

PHOENIX

Beyond the Stellar Empire

Starship Manual

v1.0

Starships

Introduction

Starships (also referred to as spaceships, space vessels, or simply ships) are vehicles capable of travelling through space. Ships come in all shapes and sizes, which in Phoenix are defined by the items that go into their construction. There are two basic parameters to a ship, from which the general concept of the ship is derived. These are the type of hull used in their construction, and the quantity used.

Hull Types

There are four types of hull that span a range from large volume but thin and weak through to small volume but thick and able to withstand damage.

Hull Type	Internal Capacity (mu's)	Integrity Loss Multiplier	Notes
Heavy	30	0.5	Thick and strong, generally used for warships and exploration vessels
Normal	50	1	Used by freighters that see action from time to time
Light	70	2	Weak, used by standard freighters
Xtra Light	90	4	Used by freighters in very safe regions of space.

Ship Size

The quantity of hulls multiplied by the internal capacity of the hull determines the size of the ship. It can therefore be seen that a ship constructed out of 100 light hulls will be much larger than a ship constructed out of 100 heavy hulls.

Integrity

Integrity is a measure of how resilient the hull type is to day-to-day stresses. As a ship can only be constructed out of one type of hull, this value will determine how often a ship will have to be patched up. This multiplier is applied to the stress level of any action to determine loss of integrity. Therefore, a ship constructed out of heavy hulls performing the same actions as an xtra light ship will suffer integrity losses at a rate of 1/8th that of the xlight ship. This is a very important factor when considering the type of ship to assign to a certain task.

Internal Items

The hulls of a ship are the bare bones. A ship needs items installed within it to make it functional. There are a number of basic items required in order for a ship to be serviceable.

ISR Drives – these propel a ship through interplanetary space. Without them it would take a ship from months to years to get from one planet to another.

Jump Drive – this is used to move a ship from one planetary system to another (see chapter on Stellar Navigation).

Mass

In Phoenix, the term **mass unit** (usually written as mu – pronounced: “em you”) is used to represent a combination of volume, mass and inertia. A single mu cannot be truly expressed in terms of cubic metres or even kilograms, it is a kind of compromise. It also takes into account other factors. For example a single life form is classed as one mu. As well as the physical mass of the life form the mu also accounts for living space required by the life form, possibly tools of trade such as weapons and even an environmental suit. An mu of ore on the other hand will include some kind of suitable storage device or cargo pod.

Items

Items along with mass (mu's) have a vast number of other parameters. These determine what the item can do or be used for. Each specific item has a unique number for example . Metals = 1, while Human Crew = 505. Items that have a number of common parameters or functions are grouped together. This is known as their item TYPE. This determines what the item can be used for, e.g. Metals has the item type ORE, this means that it used in building many other items. Hulls on the other hand are used in the construction of ships and are therefore given the item type SHIP HULL. TROOPS are used to run ships, control ordnance and fight battles. Certain items also have a subtype.

Time

Each week is broken up into 5 days during which turns are processed. This is normally Monday to Friday. This allows for some freedom to move processing days to accommodate bank holidays and general internet disasters. Where a day is lost the weekend will be used to bring the game back into line. During a standard processing day, orders submitted for positions, including any pending orders, will be run. Any special actions will be dealt with and standard maintenance checks for appropriate positions will be performed. After these are all finished, battles will be conducted. Finally, the results of all of these orders, known as **TURN RESULTS**, will be emailed to the appropriate players.

As stated each week consists of 5 days and each day is broken down into 60 **TIME UNITS** (TU's). This means that there are 300TU's in every week. Each action performed by a ship requires a set number of TU's. In order to make life simpler for the player however ships are able to stack TU's for up to a week, effectively performing up to 300TU's worth of actions in one set of orders. For example, a ship could buy some items, leave orbit of a planet, travel across the star system and enter orbit of another world and deliver the items it has just bought to a starbase situated on the world.

Thrust Engines – these are used in order to perform manoeuvres in gravity wells such as around planets. ISR drives cannot be used in these circumstances due to interference with the ISR field.

Quarters – crew and life forms need to have a number of basic living requirements satisfied. Quarters cover everything from sleeping booths through to mess halls and limited recreation facilities.

Bridge – while this is optional, not having one places a greater burden on the crew. As very small ships can easily have more crew than are needed, they can often go without a bridge and accommodate the drop in running efficiency.

Sensors – these are the eyes and ears of the ship. They use a battery of scanning techniques in order to observe the region of space near the ship. Further, they are used for specific actions such as scanning for minerals or other ships.

Cargo Bays – these are used for the transport of items (see section on Interaction and Trade)

Crewing a Starship

As well as a number of basic items installed into the ship, there are several other requirements. The most important of these is a crew to run the ship. Each item installed in a ship requires someone to look after it. This is known as the **crew factor requirement**. For a ship all these requirements are totalled giving an overall crew factor requirement. In order for the ship to run at normal operating efficiency (100%) the ship requires a crew whose total crew factors equals or exceeds this requirement. While crew are the most able at running ships, other troops can also be used. The table below gives the crew factors provided by various troops. Veterans (troops that have gained experience) are better than normal troops.

Troop	Normal	Veteran
Crew	4	8
Marine	2	4
Mercenary	1	2
Soldier	1	2
Scout	1	2
Startrooper	1	2

Ship designs generally assume that crew will be used to run a ship, therefore it is most often the case that there will not be enough quarters to run a ship using other types of troops.

As space is a premium on ships, more advanced items, if available, such as bunks or cryogenic booths can be installed instead of quarters. This increases the life capacity of the ship per installation space used. Ships designed for war, for example may encounter boarding actions. For this reason it is better to use marines as they are suited to close-quarter fighting. But as warships are made out of heavy hulls in order to resist damage, space is tight. As a result they will often install bunks, instead of quarters. These are both more resilient to damage and cram more life forms into the same space as quarters. Bunks though are both restricted technology and require the use of expensive minerals. As such they are generally considered a frivolity on a lighter hull ship.

Where a player issues a number of orders that overrun the total available TU's, the remaining orders are NOT deleted.

*They will be saved. These saved orders are known as **PENDING ORDERS**. A list of the pending orders will be shown at the bottom of the turn result for the ship.*

THESE ORDERS WILL NOT BE PROCESSED UNTIL THE SHIP HAS 300TU'S AVAILABLE!

This means that the week following the first turn, another turn will be sent to the player with the next 300 TU's worth of the pending orders completed – or all the remaining orders. If there are still orders pending this will continue week after week until all the orders have been completed.

As stated above a ship can perform 60TU's worth of actions per day. This means that a player can if they desire merely send in orders totalling up to 60 TU's and have a turn sent back to them every day.

In fact if a player sends orders in, a turn will always be generated.

This means that even if there are orders pending, sending in more orders will trigger the ship to attempt as many of the pending orders as time allows. For example, if the ship has performed 300TU's worth of actions and still has some pending, sending in more orders 3 days later will mean that the ship will attempt to perform another 180TU's of the pending orders.

Efficiency

Most orders performed by the ship take time - normally a set amount for a specific order. This however is adjusted by the efficiency of the ship. If there are insufficient crew factors to meet the requirements of the ship, then the time to perform the orders is increased accordingly.

Taking shore leave, i.e. a visit to a recreation complex gives a boost to efficiency that means that actions take less time. This boost to efficiency however is short lived. There is no other normal way of boosting efficiency beyond 100%.

Having more crew factors available than the requirement does not make the ship run more efficiently, it merely means that other penalties such as a surly crew (one that has not had shore leave for over 30 weeks), not having a bridge or attempting to fly an alien ship for example can be overcome, allowing the ship to run at optimal efficiency (100%).

Captains

A ship has a rank associated with it. This is generally captain. Under normal circumstances the captain is non-commissioned officer, i.e. one of the crew. With time however a crewmember could be given a commission, using the 'Create Officer' political order (See political position rules for more information). Once created, the new officer (a unique item in the game) will begin to accumulate experience that will aid in combat, and also give a boost to the crew factors provided by each crewmember. *It is important to note that the rank is associated with the ship, not the officer.* As such there is no reason why a ship without a commissioned officer cannot have a rank of admiral, although the lack of experience may well deter an affiliation from promoting a ship to this rank. If the ship's rank is increased, the ship will be able to have greater autonomy over its choice of actions, including which enemies it can select. Captains can only attack pirates and support and defend their own affiliation's positions (see appendix, Orders – add to enemy, add to support, add to defend).

