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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.

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LETTER FROM THE EDITOR

Hello Explorers!

And welcome to issue 26 of the Frontier Explorer. This issue is a more typical grab-bag issue with no particular theme, although it definitely leans heavily to the weapons and equipment direction. We have articles by two new authors this issue, Nick Landry and John Blaylock, with articles on portable power sources and energy weapons, respectively. I think we can expect to see more articles from them in the future.

We almost didn't get our comics this issue as Scott's computer decided to give up the ghost just as he was getting the comics put together. However, he got is replacement in time and was able to rebuild it enough to put together the comics. Although the Escape Run comic is a bit of an interlude and a nod to the problem.

Another new feature in this issue is the beginning of a run of articles, under the heading of "Things that go Boom!", by Joseph Cabadas. This issue contains the first two articles, about grenades and missiles. This series will run with a couple of articles per issue for the next year or so. I believe there are currently eight articles total in the publication queue and he's working on a ninth. So expect lots of explosions in the issues to come.

Another first for this issue is articles for the Traveller game system. Richard "Shadow Shack" Rose has picked up the game again recently and takes us on a trip down memory lane from when he was a player in the 80's and also provides an introductory article on the various career options during character generation in that game system for those of us, which includes myself, who have never played the game. I've read the MegaTraveller rules but never the original Traveller system.

We round out the issue with a couple of "How does it work?" articles on Yazirian gliding (that got bumped from last issue due to space constraints) and exoskeletons, a fluff article detailing a phonetic alphabet for the Frontier, our usual Jurak Hangna article, and deck plans for a pirate frigate.

There's no community news page in this issue so I thought I'd highlight a few things that have been going on since last issue. First, one of our new authors, Nick Landry, is currently a player in an SF game, Omega Dusk, that is being posted as an actual play

on YouTube. You can find the first episode (which is all that has been posted as of this writing) at <https://www.youtube.com/watch?v=unUGam39uII>.

Second, I developed a large, full-colored Extended Frontier Map, that covers an area about 6x the size of the original AD map and includes all the systems from the rules, modules, and both fanzines. Plus a bunch of sathar worlds and jump routes. I've made a poster-sized (24"x27") version of the both the Referee's and Players' versions of the map (with and without the sathar data, respectively). The details of the map's creation can be found on my blog (<http://expandingfrontier.com>). I will probably do an article on the map in a future issue.

Third, is another project I've been working on since the last issue came out. I've acquired a high-res 3D printer and have been bitten by the modeling bug again. I've created sathar and UPF fighters, an space station, reproduced the UPF light cruiser miniature, and am currently working on reproducing the UPF battleship mini. You can find details about all of these on my blog as well. These projects will also probably produce an article in the future. As part of this effort, I've decided to make 3D printed copies of all the miniatures I've created available. A small ad on page 42 provides a link to details on this service.

Finally, Steven Rycroft has started up a play-by-post game on the Unseen Servant forums. If you would like to follow along and watch the adventure unfold you can check it out here: <https://www.unseenservant.us/forum/viewforum.php?f=827>.

That's enough rambling from me. Sit back, settle in, and enjoy this issue of the Frontier Explorer. And as always, keep exploring.

—Tom Stephens
Senior Editor

THEY CALL DRALASITES DELTA BRAVOS

A MILITARY PHONETIC ALPHABET FOR THE STAR FRONTIERS SETTING

WARRIORS OF WHITE LIGHT 2.04

BY THOMAS VERREAULT

Most people have heard the phonetic military alphabet in use before whether in a movie, on TV, or in a book or, alternately from prior military service. While Delta Bravo is penetrating the culture by and large as a label for an obnoxious idiot and because it's far politer than saying "douche bag"; Oscar Mike (on the move), Charlie Mike (continue mission), Tango Delta (target down), and Lima Charlie (loud and clear), while familiar, are lesser known.

A BRIEF HISTORY OF THE MILITARY PHONETIC ALPHABET

The first phonetic alphabet was developed by the International Telecommunications Union in 1927 but was revised in 1932 and used by the International Commission of Air Navigation until the beginning of World War 2, and by the International Maritime Organization until 1965. British and American militaries developed their own, the RAF alphabet and the Joint Army/Navy Phonetic Alphabet. In 1941 the American alphabet became known as Able Baker and was used by all branches of the American military while the British modified theirs in 1943 to a nearly identical alphabet.

Post war, and due to the Able Baker alphabet having sounds unique to English, a Latin version was developed called the Ana Brazil Alphabet. The International Air Transport Association realized a universal alphabet was needed and drafted a version with sounds common to English, French, and Spanish, but further revisions by various approving agencies lead to the Revised Able Baker alphabet in 1951. However, with some words, like Delta and Extra, sounding the same and contributing to garbled communication, some users reverted back to the old Able Baker alphabet. This lead to the development of the modern military phonetic alphabet that was adopted by NATO and civilian users across the board after 1959.

What follows is an adaption of the idea of a phonetic alphabet for use with radio and subspace radio communications in the Star Frontiers setting. Ultimately, it is

just fluff to dress and color the setting, but certainly adds a degree of verisimilitude to the game.

THE HISTORY OF THE PAN GAL PHONETIC ALPHABET

In the early days of contact between the major space faring species, subspace communication was the primary form of contact. In part because space travel took time, and because starships were scarce. To alleviate difficulties in communication, and deal with the occasional interference on subspace transmission band waves, the Interstellar Subspace Communication Commission developed a phonetic alphabet adapted to the dominant languages of hu-

manity and the dralasitas. The language of the vrusk is almost entirely unpronounceable by all other sapient beings and very few non-vrusk are gifted enough to understand it, so this language had no impact on the alphabet.

Three years after first contact with the yazirians, it was realized that certain sounds not found in the yazirian language proved difficult for them to pronounce initially and this caused some to call for a revised alphabet. However, there was not much pressure to make any changes, until the Hatzk Naar pirate raid and the First Common Muster. This led to the development of the Muster Alphabet, instituted by Admiral Morgaine, which was used by mili-

MILITARY ALPHABET OVER TIME

LETTER	IRSA (1957-PRESENT)	JOINT ARMY (WW2)	ITU (1927-WW2)	RAF (1913)	MORSE CODE
A	Alpha	Afirm	Amsterdam	Able	· _
B	Bravo	Baker	Baltimore	Boy	_ · · ·
C	Charlie	Charlie	Casablanca	Cast	_ · _ ·
D	Delta	Dog	Denmark	Dog	_ · ·
E	Echo	Easy	Edison	Easy	·
F	Foxtrot	Fox	Florida	Fox	· · _ ·
G	Golf	George	Gallipoli	George	_ _ ·
H	Hotel	How	Havana	Have	· · · ·
I	India	Int (Item)	Italia	Item	· ·
J	Juliet	Jig	Jerusalem	Jig	· _ _ _
K	Kilo	King	Kilogramme	King	_ · _
L	Lima	Love	Liverpool	Love	· _ · ·
M	Mike	Mike	Madagascar	Mike	_ _
N	November	Negat	New York	Nan	_ ·
O	Oscar	Option	Oslo	Oboe	_ _ _ _
P	Papa	Prep	Paris	Pup	· _ _ ·
Q	Quebec	Queen	Quebec	Quack	_ _ · _
R	Romeo	Roger	Roma	Rush	· _ ·
S	Sierra	Sugar	Santiago	Sail	· · ·
T	Tango	Tare	Tripoli	Tare	_
U	Uniform	Uncle	Upsala	Unit	· · _
V	Victor	Victor	Valencia	Vice	· · · _
W	Whiskey	William	Washington	Watch	· _ _
X	X-Ray	X-Ray	Xanthippe	X-Ray	_ · · _
Y	Yankee	Yoke	Yokohama	Yoke	_ · _ _
Z	Zulu	Zebra	Yokohama	Zed	_ _ · ·

COMMON CODE PHRASES

Delta Bravo: Dralosite Bag—a derogatory term derived to refer to obnoxious dralosites but has developed a wider use for any being that is obnoxious.

Uniform Bravo: Unknown bogey. *Note: The Royal Marines, despite adopting this phonetic alphabet continue to use the code phrase “Baker in the house” for unknown bogey in the star system and “Baker in the kitchen” for unknown bogey in the inner system nearing Clarion. Baker being the original code word used by the Royal Marines and it remains a feature of their institutional culture.*

Vampire: a code word for a hidden enemy ship possibly using stealth or ion window technology to avoid detection.

ZULU, ZULU, ZULU: Invasion imminent. This code phrase is never used in training or wargames. It is reserved for purely real threats. *Note: I stole this from a popular science fiction author, David Weber.*

PAN GAL PHONETIC ALPHABET

ALPHABET	CODE WORD
A	Alpha / Alfa
B	Bravo
C	Charlie
D	Delta
E	Echo
F	Foxtrot
G	Groth
H	Hotel
I	India
J	Juliet
K	Kilo
L	Lima
M	Mike
N	Nexus
O	Oscar/ Osaka
P	Papa
Q	Quivera
R	Rupert
S	Sierra
T	Tango
U	Uniform
V	Victor
W	Whiskey
X	Xray
Y	Yast
Z	Zulu

tia organizations until just after the Sathar War (SW1 is referred to as the Sathar War until SW2). The Interstellar Subspace Communication Commission continued to use the older alphabet with civilian based radio transmissions.

After the formation of the UPF and Spacefleet in the aftermath of the Sathar War, and in conjunction with the growing popularity of the Pan Gal trade language which was specifically developed for ease of use by three of the dominant Frontier species, Babalor, the lead dralosite linguist who worked on the Pan Gal trade language, developed the Pan Gal Phonetic Alphabet for radio transmissions. It was essentially the same as the Pan Gal alphabet but he made a few modifications to appeal to the military like dropping Beta for Bravo. It was immediately adopted by Spacefleet and the Interstellar Subspace Communica-

tion Commission. It, as well as the Pan Gal trade language, were required for all radio communications in the Frontier whether military or civilian.

Author’s Note: *Despite the fact that I’m a fan of Earth being in the setting regardless of what might be printed in the Basic Game rule book, I have modified the standard NATO Phonetic Alphabet changing words that seemed Earth-centric for words out of the Frontier setting like Quebec and Rome for Quivera and Rupert. Other words like Golf, November, and Oscar were changed to Groth, Nexus, and Osaka for flavor, although Oscar is only changed to Osaka after the Rim is contacted, if it even exists in your version of the setting. I have no doubt that my changes might actually undo some of the clarity of the NATO alphabet, but this is just in the interest of a little setting fluff.*



IMAGE BY DON FREEMAN

HOW DOES IT WORK?

YAZIRIAN GLIDING PLUS A LOOK AT THE DIVING AND FALLING RULES

BY TOM STEPHENS & TOM VERREULT, JR. with JOE CABADAS

Referee: OK. You've reached the top of the spire. The ground below you is 60 meters down. Behind you, you hear the sounds of the Streel guards coming up the ladder.

Player One: I've got my gyrojet pistol...

Referee: And you're down to one shot. There were about five guards.

Player One: No problem. I'm a Yazirian. I'll just spread my wings and fly down.

Referee: Your character doesn't have wings and you don't fly...

Player One: Whatever. I'll glide down then.

Referee (after checking the chart in the Alpha Dawn Advanced Game rulebook): Well, it says here that in a 1 G gravity you can glide 10 meters. So, I guess you fall the remaining 50 meters...

Player One: No way! Do birds just fall all of a sudden when they glide?

Player Two: Hey, I saw this video on YouTube about guys in wingsuits. One even jumped out of an airplane and glided down to the ground without a parachute. Let me look it up on my phone...

Referee: Look, the rulebook clearly states that in one turn, a Yazirian can glide down 10 meters. That's 10 meters down and 10 meters forward. That's it. And then you've got to land.

Player One: Where does it say that?

Player Two: Ah, here's the video. (The player holds up his smart phone, but tilts it where neither the referee or other player can see it properly). See that guy go?

Player One: The rules don't say I have to land. And, how long does it take my character to drop 10 meters? Six seconds is a long time.

Referee (scratching his head): These are the rules...

GLIDING

The rules on the subject of Yazirian gliding are a bit vague. Really, how far can a Yazirian glide during a turn? What happens during a steep dive? What if the Yazirian wants to drop more distance faster?

Can they turn? And what happens if the Yaz wants to make an attack while gliding? To glide, he must keep his arms and legs stretched out, but to aim a pistol or throw a weapon will cause a loss of glide surface, meaning the Yaz would plummet faster.

This article will try to hash this subject out. It is based upon **an old discussion on the StarFrontiers.us website.**

According to the Alpha Dawn rules, Yazirians can glide short distances using the membranes along their sides. Starting at no less than 10 meters above the ground, the character can glide 1 meter for every meter he is above the ground.

The maximum distance that the Yazirian can glide during a turn depends on the gravity of the planet, as shown in the Yazirian Gliding Table 1. Yazirians cannot glide on planets with gravities below 0.6 G or above 1 G.

It actually takes a Yazirian about 3 seconds to glide from a height of 10 meters to the ground in 1.0 G gravity.

At the end of movement, the Yazirian character may be able to make a grappling/tackle attack at a target below or use a one-handed melee weapon—such as a knife or shock gloves. In such a case, the character would receive the +20 percent modifier for attacking from above, but would suffer a -10 percent modifier for “running.” In the end, the character would have a +10 per-

cent modifier.

Yazirian Gliding Table 2 provides some statistics about how far a Yazirian can travel horizontally, how far they will drop, the minimum time it takes to travel that distance, etc.

If the Yazirian keeps gliding for a full 6-second combat turn (in a 1.0 G environment), the character would have traveled 22 meters horizontally and would have dropped 18 meters. At this point, a Yazirian does not need to have landed and could keep gliding—if there is room—or depending upon the distance to the surface; the character could elect to drop down from the remaining height. This would be treated like a fall, but treat the first 20 meters as if the character jumped. (See the information below about “Falling” and “Jumping” for more information).

At the end of two combat turns in 1.0 G, a gliding Yazirian will have dropped 50 meters but can glide at about 90 meters horizontally in a straight line. For longer glides, assume the character can travel 2 meters horizontally for every meter dropped vertically.

Unless the character uses some sort of parachute or other device to slow down at the end of a long glide on planets with gravities of 0.9 or 1.0, he must make a Dexterity check or take 1d10 points of damage.

Decreasing the atmospheric pressure would also do the following: it would increase the height and time needed for a Yazirian to achieve a sustainable glide and increase the terminal velocity and landing speed.

A gliding Yazirian can turn, make dodging rolls, could try to throw objects such as a Zamira (a traditional Yazirian weapon) or

YAZIRIAN GLIDING TABLE 1

GRAVITY	MAX. GLIDE
0.6 G	150 meters
0.7 G	100 meters
0.8 G	50 meters
0.9 G	25 meters
1.0 G	10 meters

YAZIRIAN GLIDING TABLE 2

GRAVITY	MINIMUM VERTICAL DISTANCE	HORIZONTAL DISTANCE AT VERTICAL MIN.	MINIMUM TIME	TOTAL VELOCITY	“LANDING” VELOCITY	GLIDE RATIO (H TO V)
1.0	49.85 m	87.28 m	9.64 s	10.93 m/s	6.8 m/s	2.12
0.9	49.68 m	87.48 m	10.16 s	10.37 m/s	6.45 m/s	2.12
0.8	45.45 m	87.67 m	10.77 s	9.78 m/s	6.08 m/s	2.12
0.7	44.09 m	77.16 m	10.21 s	9.18 m/s	5.73 m/s	2.12
0.6	36.52 m	62.54 m	9.07 s	8.46 m/s	5.33 m/s	2.12

• m = meters
• s = seconds

• m/s = meters per second
• h to v = horizontal to vertical distance.



catch a Zamira coming their way. However, a character would suffer a -20 modifier for “running” when attacking or trying to catch an object; he would also plunge an additional 10 meters before regaining his glide path. If such action causes the Yazirian to hit the surface or another intervening object, such as a tree limb, ledge, etc. then the character would take falling damage.

If the referee allows the use of the optional, fan-created character race known as the Arboreans, consider their gliding ability to be similar—if not better than—the Yazirians.

SPECIAL SITUATIONS

What follows is a bit of a recap of the Alpha Dawn rules concerning falling and jumping, but it also looks at diving into water.

Characters tend to get themselves into all manner of odd situations, some of which are covered here. If something occurs in game that isn’t covered by these rules, feel free to make things up as you go, using these rules as general guides.

FALLING

Characters who fall from buildings, ledges, or other heights suffer 1d5 points of dam-

age plus 1 point for every meter they fall. For example, a character that falls 10 meters suffers 1d5 + 10 points of damage. If a character suffers 15 or more points of damage in a fall, he has sprained a leg. His movement speed is reduced by half.

If a character suffers 25 or more points of damage, he has broken a bone or torn a muscle. The player must roll 1d10; on a 1-8, the character has injured a leg, on a 9 or 10, he injured an arm. A character with a broken leg cannot move until the leg is splinted, and then moves at half speed. A broken arm cannot be used. Dralasites can spend 10 minutes absorbing the old limb and grow a new one; this does not heal the falling damage but does remove any movement penalties.

JUMPING DOWN

A character can jump down 5 meters without being hurt. If the character jumps more than 5 meters, he will suffer injuries the same as if he had fallen, but the distance is reduced by 5 meters.

Example: *Lklekt the Vrusk jumps from a jetcopter that is hovering 15 meters above the ground. He will suffer 1d5+10 points of damage, the same as if he had fallen 10 meters.*

Optional: Humma characters, due to their superior hopping ability, can safely jump down 15 meters without being injured. If the Humma jumps down more than 15 meters, it will suffer injuries the same as if in a fall, but the distance is reduced by 15 meters.

DIVING/JUMPING INTO WATER

Jumping into water can be dangerous. If a character hits the water horizontally—also called a “pancake” landing—from more than 5 meters, it would be like hitting the ground. Similarly, a character who randomly falls into the water would take falling damage.

For example, a character falling 6 meters and lands on the water horizontally would suffer 1d5 + 1 points of damage (the first 5 meters will not count). An untrained character can jump or dive into the water from a distance of 10 meters without taking damage.

