

# FRONTIER EXPLORER



**ISSUE 36**  
**SPRING 2022**

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## LOOKING FOR SUBMISSIONS

Do you have material you'd like to see published in the Frontier Explorer? We accept submissions of any fan material for Star Frontiers, FrontierSpace, or any other sci-fi role-playing game whether it is new races, equipment, vehicles, setting material, play reports, or anything else.

If you have something you'd like to share, head on over to the [Frontier Explorer website](#) and hit the gold "Submit New Content" button. We'll help you get the material ready for publication and into a future issue of the magazine.

## GETTING THE RULES & BACK ISSUES

The published rules and modules for Star Frontiers and FrontierSpace, as well as all back issues for the Frontier Explorer and the Star Frontiersman (including print-on-demand physical copies of the Frontier Explorer) are available for purchase or download on DriveThruRPG.

All the old issues of the fan magazines, as well as print-on-demand versions of the Frontier Explorer can be found at [the Frontier Explorer page](#). These products are offered as pay-what-you-want. You can grab them for free, but this provides a way for you to make a donation to help support the magazines if you so desire.

Wizards of the Coast offers the Star Frontiers rules and modules on their [Star Frontiers page](#).

FrontierSpace products can be found on the [DWD Studios page](#).

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# LETTER FROM THE EDITOR

Hello Explorers!

Welcome to issue 36 of the Frontier Explorer. While it wasn't intended, this issue ended up with a Knight Hawks theme with details on a number of different ships and lots of rules related to starships.

Steven Parenteau gives us two different ships with deck plans along with an article about a small PSA inspired by thinking about life onboard those starships. Tom Verreault gives us an article about digger shuttles, some expanded starship repair rules, and a look at the hazards of prolonged exposure to zero gravity. He also provides a review of the Dark Colony adventure, a hacker archetype, a look at scanners, and a creature. Rounding out the starship articles is a freighter design by Richard Rose.

Jerry Boucher provides us with a second installment in his series on aircars, and Rod McDonough gives us the second part of his fiction piece started in last issue.

Finally, Oscar Rios gives us an article about dralasite reproduction and how they switch genders.

As I mentioned in issue 35, this is the last regular issue of the Frontier Explorer. I'm quite happy in the way it turned out despite postponing starting on it once again.

This isn't a mega-issue as I mentioned I might create in my last editor letter. That's because, although this is the last issue of the Frontier Explorer, it won't be the last fanzine issue produced. Tom Verreault is going to restart production of the Star Frontiersman magazine and I'm passing that fanzine over to him while I keep ownership of the Frontier Explorer. You can read the details of what he has planned in the sidebar on page 6. Since he's going to continue to produce magazine issues, all the material still in

our queue is going over the Star Frontiersman.

The cover for this issue was created by John F. Ridley on commission for Tom V. He'd been wanting an image like this for some years now and finally had it made. It's a fitting tribute to the original staff of the Frontier Explorer sailing off into the sunset. The image on the back is the full version of the image in the Star Frontiers Forever logo. I'd planned on using that as the cover until Tom V. sent me the other image.

While I might be done producing the regular issues of the Frontier Explorer, I'm not done creating. I close out this issue with an article looking back a bit at the origin and history of the magazine as well as its success over the years. In that article I talk about my future plans and the projects I'll be working on. I'm not going anywhere, just doing different things.

I've enjoyed the last decade of producing the Frontier Explorer and look forward to seeing what we find in the coming years. Now it's time for me to jump in my trusty assault scout and set off for parts unknown.

As always, keep exploring!

- Tom Stephens  
Senior Editor



# HAVE AIRCAR, WILL TRAVEL ... PART 2

BY JERRY BOUCHER

This article follows on the previous one in *Frontier Explorer* #32. The designs described below represent vehicles from the previous generation that remain in use across the Frontier. All require a Vehicle Computer (VC) to operate.

## 'STAR LAW SPECIAL'

**Cost:** 20,000 Cr (rental – not available)

**Top/Cruise Speed:** 500kph/350kph  
(300kph/200kph for transport version)

**Passengers:** 1-8

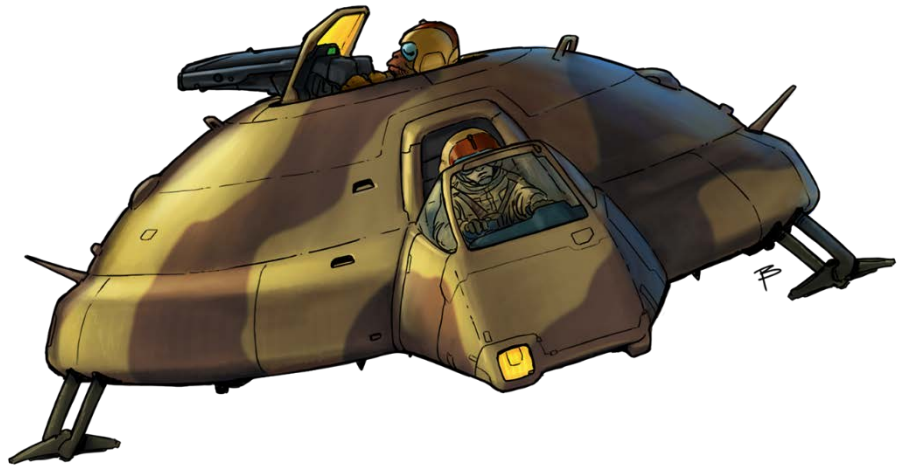
**Cargo Limit:** 100 kg, 2 cubic meters  
(500kg, 5 cubic metres for transport version)

**Parabattery:** 2 x Type 4

**Structural Points:** 100

Modern airplats and some aircar designs partially share some features with this vehicle, and its development with Star Law, various militaries and megacorps helped refine the wider evolution of aircars.

The 'Special' resembles a rectangular airplat but has a more powerful aircar engine system. Various types of streamlined bodywork can be added to this, with or without covered crew and passenger areas, or mixture of both. Some feature a swivel mount capable of supporting a variety of weapons. As cargo space is quite limited in troop or personnel-carrying versions, some designs are fitted with a pair of exterior panniers each capable of carrying up to 100kg (although these reduce top speed by 25kph).



These vehicles have been put into service as liaison vehicles, troop transports for special units, medivac, mobile communications, weapon platforms, and numerous other roles. The transport version described above is for a semi-streamlined vehicle. Most designs use parachutes for emergencies although some personnel variants feature ejector seats.

Compared to vehicles in the civilian market, the 'Special' looks somewhat basic and drab with a distinct military appearance. They are not commonly available unless assigned to players via Star Law or a megacorp.

## SECURIPLAT

**Cost:** 18,000 Cr (rental – 55 Cr plus 55 Cr/day), 10,000 Cr for robotic version (excluding programs, etc).

**Top/Cruise Speed:** 300kph/200kph

**Passengers:** 2

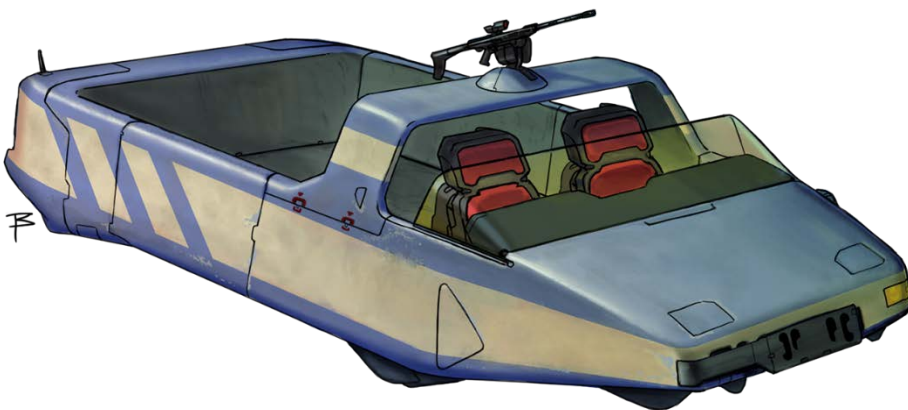
**Cargo Limit:** 50 kg, 0.5 cubic meters

**Parabattery:** 2 x Type 3

**Structural Points:** 100 (300 Stamina points for robot version)

The securiplat is a disc-shaped vehicle commonly used for patrolling and scouting. The pilot sits at the front of the disc and behind them is a raised central area inside which is a traversable seat and mounting capable of supporting a heavy weapon. The vehicle cannot operate at altitudes above 1000m and deploys a parachute in emergencies.

Another, less common variant of the securiplat is the basis of a heavy-duty robot body, also used for patrolling and scouting. This is essentially a security or combat robot, depending on the capability chosen. The pilot position is replaced by a sensor head that can traverse around the vehicle on a track mounting and is fitted with a weapon equivalent to a laser pistol, electrostunner, or sonic stunner that draws its power from the parabatteries. The central position is used to carry a security or combat robot of a standard body type. It can use its weapons from this position or debus from the main vehicle and act according to its orders.







## SECURIPOD

**Cost:** 12,000 Cr (rental – not available)

**Top/Cruise Speed:** 150kph/100kph

**Passengers:** 1

**Cargo Limit:** 10 kg, 0.35 cubic meters

**Parabattery:** Type 3

**Structural Points:** 50

The securipod is a small flying vehicle consisting of an aerodynamic shell mounted on a pair of ski legs. The shell covers a skeletal chassis and footplate, the thrusters, parabattery, and other machinery. The pilot stands within this, partly supported by a basic seat. The vehicle covers only the lower part of the pilot's body, the rest being exposed to the elements.

Securipods are relatively quiet and are commonly used by police and security forces for patrolling.

A swivel mount situated at the front-most part of the vehicle is fitted with a white light spotlight (or other types, as preferred) and a weapon equivalent to a laser pistol, electrostunner, or sonic stunner that draws its power from the parabattery. Alternatively, the mount can be fitted with the equivalent of an autorifle which has an internal magazine carrying 200 rounds of ammunition, although this reduces the vehicle's cargo capacity to zero. The pilot will have their attack modifier reduced to +10 when firing a burst with this weapon. The swivel mount has a 90-degree horizontal traverse and a +10/-45 degree vertical traverse. All other weapon characteristics (range, damage, etc) are as per the *Alpha Dawn* rules.

The securipod cannot operate at altitudes above 150m and pilots may choose to wear a glijet for use in emergencies.

## AIRCRAVE

**Cost:** 200,000 Cr (rental – 1500 Cr plus 500 Cr/day)

**Top/Cruise Speed:** 350kph/220kph

**Passengers:** 3

**Cargo Limit:** 25000 kg, cargo space varies (see below)

**Parabattery:** 6 x Type 4

**Structural Points:** 300

Aircraves are a venerable and reliable series of machines built around a similar pattern and derived from an earlier Yazirian design. A tall skeletal framework supports widely spaced landing wheels, a crew cabin, a powerful winching mechanism, and 4 large, shrouded turbofans.

All 3 crew must be pilots – the primary pilot, the 'engineer' pilot (who works with the VC, monitoring and maintaining

engine power during lifting and other manoeuvres), and an 'operator' pilot who sits facing rearward in the cabin and controls the aircraft for fine adjustments in flight whilst carrying out delicate winching and other procedures. They access the cabin via a retractable ladder.

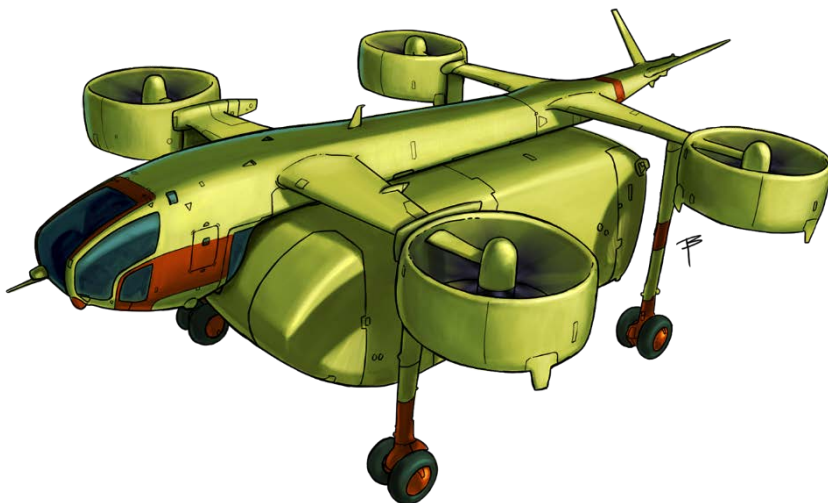
Cargo can be carried in a variety of ways, mostly using specially made pods of different sizes and of capacities between 5000 and 25000kg. The pods can open at both ends as required and include ramps. They are winched onto the Aircrave and held in place by clamps along its spine and are winched onto the ground when it lands.

Another transportation mode involves a ramped platform fixed between the landing pads which can carry vehicles, smaller pods, or cargo containers up to a combined weight of 10000kg.

Two different pressurised streamlined pods can be used to ferry large numbers of passengers. One is a basic version used to carry 50 troops with their personal equipment or 50 stretcher casualties with support staff. There are double doors on both sides and a ramped door at the rear. The other pod can carry 30 passengers in relative comfort, roughly comparable to a basic airliner. This has a pair of doors on either side. These pods are also winched to the ground when the Aircrave lands.

The winch can ferry underslung loads up to 10000kg for a distance of 400km at speeds up to 220kph.

The Aircrave can deploy parachutes in an emergency only if no cargo is carried (it must be detached first) or the crew can use ejector seats. The pods themselves deploy parachutes.



# THE HACKER ARCHETYPE

BY TOM VERREAULT

As a society becomes dependent on computers, hackers are sure to gain importance. They understand the ins and outs of computer networks and how to bypass or defeat computer security. Whatever their intentions, they rule the cyber world.

## CHARACTER CONCEPTS

### THE BLACK HAT HACKER

This is the criminal hacker. Their focus is on malicious activity and theft of information. They have learned to write malware programs to aid in hacking computers and networks. Their job is to disrupt computer systems or break in to either steal information or take over the system. They find employment in corporate espionage programs, criminal cadres, or as a lone wolf motivated by their own interests.

### THE WHITE HAT HACKER

This is the “good guy” hacker. They combat the black hats and scammers or perpetrators of some injustice through computer networks. Their mission is to stop the “evil-doing” through hacking although their definition of “evil-doing” may differ from that of others. They may work for corporate security, a government agency, or be a lone wolf motivated by their own personal moral code.

### CYBER SECURITY EXPERT

This hacker is a neutral agent. They are trained for cyber security and mostly work for a company, the government, or a cadre but are purely motivated by money. They care not about the “good guys” or the “bad guys”. They are just good at their job and does what is required of them.

## DEVELOPMENT

Hackers will likely have the Tech PSA so they can advance rapidly in computer skill. The Logic ability score and the Computer Skill are the primary focus of this archetype. Both should be developed by the player almost to the point of being a “one-

trick pony”. The good news is that with a Tech PSA and a high LOG, it will be easier for this character to diversify into robotics and technician skills to alleviate the “one-trick pony” issue. A few levels of technician skill, so that they can detect and deactivate alarms, will greatly enhance their versatility, and fit the criminal side of the character concepts.

## EQUIPMENT

The Robcom tool kit has generally been considered necessary for the computer tech to perform his skill actions. However, based on its contents, it can be contended that it is only necessary to perform repair or bypass security skill checks. It weighs 10 kg and can contribute to encumbrance and repairing a computer is not what a hacker is interested in. While a hacker may still keep one handy for the times that Defeat Security skill checks fail, so he can resort to a Bypass Security skill check, it really is unnecessary weight the character may not wish to carry.

Potentially more important to the hacker is the Computer Access Computer from Zebulon’s Guide. The CAC costs 2000 Cr and weighs 2.5 k. It is designed to connect to computers and is crucial to connecting to computers that lack manual (keyboard) or voice input. It automatically adjusts to the language of the computer and allows the hacker to perform any of the actions allowed by the Computer skill. It can be loaded with four extra booster programs providing a +15% bonus to four of the following: Access & Operate, Bypass Security, Defeat Security, Display Information, Interface, Program Manipulation, Program Writing, and Program Bodycomp. Since the CAC can only be loaded with 4 booster programs a hacker will want Defeat Security at a minimum. The Program Bodycomp booster can probably be ignored as this activity is unlikely to be performed while hacking.

Since the hacker does his battle online, he can save on weapons and defenses. A hacker that is part of a team can make do

with one defensive suit (a civilian version is usually preferred) and a pistol of some sort.

At each level of computer skill, the computer technician learns to write a new computer program. One of the first programs that any hacker should learn will be Computer Security since knowing how to write a program confers a +20% bonus to trying to manipulate it.

## NEW EQUIPMENT

### MALWARE PROGRAMS

This program can be learned by any computer technician. A malware program must be of the same level as the computer it is to be installed into. It causes the computer to begin to malfunction. There is a general -10% penalty to anyone but the hacker using the computer and a number of programs in that computer will cease to function equal to the level of the malware program.

*Example of installing a Malware Program:* If the hacker has direct access to the computer they will need to perform an Operate Computer skill check, but if they cannot access it directly then they must begin with an Interface skill check and use a second computer (note: if hacking through an interface the hacker cannot perform bypass security or repair skill checks). If there is computer security, they will need to perform a Defeat or Bypass Security skill check. They will need to perform a Display Information skill check to list all of the programs in that computer for the purposes of determining which ones the malware will cause to stop working. Note there is no Install Program skill check in the original rules so use a Manipulating Programs skill check for each program the Malware is to affect or shut down.

Hiding the presence of a malware program is sometimes desired. Some hackers will write their malware to have an innocuous name like Backup Life Support, Commerce Program, or anything they care to name it, like “Kilroy’s Revenge”. If the

computer already has a program by that name, the malware must be designated as backup for that program.

*Dealing with malware:* if a computer tech or cyber security tech suspects the presence of malware, a Display Information skill check will list all of the programs. If the Computer Security Program is not affected by the malware it can be used to detect the presence of malware (which is why most hackers always set the malware to stop the security program from working properly). If they cannot use the security program, then they will have to perform a Manipulate Program skill check with each program until he finds the malware. Note: if the computer tech has already operated a program or he wrote it then he does not need to roll to manipulate a program

unless it is a program that has been changed in some way since he last used the program – i.e. malware is affecting it. Thus, a computer technician can make some guesses at where the malware is: programs labeled backup, with oddball names, or that they don't remember being part of their computer. e.g. suddenly the computer has a commerce program that was never there before. Once a computer tech has identified a malware program, a Manipulating Program skill check is required to purge it and will reveal which programs it was affecting. Each program that was affected by the malware must also receive a manipulating program skill roll to free it from the effects of the malware even after the malware was purged.

Since programs that stop working and a

computer becoming harder to use is a red flag that malware is present, the hacker might not write the malware to do these things. It might be set to simply cause the weapons programs on a starship to be sluggish and have a -15% penalty to shooting. An astrogation program might cause a misjump. An atomic drive program might cause a hyper-ignite on lift-off. A malware program could be used to copy all information in the commerce program because the ship's owner suspects the crew who operates the ship of cheating him. The uses for a malware program are only limited by the imagination of the player or referee employing the program.

Treat the malware program as the computer security program for purposes of determining function points and cost.

## WHAT'S COMING NEXT?

With the Frontier Explorer publication winding down the big question being asked is what is going to happen next?

Star Frontiersman Vol. 2 is working up with a new team. It has a new email for submissions and communicating with the editorial staff: [starfrontiersman@gmail.com](mailto:starfrontiersman@gmail.com). Be sure to attach your full name as you want it to appear in print.

We intend to produce a quarterly magazine, in much the same vein as the Frontier Explorer magazine. Content for the new magazine will be encounters, fiction, deck plans, equipment, and everything you've come to expect from the Frontier Explorer but one new feature that we're excited about is the "Frontier's Most Wanted".

The "Star Frontiers Gamer" YouTube channel has received a lot of support and encouragement. It will continue to produce content. You can contact the channel at [starfrontiersman@gmail.com](mailto:starfrontiersman@gmail.com) with Attention YouTube in the subject line.

WotC and 5e continue to be the 900 lb. gorilla in the RPG gaming room and they might as well be a 90,000 lb. gorilla. That is not going to change. There are waves of new and younger players discovering

RPGs, but they are not discovering Star Frontiers. One must ask themselves if they are prepared to be the last Star Frontiers fan at age 90 in a nursing home telling the nurse that in their day, they use to set their laser to 10 SEU and having the nurse mark senile dementia in the chart. I speak with exaggeration there, but you get the picture. For this situation to change Star Frontiers will need to be accessible to 5e players. This means Star Frontiers will need to be playable in 5e. To my knowledge Star Frontiers has been played with Traveller, Stars Without Number, Savage Worlds, 4e, and Frontier Space. I'm sure there are other rules sets that have been used but these are the ones I can say I've heard of being used so adding 5e to that list shouldn't be a problem.

I know, WotC has been likened to the megacorps in the Star Frontiers setting and has been railed against in much the same way. Railing against it won't change its position as the preeminent megacorp in the RPG universe. With yazirians, dralasites, and vrusk making a comeback under the Spelljammer banner, now may be the

time to push the popularity of Star Frontiers in hope that WotC may finally actively, or at least passively, allow something to be done with the Star Frontiers setting. The fact that there have been 2 trademark grabs for the Star Frontiers name in 4 years may also work in our favor on this front.

To that end, I've gotten involved with a group of game designers working to produce a 5e compatible sci-fi game with the Star Frontiers "serial numbers filed off". The setting will be set in a sector "next door" to the Frontier. It will attempt to honor the spirit, essence, and feel of Star Frontiers and be the modern remake the game has deserved for decades. It is hoped that this will expand the vistas of Star Frontiers. So I am excited about the potential for the 5e game called: Light Years.





# DOMESTIC SERVICES (PSA)

BY STEVEN PARENTEAU

The skill group you never knew you needed, well you probably don't but why not.

While I was working on the Ajax freighter article (see page 25), it made me think about what the crew does while travelling between systems running ion engines. The engines are reliable and effective but slow as hell. What does the crew do during the flight? Well, a ship full of spacers probably make a mess. Who cleans that up? Likely the class 2 maintenance bot but their cooking sucks. At some point the crew will likely cook and clean for themselves since they have so much down time between stops. But how important a skill is it? Well not very much for the game, after all, no one wants to be the guy at the chuck wagon when you can be the cowboy heading out on the range to chase horse thieves.

## DESCRIPTION

The Domestic Services PSA can never be purchased as a primary skill group (and why would you), instead it adds some color to otherwise boring tasks the characters must perform. And with your GM's permission, some can earn bonuses for these tasks. Since DS is a "minor" PSA group each skill only costs 2 points per level.