Wages

Wages are paid every week. These are drawn either from the player's political position or from the individual ship if the player does not own a political position.

Standard weekly wages are equal to one stellar per troop (crew are classed as troops). The captain is also paid 5 stellars per week, such is the price for having somebody more experienced than the standard crew.

If there are insufficient stellars to pay the crew they will start to be less efficient. Should a player so desire, they can set the wages to be less than the standard amount. The primary reason for this is if the ship is transporting troops. In such cases there will be vastly more crew factors than the requirement of the ship. As such the drop in efficiency will not prove to be problematic.

At times however due to various events such as combat there may be a shortfall in crew factors. This would normally mean that the ship is running at less than 100% efficiency. Setting the wages to greater than 1 stellar each per week can be used to increase the efficiency, up to a maximum of 150%.

It is important to remember that having more crew factors than necessary - either through extra troops or by paying extra wages - will never increase the efficiency of the ship above 100%. Only a recreation visit will do this.

When a crew visit recreation complexes they will spend some of the wages that

Stellars

Stellars (in-game money) are one of the most important aspects of Phoenix. It is used for wages of troops and employees, it is gained from goods sold to world populations.

A stellar is a unit of currency. It is defined by a number of basic assumptions in the universe of Phoenix.

It has a standard value equal to 1mu of luxury goods sold to a planetary population on the same planet as the goods originated.

It is the standard weekly wage paid to a troop or employee in a starbase or crew on a ship.

It is the production cost of 1mu of an item. This does not include the base mineral cost.

From these defining factors, the relative value of any object or service can be determined.

A stellar is not a physical item, but a rating of credit agreed upon by the Extragalactic Economic Monopoly (EEM). Every position willing to trade or perform any service registers (an automatic part of the game) and all stellar transactions are passed via the EEM. Phoenix is a game not an accounting package.

*One generic currency has been opted for to make life simpler for the player – **this feature is a game mechanic that cannot be circumvented or cheated.** The EEM do not normally interact with the game on any other level, nor can they be swindled or cheated.*

they have been paid over the last six months. The quantity of recreation complexes present, as well as the amount of stellars they own, will determine the amount of stellars that they will spend in any one visit. All the stellars spent in the recreation complex visit go to the starbase owner. It is therefore in the interest of the starbase governor to build lots of complexes and entice ships to visit their starbase. They may offer incentives to visit their starbase instead of another. For example, a warship with a crew of 200 marines will have a wage bill of 5200 stellars over 6 months. Even if the crew blow only a quarter of their wages in a single visit, this is still well over a 1000 stellars, or enough stellars to run 50 complexes for a month! Few governors are going to pass up on this.

Generating Orders

Normally the order editor is used to generate orders for the ship. These should be issued sequentially for the ship, as they are processed in the order designated. All orders require the use of information. This could be anything from simple items through to other positions.

Data

In order to make issuing orders simple, all aspects of Phoenix use numbers to represent specific data. For example, the Yank Starsystem is number 146. Metal is item 1, a ship may have number 6654 and a planet may have number 226. These numbers are all stored in databases both at KJC Games and within the front end application.

When an order requires a specific number a player will often have a drop down menu, from which they can specify the ID so that the number will be filled in for them.

Common Data

A new front end will have basic data already included. This will have systems, common items, ores and affiliations that are known to everyone. To this list, a player should add any positions that they own and starbases that they trade with.

Restricted Data

Many data numbers will not be known at the start of game. This data is known as **restricted data**. Whenever this data is discovered during the course of the game, the responsibility is on the player to update their front end.

KJC holds a database with a list of information that has been discovered by each player. If a player attempts to use information that they do not know, the order will fail. In some cases they may well be penalised for attempting to use this information. Restricted data exists in the game to limit cheating.

Data

There are three levels to data.

Common Data – this can be used by anyone.

Affiliation Restricted – this is data that is known by the affiliation and safeguarded by various means in order to remain the sole property of the affiliation. This may require the use of subspace streaming to use data off-site (such as jumping into a restricted system), or regular purges built into the software of computers. Affiliation Restricted data can only be copied to other affiliations or political positions by issues raised and voted for by the affiliation.

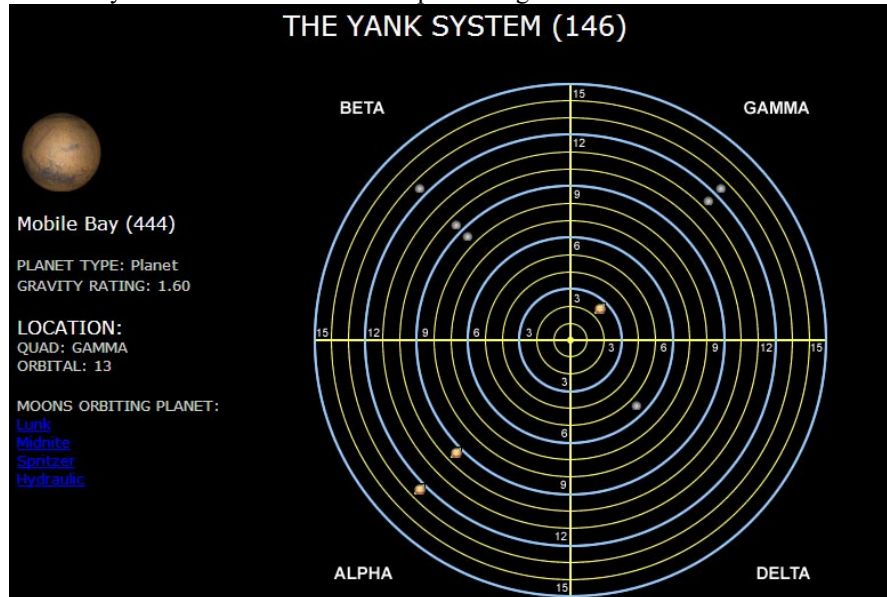
Political Restricted – this is data that is stored by the political office of the player. It is available to all positions run by the player. Political Restricted data can be transferred to political positions owned by other players, it can also be transferred to the affiliation.

Stellar Navigation

Terminology

Within the galaxy are millions of stars. A star is a huge ball of burning gas. It is generally the case that a star has a number of celestial bodies orbiting around it. These celestial bodies could be planets like our own or swirling spheres of cold gas like Jupiter. There could be asteroids or in some circumstances even another star present. Together these are known as a star system, or more commonly just system.

A primary star always exists at the centre of the system. Around this, the system is broken down into 4 quadrants and 15 rings known as orbitals. This map is not a map representing true location, but closer to a map used in the real world by underground tube trains. It represents relative location not physical distance. In Phoenix, relative location is based on iso-gravitational regions. These are effectively relative travel times for ships moving from one location to another.



Each star system is separated from other systems by phenomenal distances - so huge that it takes light produced by one star many years to reach another. Under normal circumstances travelling from one star to another would be impossible. Scientists however discovered something called Inverse Spatial Resonance (ISR). This showed how one region of space could be uniquely connected to another through the dimensions known colloquially as subspace. The application of this at a macro level meant that with the correct navigational knowledge a space ship could create a sphere around itself and be effectively catapulted instantaneously from one region of space to another.

There are two uses for ISR fields. The first use is to move from orbit around one star to orbiting around another star. This is known as 'jumping' from one system to another. Drives designed specifically for this use as known as Jump Drives. The second use of ISR fields is to move through space within a system. This interplanetary travel requires faster formation of ISR fields and many micro-jumps. The speed at which the field surrounding the ship forms is related to the relative volume of the ship compared to its integrity. As such ships that are relatively small compared to their mass such as those constructed out of heavy hulls are able to utilise smaller fields. This means that they can use drives that are able to create fields faster, thus allowing them to travel through interplanetary space much faster than ships that are built from xlight hulls.

System – the region of space surrounding a star, enveloping a number of worlds and other satellites.