Unless a Dralasite takes the time to form an air pocket in its body before entering the water (see swimming in the rules), it will not float. It can swim but will drown if knocked unconscious. Because Vrusk have rather large bodies, they must make a Dexterity check to properly line up for a dive; otherwise, they will take half falling damage (roll any damage and divide the result by 2).

Satharoids—Sathar and S’sessu—have worm-like, hydrostatically hardened bodies that make them superior at diving. They have double the safe diving distance—up to 20 meters—before taking falling damage.

Humma have double the safe diving distance—up to 20 meters—before taking damage, while Yazirians triple this distance to 30 meters due to their gliding ability. For each meter afterward, a character would take 1 point of damage.

Characters with the Swimming skill can double their safe diving/jumping distance. Players can also use experience points to increase their characters’ safe diving distances by 2 meters per experience point. For example, Humma who have the Swimming skill can now safely jump down 40 meters into water; Yazirians can glide and then dive down 60 meters without suffering damage.

These rules will hopefully help game masters and players figure out how Yazirians can glide and conduct some aerial maneuvers, while also taking into account any falling damage that may result.



INTRODUCTION TO TRAVELLER: CHARACTER SERVICE BRANCHES

BY RICHARD "SHADOW SHACK" ROSE

Traveller (intentionally and uniquely spelled with an extra L) is a science fiction role-playing game, perhaps the first of the sci-fi RPGs. It debuted way back in the merry old year of 1977, about the same time a revolutionary new sci-fi film hit the theaters. Whether one subscribes to coincidence or not, that's two great sci-fi hits that were unleashed upon an unknowing world. In Traveller, characters journey between various star systems while participating in the usual science fiction activities such as exploration, ground and space battles, and (hopefully profitable) commerce.

Unlike most games where players start with fresh newbie characters and increase their wealth, power, and skill levels as they make their way through a campaign, in Traveller you start off with a seasoned character that has either been dismissed or retired from a service area to begin their new "career" of adventuring. The process

of character generation (A.K.A. "char-gen") is a random determination of skills learned over the course of four-year terms of service. Once generating your characteristics (Strength, Dexterity, Endurance, Intelligence, Education, and Social Standing), characters can choose from Navy (the interstellar space fleet), Marines (ship-based troops), Army (ground-based troops), Scouts (exploration, survey, & interstellar "pony express"), Merchants (commercial traders), and "Other" (which, despite offering a handful of shady skills, really isn't a criminal career).

Each service branch has an Enlistment Roll to be accepted, if your character gets rejected then he or she subjects him/herself to "the Draft" where the character gets selected into a random branch (which means you have a one in six chance of getting into the branch that just rejected you). Once enlisted, you begin rolling on various

tables to determine what skill(s) the character learns over the course of a four-year term. These tables include Personal Development (which offers increased Characteristics along with the occasional basic skill or two), Service Skills (the meat & potato skills of each branch), and Advanced Education (more "elite" skills). Any character with an Education score of 8 or higher is also eligible to roll on the second Advanced Education table (which offers more "elite" skills).

All branches have a Survival roll which, as is the nature of the term, defines if your character makes it through the term of service. Yes, your character can actually die during the generation process ... however, there is an optional rule that allows your character to survive at a reduced term and subsequent dismissal from the service.

The Merchants and all three "military" branches have a Commission roll (which

advances you to the first rank) and Promotion rolls. Finally, there is a Reenlistment roll that allows you to continue serving a sequential four-year term. The first term nets you two skills along with some automatic skills that come with most of the branches upon enlistment and/or promotion. You get a bonus skill when you are commissioned to your first rank, and a bonus skill comes with each promotion roll afterwards.

Typically, after seven terms, mandatory retirement kicks in unless you roll a natural/unadjusted 12 on 2d6 for continued service into 8th (and possibly 9th, 10th, and further terms with natural rolls of 12 each time). Anyone retiring or forced out of service after 5 terms is eligible for an annual pension, the amount of which increases with each term served after five. Upon completion of service, characters Muster Out and receive cash and/or beneficial items.

With that in mind, let's take a look at each of the six service branches you can start your Traveller experience with.

NAVY

Much like Paladins from D&D, this is the only career path where your Social Standing (SS) score is not a dump stat. It's the only career that offers improvement in that score via the Personal Development tables, and it's also something that gets increased with higher rank and even when mustering out.

Your character will enjoy a broad variety of skills (including Jack of Trades as a possibility for any Navy character) without being much of a combatant on the ground—but that's what Army & Marine NPCs are for anyways; your job is simply to get them there. This is the toughest career to advance in, with the highest Commission roll followed by a high Promotion roll—the first of which is modified to your advantage if your SS score isn't a dump stat. Essentially you have Dukes & Counts leading Knights & Barons in the Navy, or at the very least your lowly peasant that enlists into the Navy can retire as a noble.

Aside from SS, higher scores in INT and EDU offer positive modifiers (both will help with the enlistment roll, INT helps your survival roll, and EDU helps with promotion rolls). As mentioned earlier, upon attaining the highest two ranks, a Navy character enjoys an increased SS

score with each promotion.

ARMY & MARINE

Both the Army & Marine services are carbon-copy careers offering a decent array of combat-oriented skills, with the difference being the Army is ground based while the Marines are ship based. Both branches share identical Advanced Education (AE) & AE2 tables, the Personal Development tables share five skills and the Service tables share four skills. Neither branch offers Jack of Trades so you'll be relying solely on the skills you are eligible to receive. Both services offer Gun Combat twice on the Service Table so you have a fair shot at higher experience with a firearm, not to mention both branches offer combat skills upon enlistment and upon attaining Rank-1.

The "significant" difference between the two careers? One gives the off chance of Vacc Suit training along with additional Blade training while the other offers Air/Raft & Forward Observer. For all the similarities, the Marine career is much more stingy about skills with the higher Commission & Promotion rolls. Pick Army between the two, if you really want to enjoy the Marine life you can always learn Vacc Suit at zero level any time in the future and improve it to lv-1 with the Experience rule.

Marines benefit from higher STR, END, INT, & SS scores with STR & INT having an influence on enlistment, END for survival, EDU for commission, and SS for promotions. Army characters benefit from higher DEX, END, & EDU scores, with DEX & END offering positive modifiers on enlistment, EDU for survival and promotions, and END for commission. Both branches receive a weapon skill with enlistment and another upon commission.

"OTHER"

This branch really shouldn't be a choice. If you get it through the draft, pray for a bad survival roll so you can develop another character that actually earns some more skills over a similar timeframe. There are no automatic skills upon enlistment and/or promotion (as there is no commission or promotion sequence in this service), just the two skills upon enlistment/draft, and one per term afterwards. That yields about half of what you can get in the oth-

er careers.

The Advanced Education 2 table borders on being useless, repeating half of the skills from the first AE table (the other five careers feature repetition as well but not to the same extent, one skill each save for merchants that share two skills between the AE tables). The only benefit here is the Jack of Trades skill on the AE2 table.

For a career path that is strenuously defined as "not necessarily criminal" it sure applies itself as a career that lacks the "right side of the tracks" possibilities. Mustering Out is your only shot at something decent: a six-figure cash option, assuming you learned Gambling somewhere along your non-existent career — but even that gets nullified by the possibility of "nothing" on the Benefits side. Even the Personal Development table features a negative SS "opportunity," but remember...this isn't a criminal career (wink wink nudge nudge).

The bottom line here is "Other" becomes best served as an NPC in the party, because even Classic D&D level:1 Thieves have better chances with their low 10-15% Thief skills. The advantage to this class comes in the way of low enlistment, survival, and reenlistment rolls. Like I said, pray for a bad survival roll.

"Other" characters only see a positive modifier to survival with a higher INT score, so even more prayer is needed if you have such a boost.

SCOUT

This should be a player's first choice if the player is seeking a generous assortment of varying skill areas. Everything that makes "Other" undesirable is antonymous with the Scout service. Two skills per term, guaranteed. While the remaining non-Other classes have a chance at more skills, that all hinges on your commission & promotion rolls. The best part about the Scout career is the wide variety of skills you can learn, combining those found in Navy, Marine, and Army not to mention the coveted Jack of Trades skill appears on three out of four tables.

Naturally, with such perks it comes with some quirks: it's the toughest career for survival rolls, although this is offset by the lowest reenlistment roll. Also noteworthy, you have a straight up fair shot at starting the game with a ship (versus requiring the high rank Merchants need to acquire a ship from Mustering Out).

Scouts receive positive modifiers to the enlistment roll with higher STR & INT scores and a boost to survival with a higher END score. All scout characters receive the Pilot skill upon enlistment.

MERCHANT

If players fail the enlistment for Scouts, then this career should be the runner up for a well-rounded set of skills. Low survival rolls complimented by a low reenlistment roll means you can stick with this career for a while.

Like the Scout service, you get the potential for a well-rounded skill set of both “space” and “ground” skills (versus “space-only” Navy and “ground only” Army and Marine skills), along with Jack of Trades and a pair of shady “Other” skills, all of which appear on the standard tables that any and all characters are eligible to roll on. Voila, the “Other” career choice earns yet another reason to be avoided.

If you fare well on the promotions (which require the highest roll of all services, following the lowest Commission roll of all branches) you have a shot at starting the game with a ship, although you’ll most likely have a lifetime of monthly payments and you’ll definitely need to hire a few crew members if the other players don’t get the rest of the crew skills needed to operate the craft.

Merchants benefit with high STR and INT scores, both of which will positively influence enlistment while INT by itself influences survival, commission, and promotion rolls. Merchant characters receive the Pilot skill upon attaining the rank of First Officer (fourth promotion out of a possible five).

JACK OF TRADES SKILL

Readers may note the frequent mention of “Jack of Trades” as this is a valuable skill that can be had in basic chargin. In a nutshell, if you don’t have the desired skill for a task, the Jack of Trades skill can shine as it gives your character a chance of performing that skill at a zero-level proficiency. It’s a generous offset to the possibility of short careers and/or minimal skills if you can obtain it.

And that’s the skinny on Traveller chargin, choose your career path, and hopefully after surviving the experience...Happy Travelling!



ART BY SCOTT MULDER

THE VOLTRUNAIN BOWLER

BY ERIC WINSOR

Our time in Theseus was great but our schedule is tight, so we had to push on to meet our date in Timeon. Unfortunately, we could not get a direct ship to Timeon from Theseus; we had to layover in New Streel and sign on to a new ship. This created a ten-day delay that caused our stay in Theseus to be so tight. The next ship heading from Theseus to Timeon direct was twenty-six days out so it was better to take the layover and reach Timeon on our scheduled date than take the direct flight— with no layover in New Streel just passing through—and be late. This, however, put us whiling away our time in space dock for a few days. A few days is all it seems are needed for Dwain to find the unexpected.

A GAME OF STACKS

The station we parked in, orbiting Corppo, is not very large so there was not much to do. Dwain, Tik, and I spent our time reading or playing games in the spacer lounge. Tik did more reading than game playing. Dwain did more playing than reading. Dwain, Tik, and I are not prone to gambling. None of us endorse it so we sat out of all the gambling games and stuck to the various other games of strategy, adventure, and amusement that were available in the table displays.

The last day on station we ate breakfast in the lounge and a new group of spacers arrived, two yazirians and a dralasite. The dralasite had a Voltturnian bowler in tow and Dwain took immediate notice. When I was a hanger, I remember reading over the reports of Commander Jameson's expedition to Voltturnus and seeing an image of his team being attacked by a pack of bowlers. This dralasite had a young bowler on a leash and it crawled up onto the dralasite's back and perched on its shoulder as it were. They were a rough looking bunch, but Dwain could not resist and headed straight over to greet the dralasite and asked to meet its pet. We left Dwain playing with the bowler pup while we checked our bags onto our next ship to Timeon.

We meet our ship captain and then rushed back to pick up Dwain. We got back just as Dwain was leaving the lounge

with the bowler pup in his arms. The dralasite was sitting at a game table with its two yazirian companions on either side of him. The dralasite was obviously a bit shocked by the change of events and was in a heated argument with the two yazirians. Dwain was all smiles and quickly but not hurriedly heading to find us and share his fortune. Dwain's first words to us when we meet at the door to the lounge was, "Look what I just won off that one-eyed dralasite over there!"

The yazirian captain of our ship was with us having warned us that the crew of the ship in the berth next to us were rumored to be pirates. Tik and I began to discuss with Dwain about leaving the bowler pup when the dralasite stood up and headed toward us. Our captain stood in front of us and threw his cloak open to reveal his Clan Gasar symbol. Immediately the two yazirian companions pushed the dralasite back down into the seat. The captain halted Tik and I from arguing with a firm statement that Dwain had won the bowler fair and square. He then informed us that we needed to push out as soon as possible to keep our schedule to Timeon.

Hours later while pushing out, the captain delivered a message to us from the three spacers Dwain had meet in the lounge. They were crew of the ship berthed next to us on the station. The dralasite spoke flanked by the two yazirians with hands firmly on each shoulder of the dralasite. The dralasite said, "Well played human. Your hand was skillfully played to win just pup with your third stack while sacrificing the other four stacks. I accept the greater wins from the other stacks. The pup likes roots of all types, preferably with a little soil still on them, or even offered buried so he can dig them up. Be warned, he will soon grow too big to handle alone and will need a pack of his own kind to socialize with or he will become very mean." The yazirians had closed the message with text over their heads that they were glad to be rid of the beast.

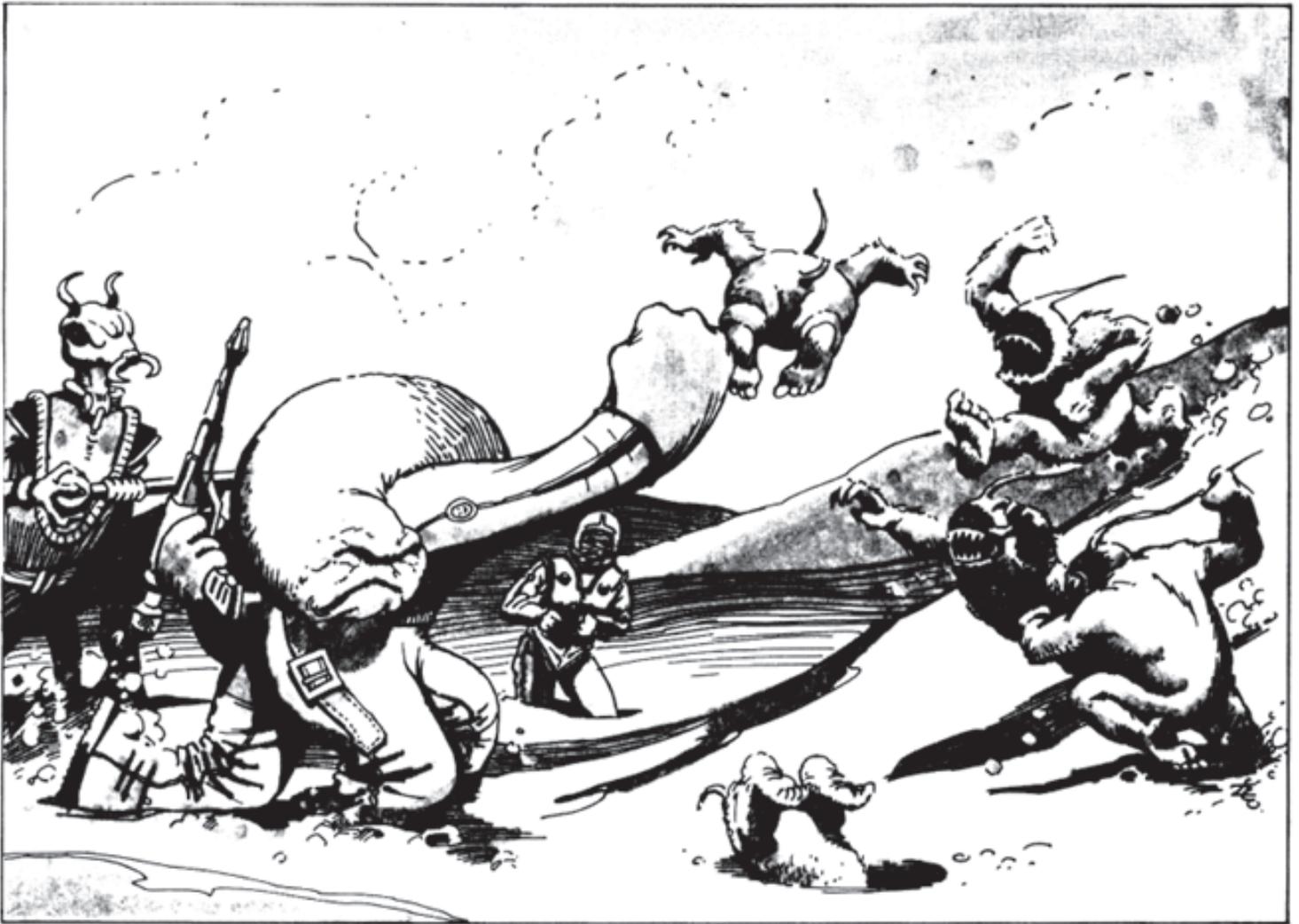
Tik and I then questioned Dwain, and he reported that he had placed his three strongest tiles in his third stack of three tiles, his next two strongest tiles in the stack of four tiles, the following five

strongest tiles in the stack of five tiles, and then the weakest tile in the single tile stack and the other two tiles in the two tile stack. This way, as the bets played out, it appeared that Dwain had a strong hand worthy of negotiating a non-credit bet but not so strong that anyone would not take on his offer. When the tiles were laid out, five, four, three, two, and one, Dwain made a moderate bet on his stack of five and won. The dralasite commented that it was poor strategy to play too many good tiles too early. Dwain made the same bet for his stack of four but had his two better tiles on the top and they were beaten out in the draw by the dralasite's last two draws so the stack was a bust causing the bet pool to ride. Then Dwain offered that if the bet pool was so high for a third stack that he would match the pool if the dralasite bet the pup. The dralasite took the bet and all three draws from Dwain beat the dralasite. Dwain then used his winnings to cover the fourth stack and lost. Then Dwain bet what he felt was a proper price for the pup for the fifth stack and lost as he expected. Dwain had used the game of stacks to purchase the pup very wisely. This was a really well-played game of stacks.

