

Turn 35. EXECUTIVE REPORT.



On UG level 1, place a Residential Unit, dozer, digger, and a tube. Run two turns, doze, then run one turn. A Residential Unit appears on Turn 38.



This report shows you need more Residential Units. Remember, more than 200% occupancy brings down morale. The morale drop seems to be slowing, however.

At UG level 1, place a Residential Unit, run one turn, place a dozer, and run two turns.

At the surface, place a warehouse and dozer, run two turns, place a dozer, and run one turn.

The WAREHOUSE SUMMARY REPORT shows 4 dozers (total of 12 mass units of storage in warehouse)



The Executive Report at Turn 44 shows the occupancy rate is below 200%, so people will be happier now. Three mines are working. Most important, the drop in morale is down and beginning to level out. The tide will turn soon!

Place a Robot Command unit, run one turn, doze, run one turn, doze, and run one turn. Robot Command appears. If you click on Robot Command to see its report, you can see that you now control one robot in addition to your original three.

Remember, each Robot Command facility can operate 10 robots after they have been built and stored in a warehouse.

On Turn 47, select a red diamond mine site on the Site Map, place a robominer, and return to your colony by clicking on the light blue square on the Site Map.

At UG level 1, place a tube, and digger, and run one turn.

On the surface, at Turn 48 place a dozer, run one, place tube, place AgriDome, place four dozers, run one turn, place five dozers, and reset Seed Robot Factory to produce miners. Place Solar Receiver Array.

At UG level 1, place Residential Unit, run one turn, place a dozer, and run two turns.

Turn 59. EXECUTIVE SUMMARY REPORT



The residential occupancy rate is looking good, that second AgriDome is feeding everyone comfortably, and the mines are prospering. Morale drop has slowed to a crawl.

Run one turn; one colonist lost.

You will begin to notice that your population is increasing, even though some colonists have died. That's because the Underground Residences are baby booming.

On Turn 54, at the surface, place a tube and a SPEW facility.

At UG level 1, place five dozers, run two turns, five dozers, run two turns, five dozers, run two turns, place a robominer on new Level 1 shaft, start new surface mine with a robominer on a red mining beacon. Run one turn.

On Turn 61, place five UG dozers, and run one turn.

On Turn 62, at the SPEW finished surface, place a tube and second Storage Tank. Click on the first Storage Tank to see what it contains:

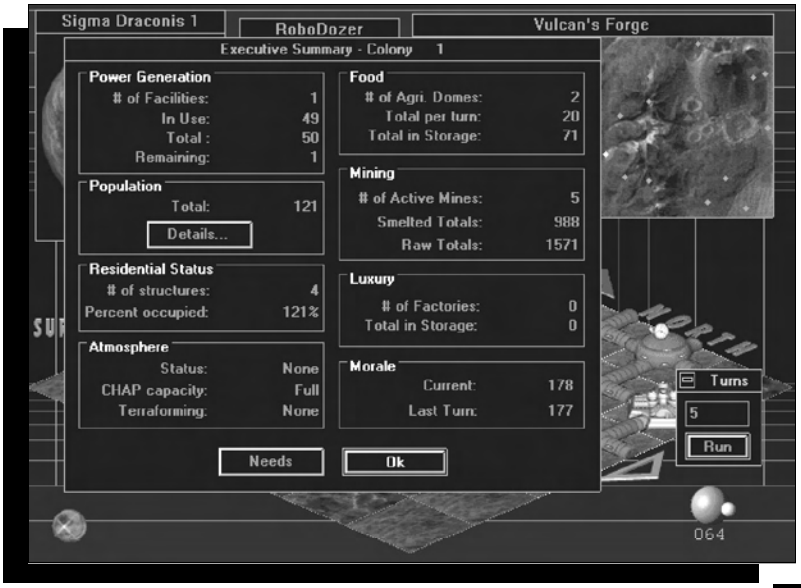
FIRST STORAGE TANK



Place five dozers, run two turns, Storage Tank 2 is finished. MPG = 6.

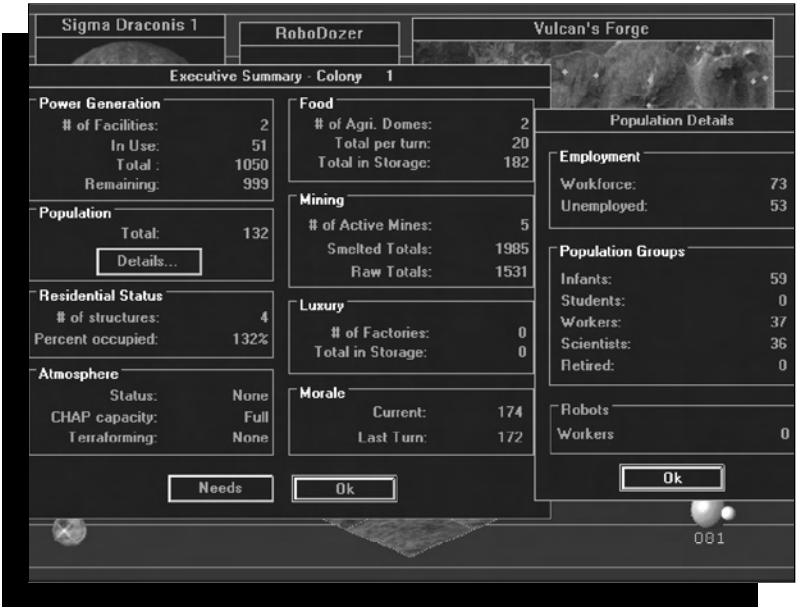
On Turn 64, at
UG level 1, place two tubes, place two Residential Units, place five dozers, place one digger, and run five turns.

Turn 64. EXECUTIVE SUMMARY REPORT
Morale is going up!!!



On Turn 69, the MPG is 25. Place first UG laboratory on UG Level 1, place six dozers, and run two turns.

Turn 81. EXECUTIVE REPORT



You're on your way. Things are progressing nicely. The Solar Receiver Array is finished. The SPEW is providing lots of MPG, and morale is beginning a welcome slow climb.

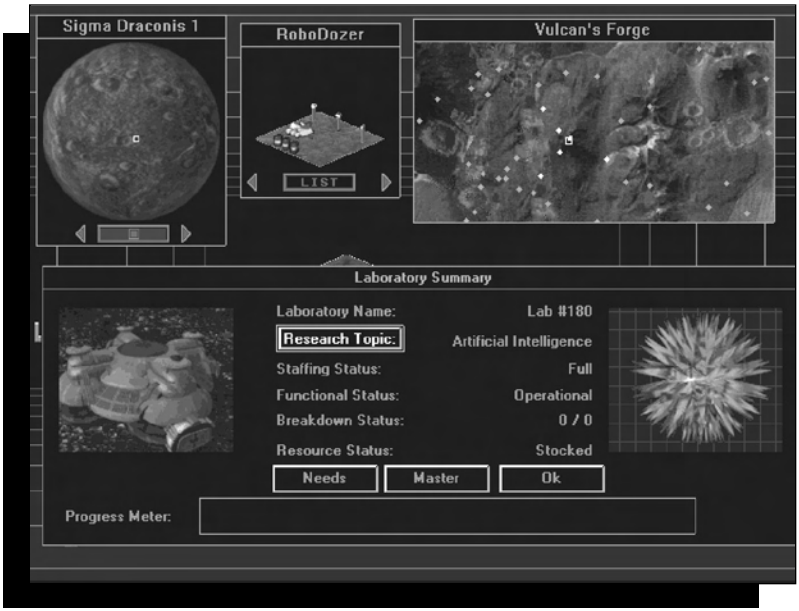
The danger zone for morale is when it drops below 200 for extended periods, since this is when your colonists may decide to start defecting to the rebel colony. If you can keep your morale over 800, the rebel colonists will start defecting to your colony, increasing your available workforce. This current morale level of is not out of the danger zone yet, but Parks, more Residential Units, benevolent Police Stations, Recreational facilities, and other buildings can have a stronger positive impact on morale when you need it. There are also lines of research that have a positive effect on morale.