Orbital – Each system is broken down into 15 rings known as orbitals. These represent iso-gravitational regions similar to contours on a map. These relate to the use of ISR drives and only nominally correlate with actual distances.

Quadrant – Each system is broken down into 4 quadrants. Alpha, Beta, Gamma and Delta.

Orbital Quadrant – This is used to reference the co-ordinates of any object within a system e.g. Mobile Bay is in Gamma 13.

Ecliptic – Iso-gravitational regions are bound by relative location of the original formation of the system known as the accretion disc. As such ISR drives can only be used in a relatively thin disc of space surrounding a star. Ships cannot normally move above or below the ecliptic.

Celestial Bodies

Planet – These are rocky worlds. They generally have an atmosphere that in some cases can support life.

Gas Giant – A large gaseous world without a solid surface.

Moon – A world that orbits either a planet or a gas giant.

Asteroid – A small chunk of rock that is too small to be classed as a planet.

Nebula – a cloud of gas that reduces the integrity of ships that pass through them.

Asteroid Field – a scattering of small rocks with chaotic orbits. They will damage a ship passing through an asteroid field.

There may also be other types of celestial bodies around, but these will need to be discovered.

World Parameters

X, Y – this is the diameter of the world at the equator and from pole to pole. This is measured in sectors. Sector sizes are relative to the type of planet and are roughly proportional to the time required to move from one sector to another while on the world. A world's size is usually described as "XxY" eg. 1x1 for a small moon or 36x36 for an Earth sized planet

Gravity – This is the gravitational field strength at the 'surface' level of the world. The surface for gas giants is roughly 1 Standard Atmosphere.

Optical Depth – This is the multiplier to any sensor scans conducted through the atmosphere of the world. This ranges from 0 (totally opaque) to 1 (completely transparent).

Atmosphere – This is the list of gases present in the atmosphere, and their relative abundance.

Temperature – The temperature of the world is determined by a number of factors including real distance from the primary star and optical depth. Worlds outside the tolerable temperature range for humanoids will prove to be undesirable for colonisation.

Moving Around

It is therefore more sensible to create maps of systems based on the use of ISR fields rather than actual distances. This allows the star system to be neatly cut up into regions of relative iso-gravitation known as orbitals. As all worlds have a direct impact on iso-gravitational regions within a system, in some systems it may be the case that some worlds in a low orbital are icy while other worlds in the same system at a higher orbital are in fact warmer. These though are quite unusual and it is generally the case that increasing orbital means decreasing world temperature.

Jumping

Moving from one system to another requires the use of a jump drive. While the time to jump is instantaneous, the formation of the field around the ship takes around two days. This field can only be formed under certain limits. The primary one is that there is little interference from the primary star. This invariably means that the starship is in at least the 10th orbital ring. This means that jumps from one system to another can normally only occur in the outer region of the system. If a ship attempts to perform a jump while in an orbital that is too low, the ship will automatically attempt to move out to the sufficient orbital. If already beyond the minimum jump ring, the jump will be performed in the current orbital. Other celestial bodies also tend to interfere with the formation of the field and as such a jump cannot be performed while in orbit around a world. Interference by other starships and such will also prevent the field from forming. As such a ship cannot perform a jump if it is involved in combat. Fleets of ships moving together will always give each other sufficient space in order to generate a field. A jump from one star system to another will place the jumping ship in the same orbital quadrant.

Interplanetary Travel

As a system map is largely based on travel times, under normal circumstances the use of the order editor will allow a destination to be directly set. From this a route will be determined. This route will always be the fastest route possible. Where the destination is in a lower orbital, the ship will move directly inwards first, then follow the orbital around, changing quadrants until it is in the correct one. Where the destination is in a higher orbital, the ship will change quadrants first and then move outwards until it is the correct orbital quadrant. Calculating time to move from one location to another is relatively simple. Each ship has an ISR drive rating. This is a multiplier to 'distance' travelled. To calculate distance travelled, add the current orbital value for each quadrant crossed to the number of orbitals crossed e.g. if a ship is in Gamma 10 and moves to Delta 8, it will first move down to Gamma 8 (2 orbitals crossed), then move to Delta 8 (crossed 1 quadrant at 8). Therefore the distance travelled is 10 (2+8). This is multiplied by the ISR rating to calculate Time Units (TU's) used. There is a normal requirement of 1 ISR drive per 10 hulls. A ship however can utilise less. This will place greater strain on the ISR drives and can lead to overload. If the drives overload, one will be destroyed and the remaining drives have to be reset. This is done automatically but takes time. After they have been reset another attempt will be made at creating a field.

The ISR drive rating effectively limits the size of the field and formation time. As such the faster drives (lower ratings) can only be utilised by certain hull types.

There are a number of ways of getting from A to B. Like every action in Phoenix, movement is undertaken using orders. There are a number of approaches to deciding which order to use. The advanced movement orders allow for a series of specific orders to be assumed. For example issuing the order 'move to planet orbit XXX' while located within a starbase will lift the ship into orbit, leave orbit and move through interplanetary space until it reaches the location of the planet in question, then it will enter orbit. These advanced orders are intended to make life easier. There is no reason why a player cannot issue each individual order. When undertaken, both sets of orders will take the same amount of TU's to conclude. However, a player may want to vary their route in order to avoid an asteroid belt or the known location of a fleet of hostile ships. In this case the single advanced order could not be used.

Orbital Docks

Normally a ship will land in a starport and take off under its own power. Should the starbase/outpost have orbital docks, these will be automatically used if they will prove to be beneficial. This may be because it is faster to do so or the manoeuvre rating of the ship is lower than the gravity of the world. Maximum ship size (No. hulls) that can be orbitally docked is equal to quantity of orbital docks multiplied by 25. Therefore 4 orbital docks can move ships of up to 100 hulls. It normally requires 40TU's to use orbital docks to either land or take off. There is no limit to the number of positions that can use the orbital docks in a single week.

Location Terminology

Docked – this means that the ship is in the starport of a starbase or outpost. It can leave this location by either taking off, moving to XY (a sector on the world) or to another starbase on the same world. Using advanced orders to move further afield will automatically incorporate one of these orders.

Orbit – the ship is in a geo-synchronous orbit around a world. It cannot be scanned by positions in space but can be scanned by other positions in orbit about the same world. It can also be scanned by positions on the surface of the world

Quadrant – the ship is in space, in the specified orbital quadrant.

Landed – this will be the XY co-ordinates of the specified world. A position on the surface can be scanned by other positions on the surface and by positions in orbit.

Hull Type	ISR Drives that can be used
Heavy	1,2,3,4
Normal	2,3,4
Light	3,4
Xtra Light	4

A ship with ISR 1 Drives will move 4 times faster through interplanetary space than one with ISR 4 Drives. It is normally the case that escort ships (those that accompany freighter convoys) constructed out of heavy hulls will still install ISR 3 Drives, in order to avoid leaving the light hulled freighters behind on long hauls.

Thrust Movement

As a ship cannot use ISR or jump drives while in orbit, it has to rely on more conventional means of propulsion. Reaction drives are therefore used in situations where ISR fields cannot be generated. This includes manoeuvring around planetary bodies, which can be broken down into landing, taking off, entering orbit and leaving orbit. They are also used in combat. Each engine produces a standard amount of thrust. It is the total thrust against the total mass of the ship that determines its manoeuvrability. This in turn determines the maximum gravitational field that can be entered. A ship with a manoeuvre ability lower than the gravity of a world will be unable to land on the world, or if constructed on the world, unable to take-off without aid.

Combat Speed

As well as for manoeuvring within a gravitational field, thrust is used in combat. A ship with a higher combat speed has the upper hand in combat. It is capable of leaving combat when it so desires and is also capable of preventing a single slower vessel from leaving combat.

As combat speed is based on manoeuvrability and modified by the integrity multiplier for the type of hulls used in the ship construction, heavy hull ships often have greater combat speeds than lighter hull ships.

