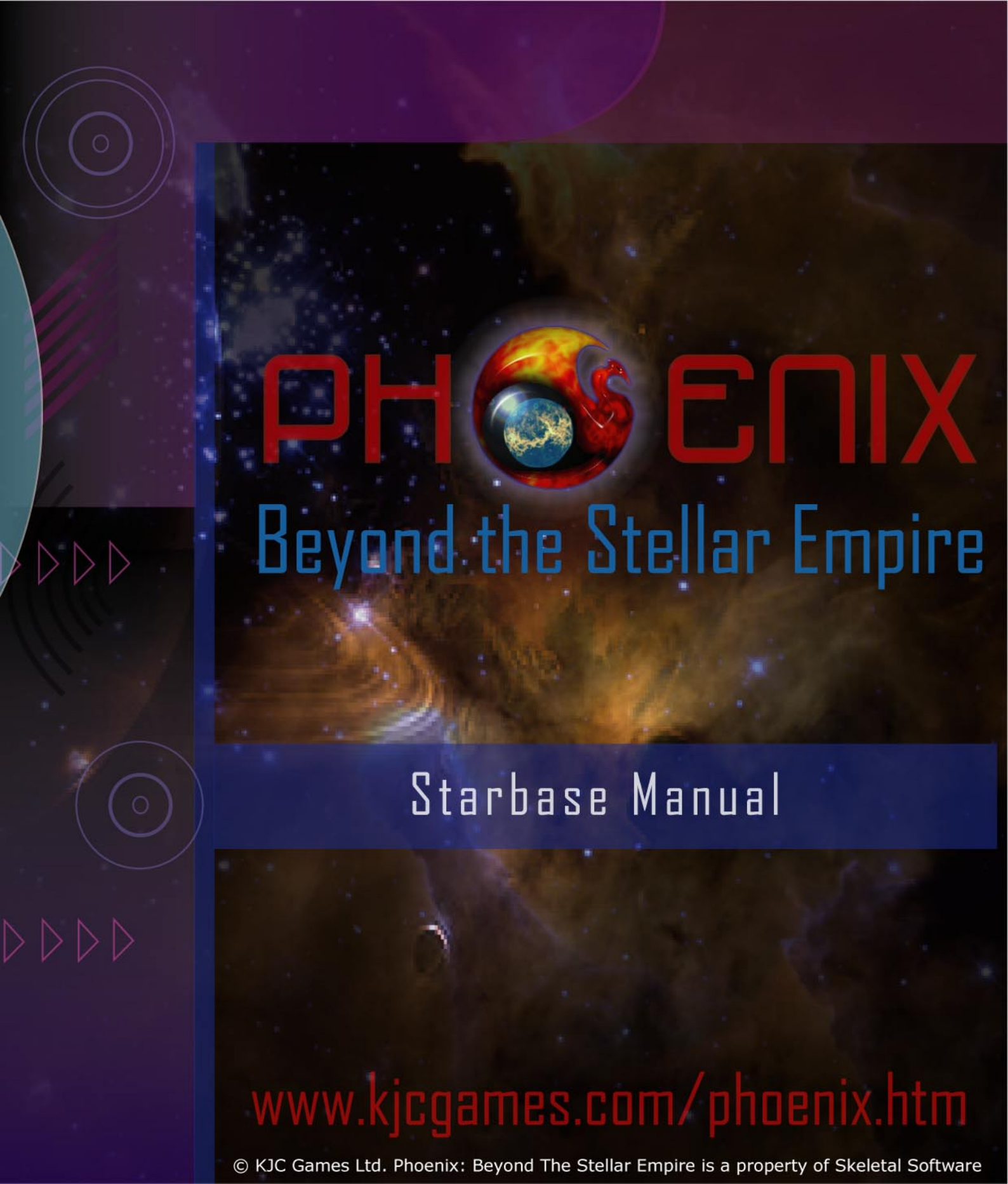


Starbases

Starbases and outposts both make use of complexes. Complexes are fixed installations that perform a certain task or have a specific role. Both starbases and outposts have a region of the facility dedicated to housing visiting positions such as ships and ground parties. This is known as a starport. A starport may be anything from a flattened ridge, cleared of snow and ice, through to docking bays and extending airlocks. For game purposes, though the starport is presumed to be whatever is necessary to accommodate visitors.
All visiting positions will be restricted to the starport, but allowed access to certain facilities. They will never be allowed open access to the entire establishment. The only way to achieve this is to actively assault the starbase/outpost.

The primary difference between an outpost and a starbase is that an outpost cannot make use of the entire range of complexes. As such **unless otherwise stated treat references to Starbases as including outposts as well.**

Governor

Each starbase has a governor. This may either be a generic title for one of the personnel or it may be a specific person, in which case the governor is given a unique item number. The governor is the effective ruler of the starbase, making all decisions of importance. He (a generic pronoun, used for simplicity to denote male, female or one of the alien genders) is surrounded by the best security that the starbase has to offer - this assumes a personal bodyguard of the most highly trained troops. Governors will not be wandering the starport by themselves just waiting to get blown up or kidnapped, nor will they allow visitors to get within striking distance while carrying any form of weapons. Special actions will not circumvent the standard assassination order. Governors do not live permanently in stone bunkers, but by the same token they do not frequent recreation complexes filled with off-worlders. The only way to make a governor more secure is to conduct regular security sweeps and monitor all positions that pass close to the starbase.

Work Hours

Virtually all complexes require personnel to run them. There are a few exceptions (see appendix for complex descriptions) but for the most part this is 500 work hours per week. Since time within the game is standardised, each standard employee will produce 50 work hours per week. As such it is generally the case that a starbase will require 10 employees per active complex.
Each week, the total work hours for the starbase are calculated. This is compared to the total requirements for the starbase. If there are excess work-hours, the starbase will run at 100% efficiency. If there is a deficit the starbase will work at the appropriate efficiency percentage, i.e. only having 75% of the required work-hours will mean that the starbase runs at 75% efficiency.

Documentation

For ease of reference unless otherwise stated, references to starbases also include outposts.

Basic Requirements

Command Complex - All starbases should have 1 command complex per 100 complexes (rounding up). Failing to have this will result in a drop in efficiency.
Personnel - It normally requires 10 personnel to run a complex. This is based on the requirement of 500 work hours to run each complex at maximum efficiency. Each standard employee will produce 50 work hours per week, i.e. the standard requirement of 10 employees per complex.
There are other tasks require work-hours. These include closing down complexes and demolishing them.
There are also other sources that provide work hours beyond employees. Certain robotic devices and slaves also provide labour. These alternative sources usually either have drawbacks to their use or are restricted technology and difficult to obtain.

Efficiency

Where there are sufficient work hours to run all complexes and extras, the starbase will run at 100% efficiency. If there are insufficient work hours, then there will be a drop in efficiency. This will reduce the output of all complexes for the following week, e.g. factory complexes will produce less, shuttle port complexes will not be able to move as much mass etc.

Wages

Each troop and employee requires weekly wages. This is normally taken from the player's central political account automatically each week. Troops are paid first to prevent a military coup, then the employees are paid to prevent them quitting the facility.

Active/Closed Complexes

Complexes are active immediately upon construction. There may come times however when the complex is required to be closed. It may be the case that there is a personnel shortage, or that the complex is temporarily not required - such as a recruitment complex. Using the “activate complex” order, indicating the total number of active complexes required (and not the change in number) will close the remaining complexes. Closed complexes still need to be maintained which requires 50 work hours per week – a single “caretaker” employee.
A more drastic measure is to scrap a closed complex. This will utterly destroy a complex, removing it from the outpost completely. Nothing can be salvaged from the ruins but there will be no further drain on total work hours.