### DOMESTIC SERVICES COST & PAY

DS SKILL	XP	EARNINGS/DAY	EARNINGS/MONTH
Level 1	2	5	100
Level 2	4	10	200
Level 3	6	15	300
Level 4	8	20	400
Level 5	10	25	500
Level 6	12	30	600

If your campaign doesn't bother with worrying about costs for supplies on the ship or how much weight player characters can carry when on a ground adventure,

this PSA would be of little value to your players.

## SKILLS

### COOKING

*Success Rate: 30%+10%skill level*

Cooking is home domestic cooking - not being a chef working in a 5-star restaurant. This is looking through the cupboards and being able to make a meal from items and spices available. Most spacers eat pre-designed meals (microwave dinners) until someone on the crew wants a home cooked meal.

**In game effect:** The cook can make a dessert to improve moral (who is not happy when they get a chocolate cake (or a carrot cake if you're a Vrusk) any multi-day task is reduced by a day (to a minimum of 1 day).

### CLEANING

*Success Rate: 20%+10%skill level*

With the crew living on board of a ship, weeks at a time between stations, the place gets messy. Someone needs to go around to clean up and more importantly put the important items away that were left lying around (like tools to fix the engine). As the player's skill goes up, they know where all the items on the ship are stored and can put them back in the right place for the users to find them again.

**In game effect:** If the player succeeds in their cleaning skill check, it will give a 10% synergy skill bonus to another character attempting to complete a task that required tools or some other form of equipment.

### PACKING

*Success Rate: 10%+10%skill level*

Sometimes you're in a rush to get off station or just need to get the explorer packed as quickly as possible. Throwing stuff into the cargo hold to get going is important but space is money.

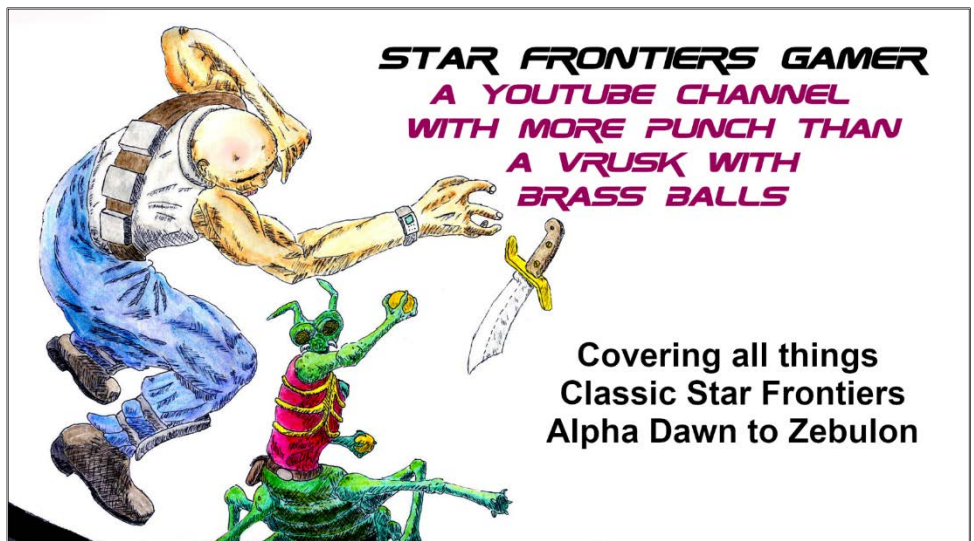
**In game effect:** If a character spends at least an hour looking through the loading bay or sifts through their backpack, they can gain back 10% of space by restacking boxes or breaking packages open and repackaging with zip lock bags (in the case of a backpack).

### SHOPPING

*Success Rate: 10%+15%skill level*

Most spacers run to the market when getting ready to leave the system. They purchase 50 microwave dinners and put them in storage for the trip. Shopping allows the character to sift through sales and buy items in bulk that will be cooked later while saving money.

**In game effect:** If the character spends an hour of their time shopping and succeeds at their skill roll, they will save 10% off the price for their supplies on a trip.





# THE GOLIATH BUCKET MOUTH CRAB OF LOSSEND

BY TOM VERREAULT

Derrick sat on a log by the fire savoring the smell of roasting crab. He drummed the fingers of his bionic prosthetic hand on his fishing spear waiting for the meat to cook. At age 13 he was not supposed to be at the shore, his parents had forbidden it. However, this was personal between him and the Goliath crab. Before he had received the bionic hand, paid for by a charity endowed by Tachton Corporation, he had lost his hand to a crab just like this one while swimming. Now that his rehab was over, he was determined to get back his pound of flesh from the crabs and more.

## LOSSENDIUS SITULA ORE CRUSTATUM GOLIATH

The Goliath Bucket Mouthed Crab weighs 30-40 kg and is 2m in diameter (legs at full extension). It has a hinged carapace resembling a clam which it opens to form its digestive maw. The carapace is ringed with piercing “teeth” and the bite strength of the crab is in excess of 4,450 newtons (1,000 psi). It has 6 legs and 2 arms with the arms ending in small pinchers for grasping and manipulating food into the mouth. The upper carapace is ridged with sharp protuberances and the

eye stalks emerge from the two protuberances closest to the mouth.

The goliath crab can scuttle walk on land and the sea floor but due to the configuration of its carapace, it can also swim. It can gulp water through its mouth much like a clam and jet it out the back. It uses this propulsion for short bursts of about 10-12 seconds (up to 2 combat rounds) in an ambush style attack. The crab must rest for 5-6 seconds (1 combat round) before using its swimming ability again.

The crab can see into the infrared and is attracted to heat sources. This is one reason they have been so dangerous. The crabs prefer an ambush style attack from below using their swimming ability to close the distance and latch onto its target.

The crab has proven extremely dangerous to swimmers and divers. It seeks to engulf an appendage or extremity in its mouth. If a swimmer or diver is holding a weapon when then crab makes its initial clamping bite and the swimmer has not already made an attack this round he may make a RS check to strike first into the exposed mouth (no protection from the hard carapace). If this attack is with a small melee weapon (like a knife) or even a pistol and the crab does not die then the hand is engulfed in its maw on a successful attack roll. The swimmer may then make attacks each round against the soft innards of the crab bypassing the hard carapace (melee attacks are at -20 due to pain from the clamping bite but range weapon attacks are at +10). If the weapon was long, like a rifle or a spear, then it is clamped in the crab’s mouth. A rifle can shoot a +10 against the soft innards but the spear is rendered useless until wrenched free at -20% penalty. Long weapons that get clamped in the crab’s mouth are typically broken 30% of the time.

Many colonists have lost hands or feet to the goliath crabs. This has led Margret Bovia of the Tachton megacorp to endow a charity to fit amputees with advanced bionic prosthetics.

A curious artifact turned up in an archaeological dig at what is believed to be an

ancient wypong (Lossend’s tool using primate) coastal encampment. It was an upper carapace of a goliath bucket mouth crab with four holes drilled into it. It appears to have been intended for use as a shield but there is no consensus among experts and to date no wypong has been seen using such a carapace shield.

Upon the arrival of the saurian refugees, the hunting and trapping the goliath crabs became a major industry. The saurians have developed them as an export food item and they work the carapaces for jewelry, artwork, and shields. The saurians have been unsuccessful marketing the 1m shields as riot gear to police forces outside of the Timeon system. However, the crab carapace shield has proven very popular among the saurians despite the availability of modern composites for such items.

## CRAB CARAPACE SHIELD

When used defensively in melee (this means the character has invoked the defending melee modifier) it will absorb ½ damage from attacks that succeed up to 30 points. This damage reduction occurs before the damage is applied against other defenses. It does not conduct electricity and provides a +10 to saves verses the stun effect of stun sticks or electric swords. It may also be used for a shield bash attack in combat. (Damage 2d10, Melee Modifier: +10, Defense: inertia, Mass 2, Cost: 25 cr.)

## CRAB TRINKETS AND JEWELRY

Trinkets and jewelry have become popular with the saurian and Lossendians. Necklaces sell for approximately 30 Cr and bracelets see for approximately 10-15 Cr but only on Lossend. The saurian have yet to get Uni-ho to include them as fashion accessories in one of their yearly fashion lines. Until that happens the market for them outside Lossend is just not there and prices are cut in half outside of Lossend.

THE GOLIATH BUCKET MOUTHED CRAB	
TYPE:	Large Crustacean (medium carnivore)
NUMBER:	1-5 on shore, 2-10 on the sea floor, 2-20 near underwater heat sources
MOVE:	Slow walking, Medium swimming (see below)
IM/RS:	6/55
STAMINA:	50
ATTACK:	60
DAMAGE:	3d10
SPECIAL ATTACK:	Clamping Bite automatic 1d10 damage after successful attack (STR check at -20 to break free)
SPECIAL DEFENSE:	Hard Carapace -1/2 damage from ballistic or kinetic damage
NATIVE WORLD:	Lossend

# REVIEW: DARK COLONY

## IT'S NEXT LEVEL!

BY TOM VERREAULT

Dark Colony is a generic sci fi adventure module by James Ward (Metamorphosis Alpha), Christopher Clark (Advanced Dungeons and Dragons), and Tim Kask (founding editor of Dragon). These designers were there in the early days of the real TSR and one might say they are legendary. Their company Eldritch Enterprise, that they run with Frank Mentzer, produced this module as the capstone of their Dark campaign including Dark Outpost and Dark Visitor. Note: I really thought I was

buying the first in the series and somehow bought the last.

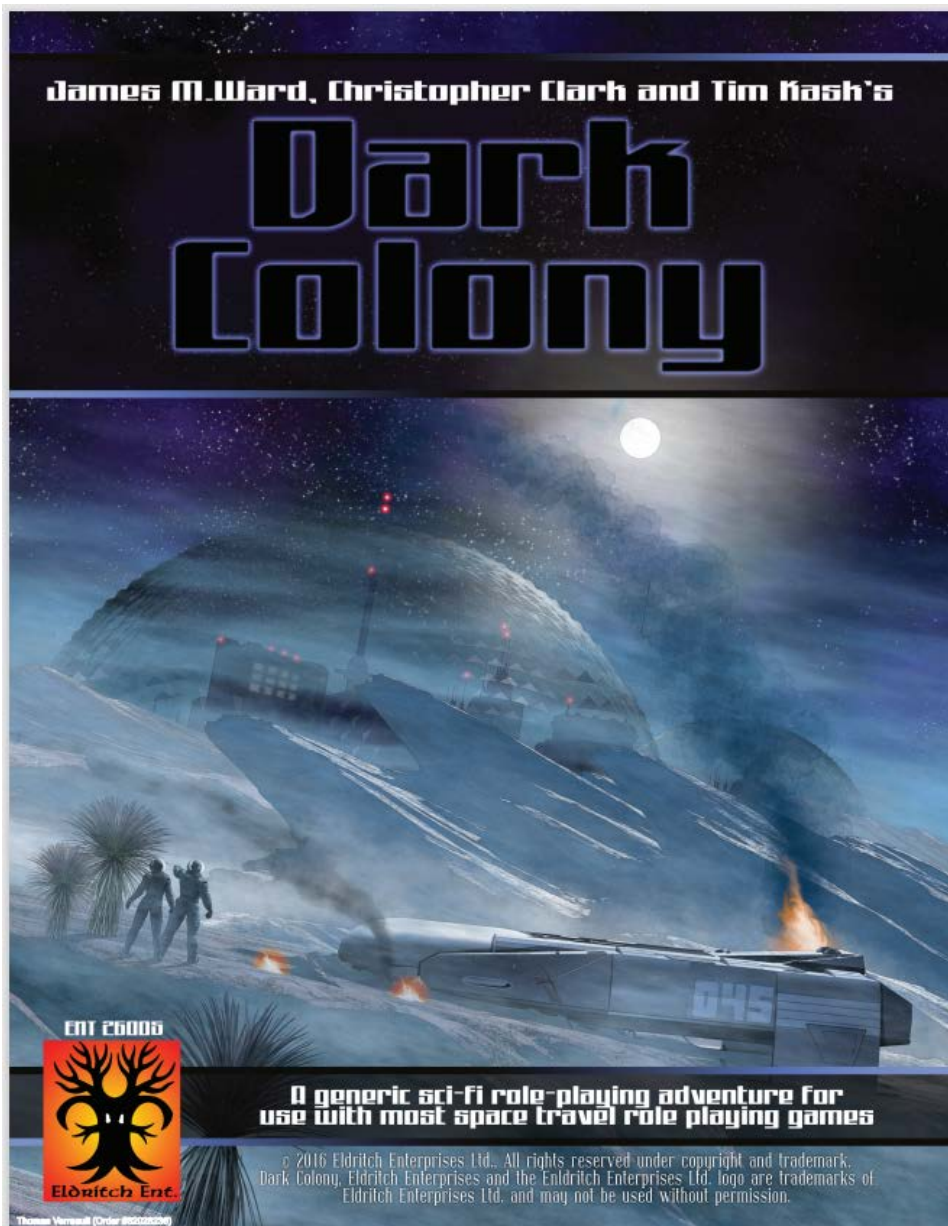
Production values are hard to rate for this product as the cover is obviously a mix of photoshop and CGI work and not the best example I've seen. However, the art direction on this cover is killer. There is a crashed and burning ship with two space-suited survivors staring off toward the horizon and these elements are evocative of the classic Larry Elmore sci fi cover for Star Frontiers. One might say that the wrecked vehicle and steel-eyed survivors is

a well beloved troupe from history to literature whether Robinson Caruso or Cortez burning his ships when he reached the New World. It's man against the world and it's a classic adventure troupe.

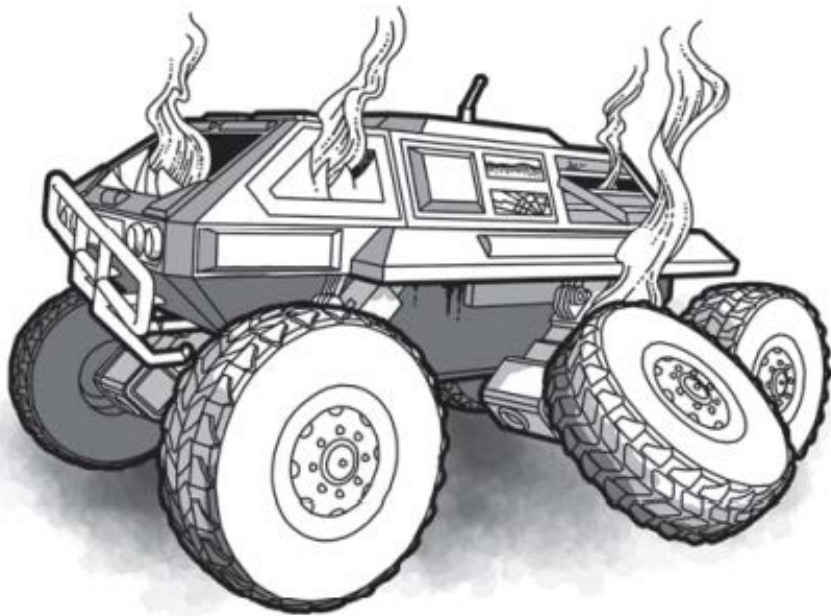
Just beyond these survivors and their burning ship is a rock formation that reminds one of Vasquez Rocks. If you think you don't know Vasquez Rocks I guarantee you must have seen them as they are 41 minutes from Hollywood, visually stunning, and an ideal location for filming on location. So much so that they have been the filming location for 66 movies and for 114 TV series. The reason I recognize them is because they have been seen in Star Trek in 10 episodes and two movies and immediately suggest Star Trek to me and this further draws me into this cover.

Finally, in the background are two domes of the eponymous Dark Colony. Domed structures and cities are a favorite of mine in science fiction, and they complete the picture in a way that makes me want to stare at the cover and imagine the possibilities of adventure held within. So, while I recognize the quality of the image is not what I'm used to in much of today's cutting edge CGI artwork, the art direction is spot on and the image still makes an impression.

The internal illustrations are black and white and fair to middling in quality. A handful are really good. I like the landed ship as it evokes the assault scout from Star Frontiers, especially when compared to the "group photo" in front of the Osprey from the "Warriors of White Light" module or the landed assault scout in "The War







Machine". What is truly amazing about the art in this module is that despite the module being 121 pages excluding the covers, it has 74 illustrations, which means there is plenty to break up the blocks of text and relieve eye strain. Clearly the authors were not content to do the minimum when laying out this book.

When the cover says "generic sci fi adventure for use with most space travel role-playing games" it is not an idle boast. I can easily see this module working with Traveller, Star Trek Adventures, FrontierSpace, Stars Without Number, and Star Frontiers with very little work. In the module, the dispatching authority is called "the Fleet" but you would change this to the Scout Service in Traveller, the Federation for Star Trek Adventures, a mega corp for Star Frontiers or FrontierSpace, and Stars Without Number is so sandboxy that this adventure is easy to drop anywhere in its canned setting.

My particular recommendations for using it with Star Frontiers is to make this the first colony in either the New Streel or Pan-Gal systems with the appropriate megacorp as the dispatching authority or set it in the Rim away from the home star systems of the 3 Rim species and the Flight would be the dispatching authority. The magical mystery ore of Manzakium (Mk127) can be changed to Federanium (from Zeb's Guide) or Tomarillion or Vi-branium (from "Volturnus Planet of Mystery").

The theme or plot hook for this adventure is something I've seen done in a Star Trek episode and one other sci fi RPG module. While it's been done before, this is the best presentation of that theme I have ever seen. There is more than one "agency" for the PCs to run up against and each of these agencies has a whole suite of responses to player actions provided for the game master to use. There are multiple mysteries to tackle. This is NO linear railroad of an adventure nor is it a simple one shot either. There are multiple sessions of play in this module. The potential outcomes range from complete disaster and destruction of the colony to the PCs being hailed as conquering heroes and everything in between.

The module consists of 16 encounter locations for the players to explore, some with 10-12 subsections. There are 17 maps throughout the body of the adventure and in the maps appendix there are 22 maps though most are copies of the original 17. There are eleven handouts: 1 mission briefing and 10 incident reports. There is also a one-page directory of the 40 NPCs present in the colony that can also double as a handout to the PCs should they seek a roster of the colony staff. Then there is a 1-page NPC roster with game master notes (including location) for each PC which is going to be super handy in running the game.

My only criticism is that I wish the authors had labeled their Dark series campaign with classic module codes like D1, D2, and D3. This would have idiot proofed me from purchasing the 3rd in the series instead of the first.

The price on DriveThruRPG is \$5 to \$25 dollars depending on the format you wish to purchase: PDF, soft cover, or hard cover. This is a meaty product with lots of content and support for the game master that puts to shame many of my recent DriveThruRPG purchases. It has set a new bar for judging RPG products of this type but then what was I expecting with the likes of James Ward, Christopher Clark, and Tim Kask as the authors! Dark Colony is truly next level and well worth it. I rate this 5 out of 5 dralasite thumbs up although part of me wants to break the scale and say, "six."





# INFINITE SHADES OF GREY

## SEX, SPORES, AND DRALASITES

BY OSCAR RIOS

Of the four core races of the Frontier, none has a more complex reproduction system than the philosophical, elastic, and humorous Dralasites. Having three gender phases, reproducing with spores, and having young Dralasites bud off of their mothers, they are unlike any other star faring race in the Frontier. But what triggers a Dralasite to move between gender phases? Are the triggers different for the male and female phase? Why are these details not more commonly known? My name is Dr. Xanados Spain, professor of xenoanthropology at the University of Zebulon, and today we're going to endeavor to answer some of those questions. So, let's get to it.

### THE MYSTERY

Let's start with the mystery behind these details. Dralasites seldom talk about their gender or reproduction to outsiders for a variety of reasons. First being most find the confusion and unease which other races have about Dralasite reproduction to be quite funny. Explaining this to people would ruin that fun, so they simply keep quiet about it. They are more than happy to enjoy the awkwardness others races feel.

Second is that it is very difficult to explain. Much of their reproduction centers on the race's superior sense of smell. Therefore, some explanations are difficult to convey without that context. It is hard for a Dralasite to explain their races sexual customs and biology when the person receiving the explanation cannot detect the thousands of unique scents Dralasites perceive between each other. I've heard it explained by Dralasites best, with the saying, "It's like trying to explain shoes to an eel."

Third is that is that many consider it a private, individual matter for each Dralasite. It's simply nobody's business other than their own. Why do other races need to know? They don't, because it will never involve them.

And finally, is that there are no hard, fast rules. Dralasites are a race that loves debate, philosophy, and discussion. As such there are no black and white rules when it comes to gender, mating, and parenting. True to the colorblind Dralasites, these variations are in countless shades of grey.

But let's talk about some generally accepted facts.

### THE GENDER CYCLES OF A DRALASITE

Dralasites naturally move through neutral, male, and female gender phases through their lifespan. Males, female, and neutral gendered Dralasites are physically indistinguishable. However, Dralasites can instantly identify an individual's gender with their superior sense of smell (see Pheromone Identifiers / Attractors). Over the course of their long lives, they can shift between them many times. Shifts are always between neutral and male or neutral and female. Dralasites are biologically incapable of shifting directly between male and female.

These shifts are triggered by a variety of factors, but the two most important ones are physical condition and physiological disposition. These phases can be, and often are, controlled medically (see Gender Lock and Shift Medications). This has been a common practice among Dralasites since they built their first steam engine, let alone developed interstellar drives and colonized the stars. Ancient Dralasites managed their gender phases with natural herbs, salves, and oils.

### THE NEUTRAL PHASE

This is the normal phase of a Dralasites life, and the one they spend the most time in. It's estimated that Dralasites spend between 80% - 90% of their lives as a neutral gender. In this state they are not producing reproductive spores (male) and are

non-responsive to spores landing upon them. There is no physical drive to reproduce, and thoughts about mating, pair bonding, and childrearing are primarily abstract, philosophical concepts to a Dralasite when in this phase.

### THE MALE PHASE

Dralasites typically enter the male phases in the first third of their long lifespans. This happens when they are at peak moments of physical conditioning. It also happens when a Dralasite feels particularly accomplished, reaching some sort of milestone in their life which they've worked towards. This phase can also be triggered by the exposure to certain pheromones emitted by a Dralasite in its female phase (see Pheromone Identifiers / Attractors). The process of shifting from neutral into the male gender typically takes about a week. However, it can be quite sudden, sometimes taking place in as little as 48 hours. Once a Dralasite shifts into a male phase, by nature they remain in this gender for anywhere between four to twelve weeks.

**For example:** A young Dralasite explorer undergoes several months of intense physical conditioning in preparation for a long expedition and slowly shift into a male phase. A middle aged Dralasite earned a long striven for promotion at their company shift into their male phase during the weekend before moving into their new larger office. Lastly, a Dralasite



IMAGE BY JOE FREEMAN

martial artist who's recently won a competitive tournament begins shifting into the male gender after being awarded their trophy.

**Optional Rule:** Referees can grant a male gendered Dralasite +5 bonus to their Stamina score, as they are operating at a high hormonal level that enhances physical endurance. They can also grant them a +5 bonus to their Leadership score, as they tend to be more confident, driven, and assertive.