MANAGING BOWZER

I'm transmitting this article to the Frontier Explorer while we decelerate into Lossend. Dwain has named the bowler pup Bowzer because the creature has a very low voice and belts out BOW and BAH a lot. Off his leash he runs bipedal quite swiftly. Fortunately, he does not show the coordination to climb ladders or the sapience to work elevator buttons or we would not have been able to keep him on the passenger deck during the journey. Watching him thrash about in zero-g while the ship turned around after dropping out of the Void was a real treat. Bowzer ran his little legs in midair and pumped his arms in frantic unison trying to run himself nowhere. Presumably if he were able to see his environment, he may have been smart enough to just relax and enjoy the floating sensation.

Feeding Bowzer has been a continuous affair. He is an omnivore, but heavily



slanted towards tubers. Tubers are not staple food on spacecraft. However, there are many starch-based foods in the human and vrusk diet, and we were able to bake some of these into solid bricks that Bowzer could eat. Lossend is a human colony world; we shall purchase a supply of potatoes when we get planetside as our net searches show that other Volturnian Bowlers in captivity elsewhere have done well on a diet of potatoes. We will have Bowzer with us everywhere we go on Lossend, so we need to have his needs meet.

Bowzer is strong and likes to wrestle. Dwain puts him in a seat opposite him at a table and grips him by one hand in a contest Dwain calls an arm wrestle. Bowzer is adept at this game but reverts to two hands which Dwain says is cheating. He is still quite blind being just a pup and so he feels his way about with his hands and picks up everything to examine it. We have to fight things out of his mouth and he always tests things by trying to bend and mangle them. I lost a good set

of camping utensils that he reshaped by hand while we were inventorying our supplies for safari on Lossend.

We have found that a good way to satisfy his wrestling urges without damage is to wrap him in a blanket. He rolls about for hours wrestling and twisting about in the blanket bellowing and bowing. He then drags the blanket with him about the cabin, wrestling inside it or pulling at it between periods of sleep or just lounging about. Net searches and studying tells us that bowlers on Volturnus run in packs of five to ten and follow similar periods of lazy activity with sudden bursts of energetic mayhem.

COMMANDER JAMESON'S FIRST BOWLER ENCOUNTER

I tracked down this image of Commander Jameson with five adult bowlers attacking him on a snowy mountain somewhere on Volturnus. This is the image I remem-

ber as a hanger. Whether this is before the battle of Volkos or not I do not know. That fact that there is snow leads me to believe that it is not close to the hot regions around Volkos. According to the Galactipedia article I found this image in, Commander Jameson was exploring on foot with his team when one of the party set off a seismic charge to take underground images and this alerted the small pack of bowlers which immediately rushed the expedition team.

Jameson's expedition in the image above was four beings: a human, a vrusk, a yazirian, and a dralasite. Presumably Jameson is the human in the image and the yazirian was capturing the image. The small pack of five adult bowlers rushed down upon the expedition to protect the young and females further uphill from them. The first two bowlers were dispatched by the dralasite before it was wrestled to the ground by two others. The fifth bowler was incapacitated by the vrusk with her electrostunner. While the

GM NOTES

Voltrunan Bowlers are an abandoned and forgotten genetic project of the Eorna. They were intended to be mass ground forces against the Sathar but the Eorna gave up on their development as they never evolved to be properly organized or controllable. They also have a docile side to them that made them not reactionary enough to be used for battle. They may remain passive despite conflict around them and just move away to stay out of the fight. Then again, they may go berserk and fight everything but themselves. Hence the Eorna just left them isolated in some high mountain habitat as a project to tweak and perfect later.

Streel is attempting to pick up where the Eorna left off and weaponize the bowlers as mass horde cannon fodder forces. So far, they have succeeded in training them to chase a small robot that is controlled to direct the pack's advance and aggression with loud noises.

VOLTRUNAIN BOWLER

Type: Omnivore

Size: Medium, 1m/40kg

Number: 5-25

Move: Medium, 70 m/turn

IM/RS: 5/50

Stamina: 55

Attack: 55

Damage: 2d10

Special Attack:

Special Defense: Battle Rage (+20 attack, 20% to rage)

Native World: Voltrunus, Zebulon

dralasite tangled fiercely with the two wrestling it, the human dropped a tangle upon the bowler that belted in his direction. The first bowler then recovered and leapt upon the dralasite and began biting viciously. The dralasite quickly began taking serious bite wounds and the vrusk was obliged to fire indiscriminately with her electrostunner into the tangle of bodies. The yazirian began ripping bowlers loose while the human began tossing doze grenades uphill toward the advancing second wave of female bowlers. As soon as the dralasite was freed of the last stunned bowler, the vrusk and yazirian dragged the stunned dralasite downhill in retreat while the human covered their retreat.

This is the only recorded encounter with bowlers in the wild on Voltunus. All other records we could dig up are of bowlers which have been introduced into the Frontier.

AN ODD PET OR A JUNK YARD DOG

We found a number of media articles in the Port Loren Daily Chronicle about the growing popularity of owning bowlers as pets in the city. The articles state that bowlers are new to the Frontier and there is a growing problem with managing them when they get older. They grow from a few pounds when pups, mature to full size in about five years, then live another ten. But once full grown, many

owners cannot manage them anymore and discard them or euthanize them. This has many social problems and raised questions about humane treatment in the media. The pet is new, not a traditional pet, has hands and can get into things, and is maybe not properly suited to be a pet. However, the articles also question the source of these pets on Gran Quivera as all investigations into purchases turn up legal sales through layers of licensed dealers but no ultimate sources. There are currently political players who are pressing to restrict, or outright ban, the possession and sale of bowlers because they are not a natural creature of Voltunus but appear to be yet another Eorna genetic creation. No enquiries to Eorna government officials have been answered.

We also found a few trade journal reports about bowlers being utilized on Pale by an animal security firm which appears to be a subsidiary of Streel. The company has been breeding and raising packs of bowlers to serve as guards for customers who distrust the use of robotic guards due to the potential for robot guards to be hacked and the rising fear of robots with Mechanon imposters in their ranks.

Dwain and I are a bit alarmed with the reports we have read about this animal and have never encountered it before so we will be raising Bowzer very conscientiously and following the Frontier developments with bowlers very carefully. We are strongly against creature abuse at the JHF.



ART BY ARRON O'BRIAN

CHARGEN!

BY RICHARD "SHADOW SHACK" ROSE

Editor's Note: This little walk down memory lane provides a small introduction to the Traveller game as well as a couple of NPCs and a small ship you could drop into your game.

I recently acquired some of the LBBs (Little Black Books, as opposed to D&D's little brown books) having last played Traveller in the mid 80's. I never GM'd the game, having never owned any of the actual rules until now (Fun Fact: the Starter Set is currently available at DrivethruRPG, what are you waiting for?!?). I also found my old character sheets and ship, I had a seven term Scout named Torc Raven VII (because, naturally Torc Ravens one through six died during character generation AKA "chargen") and he got the scout ship from mustering out. It brought back memories of my childhood, which I will now share with you. Cue the John Williams score, here's my opening crawl:

TRAVELLER

EPISODE I CHARGEN!

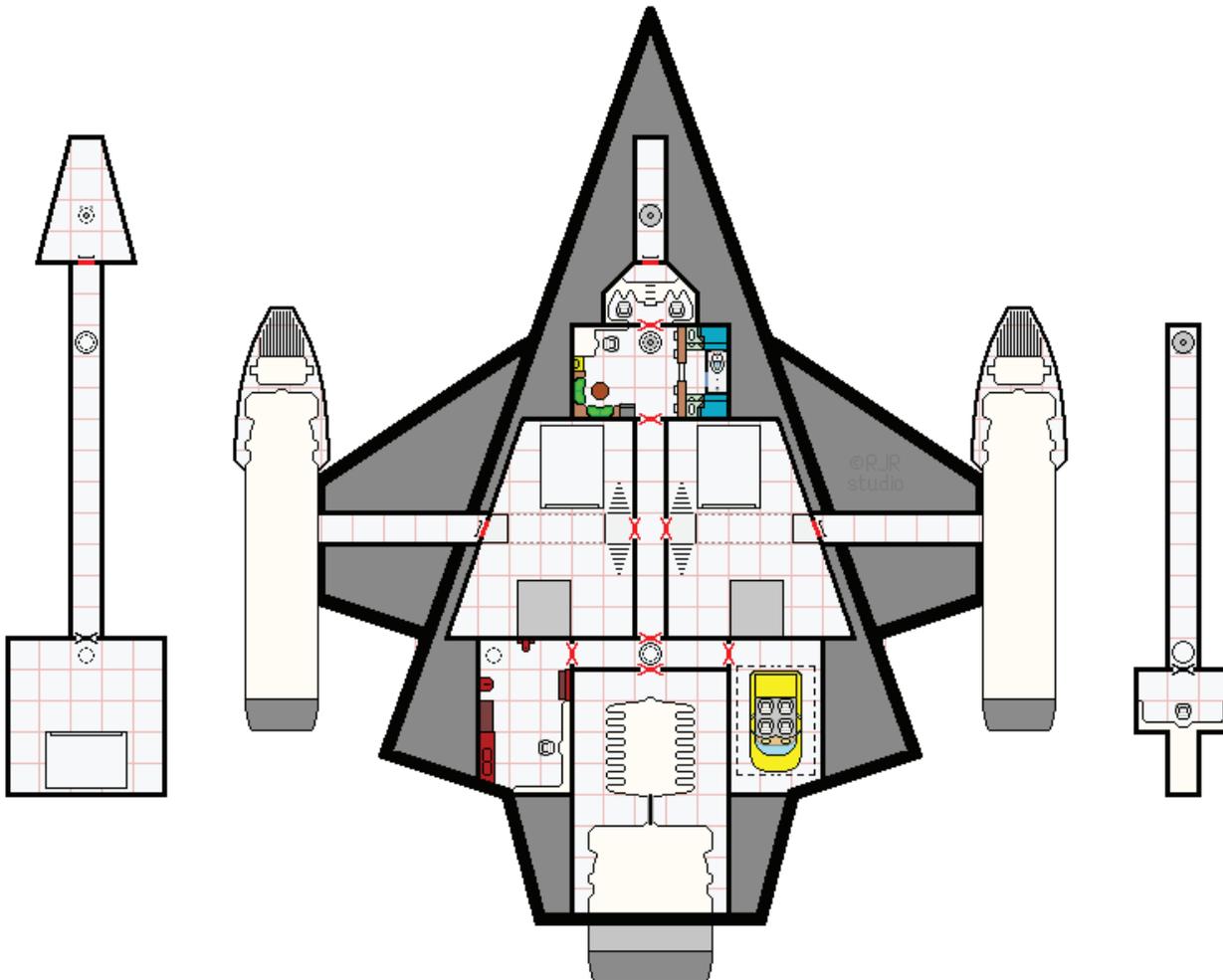
Torc Raven VII survives seven terms of the Imperial Scout Service, the first in his lineage to retire and go on to become an adventurer. All six of his forefathers died during their various terms of service. He musters out with a Type S Scout/Courier and begins to explore the spaceways.

He soon meets Diana Steele, a retired six term merchant trying to make her way with a Free Trader that still has 20 years worth of pay-

ments remaining. The two pool their resources, sell the Trader, and use the credit equity to upgrade the free & clearly owned Courier at a Tech:15 shipyard.

The SS Nomad is now a 150 ton Merchant/Courier, a redesigned Seeker conversion boasting outboard maneuver drive nacelles. With the improved performance, fuel, and cargo capacity, the duo find themselves making their way through the galaxy as tramp merchants....

The camera pans down through open space and we see a wedge-shaped craft with outboard nacelles accelerating away. A larger craft, cylindrical in shape with squared nacelles extending from its stern, is in pursuit.



ART BY RICHARD ROSE

SS NOMAD

150 TON MERCHANT/COURIER

Power Plant: 4

Maneuver Drive: 4 (4G)

Jump Drive: 2 (Jump-2)

Fuel: 51 tons

Cargo: 35 tons (2 x 15 ton port & starboard holds + 5 ton lower hold)

Bridge: pilot & navigator stations

Crew: pilot, engineer, navigator, 2 gunners

Crew Accommodations: Four bunks in the common area

Ship's Vehicles: 4 ton bay (air/raft)

Computer: Model/2 bis

Weapons: triple pulse laser turret

Misc: streamlined, fuel scoops & on-board purification

Inside the Nomad's bridge we see Torc and Diana frantically engaging the vari-

ous controls. Diana yells over her shoulder "Babe, want me on the turret now?!" To which Torc shouts a response, "Forget it, we don't stand a chance against that corsair's particle accelerators! The good news is they dropped their tanks. We might not out accelerate them but with their lack of remaining fuel we can definitely outjump them!" Diana responds, "We're two parsecs away from Regina, I'll start generating the course!"

TORC RAVEN VII

8A9687

Human male

Age: 48, 7 term Scout

Skills: Pilot-3, Submachinegun-2, Gunnery-1, Laser Carbine-1, Mechanical-1, Electronics-1, Air/Raft-1, Computer-1, Engineering-1, Vacc Suit-1

Equipment: Cloth w/Reflec Vest, SMG, 2 magazines; half ownership of SS Nomad, 8000Cr annual pension

DIANA STEELE

89898A

Human female

Age: 44, 6 term Merchant, rank 4

Skills: Gunnery-3, Bribery-2, Revolver-2, Dagger-1, Streetwise-1, Computer-1, Navigator-1, Pilot-1, Medic-1, Vacc Suit-1, Jack of Trades-1

Equipment: Cloth w/Reflec Vest, Revolver w/silencer, 3 reloads, dagger; half ownership of SS Nomad, 6000Cr annual pension

Following some hectic moments of evasion, the Nomad makes the jump and leaves the Gazelle class close escort behind, her pirate crew left to find another less willing victim. More importantly, the four tons of gemstones that Torc & Diana have been transporting can be easily sold at Regina for a hefty profit!



ART BY RICHARD ROSE

THINGS THAT GO BOOM!

GRENADES

BY JOSEPH CABADAS

Editor's Note: This is the first in a series of articles on various explosive devices, the second is later in the issue and covers missiles. Joe has been hard at work and the series is up to at least eight different parts so you can expect to see one or two of these articles in each of the upcoming issues of the *Frontier Explorer* for the next year or so.

In the *Star Frontiers* game, the grenade is defined as an explosive that is both a thrown and an area effect weapon.

Such small bombs date back to antiquity. Having developed gunpowder, the Chinese originated grenades circa 1,000 AD. Early grenades were often hollow metal containers filled with gunpowder. Grenadiers simply lit a fuse before tossing them at opponents.

Later, grenades came in use around the 15th century. Some of these archaic explosives resembled pomegranate. The word grenade originates from the French name for the fruit. The first self-igniting grenade, which was safe for the thrower, was invented by 1915 by English engineer William Mills (*The History of the Grenade*, Mary Bellis, <https://www.thoughtco.com/history-of-the-hand-grenade-1991668>).

Over time, militaries developed grenades that produced smoke and poison gases, and produced non-lethal stun grenades that produce a painfully loud noise, more than 170 decibels, and an intense flash of light, about 7 million candelas. Impromptu grenades include the Molotov cocktail—a breakable container filled with a flammable liquid with a lit rag as a crude fuse.

Modern grenades weigh about 2 pounds (0.9 kilograms). If the referee wants to prevent characters from hoisting around 100 grenades—which have no weight under the *Star Frontiers* rules—just say they weigh about 0.5 kilograms. With a bit of heft, multiple grenades would count against a character's carrying capacity.

AS A THROWN WEAPON

From the Expanded Game rulebook:

Grenades (and other thrown weapons) are treated as ranged weapons when determining hits and misses. A character's chance to hit his target with a grenade equals one-half of his Dexterity score plus 10 times Thrown Weapons skill level. The only other ranged weapon modifiers that apply to thrown weapons are range, movement, wrong hand, and wound modifiers. Other modifiers should be ignored.

Under the Alpha Dawn Expanded Game rules, grenades can be set to explode in one of two ways, either on contact or with its built-in timer, but there are other methods too, which will be explained farther on. When a character tosses a grenade, the player must declare at the beginning of the turn which method he is using.

If it is set to explode on contact, it has no chance to bounce around. If it is set on a timer, or it does not make a direct hit, the referee must use the Grenade Bounce

Table (*Zebulon's Guide*, remastered, p. 11).

RATE OF FIRE

All modern grenades, whether fired or thrown, have a rate of one per turn, except the small, sonic marble grenades, up to three of which can be tossed or fired per turn.

GRENADE BOUNCES

When a grenade misses its target, it still goes off somewhere. The player should roll 1d10 and check the Grenade Bounce Diagram to see which direction the grenade rolls. The distance the grenade bounces depends on how far it was thrown.

The grenade bounce table shows how far grenades will bounce if they are thrown from different ranges.

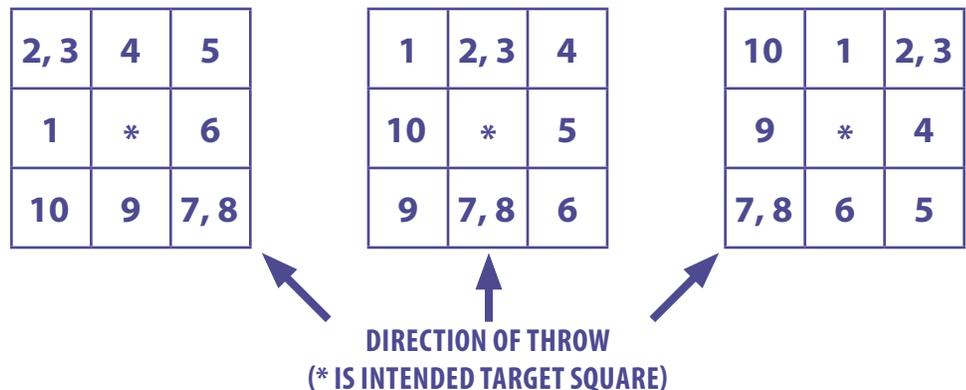
The actual distance that a grenade misses by depends on the situation and how far the grenade was thrown. The referee must use his discretion and check for any damage caused to anyone or anything in the blast area.

Grenades set to explode on contact will immediately go off. If the grenade is on a timer then it could bounce quite a distance. Again, the referee should check for damage caused to characters or objects other than the target in the blast area.