Wages

One of the single most important aspects of running an outpost is the weekly wage bill. In this instance, starbases and outposts are treated differently as employees have to be paid more to work in an outpost. The standard wage for a starbase is 1 stellar per troop and 1 stellar per employee. An outpost has to pay 2 stellars per troop and 2 stellars per employee each week.

Command Complexes

These are generally one of the first complexes to be built. They are the operational brain of the starbase and have a number of basic roles. They have a very limited production capability, which is presumed to be used completely, to churn out low-key peripheral items, such as environmental suits, some food and provide some living facilities for personnel.
A command complex performs two important roles. The primary one is that it co-ordinates operations within the starbase. As long as there is a minimum requirement of 1 complex per 100 other complexes, in which case the starbase will run at normal efficiency providing all other parameters are met. Excess work-hours may be used to accommodate any efficiency drop from lack of command complexes (or any other reason).
The second role of a command complex is to dampen nuclear weaponry. The command complex emits a very low strength ISR field. The gravity well of the world on which the starbase is constructed means that this ISR field cannot hope to perform its normal function of transportation, but it does interfere with atoms at a nuclear level. When there is a high-energy nuclear reaction (fission or fusion) the produced particles have enough energy to push them over the quantum threshold for ISR field formation. The result is that the particles (even gamma particles, due to the energy/matter duality already known to 20th century scientists) perform jumps in random directions. This effectively disperses the initial energy of the reaction over the local region of space, effectively ending the nuclear explosion almost as soon as it began. As this needs only be a very weak field, a single command complex will cover an entire planet and it is even hypothesised to eventually lead to core cooling which would be detectable over a period of a few hundred thousand years.
This use of ISR fields to dampen nuclear weapons, including fusion (as they include initial fission) means that attacking starships with nuclear weaponry will only work if a ship has neither jump nor ISR drives installed.

Peripheral Items

This is a game not an accounting package. Certain things are therefore assumed. It is assumed that there is life support for personnel within a starbase. It is assumed that there is power to run complexes and provide lighting and heating. It is assumed that there are tools for personnel to use. Food is provided and generally speaking all basic requirements are met. These items have no commercial value and their mass is assumed to be accommodated within standard complex, item and life form mass (mu's).

Recruitment and Training of Personnel

If a planet has a population, recruitment complexes can be built. There are two types of recruitment complex; these are designed to recruit either mercenaries or employees.

Mercenaries

Mercenaries are basic troops that will work for anyone - as long as there is a wage at the end of the week. They have their own weapons and some basic combat skills. They have little loyalty to the starbase that has recruited them and will therefore swap sides if the starbase ever surrenders.

Employees

These work for a wage and like mercenaries have little loyalty to the starbase. They have absolutely no combat training and will surrender in combat immediately.

Slaves

Slaves will work for a starbase without having to be paid. They do however have to be supervised by troops at all times. This could lead to a shortfall in crew factors for the manning of weaponry during combat. Slaves are normally brought into the starbase from outside. Some governors will however be tempted to use brute force to throw normal employees into slavery. This should be avoided as the remaining employees may well leave. Also, if word gets out, the planetary population may boycott the starbase, interfering with planetary resources and finances.

Robots

Certain automated machines exist which will contribute work-hours each week. As they do not need paying, they are most suited to working in outposts due to the wage demand of employees.

Training

Mercenaries can be trained into specific troop types. This requires training complexes. These complexes are both training camps and hi-tech surgeries. Each complex has a limit of 10 training programmes per week. This is set during weekly maintenance. The training program combines physical training, neural grafting of knowledge and even some augmentation surgery in order to impart years of training and 'false' experience within a week.
Each training program, e.g. “Human Marines”, has a specific tooled blueprint. To perform a training program, the starbase requires a blueprint of the technology to be used. Each blueprint allows the starbase to train up to 20 mercenaries of the specified race to the specified troop, e.g. the blueprint Human Marine can only be used to train human mercenaries into human marines, it cannot be used to train dewiek mercenaries nor can it be used to train human mercenaries into human soldiers.

Requirements

*Work-hours - these are needed to run complexes. Crew-factors - these are needed to run ordnance during combat. Slaves have a weekly crew-factor requirement, which will be deducted from crew-factors **before** determining combat efficiency.*

Security Complexes

These aid in the control of ordnance, making crew-factors more efficient. Security complexes act as a multiplier to the number of provided crew-factors when calculating ordnance requirements.

Population Diversity

The planetary population determines which life forms are recruited. The recruitment is based on the relative percentages of sentient life forms present on the world. This may mean that if one type is undesired, standing orders will have to be used to sack the specific race.

Training Restrictions

Specialist troop training is restricted technology. Blueprints for the specific troop are needed. If the starbase does not have any then all training will fail.

Blueprints

These combine both data and specific peripheral items required to perform some task that is normally restricted. Each blueprint is 100 mu's in size.
A blueprint can only be used by a starbase if it is tooled. Tooling a blueprint is accomplished by using the Tool Tech order. Once tooled a technology item cannot be taken out of the starbase until it is untooled. If a blueprint is not tooled it cannot be used, i.e. it is considered inactive. Tooling and untooling requires a week.

The total number of troops that can be trained is limited by the quantity of blueprints, the quantity of training complexes and obviously the quantity of mercenaries of the appropriate race.
Each mercenary costs 10 stellars to train, although after being trained the troop is still only paid the standard weekly wage. Each type of troop is proficient in a certain field.

Soldier

The basic trained troop, these ground-pounders are ideal for planetary defence forces. They are the most proficient troops when it comes to mid range combat manoeuvres such as urban defence and assault.

Startroopers

These are trained in personal shuttle suits that are capable of reaching orbit. They can therefore assault a ground-based installation without the need of personnel carriers. They can also move from one side of the planet directly to the other without the need to move over land or use personnel carriers.

Crew

Crew are trained in the use of vehicles, large weaponry and all manner of ordnance and electronics, including security. This makes them ideal for running space weaponry as well as remote controlling tanks and mechanised infantry such as warbots. They have never been trained in the use of personal weaponry, so are only as good as basic marines in open conflict.

Marines

These specialise in close quarters combat such as within the hold of a ship or on an orbital platform. They are the most proficient at short range/hand-to-hand confrontations. They are also only second to crew when it comes to control of ordnance and space weaponry.

Scouts

The job of the scout is to evaluate the military capabilities of other positions. This could be to done on positions in the starport although it is more usual for the scouts to be placed into ground-parties in order to perform the mission at another location.

Guards

Guards are similar to crew but provide better crew-factors for security purposes only. This makes them ideal for taking care of slaves and other unsavoury jobs.

Veterans

Each time troops are involved in conflict, depending on the severity of the action, a number of troops will gain experience. Those that do will be converted into veterans of the same troop type as before. Veterans are effectively superior versions of the basic troop type. Veteran mercenaries however have become unsuitable for specialised training, and as such cannot be trained into a specific troop type (this prevents players engaging in 'friendly' battles using mercenaries as cannon fodder in order to train the resulting veterans).

Exploitation of Resources

A natural resource is a generic term that covers everything from fossil fuel reserves through to rounding up natives for slavery.
There are two primary methods of exploiting these natural resources, through mining complexes and through resource complexes. A third complex, the exchange complex is closely related but requires the starbase to give something in exchange for the resource.

Knowledge of Resources

Normally a starbase or outpost will be built on a location that contains a natural mineral deposit. For more information on the construction of outposts and discovering natural resources see the ship rulebook. Here it is presumed that the starbase knows about the various resources to be exploited. This involves having access to data. This data must be known to the player, through political transfer, affiliation data or simply by being at this location. This data does not need to be on a list although attempting to start exploitation of a resource costs stellars so attempts to exploit random resource ID numbers will result in exorbitant stellar fees, so should be avoided.