## THE FEMALE PHASE

This phase is triggered typically by older Dralasites in the middle phases of their lives. Physically, such Dralasites are less active but still in prime physical condition. Mentally, Dralasites entering their female phases feel accomplished, content, and secure in their positions and environments. They feel they having nothing left to prove to anyone or to themselves. They are comfortable in who they are and what they've built. Such Dralasites are in the perfect position to focus their energies on creating and caring for a new life, and often their biology follows suit. As in the male phase, this gender shift can sometimes be triggered by the pheromones emitted by a male Dralasites (See Pheromone Attractors). Shifting into the female phase is a gradual process, typically taking between two to four weeks. By nature, this phase lasts for between twelve and twenty-six weeks.

**For example:** A mature Dralasite has just paid off a considerable debt and becomes financially stable and begins to shift into their female phase. A Dralasite shifts into female phase shortly after the construction on the home they designed is completed. A Dralasite spacer finally becomes the owner and captain of their first starship and shifts into their female phase.

**Optional Rule:** Referees can grant a female gendered Dralasite +5% bonus to their Lie Detection ability, because they are more mentally attuned to others than themselves. They can also grant them a +5 bonus to their Personality score, as they tend to be better listeners, more insightful, and empathetic.

## PHEROMONE IDENTIFIERS / ATTRACTORS

While all Dralasites look exactly alike physically regardless of gender, they do not smell the same. Male and female Dralasites emit strong pheromones, identifying their genders to other Dralasites. Other races cannot detect these pheromones naturally, but Dralasites, with their excellent senses of smell absolutely can. Not only that, they can tell the number of males and females present within a 25-meter radius by scent alone. Dralasites find such scent pleasant, alluring, even tempting, and they often play a factor in triggering a gender shift.

**For Example** – Dugoolu, a Dralasite Star Law agent working undercover, enters an improv comedy club. At a glance they can see the club is packed, with many of those in attendance being fellow Dralasites, possibly twenty-five individuals. After a minute or so of breathing in the air they detect the scent of two different females and four different males. It's a pleasant and attractive scent, but such things are not what they're interested in at the moment. Dugoolu double checks their webbing pocket and pulls out their gender medication pill tube. With a glance they confirm that they've taken their monthly gender lock supplement. With that out of the way they begin to focus and start moving about, scanning for the suspect said to frequent this establishment.

## PAIR-BONDING TRIGGERS

Often when two Dralasites work closely together and have a very positive relationship, a deep bond can form. After a period of time and a certain level of familiarity is reached, biology can, and often does, take advantage of a situation. Seemingly out of nowhere the two Dralasites begin to shift into opposite genders. Culturally this is considered the best form of compatibility and is what most Dralasites hope for. Dralasites have a single word, "Shozuzoh", that conveys a complicated message: *If I could make a new person who was half me, I would*

*want the other half of that person to be you.* Shozuzoh is only used in describing Dralasites who've gender shifted due to a pair-bond trigger.

## GENDER LOCK AND GENDER SHIFT MEDICATIONS

These medications come in various forms, such as pills, sprays, oils, and in hypos. They last anywhere from two weeks to one year, although typically dosage is effective for a two-month period. Stronger, longer lasting doses convey unpleasant side effects, such as mild nausea and feelings of vertigo, for the first week. This medication comes in three variations: male gender lock, female gender lock, and by far the most common, neural gender lock.

There are also medications which artificially shift a Dralasite's gender from neutral to male, neutral to female, or back to neutral from either male or female. Artificially shifting between genders with medication is an uncomfortable process, as the drugs convey the side effects of nausea, dizziness, and mood swings for between two and five days. Once a gender is artificially shifted it can be medically locked. Unless the gender is medically locked the artificially triggered gender phase shifts back to neutral in about two weeks. The exception to this is when the gender artificially shifted into is neutral, in which case it remains naturally stable.

## GENDER, IDENTIFY, AND SOCIAL ACCEPTANCE

Although it is rare, some Dralasites prefer to remain either male or female for extended periods of time exceeding their natural phase cycle. A few even choose to permanently remain as either male or female. Such choices have nothing to do with reproduction, but are rather personal choices. Some Dralasites claim they only feel like their true selves when they are either in a male or female phase.

The social response to such Dralasites, among other Dralasites, varies wildly from

community to community. In some places this is considered their individual's personal right as a sentient being, with such persons being complete accepted and having their rights legally protected. In other places, such Dralasites are considered to be deviants, and are actively ostracized and subject to legislation which limits their rights and personal freedoms. As Dralasites as a race love debate and philosophy, every individual has their own opinion on the subject.

## MATING

Dralasites reproduce when a male emits spores which then land on a female. Only males can emit spores, and only females have skins which are receptive to receiving them. Spores do not remain viable for more than a few minutes, nor do they travel very far. Typically, a male must be within two meters of a female for a viable coupling to occur. The spores carry a hormonal trigger that sparks the certain reproductive specific pleasure receptors in a female's biochemistry.

When these are triggered it causes a Dralasite female to release an intense pheromone mist, called a perfume echo. This mist of biochemical also has a range of only about two meters. The perfume echo in turn sparks certain reproductive pleasure receptors in a male.

Dralasites typically repeat this process between two and five times when mating, depending on the stamina level of the male. The closer the pair are to one another the more intense the physical reaction, due to the concentration of spores and pheromones. Typically, each occurrence of mating has a 30% chance of producing a viable offspring.

While some Dralasites mate privately, others do so in group settings, with multiple males and females. Some Dralasites wish to be personally connected to those they mate with, while others most certainly do not. Some Dralasites wish to carefully chose whom they share their genetic material with, and who's genetic material they use to create a new life. However, there are just as many who prefer to trust their sense of smell in choosing a desirable partner, and letting instinct and

biology take control in such matters. Again, as Dralasites are a race what enjoys debate and philosophy, individual preference and opinion on such matters varies wildly.

## SEX SOLELY FOR PLEASURE

Most Dralasites consider mating to be something done for the production of offspring. While it is pleasurable, that is the reward of the act, not the point of it. However, as with all things in a Dralasite's existence, there is no clear black and white to this either. There are Dralasites who enjoy mating but do not wish to either pass on their genetic material or produce a new life. They see mating as a pleasurable biological function that is worth pursuing, but that the production of an offspring is only an unwanted side effect. This is a very infrequently encountered opinion, and one which is often considered socially irresponsible among Dralasites.

## BIRTH CONTROL

Dralasites have drugs that allow a male to produce spores which trigger a female's

pleasure receptors but do not carry their genetic material. They also have drugs which allow a female to both receive spore's pleasure receptors and produce her perfume echo, but make them incapable to receiving a male's genetic material. Such drugs often have unpleasant side effects and are sometimes heavily regulated. Use of such drugs without the consent of one's partner is considered morally wrong by Dralasites. To Dralasites, mating solely for pleasure, without the possibility of producing an offspring, should be a decision both parties agree to.

## IN CLOSING

That's all the time we have. Yes, I see many of you still have questions. Do Dralasites remain female when pregnant? How long does a Dralasite remain pregnant? How independent are Dralasites when they initially drop off from their mothers? Are the male spore donors involved in caring for their pregnant partners? Are they involved in raising the offspring? How long is a Dralasites childhood?

I'll be discussing all of this in my next lecture. I'm afraid that's all the time we have for today.



The image shows the cover of the 'Space Kids RPG' Player's Guide. The title 'SPACE KIDS RPG' is at the top in a stylized, blocky font. Below it is a black and white illustration of three young characters in a sci-fi setting. One character is a girl with a bow, another is a boy in a spacesuit, and a third is a boy with a gun. They are standing in front of a large, complex structure that looks like a spaceship or a space station. The text 'PLAYER'S GUIDE BY NICK LANDRY' is at the bottom of the illustration. The publisher's name 'BIG PALD GAMES' is at the bottom left. To the right of the illustration, there is text: 'Are your kids too young for Star Frontiers and other tabletop RPGs?', 'Start their sci-fi tabletop gaming education', 'Simple & inclusive', 'Fun & educational', 'For kids aged 4-12 and their parents', and 'Pre-order today: [www.SpaceKidsRPG.com](http://www.SpaceKidsRPG.com)'.

Are your kids too young for Star Frontiers and other tabletop RPGs?

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**SPACE KIDS RPG**

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# THE ALPHA TO ZED OF FRONTIER SCANNERS

BY TOM VERREAULT

I was working on a project involving robots and came across one fan creation that included some Zeb's Guide equipment in what was essentially an Alpha Dawn stat block. The author had included the Duo-CAS with electromagnetic and mechanical scanning. Normally, I ignore major portions of the Zeb's Guide equipment list because I hate the fiddly "build it yourself" aspect of that list. (It may be hypocritical of me because I don't mind building a robot this way). However, I actually like the idea of this scanner. I added it to the robot's stat block under "installed equipment" but rather than list all the pieces of it from Zeb's I simply called it the Maintenance Scanner.

The maintenance scanner, as per Zeb's Guide, costs 400 Cr and weighs 3kg. Under Zeb's rules, it confers a +2 column shift to certain skill checks. I would rule those skill checks to be repairs of weapons & robots (with the appropriate skills), modification of robots, and many of the technician skill checks: repairing machinery, detecting alarms & defenses, deactivating alarms & defenses, and opening locks.

The big question is what should the bonus be for using this item under the AD skill system? Consultation with other Frontiersmen suggested the Math on a

column shift works out to about 8%. Normally, I would round that up to 10% which would be 20% for shifting two columns. This felt a little generous especially in light of medical skill checks performed in a hospital gain a +20% due to all the assets of that institution that are available. If the 8% per column bonus were multiplied by 2 columns before being rounded to the nearest multiple of 5, we would get 16% which would round to +15% bonus in keeping with the AD system. To me, a +15% sounds about right.

All of this conversion work raised the question of what about workshops, would skill checks performed in a workshop gain a bonus like medical skill checks performed at a hospital? Of course, not all workshops are created equal, nor do they have assets that would compare to a hospital. To simulate the wide range of quality in workshops a game referee can assign a bonus value for the workshop of +0, +5, +10, +15, or +20 to reflect everything from a shed with a few tools to a full maintenance depot with all the latest hi-tech tools and a parts crib. Alternately, the workshop bonus can be generated randomly by rolling 1d10 on the following table:

DIE ROLL	BONUS	TYPE
1-2	+0%	Shed w/tools
3-4	+5%	Personal Workshop
5-6	+10%	Garage or Starship Workshop
7-8	+15%	Maintenance Depot
9-10	+20%	Elite Maintenance Depot

Adding a bonus for a maintenance scanner feels right because it exists in Zeb's Guide and adding a bonus for a workshop also feels right because of the hospital precedent but the potential for a stacked bonus exceeding +20 feels wrong. So, my ruling here is the bonus for the maintenance scanner and the bonus for the workshop do not stack, a character having the scanner and a workshop both at their disposal must choose one or the other for the bonus. This means adding a maintenance

scanner to a workshop automatically bumps its bonus to +15% even it is a shed with just a few tools.

## WHAT ABOUT OTHER CAS SCANNERS FROM ZEB'S?

To recreate the Environmental toolkit from the Zeb's Guide equipment list you would need the Atmospheric CAS (200 Cr), the Geological CAS (200 Cr), and a Duo-CAS with Flora and Fauna applications (480 Cr) for a total cost of 880 Cr. The original Alpha Dawn Environmental tool kit only cost 500 Cr which makes switching to Zeb's CAS scanners a bad deal.

I would keep the Bio Scanner from AD giving it a cost of 300 Cr and a weight of 3kg. This would make it a Duo-CAS with flora and fauna application, but the price would be more in line with the AD toolkit while the weight is conformed to the weight of the Duo-CAS. The bonus for using it with Environmental skill rolls is +15%.

The AD vapor scanner & geo scanner combined with the Zeb's Guide chemical scanner and a small lasing device (a re-worked laser scalpel) become the Mass Spectrometry Scanner. The lasing device ionizes samples so that the scanner can read the chemical composition of gases, liquid, or solid samples. The mass spec scanner will cost 300 Cr and weigh 3 kg. The scanner gives an accurate readout of elements in a sample 97% of the time. The character is rolling to see if they get an automatic failure result which just means the sample was contaminated or the results were inconclusive. The referee is free to assess a penalty for the roll with the mass spec scanner in the case of weird or alien samples; a -20 from 97% makes for a real chance of failure at 77%.

Taken together, the bio scanner and the mass spec scanner cost slightly more than the AD tool kit but also weigh a little less. The mass spec scanner also gains the capabilities of the chemical scanner from Zeb's



IMAGE BY JERRY BOUGHER

Guide. This in effect makes them an upgrade over the AD toolkit.

The availability of a lab will aid in skill checks for an environmentalist. Similar to the workshops, not all labs are created equal. A lab will have a bonus value of +0, +5, +10, +15, or +20 to reflect everything from a field station to a corporate research lab. A referee can generate it randomly by rolling 1d10 on the following table:

DIE ROLL	BONUS	TYPE
1-2	+0%	Field Station
3-4	+5%	Personal Lab
5-6	+10%	Generic Lab or Starship Lab
7-8	+15%	University Lab
9-10	+20%	Corporate Research Lab

Environmental skill check performed with both a lab or a scanner available for a bonus will not stack, the environmentalist must choose one or the other.

The AD toolkit contains a med scanner and only costs 500 Cr as opposed to the medical-CAS of Zeb's Guide which costs 800 Cr making the AD toolkit the item to keep. The adoption of the medical-GAS is problematic as Zeb's Guide lacks any kind of med kit.

The robo-CAS isn't really needed with the maintenance scanner and the special robo access computer from Zeb's. The problem being that the CAC's cost of 2,000 Cr is a little high so I think the robo access computer's cost can be reduced to that of the robo-CAS which is 800 Cr.

Likewise, the computer access computer can be reduced to the same cost of 800 Cr. These computers, once interfaced with a

computer or robot, confer a +15% bonus to computer or robotics skill checks involving programming or access type skill checks.

The demolitions scanner is a great addition to the Frontier. Conferring a +15% bonus to demolitions skill checks the scanner could mean life or death for a demolitions expert. It costs 300 Cr and weighs 2 kg.

EQUIPMENT	COST	WEIGHT (KG)
Bio Scanner	300	3
Demolitions Scanner	300	2
Maintenance Scanner	400	3
Mass Spec Scanner	300	3
Medical Scanner	250	2
Computer Access Computer (CAC)	800	2
Robo Access Computer (RAC)	800	2

## STARSHIP MINIATURES

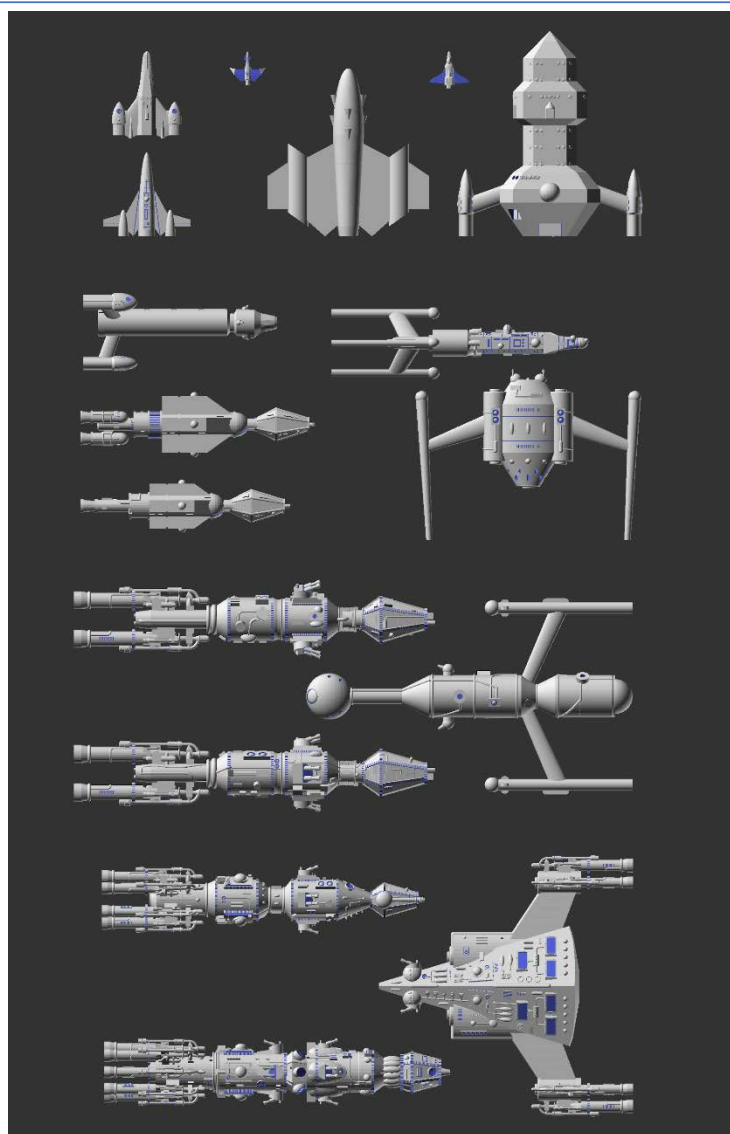
Interested in growing your collection of starship miniatures? Do you want 3D models of the ships to work with? Both are available if you need them.

I've created 3D models of almost every original Star Frontiers ship miniature as well as a number of original designs that fill in the order of battle for both the UPF and Sathar fleets. And I'll be working on more in the months to come.

You can find all of these models in my **3D Models collection on DriveThruRPG**. Recreations of the original Star Frontiers miniatures are pay-what-you-want while the models of my new designs have a small cost (\$1-\$2). If you have a 3D printer and want to print them yourself, or just want to use the models in another program, this is your source.

If you don't have a 3D printer and would like me to print the miniatures for you, I can do that as well. Head on over to my **Expanding Frontier blog and look at the miniature price list page** for information on print and shipping costs and how to order. The cost of the printed miniatures is based on the size of the miniature and range from \$0.30 to \$10.00.

*This image shows some of the model available. Each of the four groups are to scale with one another although the groups are not to scale with each other.*



# LION CLASS FRIGATE

## PROTECTING THE FRONTIER ONE SYSTEM AT A TIME

BY STEVEN PARENTEAU

### BACKGROUND

The Lion Class frigate is the workhorse of the UPF fleet. It is the most produced warship in service to date. After the First Sather War, it was obvious a modernization program was going to be needed to get the UPF fleet in fighting order to protect the Federation. The previous class frigate, the Driadia, was designed with patrol and pirate interdiction in mind. Fighting against larger warships in fleet battles as part of integrated task force was not where the Driadia excelled.

With years of battles to analyze, and surviving navy personnel to interview, intelligent designs were used for the next generation of ships. The first ship on the redesign plan was a new frigate. The design team started the design in 12FY and was completed in 16FY. The first ship of the class wouldn't leave the Gran Quivera space dock until 18FY. The ship underwent rigorous testing and was forced to return twice for changes and to examine her engines. The first ship, UPF Lion, was accepted by the UPF in 20FY.

The weapon and defense configuration remained unchanged from the older model, but space saving techniques were used to reduce the volume needed by these core systems. With the additional space, the ship was made more "survivable" in the case of catastrophic damage. Life support systems were spread across the entire ship in case the main system went down from an unlucky hit. Battery stations were spread across almost all the deck levels to keep life support running as well as important systems like the turbo lifts. Lifeboats and escape pod numbers were increased to accommodate the entire crew as well as having them stationed where the crew would be located during battle station operations.

The update to the deck layouts and new configuration proved invaluable in 80FY when the Sather again threatened the

Frontier worlds. The frigates which were up to 60 years old by this time proved able to keep their crew alive for days even after engine shutdown if the crew were conservative with their supplies.

### KNOWN SHIP REFITS

Several upgrades were made through the design life of the ship, mostly in the way of electronics upgrades. Other notable changes were:

#### REFIT H

Known as the "Hot Frigate" the rocket battery system was replaced with an additional laser battery. This increased the ships endurance and had less reliance on ammunition.

#### REFIT K

Attempts were made to add a second turbolift to the lower deck (4 thru 10). To squeeze in the extra lift to improve efficiency, most of the emergency life support had to be removed or put into storage areas. This either lowered survivability or endurance. This option is most often used in militia ships that work close to home port.

#### REFIT W

In 105FY a new ECM system was developed by Pan Galactic. This was beyond a mere targeting system. It would distract any seeking weapons. It was decided to install the system in the older frigate, the UPF Tiger. The laser battery was removed and replaced with an electronic gear. The ship was nicknamed "Wild Tiger".

### SHIP CONFIGURATION

Deck plans for the ship are given on the following pages. What follows is a short summary of each deck.

#### DECK 1, FLIGHT CREW DECK

This deck contains state rooms for the flight crew on the bridge: helm, weapons,

astrogation, radio/radar. There are two sets of bridge crew members so they "hot bunk" 12-hour shifts.

#### DECK 2, BRIDGE, CAPTAIN'S QUARTERS

The main controls for the ship are located on this deck with stations for major departments: navigation, weapons, astrogation, radio/radar, engineering, and a command seat. The bridge also has a lifeboat that will support all crew members on the first three decks, five emergency lockers, back up life support, and backup parabattery - type 4.

The captains' quarters are also located on deck 2 putting him as close to command as possible.

#### DECK 3 OFFICER'S QUARTERS

This deck has rooms for the first officer, navigation officer, and weapons officer. There are 2 emergency lockers in the hallway and one in the XO's room, back up life support, and a backup parabattery - type 4.

#### DECK 4 ASSAULT DECK

This deck houses the ship's laser cannon and torpedo launcher. There are accommodations for 8 crew members and 4 escape pods are also on this deck. There are emergency lockers for each crew member and there are back up life support and a backup parabattery - type 4 near the lift.

#### DECK 5 AXILLARY CONTROL DECK

This deck primarily holds the auxiliary control station with the same six stations as the bridge. During combat, the off-duty crew along with the first officer report here to take command in the case the bridge is hit. The deck also has the sickbay, doctor's quarters, and surgery bay. The officers mess, lifeboat, back up life support, and a backup parabattery - type 4 near the lift complete the deck.