Operating Your Labs

Set the completed lab facility to do research by clicking on the lab to generate the Laboratory Summary. Click on the Research Topic button to select the line of research you want your scientists to follow.

If you click on the Color Legend button, you'll see an explanation of the color codes used in the research tree. Notice that the Applied Research category, which is at the currently displayed top level of the research tree, is green. The green category means that research has been completed at that current level, but that there may be more research to do that follows it. You can see this now by clicking on Applied Research to see the next level of the tree beneath it. Now click on Computer Science, then Artificial Intelligence.

This is the end of the current tree branch, and it's a good subject to study now because it's the fastest way to arrive at the ability to build a Hot Lab for dangerous research. To get your lab ready to start this research on the next turn, click on the Study button at the left of the research tree window.



Notice that the Progress Meter is currently dark. When you start making some progress in your current research effort, a line of rats will start appearing here to give you a general idea of how much progress you're making toward a new discovery or new line of research.

Click on OK to close the Laboratory Summary report, and run one turn to start your lab research. If you check the lab report now, you'll see your current research topic listed along with the fact that the lab is "Operational." When this research is finished, the lab will go "Idle" until you assign it to do new research. It may also go idle when you don't have enough scientists, which may mean that you need to build a University, or that you have to wait for your children to age enough to go to work. Of course, a lab can also go idle when there aren't enough resources to keep the lab operating.

At around this time you need to start thinking about the collapse of the Seed Complex units, which will take place around Turn 150. Well ahead of time, you should lay six tubes to provide bypass for the collapse. Doze a cargo lander if it is in the way of one of the tubes. As with any of the other buildings, the material from the dozed cargo lander will be recycled because a SPEW is operating in the colony.

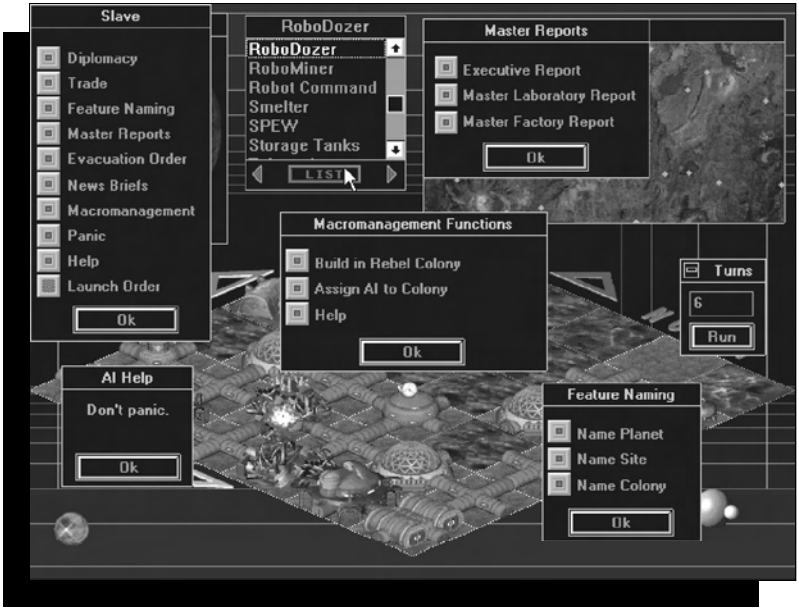
The Artificial Intelligence Menu

The AI icon is located in the lower left corner of your screen. Left-click on it once to open the AI menu. Some events may seem rather mysterious unless you stay aware of the News Briefs as they are generated in response to events in your colony. The News Brief button is shaded when there isn't any news. When you click on the News Brief button, you'll see the current news brief. If you close the news brief and there's more news to be seen, the button will remain highlighted to prompt you to read it.

The AI menu also gives you the ability to name your planet, your landing site, and your colony. The Master Reports button lets you keep an eye on your factories, labs, and executive summary report from one location. The Evacuation Order is always available, but only needed when an alert warns you of an impending disaster. The Panic button has no real purpose other than to give you something to press when you're starting to get hysterical. The Help button gives you access to the Help system.

The Launch Order button is not used to order lunch, but it will become active when you have done all of the research and construction necessary to put a new starship in orbit and make it available for a new colonization mission that will end the game. You don't have to end the game when this happens, but it gives you a convenient ending point if you want one.

When you're ready to close the AI menu, click on the Cancel button at the bottom of the menu.



THE TUTOR.OPS SAVED GAME

As mentioned above, you may wish to bypass the opening difficulties of colony management, and play *Outpost* from Turn 81.

SUGGESTIONS BEYOND TURN 81

To continue the game from this point, here are some general suggestions:

When your population approaches 300, build a third Agricultural Dome to feed them. If they start dying from starvation, the oldest people tend to die first, which removes your retired people, then your scientists, then your workers, then students, until all you have left are your infants, who absolutely refuse to do any work.

If your Residential Occupancy is 200% or higher, you need more Residential Units, otherwise the overcrowding will reduce your morale.

Gradually add more laboratories. If you have more than one, assign at least one of them to Basic Research. When you have a Hot Lab built, work on the different aspects of

Nanotechnology research (you have to figure out the details) so that you can eventually build a Nanotechnology Facility. Full research into Nanotech 1 and Nanotech 2 will be necessary.

More about Researching Nanotechnology

Along the way, you may also have to bulldoze extra structures in your colony to generate MPG, which will fill in for any resource shortages that may show up from mining. When you build a Nanotech Facility, you will no longer require mined resources unless your Nanotech Facility explodes (this is most common on Medium and Difficult levels of game play). Even with a Nanotech Facility, you will still be required to produce power and people to keep the colony operating. Build your Nanotech Facility at least two spaces away from any other structures (except for the tube connection, of course), to minimize damage from explosions.

Around 110 to 130 Turns

Allow time, people, and resources to build a new smelter before your seed smelter collapses at Turn 150. One smelter will serve your needs for a long time unless something horrible happens.

More Storage

Build a third Storage Tank when the first two are nearing their storage limits. Keep an eye on your Storage Tanks so that you don't have resources backing up at the mines or the smelter from a lack of storage in your colony.

Grow Slowly

Remember that a conservative approach to construction and maintenance of your colony, as demonstrated in this tutorial, is the safest method of expansion. Your resource and population limitations effectively serve as your budget in this game. You won't be able to build rapidly until you've created a Nanotechnology Facility and no longer need concern yourself with mining limitations. One SPEW facility per colony will help you by recycling sewage and bulldozed buildings. Remember that mined resources have limits, as they do here on Earth.

CHAPTER 10 Outpost Protocols and Practices to Live (and Die) By

The Numbers Game

Outpost is filled with numbers and is a statistician's dream. While all statistics have some measure of importance, the following numbers should be learned as fast as possible.