GRENADE EFFECTS AND BLAST RADIUS

Most grenades affect areas 6 meters in diameter (a 3-meter blast radius). Every living creature in the area is affected, but damage is rolled separately for each. This

GRENADE BOUNCE TABLE	
RANGE	BOUNCE
Short	2-5 meters
Medium	6-10 meters
Long	11-15 meters
Extreme	16-20+ meters



means a grenade can seriously injure one character and have very little impact on others.

Example: A fragmentation grenade explodes and catches three characters in its blast radius. The grenade causes 8d10 points of damage to each character. The first rolls 40 points, the second rolls 63 points and the third rolls only 17 points.

AVOIDANCE CHECKS

Characters can avoid or reduce the effects of some grenades by leaping or twisting away from the attack, or by resisting its effects. A character gets to make an avoidance roll with a d100. If the result is equal to or less than the indicated ability score, the character has avoided or resisted the attack.

A character who passes an avoidance

check against a fragmentation, incendiary, or tangler grenade must move 3 meters to get out of the blast area. If the character has nowhere to move to, he cannot try to avoid the blast. A character can try to avoid only one grenade per turn.

USING DOZE GRENADES

Filled with a sleeping gas, doze grenades will cause all creatures within the blast radius to fall asleep for 1d100 turns unless they pass a current Stamina check. A shot of Stimdose will revive a sleeping individual immediately. The doze gas is effective only on the turn that the grenade goes off.

Very large creatures usually cannot be knocked out with only one doze grenade. The number of doze grenades needed to knock out a creature is equal to its current

Stamina divided by 50, rounded down (but never less than one).

Example: an animal with a Stamina of 120 could be knocked out with two dozen grenades. If its Stamina was reduced to 90 by wounds, it potentially could be knocked out with one dozen grenade.

USING GAS AND OTHER EXOTIC GRENADES

Similar to dose grenades, poison gas and other exotic grenades (tangler, solid, etc.) will not necessarily affect huge creatures. For example, a poison grenade may not contain enough gas to affect the huge creature's respiratory system.

The number of gas grenades needed to possibly affect a creature is equal to its current Stamina when the grenade hits, divided by 50, rounded down but never less than one (*Zebulon's Guide, remastered, p. 11*).

Refer to the equipment section for the effects of each grenade.

USING DUSK AND NIGHTFALL GRENADES

A dusk grenade releases a dark, odorless gas that immediately spreads out to a five-meter radius, dimming out the entire area.

Only Yazirians, or other characters using some form of IR, starlight optics, or scanners can see normally. Otherwise, anyone shooting at targets inside the cloud (or characters inside the cloud firing out) suffer from a -10 percent to-hit modifier. Artificial light sources only work to one-third their normal range.

If a dusk grenade is used in a location that is already dark, add an additional -5 percent penalty to attackers firing into or out of the cloud.

A nightfall grenade acts similar to the dusk grenade, except it causes a nearly impenetrable darkness within a five-meter radius. Only by using IR vision, scanners, or radar can anyone "see" in or out of the cloud; otherwise characters suffer a -20 percent to-hit modifier. Artificial light sources only work to one-tenth their normal range within the nightfall cloud.

If used in an area that is already dark, add an additional -10 percent modifier to attackers firing in or out of the cloud.

The duration of dusk and nightfall grenades is two minutes (20 turns).

GRENADE AVOIDANCE TABLE

GRENADE TYPE	AVOIDANCE ROLL	RESULT
Albedo (if used offensively)	RS check	Half effect
Cryo	RS check	Half damage
Doze	Current STA	No effect
Dusk	—	—
Expanding Sphere	RS check	Half damage
Flash	—	—
Foam: Acid	STA check	Half damage
Foam: Chemical Defoliant	—	—
Foam: Dye	RS check	Half duration
Foam: Extinguish	—	—
Foam: Irritant	STA check	Half damage
Foam: Slick	—	—
Foam: Solid	STR/STA check	Reduce entrapment by half
Foam: Rad-Blast	—	—
Fragmentation	RS check	Half damage
Halon	RS check	Poison duration cut to 2 turns
Incendiary	RS check	Half damage
Infra-Grenade	—	—
Laser 5 SEU	RS check	Half damage
Laser 10 SEU	RS check	Half damage
Nightfall	—	—
Nullifier	RS check	Power drain reduced to 10-60%
Poison	STA check	No damage
Smoke	STA check	No ability penalties
Sonic: Boomer	RS check	Half damage
Sonic: Marble	RS check	Half damage
Sonic: Polyhedron	RS check	Half damage
Stun Grenade	STA check	No effect
Tangler Grenade	RS check	No effect
Void Grenade	RS check	Half damage

EFFECTS OF WIND ON GAS GRENADES

Breezes to fierce winds will greatly degrade the effects of dose, poison gas, dusk, nightfall and other gaseous grenades. The referee will need to decide what specifically will occur.

GRENADES AND VEHICLES

Some grenades, such as gas grenades, have no effect on vehicles and robots, though unprotected characters in the area still have to make their avoidance checks.

Whenever a vehicle is hit by gunfire, an exploding grenade—such as a fragmentation type—or a thrown explosive, the attacking character must roll on the Vehicle Damage Table (found in the Vehicle Combat section of the Expanded Game rulebook). The damage from the grenade is added to the result.

EFFECT OF INERTIA WALLS/SCREENS

Inertia screens and walls that are protecting an area rather than an individual character, object, robot, etc. will interfere with a grenade's path through the air, causing it to explode prematurely.

The **Inertia Wall** was introduced in Star Frontiersman issue 5, in an article by Bill Logan. Operating on the same principal as an inertia screen, it is designed to protect a larger number of characters. In the field, it would consist of two tall poles, linked together by heavy cables to a control unit and a type 1 parabattery. The 2-meter-tall poles can be set up to 10 meters apart.

These poles could even be set into the walls of a corridor.

When activated, the inertia wall will halt all inertia-based attacks coming from the direction that it protects against. It uses 2 SEUs per turn and each die of damage from an incoming attack would drain an additional 2 SEU.

Cost: 5,000 Credits.

Weight: 100 kilograms.

DETONATOR SYSTEMS

Editor's Note: the following section on Detonator systems is based off Larry Moore's article "Don't Tangle with the Tangler," in Star Frontiersman, Issue 5.

Most grenades are activated after "pulling the pin"—or pushing a button, turning a knob, etc. While the safety hammer (or similar apparatus) is held down, nothing happens. The user could then disarm the grenade by putting the pin back in place.

When the user releases the handle, however, the grenade is set and the charge will activate in 3-4 seconds, which is just enough time to hurl it away. This is the standard form of using a grenade, but there are others.

Detonation Buttons—These types of grenades use a two-button system to arm the grenade. These buttons must be pressed simultaneously and are set where they cannot be accidentally pressed at the same time. It will explode in 3-4 seconds after the buttons are released.

Impact—This type of grenade does not have identifiable buttons, handles, pins, or other external arming system. With tail fins to force a proper orientation when thrown, it will explode when its internal detonator detects a significant change in velocity—as in being thrown—followed by a sudden impact. Needless to say, this type of grenade is dangerous to accidentally drop.

Variable Timer—Using a small dial, often with a setting between 1-10, and a push button, variable timer grenades are set when the dial is turned to a countdown mark and the button pushed.

A setting of "1" is for one combat turn (six seconds) while the "10" setting is for 10 turns (1 minute). Once the button is pushed, the timer cannot be modified. A character with a demolitions skill might be able to disassemble a variable timer and deactivate it by spending a turn using a successful Defuse Charge skill check. But, when the timer expires, the grenade explodes.

Users often use variable timers to set impromptu charges to damage doors and the like.

Voice Command—Using an amplified microphone receiver, the voice command detonator has a small amount of electronic memory. The user presses a button to program a command word or phrase into the unit, then releases the button. From that point on, if the microphone detects the voice pattern speaking the command word, it will detonate.

The microphone sensor cannot detect a character's voice beyond 15 meters and environmental conditions—noise, high



A YAZIRIAN EQUIPPED WITH A DISC GRENADE BANDOLIER. IT ALLOWS THE YAZIRIAN +1 IM BONUS WHEN USING DISK GRENADES (OR ZAMIRAS) DUE TO ITS FAST-USE DESIGN. IT COSTS 20 CREDITS.

winds, etc.—may degrade that sensing range. There have been incidents of accidental detonation when these grenades are improperly stowed.

LOOKING AT VARIOUS GRENADES

The grenades listed in Zebulon's Guide are fairly easy to convert to the Alpha Dawn system. An optional rule is to give grenades some weight, at least 0.5 kilograms against a character's carrying capacity. Real world grenades actually weigh about 1 kilogram!

Other optional grenades have appeared in either previous issues of Frontier Explorer or, in the case of the **Yazirian Disc-Grenades**, in issue 5 of Star Frontiersman magazine. The disc-grenades have a longer thrown range.

ALBEDO GRENADE

Designed to reduce the effectiveness of lasers, the albedo grenade is oval shaped

and made of plastic with ports around its circumference. When it explodes, it jets out a cloud of smoke and lightweight plastic filaments with a reflective coating.

These filaments float slowly to the ground. Many colors of smoke are available. The smoke obscures the target while the filaments degrade laser beams.

Normally used as a defensive grenade, it is armed by the press of a button and will go off on impact. It will not cause damage to anyone, while the smoke cloud (which is nonhazardous) will take effect at the end of the combat turn. It has a 6-meter radius.

While in effect, the albedo cloud will reduce the damage of lasers passing through it by half. Also, anyone firing into or out of the cloud receives a -10 percent penalty to hit.

The duration of the albedo cloud is for 1d10 combat turns. There is a -1 round modification for wind speeds at 5 kilometers per hour (kph). Higher winds will cut the duration by one turn per 5 kph. So, if the wind is 10 kph, the duration would be 1d10-2 combat turns.

Using more than one grenade only increases the duration of the albedo effect; it does not reduce laser damage any further nor decrease aiming.

If the grenade is used offensively—i.e. thrown at an opponent—it will go off as normal and will degrade the enemy's line-of-sight and lasers firing in and out of the albedo cloud. An opponent can make an initial Reaction Speed check, which will trim the degrading effects by half. Of course, the opponent is free to move out of the cloud when it is his turn to move (*Albedo Grenade*, Chris Harper, *Star Frontiersman Issue 10*, pg. 15).

CRYO GRENADE

An exploding cryo grenade scatters sticky, freezing liquid (commonly liquid nitrogen) across everything in the blast radius. A cryo grenade causes 4d10 points of damage on the turn it explodes.

The freezing liquid sticks to the victim, causing an additional 1d10 points of damage on the second, third, and fourth turns after the explosion. A character that passes a Reaction Speed check takes only half damage. Anyone in a chillsuit or a space-suit takes no damage from a cryo grenade (<https://starfrontiers.fandom.com/wiki/Grenades>).

DOZE GRENADE

A doze grenade releases a cloud of fast-acting knockout gas. See the earlier description for more information.

DUSK GRENADE

The dusk grenade releases a dark, odorless gas that immediately spreads out to a five-meter radius, dimming out the entire area. See the earlier description for more information.

EXPANDING SPHERE GRENADE

Generating a fast-pulse, 6-meter-diameter inertia screen bubble, the expanding sphere grenade repulses everyone and everything away from the center of the pulse.

Characters caught in the blast radius will have whatever is in their hands knocked away—they can make a Reaction Speed check to hold on—while being thrown back 4-10 meters. Characters and objects will suffer an initial 5d10 damage from the blast. They could suffer more damage from striking other objects.

The expanding sphere grenade will cause double damage to any active inertia screens in the blast radius—with half the damage going through to the wearer—while doubling the repulsion effect. For example, a character using an inertia screen in the blast radius would be thrown back 8-20 meters (*SFAndroid*, <http://www.starfrontiers.us/node/4524>).

FLASH GRENADE

When a flash grenade goes off there is a brilliant flash and a loud boom. Though no damage results, everyone in the area is momentarily disoriented by the flash and noise.

Characters wearing sonic headphones are not affected by a flash grenade unless they are looking in the direction of the flash. Anyone outside of the area of effect has automatic surprise during the turn of the blast on anyone affected. Flash grenades are used by Star Lawmen to get the jump on terrorists or criminals.

FOAM GRENADES

Releasing chemicals that instantly swell in normal oxygen atmosphere and standard gravity, these grenades create a thick, opaque, foam-like substance that expands in one turn to completely fill an area within a three-meter radius of the blast point. The dense foam cannot be visually pene-

trated without the help of scanners or radar. It will dissipate after one minute (10 turns).

For every tenth the gravity is lighter than 1.0 the foam dissipates one turn later (foam in 0.8 gravity lasts 12 turns). For every two-tenths the gravity is heavier than 1.0, the foam dissipates one turn earlier (foam in 1.4 gravity lasts eight turns). There are eight different types of foam grenades.

■ **Acid**—A chemical acid causes 2d10 points of damage per turn to everything in the foam area. A thin covering of salgel negates the acidic effects on objects and cuts damage to bioforms in half. Damage is halved if a Stamina check is made. This is checked every turn the character is in the foam.

■ **Chemical Defoliant**—Chemical defoliant foam breaks down any vegetable matter in the foamed area within one minute, leaving a slimy, green residue. It has no effect on non-plant organisms.

■ **Dye**—This foam dyes anything it contacts. The dye dissipates after 20 hours. It can be any color the player desires. This is often used to mark escaping fugitives or vehicles.

■ **Extinguish**—Extinguishing foam grenades will smother practically any flame within the blast area in one turn.

■ **Irritant**—This foam causes 1d5 points of temporary damage for every turn it touches exposed flesh or hair. If the character's flesh is entirely protected no damage is taken. Damage is halved if a Stamina check is made. This is checked every turn the character is in the foam. This damage will heal at the rate of 4 points per hour of rest; however, it will still cause a character to die if his Stamina falls below zero.

■ **Slick**—Coats all surfaces in the blast area with a super-slippery substance. Walking movement is cut to one-quarter normal. No one can run without falling and receiving 1-3 points of damage. It is especially effective against ground vehicles and robots (those using wheels, tracks, legs, etc.).

■ **Solid**—Solidifies completely after one minute, trapping anything and anyone inside as if encased in porous rock. Air can filter through the solidified foam, so the trapped character can breathe, but not move, speak, or see. The trapped character cannot begin to break out until 30 minutes pass, when the solidified foam begins to break down, or when solvaway is used on it. A character who made a successful Strength or Stamina check will reduce their entrapment time by half. Any creature with more than 100 Stamina points can break out of the solidified foam in 5 turns. This type of foam grenade is extremely rare and expensive.

■ **Rad-Blast**—An extremely powerful mixture of chemical agents acts to temporarily negate the penetration of radioactivity into the foamed area (up to 100 rads per hour). When the minute duration is over, the radiation level immediately climbs back to its previous level.

FRAGMENTATION GRENADE

When a fragmentation grenade explodes it sends out hundreds of small, sharp pieces of metal in all directions. Fragmentation grenades are commonly called frag grenades.

Any creature or character in the blast radius suffers 8d10 points of damage. This damage is cut in half if the individual passes a Reaction Speed check. Inertia screens and skeinsuits also reduce damage by half. All of these modifiers are cumulative.

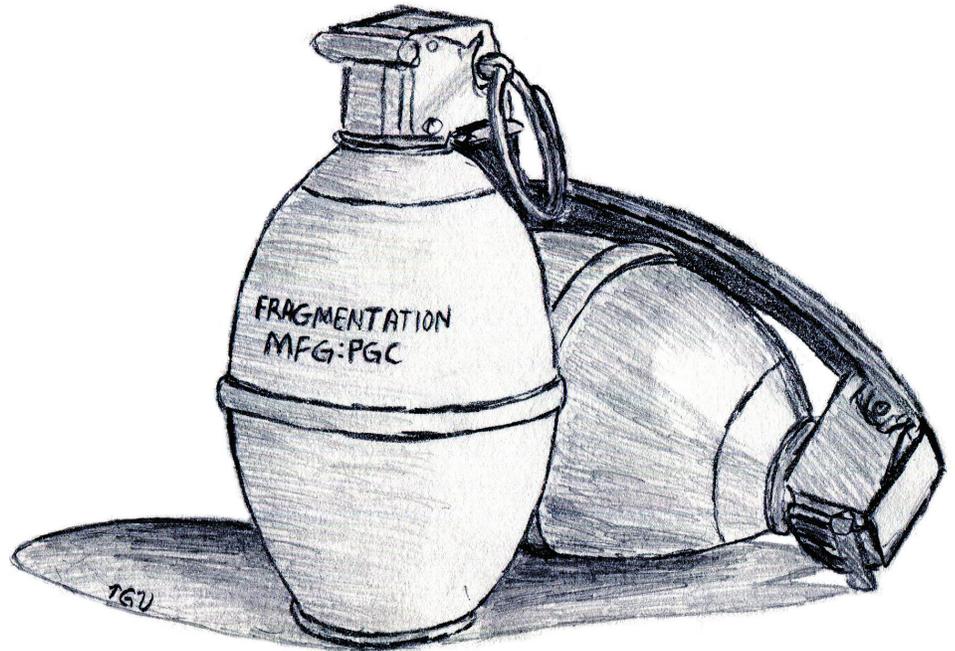
HALON GRENADE

Originally created as a fire extinguisher, these devices also interfere with a being's ability to breathe. By design, halon devours oxygen, cutting down one of the three elements needed to sustain a fire. Fuel and heat are the other two elements.

When used against a fire indoors, a halon grenade should extinguish a fire within its 3-meter blast radius within 1-6 turns. This is contingent upon the size of the room and fire.

When used outdoors, wind and other environmental factors may require more halon grenades to extinguish a fire.

When used as a weapon, characters who are in the blast radius of the halon grenade are poisoned (S5/T10). A charac-



ter can attempt to flee the affected area to get out of the halon cloud, which will cut the duration of the effect.

Once outside of the halon blast radius, the character would take damage for two more turns as the halon is naturally expelled through breathing. One obvious defense is wearing a breathing apparatus. Non-oxygen breathing beings are unaffected by halon grenades (*SFAndroid*, <http://www.starfrontiers.us/node/4524>).

INCENDIARY GRENADE

An exploding incendiary grenade scatters sticky, flaming liquid (commonly napalm) across everything in the blast radius. Incendiary grenades are commonly called fire grenades.