Parameters

All resources are classified by a number of parameters. These are as follows:

Resource ID#

This is unique to the resource. This is needed in order to exploit the resource.

Item Produced

This is the specific item number. It may be a unique item such as Venetian Jewellery or a more generic item such as Standard Food.

Extraction Complex

This refers to the type of complex that is necessary in order to extract the resource. Mining complexes are generally needed for ores discovered through prospecting. Resource complexes are needed for ores or other items that have formed under more unusual circumstances that defy normal mining techniques, i.e. those found through investigation. Resource complexes are often used to tap flora and fauna for trade goods.

Yield

This is the maximum amount (in mu's) of the item that can be produced by a single complex in a single week.

Drop Step

For every multiple of the drop step the amount of mu's per complex will decrease by 10%. In other words, while the number of complexes exploiting the resource is equal to or under the drop step, each complex will produce the yield in mu's each week. If the number of complexes present is twice the drop step, half will produce the yield each, the other half will produce 90% of the yield each.

Quantity

This is the amount of resource remaining on the world. In the case of common ores, this may well be so big that it is classed as infinite.

Change

Ores are generally formed over millions of years. For this reason it is generally the case that ores have a zero change. This means that eventually the resource will become exhausted. Biological resources may also be in stability with their surroundings so that any form of exploitation will eventually cause extinction. Again these will have a change of zero. Most biological resources however are capable of being exploited up to a threshold. This is often referred to in investigations as the maximum number of complexes. This maximum multiplied by the yield is the increase in quantity per week. If a resource is becoming naturally depleted, such as the decay of a meteor rich in radioisotopes, the change will be negative. This means that even if the resource is not exploited the quantity will decrease while exploiting the resource will deplete it all the faster. In these cases it is a judgement call as to how many resource complexes should be built especially if there will be no further uses for the complexes once the resource is extinct.

Location

This is the source of the resource. Generally this is a specific sector although it can even be a position location as in the case of some strange alien technology that is located within the starbase.

Dispersion

Even though a source may be present in one sector, it is often the case that it extends beyond the sector into adjacent sectors. A dispersion value of one indicates that the resource is present throughout the entire world. Typical planetary resources are common background ores such as metals, hydrocarbons and basic elements. Biospheres often have food sources that can be tapped from anywhere on the planet. It is generally the case that only planetary wide resources are exploited by more than one starbase or outpost, however all calculations for output are based on the total number of complexes exploiting the resource, irrespective of location. At the opposite end of the scale, a dispersion of zero can only be exploited in the source sector. As the dispersion tends from zero to one, the distance at which the resource can be exploited increases, although there is fall-off in the yield based on a function of the dispersion and increasing distance.

Mining

A starbase or outpost report will show the minerals present that can be exploited using mining complexes. This will only however show the minerals that are common data or are present in the affiliation/private political data list, e.g. hellenium is unknown to the owner of an outpost. As such, even though the outpost happens to be on a rich source of it, it will not be listed in the mineral report.

Resource

Due to the diverse nature of the produce of resource complexes, these are never revealed on a starbase or outpost report. It is entirely up to the owner to keep track of what is available for exploitation. This makes the knowledge of resources a valuable asset. Informing controllers of other starbases and outposts on the same planet can lead to rapid over exploitation of the resource, to the point where tapping it becomes pointless.

Shuttle Ports and Teleports

Starbases and outposts invariably have to move large amounts of items. This may be to other starbases and outposts, or possibly to ships in orbit or ground parties somewhere else on the planet. As they cannot move themselves they have developed shuttle ports. These are automated cargo handling vehicles that use a depot within the starbase known as a shuttle port complex. Each shuttle port can be used to move a total mass during the course of a week. The amount that can be moved is equal to 2000 mu's per week, per active shuttle port present in the starbase. This limit applies only to amount not the direction, e.g. a starbase or outpost with 3 shuttle ports can move 6000mu's per week, this could be comprised of 2000mu's imported and 4000mu's exported.
Shuttle ports are used by the starbase through the use of starbase orders. They cannot be accessed by other positions. Any interaction with other positions is instigated by the starbase. They are not passive like hiports, although sequencing can be used (see shuttle port standing orders).

Importing Items

Shuttle ports can be used to pick up items from other positions. In order to do this though, they need the security code of the position they are picking items up from or a specific authorization to do so from the owner of the position in question. Shuttle ports cannot be used to buy items from other markets - they can only be used to pick up items. If a deal is struck with another governor, shuttle ports can obviously be used to do the imports and exports. The most common use of shuttle ports is to import ores from outposts prior to production (see shuttle port standing order below). This allows the starbase to run its factories efficiently and almost automatically.

Exporting Items

As with importing, items can only be delivered to a destination if the security clearance is known (or an authorization has been given) for the destination position. Shuttle ports cannot be used to sell items to other markets (see above). A common use of shuttle ports is to boost platforms by delivering more platform hulls and for the delivery of items to platforms. They are also used extensively to deliver mines and such to outposts.
Teleporter complexes cannot export items. Their capacity can only be used for importing items only.

Combat Interference

If either the starbase or the target position is locked in combat, shuttle ports cannot be used for either importing or exporting items. This means that a fleet in orbit will effectively cut off the starbase. If the starbase is reliant on regular imports from outposts or other starbases for production and other necessities, it will quickly start to suffer.

Range Limit

A shuttle port can be used to transact with other positions within the same orbital quadrant, as long as the target is not docked. This means that transactions can be made with positions not only on the other side of the planet but also in orbit, in space and even on another world. Both positions must be in the same orbital quadrant, a security code or authorization must be used and neither position can be pinned.

If the target is in the starport of the starbase or outpost making the transaction, then shuttleports are not needed and unlimited transactions can be made.

If the target is docked in another position such as in another starport or cargo of a ship, it cannot be transacted with, even if it is within the same orbital quadrant and even if the position it is docked with is in the starport of the starbase, e.g. there can be no transactions with a ground party that is being carried in the cargo hold of a ship, even if the ship is in the starport and the starbase has access to security codes to both the ship and the ground party. The ground party also cannot interact with the starbase until it has undocked from the ship (note – this will immediately cause a check for enemies).

Shuttle Port Standing Orders

Standing orders are a very powerful tool for shuttle ports; by careful assigning a starbase's shuttle ports can be used to import ores at the start of the weekly maintenance, prior to production. Then after production, finished items can be exported back to outposts and other facilities. During the week any spare capacity can be assigned as needed by normal orders, then a final set of end of week orders can be assigned to utilize any remaining capacity. This final set of standing orders are often used to import ores that are not needed on a regular basis or possibly some extra boosts to defensive platforms.

At times it may be desired to use them at a certain time during the week but not as part of a standing order. A ship could be arriving in the orbital quadrant but may not want to enter orbit on account of potential integrity loss, or due to positions that are hostile only to the ship. Sequenced turns can be used as follows:

The ship performs its order to move into the orbital quadrant and ends its turn. The starbase then has its sequenced order to transact with the ship, picking up and/or delivering items to it. The next day the ship performs more orders to move away without risking entering orbit.

Teleports

Teleport complexes are very similar to shuttle ports in their function, but utilise advanced ISR technology. They create a field so that they can transport a localised volume through space to arrive at the complex. As this is not an exact science due to quantum uncertainties and nodal decay they cannot be used to export items only import them.
They have two primary advantages; the first is that they can be used to import items from any other undocked position within the same system. The second is that they can be used to import items even if the starbase or outpost is currently locked in combat. They cannot however pick up items from another position if that is itself locked in combat.