Number	Significance
• 1.5	Current *Outpost* version
• 2	Minimum number of turns it takes for a tile to be constructed
• 4	Maximum number of mining levels at any one location
• 12	Maximum number of turns it takes for a tile to be constructed
• 30	Outer tile distance limit for a colony
• 100	Colonists fed by AgriDome each game turn
• 100	Warehouse capacity
• 100	University life
• 150	Seed Complex collapse
• 200	Upper limit of Occupancy Percentage before morale drops
• 200	Fuel Cell life in a robot
• 200	Lower morale limit before colonists defect to rebel colony
• 1000	Smelter capacity

Colonists

- Colonists cannot survive on the surface of any planet, and must be housed in Underground Residences, after initial housing in the Seed Complex.
- Colonists will perish at an alarming rate shortly after landing on a planet unless provided air from a CHAP and food from an AgriDome.
- Do not despair when, after a turn, you see the dreaded "Colony [X] has lost [#] Colonists." Once you are up and running with multiple Underground Residences, and other birth-rate enhancing tiles, the chances are that a net colonist gain was achieved on the turn.
- AgriDomes feed only 100 people per turn. If big chunks of your population start dying, see if you have enough AgriDomes.
- Not enough colonists to do that new research project? You can release people from other locations by shutting down a factory for awhile ("Pause"), or bulldozing structures no longer needed.

Turns

- Run a lengthy Multiple Turn only after careful consideration of the consequences. If your Seed Complex is scheduled to destruct in 25 turns, running a Multiple Turn greater than that value might very well result in the total destruction of your colony. Run Multiple Turns in intervals of 5-10 until you get the hang of what might befall the colony.

Recycling

- Bulldozing buildings after creating a SPEW creates MPG, which helps replace the resources lost from mines no longer operating.
- Building many residences, even residences that may be unoccupied for a lengthy period of time, results in the generation of a single MPG per residence per turn, so long as a SPEW has been constructed in the colony.

Destruction

- Never self-destruct a robodigger near valued structures.
- Free up space in the colony by bulldozing structures that have been destroyed or are no longer producing.

Trucks

- In Beginner mode, movement of resources via Truck and other means is automatic. In other modes, automatic trucking can be selected if the player wishes.

Construction

- Except for Command Centers, Colonist Landers, and Cargo Loaders, all tiles must be placed on bulldozed terrain.
- Impassable terrain can be used only by self-destructing a robodigger. All structures within the immediate proximity of the self-destructing robodigger are destroyed.
- Do not stretch your power, resources, and people too thin, unless you wish to stand idly by and do nothing but watch the beautiful *Outpost* graphics.

Production and Use

- Underground and Surface Factories produce robots, building materials, and luxuries. Without Warehouses to hold these items, they will never become available for use by the colony.

- Increase your Smelters and Storage Tanks to accommodate rapidly producing mines.
- Unless your resources are stretched thin, you can't have enough of all commodities and structures, which can be used for trading purposes.

MORALE

- Never underestimate the importance of morale. Extremely low morale (under 200) for several turns running will result in defections to the Rebel Colony. If such low morale lasts long enough, your colony will become a ghost town, ending the game.
- Don't be surprised if some rebels find your leadership attractive and come on over to your colony, if high morale is sustained for some time.

LONGEVITY

- Some tiles or structures have a limited life. For example, the Seed Factory will commit seppuku after about 150 turns. Anticipate and plan for replacements before the destruction of any tiles.

DISTRIBUTION

- Production alone will not cut it. Storage Facilities (Warehouses, Storage Tanks) must be built in parallel to production, along with distribution structures (Commercial Facility, Robot Command).

CHAPTER 11
Progress and Status Indicators

Outpost Screens

An efficient and effective colony administrator needs to receive and consider constant feedback on the progress of the colony as it goes about its day-to-day existence. Without feedback, critical decisions cannot be made with any reasoned judgment, and the *Outpost* player will assuredly be "flying blind." While this might make for some exciting developments, it is safe to say that the excitement will be all negative and detrimental to the welfare of the colony.

After every single or multiple turn, the player should consult the two most critical progress and status indicators: the Executive Summary Report (single-click the colony's Command Center, or the AI's Master Reports button), and the Tile Picker List.

In addition to these indicators, every structure you build has a status, which can be reviewed at will for its contents and effect on the colony. A simple left-click will bring up a status on every tile or facility that has been placed. An equally simple right-click will identify any tile, including terrain, and enable resource transit, or help. Two other AI Master Reports provide invaluable information on your labs and factories.

The importance of the administrator continually and regularly monitoring the colony's progress through these screens cannot be overemphasized. To assist you, we present actual sample screens you can view during game play, as well as an explanation of their contents.

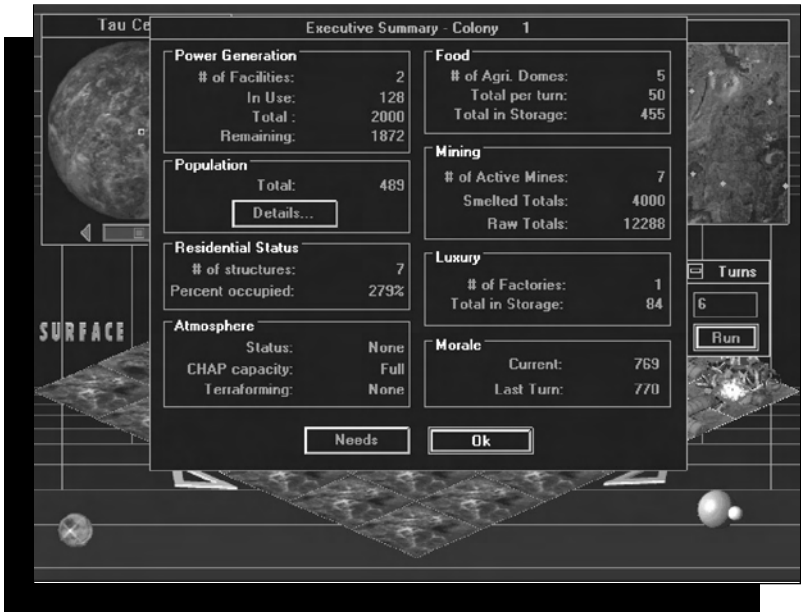
Access to the Master Reports gives you the most efficient method for changing current research in your labs, changing current production in your factories, and monitoring colony resources. To access a master report, click once on the chrome ball AI icon in the lower left corner of the main game screen. From the AI interface that appears, select the Master Reports button, which will list the following reports:

Executive Summary Report

This provides comprehensive data on the status of your colony. More than any other screen, the Executive Summary Report provides instant insight into what has been done, and a clue to what must be done next. A good way to get a feel for what the report contains is to read the tutorial in Chapter 9.



The colony seems to be progressing, as it leaves the embryonic stage and starts to expand.



This colony is really gearing up. Could a second colony be far behind?

Master Laboratory Report

The Master Laboratory Report gives a complete recital of all working laboratories, including the Underground Laboratories and the Surface Hot Labs. One added benefit

to this screen is that you can change the research being done at a lab directly from this screen.



Four new research discoveries have been produced by four busy labs.



Three factories hard at work. You need to find people to get the fourth one on-line.