A fire grenade causes 4d10 points of damage on the turn it explodes. The burning liquid sticks to the victim, causing an additional 1d10 points of damage on the second, third, and fourth turns after the explosion. A character that passes a Reaction Speed check takes only half damage. Anyone in a spacesuit or using an asbestos (fire-proof) suit takes no damage from an incendiary grenade.

INFRA-GRENADE

The infra-grenade does no damage at all upon explosion, except to heat sensors. The blast is a quick burst of heat that activates and burns out any heat sensors within 10 meters of the blast. The purpose of such a grenade is to heat up everything in the area so it shows up clearly in the IR

spectrum.

The heating lasts for one minute and anyone wearing IR or IR high-res optical devices can see everything in the room during that period, even if the room is dark and empty or filled with smoke. This effect does not work against a foam grenade.

LASER GRENADES

Developed by the Pan-Galactic Corporation, laser grenades look like a sturdy plastic sphere. Charged with a predetermined SEU setting, it is set off by an incendiary timer that releases the energy through channeling tubes that contain focusing crystals. The result is the energy blast comes out as laser beams.

Laser grenades can be purchased in 5 SEU and 10 SEU increments and fires laser beams equal to that setting. For example, a 10 SEU grenade fires 10 laser beams in all directions, causing 10d10 points of damage to targets, while a 5 SEU grenade fires five beams that cause 5d10 points of damage.

A character caught in the blast radius takes full damage (half for a successful Reaction Speed check). An albedo suit or screen—or an activated smoke screen from an albedo grenade—halves the damage. So, if a character makes a successful RS check and is protected by an albedo suit or screen, the damage is reduced to one-fourth.

Area of effect: If the grenade misses its intended target and bounces somewhere else, there is a 15 percent chance that the

lasers emitted will hit other objects within 20 meters. Remember too that ceilings and floors will absorb damage from laser grenades.

Laser grenades cause 2 points/SEU of structural damage to objects if thrown and 5 points/SEU if placed (*Laser Grenade, Larry Moore, Star Frontiersman Issue 10*).

NIGHTFALL GRENADE

The nightfall grenade releases a gas that immediately causes darkness within five meters. See the earlier description for more information.

NULLIFIER GRENADE

Generating an electro-magnetic pulse (EMP), the nullifier grenade causes complete discharge of all portable power sources within its blast radius. It will affect all powerclips, powerpacks, unmounted parabatteries, etc. within the blast radius.

A character can make a Reaction Speed check to jump away from the field before detonation. If the check is successful, the power drain is reduced to 10-50 (1d5x10) percent.

Vehicles get a chance to avoid the effects (or lessen them) based on the size of the vehicle:

- Ground cycles/Hovercycles, no save;
- Ground/skimmer cars, 20 percent

chance to resistance, reducing the power drain to 10-75 percent;

- Ground/hover trucks, 30 percent chance to resist, reducing the power drain to 10 percent;
- Aircar/Cloud Flyer/Jetcopter, 30 percent chance to resist, reducing the power drain to 10 percent.

Robots also can make a save based on size:

- Standard size and below, save is based on a quarter of its undamaged Stamina score, reducing the power drain to 10-75 percent;
- Standard, reinforced to heavy-duty, 40 percent chance to resist, reducing the power drain to 5-25 percent;
- Larger than heavy-duty, 50 percent chance to resist, reducing the power drain to 5 percent;
- Combat robots receive a +10 percent resistance bonus;
- And warbots receive a +20 percent resistance bonus.

Vehicles and robots with EMP shielding would resist a nullifier grenade attack. Robots with anti-shock implants receive an additional +10 percent resistance bonus (*SFAndroid, <http://www.starfrontiers.us/node/4524>*).

POISON GRENADE

A poison grenade releases a cloud of poisonous gas. Anyone in the blast radius will be poisoned by the gas. The gas is effective only on the turn the grenade explodes.

The gas acts as an S5/T10 poison. A character who passes a current Stamina check will not be affected, nor will anyone in a gas mask. A shot of antitox will neutralize the poison so that no further damage is taken.

SMOKE GRENADE

A smoke grenade produces a thick cloud of smoke that both blocks vision and acts like tear gas. Smoke grenades are available in colors so they can be used as signals.

Anyone in the blast radius on the turn the grenade explodes must make a current Stamina check. If the character fails

the check, he has a -10 percent modifier on all ability checks for 1d10 turns, due to coughing and blurred vision.

The smoke will continue to spread 3 meters/turn for five turns, when it will cover an area 30 meters in diameter. The smoke cloud gives soft cover to anyone behind it or inside it. The smoke screen will last for 10 minutes, though it can be affected by wind.

SONIC GRENADES

This class of grenades does its damage through blasts of high frequency sonics. These sonic grenades include:

- **Boomer**—A boomer grenade inflicts 8d10 points of damage within a five-meter blast radius. Rare and expensive, they are too large to use in grenade rifles or mortars, but are favorites for mines. Damage is reduced by one-quarter if the victims are wearing sonic screens.
- **Marble**—So named because of its 2.5-cm size, this sonic grenade causes 1d10+6 of damage in a one-meter blast radius. Up to three can be thrown per turn and they are sometimes formed and painted as camouflaged jewelry or decorations. Sonic screens or sonic headphones provide full defense against this type of grenade. However, if three or more marble grenades are detonated at the same time, the third marble, and all others following it which detonate in the same turn, are treated as polyhedron sonic grenades for defense purposes.
- **Polyhedron**—This many-sided grenade blasts all in a three-meter radius and causes 5d10+6 points of damage. Damage is halved if sonic screens or sonic headphones are used.

STUN GRENADE

This device causes a concussive blast that can have two effects, based upon the target's Stamina check. This grenade has a primary blast radius that is two meters in diameter and a secondary blast radius of five meters in diameter.

The blast from a stun grenade sounds like a thunderclap and can shatter standard (non-reinforced) glass and knock leaves off trees but is generally only able

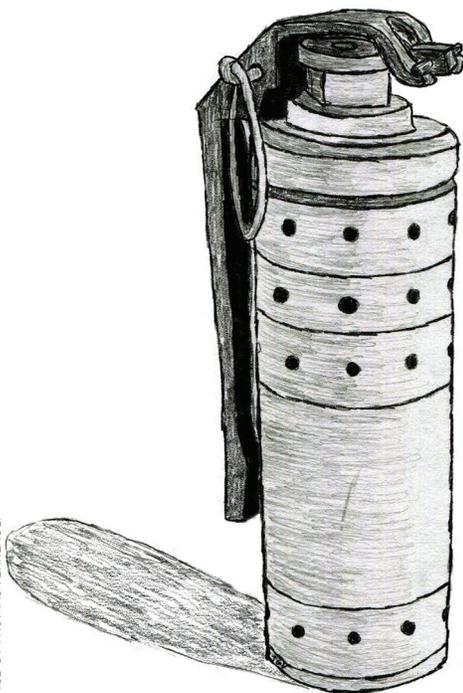
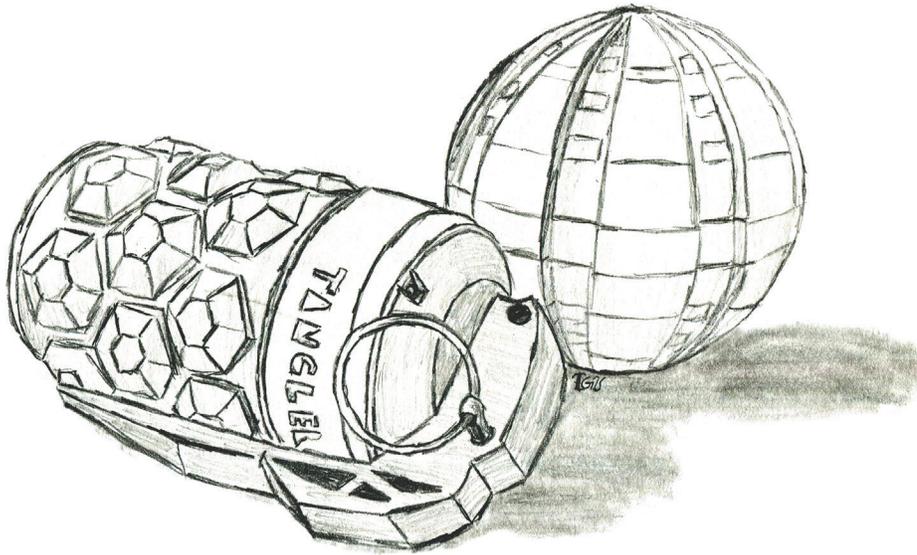


IMAGE BY THOMAS VERREAU



to stun or daze an opponent.

Those within the first blast radius must make a Stamina check. If they fail, they are knocked back 1 meter from the blast, and are knocked unconscious for 1d10 turns. Use the grenade bounce diagram for the direction of the knock back.

Those within the secondary blast radius must make a Stamina check or be dazed. A dazed character has all of his ability scores halved (rounded down) for 1d10 turns. This will affect their Initiative Modifier and Punching Score levels as well. No damage is inflicted, but the character's halved Stamina will mean it won't take much to knock him unconscious.

Targets which pass the STA check are unaffected by the blast.

Defenses: Inertia screens and skeinsuits help cushion the wearer from the kinetic shock of the concussive blast. Each of these provides a bonus of +20 percent to the wearer's Stamina check. If both defenses are present, the bonus is +40.

The Stun Grenade is ineffective in a vacuum and can have its blast radius increased or decreased based on air pressure and density (*Stun Grenades*, Brian Conway, *Star Frontiersman Issue 7*).

TANGLER GRENADE

An exploding tangler grenade throws out hundreds of strong, sticky polymer threads. These threads stick to everything within the blast radius.

An entangled individual cannot move until the threads decay (in 30 minutes) or until solvaway is spread over the threads. Any creature with more than 100 stamina points can break out of tangler threads in one turn.

VOID GRENADES

Manufactured in a vacuum they only work in an environment with an atmosphere. It causes all objects within a three-meter radius to make a RS roll or be thrown (or rather sucked) toward the grenade's detonation point. They cannot act this turn and suffer a -3 on their initiative roll for next turn. People in a five-meter radius must make a RS check or whatever they are holding is sucked to the grenade's detonation point (*grenade was created by user Colt45*: <http://www.starfrontiers.us/node/4524>).

YAZIRIAN DISC-GRENADES

With their keen sense of air currents and the innate ability to glide, Yazirians developed a number of throwing weapons including the disc-shaped Zamira, a dueling blade that they hurl with grace and precision. For modern weapons, the Yazirians created the disc-grenade. A 15 centimeter diameter disc made of a lightweight plastic shell, the core of the disc-grenade can be any of the relatively common Frontier grenades.

A character with a Thrown Weapons skill can throw a disc-grenade around corners and bounce off certain solid surfaces in order to get it to the target. A skilled thrower might be able to bounce the grenade around defensive barriers.

Most disc-grenades are set to detonate on impact or with a short timer fuse. So, when bouncing one off of a solid surface, it is important for a thrower to realize how hard to throw the grenade to prevent it from blowing up prematurely. This requires continuous practice with dummy disc-grenades, which cost 5 Credits.

Marble and Boomer sonic grenades are incompatible with the disc-grenade.

Disc-grenades can be purchased in any location where normal grenades are sold, as long as it's a world with a notable Yazirian population. They're quite common on Gruna Garu. Clan markings are often placed on these devices, left as a calling card in clan politics (*Yazirian Disc-Grenades*, Bill Logan, *Star Frontiersman Issue 5*, p. 19).

IMPROMPTU GRENADES

Characters can throw up to 250 grams of explosives as though it was a grenade. Anyone inside the blast radius takes full damage.

One of the most common explosives used on the Frontier is Tornadium D-19 (TD-19). Also known as "kaboomite," a 50-gram charge of TD-19 will cause 5d10 points of damage to anyone and anything within 1 meter of the explosion. Each additional 50 grams causes an additional 25 points of damage.

Anyone farther from the explosion than 1 meter, but within the blast radius, takes one-half damage. The blast radius is 1 meter for every 100 grams of TD-19 used. A thrown charge does full damage to living creatures, but only one-half damage to structures.

It would take a character with a Demolitions skill to properly set up a TD-19 hand bomb with a successful set charges roll. At a minimum, if they are not prepared ahead of time, the character could only throw one every other turn. (If the charges are prepared before combat, the character can lob one per turn.

Editor Note: *The Alpha Dawn rules state that the time to set a charge is a number of turns equal to seven minus the character's Demolitions skill. So a character with a level 6 skill could throw one every other turn; lesser skilled characters will not be as quick.*

If is thrown like a grenade, TD-19 will cause full damage to living creatures but only half damage to structures. Anyone within twice the radius of the blast must pass a Reaction Speed check or be stunned for one turn.

Another common explosive is Tornadium D-20 (TD-20). A shaped charge, TD-20 does not have a secondary blast area. Rather, the explosive blast is focused in a single

direction, rather than blasting equally in all directions. If anyone is foolish enough to throw a charge of TD-20 as a weapon, use the Area Effect Weapon Miss Diagram to determine in which direction the blast is released.

The blast radius per gram is identical for TD-20 and TD-19. A thrown charge of TD-20 causes full damage to structures, but only half damage to living creatures.

A third Frontier explosive, Plastid, cannot be thrown like a grenade.

More information on explosives is given in the Alpha Dawn Expanded Game and Zebulon's Guide rulebooks.

ARCHAIC GRENADES

The archaic grenades offered below should help compliment the other archaic weapons listed in the Alpha Dawn Expanded Game including bows and arrows, swords, and muskets.

FIREPOTS

A firepot uses an oval or similar hand-sized terra-cotta pot. The exterior is often etched to improve the grip for the thrower. Filled with gunpowder, the container's neck is covered in canvas or parchment.

The thrower would light a match cord to ensure detonation. While it takes only seconds to toss, assume the thrower needs a total four turns to prepare and light the device. Additionally, the thrower has a -10 percent chance to hit.

The primitive fuse is variable so it may not go off the same turn it lands. On a roll of 1-5, it explodes the same turn; on a roll of 6-7, it explodes the following turn; and on a roll of 8-0 it explodes in 2-4 turns. Opponents may be able to pick them up and throw them aside or back at an attacker if they make a successful Reaction Speed check.

An automatic miss means the firepot exploded prematurely, injuring the thrower.

HAND BOMBS

Similar to the firepot, this incorporates a mixture of musket shot and or glass to improve the deadliness of early hand grenades. It takes a total three turns to prepare and light a hand bomb, so the rate of fire is once every three turns. The thrower has a -10 percent chance to hit.

On a roll of 1-5, it explodes the same turn; on a roll of 6-7, it explodes the following turn; and on a roll of 8-0 it explodes

in 2-4 turns. Opponents may be able to pick them up and throw them aside or back at an attacker if they make a successful Reaction Speed check.

An automatic miss means the hand bomb exploded prematurely, injuring the thrower.

SPIKE GRENADE

Embedded with as many as 90 metal spikes, it is launched by a specialized crossbow and can stick to anything wooden (with a successful hit on such a surface). This bomb was used to blow up ancient gates and fortifications.

SPIKE GRENADE CROSSBOW

A specialized crossbow, it is designed to hurl spike grenades or similar sized objects. Bulky, it can only be used by a character with a Strength score of more than 50 and must be supported to fire—either by resting it on a wall, the back of a character, etc.—otherwise the crossbowman has a -15 percent modifier to hit.

This crossbow can only fire one grenade every five turns (30 seconds). If fired at a character, the target can make an RS check to avoid the spike grenade.

STICK GRENADE

Also known as a “potato masher” or stielhandgranaten, this is an early fragmentation grenade design. Some models were also early smoke and poison gas grenades.

Weighing about 750 grams, it has a hollow wooden handle that is attached to a metal cylinder—where the explosive is. The grenade is activated by a friction igniter that lights a 4.5-second fuse. It cannot be disarmed once activated. It rolls unpredictably when it lands, so on a miss it will bounce an additional 1d5 meters.

MOLOTOV COCKTAIL

Basically an improvised incendiary grenade, it uses a breakable container—such as a glass bottle—filled with a flammable liquid. The fuse is often a rag that stoppers the bottle.

Since such a container is unbalanced, the thrower receives a -10 percent chance to-hit penalty. If it hits a hard surface, the container should shatter on impact, spraying the flammable liquid over a 2-meter diameter. If it strikes a soft surface, it has a 50 percent chance of not breaking, and thus not exploding.

It causes 3d10 points of damage on the turn it explodes. The burning liquid sticks to the victim, causing an additional 1d10 points of damage on the second, third, and fourth turns after the explosion. A character that passes a Reaction Speed check takes only half damage. Anyone in a space-suit or using an asbestos (fire-proof) suit takes no damage from an incendiary grenade.

Assuming the container is prepared ahead of time, it would take one turn to light the Molotov Cocktail before it can be thrown.

GRENADE RIFLES AND MORTARS

Grenade rifles and mortars are ranged weapons that use special grenades as a warhead. They only have an immediate blast area. They can be set to explode in one of two ways—either on contact or with its built-in timer. A character must declare at the beginning of the turn which method he is using.

HANDLING MISSES

On a successful attack roll, the grenade detonates (or lands if delayed) on target. If the attack misses, the grenade bounces, the distance being determined by the detonation setting.

If the grenade was set to explode on contact, it detonates 1 to 10 meters away from the target in the direction indicated by the Grenade Bounce Chart. The actual distance depends on the situation and how far the grenade bullet/mortar round was fired.

The referee must decide and should check for any damage caused to anyone or anything in the blast area.

If the grenade is on a timer then it could bounce quite a distance. The direction is determined by the Grenade Bounce Chart. The diagram could be anything up to one-half the distance from the shooter to the target.

Again, the referee should check for damage caused to characters or objects other than the target in the blast area.

GRENADE RIFLE

A grenade rifle resembles a shotgun. It fires hand grenades that are fitted into special grenade bullets. Any type of grenade can be used. It can fire one shot per turn, and then must be reloaded, which also takes one turn.

If a shot misses, the grenade does not scatter. Depending on what type of grenade is being used, all the usual grenade saving throws apply.