Engines

Standard thrust engines have a range of boosters from small manoeuvring thrusters used for quick bursts to flip and spin the ship, through to larger continuous boosters to accelerate and decelerate the ship. Combat engines have sacrificed long burn boosters in favour of small high intensity ones. As such they give much greater performance than standard engines but only count for combat speed. Landing engines on the other hand are primarily long steady burst boosters that are suitable only for non-combat operations.

Worlds

Most worlds are in fact not spherical. Small asteroids may well be oblong, while rocky planets may be slightly oblate, that is squashed. In Phoenix the size of a world is represented by its X and Y values. Like the system map, these are relative to the time required to cross them. In the case of a planet, each sector is roughly 1,000km across. Earth roughly corresponds to a 36x36 planet. Smaller worlds such as asteroids tend to be made out of localised mineral deposits of an inhomogeneous and generally very rocky nature. As such a sector may well represent only a 100km. Gas giants on the other hand are little more than gaseous spheres. The surface of these worlds is considered to be the depth where the atmospheric pressure is suitable for life (roughly equal to Earth's). As such the

gravity at this level is also roughly equal to Earth's. As the surface at this depth is still insubstantial a sector could easily be 5,000km in diameter.

Each sector has a terrain type. In the case of gas giants these will all be gas, but for planets, moons and asteroids, there are many other classes such as craters, mountains, ice, forest, sea etc.

Wormholes

Certain regions of space contain peculiar phenomena in which the normal physics of the universe is twisted. These are known as wormholes. They are effectively rifts in space where one part of the universe is connected to another. A ship can journey through one of these wormholes in order to vastly reduce what could have been many jumps. Wormholes can however pummel a ship reducing integrity. The likely level of integrity loss is related to the instability of the wormhole. An extra light hulled ship passing through a very unstable wormhole may not come out in one piece and the resulting debris will be scattered around the opening at the intended destination.

As well as being unstable, wormholes may also be transitional. This means that they may connect to different locations at different times. Some are cyclic, in that they have predictable connections at different times of the year, others may well be random, possibly even connecting one part of the system to another.

Stargates

Stargates are artificial rifts in the subspace fabric of the universe. They cannot be seen, but show up on sensors as a localised distortion of space. The ones in existence are very ancient, the creators of which have long since left the Peripheries. It is understood that they anchor a point in space and use some advanced form of Inter Spatial Resonance to temporarily connect with another stargate. The use of the stargate requires a key to have been installed in the ship. This key activates the gate, causing it to resonate at the specific frequency of another gate that is attuned to the one being opened. The two gates then form a node long enough for an object in the well of the distortion to be transported through space to the location of the other stargate.

Each key is specific to a stargate within a designated system. So using a key to pass through a stargate will not allow the ship to come back the other way.

Stargates do not connect to all other stargates, they only connect to specific ones. Some may form a ring, while others may be connected to a single part of the ring. Some may be closed. If a stargate is closed it cannot be used even if the key is installed within a ship. Ships entering other stargates cannot exit through a closed stargate even if they would normally be connected. Failed stargate entries will leave the ship in the location of the stargate it attempted to enter.

Using a stargate can also cause integrity losses, although these are much less severe than using wormholes.

Other Phenomena

Asteroid Belt

Certain regions of space can contain tiny rocks and ice pieces left over from the formation of planetary bodies during the planetary accretion phase of a star system's evolution. These tend to be cold inert rocks that are very difficult to scan. Many are uncharted or follow chaotic orbital paths. As such a ship moving through an asteroid belt has a chance of colliding with rocks. The chance is not great and the experience of the captain also aids in avoiding damage. Should a collision occur however, damage is inflicted to the hulls. This can be very dangerous for an extra light hulled ship of small size (see section of ship construction for damage capabilities of hull types).

Nebula

Along with rocks there are regions of space that contain nebulae. The term nebula covers many types of clouds. These could be a band of gas left by a comet, outgassing emissions from a proto-planet with a low gravity, cold molecular clouds on the edge of a star system with a dim dwarf star, or even a planetary nebula formed by a super nova. Stellar flare residue and emissions from red giants are also responsible for the formation of nebulae. These gaseous particles are too small to physically damage the hulls of the ship - their effects are more insidious. They can freeze to the hull and then often burn off or become ignited around the ship. The general effect is to therefore to reduce the integrity of the ship.

Rogue Comets and Asteroids

Certain small cold planetary bodies have an albedo that is so low, or follow an orbital path that is so eccentric, that they are not detected during normal system scans. Their planet numbers are classed as restricted data and as such only positions that know of their existence are allowed to enter orbit. Detecting them is done automatically during interplanetary movement through the orbital quadrant. Scanning a location may well also reveal any that are present. Once discovered, the planet ID number is added to the political position (or their affiliation's restricted data list if the discovering player does not have a political position). From this point onwards the planetary body can be interacted with just like any other planetary body.

Scanning and Evasion

As has been noted under Rogue Asteroids and Comets in the section above, not everything is immediately visible to the sensors of the ship, even if they are close by. Scanning works on three principles, these are range of detection, scanning power and the profile of the object being scanned.

Range of Sensors

The first principle, Range of sensors is a fairly simple concept. Space is large, so it is the case that the ship actively scanning may not even come within range of an object in the first place. The larger the volume of space, the lower the chances of happening upon an object. When moving around a system from one quadrant to another, the chance of coming within sensor range of all objects in the orbital quadrant is roughly proportional to the orbital ring. Further, only the location moved into is checked, i.e. moving from Alpha 10 to Beta 10 will give a 10% chance of happening to get within sensor range of each object present within orbital quadrant Beta 10.

When moving across a system, from one orbital to the next (inwards or outwards) as a much smaller area is crossed, so the chance of happening to get within range of an object is roughly equal to the square of the orbital being scanned. Again it is the orbital being moved into which is scanned, i.e. moving from Alpha 9 to Alpha 10 gives a 1% chance of happening to get within sensor range of every object present within Alpha 10. Thus, it is much more effective when patrolling a system, if ships follow circular paths around the system.

Sensor Rating

The total output of the sensors of the ship produces a value called the sensor power. This is based on the total output of the sensors installed on the ship. Increasing sensor numbers gives diminishing returns, so the sensor power of 20 sensors is not double the sensor power of 10 sensors. The conversion of output to power is then translated into a value called the sensor rating and is measured as a percentage. This is the chance of detecting an object with a sensor profile of 0%. Even a single sensor will give a positive sensor power resulting in a sensor rating greater than 0%. It is possible to achieve sensor ratings greater than 100%.

Sensor Profile

Every object, including ships, starbases, worlds and ground parties have a sensor profile. This can be a large negative to a large positive. If an object cannot normally be missed it will have a sensor profile greater than 100%.

Sensor profile is largely determined by surface area. The lighter hull ships are designed to have maximum volume for cargo. As such they have large surface areas when compared to ships that are built from the same number of hulls, but incorporating a heavier hull type.

Scanning

Overview

If a scanning ship comes within sensor range of an object there is a chance of scanning the object.

The sensor power of the ship is added to the sensor profile of the target object.

This is the percentage chance of the ship scanning the target object.

Modifications to Sensor Profile

Certain situations will decrease the sensor profile of a ship, these include nebulae, the optical depth of a world's atmosphere and in fitting of special plates to the hull of the ship during construction.

Similarly starbases and outposts can build cave complexes that will hide mass from sensor scans.

As the sensor profile of the starbase/outpost is based on observable mass, this decreases their sensor profile.

Places to Hide

Hanging around the outer edge of the system will reduce the risk of being observed in the first place.

Landing on a large planet with a high optical depth will decrease chances of being scanned.

Combat

Combat alerts every position in the location. All positions involved in combat will always be scanned.

The table below gives an indication of the basic sensor profile of a 50 hull ship for varying hull types. Under normal circumstances, an xlight hulled ship is easily spotted, even at this small size.

Hull Type	Scanner Profile for a 50 hull ship
Heavy	25.6%
Normal	54.5%
Light	80.8%
Xtra Light	105.4%

As increasing the number of sensors installed in a ship will increase the sensor power of the ship, so too are there ways of decreasing the sensor profile of a ship.