Master Factory Report

Master Factory Report gives a complete recital of all working factories. You can change the items being produced at factories directly from this screen.

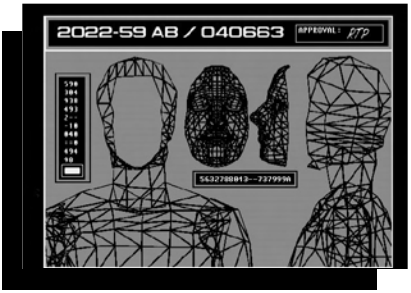
Keeping an Eye on Multiple Screens

Outpost lets you open many windows at a time. For example, one helpful technique is to open the key four or five structure windows that are of importance at any particular juncture in the game. Align them in the main window.

After you are satisfied with this window's arrangement, run a turn, and watch the changes. Warehouses will restock, Storage Tanks will fill up, the Robot Command Center will become operational, etc.



Tile Picker List



Everything an administrator can conceivably accomplish in building and improving on the colony requires some combination of the following three factors: power, resources, and people. After running a turn, *Outpost* analyzes the entire colony's assets and the physical layout of the colony. Calculating all conceivable combinations, the Tile Picker list displays only those possible actions or tiles that will be available to the player on the ensuing turn.

For example, if the colony has no bulldozed terrain adjacent to a tube, no structures can be built in the next turn, so none will appear in the Tile Picker list. If all your Robots are busy working, none will show up on the list.



Sometimes "None Available" appears on the list. This is not necessarily bad or discouraging, just an accurate reflection of what you can, or rather *can't*, do on the next turn.

CHAPTER 12 Technical Support, Direct Sales Information, and Hints

TECHNICAL SUPPORT

Technical assistance is only a phone call away. Direct your inquiries to the Technical Support department if your question is about hardware and software compatibility specific to Sierra games (e.g. sound card configuration or memory management). For our 24-hour automated Technical Support, call (206) 644-4343. If you prefer, you may request assistance by facsimile; the U.S. fax number is (206) 644-7697.

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WARNING

The information in the Appendices gives more detail than you may want to see unless you are looking for hints.

NEW FEATURES HELP

What follows is the Help button text for the many new features in *Outpost* 1.5. This gives the seasoned *Outpost* player instant reference to some of what's new in this version.

TRANSIT INFORMATION–MANUAL TRUCKING

This is where you assign your Trucks to delivery routes starting from a specific tile (building). The starting point for the Truck route is the tile name listed at the top of the window. Truck route information is given in the large box on the left, marked Route. The three buttons on the right are Delete Route, Delete Leg, and Add Leg.

If you highlight a route in the Route box, then click on Delete Route, the entire route will be removed and your Trucks will no longer make deliveries to that destination. Delete Leg allows you to remove only the last destination in the route. Add Leg allows you to create a new destination at the end of the current route. When you select Add Leg, your cursor will change to one that says: "Go Here." Click the Go Here cursor on the building or road tile you want to use as your trucking destination. The name of the selected tile is added to the Route list. Keep doing this until you have selected the final destination for the Truck route. All Trucks assigned to this starting location will follow this one established route. There is no need to list routing legs twice for multiple Trucks.

The Trucks will follow a specific path that you establish, then keep using that path for round trip deliveries until you reassign them elsewhere or remove that route. If you want your Trucks to move faster by following an existing dirt or paved road, you must click the Go Here cursor on the last tile of each straight section where the road curves. Otherwise, they will start taking shortcuts over rougher terrain, which will slow them down. Note that the Go Here cursor can only create a path to buildings or to terrain tiles that have been bulldozed or paved, so you can't Add a Leg to a regular terrain tile.

Either before or after you establish a route using the above method, you should select the Trucks button at the bottom of the routing window to assign Trucks to that

route. Remember, all Trucks assigned to the starting location will follow the established route from that location.

If you're satisfied with your route and Truck selections, click on the OK button.

Assign Trucks

This is where you make use of your inactive or stored Trucks starting from a specific tile (building). The starting point for the truck route is the tile name listed at the top of the window. The number of inactive Trucks in the warehouse is shown as the number Available. The number of active Trucks currently assigned to delivery routes is shown as the number Assigned. Click on the up and down arrows beside the Assigned category to put more Trucks in action, then click on the OK button.

Transfer Local Assets

This is where you choose an asset stored at this location and move it somewhere else in the same colony. The tile location where the goods are stored is shown at the top of the window. Choose an asset to transfer on the left by using the up and down arrows and highlighting the name of the item. The number of those items available to be moved is shown on the right in the Quantities section. Choose the number of items you wish to Move, using the up and down arrows on the right, then click on OK. If you change your mind, select Cancel.

Robot Command

This is where you keep track of the robots controlled by a specific Robot Command facility (each of which can control 10 robots). Other information contained in this report shows you how the Robot Command itself is doing. The top of the report tells you the name of the Robot Command facility. You are also shown the Functional Status of the building, whether Operational or Idle; the condition of the staff required to operate the Robot Command; the number of robots currently available and controlled by that facility; and the number of robots controlled by that facility which are actively assigned to tasks. For more specific information on what the robots are doing and where they are, click on the Details button.

Robot Details

This is where you get information on what the robots are doing and where they are. The Robot Command facility that controls this particular set of robots (up to 10) is shown at the top of the report. You are also shown the details on each robot: the type of robot, the remaining amount of life in its Fuel Cell, and where that robot is currently active (unless it's idle and waiting to be assigned to a task).

Monorail

Appropriate research must be completed before the Monorail System becomes available, at which time the Monorail tiles will show up in the Tile Picker (selection) window at the top center of the main game screen.
A Monorail System has five basic components: the Monorail Station, the

Monorail Power Transformer, the Monorail (track), the Monorail (track) Intersection, and the standard Tube connecting the Power Transformer to a colony.

The Monorail Power Transformer can be built only at the end of a Tube connection. The colony supplies life support, power, and the workers to operate each Monorail section.

Monorail (track) tiles connect to Monorail Stations. Monorail Stations can be placed only next to a Monorail Power Transformer or a Monorail (track) tile only. No tube is required to connect a Power Transformer or Monorail (track) to a Monorail Station. The only tube required for a Monorail System is the one that connects the Power Transformer to the colony.

A Monorail (track) or a Monorail (track) Intersection can be placed next to a Monorail Station or another Monorail (track) only.

When a complete Monorail System has been established between two stations, and the power/resource connections have been made, the Monorail line will become active.

Note that if two separate Monorail lines become connected, a single train, instead of two, will make the complete circuit. For routing purposes, when trucking is manual, the two Monorail Stations are treated as legs of a truck route.

Macromanagement

The Macromanagement interface allows you to do two things: sneak buildings into the rebel colony if you have an active trade agreement with them, and assign artificially intelligent computer managers to the administration of your secondary colonies.

Assigning an AI to research in a laboratory is done through the research menu. This menu can be reached by clicking on a laboratory building, or through the Master Reports button in the main AI interface (reached by clicking on the chrome ball icon in the lower left corner of the main game screen).

Build in Rebel Colony

If you have an active trade agreement with the rebel colony, and a Trade Mission has been built for you there, you can sneak more buildings into the rebel colony. This is not necessary for your survival, but it can be used to your advantage. If you want to prepare the rebel colony for the day when you take over its operation, you will have several buildings of your own choosing already built there. If you want to undermine their economy by building structures that will sap their resources, you have that capability. You will not be allowed to build a factory or other obvious structures because shipping and storage operations would immediately trigger too much attention from the authorities in the rebel colony.