GRENAD MORTAR

A grenade mortar is a hollow tube that is attached at an angle to a large base plate. It can fire any type of grenade, using a special shell called a grenade shell. It operates like a grenade rifle, except for the greater range. Because it lobbs grenades in a high arc, it has a minimum range of 10 meters.

Grenade mortars are considered heavy weapons. When a character fires a heavy weapon, he must subtract 1 from his skill level with that type of weapon. A character with no training for that weapon has a -10 penalty. A spotter using omnoculars adds a +10 percent to-hit when using a grenade mortar.

GRENAD LAUNCHER ATTACHMENT (RIFLE UNDERMOUNT)

A weapon that can be attached under the barrel of most rifles, it uses the grenade rifle's special grenade bullets.

Most types of grenade can be used with the notable exception of sonic grenades (because of their unusual sizes and shapes). It can fire one grenade, and then must be reloaded, which takes one turn. The rifle cannot be used for anything else during the turn its grenade launcher is used.

Once installed, the grenade launcher cannot be easily removed—at least not without some extensive work. The installation of a power light or a knife mount prevents the installation of a grenade launcher.

MINIGRENAD LAUNCHER (HELMET)

This device can hold six sonic marble grenades and has a range of 25 meters (no range combat modifiers apply). Up to three grenades can be launched per turn. This grenade launcher is activated by a jaw-tension mechanism and is an action that can be performed in addition to other actions that round.

Referees should note that if the player is firing a hand-held weapon that combat round then the marble grenades must be launched in the same direction as the player is looking. A minigrenade launcher cannot be affixed to a helmet that is already equipped with helmet rafflurs. The minigrenade launcher can launch a total of 60 grenades per microdisc.

GRENAD WEAPONS TABLE

GRENAD TYPES	DAMAGE	BLAST	ROF	DEFENSE	RANGE PB/S/M/L/E
Albedo	-10% to hit, ½ laser dmg	6	1	Wind	5/10/15/20/25
Cryo	4d10+(1d10x3turns)	3	1	Chillsuit	5/10/15/20/25
Doze	Sleep	3	1	STA check	5/10/15/20/25
Dusk	Dim light	3	1	IR, scanners	5/10/15/20/25
Expanding Sphere	5d10+knockback	3	1	RS check	5/10/15/20/25
Flash	Surprise	3	1	Special	5/10/15/20/25
Foam: Acid	1d10+6/turn	3	1	Basegel	5/10/15/20/25
Foam: Chem. Defol.	Defoliates *	3	1	RS check	5/10/15/20/25
Foam: Dye	Marking	3	1	RS check	5/10/15/20/25
Foam: Extinguish	Smother Flame	3	1	—	5/10/15/20/25
Foam: Irritant	1-8/turn	3	1	Special	5/10/15/20/25
Foam: Slick	Slick surface	3	1	Slow move.	5/10/15/20/25
Foam: Solid	Entrapment	3	1	RS check	5/10/15/20/25
Foam: Rad-Blast	Blocks radiation	3	1	—	5/10/15/20/25
Fragmentation	8d10	3	1	RS check	5/10/15/20/25
Halon	S5/T10	3	1	Breath. Mask	5/10/15/20/25
Incendiary	4d10+(1d10x3turns)	3	1	Asbestos	5/10/15/20/25
Infra	Sensor damage	3	1	—	5/10/15/20/25
Laser 5 SEU	5d10	20	1	Albedo	5/10/15/20/25
Laser 10 SEU	10d10	20	1	Albedo	5/10/15/20/25
Nightfall	Darkness	3	1	IR, scanners	5/10/15/20/25
Nullifier	Power drain	3	1	EMP shield.	5/10/15/20/25
Poison	S5/T10	3	1	STA check	5/10/15/20/25
Smoke	-10% to hit	3	1	IR	5/10/15/20/25
Sonic: Boomer	7d10+10	5	1	Sonic	5/10/15/20/25
Sonic: Marble	1d10+6/gren.	1	3	Sonic	5/10/15/20/25
Sonic: Polyhedron	5d10+6	3	1	Sonic	5/10/15/20/25
Stun	Stun	5	1	Inertia	5/10/15/20/25
Tangler	Entanglement	3	1	Solvaway	5/10/15/20/25
Void	Special	5	1	RS check	5/10/15/20/25
Yazirian Disc	As per grenade	*	1	*	8/16/24/30/36

*Yazirian Disc-Grenades have the same blast radius and effect as the normal grenade type.

IMPROMPTU AND ARCHAIC GRENADES	DAMAGE	BLAST	ROF	DEFENSE	RANGE PB/S/M/L/E
Tornadium D-19	5d10/50 grams	1*	*	RS check	5/10/15/20/25
Tornadium D-20	varies	*	*	RS check	5/10/15/20/25
Firepot (-10% to-hit)	4d10	2	1/4	RS check	5/10/15/20/25
Hand Bomb (-10% to-hit)	6d10	3	1/3	RS check	5/10/15/20/25
Spike Grenade	6d10	3	*	RS check	See Grenade Crossbow
Stick Grenade	6d10	3	1	RS check	8/12/18/24/30
Molotov Cocktail (-10% to hit)	3d10+(1d10x3turns)	3	1/2	Asbestos	5/10/15/20/25

*The blast radius and damage for Tornadium D-19 varies, depending upon how much is used. One prepared charge can be thrown per turn; it takes a Demolitionist a minimum of one turn to prepare a charge before throwing another.

When used as a hand bomb, the blast of TD-20 goes off in a random direction. Otherwise, it is similar to TD-19.

Spike grenades will normally be catapulted via a Spike Grenade Crossbow or some other sling or throwing device.

RANGE WEAPONS	DAMAGE	BLAST	AMMO	ROF	DEFENSE	RANGE PB/S/M/L/E
Grenade Rifle	Varies	*	1 bullet	½	Varies	—/25/50/100/200
Grenade Mortar	Varies	*	1 shell	½	RS check	—/200/500/1km/2km
Grenade Launcher, Rifle undermount	Varies	*	1 bullet	½	RS check	—/25/50/100/200
Minigrenade Launcher (helmet)	1d10+6/gren.	1	3 marble	3	RS check	25/—/—/—/—
Minigrenade Rifle Attachment	1d10+6/gren.	1	30	3	RS check	5/15/30/40/50
Minigrenade Gun	1d10+6/gren.	1	30	3	RS check	5/15/30/40/50
Spike Grenade Crossbow	*	—	1 spike gen.	1/5	RS check	10/40/60/80/100

*The damage and blast radius for bullets and shells fired from the grenade rifle, grenade launcher attachment and the mortar depend upon what kind of ammunition is used.

MINIGRENADE RIFLE ATTACHMENT

Similar to the grenade launcher attachment, this device only fires marble grenades. It can fire three grenades each turn.

MINIGRENADE GUN

This is a handheld version of the helmet-mounted minigrenade launcher. The size of a large handgun, it has a longer range, but the user suffers a -1 Initiative Modifier. It fires three marble grenades at a time and holds 30 grenades, good for ten shots.

RELATED EQUIPMENT SOLVAWAY

The only solvent that will immediately dissolve tangler grenade threads, solvaway must be applied by someone other than the person who is tangled in the threads. One vial of solvaway contains enough liq-

uid to dissolve the threads from one tangler grenade.

Early versions of this solvent were only good to dissolve tangler grenade threads, but once solid foam grenades came on the market, it was reformulated to dissolve the hardened foam.

DETANGLER HARNESS

Developed to help adventurers avoid the pitfalls of being caught in tangler threads, this harness can be worn over conventional protective suits and vests. It comes with a belt that can be used to mount holsters and pouches.

The harness has a network of sensors and will release a charge of solvaway in aerosol-form to dissolve tangler threads. This device has a 75 percent chance to work the first time, releasing the character on the second turn. If the first charge doesn't work, the detangler harness has five more solvaway charges; it has six charges in to-

tal. (New Equipment: Detangler Harness, Star Frontiersman, Issue 6).

STANDARD GRENADE BANDOLIER

The standard equipment bandolier has 8 pouches. A thrown grenade, 2 ammo clips, a gas mask, or other small items will fill 1 pouch. Grenades carried in a bandolier are treated as a pistol in a holster for initiative rolls.

YAZIRIAN DISC-GRENADE BANDOLIER

This bandolier is designed to hold 6 disk grenades and 2 solvaway vials. Characters drawing and throwing a grenade in the first turn of combat suffer the same -2 IM penalty as a character drawing a pistol from a holster.

GRENADE RIFLE BANDOLIER

This bandolier is designed to hold 12 grenade rifle rounds and 4 solvaway vials.

GRENADE & RELATED EQUIPMENT COST TABLES

GRENADE TYPES	COST (CR)	WGT (KG)	GRENADE TYPES	COST (CR)	WGT (KG)
Albedo	50	0.5	Incendiary	20	0.5
Cryo	40	0.5	Infra-Grenade	20	0.5
Doze	10	0.5	Laser 5 SEU	35	0.5
Dusk	20	0.5	Laser 10 SEU	55	0.5
Expanding Sphere	800	0.5	Nightfall	25	0.5
Flash	10	0.5	Nullifier	250	1.0
Foam: Acid	45	0.5	Poison	30	0.5
Foam: Chemical Defoliant	40	0.5	Smoke	10	0.5
Foam: Dye	10	0.5	Sonic: Boomer	75	1.0
Foam: Extinguish	10	0.5	Sonic: Marble	8	0.1
Foam: Irritant	25	0.5	Sonic: Polyhedron	25	0.5
Foam: Slick	20	0.5	Stun Grenade	75	0.5
Foam: Solid	100	0.5	Tangler Grenade	25	0.5
Foam: Rad-Blast	30	0.5	Void Grenade	200	1.0
Fragmentation	20	0.5			
Halon	10	0.5	Yazirian Disc Version	+25%	+0.1
WEAPONS & EQUIPMENT	COST (CR)	WGT (KG)	WEAPONS & EQUIPMENT	COST (CR)	WGT (KG)
Firepot	5	0.5	Grenade Launcher Attachment.	700	3.0
Hand Bomb	10	0.5	Minigrenade Helmet	250	—
Spike Grenade	20	1.0	Minigrenade Launcher Attachment	700	3.0
Spike Grenade Crossbow	50	6.5	Minigrenade Gun	700	3.0
Molotov Cocktail	2	0.5	Solvaway	10	—
Grenade Rifle	700	4	Detangler Harness	600*	3.0
Gren. Rifle Bullet	3	0.5	Standard Grenade Bandolier	20	—
Grenade Mortar	2,000	15	Yazirian Disc-Grenade Bandolier	20	—
Gren. Mortar Shell	10+gren.	0.5	Grenade Rifle Bandolier	25	—

* This is the cost of the Detangler Harness when empty. Six solvaway charges would cost 60 Credits.

PORTABLE POWER IN THE FRONTIER

BY NICK LANDRY

Resources are often limited in the Frontier. While disposable power clips and batteries are somewhat commonplace, many explorers and professionals prefer to invest in rechargeable batteries to power their weapons, screens, and equipment. Rechargeable clips and packs are not only economically sound choices, their ecofriendly nature make them vital components in low-waste colonies, space stations, and outposts.

The term battery is used below to commonly refer to all portable power items such as weapon clips or wearable packs. Rechargeable or not, players must keep track of how many SEU remain in a battery.

Author's Note: *This article contains an aggregated list of portable power items, including items that originally appeared in Star Frontiers books published by TSR. The descriptions for these items were updated to match the format of the new items described below. Note that the price for disposable power clips has been lowered, and a weight value of 0.5 kg was added to provide a more realistic limitation.*

CHARGING BATTERIES

While rechargeable batteries can be more practical, they cost more to purchase than

the disposable versions. The following rules outline how batteries can be recharged:

- Disposable batteries cannot be recharged. Most equipment shops in urban areas will accept empty batteries for recycling purposes at no cost.
- Only batteries with a valid charging rate value can be recharged (see table 1 below).
- Table 2 outlines the various power source options that can be used to charge batteries, including outlets, generators, urban charging stations, starships, etc.
- All batteries showing a valid charging power output rating in Table 1 represent high-rating batteries that can be used to charge smaller batteries.
- When calculating the time needed to refill a battery, consult the charging rate of the target battery and the charging power output rating of the power source, and use the smallest value. A battery cannot charge faster than its charging rate even when connected to a high-rating power source.

- High-rating power sources can be used to charge multiple batteries, up to their maximum charging power output rating value.

POWER SOURCES FOR CHARGING

Player characters can use outlets in buildings and starships they own or have access to if they want to recharge batteries. When charging from a vehicle, the associated parabattery is used as a source (and drained) to charge other batteries. Public charging stations are available for a fee, while patrons in restaurants, bars and hotels can have access to outlets provided they are paying customers. Vehicle service stations also provide energy recharging services at a cost. See Table 2 for a list of available power sources, their charging power output rating and energy costs.

PORTABLE POWER ITEM DESCRIPTIONS

Table 1 below shows the list of new and revised portable power items, including their specs such as weight, capacity, charging rate (if applicable) and cost.

TABLE 1. BATTERIES

PORTABLE POWER ITEMS	COST (CR)	WEIGHT (KG)	CAPACITY (SEU)	CHARGING RATE (SEU / MINUTE)	CHARGING POWER OUTPUT RATING (SEU / MINUTE)
SEU microdisc (disposable)	10	—	variable*	N/A	N/A
Mini Power Clip (disposable)	15	0.1	10	N/A	N/A
Power Clip (disposable)	25	0.5	20	N/A	N/A
HighCap Power Clip (disposable)	60	0.5	40	N/A	N/A
ecoCharge SEU microdisc	40	—	4	1	N/A
ecoCharge Mini Power Clip	60	0.1	10	1	N/A
ecoCharge Power Clip	100	0.5	20	1	N/A
HighCap ecoCharge Power Clip	240	0.5	40	1	N/A
Power Beltpack	250	4	50	2	5
HighCap Power Beltpack	600	6	100	2	5
Power Backpack	500	10	100	4	10
HighCap Power Backpack	1,200	15	200	4	10
Parabattery—Type 1	600	25	500	10	5
Parabattery—Type 2	1,200	50	1,000	20	10
Parabattery—Type 3	2,300	100	2,000	40	20
Parabattery—Type 4	4,500	200	4,000	80	40

Items that can be used to charge other items also show a charging power output rating.

SEU MICRODISCS

Also known as power coins, these coin-sized metal batteries hold a small SEU charge and measure about 2 cm in diameter. They are used to power small portable electronic gadgets and microcircuited items like chronocoms, precision tools, flashlights, sensors, electronic goggles & binoculars, timers, and more. Most tools in a Techkit, Robcomkit, or Medkit also use microdiscs. Microdiscs cannot be used to power weapons or screens, except for rafflurs. When purchasing any piece of equipment that consumes microdiscs, a standard fully charged disposable coin is typically included. The energy consumption of such items varies and is listed in the item's descriptions. For items without any listed SEU consumption, the referee can determine when these items would run out of power should the characters find themselves stranded without any access to supplies for an extended period.

POWER CLIPS

The standard 20 SEU power clip is a sturdy polymer cartridge that is about the same dimensions as a standard business card, with a thickness of about 1 cm (about 9 cm x 5 cm x 1 cm). Power clips are stan-

dardized and will fit any equipment that can use a power clip, such as beam weapons, power screens, CAS/scanners, radios, portable computers and other electronic devices. Standard power clips are considered disposable and cannot be recharged. When purchasing brand new beam weapons, power screens, or other pieces of equipment that consume power clips, a standard fully charged disposable clip is typically included.

ECOCHARGE MICRODISCS AND POWER CLIPS

These portable batteries are identical in size and shape to their disposable variants but can be recharged when connected to a power source. They are ecofriendly and feature a built-in charge indicator. ecoCharge batteries can be recharged using the included charging cable at a rate of 1 SEU per minute using an appropriate power source.

POWER BELTPACKS

A power beltpack is a 20 cm x 8 cm x 5 cm box-shaped polymer battery that attaches to a character's belt. It comes with three powercords that can be plugged into three identical outlets (ports) in the side of the unit. The ports can be used to charge standard equipment simultaneously, including beam weapons, power screens, and auxiliary equipment such as portable computers, scanners or radios.

Up to two weapons and one screen can be plugged into a beltpack at the same time. Beltpacks can be recharged at a rate of 2 SEU per minute using an appropriate power source. A character can unplug a powercord from a power beltpack and plug in another weapon, screen, or device in a single turn.

POWER BACKPACKS

A power backpack is worn on a harness that slips over the shoulders. Special adapters are available for Dralasites at no additional cost. A backpack has 5 ports, supporting up to two weapons, a power screen, and auxiliary accessories. Backpacks can be recharged at a rate of 4 SEU per minute using an appropriate power source. It takes one turn to unplug a powercord from a power backpack, and another turn to plug in another weapon, screen, or device.

POWER HELMETPACKS

These polymer batteries are identical to those found in power beltpacks but are designed to be attached to a helmet. A power helmetpack features 3 ports which primarily used for optical devices, communications devices, and weapons attached to the helmet itself. Helmetpacks can be recharged at a rate of 2 SEU per minute using an appropriate power source. Due to the tightly integrated nature of the powercords in a helmetpack,

TABLE 2. POWER SOURCES

PORTABLE POWER ITEMS	COST (CR)	WEIGHT (KG)	OPERATING COST (CR / SEU)	MAINTENANCE COST (CR / DAY)	CHARGING POWER OUTPUT RATING (SEU / MINUTE)
Civic Structures / Building Outlets	varies*	N/A	0 (negligible)	varies*	40
Vehicles (use associated parabattery)	varies*	varies*	0	varies*	5-40 (by type)
Starship Outlets (engines powered)	varies*	varies*	0 (negligible)	varies*	40
Public Charging Stations	N/A	N/A	2	N/A	10
Vehicle Service Stations	N/A	N/A	1	N/A	80
Restaurants, Bars, Hotels Outlets	N/A	N/A	included**	N/A	20
PORTABLE POWER ITEMS	COST (CR)	WEIGHT (KG)	FUEL COST (CR / HOUR)	MAINTENANCE COST (CR / DAY)	CHARGING POWER OUTPUT RATING (SEU / MINUTE)
Power Generator—Type 1	10,000	50	5	10	10
Power Generator—Type 2	20,000	100	10	20	20
Power Generator—Type 3	40,000	200	20	40	40
Power Generator—Type 4	80,000	400	40	80	80
Solar Generator—Type 1	15,000	75	0	0 (negligible)	5
Solar Generator—Type 2	30,000	150	0	0 (negligible)	10
Solar Generator—Type 3	60,000	300	0	0 (negligible)	20
Solar Generator—Type 4	120,000	600	0	0 (negligible)	40
Solar Charger—Foldout	500	2	0	0	1/10
Solar Charger—Backpack	1,500	10	0	0	½

TITAN RISING: 2299

EPISODE #19.0: "BLIND"

V2.0



MEANWHILE ON THE STARSHIP INTREPID...