Authorisations

A governor of a large starbase is likely to be inundated with many requests for items from allies, as well as other members of his own affiliation. Giving out the security code for the starbase is simply not an option. Authorizations allow some measure of automation in the granting of requests without the need of a security code. Authorizations can apply to both pick-ups and deliveries. The level of authorization depends solely on the governor and can be from as little as a single one-time transaction for one item through to unlimited access to the starbase stores.
An authorization therefore needs a number of parameters:
Group Type, Authorization Type, Quantity
Each of these parameters needs to be set for each authorization.

Group Type

An authorization is given to a group. When a group is selected, then a reference needs to be given to indicate which group faction. In most cases the group type needs to be specified.

Any

This means that there is no restriction on who can perform the transaction.

Position

The single position specified can perform the transaction.

Political

This means that any position under the control of the political position can perform the specified transactions. This is useful as it allows close friends within an affiliation to perform transactions without having to worry about giving authorization to all the positions owned by the player.

Affiliation

This will allow all the designated affiliation to perform the designated transactions. The affiliation number needs to be given.

Race

The racial number needs to be given. This will not be frequently used.

Race	Number	Race	Number
Human	1	Flagritz	7
Dewiek	2	Aquaphid	8
Felini	3	Kastorian	9
Naplian	4	Falconian	10
Hive	5	Krell	11
Wimble	6		

Authorization Type

This specifies the nature of the substance being transferred. In most cases a specific parameter also needs to be given to clarify the type.

Single Item

This specifies the exact item, e.g. Targeting Computers mkII (108). This does not allow transactions for Targeting Computers mkIII (109) or even Targeting Computers (107).

Item Type

This specifies an item type and the transaction can be made up of any items falling into the category, e.g. Targeting (30). This will allow transactions for any targeting computers irrespective of the item number or their mark.

1 Troop	22 Energy Weapon	45 Artefact
2 Pirate	23 Jump Drive	46 Grav Lander
3 Officer	24 Space Interceptor	47 Cloaking Device
4 Operative	25 Space Bomber	48 Inertial Damper
5 Employee	26 PD Missile	49 Ore
6 Slave	27 PD Launcher	50 Trade Good
7 Civilian	28 PD Weapon	51 Drug
8 Prisoner	29 Sensor	52 Live Trade Good
9 Hull	30 Targeting	53 Plant
10 Hull Patch	31 Thrust Engine	55 Module
11 Complex	32 Landing Engine	56 Vehicle
12 Space Mine	33 Combat Engine	57 Scrambler
13 Armour	34 ISR	58 Jammers
14 Shield	35 Platform Hull	59 Inertial Stabilizer
15 Shield Generator	36 Landing Device	60 Stargate Key
16 Scintillator	37 Takeoff Device	61 Bridge
17 Shield Modulator	38 Ship Component	62 Ships Computer
18 Missile	39 Blueprint	63 GPI Sensor
19 Launcher	40 Technique	64 Exploration Module
20 Kinetic Weapon	41 Principle	65 Alloy
21 Kinetic Ammo	42 Scientist	66 Tractor Beam

Sensors and Surface Area

The size of a starbase determines if it can be detected. Due to the very nature of starbases, this would normally render them easily detected. There are however a number of factors which will reduce the overall sensor profile of the starbase.
Mines have natural storage facilities that can be used to hold large stockpiles of ore. Each mine complex will reduce the overall visible mass of ores present in the starbase by up to 500 mu's for the purposes of determining sensor profile.
Caves are structures that are constructed either underground or within a mountain or other land mass. As such the natural background shields the starbase from sensors. Each cave will remove up to 20,000 mu's from the overall mass when determining sensor profile.
Optical Depth of a planet is a measure of the dampening effect on sensors (amongst other things). This can in effect reduce the sensor profile of the starbase.

Research and Technology

Research is the conversion of theories and hypotheses into formulated procedures that can be used either for the furthering of specific fields of research or to create blueprints for the construction of advanced items in factory complexes.

Theory

Research is the development of technology as well as the duplication of existing technology. Research complexes produce research points. These represent theories as well as the equipment needed to test the theories. It is presumed that research can be broken down into smaller steps. The governor of the starbase determines these research steps, although there are always a minimum number of steps that must be taken. This is the theoretical minimum time to develop a project.

Research Points

Research points are accumulated at a rate of 100 per complex per week. There is no limit to the number of research complexes that can be accumulated. At any time the starbase governor can elect to put the researched theories to the test. The test will (hopefully!) convert research points into mass of the principle, tech or blueprint being researched. Once the mass of the item has been accumulated, the research is completed. **As with all research, there may be unforeseen factors involved. These may aid the research or may cause a set back.** The greater the amount of research points at the time of conversion, the greater the analysis of the theory and therefore the smaller the chance of something going wrong. The conversion table on the next page indicates the results.
The governor can set the conversion amount as a number of research points, allowing for relatively predictable results.

Conversion

Conversion Result	Max Research
Disaster - Research item destroyed 5-25% starbase destroyed	0
Disaster - Research item destroyed 1-10% starbase destroyed	400
Disaster – Research item destroyed	1225
Wrong avenue - Half research item mass scrapped	2025
Stalled - 4 items required	2500
Stalled - 3 items required	3025
Stalled - 2 items required	3600
Stalled - 1 items required	4900
No MU's Constructed	5625
10 MU's Constructed	6400
20 MU's Constructed	8100
30 MU's Constructed	10000
40 MU's Constructed	12100
50 MU's Constructed	14400
60 MU's Constructed	16900
70 MU's Constructed	19600
80 MU's Constructed	22500
90 MU's Constructed	25600
100 MU's Constructed	28900

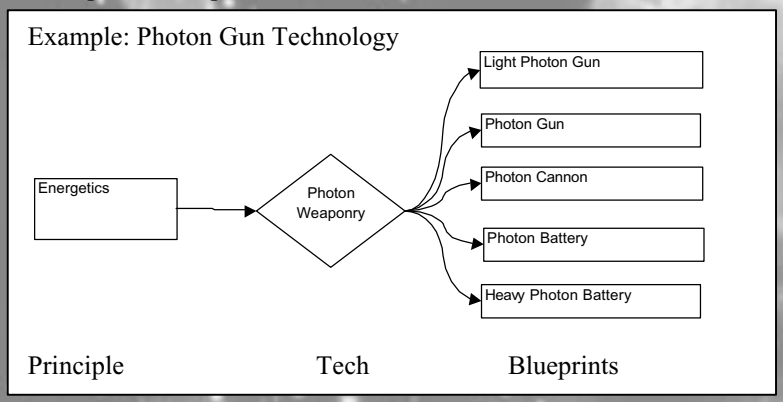
Maximum Research

The table above shows the maximum research needed to achieve the result, not the minimum, e.g. accumulating 8100 points at the time of conversion assures that at least 20mu's will be constructed, although depending on circumstance as much as 100mu's could be built. The reason for this is that there is the chance of flukes or breakthroughs. The maximum research presumes that absolutely everything has been covered by the theory and nothing is left to chance. Obviously using less than the maximum is taking risks in an attempt at fast tracking.
NB. Maximum research presumes all underlying technology is present (see below).

Research/Construction

There are three types of basic research. These are blueprints, tech and principles. Blueprints are needed to build advanced items. As these items cannot be built without a blueprint, they are known as restricted items. Items with similar properties will generally be researched from a single tech. They are shown grouped together under the tech from which they can be researched. Thus a tech may be useful in researching a number of blueprints. Finally, each tech is itself founded on principles. These are wide fields of research covering many aspects, not all of which will be applied to a tech. It is often the case that a tech will be founded on a number of principles. In general, the more advanced a tech, the greater the number of principles that will be needed. Principles are often themselves founded on other principles.