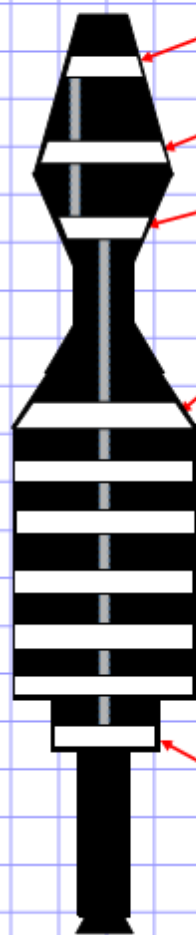
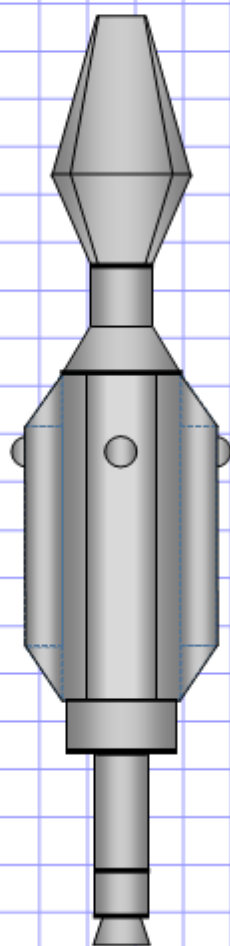
# UPFS Lion Class Frigate

## Lion Class Frigate

Builders: Gran Quivera Shipyards  
 Operators: UPF  
 Preceded by: Driadia Class  
 Succeeded by: Delta Class 100FY  
 First Commissioned: 18FY  
 First Flight: 20FY  
 Hull size: 5  
 Length: 100 meters  
 Width: 15 meters  
 Decks: 10  
 Hatches: 2  
 Cargo Hatches: 3  
 Engines: 3 Atomic B  
 Range: 3 jumps  
 Emergency Power: Para Battery (x15)  
 ADF: 4  
 MR: 3  
 DCR: 70  
 Hull Points: 40

Standard Crew:  
 -Officers: 6  
 -Crew: 20  
 -Marines: 4  
 -Option: 8  
 Computer...218FP  
 Starship Astrogation  
 Videocom Radio  
 Comm Screens... 5  
 Intercom with mics... 26  
 Radar  
 Full Cameras  
 Skin Sensors  
 Escape Pods... 12  
 Life Boats... 3  
 Life Support:  
 -Primary: support 60  
 -Secondary: support 35 (x6)  
 Armament:  
 ...1 Spartan Laser Cannon  
 ...1 Buzz Saw Laser Battery  
 ...2 Mark 54 Torpedoes  
 ...4 Swordfish Rocket Batteries  
 Defenses:  
 ...Second Skin Reflective Hull  
 ...Mark 5 Masking System  
 ...4 Mongoose Interceptors

Total=\$2,758,310  
 Class I shipyard  
 Total=\$3,108,310  
 Class II shipyard



Flight Crew Deck 1

Bridge Deck 2

Officers Quarter's Deck 3

Assault Systems Deck 4

Auxiliary Control Deck 5

Defense Systems Deck 6

Attack Systems Deck 7

Crew Deck 8

Supplies Storage Deck 9

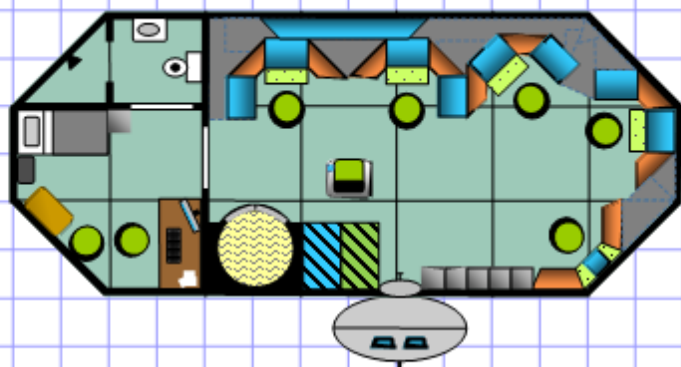
Engineering Deck 10

## Lion Class Frigate Computer

Computer...218FP  
 Master Panel  
 Atomic B...(64)  
 Life Support...L2(3)  
 Backup Life Support...L2 (18)  
 Alarm...L3(4)  
 Communication...L3(12)  
 Computer Lockout...L5(16)  
 Computer Security...L5(32)  
 Damage Control...L(8)  
 Maintenance...L3(8)  
 Astrogation...(24)  
 Skin Sensors...(1)  
 Laser Cannon...(3)  
 Laser Battery...(4)  
 Rocket Battery...(6)  
 Torpedo...(3)  
 ICM Launcher...(12)



**Deck 1 Flight Crew**  
 Pilot  
 Weapons  
 Astrogration  
 Radio/ Radar



**Deck 2 Bridge**  
 Captains quarters  
 Seats: Navigation, Astrogration,  
 Weapons, Radar, Engineering



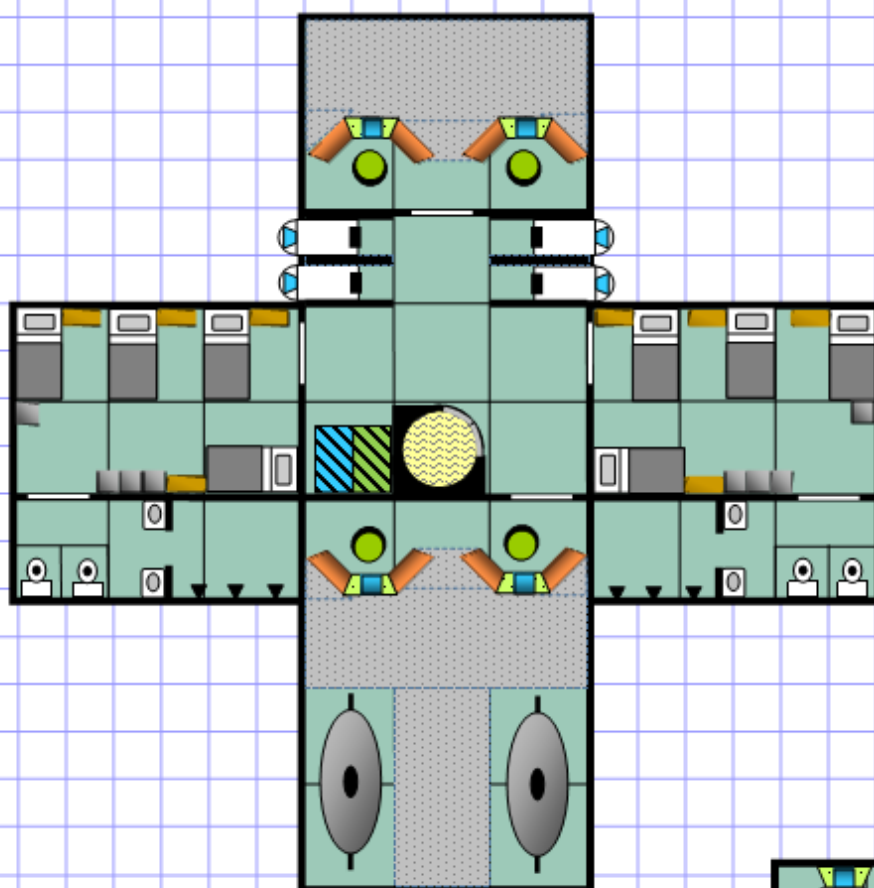
**Deck 3 Officers Quarters**  
 First officer (desk)  
 Navigation  
 Weapons

**KEY:**  
 Emergency Lockers:  
 Cabinet Storage:  
 Night Table:



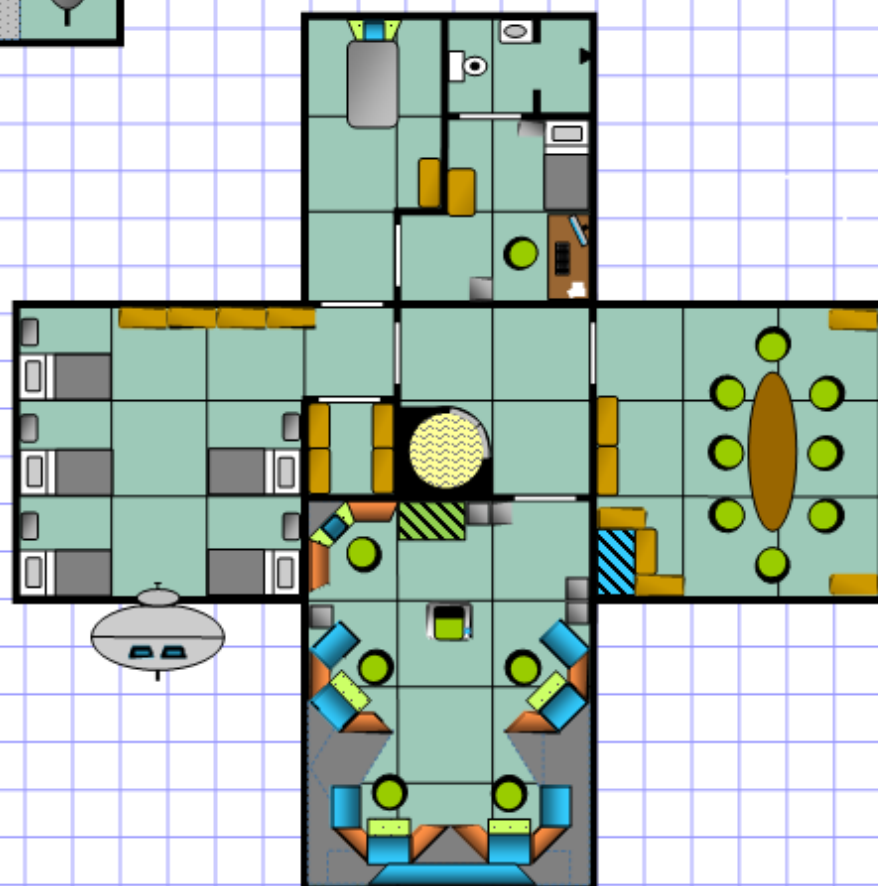
Life Support:  
 Para-Battery4:  
 Engine Equipment:



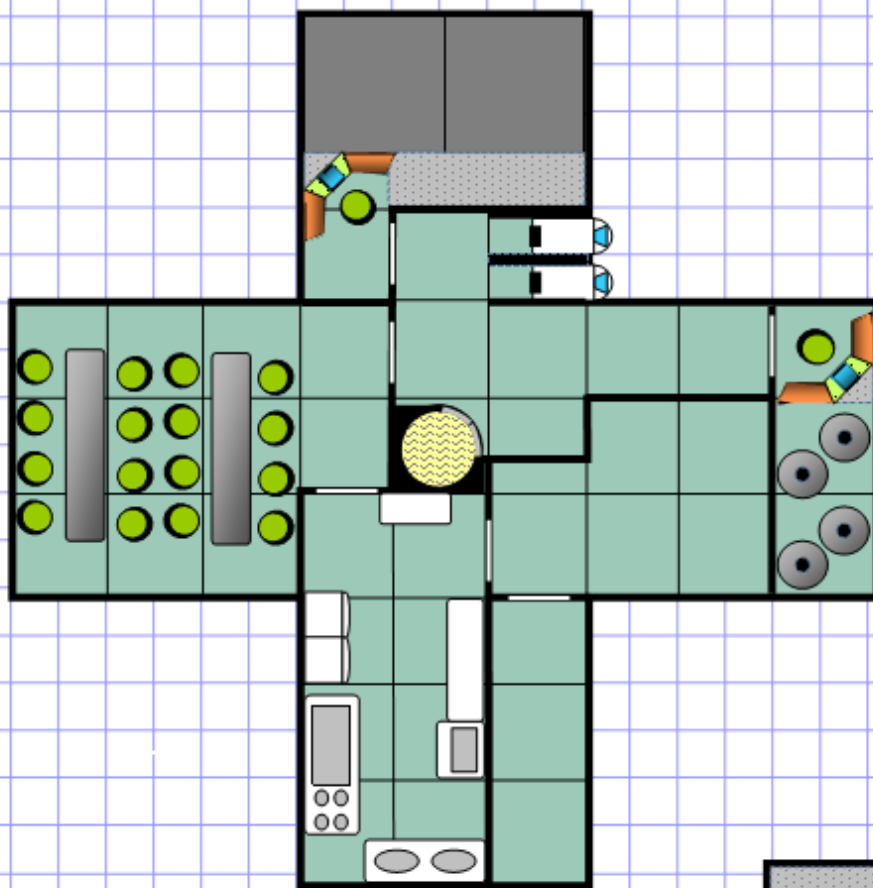


**Deck 4 Assault Deck**  
 Laser Cannon  
 Torpedo's and launcher  
 Weapons team quarters

**Deck 5 Axillary Control Deck**  
 Axillary Control  
 Officers Mess  
 Sick Bay  
 Surgery  
 Medical officers quarters

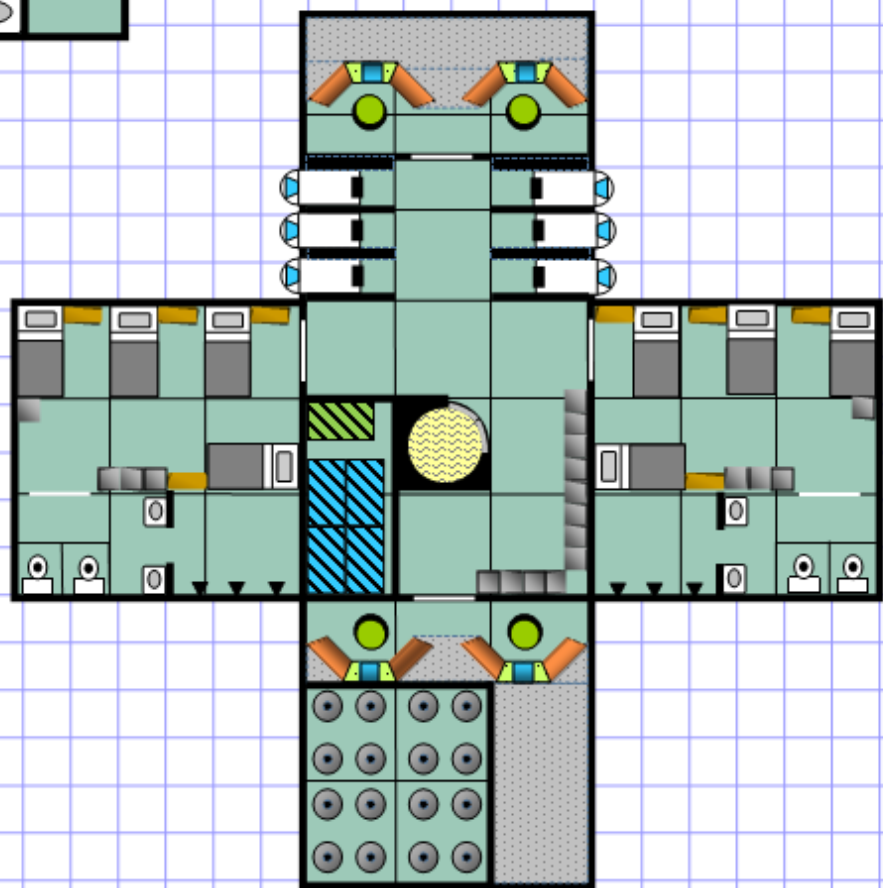


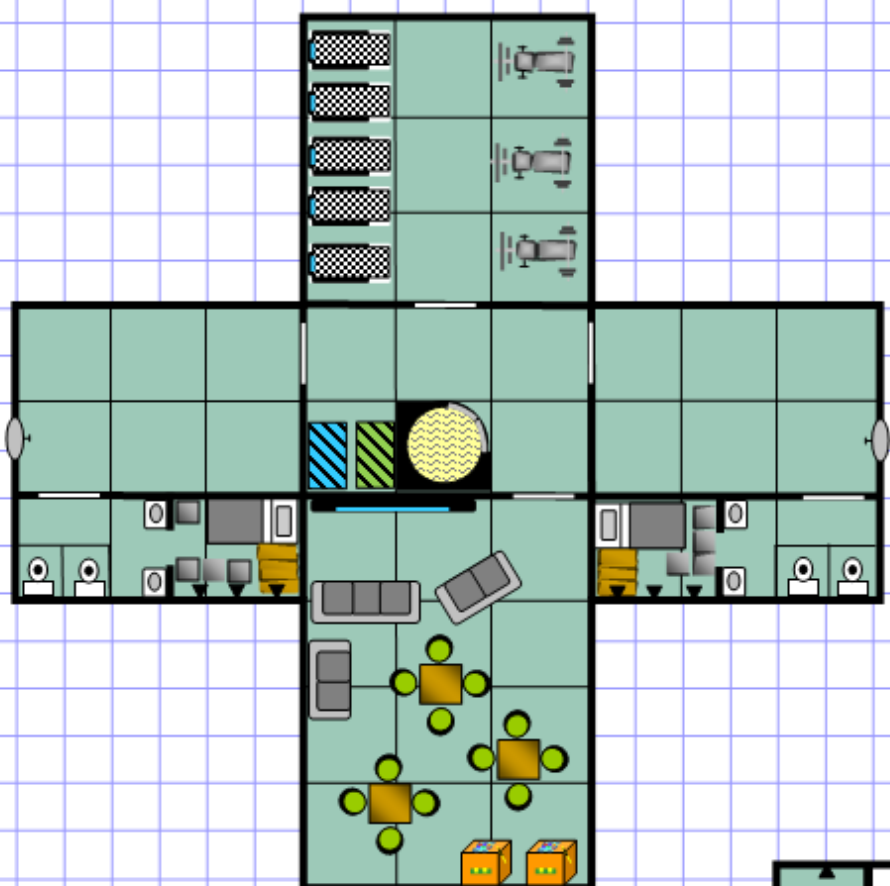




**Deck 6 Defense Deck**  
 Masking Screens  
 ICMs  
 Kitchen  
 Crew Mass Hall  
 Supplies

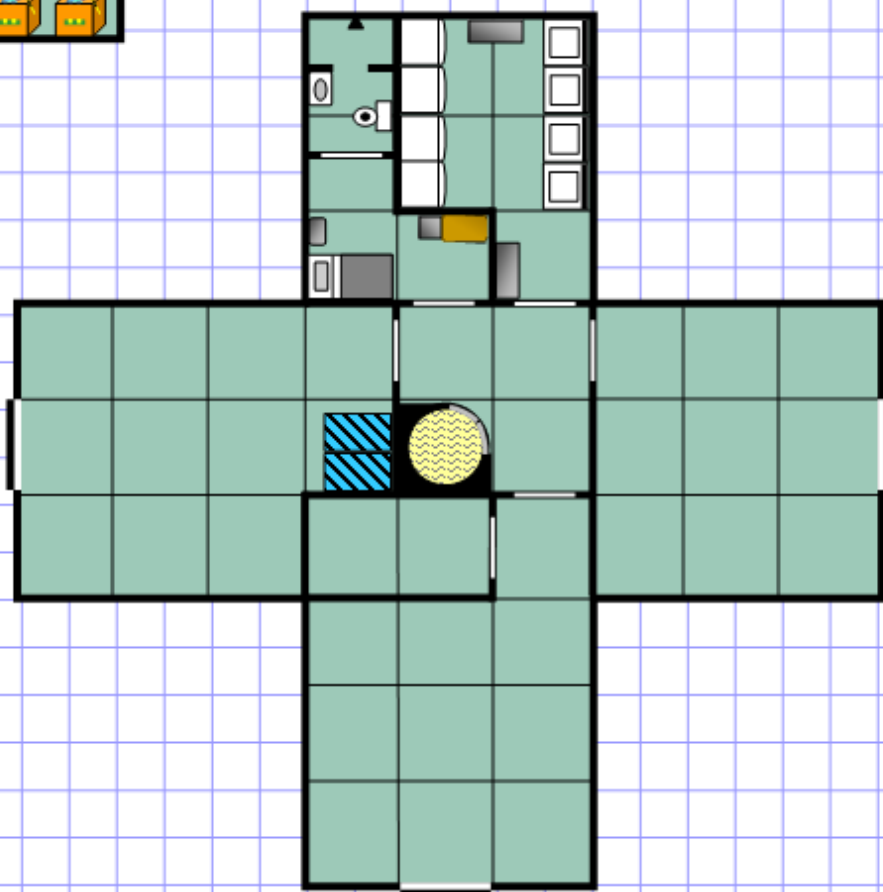
**Deck 7 Attack Deck**  
 Rocket Battery  
 Laser Battery  
 Crew Quarters

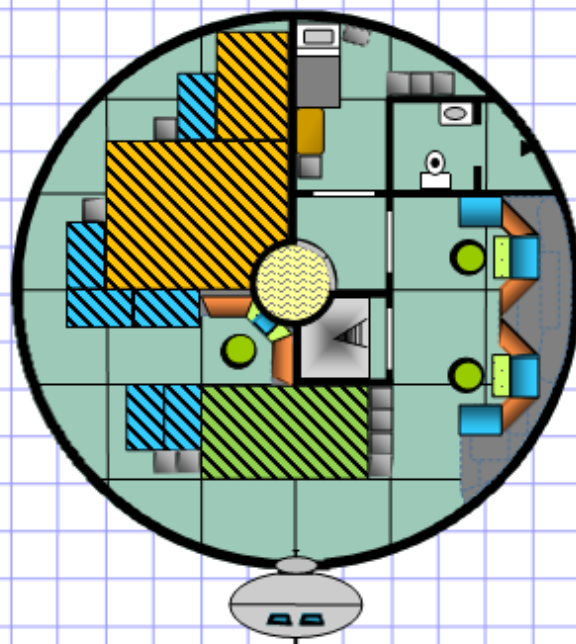
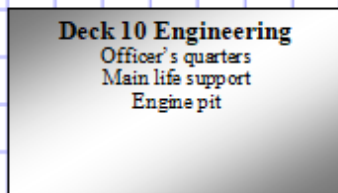




**Deck 8 Crew Deck**  
 Exercise Room  
 Rest & Relaxation  
 Marines quarters/ Storage

**Deck 9 Storage Deck**  
 Officer's Quarters  
 Laundry Room  
 Ships supplies  
 Special supplies





#### Author's Notes:

The ship's design is based on the miniature created by TSR in 1983 (one engine). However, the ship cost is based on the Knight Hawks rules for three engines.

The military ship design I have used is based on the only deck plan for military ships, the assault scout. Each hull space of a ship gives 2 deck equivalents of crew space. So, the 5-hull space frigate gets 10 decks. I also based the deck designs from my experiences on many World War 2 naval museum ships I have visited, not a lot of hallways and all empty space filled with equipment.

Each square is 2 meters by 2 meters with a height of 2.5 meters giving them an area of 10 cubic meters.

The footprint space usage for weapons and defenses is based on the rules from the Knight Hawks rule book and that each square is 10 cubic meters.

### DECK 6, DEFENSE DECK

This deck contains the defensive systems for the ship: two masking screen charges and 4 ICM with launcher. The crew mess and kitchen are here along with storage for the kitchen. There are two escape pods here for the defensive deck crews.

### DECK 7, ATTACK DECK

This deck houses the ship's rocket battery and laser battery along with sleeping quarters for another 8 crew. The deck also has an extra 12 lockers of emergency equipment, 6 escape pods, emergency life support and four parabattery – type 4 units.

### DECK 8, CREW DECK

There is an exercise room for the crew along with the rest and relaxation area for off deck crew members. There are also two large rooms used for storage under normal ship operations but can be converted to additional marine quarters for 8 more marines (16 if they are forced to hot bunk). Off the storage/marines' quarters are the ship's two docking points. In addition, there is a backup life support and a parabattery - type 4 near the lift.