Korondite Plates

As detailed in the combat and ship design sections plates can be layered onto a ship during construction. Certain types of plates counter scanners. These effectively reduce the sensor profile of the ship. As the number of plates that can be fitted to a ship is proportional to the hull type, heavy hull ships can utilise the most plates. The table indicates the results of using standard korondite plates for each hull type.

Sensor profile for ships fitted with maximum korondite plates			
Hull Type	50 Hulls	100 Hulls	150 Hulls
Heavy	-43.5%	-10.3%	22.7%
Normal	12.0%	77.8%	133.0%
Light	68.4%	167.3%	250.3%
Xtra Light	98.4%	214.9%	312.6%

This means that a ship that gets within sensor range of a heavy hull ship (50 hulls) needs a sensor power of at least 44% in order to have even a basic chance of detecting it. There are even more advanced versions of korondite plates that will reduce the sensor profile of the ship even further.

Cloaking

Related to scanning and detection is the ability to cloak. All cloaking devices are advanced technologies, but as they are not uncommon their use is described here. Cloaking devices make the ship completely undetectable irrespective of the sensor power of the scanning position. They also effectively make the cloaking position blind while cloaked, i.e. the cloaking position cannot scan. All cloaking devices can operate for a limited amount of time. After this, the position has become charged with exotic particles. These do not interfere with the normal running of the position but are easily detected, which means that the position cannot be cloaked again until the charge dissipates. This normally requires 300TU's to pass since the last activation. All cloaking devices work on an optimum surface area that can be cloaked. In ships, this equates to total installation space (quantity of hulls multiplied by internal capacity). If the size of the ship attempting to cloak is greater than this value, the cloak will not last as long due to the increased rate of exotic particle build-up.

Locked in Combat

Whenever a ship is scanned, a combat check will be automatically initiated. If a ship is registered as an enemy, it will be attacked. The attacker will attempt to get close enough to the target ship that it can effectively prevent the formation of ISR fields or disrupt attempts to land or leave orbit. This will be successful only if the attacking ship has a superior combat speed. While combat is covered in more detail in the combat section, this point is very important for scanning.

If a ship is pinned and therefore forced into combat, it loses all hope of trying to remain unnoticed. As such the ship, an in fact any other position involved in combat immediately has sensor profiles of 100% and the standard sensor range check is ignored.

If a position is pinned, it cannot perform the cloaking action (see combat section on combat options). Therefore it cannot leave combat through the use of stealth of any kind.

Interaction and Trade

One of the key elements to Phoenix is the relocation of items. This will be done for many reasons such as trade, colonisation, war, empire expansion and so on. It is generally the role of the ship to accommodate this transfer. This is where the cargo section of the ship comes in use.

While most items can be carried in general cargo bays, dedicated transportation bays can be installed. There are restrictions placed on each type.

There are a number of types of cargo

Life Support	This gives the maximum mu's of life forms that can be carried by the ship. These include sentient life as well as alien creatures. Life form basically covers anything that would die in a cold vacuum. Life forms cannot be carried in Cargo.
Ammo	Ammunition will explode if destroyed. If it is still on a ship this could be disastrous. Installing magazines gives some measure of safety to the ship. There is no imperative to install magazines and ammunition such as missiles and torpedoes can still be used directly from cargo. But Ammo Bays offer more protection to the ammo if the ship should come under fire
Ore	Due to its resilient nature, ore does not need custom fitted housing or life support or thermal regulation. As such, compared with normal cargo bays, those designed for ore have greater capacity for the same volume of installation space.
Space Fighters	Space fighters can <u>only</u> be launched from specially designed bays. While a ship with cargo bays could transport more space fighters than it is capable of launching. In such a case only the maximum number of space fighters will be launched. However, should some fighters be destroyed in the day's combat, fighters not launched will be used to supplement those destroyed.
Cargo	Any items, apart from life forms can be carried in cargo. The programs work out the best possible location for each item. There is no need to specify where an item will be placed.

Cargo

A ship has a maximum installation capacity. Certain items such as cargo bays and quarters can be installed into this space. Once installed they provide room for items that are not normally installed, such as life forms or trade goods.

Items in cargo can be loaded and unloaded without danger to the integrity of the ship. Items can either be picked-up and delivered through the use of the specific item number or through item type. The latter will allow for multiple items to be transferred at the same time, but with the costs of a single transaction.

Important

If item type ANYTHING is used for a delivery or a sell, items with crew factors will not be considered. This is to prevent delivering all the crew from the ship by accident, which would render it useless!

Where a number of transactions are carried out and there is uncertainty over the amount of item present, it is standard practise to use quantities greater than would be possible to pick-up, e.g. a ship with 500mu cargo space may attempt to buy 500mu photon guns, 500mu luxury goods and 500mu metals. The theory is that photon guns are the primary purchase. After buying as many of these as possible, the ship will then attempt to fill any remaining space with preferably luxury goods, but failing that "metals will do", thus hopefully ensuring that the ship fills its cargo hold to capacity.

Transaction Types

There are four basic transaction types. These are pick-up, deliver, buy and sell. All of these transfer items from one position to another.

If the quantity of an item specified in an order is greater than the quantity available, then the amount transferred will be automatically decreased to the amount available. Should there be none of the item present then the action will fail. The ship will still be charged the standard number of TU's for the action even if it failed.

Transferred items are placed by default in the cargo section of the destination position. Should there be insufficient cargo space for the specified item in the destination position, the amount of item transferred will be decreased to the maximum amount that will fit. If the installation option has been selected then the transferred items are not placed into cargo but an attempt is made to install the items, bypassing cargo space. Again if insufficient installation space is available the amount installed will be reduced to the maximum possible. The program will then attempt to transfer the remainder to cargo space as detailed above. (see 'Installing')

Buy and sell deal with starport markets. These will involve an automatic stellar transfer based on the price of the item. Should there be insufficient stellars in the purchaser's account then the quantity of items transferred will be decreased in order to keep in line with the stellars available.

Pick-up and deliver normally require the use of security codes for the position being interacted with. If the same player owns both positions, the security code is automatically assumed to have been given, and so a player does not need to specify these in their orders.

Installing

When buying or picking-up items, presuming there is sufficient installation space available, the items can be selected for direct installation into the ship. This will always decrease the integrity of the ship. If the ship falls below 20% integrity it will not be allowed to install further items until it has performed a maintenance complex visit to restore lost integrity.

If an item cannot be installed, such as crew, trade goods and such then the order will ignore the install indicator in the order and attempt to place the items in the relevant cargo section.

Only ships have an installed section, so when delivering to non-ship positions, there is no need to use the install option.

Pick-up Authorisations

Having the security code for a position effectively allows any items to be pick-up without the consent of the position's owner. As such it is generally the case that instead of giving out the security code, the position owner will give out authorisations. These effectively limit the range of items that can be pick-up without the need for the security code. The exact range of pick-up authorisations can be found on the order. Examples include allowing free access by all within the affiliation or possibly a single item to be picked-up by a specific ship.

HIPORTS

Starbases and outposts can build links from the ground into orbit. If a starbase/outpost has a hiport, a ship can perform all transactions while in orbit (but not complex visits).

Planets purchase items from starbases. The amount they pay for standard items can be determined by the economy scan of the planet. The only way to actually sell to the world is through a starbase built on the world. Even a planet without a population may have a life form market. This is the case for habitable worlds where the starbase is effectively being paid to act as a colonisation facility.

As a starbase determines the items on its market, a ship owner will often have to contact the owner of the colony in order to strike up a deal for the purchase of specific items.

An economy scan can be used in order to give a basic value for an item sold to the planetary population by the starbase on the world. Further it will also state the standard weekly mass that will be purchased by the population.

Perishables

Certain trade goods are classed as perishable. These items go off. In game this is accounted for by a weekly mass attrition. Each week there will be a drop of up to 5% of the mass. When trading in perishable masses it is imperative that this loss is taken into consideration on all trade deals. If the goods are going to be in transit for a few weeks this could vastly reduce the profit margin.

Transactions using Item Types

While transactions are normally for a specific item number, such as Basic Elements (2), they can also be for item types such as Ores. The advantage of using item types is that a number of items can be accounted for in the same time period. If an outpost on the edge of known space is mining a few different ores, then ships are not particularly fussy which ores they are picking up as all the ores present will be eventually shipped off to a starbase. As such the ship will issue the order to pick up item type “ores” equal to the amount of cargo space present. By doing it this way the ship does not need to specify which ores to pick-up and if there are more than one ore type present, the action will only take the time of a single pick-up.