The diagram below show a flow chart showing the relationship between a principle known as **energetics** and the various types of photon beam weapons. All these photon weapons are restricted items.



Lack of Underlying Technology

Normally research is conducted based on previously acquired technologies. Jumps and shortcuts can be taken although these will make all research harder. Research can be conducted without the underlying principles. If this is done though, the maximum conversion result will be shifted towards failure. Insufficient prerequisite principles at the time of conversion will shift the result towards failure by 3 rows per principle order. Insufficient tech will shift the result towards failure by 7 levels per tech order.
Example
A starbase has accumulated 22500 research points and want to convert them into mass. This would normally generate a minimum of 80 mu's but the starbase does not own one principle. The missing principle is classed as level 1. The result is shifted by three levels towards failure giving a minimum result of 50mu's.

Obviously the more complicated the item, the more prerequisite principles. In general blueprints only require tech, but the shift of 7 levels per tech order is a severe penalty. This said, it is often faster to develop blueprints for relatively simple items such as photon weaponry directly (despite the penalty), than to complete research into both the principle and the photon weaponry tech. The trade off though comes when better versions of the weapon are desired, or if blueprints are wanted in many starbases. In this case, a single set of principle(s) and tech(s) is often fastest, with the blueprints then being distributed to the required destination

Stalled

Stalled research means that no new conversions can be made until the requested item is used. The required item may be rare minerals, bio-organisms or really anything. Even though the construction has been stalled, research points can still be accumulated. Alternatively, if research becomes stalled, the governor can elect to scrap half of the current construction and carry on. Obviously this may not be a viable option later on.

Example

When researching energetics, the conversion throws up “stalled 100mu thorlium”. Thus, until 100 mu's of thorlium are used no more conversions can be made. As this was the very first conversion and thus no mass has been built yet, the governor elects to scrap the project.

Duplicating Principles, Tech and Blueprints

Having the original present gives a +2 shift towards success on the conversion table but does not cover all the prerequisites.

Example 1

A governor gets his hands on a tech that requires 2 1st order principles that he does not have, he is still at a penalty of -4 (-6+2) to researching a copy of the tech.

Example 2

A governor acquires a Light Photon Gun mkII blueprint. This is dependent on Photon Weaponry mkII, a 2nd order tech. Research to copy the blueprint can be conducted at -12 ((-7x2)+2). The starbase is going to need a scientist specialising in Photon weaponry in order to stand even the remotest chance of copying the blueprint. This makes blueprints of higher mark items often irreplaceable.

Scientists

A scientist is a unique item similar to an officer. Once created the item will be checked during research to see if the scientist will give a bonus to the research. A bonus will be given if the principle/tech/blueprint the scientist is specialised in is a pre-requisite of the research or the target of the research. Scientists come into play at the time of conversion of research points into mass. They oversee the testing of the theories among other things.

The best scientist available will shift the results towards success per bonus. A scientist will give a bonus range for 1 to 5, e.g. a +4 scientist will turn a result of 'stalled 1 item required' into '30mu built'. Even scientists with a +1 bonus are uncommon while a +3 bonus will only be given by a super genius.

Scientist Creation

A scientist is somebody that has proved himself to have a flair for the research project undertaken. This will only be revealed during the final analysis of the research, i.e. when the project is finally completed. The check is automatic and it is presumed that everything is done to recruit and identify anyone with a particular talent in this field during the course of the research.

At the time of completion there is a check to determine if one of the employees that worked at the research complex is upgraded to scientist. The speciality of the scientist will be the project target and the chance of producing a scientist is directly proportional to the size of the project undertaken. The scientist bonus is very rarely above +1.

Tooling Technology

In order to make use of any principle, tech or blueprint, it needs to be functional. Making it active is called tooling. This can be seen as the distribution of the data and special parts throughout the starbase. When tooled technology cannot be removed from the starbase - although it can still be destroyed. Due to the amount of care and precision that is required during tooling a fixed amount of time is required based on the type of technology is being tooled.

Technology	Tooling Time
Principle	26 weeks
Tech	12 weeks
Blueprint	1 week

In order to move a piece of technology to a new location, the technology needs to be untooled. As this is fairly straightforward, it only takes a week to untool any piece of technology although any attempt to use it during the time of untooling will fail.

Blueprint 100mu

Blueprints are needed to build items that are not classified as common. They are also used to build ships and train troops to advanced levels. They may also be required for the exploitation of rare resources. They therefore represent a unique set of equipment including schematics and the basic processing equipment needed to produce specialist aspects of the item such as widgets. It is not just a load of data.
As can be seen in the conversion table, a blueprint can be produced in a single step.

Damage

Each blueprint is unique, as by their very nature they do not represent ubiquitous technology. Further, as blueprints not only represent data, but also what is often irreplaceable equipment, they can be broken due to damage such that caused by sabotage or during combat. If this happens, they are basically useless and are scrapped.

Production Limits

Blueprints not only represent data, but also specific tools needed in factory production and various protocols to be used. As such, each blueprint regulates the maximum amount of production that used to build the restricted item. Generally speaking, a mkI blueprint will allow the production of 1000mu's of an item. For each mk increase in the blueprint, this amount will halve. The table below gives an example for all the various photon weaponry blueprints.

Photon Weaponry	Mu's production per blueprint
MkI	1000mu's
MkII	500mu's
MkIII	250mu's
MkIV	125mu's

There are exceptions to this rule. Certain blueprints allow the construction of a single item per blueprint. Having multiple blueprints in all cases allows the starbase to build the limit multiplied by the quantity present.

Training Limits

As blueprints for items do not only represent data, so too training blueprints cover the construction of small weapons needed for the troops, skills needed to subliminally implant into the minds of the troops and much more. As much of the blueprint covers neurological lacing, the artificial implanting of learned instincts and knowledge, each blueprint is also tied to a race. A blueprint for the training of human crew cannot be used to train dewiek mercenaries. These blueprints also require troop-training complexes, as some simulation training is also necessary. Most training blueprints allow up to 20 mercenaries of the appropriate species to be trained up to the specified troop each week. Veteran mercenaries cannot be trained.

Shipbuilding Limit

Once a design of ship is decided on, a blueprint is created for it. This is a list of parameters for the ship, including hull type, size, armour and installed items. During construction this list is referred to in order to build the ship to the specified capability. The blueprint also includes unique construction techniques to ensure that the ship is spaceworthy once built and not merely a lot of randomly bolted hulls. Each blueprint will allow up to 25 hulls to be assembled per week towards the specified ship, although the number of shipyards may reduce this. As such, presuming all items are present and that there are sufficient shipyards, having 4 blueprints will allow a 100 hull ship to be built each and every week.

Tech 1000mu

This covers the specific application of principles within a select field. It is also the basis for a number of blueprints. It may well be the case that a number of different items will fall into one technology, e.g. thruster tech will cover standard, landing and combat thrusters.
Higher order versions of the same tech are often based on the lower order techs combined with another principle.
Example
Development of the mkII landing thruster blueprint uses Thrusters mkII Tech. All mkI Photon weaponry such as the Photon Gun, Photon Cannon and Photon Battery use the Photon Weaponry Tech.
Even without the Technology though, the blueprints can be researched, but a penalty is applied (see above).

Example 2
Photon Weaponry Tech is based on the Energetics Principle. Photon Weaponry mkII Tech is based on Photon Weaponry Tech and the Anti-Matter Manipulation Principle.