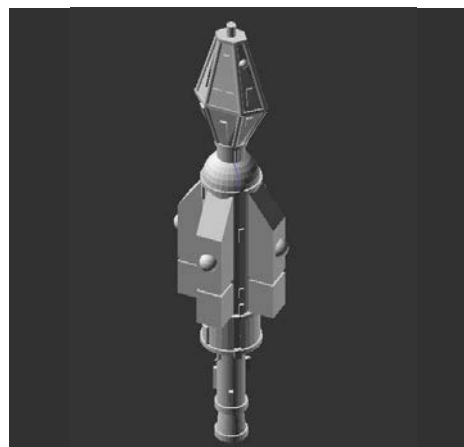
### DECK 9, STORAGE DECK

The ship's supply officer has their quarters here along with the laundry room. The bulk of the ship's stores are also located on this deck. There is a "special supply" room where medicine and other high value

supplies are stored. There are a pair of cargo doors on either side of the ship for taking on supplies plus two parabatteries – type 4 here.

### DECK 10, ENGINEERING

The chief engineer of the ship has their quarters here. Also, the engine room itself has controls here for all the engines and life support systems throughout the ship. Access to the atomic engine can be gained here through the "pit" and is limited to the chief engineer. Primary life support and main battery supply is also here crammed in the tight spaces of the deck.





# EXPANDED REPAIR & MAINTENANCE RULES FOR KNIGHT HAWKS STARSHIPS

BY TOM VERREAULT

How many spares and supplies does a starship have for repairs and maintenance? If a ship is on a long cruise, does it ever reach a point where it runs out of spares and supplies? It's a good question but an even more important one is do we really want to track every self-sealing stem bolt and washer in the game? There was nothing I hated more in a retail environment than doing inventory and that doesn't seem like its conducive for fun in a game either. What follows is an optional rule at the risk of adding greater detail for commerce or mining campaigns.

What I propose is an abstract system of spares and resources for each ship based on its hull size, its DCR, and whether or not it is a civilian, corporate, or military vessel. This will be called Spares but will represent spares and raw resources that the engineers or technicians might use to make a spare. The Spares number will be a number representing the total assets onboard until the ship reaches a situation where it can purchase replacements.

Repairs, maintenance, or damage control performed by the crew will reduce this number. Anything requiring engineering skill for maintenance uses 2 Spares assets and if it is a repair then it uses 3 of the Spares assets. Anything requiring technician, robotics or computer skill for maintenance uses 1 Spares asset and if its a repair then it uses 2 Spares assets. Every time DCR or damage control is rolled for, 4 Spares assets are used.

ACTION	SPARES ASSETS
Maintenance	1
Tech Skills Repair	2
Engineer Skill Repair	3
DCR Attempt	4

Civilian ships have a number of Spares assets equal to their (Hull Size x 5) + DCR. Corporate ships have a number of Spares assets equal to their (Hull Size x 5) + (DCR x 2). Military ships have a number of

Spares assets equal to their (Hull Size x 5) + (DCR x 3). Militia vessels stay close to home and will usually stock at civilian or corporate levels. These formulas only represent the usual amounts on these classes of ships, but Civilian or corporate ship owners may stock their ships with a greater number of Spares assets. The maximum amount of assets is the military formula. Because Sathar ships embark a large amount of ground troops, their maximum Spares is equal to that of Corporate vessels.

SHIP TYPE	SPARES #
Civilian	(Hull Size x 5) + DCR
Corporate	(Hull Size x 5) + (DCR x 2)
Military	(Hull Size x 5) + (DCR x 3)
Sathar	(Hull Size x 5) + (DCR x 2)

The only exception is fighters which carry no Spares assets. I know that fighters in the KHs board game have a DCR rating of 30 but the reality is that they are being flown by a pilot with no other crew which probably means his hands are full with just flying and fighting. I would rule no DCR for fighters or steal a page from the Star Wars universe and include the Frontier equivalent of an astro-mech droid in the fighter. If the robot rolls to repair something and fails that system is too badly damaged for the robot to fix and it will have to wait till the fighter lands. The crew of a carrier can make an attempt to repair a fighter on the turn after it lands, regardless of whether that turn is the "every 3<sup>rd</sup> turn" for DCR or not. However, DCR used in an attempt to repair a fighter must be deducted from the DCR total in the next 3<sup>rd</sup> turn for damage control.

## MAINTENANCE SCHEDULES

Starships are large complex devices; they generally need maintenance every Galactic

Standard Week (GST). Maintenance does not require a skill roll to be successful, it is basic stuff the technicians or engineers know how to service, and the action is automatic. The amount of maintenance is equal to one maintenance event for every 5 points in the hull size.

If the ship is under 10 years old, a technician or engineer making a skill check while doing maintenance means he did not use any Spares assets. For every 10 years of age after the initial 10 of the ship there is a -5% penalty to this skill check. Example: ships 0-10 have no penalty, ships 11 to 20 have a -5 penalty, ships 21-30 have a -10 penalty, and so on. This will generally mean older ships require more spares and assets to keep them operating at normal parameters while newer ships will not. Also, highly skilled technicians and engineers know what they are doing and will be able to conserve the ship's supply of Spares.

## REPAIRS

Things just break over time and sometimes new items are just defective and this will require repairs. Once every 4 GST weeks roll d100 and add the age of the ship; then consult the following table. The results will be nothing breaks, non-starship system breaks, starship system breaks, or roll twice.

MONTHLY REPAIR CHECK	RESULT
01 to 50	Nothing Breaks
51 to 75	Non-Starship System Breaks
76 to 98	Starship System Breaks
99 to 100	Roll Twice

Starship systems are anything on the Advance Damage Table in the KHs rule book. Simply roll on that table. Non-starship systems are things like plumbing, lighting, air circulators, and mechanical problems that are important toward the

Non-Starship System breakdowns can happen on any deck or area of the starship. A referee can randomly determine the location or simply choose one. The table below can add flavor and the referee can embellish the breakdown to be more detailed and have more color. Example: the deck 3 mess hall bathroom toilet was clogged by someone; the toilet no longer works and has overflowed into the mess hall. Alternately you can use the “Got Techno-Babble” table in **Frontier Explorer #6** for more sci-fi sounding flavor.

ROLL 1D10	SYSTEM TYPE
1 to 2	Electrical
3 to 4	Plumbing
5 to 6	Air Circulators
7 to 8	Temperature
9 to 10	Mechanical

When the Spares assets are reduced to zero, all repair rolls are at -20% penalty. This is the point where the engineer and technicians are holding things together with bubble gum, bailing wire, and ion bonding tape. Its time to put into a port where Spares can be purchased.

If a repair is necessary and there are no assets and the repair roll fails three times, then the system is permanently broken until the next overhaul of the starship. Alternately, if the owners wish to fix it before the next overhaul, save and total the results of the three failed repair rolls and multiply that times 100 for non-starship systems and by 1000 for starship systems. This is the cost to repair it at a suitable space station, starship construction center, or landing field for ships that can land.

The cost of spares and supplies is 100 Cr. times half the of Spares assets being replaced and 1000 Cr. times the other half or 1100 Cr. for every two assets. This

Spares can be purchased in any system with a planet above outpost level. A referee can add a premium of +25% for systems with no space stations if the ship cannot land on planets. If the largest colony in that system has a light population and there is no space station, then the premium is +50%.

Corporate ships do not have to pay for Spares in a system where their corporation is headquartered, controls or owns the planet, or is the likely owner of the space station in orbit. For example: K'tsa-Kar star system has a resort space station and this is probably owned and or operated by the Star Play mega-corp so that corporation's vessels won't have to purchase spares there. Otherwise, the ship's purser will have to use company credit lines available to him to purchase Spares. For simplicity, corporate vessels don't really pay for Spares but a captain costing the company extra credits all the time by not restocking in systems with corporate depots or by paying a premium for Spares will eventually receive a negative performance review.

Military ships do not pay for spares at all but they can only get them in the Prenglar (Spacefleet Headquarters) and Lynchpin (secret military base) systems as well as any system with a space fortress, fortified space station, or armed space station. The Space Fortresses are fully under Spacefleet control. The fortified and armed space stations may or may not be under Spacefleet administration, but Spacefleet will maintain a depot on these stations to support Frontier-wide naval operations.

It goes without saying that sathar ships can only restock Spares if they have a freighter or logistics ship in tow. In war, sathar supply ships will be high value targets to cripple front line vessels and force them to retreat to sathar held star systems.



# THE AJAX CLASS FREIGHTER

## THE GLUE THAT KEEPS THE FEDERATION TOGETHER

BY STEVEN PARENTEAU

### DESCRIPTION

Over one hundred years ago, the United Planetary Federation was formed out of necessity to fight a common enemy. The fleets of the Federation protected its worlds from outside enemies, but commerce has kept the worlds working together. Soon after the races discovered one another, merchants started to cross the vast void to trade rare goods from one world to another.

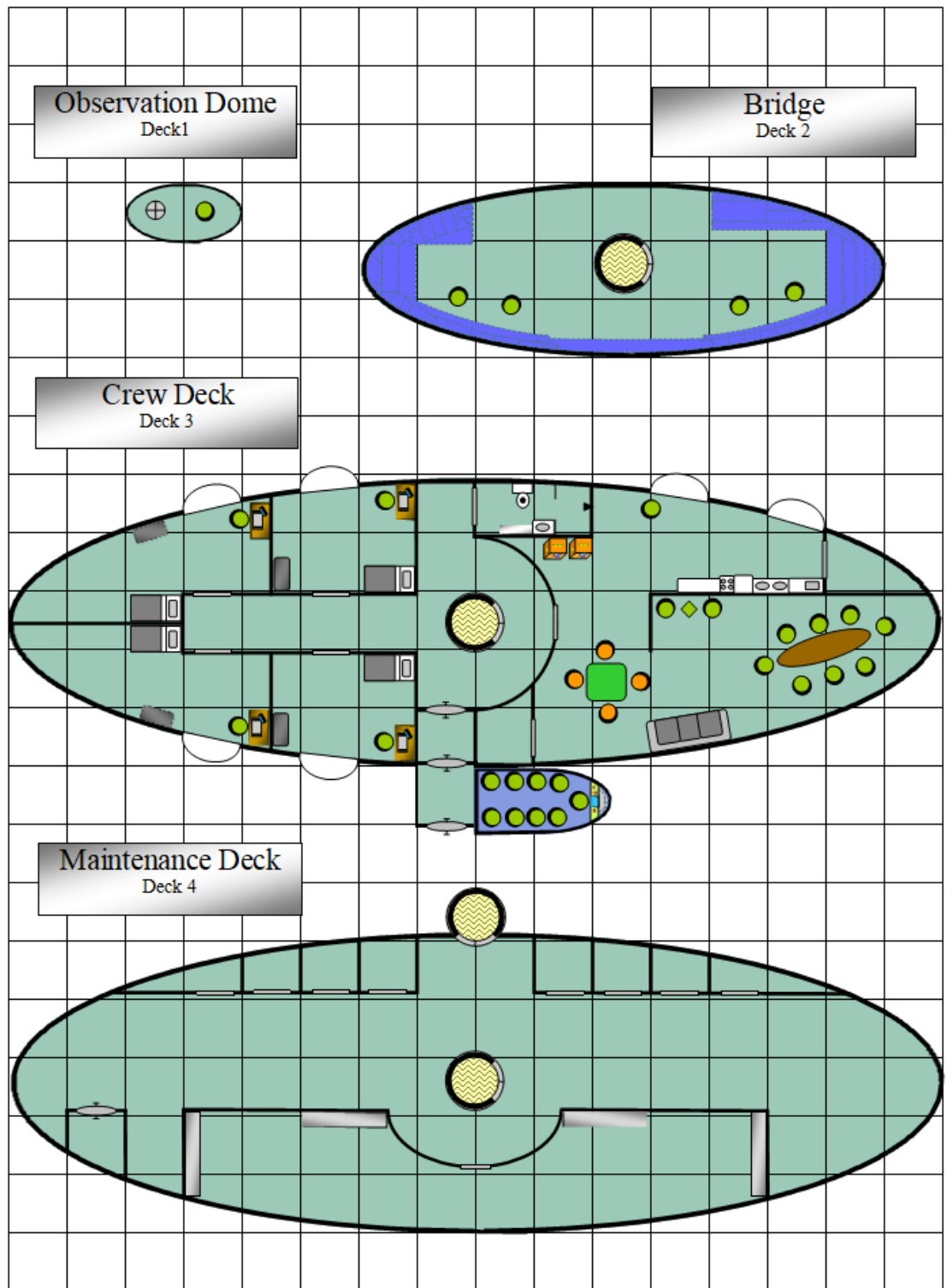
For nearly 100 years, the backbone of the merchant fleets crossing back and forth across the federation has been the Ajax freighter. First developed by Pan-Gal in 10FY, the Ajax was designed as an inexpensive (less than one million credits retail), low maintenance way to expand their commerce interests. The first ship in the new class, named Cleon after the Greek merchant turned general, first rolled out of the shipyard in 11FY. Since then, hundreds of these ships have been constructed and can be seen at every port of call.

The Ajax freighter has an expected service life of 50 years and uses cheap hydrogen gas as fuel stored in 5,000-unit storage tanks. While the vessels have no weapons, they do have an impressive array of defenses including a reflective hull, masking screens, and interceptor missiles. The freighter generally has a crew of 4: pilot, co-pilot, engineer, and cargo specialist. An oversized life support system was installed to handle

a crew of up to 12 along with a full backup system.

The design has been so popular, it has been modified over the years for other

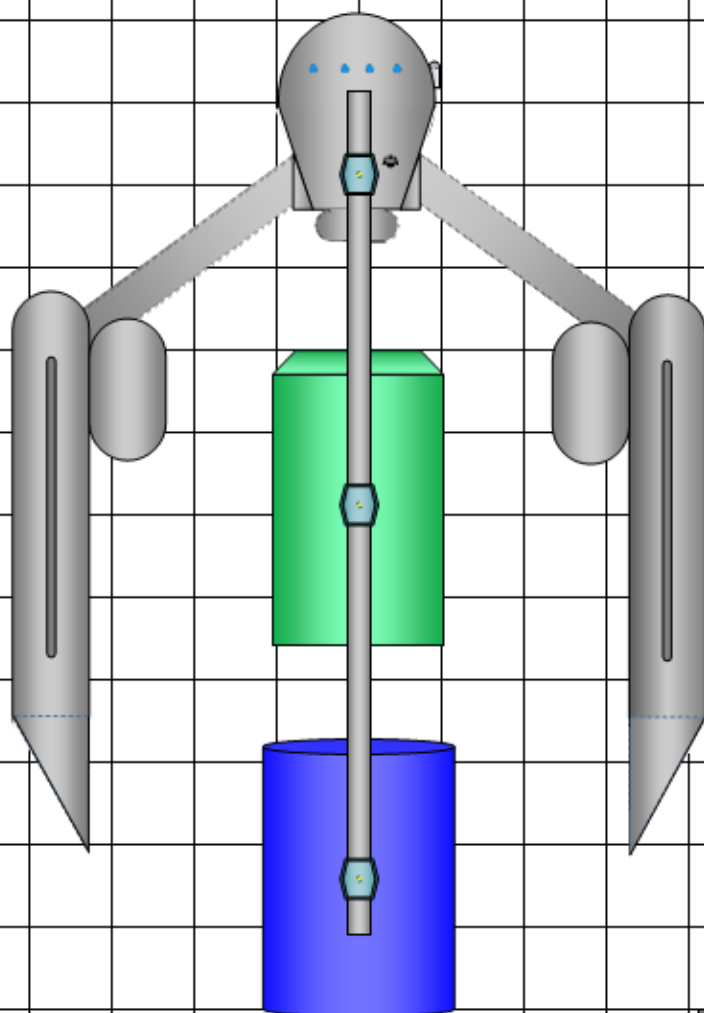
tasks by simply changing the payload bays. They have been used for troop transport, rescue ships, medical ships, and emergency relief.





# AJAX CLASS

Freight Transport



## Ajax Class Freight Transport

Hull size...7  
Length...150  
Width...25  
Decks...4  
Hatches...1  
Engines...2, Ion B  
ADF...1  
MR...3  
HP...35  
DCR...41  
Computer...62FP  
Life Support 7-12  
Life Support Backup  
Starship Astrogation  
Videocom Radio  
Comm Screens...4  
Intercom with 4 mics  
Subspace radio  
Radar  
Portholes...6  
Cargo Arm...1  
Workpod...1  
Lifeboat...1  
Reflective Hull  
ICM Launcher  
ICM (x6)  
Masking Screen  
Charges (x3)

Total=\$956,190  
Class II shipyard

Observation Dome 1

Bridge Deck 2

Crew Deck 3

Maintenance Deck 4

Crew Elevator

Life Boat

Work Pod

Cargo Elevator

Masking Screen Tank

## Ajax Class Computer

Computer...62FP  
• Master Panel  
• Ion B  
• Alarm...L2  
• Lockout...L2  
• Damage Con...L2  
• Astrogation...L4  
• Life Support...L2  
• Information Storage...L2  
• Maintenance...L1  
• Computer Security...L3

# SS SANFORD

*Modified Ajax Freighter for Salvage Collection*

The TES Girard, an Ajax freighter, was constructed in 31FY at the Hentz shipyards and served for 55 years for Trojan Enterprises. After that it was put up on the auction block for 40% of its value and purchased in 87FY by the now defunct moving company G'ureny Shipping.

G'ureny shipping was owned wholly by a Yazarian by the name Jalek Kur. Kur needed to liquidate his company and all assets quickly and was forced to part with the Girard to Red Sanford for an undisclosed amount in 92FY before he departed.

Red re-registered the ship as the SS Sanford, sold off his other assets and made the ship his home. He travels the Frontier with his son Larry and friends Grady and Bubba. They travel as "used wealth acquirers and re-distributors", aka. junk collectors. Red's favorite hunting places are old battle sites and asteroid mining facilities as their former owners do not recollect the portable processing facilities assembled on the asteroid surface. Otherwise, the Sanford can be found in the Cassidine system selling his salvage at Boneyard Station.<sup>1</sup>

The SS Sanford is a heavily modified Ajax freighter. The lifeboat has been replaced with a large launch so that they can transport smaller valuables to stations directly. The rear cargo pod has been replaced with an open-top container so the arm can just place stuff in the "pick-up" bed.

Larry installed a computer personality program into the system that can do minor operations around the ship (lower the lights, lock a door, etc.). The computer responds verbally with a female voice and is named "Elizabeth" after his deceased mother.

There is a nuclear mine, that Red found while salvaging a battlefield in Dixon's Star, strapped to the rear of the cargo tow that he has named "Ester". It can be released from the bridge as a last resort from pursuers in the hopes of deterring boarding, but pirates aren't very interested in a

flying junkyard. In addition, the airlock is rigged with 2 laser cutting torches that can be activated from the bridge or by Elizabeth. The elevator transfer section is rigged with doze grenades and there are various guns and melee weapons hidden under tables and couches.

The ship is easily identified by its bright red color, open cargo container, and various cargo nets hanging off the back of the ship dragging salvage that wouldn't fit in the storage bins. Carbon scorches can be seen all over the exterior and if there could be rust in space, you would expect to see it on the Sanford. The Sanford is over 80 years old, and it shows by the reduced hull points on its ship data form (next page).

## CREW

### RED SANFORD

*Male, Human, Technological PSA*

**STR/STA:** 25/25      **PS:** 2  
**DEX/RS:** 40/40      **IM:** 4  
**INT/LOG:** 60/40      **RW:** 40  
**PER/LDR:** 70/50      **M:** 20

**Skills:** Pilot 4, Astrogation 3, Technician 4, Computer 3, Beam Weapons 2

Red Sanford ran a modest salvage yard along with his son Larry on Kdi-kit. Jalek Kur sold Red the freighter in exchange for \$10,000CR and documents to change his identity (Red has contacts throughout the Frontier). Since then, he has lived a moderate lifestyle on board the Sanford. He is often scheming some get-rich-quick plan when he finds a piece of interesting salvage. More often than not, Larry has to handle it or get Red out of trouble with the wrong person. Red is not malicious but is often short sighted.

### LARRY SANFORD

*Male, Human, Technological PSA*

**STR/STA:** 45/45      **PS:** 3  
**DEX/RS:** 50/40      **IM:** 4  
**INT/LOG:** 60/60      **RW:** 45  
**PER/LDR:** 50/50      **M:** 25

**Skills:** Pilot 3, Astrogation 3, Technician 4, Engineering 3, Computer 3, Robotics 3, Beam Weapons 2

Larry is in his early 30s and loves the spacer life. He enjoys meeting people and travelling to unique places. Someday he'd like to visit the Rim worlds and visit everything they have to offer. But for now, he is the backup pilot, astrogator, and keeps his father out of trouble. His dad is always looking to get-rich-quick schemes with things he finds that generally leaves other people short and angry at Red. Larry has to smooth over anyone that Red upsets at each port of call.

### GRADY FRANKEL

*Male, Human, Technological PSA*

**STR/STA:** 55/55      **PS:** 3  
**DEX/RS:** 45/55      **IM:** 6  
**INT/LOG:** 40/40      **RW:** 45  
**PER/LDR:** 40/45      **M:** 33

**Skills:** Technician 4, Engineering 6, Computer 3, Robotics 3, Beam Weapons 2, Energy Weapons 2

Grady is Red's longtime friend and worked with him back in his old salvage yard. Grady spends most of his time keeping the engines running with the wrong used parts. Otherwise, he's searching through the salvage piles pulling parts. Anything interesting he gives to Red for their next big adventure.