An even better example of the use of item type is salvaging debris. By using pick-up and deliver item type “anything” a cargo ship can be ordered to undertake shipping runs effectively hoovering up the debris and delivering it to a starbase or other position.

Important Note— deliver item type “anything” does not deliver any item which provides crew factors. This is to stop the delivery of crew which would render the ship useless. It will however deliver every other type of item from the cargo including space fighters, ammunition and such, so should be used with some discretion by warships.

Transactions that use the item type parameter always start with the item present in the largest quantity. Once this has been transferred up to the maximum number of mu’s possible then other items are considered. For example, picking-up “anything” from the debris of a destroyed ship may attempt to pick-up hulls first until the space present in the cargo section of the ship falls below 100mu’s (the mass of 1 hull), then it may pick up quarters and attempt to fill the remaining cargo space and finally pick-up some gattling lasers and troops until there is no cargo space remaining. All this will cost the standard TU’s of one pick-up.

Planetary Economies

A player running only ships need not concern themselves with the ins and outs of planetary economies, but understanding the basics of trade is very important for making a profit and paying crew wages.

Many planets produce unique trade goods, life forms and drugs. By unique it means that although the item falls into an item type, the item itself cannot be produced on any other world. As these are freely accessible to the planetary population the demand for the unique items is quite low on the planet. On other worlds the planetary population will pay more for the item. The increased value of the item is based on the purchasing population and the distance from the origin. As such, buying unique items from one starbase and selling them to another (either in another star system, or a distant periphery) can earn the ship a lot of stellars. However, as the ship cannot sell directly to a population, they have to negotiate a purchase price with the owner of the starbase they are intending to sell to.

A small population will only be able to cope with a small mass of drugs and trade goods on a weekly basis, while a largely uninhabitable world will have few people wanting to colonise it. This should be taken into account by the freighter captain when scouting out deals. As such it is generally the case that small shipments of very expensive goods should be sold to starbases on worlds with low populations. Huge shipments of low value goods should be sold to starbases on worlds with larger populations, and probably many starbases in competition. Also, where possible a round trip should not be ignored. Swapping cargo or taking part payment in goods will mean that stellars are to be made in both directions. A clever captain with a number of contacts could easily make good profits with only a small ship, ferrying goods across the galaxy from one small starbase to another.

Rapid Trade Runs

As each ship can accumulate up to 300TU's a number of ships in strategic locations can be used as a relay in order to get a perishable shipment from one location to another before the weekly attrition sets in.

Exploration

Exploration is an important part of Phoenix. It is used to search for new resources as well as determine where to build outposts. Resources can be classified under three headings. These are mineral based, special and planetary population.

Searching for Mineral Resources

Production converts ores into finished items. As such, new and better sources of minerals are always desired. Mineral deposits can also become exhausted over time, thus forcing searches for new ore sources.

Scanning a planet for minerals is known as Geological Probability Indication (GPI). What this gives is the likelihood of minerals of the type specified being present. The sensor power of the ship also gives an error range in the mineral abundance present. Increasing the sensor power of the ship will reduce the error range, giving a more accurate indication of the ore present.

There are number of ways to GPI a world. The first is a GPI of the entire planet.

This takes the average of the ore scanned for over the entire surface area of the world. On a large world, the low general background will swamp a small number of localised deposits. A GPI scan of a designated area can also be conducted.

This can be done in order to look at the average over the area. A series of these can be used on large worlds in order to quickly zoom in on a localised deposit by a series of overlapping GPI scans. Scanning rows will allow a ship to sequentially GPI scan every sector in a row for the range of rows indicated. This is slow but does have the advantage of being thorough. Finally a GPI scan can be conducted for a single specific sector.

GPI Scans

GPI scanning is normally conducted from orbit. If the position is landed, then it can only GPI the sector it is located in.

Ores fall into a number of categories. When GPI'ing the player has to select which ore type is being scanned for. Only known ores will be scanned for.

Common – Metals, Basic Elements, Hydrocarbons.
Excellent Yield – 170+
Good Yield – 150+
Poor Yield – 100-

Uncommon – Thorlium, Pulac, Rare Earth Elements, Strion, Korondite, Precious Metals, Precious Gems.
Excellent Yield – 110+
Good Yield – 90+
Poor Yield – 60-

Rare – Collidium, Celesium, Fibrillium, Jacium,
Excellent Yield – 5+
Good Yield – 10+
Poor Yield – 5-

Very Rare – Gravitron, Moxa, Degenerate Matter, Zionite
Excellent Yield – 5+
Good Yield – 3+
Poor Yield – 1-

Prospecting

Once a sector is designated as a location likely to contain one or more minerals, a second operation can be carried out. This takes much longer than a GPI and can only be conducted while landed in the designated sector. It involves taking samples of the rock, soil, subsurface (or even ocean floor) and determining the exact yields of various ores present. It determines the vein, which is the mass or ore present. Finally the prospect also determines the accessibility of the vein. This is the number of mines that can exploit the vein at maximum output. There will be a 10% drop in the output of the mines for every multiple of this number, e.g. the table below shows a yield of 100mu's and a 10% drop of 15.

Quantity Mines	Output Per Mine	Total MUs ore produced per week
15	15@100	1500
30	15@100, 15@90	2850
45	15@100, 15@ 90, 15@ 80	4050

From this it can be seen that if the yield is high but the 10% drop is very low, setting up a large outpost to tap what seems like a good yield on the surface may well prove to be a poor investment.

Another table, this time for a yield of 150 but a 10% drop of 3.

Quantity Mines	Output Per Mine	Total MUs ore produced per week
15	3@150, 3@135, 3@120, 3@105, 3@90	1800
30	3@150, 3@135, 3@120, 3@105, 3@90, 3@75, 3@60, 3@45, 3@30, 3@15	2475
45	As above with 15@0	2475

For the first 15 mines this outpost will out-produce the previous one, but this all changes when larger quantities of mines start to be considered. A good explorer will take these finds into consideration when searching for a site for an outpost. When looking at minerals it is also a good idea to look at the range of minerals that can be produced in the sector. It is often the case that a sector will have a number of overlapping ores or even possibly more than one source of a single ore. In the above example, the two ore veins may have existed in the same sector. This means that construction of an outpost would allow it to exploit ore from the 150mu yield to begin with, and then with increasing numbers of mines start exploiting the 100 yield once the return on the 150 fell below 100. Each deposit has its own unique identification number (ID#). This is only revealed by the prospect order. This ID# is used by the outpost in order to exploit the deposit. When considering where to construct an outpost, the vein has to be considered. There is little point in building an outpost in a sector where all the ores will be exhausted in a few months!

Dispersion

While a deposit is considered to be situated in a single sector, it often extends into the surrounding sectors. This is known as the dispersion factor of the deposit. The dispersion value is the multiplier per sector to the original yield per sector distance from the origin. A dispersion of 0 means that the deposit is truly a point source and can only be exploited from the specific sector. The other extreme is 1. This means that the yield is a planetary one and can be tapped from anywhere on the world. It is generally the background level and when present is usually very low in yield. A dispersion of 0.5 means that a yield of 100 for example would be 50 in an adjacent sector, 25 in the one next to that and so on. A value of around 0.6 is common.

Searching for Special Resources

Special resources are those that cannot be found through standard actions and require the ship to perform special actions. These are always processed by a human moderator and as such have a real money charge of £1.50 per special action associated with them. Once a special resource is discovered however, it is added to the data for the game and given a unique identity number (ID#). Once this ID# has been discovered, it can be used by any outpost or starbase in order to exploit the special resources, there is no further need to conduct special actions. As such starbase owners are often prepared to pay for ships to explore the planet for them, rooting out new special resources.

Conducting an expedition to discover special resources is fairly simple. Mapping the surface of the world will produce a map of the various terrains present on the surface of the world. For simplicities sake all terrains of a specific type are considered to have similar ecologies. There may be a few exceptions, although these will be obvious from the results of the explorations.