The conversion table shows that a minimum of 10 steps must be taken in order to complete research of techs.

Principle 5000mu

Principles cover a wide range of aspects within the field. The mass covers not only data but everything needed for research and development such as linear accelerators, nuclear plants, firing ranges, computer simulations, artificial intelligence simulators, laboratories, even torture chambers and whatever else will be needed. Without principles, developing tech is very difficult although not impossible for tech based on the lower order principles.
Known principles have been placed into a tree showing their order of magnitude and what they are dependent on. There may be other principles waiting to be discovered that are not commonly known about.
As can be seen on the conversion table, due to the limit of 100mu's per week, it takes a minimum of one year to complete any principle.

Shipyards and Ship Design

Once a blueprint has been designed using the ship utility it can be sent to KJC Games as a special action in order to start research. The referee will import all the statistics into the game as well as check certain details such as conflict of name or some glaring error that would make its research a waste of time. After acceptance, the ship can be researched as per the standard research rules. Each ship blueprint has a limit similar to production limits of item blueprints. This is normally 25 hulls, i.e. having 4 blueprints for the same design of 100 hull ship will allow it to be constructed in a single week provided there are sufficient shipyards at the starbase.

Shipbuilding

A starbase requires shipyards in order to build starships. Each shipyard is able to assemble up to five hulls per week although multiple shipyards can work together in order to build a single ship, i.e. 20 shipyards will built a 100 hull ship in a week provided there are sufficient blueprints.

Construction List

Each starbase will have a list of ships currently queued for construction. Each ship will be attempted in list order. If a ship cannot be constructed for any reason, the next one on the line will be attempted. Prioritising a ship will place it at the top of the queue, shuffling the rest down one step.

Incorporating Items

Along with hulls and armour, a ship will require the installation of the items listed on the blueprint. At the time of adding a ship to the construction list, a check will be done on the items present in the starbase and all the items listed will be removed from the starbase. If there are insufficient items present, then all that can be taken will be. A list of missing items will be displayed on the starbase report and then stored. At the final stages of construction a second check will be made, in order to incorporate any items that were not present at the beginning.

Recreation and maintenance complexes

Not all complexes present at a starbase directly aid the starbase. Recreation and maintenance complexes are built solely for the use by visiting ships. The quantity to build is dependent on the frequency that they will be used.

Recreation Complexes

In order to maintain an efficiently run crew, a ship needs to make a recreation visit every few months. As such, a starbase that enjoys regular visits by starships should have at least one recreation complex. When a ship makes a recreation visit the crew will pay some of the wages that has been paid to them in the past. The greater the quantity of recreation complexes present, the wider the choice of venues for the crew, so as a result, the larger the amount of stellars that will be collected by the starbase from the visit. In the case of recreation complexes, the stellar income from visiting ships should be greater than the stellar cost of running the complex. A single complex is probably sufficient for a starbase or outpost on the edge of the empire while a primary shipbuilding and maintenance starbase with frequent visits will do well to have possibly as many as twenty.

Maintenance Complexes

As ships lose integrity they need regular maintenance. The exact amount of time between maintenance depends largely on the individual ships and the role they perform. As each complex will restore up to 10% of the ship's integrity, there is little point in building more than nine complexes.

Planetary Extremes

Not all worlds are garden worlds. Some are so alien that even oxygen freezes. Other worlds may have black seas composed of liquid methane. At the other extreme there may be rivers of molten rock and thick smogs of sulphurous gases. While an outpost can still be built here and upgraded to starbase status it will normally have restrictions placed on it.

At a basic level the restrictions apply to which complexes can be built. A world without a population normally has a restriction preventing the construction of merchandising complexes and recruitment complexes. While a gas giant will normally have restrictions preventing the construction of cave complexes.

Where a planet is truly hostile, there will generally be a requirement for the construction of domes. These massive structures are constructed in such a way to envelope other complexes, forming an environmental seal. This allows personnel easy transit from one complex to another without the need to suit up against environmental extremes. A starbase can still function without these domes as complexes are designed to withstand the worst that a planetary environment can throw at them, but it will not be as efficient.

Caves will also serve the same purpose as domes but obviously cannot be built on a gas giant and generally not in sea or shallows regions.

It is often the case that it is desirable to alter the planetary environment in order to make it more suitable to colonisation. Each world therefore has a terraforming value. Terraforming complexes slowly alter the planetary structure over time to the point where the planet has changed so significantly that it no longer requires domes. At this time the temperature and atmospheric conditions will change to be compatible with humanoid life. In some cases however, this terraforming will only exist as long as the terraforming complexes remain active. Loss of the complexes may well result in the slow change of the planet back to it's original state. A small moon with a low gravity for example will not retain an atmosphere and without the constant work of the terraforming complexes, the atmosphere will gradually dissipate.

Construction

As per the ship rules, an outpost is first constructed and this is upgraded to starbase status. Outposts can be built anywhere, on the insubstantial surface of a gas giant, within a giant crater of a moon or even floating on a black liquid sea of butane.

The construction presumes that the basic requirements for survival are met. An outpost built in deep space will be airtight, one built in a gas giant will be able to remain airborne while one built on an ocean will float.

They are incapable of moving due to their design, they remain anchored to a fixed location, even when built on water or skimming the air of a gas giant.

Orbital Platforms

Defence of starbases is through special structures normally built in orbit. These are similar to starships, in that they are constructed from hulls, although as they are not designed to move they have the benefit of being equivalent to heavy hulls for the purpose of damage tolerance but have the installation space of normal hulls.

Construction

Platforms are normally constructed as a result of building a platform control complex, although it is possible to build one of the complexes and not build a platform. This is normally done to have a spare control complex to act as a backup should the main complex be destroyed.

The construction of the complex will immediately use 10 platforms hulls, which will be incorporated into a new platform that will be launched into orbit. The platform will then be operational (though empty).

At this stage the starbase can use the platform control complex to deliver more hulls to the platform as the platform control complex comes with a 500mu shuttle port capability. If the starbase has extra shuttleports, then this capacity can also be used to transfer items to the platform.

Platform Hulls

Platform hulls are 100mu in size and have an internal capacity of 50mu. They are considered equivalent to heavy hulls for damage tolerance, i.e. the standard hull can withstand as much as 400mu damage before being destroyed.

Reason for Platforms

There are two primary reasons for using a platform for defence rather than leaving all space weaponry in the starbase.

Armour

A starbase cannot be armoured, as such it is reliant on shields and Scintillators to protect its contents. A platform is automatically armoured as a consequence of platform hulls.

As stated, a platform is constructed from hulls. These have to be of a special design, called platform hulls. These hulls have to be built by the starbase or at least imported. They can be delivered directly to the platform. When delivered they will automatically and irrevocably incorporated into the platform, increasing its size and installation space.

Lists

A platform is slaved to its controlling starbase. By this it meant that despite being able to carry its own enemy, support and defend lists, the lists will be superseded by the starbase lists.

Equipping Platforms

While it is imperative to arm a platform with whatever weaponry is desired, it is also important to defend them. Enemies can board them, so the stationing of troops and close-combat ordnance such as warbots is imperative. Marines are the best suited to this type of combat.

All items delivered to them are considered active, i.e. unlike ships there is no effective cargo section. All items other platform hulls can be delivered and picked up at will without any loss in integrity.

While all items are considered active once delivered to a platform, weaponry and ammunition that requires a launcher cannot be used on its own, i.e. sufficient fighter bays, launchers and such need to be present.

Efficiency

Platforms are considered to be largely independent and as such have their own efficiency. This is calculated based on the number of factors required to run each and every item present within the platform. If there are insufficient factors provided by the troops stationed at the starbase, they will suffer the standard penalties for low efficiency.