### BUBBA RUBEN

*Male, Human, Military PSA*

**STR/STA:** 55/55      **PS:** 3  
**DEX/RS:** 60/60      **IM:** 6  
**INT/LOG:** 40/40      **RW:** 45  
**PER/LDR:** 45/35      **M:** 33

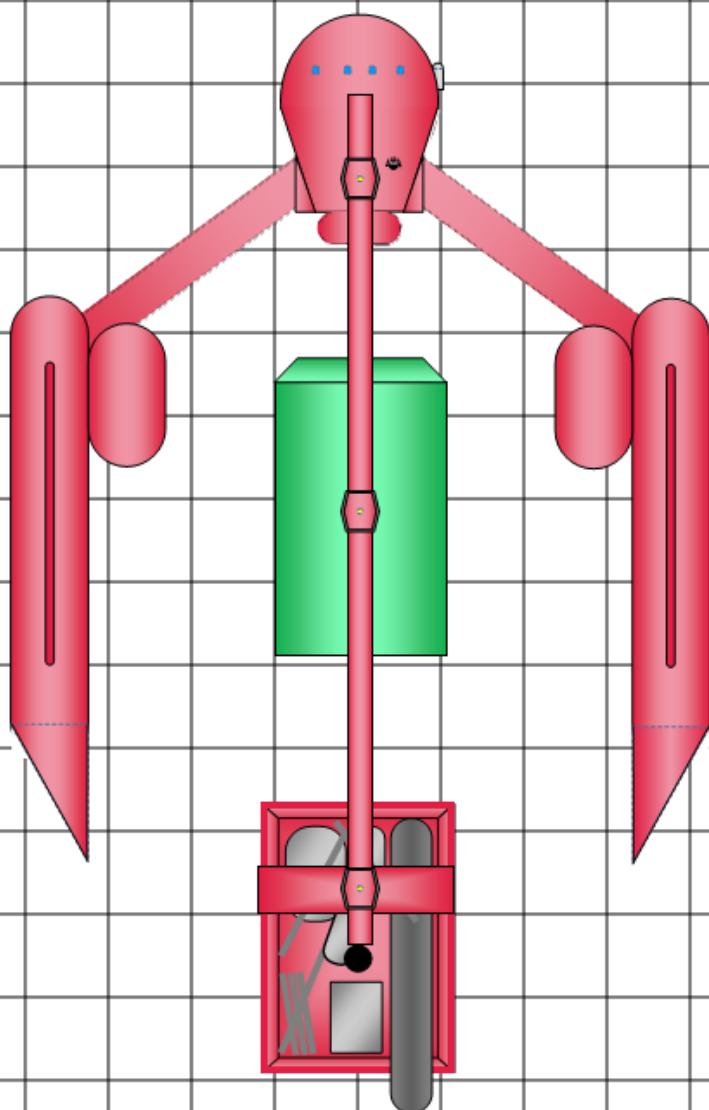
**Skills:** Beam Weapons 4, Gyrojet 4, Melee Weapons 3, Thrown Weapons 3, Environmental 1, Medic 1, Computers 1, Energy Weapons 2

Bubba is another old friend of Red's. His official title is cargo handler but really, he's the group's muscle and during travel time he keeps the ship clean and cooks for the gang. He spends his time in port looking for cheap wine and coming to Red's rescue when his ideas get him into trouble.

<sup>1</sup> From article "Boneyard Station" by Richard "Shadow Shack" Rose in Star Frontiersman Issue 15

# SS SANFORD

Ajax Class, Freight Transport



## SS Sanford Ajax Class Freight Transport

Hull size...7  
Length...150  
Width...25  
Decks...4  
Hatches...1  
Engines...2, Ion B  
ADF...1  
MR...3  
HP...30  
DCR...41  
Computer...74FP  
Life Support 7-12  
Life Support Backup  
Starship Astrogation  
Videocom Radio  
Comm Screens...4  
Intercom with 4 mics  
Subspace radio  
Radar  
Portholes...6  
Cargo Arm...1  
Workpod...2  
Launch...1  
Reflective Hull  
ICM Launcher  
ICM (x6)  
Masking Screen  
Charges (x3)

Total=\$1,261,190  
Class II shipyard

## SS Sanford Computer

Computer...108FP  
• Master Panel  
• Ion B...(24)  
• Life Support...L2(2)  
• Alarm...L2(2)  
• Commerce...L3(12)  
• Communication...L3(12)  
• Computer Lockout...L2(2)  
• Computer Security...L2(4)  
• Damage Control...L2(4)  
• Information Storage...L2(4)  
• Maintenance...L1(2)  
• Astrogation...(24)  
• ICM Launcher...(12)



# DIGGING WITH DIGGER SHUTTLES

BY TOM VERREAULT

Digger shuttles, they're like a combination backhoe and dump truck in space. They can grind 4 tons of ore an hour and haul 50 tons back to its mothership. They require 8,000 Cr worth of digging equipment for the nose of the shuttle and a 4,000 Cr excavation program. The only other thing we know about digger shuttles is that they can actively dig into a moon with a gravity of 0.1 G or lower.

## DRIVE CONSIDERATIONS

Some digger shuttles have used chem drives. Most miners consider these obsolete preferring the steady long-lasting power of an ion or atomic drive. Chem drive shuttles require that their mothership maintains a bunkering of their fuel. It's possible to prospect with this shuttle but most miners are adamant that ion or atomic drives are the only way to go when using the shuttle to prospect.

Ion drives have the benefit of holding a lot of hydrogen fuel in their engines. An ion drive digger shuttle is never "dead in the water" because it can always use crushed rock as fuel, although the drives power will be cut in half. Some miners consider the ion drive awkward and unwieldy because it has to be mounted on a pylon away from the ship. The reasoning is that a digger shuttle could run into issues maneuvering within an asteroid cluster with such a big construct standing away from the hull of the ship. This led to the design of the Scorpion Class ion powered digger shuttle. The Scorpion Class has a pylon that folds against the body of the shuttle but lifts away from the shuttle and can extend the ion engine from the ship.

One unique benefit of an ion drive shuttle is the ion window for jamming radar. This comes in handy if another mining ship is snooping to see which asteroid you're mining or if pirates turn up. The only other issue is the ion window must be dropped if a spacer goes EVA, unless he's wearing an inssuit (from the starship engineer's tool kit) under his space suit. If the ion engine must be mounted on a pylon

away from the ship for the safety of the crew then the same engine flooding space with particles to generate an ion window would make EVA a dangerous or deadly activity.

Having at least one digger shuttle powered by an ion drive makes a lot of sense for the mothership. If for any reason the mining ship needs to create an ion window the digger shuttle can aid with this. A HS 14 mining ship with ion drives (6 engines) could screen its hex and 5 others adjacent to it from radar and the digger shuttle would screen the 6<sup>th</sup> hex surrounding the mother ship. This tactic might be standard for mining crews to hide their operations from any other mining ships or prospecting shuttles wandering into the area or for pirates. Of course, the ion window only jams radar, not energy sensors, so cross your pseudo-pods that the pirates don't have energy sensors.

The atomic drive has proven versatile in digger shuttles. It allows prospecting ahead of the mining ship, acts as a lander on planets and if need be, has the speed to outrun most pirates. Atomic fuel only has to be replaced after making a void jump. Since a digger shuttle is not performing that action in its day-to-day mission the atomic drive is "fuel it and forget it" and the fuel load will last for many months to a GST year.

## THE DIGGING EQUIPMENT

Digging equipment cost 8,000 Cr and can funnel ore into an ore hopper on the shuttle. It needs regular maintenance or it will jam up (1 hour/day or 5/week). Even with regular maintenance, sooner or later a jam may happen and when it does it takes 1d5 hours to clear.

The digging equipment will also have a sampling laser drill and a geoscanner from the environmentalist tool kit. The sampling laser takes samples and a qualified environmentalist can perform an "analyze samples skill check" from the comfort of the flight deck.

In dire emergencies, digger shuttles have been used to attack pirates. The pilot must maneuver his ship within close proximity of the pirate vessel and then may use the digging equipment and laser sampling drill to damage the other ship for 1 hull point per turn. If the ship to be attacked is not maneuvering then it's a simple pilot maneuver. If the ship to be attacked is maneuvering, the shuttle pilot must use the grappling rules to maneuver close and attack with his digging equipment. The maneuver against an actively moving ship will only be possible with an atomic drive digger shuttle due to how the grappling rules work. The first use of this tactic was by an ion drive shuttle against a pirate ship that had docked with and boarded its mothership.

A final consideration is landing on planets. Chem and atomic drive digger shuttles could perform this action but on a planet with atmosphere there are issues with the digger equipment. For this reason, a model of the digging equipment was developed with a retracting capability and reinforced heat shielding costing 16,000 Cr for craft landing tail first and 24,000 Cr for aerodynamic craft that land as a plane.

## DIGGER SHUTTLES VS EXCAVATION ROBOTS

Space mining operations do use heavy duty excavation robots. They can move 4 tons of ore per hour the same as the digger shuttle. For this reason, I believe they use roughly the same digging equipment at the same cost. They lack the ore hopper of the digger shuttle and have been primarily relegated to moon and terrestrial mining operations. Heavy duty robots lack the endurance of a shuttle and cannot operate very far from the mining ship. Thus, the digger shuttle reigns supreme, especially for prospecting missions.

A new development is the umbilical that connects a mining robot to a mining ship and allows the excavation bot to feed ore directly into the mining ship's ore hopper or its OPL (orbital processing lab).

Umbilicals are prone to clogging unless the robot throttles back the volume of ore per hour to 2 tons. The umbilical has a power feed and a data feed. This means the robot can use power from the ship instead of its on-board battery and that the bot can be controlled via the data feed instead of relying on wireless communication. An excavation bot with an umbilical is usually employed on a mining ship equipped with grapples that secures the asteroid against buffers which allows the excavation bot to effectively mine the asteroid. An umbilical is 100 m long and cost 4,000 Cr.

## CREW REQUIREMENTS

In theory, a digger shuttle only needs 1 crew member (pilot) for digging operations close to the mothership. However, any prospecting missions away from the mothership are likely to require a navigator/astrogator, engineer (if atomic drives are employed) and Environmentalist for checking samples. Digger shuttles were just not designed for interstellar jumps but if one had received upgraded astrogation equipment and program and was powered by an ion or an atomic drive there is nothing stopping it from making an interstellar jump. Space inside will be cramped and it won't be a pleasant experience but the jump would be doable.

Amenities on a digger shuttle are usually bare bone. However, those captained by "wildcat" prospectors will have slightly more in the way of a bunk and a tiny kitchenette. There have been wildcat prospectors that have filled all the rolls required on the shuttle: pilot, astrogator, engineer and environmentalist. These hardy souls harken back to hermits that lived solitary lives and were self-reliant. Some wildcat prospecting is done by families where spouse and children perform crew roles. An ion drive ship crewed by a pilot and astrogator could get by if one member of the crew had picked up a level of environmental skill.

So what are the skill requirements for a solitary prospector? Under the original Knight Hawks rules, where spacer skills require level 6 prerequisite skill, it's hard to imagine a character gaining all of those skills just to learn 1<sup>st</sup> piloting, astrogation,

and engineering so that they could operate a digger shuttle solo. However, if you are using "Spacer Skills Revisited" Star Frontiersman #10 this is far more plausible. Such a prospector would have Technician 2, Computer 2, Robotics 1, Pilot 1, Astro-gator 1, Engineering 1 and lastly, he would need Environmentalist 1 for analyzing ore samples.

## BASE MODEL DIGGER SHUTTLES

All digger shuttles are built on a Hull Size 2 chassis. This hull is 30 m high by 5 meters in diameter but could be enlarged by 25% to 37x6. It makes little sense to go with a hull 25% smaller. These ships have 1 hatch, 1 type A engine, and ADF/MR is 4. The hull cost 100,000 Cr (all prices computed for starship construction center type 1). Drives cost 50,000 Cr for a chem drive, 100,000 Cr for Ion, and 200,000 for an atomic drive.

The astrogation package costs 1,000 Cr not counting the computer program. The shuttle will need a videocom radio, radar, possibly 1 porthole (front window of the flight deck), and maybe an intercom system between flight deck and engineering space with a total cost of 11,110 Cr. External camera systems are promoted for starships employed in research and

exploration which is part of the digger shuttle mission albeit for commercial purposes. Most digger shuttles will have the half-sized camera system as it helps document the prospecting claims. The camera system might also be a need to review video from mining operations if something happened. Thus, the half-sized camera system (15,000 Cr) is nearly standard on digger shuttles.

Hull size 2 craft are generally allowed 2 escape pods. However, space is at a premium and designers decided to maximize the ore hopper so they took a page from fighter design and the whole flight deck ejects as a double sized life pod (60,000 Cr).

Digging equipment costs 8,000 but this is only for shuttles that won't be making atmospheric landings. Retractable digging equipment and reinforced heat shielding will cost 16,000 or 24,000 Cr. depending on mode of landing.

The minimum computer programs on a digger shuttle are: the drive program (specific to type of drive), a shuttle package astrogation program, alarm, life support for 6, damage control and computer lockout. I always add a backup life support program that is equal to the main LS. The thinking being that no one goes into space without a backup LS. The backup LS also provides the capability to double the occupancy the ship is rated for in an emergency.

DIGGER SHUTTLE COMPUTERS BY DRIVE PROGRAM			
	CHEMICAL DRIVE	ION DRIVE	ATOMIC DRIVE
PROGRAMS	LEVEL (FP)	LEVEL (FP)	LEVEL (FP)
Drive	1 (3)	3 (12)	4 (32)
Astrogation	1 (3) Shuttle	1 (3) Shuttle	1 (2) Shuttle
Alarm	1 (1)	1 (1)	1 (1)
Life Support (max of 6)	1 (2)	1 (2)	1 (2)
Backup Life Support	1 (2)	1 (2)	1 (2)
Damage Control	1 (1)	1 (1)	1 (1)
Computer Lockout	2 (2)	3 (4)	3 (4)
Excavation	2 (4)	2 (4)	2 (4)
Total FP	18	29	48
Computer Level	2	2	3
FP till Next Level	12	1	32

# DIGGER SHUTTLE MODELS

## THE CHATELIER

The Chatelier was named after a chemist and mining expert. Crews have just referred to the shuttle as the Chatler. While it was popular a hundred years ago, it is considered obsolete and it's rare to find one under 60 years of age. They were dependable and occasionally you can find one still in operation, but they are generally being retired across the Frontier.

**HS:** 2 **HP:** 10

**Engines:** 1 Class A Chemical Drive

**ADF:** 1 **MR:** 1 **DCR:** 26

**Computer:** Level: 2 **FP:** 23

**Computer Programs:** Chem Drive Program 1, Astrogation 1 (shuttle), Alarm 1, Life Support 1, Backup LS 1, Damage Control 1, Computer Lockout 3, Excavation 2, Information Storage 1, Communication 1

**Equipment:** shuttle astrogation package, excavation equipment, life support (Max 6) & backup LS, port hole (cockpit forward view), videocom, radar, intercom, half external camera system, type 3 parabattery but NO escape pod system

**Cost:** (New) 210,410 Cr,  
(20 Years Old) 105,000 Cr\*,  
(From a Scrap Yard) 60,000 to 75,000 Cr\*\*

**Defenses:** RH

## THE SCORPION CLASS

This model is widespread in the asteroid belts of the Frontier. It's very economical to operate and the "swing" pilon lets the ion engine lay flat against the shuttle's hull or swing all the way behind it.

**HS:** 2 **HP:** 10

**Engines:** 1 Class A Ion Drive

**ADF:** 1 **MR:** 1 **DCR:** 26

**Computer:** Level: 3 **FP:** 34

**Computer Programs:** Ion Drive Program 3, Astrogation 1 (shuttle), Alarm 1, Life Support 1, Backup LS 1, Damage Control 1, Computer Lockout 2, Excavation 2, Information Storage 1, Communication 1

**Equipment:** shuttle astrogation package, excavation equipment, life support

(Max 6) & backup LS, port hole, videocom, radar, intercom, half external camera system, type 2 parabattery and cockpit escape pod system

**Cost** (New) 270,310 Cr,  
(20 Years Old) 135,000 Cr\*,  
(From a Scrap Yard) 65,000 to 80,000 Cr\*\*

**Defenses:** RH

## THE HEARST CLASS

The Hearst class of digger shuttle is among the most expensive but is popular with mining crews.

**HS:** 2 **HP:** 10

**Engines:** 1 Class A Atomic Drive

**ADF:** 4 **MR:** 4 **DCR:** 26

**Computer:** Level: 3 **FP:** 53

**Computer Programs:** Ion Drive Program 3, Astrogation 1 (shuttle), Alarm 1, Life Support 1, Backup LS 1, Damage Control 1, Computer Lockout 2, Excavation 2, Information Storage 1, Communication 1

**Equipment:** shuttle astrogation package, retractable excavation equipment & upgraded heat shielding, life support (Max 6) & backup LS, port hole, videocom, radar, intercom, half external camera system, type 2 parabattery and cockpit escape pod system.

**Cost:** (New) 405,310 Cr,  
(20 Years Old) 203,000 Cr\*,  
(From a Scrap Yard) 100,000 Cr\*\*

**Defenses:** RH

\*Older shuttles will have depreciated in value, developed a few quirks, require a

little more maintenance, and can't be pushed as hard as a new shuttle.

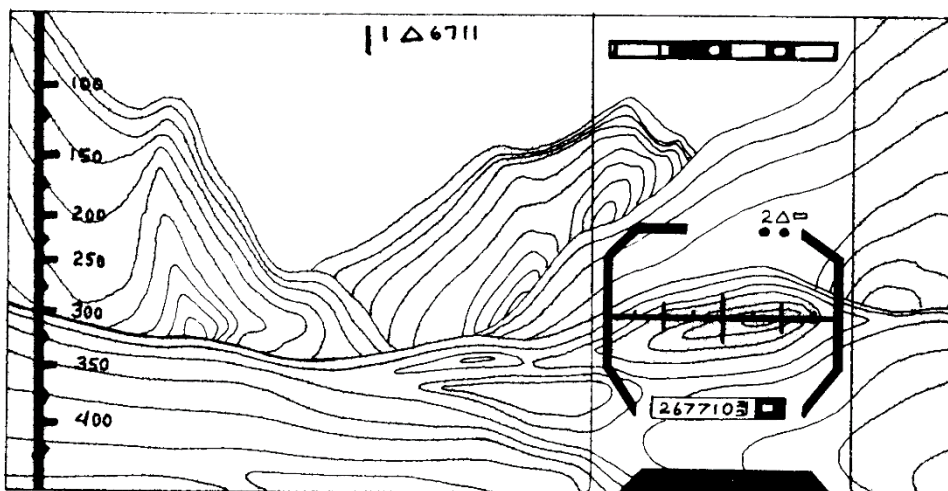
\*\* These shuttles are old. They have developed many quirks, require a lot of maintenance, and need to be babied.

## RUNNING A MINING CAMPAIGN

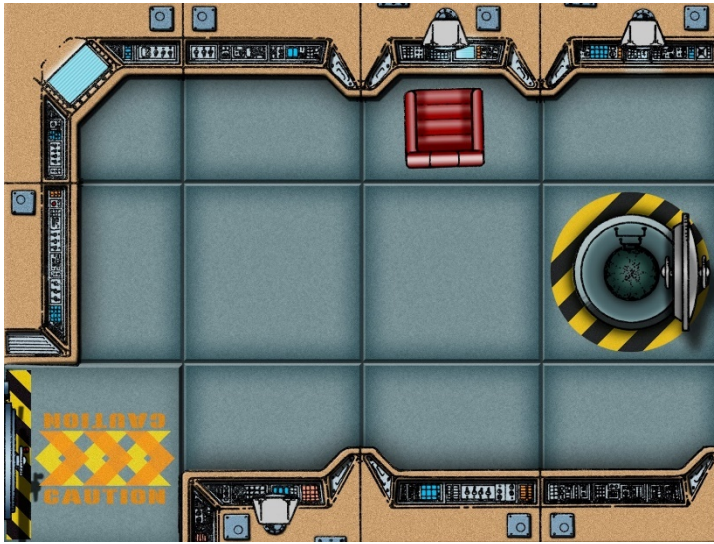
So, you're sitting there reading this article and saying, "Great, we have some digger shuttles but how do I run a mining campaign without the deck plan to a mining ship? The easy answer is, "Don't." Use the large freighter included in the KHs rule set.

In the rules is says any ship with 10 **hull points** can carry an Orbital Processing Lab (OPL) and any ship with 14 **hull points** can carry an OPL and a digger shuttle. I believe this is a typo and that it should say any hull size 10 ship can carry an OPL and a hull size 14 ship can carry an OPL and a digger shuttle. After all, a civilian shuttle of hull size 2 has 10 hull points and it makes no sense that a shuttle could carry an OPL or that a hull size 3 assault scout could carry an OPL and a digger shuttle.

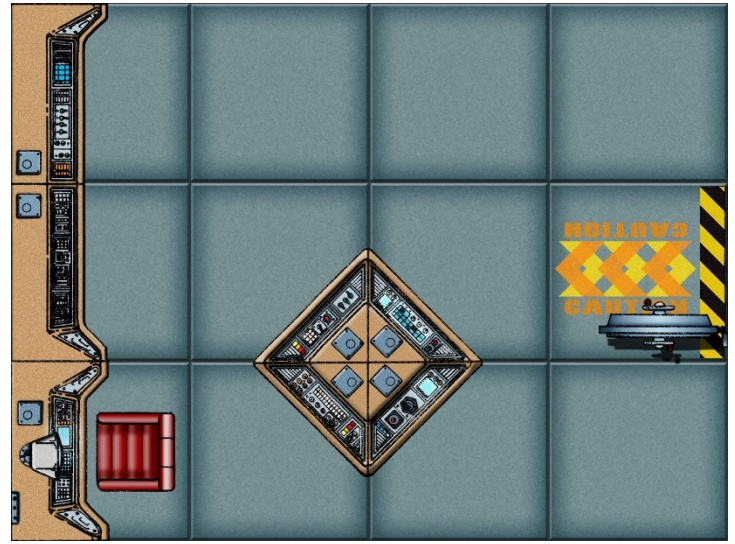
Use the large freighter from the KHs box set (reproduced below) but stipulate that it is hull size 14 and add two extra decks, duplicates of the crew deck and the maintenance deck. Then add an OPL connected to its cargo pod boom and the digger shuttle. Hire a crew and you are ready to hit the asteroid belt. Modify the freighter to have the grapples weapon system to grab an







Tile 2 – Control room



Tile 4 – Engineering space

asteroid and pull it in plus add a buffer system to keep the rock from grinding against the hull and you'll be able to use a couple of heavy-duty mining bots with umbilical systems to directly feed the OPL.

You can ignore the crew spaces in the OPL or sketch a simple control room, lab, and engineering space and have hand wave the rest of the OPL as being automated. The control room and lab would be at the fore end and the engineering access space would be at the aft. Access to these areas would be through airlocks in the coupling section of the cargo boom. One might also use the room tiles printed on the back of Star Frontier's miniatures blister pack produced by TSR. (Reproductions can be found on the next page.) They are simple, and generic and designed to stand in for gaming spaces as needed.

Tile 2 works as the control room. There is a side hatch that would connect to the cargo boom and is the access to the OPL from the ship. There is also a floor hatch which provides access to machinery within the OPL and is only used for maintenance.

Tile 4 works as the engineering space of the OPL. It has a side hatch that would connect to the cargo boom.

The OPL has the following programs in its computer: the OPL computer program L 4 FP 12, robot management program L 2 FP 4, Communication L 1 FP 3, Analysis L 1 FP 1, and Information Storage L 1 FP 2. That is a total of 22 function points for a level 2 computer.

Other resources for your game would be the Corsair Container designed by Richard

Rose/Shadow Shack and published at <https://www.starfrontiers.us/node/3864>. The container should be modified to hold HS 2 shuttles instead of fighter craft, thus two fighter bays would be modified to hold one shuttle (limit the container to two digger shuttle bays. This container is easily added to the large KHs freighter. Also, in Frontier Explorer #1, Planaron Station was reimagined as being converted to a mining processing hub in the Planaron Asteroid belt of White Light System after the encounter between the Royal Marines and the pirates that built the original base; details are here: **Frontier Explorer #1**.