Armed with a map, ships can then land in each terrain type and perform a “Surface Exploration”. This will give a description of the terrain surrounding the ship. This may include where appropriate simple descriptions of the flora and fauna or possibly native activity as well as geological features. A surface exploration will not normally reveal any special resources.

Once a surface exploration has been conducted, specific investigations of the features noted in the surface exploration can be conducted. What is believed to be worth investigating is very much open to interpretation by a player. A general rule of thumb though is that abundant special resources are generally obvious. As more and more investigations are carried out, the likely yield and 10% drop for the special resource are likely to drop.

Example of a series of investigations

The player first landed in a forested region of the planet and performed a surface exploration. From this the player then decided to investigate the trees and the creatures present. These led to further areas that the player thought might be interesting. In the table on the next page, the bold type is the title of the special action presented by the player (they may have put a note about how they intended to perform the investigation). The italics are the results written by the referee.

Special Resources

They have the same parameters as mineral resources and once discovered are generally treated in pretty much the same way. They generally also have a ‘restock’ value. This is the amount of increase in the ‘vein’ each week. Where a yield is excellent, but the vein is poor, a decent restock may well allow an outpost to exploit one resource for a period of time until it has exhausted the resource, then swap to another, allowing the first resource to replenish itself.

Origin

Certain items producible by special resource complexes are classed as unique. This means that they are not found on any other world. As such they have an origin, this being the world they are produced on. Items with origins have a variable value when sold by a starbase to a planetary population. The price that the planetary population are willing to pay is proportionate to the distance between the origin and world where they are being sold.

Standard Investigations

As well as Surface Exploration and Investigation, there are a number of other special actions that are routinely undertaken.

Surface Exploration – *This is conducted while landed on a world. The special action will explore the terrain. To keep things simple, it is assumed that all terrains of the same type are approximately the same (for a given planet).*

Investigate XXXX – *where XXXX is a specific feature of either a previous exploration or investigation.*

Subsurface Scan – *This again is conducted while landed and will reveal some aspect of the geological processes involved in the formation of the terrain. It also might reveal some minerals that are not revealed by standard GPI’ing.*

Orbital Scan – *This is conducted while in orbit. It will generally reveal something about the region of space close to the world. It will detail rings if they are present as well as other anomalous features.*

Low Pass Scan – *This is again conducted while in orbit. It will reveal some general aspects about the surface and where appropriate the atmosphere. It will also check for anomalies on the surface.*

<p>Surface Exploration of Forest <i>The forests of Trath are dark cool and humid. The cries of many arboreal creatures can be heard far above in the canopy. There are localised stands of trees. Pine trees primarily forest upper slopes while deciduous trees, overlooking the many small streams, dominate the valleys.</i></p>			
<p>Investigate Trees <i>The trees form ancient groves and although pines are sometimes found in a grove of deciduous trees, the soil chemistry is generally responsible for obvious suitability of each species.</i> ID#: 12467 Resource: Hydrocarbons (3) Yield: 120mu 10% Drop: 5 Abundance: 100000mu Restock: 100mu</p>		<p>Investigate Many Arboreal Creatures <i>There are many species present although for the most part they appear to have no exploitable value. One species appears to dominate the valleys. This creature clings to branches, never descending to the ground.</i></p>	
<p>Investigate Pine Tree <i>The pine trees growth to heights of a few tens of metres in height. Beyond their resource as wood, there is nothing specific about these trees. Most are pinecone bearing.</i></p>	<p>Investigate Deciduous Tree <i>The deciduous trees require plenty of water and considerable amounts of light. There are many fruit trees present although it is found that the arboreal creatures tend to prefer to feast on a fruit that looks similar to a plum. The seeds from the fruit in general are largely voided through the intestinal tracts of the arboreal creatures.</i> ID#: 22211 Resource: Fruit (30000) Yield: 100mu 10% Drop: 30 Abundance: 50000mu Restock: 100mu</p>	<p>Investigate Clinging Creature <i>The thick fur of these creatures proves to be the only part of the creature with commercial value.</i> ID#: 12241 Resource: Fur (30010) Yield: 40mu 10% Drop: 10 Abundance: 5000mu Restock: 10mu</p>	
<p>Investigate Pinecones <i>The pinecones contain an interesting compound that can be exploited as a drug.</i> ID#: 21347 Resource: Trath Pinecone (30225) Yield: 5mu 10% Drop: 1 Abundance: 200mu Restock: 1mu</p>	<p>Investigate Deciduous Plum Analogues <i>These are the favoured food of the arboreal creatures and prove to be a firm favourite with the exploration team.</i> ID#: 148711 Resource: Trath Fruit (32170) Yield: 10mu 10% Drop: 2 Abundance: 500mu Restock: 5mu</p>	<p>Investigate Seeds <i>The seeds are collected by the team and after a series of tests are found to have no commercial value.</i></p>	

In the example it can be seen that new avenues can be further investigated. There are the streams to look at, possibly some soil samples to take. Further investigation into the other arboreal creatures. A player may even be interested in collecting seeds from the Trath Plum Tree and seeing if they can be planted on other worlds. This though invariably requires the use of research facilities, i.e. the assistance of a starbase or outpost.

The player may even sell the information about the Trath Plum Trees to a starbase built on this world. This will require the two players to contact each other and work out some kind of deal.

Typical World Survey

This is an example of the method used to survey a world. Following this will give a very good indication of what is to be exploited on the world.

Planet Scan – gives map showing various terrains to explore.

GPI World (all ores) – reveals some basics of what can be exploited.

Orbital Scan – always good to check for anomalies.

Low Pass Scan – as above, may also reveal some important features.

GPI areas, rows or sectors for minerals.

Land at each terrain type – then perform the following:

Surface Exploration – gives some idea what to investigate.

Subsurface Scan – geological surveys can prove useful.

Investigate XXX – where XXX is some interesting aspect as revealed by the previous special actions.

Prospect – only if the sector has revealed itself to contain minerals in abundances worth exploiting.

Non-Standard Special Actions

From time to time there will be questions that need to be asked that do not fall into the basic special actions such as investigation. These may include speaking to natives found on the planet or attempting to perform an action that just isn't covered by the normal selection of orders such as rounding up some natives and forcing them into slavery. These special actions are however dealt with in the same way as investigations. The player should write what it is that is being attempted. The referee will then read the special action, take into consideration parameters appropriate to the situation and give a response.

When writing special actions use the following guidelines:

All special actions should have a single goal.

Keep special actions brief.

Avoid any ambiguity.

Never attempt to circumvent standard actions.

This is an example of a player attempting to round up a few peaceful and pacifistic natives on a backward world and force them into slavery.

Special Action:

Using the troops from the ship surround one of the small camps of natives and use overwhelming firepower to force them into the ship in order to make them slaves.

Results:

The 300 troops surround a small camp of around 50 natives. A quick and brutal display of firepower reduces a few protestors to charcoal and the rest of the natives to pliant captives. These are herded into the ship under close scrutiny where they are stripped, deloused and made ready for their new lives as slaves.

The player writing the above special action may have already discovered that the natives were peaceful and without adequate weaponry so felt confident to pull-off the action with little or no problems. Had the natives been hunter-gatherers or slightly better defended, the referee may well have given a very different result.

NB-While Phoenix does not attempt to enforce morals on players; overly extreme actions will generally be toned down or glossed over. Phrases such as ‘brutal things were done to the slaves’ will be used.

This is a game and therefore should not be offensive to players.

Building Outposts and Starbases

While trade is capable of supporting the wages of a ship’s crew, at some point it is likely that a player will want a more permanent source of stellars. This may be from a regular mineral or special resource that the ship can then sell to markets of other starbases. It may be the case that the player has grander schemes and actually want to build more ships and create a shipping fleet – or a war fleet. Starbases cannot be built directly; a ship has to first construct an outpost. The outpost can then issue an order to be converted into a starbase. A short overview of both installations and the method of construction follow.