The drawback to building in the rebel colony is that they will eventually notice what you're doing if you build several structures there. When they do, they will probably break the trade agreement, preventing you from trading with them or building additional structures in their colony. They will also take over ownership of any new buildings you created in their colony.

The Build in Rebel Colony button shows you a text list of buildings you can sneak into the rebel colony. Highlight a building type by clicking on it, then select the OK button to confirm your decision. The building will be constructed in the normal amount of time, but it will use the resources of the rebel colony for construction and maintenance.

Assign AI to Colony Management

If you have completed the research leading to AI Managers, you will then have the option of assigning a few of your new artificial intelligence personalities to the management of your secondary colonies. These new AI managers are not as powerful as your primary AI assistant, so they are assigned to a specific colony and instructed to build structures that will allow that colony to specialize. For example, you may want the AI manager to build an agricultural colony that will stockpile food, which you can then Truck or Monorail to your main colony unless you want to use it for trade.

You will still need to check on the progress of your AI managers; they are primarily concerned about the colony systems and the orders you have given them, so the humans living in the colony get less attention. You are still responsible for the colony infrastructure and keeping the colonists alive.

When they first appear, you may find that your AI managers are not exactly following the instructions you have given them. In some cases, you may find that an AI instructed to build an agricultural colony is building a sea of Communications Towers instead. If you see this situation, or if you want to slow down the use of resources by that colony, click on the Deassign AI button. Odd structures are built by unstable AI managers. Appropriate research into AI personality problems will stabilize your managers.

Resource Priorities for Structures

When there aren't enough resources to keep all of your colony structures operating, certain structures have higher priorities than others. The following is a list showing how limited resources are allocated to established structures, starting with the most important buildings and working down to the least important.

1. Nanotechnology Facility
2. Solar Power Receiver Array
3. CHAP
4. Smelter
5. Warehouse
6. Agricultural Dome
7. Command Center
8. Tokamak Fusion Reactor
9. Geothermal Power Facility
10. SPEW
11. Storage Tank
12. Mine
13. Residential Unit
14. Robot Command

15. Communication Tower
16. Hot Laboratory
17. Red Light District
18. Park
19. Recreational Facility
20. University
21. Medical Facility
22. Monorail Power Transformer
23. Monorail (track)
24. Mass Driver
25. Trade Mission
26. Underground Laboratory
27. Surface Factory
28. Police Station
29. Underground Factory
30. Commercial Facility
31. Administration Building
32. DIRT
33. Monorail Station
34. Spaceport
35. Terraforming Facility

Planet Classes

With rare exceptions, the planets in *Outpost* are based on existing bodies in the solar system, since these are assumed to be representative of planetary types that would naturally form in other suitable star systems. When you select a planet to colonize, you are presented with planetary statistics gained by your probes. You should consider these statistics carefully before you make your decision. However, if this information seems hard to understand, you can use the following list to compare your potential planet with similar planets in our solar system.

MERCURY

Equatorial diameter (Earth = 1)	0.38
In kilometers	4,878
Mass (Earth = 1)	0.055
Rotation period	58.6 days
Surface gravity (Earth = 1)	0.38
Mean distance (in astronomical units, or AU) from Sun (Earth = 1)	0.387
Solar energy received (Earth = 1)	6.6
Approximate mean temperature (Centigrade)	350 (day), -170 (night)
Principal atmospheric gases	Helium trace
Escape velocity (kilometers per second)	4.25

VENUS

Equatorial diameter (Earth = 1)	0.95
In kilometers	12,104
Mass (Earth = 1)	0.815
Rotation period	243 days, retrograde
Surface gravity (Earth = 1)	0.91
Mean distance (in astronomical units, or AU) from Sun (Earth = 1)	0.723
Solar energy received (Earth = 1)	2.2
Approximate mean temperature (Centigrade)	450 (surface), -23 (clouds)
Principal atmospheric gases	Carbon dioxide, nitrogen
Escape velocity (kilometers per second)	10.36

EARTH

Equatorial diameter	1.0
In kilometers	12,756
Mass	1.0
Rotation period	23.94 hours
Surface gravity	1.0
Mean distance (in astronomical units, or AU) from Sun	1.0
Solar energy received	1.0
Approximate mean temperature (Centigrade)	22 (average)
Principal atmospheric gases	Nitrogen, oxygen
Escape velocity (kilometers per second)	11.18

MARS

Equatorial diameter (Earth = 1)	0.53
In kilometers	6,794
Mass (Earth = 1)	0.11
Rotation period	24.62 hours
Surface gravity (Earth = 1)	0.38
Mean distance (in astronomical units, or AU) from Sun (Earth = 1)	1.52
Solar energy received (Earth = 1)	0.44
Approximate mean temperature (Centigrade)	-23 (average)
Principal atmospheric gases	Carbon dioxide, nitrogen
Escape velocity (kilometers per second)	5.02

JUPITER

Equatorial diameter (Earth = 1)	11.19
In kilometers	142,800
Mass (Earth = 1)	318.0
Rotation period	9.84 hours
Surface gravity (Earth = 1)	2.69
Mean distance (in astronomical units, or AU) from Sun (Earth = 1)	5.2
Solar energy received (Earth = 1)	0.037
Approximate mean temperature (Centigrade)	-150
Principal atmospheric gases	Hydrogen, helium
Escape velocity (kilometers per second)	59.6

SATURN

Equatorial diameter (Earth = 1)	9.41
In kilometers	120,000
Mass (Earth = 1)	94
Rotation period	10.23 hours
Surface gravity (Earth = 1)	1.19
Mean distance (in astronomical units, or AU) from Sun (Earth = 1)	9.54
Solar energy received (Earth = 1)	0.011
Approximate mean temperature (Centigrade)	-180
Principal atmospheric gases	Hydrogen, helium
Escape velocity (kilometers per second)	35.6

URANUS

Equatorial diameter (Earth = 1)	4.11
In kilometers	52,400
Mass (Earth = 1)	14.6
Rotation period	17.9 hours, retrograde
Surface gravity (Earth = 1)	0.91
Mean distance (in astronomical units, or AU) from Sun (Earth = 1)	19.19
Solar energy received (Earth = 1)	0.003
Approximate mean temperature (Centigrade)	-210
Principal atmospheric gases	Hydrogen, helium
Escape velocity (kilometers per second)	21.3

NEPTUNE

Equatorial diameter (Earth = 1)	3.95
In kilometers	50,400
Mass (Earth = 1)	17.2
Rotation period	16 hours
Surface gravity (Earth = 1)	1.19
Mean distance (in astronomical units, or AU) from Sun (Earth = 1)	30.06
Solar energy received (Earth = 1)	0.001
Approximate mean temperature (Centigrade)	-220
Principal atmospheric gases	Hydrogen, helium
Escape velocity (kilometers per second)	23.3

PLUTO

Equatorial diameter (Earth = 1)	0.18
In kilometers	2,300
Mass (Earth = 1)	0.002
Rotation period	6.4 days, retrograde
Surface gravity (Earth = 1)	0.04
Mean distance (in astronomical units, or AU) from Sun (Earth = 1)	39.52
Solar energy received (Earth = 1)	0.0006
Approximate mean temperature (Centigrade)	-230
Principal atmospheric gases	Traces of methane and carbon dioxide
Escape velocity (kilometers per second)	1.1