Finally, I encourage use of the "Spacer Skills Revisited" fan rules in Star Frontiersman #10 ([PDF link](#)). This should make the campaign more manageable and prevent early "power creep" in your game.

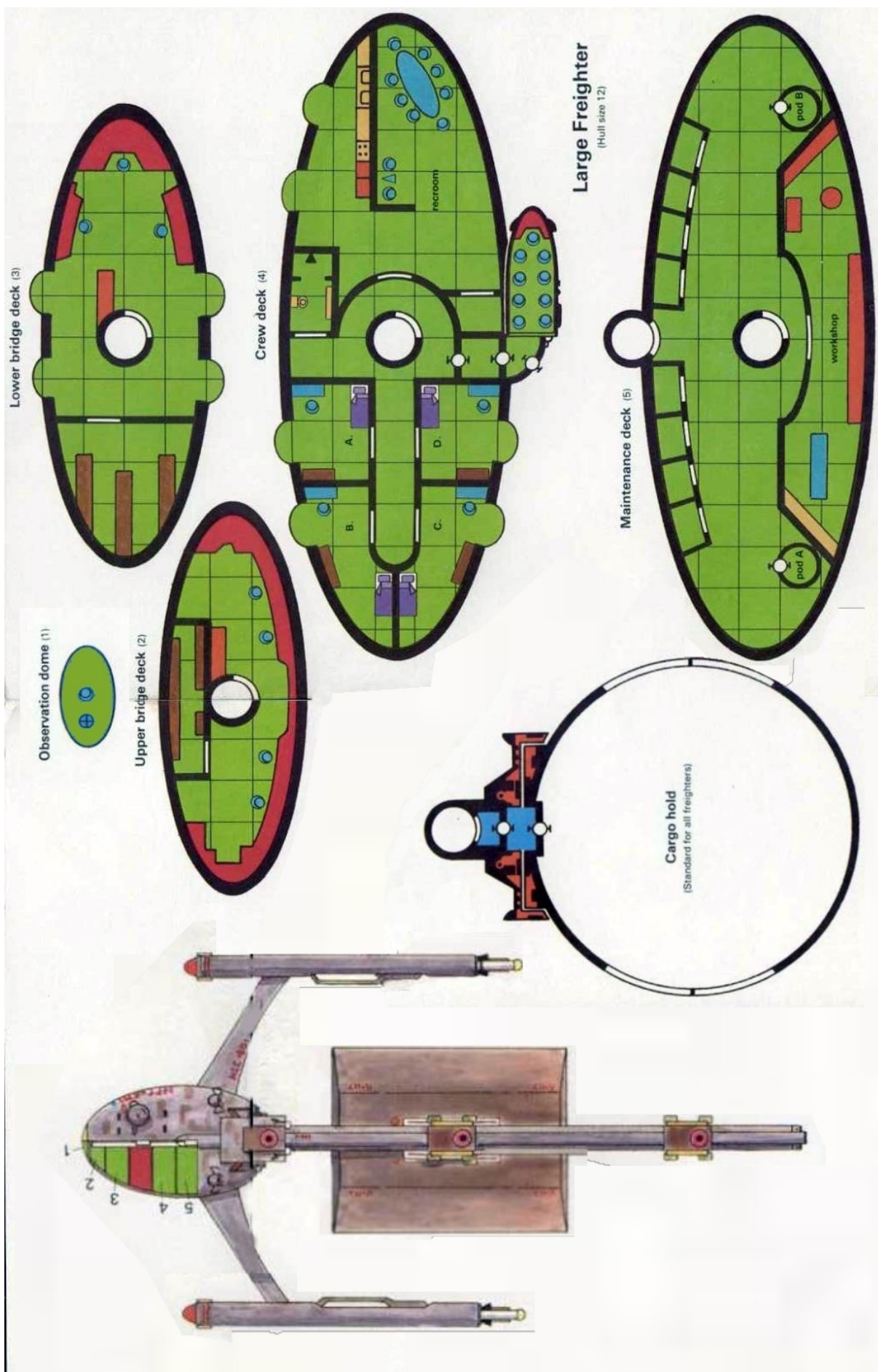
## HOW TO GET STARTED?

After recruiting players have them travel to a salvage yard station to purchase a digger shuttle at auction. The auction will feature numerous craft that the characters will not be interested in but at least 3 different digger shuttles will be on the docket. Any shuttle they purchase will have quirks, missing equipment and some maintenance issues for them to deal with on the flight back to their mining ship. They may have to purchase better astrogation equipment for the shuttle to make an interstellar jump or they can pay a fee to a freighter

captain to piggy-back on his ship back to the system where the mining ship is.

Mining operations are kind of boring so don't waste a lot of time on them. Describe a few months of the mining operation, pay the players their wages and move on to a visit at a mining station so they can blow off steam, gamble, buy stuff, and pick up rumors about claim jumpers, pirates, or mysterious things happening in the mining belt. The same applies to claim jumpers, pirates, mayday calls from ships in distress, and mysteries in the asteroid belt – move on to the fun stuff without bogging the game down on mining.

Adventures will most likely happen when the crew are going about their regular duties. Pirates, claim jumpers, stowaways, mayday calls, or a Star Law Marshal commandeering the ship can't be ignored. Ancient alien artifacts and rumors of pirate treasure vaults can be ignored but the players are probably curious enough to pursue these leads. In times of war, the government might contract at premium rates for the mining ship to mine a comet and deliver the water as ion fuel to forward logistic vessels. However, players should be mindful that their bank payment to pay off the ship is due each month and time not mining can hurt them when the bill is due. Despite the mortgage on the ship, the important thing is to have fun.





# AKYNA CLASS LIGHT FREIGHTER

BY RICHARD "SHADOW SHACK" ROSE

## KNIGHT HAWKS STATS

**HS:** 4 **HP:** 24

**Powerplant:** 4 atomic A

**ADF:** 4 **MR:** 4 **DCR:** 32

**Crew:** up to 8

**Weapons:** 2 Laser Pod Turrets

**Defenses:** RH

**Communication/Detection:** SubSpace Radio, Radar, Intercom

**Misc:** Light Hull Armor, Streamlined

**Computer:** Level:4 FP:115 SP:100

**Programs:** Alarm (4), Analysis (4), Astrogation (4), Commerce (1), Communication (1), Damage Control (4), Drive (4), Industry (1), Life Support, cap:8 (1), Maintenance (4)

**Cargo Capacity:** 3 (two 1.5u bays)

**Crew Accommodations:** 4 double bunk cabins

**Passenger Accommodations:** N/A

**Ship's Vehicles:** N/A

**Base Price:** 1,821,730

**Minimal Crew Requirements:** Pilot/Captain, Astrogator, Engineer, two Gunnery officers

## DESCRIPTION

The Akyna is a versatile freight hauler that many a ship owner has cast a lustful eye upon. And for good reason, the ship is small enough for most able crews to operate in a wide variety of situations, fairly well armed and armored boasting the lighter grade hull armor along with a pair of laser turrets, and a readily expandable mainframe computer (with additional space allotted for the hardware making future upgrades quick and easy to install).

The hull is streamlined, and all bridge and engineering deck stations are situated on rotating deck gimbals allowing them to pivot to a "main axis parallel" stance for atmospheric use. The 3-unit cargo space doesn't allow for large profits, but crews can charge a little extra for promptness in delivery along with the insurance via two laser turrets that the load will get there.

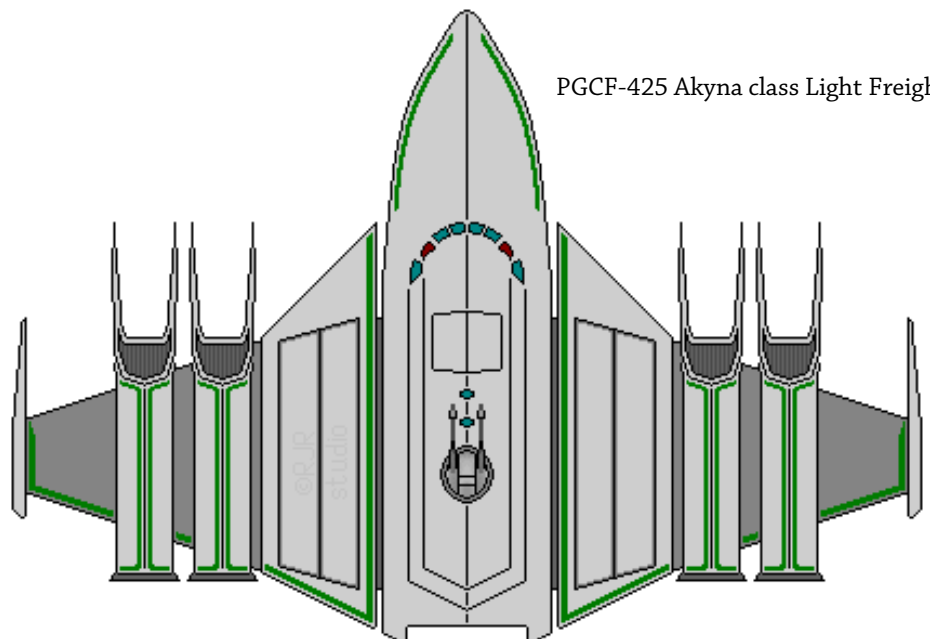
There are drawbacks to the basic design though. With no workpods, any external work will have to be performed via spacesuits, specifically with the drives and wing mounted aft maneuver jet banks. As such, most populated worlds do not permit atomic drive overhaul procedures to occur in their breathable atmospheres. The craft may land and lift off at the local starport, and even perform routine maintenance, but once the reactor is exposed to the air, crews can expect a prompt visit from Star Law and a resulting stiff fine and impound/quarantine fees to boot. More experienced crews are required for the ship as well, crews that may feel better suited for larger craft such as full-sized freighters and the like. Four drives to maintain & overhaul can be taxing to smaller crews, not to mention the additional fuel costs. Most owners are happy to absorb that to compensate for the additional defenses on the basic design.

The twin cargo holds are another anomaly. They are tiered for ease in loading but are situated for space duty. This means any ground-based cargo acquisitions will take extra time to load (figure double the usual time). Note the partial decks on each level may also be folded up against the main hull to accommodate

larger items. The ventral turret must also be positioned correctly for any landing (space station or starport), as the ground clearance is minimal with the landing gear. That said, atmospheric landings in rough or uneven terrain can cause damage to the ventral guns.

Also note the lack of emergency vehicles. No lifeboat, escape pods, or workpods means any attempt of escape would have to be executed in a launch, meaning launching oneself from an airlock. The two crew decks do not offer much privacy, so being friendly is a must. And despite new technology in the drives and other systems, the main artery between decks is a standard ladder well with airtight hatches on each deck. The upside to this is during atmospheric groundings, characters may easily walk between decks. All hatches are designed to open towards the ventral side so there is no hampering on opening hatches, although it may take a little extra effort to close them once opened.

Finally, the aft outer hull hatch is not easily defended when it comes to boarders. Crew members can find solace within the hold airlock hatchways for hard cover, and heavy weapon mounts on either side of said hatches are common upgrades. Additional crew may find cover behind any



PGCF-425 Akyna class Light Freighter



crates and such stored here, assuming such loads are present. Incoming baddies will also benefit from hard cover until they fully emerge from the side hatches as well.

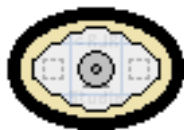
Lobbing grenades is the best bet for repelling intruders here. Most owners station a few robots here to meet additional security needs.

performed as well at a -1 ADF or MR penalty, either by adding a forward firing laser pod system or upgrading to full-fledged laser batteries. The computer maintenance shaft running between the bridge and recreation decks is a common hidey-hole used by smugglers, and oftentimes has been expanded to port for more space to indulge in such “small package trading”.

Customizing is an immediate option most owners perform. A Universal Docking Collar is easily affixed to the aft airlock, thus allowing one additional level of security measure for would be boarders that opt for standard entry. Up-gunning an additional 20 cubic meters worth of weaponry can be

## DECK PLANS

The deck plans are rendered in 1-meter squares:



**DECK 1A - AVIONICS**



**DECK 2 - FORWARD CONTROL**



**DECK 3**

**BRIDGE**



**'TWEEN DECK**

**ACCESSWAY**



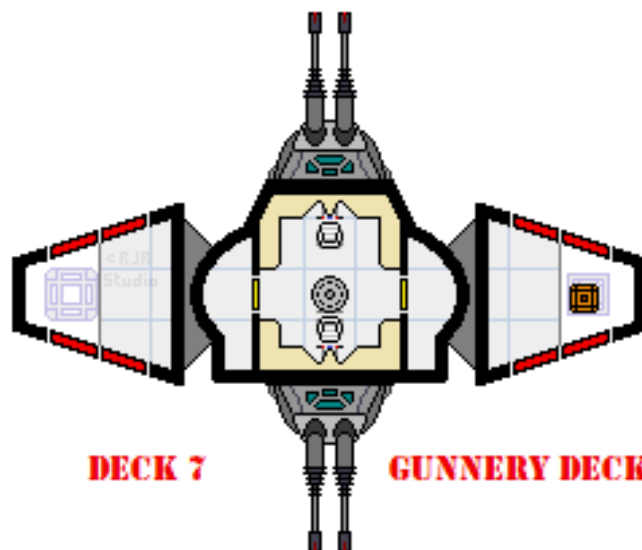
**DECK 4 - RECREATION**



**DECK 5 - UPPER CREW DECK**

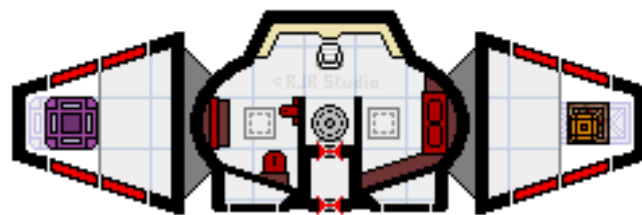


**DECK 6 - LOWER CREW DECK**



**DECK 7**

**GUNNERY DECK**



**DECK 8 - ENGINEERING**



**DECK 9 - STORAGE & AIRLOCK**

# HAZARDOUS ENVIRONMENTS: ZERO G

BY TOM VERREULT

It's known that there are biophysical impacts on the human body because of long or short-term exposure to zero gravity. In settings like that of *Star Frontiers*, *The Expanse*, or *FrontierSpace*, simulated gravity (as opposed to artificial gravity) is used. When a ship is under thrust the occupants experience "gravity" because the decks have a vertical instead of a horizontal layout. In other words, the occupants are forced against the deck because the engine is thrusting from beneath them and this can effectively simulate gravity. Simulated gravity allows us to ignore the health problems of associated 0g. This is good from a game perspective but what about the ever-popular setting locales of hollowed out asteroid stations? They exist in these settings and there is no simulated or artificial gravity at these locations.

*Star Frontiers* has canon statements that suggest that *Star Law* uses asteroid prisons. I would handwave these facilities as high priority or "supermax" type prisons and that run-of-the-mill prisoners get the classic planet or perhaps even moon-bound prison treatment as the impact of zero gravity on the prison population might be construed as cruel and unusual punishment.

Years ago, I made up a cross-section map of the Planaron Asteroid. Originally, the Planaron asteroid was used as a pirate base in the *Warriors of White Light* module. I reimagined it as an ore processing hub and mining station after the events of the *WoWL* module. Known as a "pay dirt" station it caters to mining ships in the heart of the asteroid belt, processing ore, transshipping ore to freighters, and providing amenities for the mining crews and prospectors of the belt. Short and long-term occupants of these facilities will experience health effects.

## MUSCLE LOSS

Muscle loss is a well-documented effect of 0g. Even on Earth, athletes will experience loss of muscle tone after 3 weeks of ending their conditioning regime but in

space, the problem is even more pronounced. Astronaut Heidemarie Stefanyszyn-Piper passed out at a press conference after only a two-week stay in space. For game purposes, I suggest that negative health impacts begin after two weeks in 0g. In game terms, whether *Star Frontiers* or *FrontierSpace*, it's a -10 penalty to the

Strength attribute but after 4 weeks it's a -20 penalty. This is provided steps are not taken to mitigate the effect.

In the real world, exercise is used to combat this muscle atrophy in space. Astronauts on the International Space Station spend 2 hours a day in exercise. This time includes changing clothes, setting up the



IMAGE BY JERRY BOUCHER

workout equipment, and putting it away. Players will need to specify that their characters do the same as part of their normal daily routine. Every month that the character lives in continual 0g but is following a strict exercise routine, they must make a Stamina ability check or suffer a -5 penalty to their Strength. The strength penalties are cumulative over time with each failed Stamina check increasing the total penalty by five points. This rule simulates the eventual deterioration of the body in 0g but with the Stamina check mechanic, it is not likely to happen right away and may take a year for a serious penalty to build up.

Crews of ships that spend time in simulated gravity then days in 0 g, can specify they are using a daily exercise routine and ignore the monthly Stamina check. This is the likely routine of mining ships: moving around under thrust then days in 0g mining at an asteroid. Some asteroid facilities rotate crews: two weeks on and two weeks off. With the two weeks off being aboard a passenger liner-type ship under thrust to avoid the negative health effects. It also saves the company from being forced to send their employees back to a planet in the inner system.

This is not a permanent effect on the character. If the character returns to a simulated or real gravity environment and continues a daily exercise routine, they will recover 5 points of their Strength penalty each month but they cannot be in 0g for more than a few hours (typically when a ship flips end for end to thrust in the other direction).

## DECALCIFICATION

The effects of decalcification can show up after weeks or months in space in the real world. Aliens lacking a skeletal structure, like Dralasites in Star Frontiers, may be ruled to be immune to this. For aliens that have both an internal and external skeletal structure, like the Vrusk in Star Frontiers or the Erakai in FrontierSpace, will show decalcification effects at a slower pace. Every month that a character spends in 0g results in a cumulative +5% chance of them breaking a bone during strenuous activity or fighting in a melee. For the aliens

with the internal and external skeletal features, it's every two months that they gain a cumulative +5% chance of breaking a bone (almost always an internal bone not their chitinous shell).

The simple solution is an existing item off the equipment list in Star Frontiers: vitasalt pills. Vitasalt pills are a pill made up of vitamins, minerals, and salts and were included in the Star Frontiers RPG to ameliorate the effects of dehydration in the deserts of Voltumnus in the very first Star Frontiers adventure and they cost 1 credit. It's not specified how long 1 credit worth of vitasalt pills lasts but these are an obvious fix-all for this problem and easily added to RPGs that do not have them.

A character living in a 0g environment must take vitasalt pills daily (combined with regular exercise) to combat the decalcification effect. A purchase of vitasalt pills lasts 1 week. Since demand for them on an asteroid station is high, they are typically marked up 200%. Nobody actually complains that much as 3 credits is still affordable.

## TEMPORARY EFFECTS

Disorientation and nausea are common effects to those first experiencing prolonged 0g for the first time. The first woman in space, Valentina Tereshkova, spent her whole 3-day mission experiencing nausea. Called Zero G Sickness in-game, the effect goes away after a few days. To simulate it, a character must make a Stamina check every time they experience 0g for a prolonged period or experience a -5 Reaction Speed penalty for 3 days or 1d5 days if the referee feels a random duration better fits his game. Once a character has experienced this effect, they effectively become immune to it in the future.

Making a spacewalk while under this effect is not recommended lest the character vomit in their suit and run the risk of aspiration and choking to death. I would rule Dralasites and Vrusk to be immune to vomiting from this effect. Use a Stamina check to determine if a spacewalking astronaut vomits in their suit and another Stamina check to see if they choke. A character that chokes on their own vomit can make another Stamina check to avoid

choking to death but will suffer a -5 penalty to their Stamina for a day due to the rough experience they just had inhaling their own vomit.

## GAME IMPACT

Adding these rules and effects to your game will add a level of verisimilitude but without overly complicating the game. Verisimilitude in a game is largely an issue of flavor and it's in that vane that the above rules are suggested. The hazards of 0g are easily mitigated but there for the "flavor" of reality.

Asteroid stations and starships will require workout equipment and gyms or it can be ruled that the workout equipment folds up into a wall panel on your existing deck plans. The Star Frontiers RPG has always been a game about resource management and players will need to invest a small amount of money into staving off decalcification effects.

## PLOT HOOK 1

The hazards of 0 g could come into play and complicate the player character's lives unexpectedly for the players if their ship is suddenly stranded, floating in space for a month. Lack of exercise equipment and vitasalt pills would "soften" them up for bigger challenges down the road. Imagine the players' surprise when the ship is boarded by pirates and one of them breaks a bone during the struggle?

## PLOT HOOK 2

An emergency supply of vitasalt pills must be run to an asteroid facility in the outer system and the player characters are contracted to do it. Stuff happens during the delivery or after the delivery.

## PLOT HOOK 3

The antagonist for the player characters is a long-term resident in space. He has opted to simply use an exoskeleton all the time to compensate for the loss of strength. Alternately he may have opted for cybernetic replacement of key body parts. but his organic body still is impacted by the effects of decalcification and his weak bones are prone to breaking giving him a weakness that can be exploited.

# THE INVASION OF GRAN QUIVERA – PART 2

BY ROD MCDONOUGH

## CHAPTER 2

### 110.224 F.Y.

Seven days after his advance forces had travelled through the Gates of Light, General Kasar and his headquarters staff followed. The bridgehead had been secured on the first day and three support convoys had followed over the next week, delivering supplies and ammunition, and returning laden with the first batches of prisoners for evaluation. Initial reports from General Zartak indicated that resistance was light and an area several kilometres square had been occupied and quickly secured. Another report from Colonel Bakkth revealed that his Special Forces had used their rotary wing aircraft to deliver troops from the penal battalion in an attempt to capture an airfield south of the bridgehead. The penal troops had been repulsed by local security forces and Colonel Bakkth was forced to withdraw his aircraft from the enemy airfield.

An attempt to send a column south from the bridgehead to capture the airfield by land was also thwarted. Large numbers of refugees had slowed the advance of the column but had also provided a large number of captives. Eventually, the column was stopped by blown bridges and enemy airstrikes, as was to be expected.

The land north of the bridgehead was largely pastoral and of little interest to General Kasar and his invasion force but immediately to the south was a large city, referred to by the locals as Port Loren, according to his translators. Based on the intel from his air force, the city had to have a population of at least 5 million, potentially much more, considering how densely populated it appeared to be. Kasar licked his lips in anticipation when he read that particular report.

Another report that had also caught his attention was from a frontline Special Forces officer who had discovered that the few uniformed security personnel

encountered so far appeared to have combat fatigues made from some kind of anti-ballistic material. General Kasar had approved an operation to discover more about this fabric and develop a plan to acquire the material for his own forces; General Zartak didn't need to know about that particular project. The inhabitants of the city had other technologies that General Kasar was interested in, but first priorities were those technologies that could be easily adapted for use by his own troops.