Targeting

Sensors and targeting computers within the platform are used at all times. This must be accounted for at the time of construction, as electing multiple targets will decrease the accuracy of each battery.

Shields

Platforms have an advantage in that they have a much smaller surface area as a rule than starbases and outposts. As such, shields will provide a much greater depth for the same quantity of factors. Unlike ships however they cannot visit maintenance complexes and so need to incorporate shield generators within their construction.

Stealth

Platforms are easily scanned so are only normally useful if the starbase is itself easily detected. Where the primary starbase or outpost is itself secret, the use of platforms can undermine any hope of remaining secret.

Relocation

While platforms cannot be moved under their own power, if they are still small enough they can be picked up by ships with enough cargo capacity and then undocked at their destination. This is normally only done to place them in space or possibly on the surface of the world to avoid unnecessary detection from orbit.

Redirection of damage

As offensive weaponry will be primarily placed within heavily armoured platforms, attackers are more likely to attack these rather than the starbase. Without a platform, all attacks will be initiated against the starbase and as such, even should the starbase survive, collateral damage to complexes, personnel and ground-based ordnance may be so crippling so as to make its survival a moot point.

Other Reasons

Optical Depth

Optical depth of an atmosphere will impede sensor power thus hampering the targeting capabilities of weaponry based on the ground.

Efficiency

It is easy to station enough troops to ensure that all space weaponry is working at full efficiency.

Nuclear Weaponry Resilience

Platform hulls when incorporated into platforms have a low powered ISR field as standard. This is sufficient to dampen nuclear explosions.

Maintenance

While it is presumed that complexes are working day-in day-out, accounting for this on a daily basis is not considered necessary. Instead, where possible all the accounting for the week is considered on a single day. This is known as weekly maintenance. The day is set to be the same as the original construction day, so that if the outpost was constructed on Tuesday, the following Tuesday it will undergo its first weekly maintenance. This day can be changed although a minimum of 1 week must occur between two weekly maintains. Therefore changing the day will mean between six and nine days will elapse before the next weekly maintenance.

Standing Orders

There are three types of standing order, End-of-week, Pre-production and Post-production. Every order can be set to be a standing order although it will not be appropriate in most cases. It is important to consider into which category a standing order should be set.

End of Week

This type of standing order is generally used to use up remaining unused limits of specific complexes with non-urgent tasks.

Pre-Production

These are most often used to bring in ores from outposts, so that they can be used in production

Post-Production

The primary use for post-production standing orders is to deliver finished items from the week's production run

Process Order

1.Perform end of week standing orders.
2.Pay wages to troops.
3.Pay wages to employees.
4.Calculate work-hours required.
5.Calculate work-hours provided based on wages and employees.
6.Determine employee efficiency.
7.Determine overall efficiency for the starbase.
8.Calculate weekly limits for various complexes.
9.Perform pre-production standing orders.
10.Calculate income from various complexes.
11.Perform production for starbases.
12.Perform post-production standing orders.
13.Generate turn for starbases.

Merchandising

Merchandising complexes interact with the world in order to generate stellars for the starbase. This is achieved by promoting trade amongst the population of the world and importing/selling goods to the world. All merchandising complexes will perform both roles.

Brokers for World Trade

Merchandising complexes act as brokers for the planetary populace to sell their wares to each other. As brokers, the complexes take a percentage of world trade in the form of stellars. The amount of stellars generated per merchandising complex is the total of two variables. These are global and local variables that are largely based on the technology of the world and total world population.

Global Factors

Global factors represent the proportion of the world economy that is not restricted by location. As a consequence the **total number of merchandising complexes on the world** is used for purposes of generating the proportion of stellars per merchandising complex as broker fees. Highly technologically advanced worlds generally have economies dominated by global factors as the population have access to rapid transport so are able to trade wherever they want.

This section only applies to Starbases

If an outpost has merchandising complexes they will be ignored. An outpost market will be deleted.

In brief

Each merchandising complex performs 2 roles:

- *Act as brokers for intra-planetary trade by the world population.*
- *Importing/selling goods to the world.*

Generating stellars by acting as brokers.

This can be summarised as follows:

- *All starbases on a world are in competition for stellars produced by the global factors.*
- *Local factors only apply to individual starbases.*
- *Total stellars generated per merchandising complex is the sum of the above two factors.*
- *All stellars generated per merchandising complex will decrease with increasing merchandising complexes.*

Local Factors

Local factors represent the proportion of the world economy that is tied to the nearby sectors. As a consequence only **the number of merchandising complexes in the starbase** are used for the purposes of generating the proportion broker fees of stellars generated per merchandising complex. It is often the case that while the local maximum is usually lower than the global maximum the local factors will still be contributing to merchandising complexes long after the global factor has been saturated.
The total stellars generated per week per starbase is the sum of the above two factors.

Selling to Planetary Populations

Each world has demands for certain commodities. Only starbases can trade with the world population. Ships and ground parties cannot sell directly to the world. A single starbase on a world effectively has a monopoly on selling commodities to the world. Each starbase can satisfy the world demand for commodities by trading with the world through their merchandising complexes. Each merchandising complex will allow the starbase to sell up to 100mu commodities per week

Life

Life is the generic terms for living items. This can be anything from civilians wanting to colonise the world, through to alien livestock, flora and fauna. As garden worlds without a native population may well have a demand for life it can be assumed that the actual stellars generated is either from the EEM wanting to develop the world or from the individual civilians wanting to settle on a new world. Either way, it is sufficient to state that supplying items falling into this category will produce stellars. The demand is generally proportional to the attractiveness of the planet and inversely proportional to the current population.

Trade Goods

“Trade Goods” is the generic term for items that have no strategic value, are non-living and are not pharmaceutical in nature. This covers items such as consumer goods, luxuries, antiques, foods and other perishables. In the case of perishables, these items will naturally degrade from the time of production to the time of sale to a world population. The amount of goods demanded is generally based on the size of the population. So it is found that as the population of a world increases, the demand for life decreases, but the demand for trade goods increases. This is perfectly normal in the development of a new market

Drugs

Drugs cover all pharmaceuticals – both benign and otherwise. The demand for drugs is generally based on the attitude and size of the population. These may have adverse effects on a planetary population in the long run. Further, this market can (depending on the drugs sold) have adverse effects on planetary revenue and other trade demands over the course of several years.

Generating stellars by selling to the world

Commodities fall into the following three categories:
Life
Trade Goods
Drugs

Each merchandising complex can sell 100 mu's of commodities to the world per week.
While up to this limit can be sold the world demands will affect the stellars generated as a consequence of the sale.
This can be summarised as:

- *World planetary markets are unique.*
- *Worlds have weekly mass demand for each of the trade commodities.*
- *Each world has a price that they will pay per mu up to the mass demand.*
- *Oversupply to worlds is carried over to the next week.*
- *Stellar prices per mu are dynamically based on multiples of the mass demand.*
- *Selling over the mass demand in a single week will generate lower stellars per mu.*
- *Smaller populations will generally give higher stellar prices per mu.*
- *Larger populations have higher mass demands for trade goods and drugs.*

Commodities cover a broad range of unique items.

- *Unique items have an origin and a value compared to the base value of the commodity.*
- *Unique items are worth more if sold on distant worlds.*
- *It is better to sell the highest value item to a world during a week.*

Example

Unique Item

For example, the planet Utopia in the Capella system has the resource Strimpler, a creature found in the seas and classed as a luxury food (perishable trade good). A starbase or outpost on this world can exploit this resource and accumulate a mass of the Strimpler. The owner of a starbase (outposts cannot use merchandising complexes) can sell the Strimpler to the planetary population and get a certain amount of revenue.