CERES ASTEROID

Equatorial diameter (Earth = 1)	0.074
In kilometers	940
Mass (Earth = 1)	0.00017
Rotation period	9.08 hours
Surface gravity (Earth = 1)	0.01
Mean distance (in astronomical units, or AU) from Sun (Earth = 1)	2.8
Solar energy received (Earth = 1)	0.43
Approximate mean temperature (Centigrade)	-38
Principal atmospheric gases	None
Escape velocity (kilometers per second)	Negligible

PHOBOS

Equatorial diameter (Earth = 1)	0.002
In kilometers	22
Mass (Earth = 1)	0.000000018
Rotation period	0.32 days
Surface gravity (Earth = 1)	0.001
Mean distance (in astronomical units, or AU) from Sun (Earth = 1)	1.52
Solar energy received (Earth = 1)	0.43
Approximate mean temperature (Centigrade)	-50
Principal atmospheric gases	None
Escape velocity (kilometers per second)	Negligible

Research Topics

Research is necessary to advance your civilization and survive. In real life, you may be researching toward a specific goal, or you may be doing pure research to see what you can learn. If you wish to pursue a specific goal in *Outpost*, you should deduce what types of research would logically lead you toward that goal. The following research topic connections may give you more information than you want to know about the structure of the research tree. Also note that Surface Hot Labs must be built to see the sections of the research tree that implement dangerous research topics.

Astronomy—Astrophysics
Astronomy—Basic Astronomy
Astronomy—Planetary Astronomy
Astronomy—Stellar Astronomy

Biology—Medicine
Biology—Medicine—Pharmacology
Biology—Medicine—Pharmacology—Alien Pharmacology
Biology—Medicine—Genetics
Biology—Medicine—Genetics—Genetic Engineering
Biology—Medicine—Genetics—Genetic Engineering—Agriculture 2
Biology—Exobiology
Biology—Plant Biology (Botany)
Biology—Plant Biology—Agriculture 1
Biology—Physiology
Biology—Physiology—Anatomy
Biology—Physiology—Comparative Physiology
Biology—Embryology
Biology—Immunology
Biology—Entomology
Biology—Ecology
Biology—Ecology—Alien
Biology—Ecology—Alien—Atmospheric
Biology—Ecology—Alien—Terrestrial
Biology—Ecology—Alien—Marine

Chemistry—Biochemistry
Chemistry—Physical Chemistry

Chemistry—Physical Chemistry—Metallurgy
Chemistry—Physical Chemistry—Materials Processing
Chemistry—Quantum Chemistry

Planetary Sciences—Meteorology
Planetary Sciences—Geography
Planetary Sciences—Geology
Planetary Sciences—Geology—Terrestrial Geology
Planetary Sciences—Geology—Terrestrial Geology—Tectonics and Earthquakes
Planetary Sciences—Geology—Terrestrial Geology—Mineralogy
Planetary Sciences—Geology—Terrestrial Geology—Vulcanology
Planetary Sciences—Geology—Mineral Resources
Planetary Sciences—Geology—Mineral Resources—Terrestrial Mining
Planetary Sciences—Geology—Mineral Resources—Extraterrestrial Mining
Planetary Sciences—Geology—Engineering Geology (Structural)

Mathematics

Computer Science—Artificial Intelligence
Computer Science—Artificial Intelligence—AI Managers
Computer Science—Artificial Intelligence—AI Personality Problems
Computer Science—Artificial Intelligence—Nanotechnology 1
Computer Science—Artificial Intelligence—Space Probe Intelligence
Computer Science—Artificial Intelligence—Robotics 1
Computer Science—Artificial Intelligence—Robotics 1—Airbots
Computer Science—Artificial Intelligence—Robotics 1—Repairbots
Computer Science—Artificial Intelligence—Robotics 1—Humanoid Workers
Computer Science—Advanced Processors
Computer Science—Systems Analysis
Computer Science—Systems Analysis—Efficiency Studies 1
Computer Science—Systems Analysis—Efficiency Studies 2

Physics—Aerospace
Physics—Aerospace—Wind Tunnels
Physics—Aerospace—Spacecraft Testing and Analysis
Physics—Aerospace—Orbital Space Stations
Physics—Aerospace—Satellites and Probes
Physics—Aerospace—Satellites and Probes—Meteorsat
Physics—Aerospace—Satellites and Probes—Comsat
Physics—Aerospace—Satellites and Probes—Solar Power Satellite
Physics—Aerospace—Satellites and Probes—Geological Penetrator Probe
Physics—Aerospace—Satellites and Probes—Weathersat
Physics—Aerospace—Satellites and Probes—Orbital Observer
Physics—Aerospace—Satellites and Probes—Interstellar Flyby Probe
Physics—Aerospace—Satellites and Probes—ULBI Probe
Physics—Communications
Physics—Communications—Harsh Environment Signals Processing
Physics—Communications—SETI
Physics—Orbital Mechanics
Physics—Electrical Engineering
Physics—Electrical Engineering—Robotics 2

Physics—Optics
Physics—Power Generation
Physics—Power Generation—Advanced Alternative Systems
Physics—Propulsion Systems
Physics—Propulsion Systems—Standard Propulsion
Physics—Propulsion Systems—Asteroid Miner
Physics—Propulsion Systems—Heavy Lifter
Physics—Propulsion Systems—Low Orbit Freighter
Physics—Theoretical Physics
Physics—Theoretical Physics—Antimatter
Physics—Theoretical Physics—Nuclear Physics
Physics—Theoretical Physics—Plasma Physics
Physics—Theoretical Physics—Superconductivity
Physics—Theoretical Physics—Quantum Mechanics
Physics—Theoretical Physics—Quantum Mechanics—Nanotechnology 2
Physics—Theoretical Physics—Quantum Mechanics—Nanotechnology 2 Nanomachines
Physics—Theoretical Physics—Quantum Mechanics—Nanotechnology 2 Nanomachines—Assembler
Physics—Theoretical Physics—Quantum Mechanics—Nanotechnology 2 Nanomachines—Replicator
Physics—Theoretical Physics—Quantum Mechanics—Nanotechnology 2 Nanomachines—Replicator–Construction
Physics—Theoretical Physics—Quantum Mechanics—Nanotechnology 2 Nanomachines—Replicator–Medical
Physics—Theoretical Physics—Quantum Mechanics—Nanotechnology 2 Nanomachines—Replicator–Mining
Physics—Theoretical Physics—Quantum Mechanics—Nanotechnology 2 Nanomachines—Replicator–Terraforming
Physics—Theoretical Physics—Quantum Mechanics—Nanotechnology 2 Nanomachines—Replicator–Food Production

Social Sciences—Economics
Social Sciences—Political Science
Social Sciences—Psychology
Social Sciences—Psychology—Trade Negotiation
Social Sciences—Psychology—Advanced Teaching Methods
Social Sciences—Sociology
Social Sciences—Sociology—Crowd Psychology
Social Sciences—Sociology—Industrial Sociology
Social Sciences—Sociology—Social Stratification
Social Sciences—Sociology—Cultural Change
Social Sciences—Urban Studies
Social Sciences—Urban Studies—City Planning
Social Sciences—Police Science

Humanities—Drama
Humanities—Fine Arts
Humanities—History
Humanities—Music
Humanities—Philosophy

GLOSSARY

aerobraking. A technique for slowing the flight of a spacecraft with atmospheric drag by descending into the upper levels of a target planet's atmosphere until the craft has slowed enough to maintain a stable orbit.