Outposts

An outpost is an installation that consists of one of more complex. A complex is an immovable structure that performs a specific task or has a specific role. A command centre for example ensures a chain of command in order to maintain efficiency. A mine strips and processes minerals from the sector in which the outpost is built. Special resource complexes tap the world ecology. Along with complexes, an outpost contains many other items needed for their smooth running. Employees are required to run the complexes. Troops and ordnance are often present in order to provide defence from ground attacks. Orbital defence platforms may have been built to counter-attack anything attempting to perform orbital bombardments. For all this though outposts are considered second-rate and as such all the troops and employees present in an outpost demand double the normal wages, this being 2 stellars per week.

Political Requirement

Running an outpost or starbase requires the player to first have a political position. (See rulebook on Political Positions)

Political Positions generate a weekly report. They also have weekly cost of £1.00.

Outposts

Outposts only generate a turn on request. When a printout is requested, the player is charged £2.00. Orders can be sent in without the necessity to request a printout.

Starbases

Starbases automatically generate a report every week. This report costs £2.00.

Battles

If the outpost/starbase is involved in battle, a battle report will be generated at zero cost.

Starbases

Starbases are effectively fancier versions of outposts. Along with everything that can be done by an outpost, starbases can also perform the following:

Factory Production – Factory complexes build items from minerals.

Merchandise – Merchandising complexes trade with the world population and can directly generate stellars.

Market – Starbases can have markets allowing ships to buy from them and sell to them. All interactions with outposts can only be either pick-up or deliver. Starbases also have the benefit of only having to pay 1 stellar per week.

Unusual Locations

While it is normal to build an outpost on the surface of a world in order to exploit planetary resources, it is not strictly necessary. An outpost can be constructed either in orbit or even in space. In such cases the outpost is generally referred to as a space station. It has all the parameters of a standard outpost although for obvious reasons it will not normally have any resources to exploit. There will also be other constraints such as not being able to build certain complexes such as cave complexes.

Construction of an Outpost

Normally outposts are built on a mineral deposit discovered through exploration and planetary surveying. If the outpost is destined to become a starbase, with production facilities, it is preferable to build the outpost on a good metals deposit with ready access to a reasonable basic-elements source as these are the primary two minerals used in building most items. If it is to remain an outpost, then exploitation of an uncommon or rare mineral deposit is perfectly reasonable. Careful consideration of the maximum potential growth should be undertaken as once a complex is constructed, it cannot be dismantled, only demolished. At 1000mu's each, setting up an outpost for a few months is not normally commercially viable.

Thorlium while uncommon is used extensively in the construction of ordnance and other items that have to withstand considerable stresses, including ship hulls. Again, if the outpost is destined to be upgraded to starbase status with factory facilities, having a source of thorlium either on the planet or within easy shipping distance is definitely preferable.

The order to construct an outpost requires the nomination of the first complex to be built. This complex will be constructed out of the modules present in the cargo section of the ship. This means that the ship needs sufficient modules present that are suitable for the complex designated (see Starbase rulebook appendix – Complex Module Requirements).

Providing that sufficient modules are present and the location of construction is viable, i.e. not on top of another facility and the designated complex can be constructed, an outpost will be created. This will have its own unique number and one complex. Once constructed a free update of the outpost will be sent out. This will detail the outpost, listing the single complex as well as other data such as mineral resources that can be tapped and the position present in the starport, i.e. the ship that built it.

A standard approach is to build an outpost as the last action making sure that there are plenty of TU's remaining for the ship. This way the update and the ship turn will arrive the next day and the ship will still have TU's it can use. The ship will then have TU's available to deliver some employees to the outpost (at least 10 to run the single complex) and possibly some other basic items such as more modules and employees to run them.

After these deliveries it is then a case of issuing orders for the outpost directly, running it as a separate position (see Starbase rulebook).

Maintaining Ships

Performing actions such as taking off, or entering wormholes and suchlike causes stresses in the hull of the ship. These stresses and micro-fractures will eventually lead to the ship falling to pieces if ignored. The current state of the ship is known as its integrity, this is a measurement of its peak state. A ship straight out the construction yard will have integrity of 100%.

Weekly Integrity Attrition

Merely having a ship running day in day out will take its toll on integrity such that even if a ship never moves, its integrity will slowly decrease over weeks. The hull type used in the construction of the ship dictates the ship’s resilience to integrity losses, both weekly and due to undertaking actions that place stress on the hull.

Heavy hulls are the most resilient. Ships constructed out of heavy hulls only normally lose 0.5% integrity per week. Ships constructed out of xtra light hulls will lose 4% integrity per week.

Hull Type	Weekly Loss	Integrity Modifier
Heavy	0.5%	0.5
Normal	1%	1
Light	2%	2
Xtra Light	4%	4

Manoeuvres

All actions have a chance of reducing the integrity of a ship. The chance can range from 0% through to 100%, i.e. some will never actually reduce the integrity of a ship under normal circumstances. Each action also has a maximum integrity loss. This means that should the action trigger an integrity loss, the integrity of the ship will drop by a random amount up to the maximum integrity loss. Before this loss is applied to the ship however, it is first multiplied by the ship’s integrity modifier. For example, a ship landing on a planet may incur a maximum integrity loss of 2%. For a ship constructed out of heavy hulls, the maximum loss will be 1% but for a ship constructed out of xtra light hulls this could be as much as 8%.

Zero Integrity

Once a ship falls to zero integrity, it will break up and no longer be a ship. It will be reclassified as debris, effectively consisting of a list of remaining items. Debris can be picked up by anyone as long as they have the debris position number.

Low Integrity

Even if a position has not dropped to zero integrity, it has a chance of blowing up but only if involved in combat. If a ship has suffered over 50% hull damage then each damaging hit has a chance of forcing an integrity check to avoid blowing up. The chance of forcing an integrity check is proportional to the total damage sustained by the ship. An integrity check to avoid blowing up is based on the current integrity of the ship up to a maximum of 80%. Therefore having integrity of at least 80% will ensure the greatest chance of avoiding blowing up in combat.

Integrity

Zero integrity causes the ship to be reduced to debris.

Debris cannot perform any actions.

Debris can be picked up by anyone even without using a security code. Life forms will be classed as prisoners if no security code is used.

Debris suffers attrition. This is normally a maximum of 5% per week. This means that up to 5% of the items present in the debris will be lost forever.

Installing Items

Due to integrity losses only ships with current integrity greater than 20% will be allowed to have items installed in them. At any time current integrity falls below 20% any further attempts to install items will fail.

Integrity in Combat

Warships and vessels likely to see sustained combat should aim to have integrity values of at least 80% to avoid unnecessary chances of blowing up during combat.

Ship Use

Due to the regular loss of integrity suffered through taking off an landing on worlds, survey ships should be made from heavy hulls, or possibly normal hulls.

Complex Visits

All complex visits have to be conducted while in a starport. This is a location of the starbase or outpost designed to accommodate ships and other docked position.

Installing/Uninstalling Items

Both installing and uninstalling items will reduce the integrity of a ship. This is based on the quantity of items and not the size of them. Jettisoning the items avoids the integrity drop but has the unfortunate side effect of destroying the item. The theory is that the item is cut out, leaving the ship intact while uninstalling the item removes the installed item intact at the cost of the hull.

Refit

If a ship is replacing items that are specified as being part of the ship in the ship's blueprint, then a refit order will be invaluable if the ship requires many items to be installed. A refit order, conducted while in a starport will attempt to install items in order to return the ship to its original design. Presuming that the starbase/outpost has patches, these will be automatically used to counter the normal integrity loss caused by installation.

Restoring Integrity

A maintenance visit will restore the integrity of a ship back to 100%. This will require the starbase/outpost to expend a number of patches based on the size of the ship and the amount of integrity restored. The ship will be charged for the quantity of patches used based on the market report. A maintenance visit will also recharge any shields, restoring shield factors lost in combat.

Restoring Damage

Combat damages hulls, armour and items. If an item suffers more damage than its mass, it will be destroyed and removed from the ship's itinerary. A repair visit will use patches to remove damage. The quantity of patches used is determined by the damage taken to the hulls and the armour of the ship. A repair visit will also repair any items that have been damaged but not destroyed. Destroyed items have to be replaced by either installing new items or performing a refit visit.

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