Value of Unique Item

If for example, the Strimpler is considered to be worth 120% standard trade goods per mu and the world is paying 10stellars per mu, it will pay 12stellars per mu of Strimpler. This value is still subject to the mass demand of the world.

Demand

A world has a weekly mass demand and a standard price per mass unit sold. While greater masses can be sold per week, the amount paid for more sales after the weekly mass has already been given drops per multiple of the weekly mass demand. The fall off is quite steep and dynamic so attempting two sales of 2,000mu or one sale of 4,000mu will net the same amount of stellars. Further, excess sales are carried over to the next week so in order to maximise profits it is best to sell where possible only the maximum amount per week.
It is important to note that all starbases on the world are selling items to the same population so the demands are adjusted daily.
The price per mu is often a reflection of population. A smaller population will generally pay more per mu than a larger one although the mass demand will often be much less. As a consequence smaller planetary populations are more profitable per mu than larger ones although large trade ships may well prefer to trade with larger populations on account of the ability to shift larger amounts of merchandise at a time.

Items

These standard items are produced via the use of special resource complexes. The items produced may be generic items or items unique to the locale.
Each unique item has its own relative value compared to the standard value. Standard commodities are items that are considered luxurious in nature. These commodities have a value of 10stellar per mu. Rare or superior items have a value relatively higher than this, while inferior (or more freely available) items will have lower values.

Importing

Unique items are also worth more if shipped off world. The increase in value is proportionate to the distance from origin. Selling them to a world population in a distant periphery will net the most stellars per mu. This can be as much as nine times the value offered by the world they originated from.
As the weekly mass demand affects the price for oversupplying, a starbase will generate more stellars by selling the most valuable commodity first and taking a price cut on the lower value items.

Importing/Self-sufficient Worlds

When constructing merchandising complexes, it is important to consider whether the world is a strong importer or whether supplying trade venues alone can produce enough stellars. It may well be the case that the mass demands warrant the construction of a hundred merchandising complexes even though the additional stellar income from being a trade venue is zero after the first ten complexes. It is also not enough to construct a hundred merchandising complexes merely because the world population demands are high, if insufficient merchandise can be shipped to the starbase to cover the merchandising sell limit.
A Planetary Economy Scan (100TU's), conducted by a ground party or ship in orbit of a world will reveal the planetary market, listing the demands of the world and maximum merchandising revenues from broker fees. A Planetary Economy Scan will also automatically appear on the weekly planetary report of a starbase.

Issuing a tech manual request for the will reveal the base value of the item and origin.
So if Strimpler, worth 12stellars on Utopia is sold in to a planetary population on the other side of the galaxy, it may be worth 108stellars per mu (assuming the world is offering 10stellar per mu of trade goods). Due to its perishable nature however, there may be much less of it by the time it arrives.

Tips to Starbase owners

Always try to sell up to the world mass demand if possible - although look to sell on commodities that will be worth more on other worlds.

Always try to sell perishables first.

Where stellars are needed fast, attempt to sell items from distant peripheries first.

Where more than one starbase exists on a planet communicate with other governors in order to regulate sales to the world. This will avoid being paid low amounts for rare items due to making the deal just after another starbase has flooded the market. Sales are not refundable!

If somebody is offering to sell you something that you have never heard of, ask for a sample to be delivered to your starbase then issue a tech manual request. This will even indicate which periphery it was produced in.

Worlds with small populations have low mass demands but often offer higher prices per mu as they have more efficient economies. As a consequence offering larger stellar prices per mu of commodities is possible while still making a profit.

Negotiating Prices

A starbase owner will be aware of the planetary demands and prices offered per mu. It is therefore up to him to negotiate prices with suppliers of merchandise. How much they offer will largely be determined by the item and how far off the beaten trade traders will have to go in order to complete the deal. Traders often want to ensure that they do not have an empty cargo so if a starbase also produces trade goods, selling these at prices close to or even below their standard value will draw traders to the starbase.

Factory Production

This section only applies to Starbases. If an outpost has factories they will be ignored. Production schedules will halt until the outpost is upgraded to starbase status.

Factory complexes are responsible for the creation of items from raw materials. These items can be anything from modules to build new complexes to weapons and even more advanced raw materials such as alloys.
There are two types of production, standard batch production and mass production. Standard batch production uses factories that have not been assigned to mass production. Batch production will produce a quantity of an item while mass production will continue to produce the same item week after week.

Standard Batch Production
To perform production, a Starbase Governor must issue a series of orders that are placed in the **Production Schedule**. The Production Schedule is a queue that holds orders to produce up to 10 different Items and the quantities required of each. Production occurs during at the time of printout for the Starbase along with other weekly adjustments. As each order is completed it is removed from the Schedule. New production orders are added to the end of the queue.

The output from Factories is measured in MU's. A single Factory can produce 50 MU's of finished Items. If you have a large number of Factories the level of bureaucracy involved will lead to inefficiency and waste. Up to fifty Factories can be handled without difficulty. The output from any additional Factories will be reduced as shown in the table below.

Factory Range	MU's produced per Factory
1-25	50
26-50	40
51-75	30
76-100	20
101+	10

Example
The production from a Starbase with 65 Factories would be: **(25 x 50) + (25 x 40) + (15 x 30) = 2700**.

Factory output can be improved by using **Strion**. One MU of Strion will allow four Factories to produce at 120% of normal efficiency. If Strion is available, it will automatically be used in all active factories, even if you do not have enough man-hours to operate them.

If you attempt to produce an item and lack sufficient production to complete it, any excess production will be carried over to the following week so it is not lost. If you have a shortage of any item needed to complete your production, production of the item will halt until you either acquire the needed item, or alter your Production Schedule.

You can only place items on your Production Schedule that you can currently produce. If you are researching a new item, you can only place it onto your Production Schedule once your starbase has completed the item and has the blueprints. If you lose the blue prints for an item already on the schedule, your production will halt until you remove it or replace the blueprint.

You can remove an Item from your Production Schedule but each time you do this, you lose 20% of the following weeks production. This represents the time and effort involved in changing your production lines and preparing new materials. Alternatively, if you have a lot of changes to make, you can clear your Production Schedule, which will close your factories for one week.

Mass Production

Mass production differs from standard production in that each week factories assigned to this task will produce a specific item. The advantage of this over batch production is that the factories can be specialised. As such they are not treated as part of the factories assigned to batch production and therefore have their own efficiency.Each factory in a line of mass production provides 50mu of production. There are no limits to the number of lines that can be run concurrently.

Tooling

Changing the number of factories producing an item causes factories to be either untooled or tooled depending on the change. Tooling factories takes 4 weeks, untooling takes 2 weeks. This downtime only applies to the factories that are being changed.

Credits

Phoenix Initial Concept

KJC Games

Design and Implementation

David Bethel (Skeletal Software)

Mica Goldstone (KJC Games)

Phoenix Website Design

David Dixon

Rulebook Documentation

Mica Goldstone

Rulebook Design and Creation

David Dixon

Rulebook Integrity

Dan Reed (danreed@blueyonder.co.uk)

David Dixon (david@alpha-fleet.co.uk)

Graphic Design (Rulebook and Publicity)

Martin Dixon

David Dixon

Phoenix Beta Testers

Dan Reed
Mica Goldstone
Geoff Jollye
Pedro Martins
Thomas Franz
Phil Sara
Lee Carter
Nick Maggs
Milton Papadopoulos

Special Thanks

All the Beyond the Stellar Empire Players that devoted so much time to ensuring that the Phoenix dream became a reality!