CAPTAIN, EVERYTHING IS READY FOR OUR JUMP.

ENSIGN MARCUS EVANS PROVIDES CAPTAIN WYNGATE WITH A UPDATE ON THE SHIP'S STATUS.

THE HYPERSPACE JUMP IS IMMINENT.

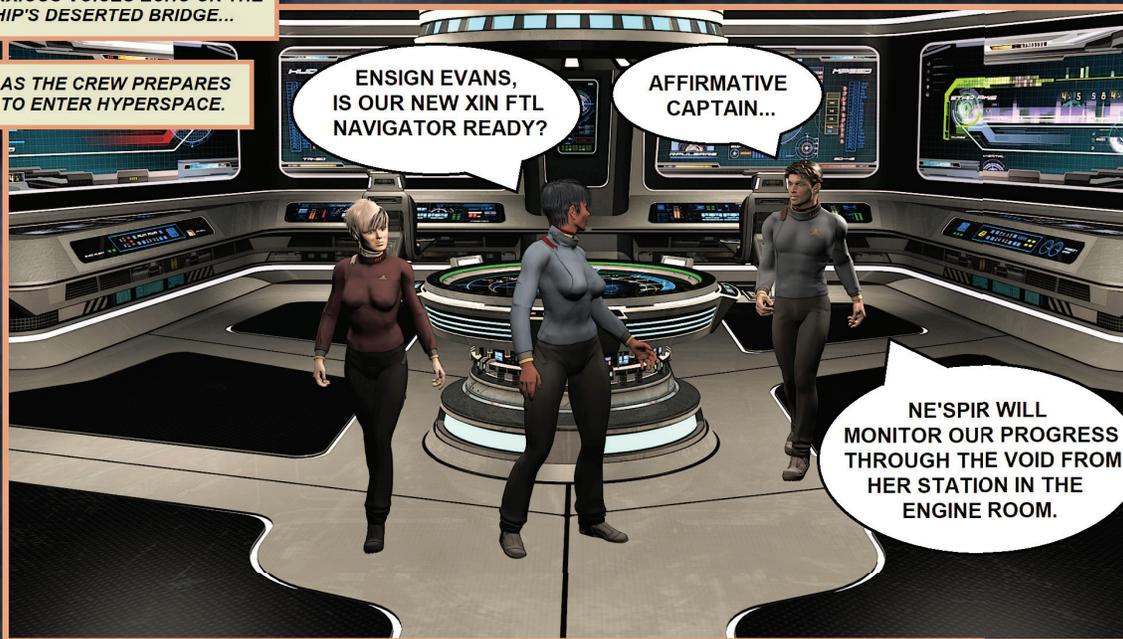


ALL STATIONS HAVE REPORTED IN AND THE INTREPID IS NOW UNDER THE NAV-COMPUTER'S CONTROL.

I'VE STARTED THE COUNTDOWN, THE H-DRIVE WILL ACTIVATE IN TEN MINUTES.

ANXIOUS VOICES ECHO ON THE SHIP'S DESERTED BRIDGE...

AS THE CREW PREPARES TO ENTER HYPERSPACE...



ENSIGN EVANS, IS OUR NEW XIN FTL NAVIGATOR READY?

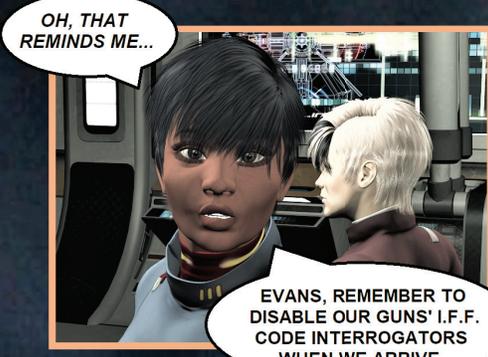
AFFIRMATIVE CAPTAIN...

NE'SPIR WILL MONITOR OUR PROGRESS THROUGH THE VOID FROM HER STATION IN THE ENGINE ROOM.



IT'S ALL UP TO NE'SPIR NOW...

WHEN WE ARRIVE IN THE NEBULA, WE WILL BE DEEP INSIDE ENEMY TERRITORY AND SENSOR BLIND.



OH, THAT REMINDS ME...

EVANS, REMEMBER TO DISABLE OUR GUNS' I.F.F. CODE INTERROGATORS WHEN WE ARRIVE.



YES, CAPTAIN.

I.F.F. CODES?

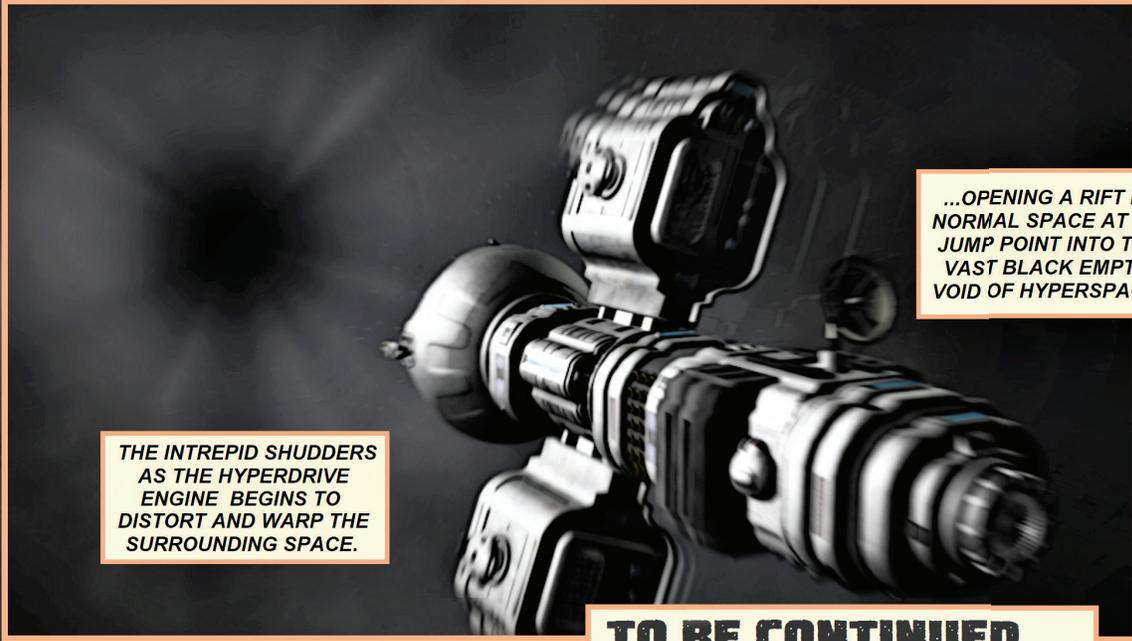
YEAH, THE ENEMY KNOWS OUR FREQUENCIES.



CAPTAIN, THE STASIS SHELTER IS READY...

ALL CREW PRESENT AND ACCOUNTED.

THANK YOU LIEUTENANT GOLDMAN.



...OPENING A RIFT IN NORMAL SPACE AT THE JUMP POINT INTO THE VAST BLACK EMPTY VOID OF HYPERSPACE.

THE INTREPID SHUDDERS AS THE HYPERDRIVE ENGINE BEGINS TO DISTORT AND WARP THE SURROUNDING SPACE.

TO BE CONTINUED...

RAFFLURS AND KE LASERS IN ALPHA DAWN

BY JOHN W BLAYLOCK

The original laser weapons in Star Frontiers are old Pan-Galactic Corporation technology developed around the time to the First Sathar War and the founding of the Frontier. For decades, they represented the top of the line for energy weapons in the Frontier. Many of them are still in service today in lower technology sections of the Frontier and in old ship's lockers, survival kits, and such. The PGC still sells and services the Model 1's through numerous local subsidiaries.

During the Second Sathar War, technology advanced again, seeing improvements in laser weaponry and the introduction of a new form of proton energy weapon, the Rafflur. Developed by WarTech, these new energy weapons promised excellent damage per expended SEU but had numerous drawbacks the engineers at WarTech could never quite overcome. The biggest of which was the inability for any model smaller than the M-10 to be safely connected to any power source larger than a 10 SEU minipowerclip.

With the development of these new energy weapons, new defenses were also developed alongside. The Simp screen and the Sythvelope suit were introduced to defend against Rafflurs. The various manufactur-

ers of Polyplate armor quickly introduced Advanced Partial Polyplate armor and Advanced Full Polyplate armor at 1,500 Cr and 3,500 respectively. These advanced models offer their protection to proton energy weapons in addition to their laser and ballistic qualities. Combat armor protects against Rafflurs at 30%/35%/45% for the Light/Medium/Heavy versions. Spacesuit armor protects at 55%.



Laser weapon technology developed into the Ke line by WarTech based on advances made during the Second Sathar War. The Ke-1000 pistol is functionally equivalent to the old PGC Model LP-1 "Starlight" pistol but is a bit easier to conceal and can accept the newer 10 SEU minipowerclips without the need for an additional adapter. The Ke-1500 is a short carbine / large pistol popular with security personnel. The Ke-2000 is superior to the PGC Model LR-1 "Corona" rifle in not only being able to natively accept a minipow-

erclip but also in damage potential per SEU. The Ke-5000 also shares the damage per SEU potential of the Ke-2000 over the PGC Model HL-1 "Solar Flare" heavy laser.

The Pan-Galactic Corporation tries to protect its dwindling share of the laser weaponry market. The PGC offers an adapter to allow a minipowerclip to be inserted into a standard 20 SEU powerclip socket for only 5 Cr and include it with every new Model LP-1 "Starlight" pistol and Model LR-1 "Corona" rifle sold. They have found this adapter to be a popular seller outside of the laser weaponry market. The PGC also offers many incentives in the purchase of new Model 1s. The most common is simply throwing in one or more minipowerclips with the purchase of a new Model LP-1 "Starlight" pistol or LR-1 "Corona" rifle. The PGC also offers a specialized powerpack for the Model HL-1 "Solar Flare" heavy laser. This powerpack contains 50 SEU and it is not rechargeable. It comes with a canvas harness and Velcro straps to attach to an HL-1, adding negligible weight to the weapon. The powerpack costs 125 Cr separately and comes with a single built-in cable to attach to the heavy laser's power port. This has also proven to be a popular seller in its own right.

	Damage	RoF	Range				SEU	Ammo	Mass	Cost	Defense	Notes	
			PB	Short	Medium	Long							Extreme
LASERS													
AD Laser Pistol	1d10/SEU	2	0-5	6-20	21-50	51-100	101-200	1-10	Powerclip	1	600	Albedo	PGC-LP1 "Starlight"
AD Laser Rifle	1d10/SEU	2	0-10	11-40	41-100	101-200	201-400	1-20	Powerclip	3	800	Albedo	PGC-LR1 "Corona"
AD Heavy Laser	1d10/SEU	1	NA	0-100	101-500	501-1km	1001-2km	5-100	Power Backpack	20	6000	Albedo	PGC-HL1 - "Solar Flare"
Ke-1000	1d10/SEU	2	0-5	6-20	21-50	51-100	101-200	1-10	Powerclip	1	600	Albedo	
Ke-1500	1d10+1/SEU	2	0-5	6-30	31-60	61-150	151-250	1-10	Powerclip	2	750	Albedo	Requires 40 STR to use one handed
Ke-2000	2d10/SEU	2	0-10	11-40	41-100	101-200	201-400	1-20	Powerclip	3	800	Albedo	
Ke-5000	2d10/SEU	1	NA	0-100	101-500	501-1km	1001-2km	5-20	Power Backpack	20	6000	Albedo	
RAFFLURS													
M-1	3d10	1	0-2	3-10	NA	NA	NA	*ALL	Microdisc	0.5	300	Synth	
M-2	4d10	2	0-5	6-15	16-40	41-80	81-150	2	Powerclip	1	650	Synth	
M-3	4d10+4	2	0-5	6-20	21-50	51-100	101-200	2	Powerclip	2	825	Synth	
M-4	Special	1	0-5	6-15	16-30	31-70	71-100	10	Powerclip	3	1000	Synth	Does 5d10 in a cone effect
M-6	5d10	2	0-10	11-30	31-70	71-150	151-300	2	Powerclip	4	900	Synth	
M-8	5d10+5	1	NA	15-70	71-120	121-250	251-500	2	Powerclip	5	1200	Synth	
M-10	10d10+10	1	NA	0-100	101-250	251-500	501-1000	5	Powerclip	22	8000	Synth	

THINGS THAT GO BOOM!

PART 2: LOOKING AT ROCKETS AND MISSILES

BY JOSEPH CABADAS

Zebulon's Guide to the Frontier added information about weapons that inflict damage over a wide area such as large explosives with an immediate and secondary blast area.

To be fair, "area effect weapons" as we will call them, have been a part of the game since practically the beginning. There was the Sathar automatic cannon from the "Starspawn of Voltturnus" module that did damage to any targets in the square where the shell hit, while anyone in the surrounding squares were stunned.

This article will look at rockets and missiles, including converting the Zebulon missiles to the Alpha Dawn combat system.

Other Area effect weapons include:

- All grenades (covered in part 1),
- Mines,
- Artillery, recoilless rifle shells and specialized gyrojet ammunition,
- Explosives, including, TD-19 and TD-20
- And certain weapons of mass destruction—the A-bomb, the hydrogen bomb, etc.

Rockets are a form of unguided missiles that were introduced with the Alpha Dawn rules. Larger, vehicle-mounted rockets were then added with the Dragon Magazine article "Tanks a Lot!" along with guided missiles.

The missiles of Zebulon's Guide to the Frontier come in four standard sizes including the micromissile, which is a portable weapon that inflicts kinetic energy along with the larger type I, II and III missiles that can carry a variety of warheads. Each missile size indicates its size and what kind of payloads they can carry.

MISSILE COMBAT MODIFIERS

Keep in mind that characters firing missiles—

even those with the appropriate skills—would still suffer a -10 percent penalty for firing heavy weapons.

When dealing with missile combat, the interpretation of "slow" and "quick" is different. When firing a missile at a target, the referee should consider not only how fast the target is moving, but how far away it is.

For example: *A jetcopter flying at full speed within 50 meters of an attack is moving quickly. Flying at the same speed hundreds or meters away it may be considered to be moving slowly to a gunner. The referee must use his common sense.*

For the most part, the only time target size is considered for missile combat is if the target is relatively huge in comparison to the attacker. Then a +10 percent modifier may be granted to the attacker. Generally, though, area effect damage negates the consideration of size.

AUTOMATIC HITS AND MISSES

An automatic miss means that any detonation is too far away to do any damage to the target or anything else of importance. Otherwise, on a regular miss, the attacker must roll 1d10 and consult the Ranged/Dropped Weapon Miss Chart, which is based on the Alpha Dawn Grenade Bounce Chart.

The distance that a missile misses its target is dependent upon the distance between the attacker and the target as shown on Missile Miss Chart (*Here Comes the Cavalry!*, Matt Brady, *Dragon Magazine*, April 1987, p. 73).

For more information about Automatic Hits and Automatic Misses, the Alpha Dawn combat rules.

RATES OF FIRE

Each weapon has its own rate of fire: check the Weapons Charts and equipment descriptions.

Note that the type I missile's rate of fire is listed as variable. This applies to MLTCs (Multiple Launch Tube Clusters) that commonly fire type I missiles and can be automated to launch more than one at a time.

Normally a hand-held type, the micromissile has a rate of one launch per turn. Type I missiles require one turn to launch. Type II missiles usually require two turns to launch and type III's take three turns to launch.

Advanced military robotic loaders may speed up the reloading process, at the referee's discretion. Generally, such equipment is usually only available to military forces.

ARMORED VEHICLES AND HARDPOINTS

The original Star Frontiers rules did not cover armored vehicles, but the module "Mission to Alcazzar" featured Explorer vehicles with top mounted turrets and heavy weapons. Later, articles appeared in Dragon Magazine to address armored vehicles. One of the most significant was probably Alex Curylo's "Tanks a lot!" article in the July 1985 issue.

Recently, Larry Moore offered an expanded system to build non-civilian vehicles by offering four different "duty" modifications including: Corporate-Duty, Security-Duty, Paramilitary-Duty, and Military-Duty. Moore's article appeared in issue 15 of *Star Frontiersman* magazine. This article on rockets and missiles mostly relies on Moore's version of arming vehicles. Non-civilian vehicles have hardpoints (sometimes abbreviated "hp").

MISSILE MISS CHART	
RANGE TO TARGET	MISS DISTANCE
Point Blank	5–20 meters
Short	21–50 meters
Medium	51–150 meters
Long	151–250 meters
Extreme	251–350+ meters

RANGED/DROPPED WEAPON MISS CHART

2, 3	4	5
1	*	6
10	9	7, 8

1	2, 3	4
10	*	5
9	7, 8	6

10	1	2, 3
9	*	4
7, 8	6	5

**DIRECTION OF FIRING/DROP
(* IS INTENDED TARGET SQUARE)**

A hardpoint is a reinforced area on a vehicle hull that allows a weapon mount to be attached and connected to the vehicle's electronic systems. The larger the vehicle, the more hardpoints can be made available.

Please refer to Star Frontiersman issue 15 for more information about creating and arming non-civilian vehicles.

MOUNTING/DISMOUNTING WARHEADS

Although not stated in the Zebs rules, assume it takes at least 5 minutes (50 combat turns) to mount or dismount a warhead from a Type I-III missile by hand under ideal conditions. Robotic systems could cut this time by half.

If a character wanted to swap out one warhead with another, it would take him a minimum of ten minutes (100 turns).

IMMEDIATE AND SECONDARY BLAST AREAS

When high explosives detonate, the blast radius on the Weapons Table is the immediate blast area. Every character, robot, vehicle, structure or other item within that area will take damage.