As he stepped from his armoured transport to the field where General Zartak and his staff awaited him, Kasar looked around at the parklands where the bridgehead had been established and the array of tents and camouflage netting that housed the headquarters of the advance forces. General Zartak greeted his commander,

"Please General Kasar, if you would come with me." Zartak led Kasar and his staff over to a large briefing tent where maps and projectors showed the progress of the invasion so far with troop dispositions and objectives also on display.

"We have begun encirclement of the main population centre now, with patrols extending several kilometres around the northern perimeter of the city, both east and west from our position here." Kasar pointed to relevant areas on the maps. "We have also made several incursions to the south, clearing outer suburbs of the local inhabitants."

"Yes." General Zartak replied. "The research with the prisoners is going well, they should solve part of our supply issues very soon." Every Harangi officer in the tent smiled at that good news.

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Ranger D'arth had ventured into the area surrounding the alien bridgehead every day since the invasion began, gathering what information she could and transmitting it back to Star Law Headquarters. So far, she had not made any attempt to break through the enemy perimeter.

D'arth had established on her first day that the aliens never went anywhere alone, the smallest group she had ever seen was a sub-patrol of 6 Harangi troopers. Harangi, that was what they called themselves. A group of Port Loren Militiamen had somehow managed to capture a live prisoner during an attack on the Port Loren Airport and after questioning, Star Law had been able to translate their language and discovered the initial assault force was some kind of penal unit of these Harangi.

"Not even real soldiers," D'arth muttered to herself, though she doubted the enemy aircraft pilots were also alien prisoners. Star Law still had not been able to discover the actual motive for the attack, but from what she had seen over the last few days, D'arth was convinced it had something to do with the large numbers of prisoners that were being herded back through the wormhole every couple of days.

The Harangi were keeping their prisoners in large pens quite close to where the wormhole was opening and herding the people through the wormhole each time it opened. Every two days, almost like clockwork, the wormhole would activate. A column of alien trucks and other vehicles would come through the Gates of Light and as soon as the supply column was through, another column of trucks loaded with prisoners would return through the wormhole and then the wormhole would close. The third time the wormhole opened, a flight of alien aircraft preceded the ground vehicles. Like their first wave of aircraft, these jets had VTOL capability and the aliens had established their own airfield just north of their bridgehead and used prisoner enclosures set up close to the aircraft to prevent bombing by UPF forces as well as mobile anti-aircraft defences to protect the field.

Ranger D'arth's reports indicated the Harangi now had approximately 10,000 troops on Gran Quivera. Half those forces were based in and around their bridgehead, the rest were now beginning an



encirclement of Port Loren, establishing armed camps and heavy patrolling between camps to prevent anyone escaping to the north. Everyone from the surrounding areas that had not fled in time were now in Harangi custody either in prisoner camps or taken through the wormhole.

There had only been one reported escape from behind the Harangi lines from a Humma escapee. Apparently the Harangi had been separating the various races into different camps: Humans, Dralasites, Yazirians, and Vrusk. It seems they had also been putting the few Ifshnits that had been captured in with the Humans, perhaps mistaking them for young humans. The few Osakar and Humma that had been captured had been held in the same enclosure as a number of exotic pets from across the Frontier. The Harangi had not yet identified the Osakar or Humma as intelligent beings and a group of them attempted a breakout. The Humma and their jumping ability caught the Harangi off guard and initially the break attempt went well, with more than half a dozen Humma able to leap the fences and hop to freedom but the Harangi response was brutal and all but one of the escapees was gunned down as were a large number of Osakar and Humma still held prisoner. The lone survivor was able to evade pursuit and eventually made his way south where he was picked up by a police patrol and taken back to Star Law HQ to be debriefed.

As well as filing her reports, Ranger D'arth had done her best to help civilians escape capture from the Harangi patrol, either guiding them to safety or occasionally providing a distraction to allow refugees to escape. She almost came unstuck on one occasion where she opened fire on pair of Harangi trooper thinking they were alone, only to find the other four troopers of their patrol were around the corner of a warehouse. The resulting running gunfight lasted for a good ten minutes before she was able to lose her pursuers in an abandoned, bombed out shopping mall. Since then, she had dutifully avoided direct confrontation with alien patrols.

Today Sharon was going to try a different approach to see if she could get closer to the enemy HQ. Different parts of Port

Loren were built along old canal networks and the Harangi did not appear to be natural water users. Ranger D'arth had yet to see a single Harangi in a boat on any of the canals or rivers. For the past couple of days, she had been looking for dive shops near the river bend behind which the Harangi had secured their bridgehead. Finally, she had found one and obtained an artificial gill suit, some jet fins, and some other underwater equipment. Riding her bike to a spot on the south side of the river, opposite to where a canal flowed into the river from the north side, Sharon parked her bike out of sight and changed into her artificial gill suit. She put her helmet, side arm, and other equipment into a sealed, waterproof bag and slipped carefully north to the river. Waiting until she was sure she was not observed from either side of the river, Sharon crept carefully to the riverbank and slid smoothly into the water.

The water was quite muddy, cutting visibility to next to nothing and the river current was strong but the ranger had made allowances, entering the river well upstream of where she wanted to arrive to allow for the current and an underwater compass would guide her north across the river. Sharon had to work hard to keep the membranes of her wings as tight to her body as possible to avoid catching the river's current and use her jet fins to propel her north across the river. Eventually, she made her way across the river and reached the opposite bank but when she poked her head above the surface of the water she found the current had pushed her too far down the river. Rather than trying to swim against the current, she opted to climb out of the water and move along the riverbank back towards the canal she was looking for.

Alien voices alerted her to the sound of a Harangi patrol nearby and she slipped back into the water to avoid detection. The Harangi aversion to water worked once again in her favour and several minutes later the patrol had moved on and she crawled out of the water again. Finally, she reached the canal that flowed into the river and once more submerged. The water was still muddy with very low visibility but at least

the current was nowhere near as strong, and Sharon was able to make her way north through the canal without too much difficulty. The muddy water also made it almost impossible for Sharon to be detected by patrols so long as she could stay at least a meter below the surface.

Feeling her way along the eastern bank of the canal, Sharon eventually found a break in the canal, this was the part she was most concerned about, a culvert under the road separating the canal with the waterways in and around the parklands where the Harangi had established their bridgehead. If the canal was blocked her mission would have to be aborted. The ranger dived into the jet-black water of the culvert, her jet fins propelling her forward. She now flicked on an underwater torch and though it did not penetrate more than a meter or two through the muddy water, it was better than no light at all. To her relief, D'arth did not encounter any blockages in the culvert and exited into the waterways of the park. D'arth stayed under water as long as possible, looking for, or rather feeling for, a clump of reeds she could use for cover when coming to the surface. Her earlier research of the parklands had flagged holovids of tours around the parklands which in turn had shown footage of the ponds, lakes, and water courses around the parklands.

Sharon found what she was looking for, a thick clump of reeds she could secret herself inside before surfacing. She brought up her waterproof bag, took out her helmet and put it on. Activating her omnocular visor and directional microphone she began sweeping the parklands, looking for any kind of communications network. Ranger D'arth spent the best part of an hour conducting a sweep of the parklands and moving to several locations where she could continue to observe but remain hidden in the reeds. There was quite a bit of activity, between Harangi troops and officers moving from camouflaged tent to camouflaged tent, guards moving captives into holding yards, and vehicles moving about the bridgehead.

After finding what appeared to be a large briefing tent, Sharon began making recordings of what seemed important when

she saw the wormhole open once again. From only two hundred meters away, the sight was impressive to say the least. More Harangi vehicles and troops emerged from the interstellar portal, at least a regiment by her count, followed by a number of armoured cars. A group of what appeared to be officers, emerged from the briefing tent to greet another group of officers disembarking from the armoured cars while a column of vehicles full of prisoners drove through the wormhole, presumably to the Harangi home world.

Sharon focused her camera and microphone on the group of officers and followed them back into the briefing tent, zooming in as close as possible with the camera and focusing the microphone on the group of officers. Though she could not yet understand the language of the alien officers D'arth sensed that the meeting was important and that she should record as much of the conversation as possible. She stayed floating among the reeds and staying out of sight of enemy troops for what seemed hours and when the meeting finally broke up, lowered herself back below the surface.

Slowly and carefully the ranger retraced her path back through the waterways, down the canal, across the river and eventually, back to her hovercycle. This time, instead of finding somewhere to transmit the data back to Star Law HQ, Sharon decided to take the recordings back personally and get an update on the progress of the war. The journey back to downtown Port Loren took longer than previously and the sight of the partially bombed city was sobering. For the last week the ranger had been operating on her own, surviving largely on instincts and training, observing her surroundings with clinical detachment. Now she noticed the empty homes and streets surrounding the alien bridgehead, knowing full well what that meant for the former occupants and as she drew further from their encampment, the level of destruction also grew.

The Harangi were not just targeting strategic locations, they were now also hitting civilian housing, especially apartment blocks and high-density housing. Terror was the name of the game now, they

wanted to drive people from their homes and create panic, fear, and desperation. These aliens were not stupid, their plans were not ad hoc, there was a purpose to every step they had made so far. They may not have always been successful, but they were methodical. The UPF needed to uncover their objective to be able to try and stop them, so far it was all guesswork, they needed certainty.

Several hours later, D'arth finally made her way through the doors of Star Law HQ. Had it not been for her hovercycle allowing her to pass through roadblocks, both deliberate and accidental, it might have taken much longer, but she made it back before sundown. Handing over the data files of her surveillance, Sharon said to Deputy Agent Hart, "Joe, get these translated for the chief ASAP. I think I got their leadership in action." She slapped his friend on the shoulder and headed for the ranger quarters for a shower and a quick meal before reporting to the briefing suite.

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Several hours later Star Law Commander Byrne stood in his briefing room with a group of senior Star Law and UPF personnel reviewing the surveillance footage acquired by Ranger D'arth. After running the audio through their polyvoxes and confirming the translation, the Star Law Intelligence officers had agreed that D'arth had indeed identified and recorded several Harangi senior officers conferring. The new arrival appeared to be the Harangi commander meeting with the headquarters staff of the alien vanguard.

The Harangi vanguard was called an Umen, which loosely translated to a Division, has been deployed to secure their bridgehead and now their regular forces would be coming through the wormhole over the next few weeks. This was not a raid; it was a full fledged invasion. The Harangi were here to stay.

The assembled senior officers were stunned by what they had just heard.

"That can't be right!"

"Abominable!"

"Barbarians!"

Men who would never be seen in public reacting in such a way had been reduced to a babbling mob.

"Replay that last comment." Commander Byrne said to Deputy Agent Hart. The yazirian star lawman nods and taps his computer keyboard. On the view screen the image of the Harangi officers grinning widely re-winded several seconds and started playing again.

"General Zartak, your men may begin foraging on the local population tonight. I look forward to sampling some choice specimens from your collection myself." The new commander said to the commander of the Harangi vanguard.

"Well, I think now we all know why they are here," said Commander Byrne. "We need to decide how we are going to deal with this, but I think we all agree our top priority now is evacuating all civilians from the front lines immediately."

The Star Law Commander turned to Commander Boomberg. "What has Landfleet got in the city now?"

"We've been able to land two regiments at the Port Loren airport and they are all deployed in the northern suburbs. As you are aware, refugees have slowed down our deployments but that is starting to ease now. The bottleneck at the moment is access to ships that can transport troops to the planet surface. When the spaceport was nuked, we lost a substantial number of shuttles and smaller craft and in the first few days after the invasion there was an exodus of many civilian ships." Boomberg looked around the room of officers and Star Lawmen. "Even now the news of the invasion has not reached the entire Frontier. I estimate it will be at least another three weeks before we can assemble most of our forces on Morgaine's World and then we will still have the issue of transporting them planetside. The current thinking is that we land somewhere north of the city, concentrate our forces and attack their bridgehead from there."

Commander Byrne nodded, "about what I expected. So we need to protect the local population, capture means as good as dead but we are going to need to use the

population, in the form of militia, to defend them.”

“Commander, if I may?” Deputy Agent K’llei interrupted.

“Of course, D A K’llei. What have you got in mind?”

“Robots, sir. In our wars against the Sathar and even during the Corporate Wars, robots were either too expensive or not practical to use in mass combat. Against an enemy that feeds off their enemy, perhaps we should offer them something indigestible?”

“We also have several technological advantages sir.” Deputy Agent Toom added. “The Harangi do not appear to have any beam weapon technology. No lasers, sonic, or electric weapons. Nor do they have skeinsuits or inertia screens.”

“So, you are suggesting we use robots armed with laser and equipped with inertia screens?” Byrne said.

Both deputy agents nod in response.

“If they don’t have energy weapons, then it stands to reason they would not have defences against those weapons and robots equipped with inertia screens should be able to soak up a lot of damage.” D A Toom replied.

“And robot bodies would make most unsatisfactory rations for the Harangi.” D A K’llei added.

“Sounds like a plan, now let’s find out how practical,” the Commander decided. “Commander Boomborg, what are your Landfleet regiments equipped with?”

Before the Landfleet officer can reply there is more news from the frontline.

“Aah sir?” D A Hart interjected. “A report just coming in now. A factory complex owned by Armorall Unlimited is under attack by Harangi airborne forces. It seems they flew in on rotary wing aircraft.”

“Armorall Unlimited is a subsidiary of Eversafe Enterprises, they’re a military contractor.” Boomborg adds, the concern evident in his voice.

“What do they make at that facility?” Commander Byrne asks.

“Skinsuits!” D A Hart answers.

“How did they know?” Boomborg wonders. “It’s not possible!”

“Apparently it is.” Byrne observes wryly. “Right now, it doesn’t matter how they know. We need to stop them taking that facility. What do we have available?”

“Nothing on hand, almost everything we have is in the northern suburbs or defending the airport.”

“You’ve got me.” A voice pipes up from the back of the room as Ranger Sharon D’arth announces her presence.

To Be Continued?



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# ENDINGS AND BEGINNINGS

BY TOM STEPHENS

Hello Explorers!

We've reached the end of our journey here at the Frontier Explorer and this is the final article. I hope you've enjoyed the journey as much as I have.

I'll have to admit, when Tom Verreault and I started this adventure a decade ago, I never really expected it to go this long. It's had its ups and downs, but we kept it going. After 10 years of publication, it's time for us to head in new directions.

But first, let's look back at the magazine's history a bit. This all started almost exactly a decade ago in April 2012. Tom V., frustrated with the slow production schedule of the Star Frontiersman, approached me about creating our own fanzine with a regular, predictable release schedule.

We took some time to get everything organized, created the website, and decided on exactly how we were going to publish the magazine. This also included a discussion with Wizards of the Coast about what we could and couldn't do in the magazine related to Star Frontiers. They were on-board from the very beginning. The first issue came out in August of 2012.

We had some lofty goals, some of which we achieved, others, not so much. The one we absolutely hit was to publish a new issue every three months. In fact, after the first issue came out, I made the decision that we would publish in January, April, July, and October. We got the second issue out in two months for an October release and have been on that schedule ever since. I'll admit I wasn't sure we'd actually hit that goal, which is why the issues are labeled by season instead of month.

While the exact date in the month has never been consistent, I have managed to have it completed and available before the end of the month every single time. The goal was always the 15<sup>th</sup> but that rarely happened. I was actually concerned about this issue but managed to pull it off.

One of the other things we decided from the get-go was that we wanted a print-on-demand option for the magazine and we wanted it in full color. This put some constraints on the format. We wanted the

print-on-demand version to be saddle-stitched like the original game books and since we would be producing these through DriveThruRPG, that set a page limit of 47 pages per magazine. Anything larger and we had to switch to PerfectBound bindings (think regular paperback book). That changed later when DriveThruRPG's printer, Lightning Source, dropped support for saddle-stitched bindings but all early issues were bound that way.

Some of the other goals were not so successful. One of the things we wanted to do was make online, linkable versions of each article available. And for the first 6 issues I managed to keep up with that. They are available on the Frontier Explorer website, linked via the "Online Version" link for each issue. Andrew Moore stepped up and helped me get issue 7 and part of 8 fully online as well but the effort fell by the wayside as life got busier. I tried to revive the effort with issue 14 (which is online) but it quickly fell by the wayside again. I'll have more to say on this later.

Related to that was getting all the maps and images online as well. Since these were related efforts, the same issues that have online article links also have all their artwork available as well.

Interest in the magazine has ebbed and flowed over the years and took a significant hit with the 2018 hiatus due to the trademark grab by Evil Hat and WotC's request that we suspend publication temporarily. That said, the sheer number of downloads really surprised me. I expected that we'd maybe get one to two hundred downloads of each issue. At its height, we were getting a thousand downloads in the first week after publication. For the issues since the hiatus, it has been about 600 downloads in the first week.

The table at the right shows the number of total downloads for every issue since we first published the magazine. These are only the downloads from DriveThruRPG as I never was good about tracking direct downloads from our website. This actually represents a lower bound on the number of times the magazine was downloaded. As

ISSUE	RELEASE DATE	TOTAL DTRPG DOWNLOADS
1	Aug 2012	6436
2	Oct 2012	5409
3	Jan 2013	5231
4	Apr 2013	4865
5	Jul 2013	4622
6	Oct 2013	4705
7	Jan 2014	4333
8	Apr 2014	4569
9	Jul 2014	3626
10	Oct 2014	3211
11	Jan 2015	3757
12	Apr 2015	2831
13	Jul 2015	2761
14	Oct 2015	2604
15	Jan 2016	2650
16	Apr 2016	2649
17	Jul 2016	2291
18	Oct 2016	2321
19	Jan 2017	2396
20	Apr 2017	2168
21	Jul 2017	2354
22	Oct 2017	2016
23	Jan 2018	1870
24	Apr 2019	1763
25	Jul 2019	1501
26	Oct 2019	1788
27	Jan 2020	1720
28	Apr 2020	1616
29	Jul 2020	1443
30	Oct 2020	1488
31	Jan 2021	1216
32	Apr 2021	1275
33	Jul 2021	1088
34	Oct 2021	1032
35	Jan 2022	967
<b>Total:</b>		<b>96573</b>
FEP 01	Feb 2014	2091
FEP 02	Nov 2017	1885
<b>Total:</b>		<b>3976</b>



you can see, in total, across all the magazine issues, there have been nearly a hundred thousand downloads just from DriveThruRPG. If you throw in the two special issue technical manuals (FEP01 and FEP02), we did break a hundred thousand downloads. Add in the just over 44,000 downloads of the Star Frontiersman since it was passed over to me and that's quite an impressive record for a free fanzine for an out-of-print game from the 80s.

That's the past, let's now turn to the future.

With the Frontier Explorer ending, you might be wondering what is next. Part of that is answered by Tom Verreault's sidebar on page 6. I've been carrying this magazine for the last decade and am setting down the mantle, but he's still interested in publishing and will be reviving the Star Frontiersman, which I'm passing off to him going forward. So you can look forward to more fanzine issues, just not of the Frontier Explorer.

That said, the Frontier Explore isn't going away. I have a few plans for the future, just not regular magazine issues any longer. I have several major projects in the queue.

First, I'm intending to create print-on-demand omnibus editions of the magazine issues. Right now, you can get all the individual issues via print-on-demand at DriveThruRPG. My plan is to gather these up into a series of 8 issue volumes, each around 400 pages, and available as both soft and hard back volumes. There will be five total with the last one only being 200 pages as it will only contain 4 magazine issues instead of 8. Like the current POD options, these will be pay-what-you-want and should be a little bit cheaper than buying the individual issues, basically the cost of the covers. I hope to have these ready by the end of summer this year.

The second major magazine-related project is to go back and fulfill the goal of getting all the articles online as individual linkable articles. This is going to be a long-term project as I have nearly 30 issues to get caught up on. But eventually that will happen.

Next up is an index. Tom V. put together a print index of all the issue up through 33 or 34 along with the issues of the Star

Frontiersman. I have that same data collected that I've been using myself for years but I've always wanted to make an on-line searchable index. So that's on my todo list as well.

I'm also planning on a revamp of the magazine website. There is a lot of behind-the-scenes functionality that we used for production that is not needed anymore and the website was never mobile friendly. I plan on overhauling that as I work on the online magazine articles and index.

The last magazine related project is that I intend to keep producing, and probably at a faster rate, the starship technical manuals. The next one up will be the HSS History's Hope as that one is partially done, but I'd like to do them for a wide range of ships. Creating starships is probably my favorite part of the game and I want to keep doing that. Look for more special issues in the future.

That's it for what is coming up related to the magazine.

Now, with the magazine not being my main focus anymore, I'm going to be reviving my Expanding Frontier blog (<https://expandingfrontier.com>). I started that back in 2018 when we went on hiatus and put it on hold a year ago and am now going to start writing there again. You can follow me there to see what I'm working on. You can also support that site via my Patreon for the blog at <https://www.patreon.com/expandingfrontier>.

Beyond the magazine updates mentioned above, there are several major projects that I'm excited about getting back to.

First is getting back to my 3D modeling. I got really into creating miniatures of the starships and recreating the original TSR miniatures starting back in 2016. That's been on hiatus for a while but I'm itching to get back to it. I've still got five of the Privateer miniatures to recreate and then I'm off onto my own creations, probably as part of my technical manuals.

The second project is to revive my Second Sathar War timeline project. I was posting on Twitter, and then a monthly summary on my blog, daily timeline updates of events in the Frontier leading up to and during the Second Sathar War, including the events of all the modules. My

last post there was back in Feb 2021. I'm going to be resuming that, probably in May.

Another writing related project is a couple of novels I'm working on. One is a sequel to my self-published book Discovery. That one is not specifically Star Frontiers related but could be. The second is explicitly a Star Frontiers novel based on Pale during the sathar invasion in the First Sathar War. That one is at about 78,000 words and about a quarter done. I'd going to get back to working on those and probably post excerpts on my blog.

Next up is an overhaul of all the Star Frontiers websites under my purview. They are fairly old at this point and could use some refreshing. These include the Frontier Explorer website, my blog (which probably won't be getting an update), the Star Frontiersman website (which is going to Tom Verreault), <https://starfrontiers.info> – the community forum site, and <https://starfrontiers.us>, which is my original Star Frontiers site. I also want to work with Art Eaton to get the old starfrontiers.org forums back online as an archive. I also maintain the Discord server and admin the Star Frontiers: Alive and Well Facebook group.

Finally, I want to finish my game. A long, long time ago (before smartphones were even invented), I started implementing the Second Sathar War game from the back of the Knight Hawks Campaign Book as a desktop computer game. All the mechanics are there except for a bug when ships have a speed of zero and I never implemented seeker missiles. It also lacks networked play and the graphics are very basic. I'd like to finish it off, update it for modern devices, and make it available. Then we can all play online together.

Oh, and I almost forgot, I'll also probably get back to writing magazine articles for Tom V. to publish instead of the other way around.

As you can see, I still have a lot of things going on, so you'll still see me hanging around in the Frontier. Thank you for all of your support over the years and I look forward to sharing my future efforts with you in the years to come. I'll close as I always do:

Keep exploring!