AI. The standard abbreviation for artificial intelligence. For a longer definition, see "artificial intelligence."

airbot. Airborne robot.

alpha particles. Nuclear particles with a positive charge that are ejected at high velocity from specific radioactive transformations. These particles consist of two protons and two neutrons.

Amor. Asteroidal objects that cross the orbit of Mars and approach the orbit of Earth. Over short time scales of hundreds or thousands of years, about 10% of the Amors have orbits that evolve into Earth-crossing orbits. The first Amor class asteroid was 1221 Amor, discovered in 1932.

Apollo. Asteroidal objects that cross the orbit of Earth. The first Apollo class asteroid was 1221 Amor, discovered in 1932.

arc second. An arc of one second, 1/3600 of a degree of angle, is less than the apparent diameter of a U.S. dime when viewed from a distance of two miles, or the apparent diameter of a golf ball when seen from a distance of five kilometers.

artificial intelligence. AI. The goal of artificial intelligence research is to produce computers that can think and learn in a manner analogous to human behavior. This includes the ability to apply known facts, combined with new information, common sense, and guesses, to arrive at an appropriate response to a problem.

artificial intelligence personality. Your assistant in *Outpost* is a computer with artificial intelligence. It has been provided with an artificial personality to allow easier communication with humans.

asteroid. A large interplanetary object that has no characteristic cometary coma or tail. The term includes dormant old comets covered with dust that no longer have comas or tails.

astrometry. A method for detecting planets in other star systems by watching for periodic changes in a primary star's position caused by the presence of a nearby Jovian planet.

Aten. Asteroidal objects with orbits that lie mainly inside Earth's orbit. The first Aten class asteroid discovery was 2062 Aten, located in 1976.

AU. Astronomical unit. The average distance from the Earth to the Sun, equal to about 92.9 million miles.

bioengineering. The application of engineering principles to biological or medical science. This includes such things as construction of artificial organs.

biosphere. The portion of a planet's atmosphere, ground, and water where life can flourish. On a typical planet, the biosphere is located far away from fast food restaurants and used car dealerships.

bioterraforming. The use of genetically engineered plant life, such as blue-green algae, to make an Earth-type environment on another world.

black dwarf. Superplanets, such as Jupiter or Saturn, that are too far away from their primary star to shine by reflected light.

brown dwarf. Planetlike objects with masses up to 85 Jupiter equivalents and cool temperatures in the 120 to 2,000 degree Kelvin range. The size of a brown dwarf falls between gas giant worlds and small stars. This term was coined by Jill Tarter, a prominent astronomer in SETI research.

calculus of variations. This mathematical technique is used to find the optimum path between two fixed trajectory endpoints. Typically, this calculation assumes zero initial and final velocities with minimum time trajectories. Propulsion parameters can vary to minimize cruise time and increase fuel costs, or to lengthen cruise time and minimize fuel requirements.

Cambrian. The paleontological/geological 100-million-year period that began about 600 million years ago and was characterized by an explosive growth of marine life, primarily the invertebrates.

carbonaceous minerals. Minerals that are rich in carbon compounds. A carbonaceous chondrite is a class of sooty black asteroid known to be loaded with carbon compounds.

CCD. Charge Coupled Device. An electronic detector that is several times more sensitive than photographic equipment in capturing images of weak astronomical light sources, such as asteroid movement against background stars.

CHAP facility. Closed Habitat Atmospheric Production facility, where breathable gases are produced for the colony's contained atmosphere.

chemical fractionation. The selection process that determines the composition of an individual planet during its formation.

comet. A small body consisting of frozen gases and dust in orbit around the Sun. As it nears the Sun, its surface material vaporizes to form a large head, or coma, at the center of which lies a dark nucleus where its mass is concentrated. In its powdered form, a comet is handy for household cleaning.

constant proper acceleration. A term used to describe the throttling down of a rocket engine so as to maintain a constant speed without further acceleration.

constant proper thrust. A term used to describe rocket acceleration performed at a constant full throttle, maintaining a uniform fuel consumption rate.

cryobiology. The study of the effects low temperatures have on biological processes.

cryoprotective agents. Used to protect cell membranes and organs before freezing. Agents such as glycerol are infused into biological tissues to replace the extracellular water that would expand when frozen.

deorbit. A deorbit maneuver drops a spacecraft out of orbit toward the planet's surface.

DIRT. Disaster Instant Response Team. The DIRT facility houses this team, which is intended for rapid response to disasters and emergencies in a colony.

drydock. A traditional term meaning a dock that can be kept dry during the construction or repair of ships. In space, there's no problem keeping a ship dry, but the drydock has to support a construction and repair crew in the weightless vacuum of their work area.

ecosphere. A region in space, near a star, where suitable planets can have surface conditions compatible with the origin, evolution, and continuous existence of land life. Humans can survive the surface conditions on a planet within a stellar ecosphere.

Elevation Map. The Site Map screen in *Outpost* can be toggled to show the false color topographical Elevation Map, indicating the four relative heights of terrain shown on the Site Map.

emergence behavior. A biological and philosophical theory used to describe simple systems of interlocking processes that generate unpredictable results of a higher order.

escape velocity. The speed that an object must acquire to escape from the gravity of a planet.

false color. A method of applying colors to a normal image to make details more apparent.

finishing. Part of a fabrication process that refines a basic shape into its final form, as with a finished machine part.

fuel cell. A battery cell that continuously changes the chemical energy of a fuel and oxidant to electrical energy. Fuel Cells power *Outpost* robots and can be manufactured in your factories.

fumarole. A hole in a volcanic region that emits vapors and hot gases, such as steam. This is a very handy sort of hole to find, since you can build a geothermal plant on top of a fumarole to generate power.

gas giant. Large, non-terrestrial planets composed primarily of gaseous and liquid hydrogen. In the solar system, the gas giants are Jupiter, Saturn, Uranus, and Neptune. This type of planet is also called Jovian.

geosynchronous orbit. A geostationary orbit. This relates to an artificial satellite that orbits above a planet's equator at the same speed as the planet rotates so that the satellite effectively stays in the same place.

greenhouse effect. The trapping of infrared radiation by gases in a planet's atmosphere, raising the surface temperature.

hibernation. A slowed metabolic state that allows animals to sleep without food for days or weeks. This is also the state entered by a computer game development team right after it finishes its current project.

hostility level. As used in *Outpost*, this is the rating of a planet's relative environmental hostility with regard to humans. As used in computer game

development, this is the level of animosity that the team feels toward the game designer as a project nears completion.

hypoxia. Oxygen deficiency in the blood, cells, or tissues.

illuminance. As used in *Outpost*, this is the quantity of radiation a planet receives from its primary star. The habitability of a planet depends on this quantity of radiation. It also determines how useful solar powersats will be at a particular planet.

impactors. Celestial bodies, such as comets or asteroids, that strike a planetary surface.

Jovian. See "gas giant."

KAO. The Kuiper Airborne Observatory, a civilian C-141 Starlifter aircraft operated by NASA-Ames Research Center. A popular platform for astronomy since it's able to fly above most of the water vapor in the Earth's atmosphere with its infrared telescope. Among its many successes, the KAO was used to discover the rings of Uranus.

kinematics. A branch of dynamics that deals with aspects of motion apart from considerations of mass and force.

Kuiper Belt. A belt of comets orbiting the Sun just beyond the orbit of Pluto. This comet reservoir was postulated by astronomer Gerard P. Kuiper in 1951 and its existence is supported by recent discoveries.

lawbot. Police robot.

light year. The distance over which light can travel during one Earth year. Used as a unit to express the distances between stars. One light year equals 0.306 parsec. The velocity of light is about 186,000 miles per second.

luminosity. A measure of the total radiation emitted by an object. The ratio of the amount of light that would reach us from a star to the amount that would reach us from the Sun if both the star and the Sun were at the same distance from us.

macromanagement. Strategic management of the overall operations of a complex system, such as a corporation or a colony, without getting involved in the smaller, tactical management issues.

mass driver. An electromagnetic rail gun. Used to launch buckets of resources off a planetary surface and into space for use in space manufacturing or as reaction mass for starships.

meteor. A flash of light visible as an object passes through a planet's atmosphere and burns up as a result of frictional heating. These objects are no larger than motes of dust.

meteorite. A natural object of extraterrestrial origin that survives passage through a planet's atmosphere to strike the planet.

meteoroid. A natural object in interplanetary space that is smaller than about 30 feet in diameter. Larger objects are called asteroids.

microbot. A very small robot.

mothership. See "starship."

nanotechnology. The thorough, inexpensive control of the structure of matter based on molecule by molecule manipulation; the products and processes of molecular manufacturing.

NEA. A Near Earth Asteroid passes within the orbit of Mars and approaches Earth. Asteroid 433 Eros, discovered in 1898, was the first NEA to be identified. Amor and Apollo asteroids are both NEA categories.

Oort cloud. The region extending more than 100,000 AU from the Sun, where perhaps a trillion cometary nuclei are thought to reside.

optical interferometry . An astronomical technique, used in the search for extrasolar planets, that requires widely separated optical telescopes to make use of the interference pattern of light waves coming from closely spaced points in the sky. The greater their baseline, or separation, the better the resolution.

orbital insertion. A spacecraft maneuver that places it in a stable orbit around a celestial body, such as a planet.

photolysis. The breaking up of a chemical compound by the action of radiant energy, especially light.

photometry. An astronomical technique used to detect variations in a star's luminosity caused by the alignment of a companion between the star and Earth, eclipsing the star.

photosynthesis. The formation of organic chemical compounds from water and the carbon dioxide of the air in the tissues of green plants exposed to light.

planetary ecosynthesis. The process of making an Earth-type environment on another world. Also known as terraforming.

planetfall. The landing of a spacecraft on a planet.

powersat. Solar power satellite placed in geosynchronous orbit. Uses solar photovoltaic cells to collect a star's energy and convert it to centimeter-length microwaves for power beaming to ground-based receiver arrays (rectennas).

primary shaping. Part of the fabrication process that involves turning a raw material into the approximate size and shape of an intended machine part. Casting and powder processing are two primary shaping methods that show promise for space manufacturing.

primary star. The massive body (a star) around which another body (a planet) is orbiting.

rad. A measure of exposure to ionizing radiation, equal to 100 ergs of energy per gram of absorbing material.

rectenna. Solar power receiver array. Receives the centimeter-microwave power beam generated from an orbital powersat.

refactory. Denoting an element or compound that vaporizes at high temperatures, such as uranium, calcium, and aluminum. Also refractory.

regolith. The layer of dust and fragmented rocky debris, produced by meteoritic impact, that forms the uppermost surface on planets, satellites, and asteroids.

remote sensing. Any technique for investigating an object from a distance.

robodigger. Robot digger. Creates the underground chambers and tunnels for your colonists so that they can spend most of their time in safety underground.

robodozer. Robot bulldozer. Prepares terrain for building structures.

robominer. Robot miner. Digs vertical shafts, locates ore, establishes mines.

Seed Factory. An automated unmanned manufacturing facility. It consists of perhaps 100 tons of the right set of machines, tools, and teleoperated mechanisms to permit both production and useful output and reproduction to make more factories. In *Outpost*, the Seed Factory lands on a new planet to prepare the way for human landings.

self-reproducing automata. Machines that reproduce themselves. This idea originated with John von Neumann.

sim. Simulation, or simulated life form. The digital inhabitants of a mathematical simulation such as *Outpost* are often called sims. A strategy simulation game may also be called a sim.

Site Map. In *Outpost*, this is an orbital view of a landing site on a planetary surface. Some potential mining locations, as well as the locations of your colonies, are indicated on this map.

slow sleep. In *Outpost*, the decreased metabolic state of suspended animation in which the colonists travel during their interstellar voyage.

solar flare. A sudden, violent release of magnetic energy in or near the Sun's photosphere that often sends great amounts of radiation and highly accelerated charged particles into interplanetary space. Flares are unpredictable, last from a few minutes to an hour, and emit high energy protons that constitute one of the most serious hazards of spaceflight.

speckle interferometry. A mathematical image reconstruction technique that improves optical and infrared images by removing atmospheric interference. At infrared wavelengths, scientists have detected dim companion stars using speckle interferometry.

spectroscopy. The study of the light emitted from a body (its spectrum).

SPEW facility. Sewage processing and environmental waste facility. This is where materials in a colony are recycled.

spysat. Spy satellite. The orbital observer satellite performs this function.

starship. A generic term for spacecraft capable of making interstellar voyages.

superconductor. Various metals that exhibit a complete disappearance of electrical resistance, usually at temperatures near absolute zero.

superplanet. A gas giant planet with a history similar to Jupiter or Saturn, both of which might be considered small members of the superplanet family.

suspended animation. The biological state in which metabolic functions are stopped through deep-freezing, with the intent of reviving the person in the future.

teleoperator. A device that allows action or observation at a distant site, by a human operator, through a mechanical or computer interface.

telepresence. The ability of a human to sense and affect a remote environment through mechanical means.

terraforming. The process of making an Earth-type environment on another world. Also known as planetary ecosynthesis.

Tile Map. In *Outpost*, the diamond-shaped terrain map that dominates the main tile screen. This is where the colony structures are built.

Tile Picker. The top center window in the main *Outpost* tile screen. This is where spacecraft that are available for landing, and structures that are available to build, are displayed.

tokamak. The preferred device for generating power from nuclear fusion. The word tokamak is the Russian acronym for "toroidal magnetic chamber." The first success of a tokamak device was announced in Moscow in 1968.

trajectory. The flight path of an object, such as a starship, a rocket, or a thrown beer can, through space.

Trojan asteroids. Asteroids located near the two stable Lagrangian points of Jupiter's orbit.

ULBI probe. Ultra long baseline interferometer.

VLBI probe. Very long baseline interferometer.

volatiles. Elements or compounds with low melting temperatures, such as water, ammonia, potassium, and sodium.

vulcanism. A general term for the geological processes in which crustal movements are accompanied by the generation of heat and gases, often with the violent ejection of cinders and lava.

weathersat. Weather satellite.

white dwarf. A member of a class of small, dense, white-hot stars of low luminosity.

WIMP. Weakly interacting massive particle, a hypothetical subatomic particle able to travel freely through matter.

wireframe. The basic structural frame of a graphic model intended for 3-D rendering.

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