Roll individually and then determine what effect armor, defensive shields and other cover may alter the result.

If the blast occurs in the open—and it is the result of TD-19 packs, type I through III missiles or artillery rounds—there is a secondary blast area. Refer to the explosive's description for its secondary blast radius but for rockets, missiles, bombs, and artillery shells, the secondary blast radius is equal to 1.5 times the radius of the immediate blast area.

For example: if the immediate blast area has a radius of 15 meters, the secondary blast radius extends out another 7.5 meters. Anyone (including robots) from 15 to 22.5 meters from the detonation site will take half damage unless they pass a Reaction Speed check. For characters who succeed with the RS check, consult Table 1: Secondary Blast Radius Resolution.

DEALING WITH MULTIPLEWARHEADS

A unique feature of the Type II and III missiles is that they have spaces for more than one warhead. This allowed the larger missiles to mount a sensor package, giving them a better chance to hit.

Larger missiles could be fitted with alternative warheads. For example, a Type II missile could have a field crusher warhead paired with a high explosive. The field crusher would damage any defense screens before the high explosive warhead inflicts damage.

But such arrangements might have incom-

TABLE 1: SECONDARY BLAST RADIUS RESOLUTION TABLE

01–20	The character takes no damage.
21–30	The character is stunned for 1 turn.
31–40	The character is stunned for 1-2 turns.
41–60	Roll for damage, but divide the result by 10. The character is stunned for 1d5 turns.
61–75	Roll for damage, but divide the result by 4. The character is stunned for 1d5 turns.
76–90	Roll for damage, but divide the result by 4. The character is stunned for 1d10 turns.
90–100	Roll for damage, but divide the result by 4. The character is stunned for 3d10 turns.

patible results. Say a Type III missile was fitted with an incendiary warhead, a defoliant foam warhead, and a poison gas warhead. The referee could—and should—rule that the incendiary warhead would burn up the foam and gas released on impact.

Yet other munitions packages could be advantageous. Say a Type II missile has a tangler warhead mounted along with a poison gas warhead. The tangler warhead can trap targets in an area while the poison gas cloud from the other warhead does its work.

Rather than trying to go through the positive and negative effects of all the various warhead combinations, referees should use their best judgement as to what happens.

Another possibility is to allow multi-warhead missiles to split just before impact so the munitions can strike separate, but nearby targets that are within 20 meters. When doing so, the missile has a -20 percent chance to hit any secondary (or tertiary) targets.

For example: a Type III missile is equipped with three standard explosive warheads, Simba the Yazirian fires the missile at a group of vehicles approaching. He has set the missile to perform a multi-strike.

Just before reaching the target, the munitions payload splits and the three warhead head for separate areas. Roll for the effects of each separate warhead, but the second and third payloads have a -20 percent modifier to hit. If they miss, consult the Ranged/Dropped Weapon Miss Chart.

SENSOR AND ANTIMISSILE WARHEADS

The sensor warhead can only be mounted to Type II and III missiles. The anti-missile warhead must be paired with a sensor, so it cannot be mounted on a Type I missile.

If you are using the idea that multi-warhead missiles can attack more than one target, assume that a Type III missile equipped with two antimissile warheads—and the sensor—can knockout two incoming missiles or even flights

of rockets that were fired from the same opponent at the same time. In this case, there is no penalty for the second antimissile warhead to intercept the second missile.

DELAYED TIMING

Normally it should be assumed that warheads are set to go off on impact—or reaching a target area—but they could be set for delayed timing.

As mentioned earlier, mixing incendiary warheads with other types—such as gas or foam warheads—may actually negate the effects of the secondary warhead. Yet some creative attacks could be used.

For example, a character could set an incendiary warhead to go off on impact while an extinguish foam warhead could be set for a two turn delay to hopefully put out any resulting fires. But, if the extinguish foam went off first; it would probably negate the effects of the incendiary warhead.

REVIEWING ROCKETS AND MISSILES

In order to resolve some of the basic differences between the original Alpha Dawn rules concerning rockets and the missiles described in Zebulon's Guide, the costs and weights of the Zeb's missiles have been altered. The Zeb's ranges have also been translated into the Alpha Dawn style, which includes Point Blank and Extreme distances.

For example: under Zebulon's Guide, an unarmed Type I missile cost 30 Credits and weighed 2 kilograms. An unarmed Type II missile was 50 Credits and weighed 4 kilograms while an unarmed Type III missile was 75 Credits and weighed 5 kilograms.

This seemed very unbalanced when compared with rockets and other heavy weapons presented in "Tanks a lot!" or Moore's article in the Star Frontiersman magazine.

Another problem with the source material for this conversion—the remastered version of Zebulon's Guide—it provided charts with con-

tradictory prices and weights for the warheads. On one chart, for instance, a Type I standard explosive warhead would be 1 kilogram, with a 5-meter blast radius, and did 68 points maximum, while costing 40 Credits.

But, the Explosive chart gave the Type I standard explosive warhead as costing 175 Credits. That's just one of the contradictions, so this article will try to unify the existing discrepancies.

MICROMISSILES

These are 10-centimeter long rockets that can be launched using a detachable tail rod or by a "popper" multi-launch tube cluster. The most common method is to hold it by a detachable tail rod.

The attacker presses the rod's ignition button to send it at its target. When fired this way, the character can only aim one every turn, but does not suffer from the -10 percent penalty for using a heavy weapon.

Micromissiles do not have a warhead, but do impact damage. Because it needs to accelerate, it does no at point blank range.

Ranges: PB —/S 19–100 m/M 101–300 m/L 301–500 m/E 501–1,000 m

SMALL ROCKETS

These are the rockets presented in the *Alpha Dawn* rulebook. They are considered a type of Gyrojet heavy weapon, but they are also a Missile weapon. One rocket will do 15d10 points of damage.

Ranges: PB —/S 0–70 m/M 71–200 m/L 201–500 m/E 501–1,000 m

COMPARISON OF ROCKETS AND MISSILES

	COST (CR)	ROUNDS	MASS (KG)
Micromissile	25	1 missile	1
Rocket (Alpha Dawn)	15	1 rocket	4
Medium Rocket (Vehide)	25	1 rocket	6
Large Rocket (Vehicle)	100	1 rocket	10
Bolt Guided Missile	1,000	1 missile	30
Arrow Guided Missile	3,000	1 missile	40
Missile I (1 warhead)	50	1 missile	10
Missile II "Standard" (2 warheads)	100	1 missile	20
Missile II "Astra" (sensor + warhead)	540	1 missile	24
Missile II "Vigilant" (1 warhead)	80	1 missile	20
Missile III (3 warheads)	150	1 missile	30

MEDIUM ROCKETS

These are longer, larger rockets than those used in the *Expanded Game Rules* book.

Ranges: PB —/S 0–200 m/M 201–1,250 m/L 501–1,000 m/E 1,001–2,000 m.

LARGE ROCKETS

Even larger than the medium rocket, they have the same range as medium rockets.

GUIDED MISSILE (BOLT)

The Bolt is considered to be a cheap guided missile. It is controlled by the joystick movements of the gunner and finalizes its own aim with infrared sensors. Its basic chance to hit is the gunner's DEX with a +20 percent modifier. All modifiers are applicable; range modifiers are reduced by three categories if the gunner is wearing magnigoggles (or a suitable visual enhancement device).

GUIDED MISSILE (ARROW)

The Arrow is the top-end guided missile. Armed with a more powerful warhead, it is programmed with a target before launching, and is self-guided. Programming takes three turns during which the gunner can take no other action. The chance to hit is 95 percent, and no modifiers are applicable.

Both the Bolt and Arrow have the same ranges
Ranges: PB 50 m–5 km/S 5–10 km/M 11–20 km/L 20–50 km/E —

Guided missiles accelerate at 150 m per turn, reaching a top speed of 1,500 m per turn.

A target jetcopter or aircar with a head start might be able to outrun a missile and get outside of its range. Keep in mind that these missiles are not necessarily starting from a standing stop. The firing vehicle's movement should be considered (*Tanks a lot! Vehicle combat in Star Frontiers gaming, Alex Curylo, Dragon Magazine, July 1985—The guided missiles' ranges have been extended while the weight has been reduced.*)

For example: a Streeel aircar has fired a Bolt at a fleeing Pan-Galactic jetcopter during Laco's War. The aircar was traveling at 220 meters per turn (m/t). The guided missile starts from the aircar's speed and by the end of the first turn has accelerated by 150 meters to 370 (m/t).

TYPE I "BANTAM" MISSILES

Although similar to unguided rockets, type I missiles have a longer range—5 kilometers. Modular, they can only carry one warhead at a time, but a variety of different warheads are available. See Warheads, for more information.

Also called the bantam size, type I missiles are heavy weapons (-10 percent modifier to fire one). They can be fired from a man-portable

missile Type I launcher or from a multi-launch tube cluster (MLTC).

Ranges: PB —/S 20–250 m/M 250–1 km/L 1–3 km/E 3–5 km.

TYPE II MISSILES

Twice the size of a Type I missile, Type IIs have a maximum range of 10 kilometers and carry up to two warheads. These warheads are larger and incompatible with those on a type I missile.

There are three types of type II missiles, the Standard, the Astra, and the Vigilant.

- Standard—A standard Type II missile is one that has two empty payload spaces. They can be equipped with two warheads of the same or different types. Before reaching its target, the warheads can separate and hit the same or adjacent targets within 20 meters of each other. When firing at two different targets, apply a -20 percent modifier when rolling to hit the second target.

- Astra—All Astra type II missiles come equipped with a sensor warhead as standard equipment; hence they have a slightly lower cost than buying the sensor warhead separate and then mounting it on a standard Type II missile. Also known as a "fire and forget" missile, it has a sensor with a specialized array of radar, infrared, ultraviolet, and shape detectors allowing the missile to lock-on to its target and provide a +30 percent chance to hit. The Astra's second warhead bay is modular, capable of accepting a wide variety of type II warheads.

- Vigilant—This type II missile only has one warhead; hence they have a lower cost to purchase. They cannot mount two warheads without extensive modifications. Such modifications would require a technician with the proper tools and parts and would take 1d5 hours, adding 15 percent to the cost of the missile.

Type II missiles can be fired from a man-portable missile launcher or a MLTC.

Ranges: PB —/S 40–500 m/M 501 m–2 km/L 2–6 km/E 6–10 km.

TYPE III "DRONA" MISSILES

Also known as the Drona, these missiles can be equipped with 1-3 warheads. Before reaching its target, missiles with 2-3 warheads can separate and hit the same or adjacent targets within 20 meters of each other.

When firing at two or three targets, apply a -20 percent modifier when rolling to hit the second and third targets. These missiles are generally fired from an MLTC. A type III equipped with a sensor warhead has a +30 per-

cent chance to hit. If equipped with two sensor warheads, the effects are cumulative, so it now has a +60 percent chance to hit.

If the Drona has a sensor and two antimissile warheads, it can knock out two incoming missiles that were fired from the same opponent without any penalty.

Ranges: **PB** —/**S** 60–750 m/**M** 751 m–3 km/**L** 3–9 km/**E** 9–15 km.

MISSILE LAUNCHERS

The most common types of launchers for missiles are the man-portable Popper (for micromissiles), the Missilier (Type I and Type II missiles need separate launchers), from a multi-launch tube cluster (MLTC), or aircraft can have single missiles mounted on a rail. Note: the only type of missiles a glijet might mount is a micromissile, and only two of those can be mounted.

SMALL ROCKET LAUNCHER

This is the rocket launcher found in the *Alpha Dawn Expanded Rules* book.

MEDIUM ROCKET LAUNCHER

Only a medium rocket launcher can fire a medium rocket. It is incompatible with larger or smaller rockets, micromissiles, or the Type I, II, or III missiles. One rocket launcher cannot fire different calibers. Rockets are fitted into special weapons pods and can be fired individually or all at once.

LARGE ROCKET LAUNCHER

An even larger, single rocket launcher, its rockets are incompatible with other rockets and missiles.

POPPER

This is a type of multi-launch tube cluster missilier that holds six micromissiles and can launch two per turn. A popper, however, weighs 15 kilograms and is considered a heavy weapon. Thus a character using one receives a -10 percent modifier to-hit and needs a tripod or sling or similar mechanism to steady it before it can be successfully fired.

MISSILIER TYPE I AND II

Type I and II missiles can be fired from man-portable launchers known as a Missilier. These launchers are heavy weapons and can only hold and fire one missile at a time.

Due to the size difference between a Type I and a Type II missile, a Missilier Type I cannot fire a Type II missile and vice versa.

The weapon's range depends on the missile type. The launcher ignites the missile's propulsion unit with a small electrical charge (costing

1 SEU). The missilier can use normal powerclips, minipowerclips, or be connected to a powerpack or other power sources.

RAIL LAUNCHER

Basically, this is the same cost and weight of a single MLTC (see below). It requires a power source to ignite the missile's propulsion system and is considered a heavy weapon.

WEAPONS PODS AND MULTI-LAUNCHERS

Rockets and missiles can be mounted in larger launchers. These include rocket clusters—also called pods—for jetcopters and aircars, guided missile platforms, and the Multi-Launch Tube Cluster (MLTC) that was created for Type I, II, and III missiles.

VEHICLE ROCKET PODS

These are compact clusters of rocket launch tubes for small, medium, or large vehicle rockets. The small rocket pod holds 12 small rockets, the medium pod holds 6 medium rockets, and the large pod holds 3 large rockets. These pods can fire any number of rockets in one turn—from a single rocket to the full cluster.

GUIDED MISSILE PLATFORMS (GMP)

There are four sizes of guided missile launch platforms. The smallest platform (GMP-1) holds 1 guided missile while the largest platform (GMP-4) holds four guided missiles. These platforms are flexible enough where they can mount either Bolt or Arrow guided missiles or a combination of the two.

MULTI-LAUNCH TUBE CLUSTER (MLTC)

These are clusters of launch tubes for Type I, II or III missiles. These launch tubes can fire any number of missiles in one turn—from a single missile to the full cluster. They must be connected to a power source and a firing computer to work properly.

It takes 1 SEU per missile to ignite each missile's propulsion units. MLTCs can be mounted on vehicles, trailers, buildings, robots, or even some kind of ground mount. They are not considered "man portable" weapons, however.

MLTC's can be connected to a variety of power sources, ranging from banks of minipowerclips, powerclips to power backpacks, parabatteries, etc.

TYPES OF WARHEADS

Like grenades, the warheads for area effect ordnance come in a variety of styles. Missiles can mount sensor, antimissile, electrical discharge, field crusher, standard explosive, and high explo-

PORTABLE LAUNCHERS TABLE			
	COST (CR)	MASS (KG)	HP
Small Rocket Launcher	5,000	15	1
Medium Rocket Launcher	6,000	17	2
Large Rocket Launcher	8,000	20	2
Popper	5,000	15	1
Missilier Type I	5,000	15	1
Missilier Type II	5,000	15	1
Multi-Launch Tube Clusters (MLTC)	1,000 + 250 x Msl#	3 + 2 x Msl#	Varies
Rail Launcher	1,000 + 250 x Msl#	3 + 2 x Msl#	Msl#

sive warheads.

The foam warheads include acid, chemical defoliant, dye, extinguish, irritant, slick, solid, and rad-blast. Gas warheads include doze, dusk, nightfall, poison, and smoke. While rounding out the selection are incendiary, sonic stunner, and tangler warheads.

Although they act similar to their smaller grenade counterparts, because of the larger size of missiles, bombs, large mines, and artillery shells have a secondary blast area. Typically, the effects of these weapons are reduced by half or are greatly diminished in the secondary blast radius.

SENSOR

This non-damaging warhead can only be mounted on type II or III missiles (mines, artillery shells, and bombs can use sensory fuses, but they are much smaller and more limited).

A sensory warhead uses radar, infrared, ultraviolet, radiation, and shape detectors so a missile can lock on to its target, providing a +30 percent modifier to-hit. However, the sensor can only identify objects within a 45-degree cone in front of the missile. A Type III missile can mount two sensor warheads, giving it a +60 percent chance to hit a target (This description differs a bit from Zebulon's Guide, which had characters pick from a number of "scanning" warheads such as radar, infrared, etc. The cost is also a bit less).

ANTIMISSILE

This specialized munition is normally mounted on Type II or III missiles. Its purpose is to destroy an incoming missile before it hits its target. It does this by exploding near the incoming missile (or flight of missiles and rockets) and releasing shrapnel and hundreds of metallic coated fibers that cover a large area and provide many false returns. Thus it acts similar to a chaff pod (See Countermeasures).

To be successfully used, it must be paired

ROCKET PODS, GM PLATFORMS

	COST (CR)	MASS (KG)	HP
Small Rocket Pod	8,000	20	1
Medium Rocket Pod	10,000	30	2
Large Rocket Pod	12,000	30	2
Guided Missile Platform 1	300	5	1
GM Platform 2	600	10	1
GM Platform 3	900	15	2
GM Platform 4	1,200	20	2

TYPE I MLTC LAUNCHERS

	COST (CR)	MASS (KG)	HP
MLTC Type I-2	2,500	10	1
MLTC Type I-4	5,000	20	1
MLTC Type I-6	7,500	30	2
MLTC Type I-10	12,500	50	2

Type I MLTCs come in six sizes: the I-2, I-4, I-6 and I-10 launchers. The number indicates the number of missiles they can carry.

TYPE II MLTC LAUNCHERS

	COST (CR)	MASS (KG)	HP
MLTC Type II-3	4,500	21	2
MLTC Type II-6	9,000	42	3
MLTC Type II-8	12,000	56	4

Type II MLTCs come in the II-3, II-6 and II-8 sizes.

TYPE III MLTC LAUNCHERS

	COST (CR)	MASS (KG)	HP
MLTC Type III-3	5,250	27	3
MLTC Type III-6	14,500	54	4
MLTC Type III-12	20,000	108	4

Type III MLTCs include the III-3, III-6 and III-12.

with a sensor warhead.

An antimissile warhead can destroy/distract not just one incoming missile, but a whole flight of rockets that were fired from one enemy during the same turn. However, the player firing the antimissile would need to roll to hit each missile.

Type III missiles can carry two antimissile warheads, which helps increase the chances of knocking out one attacker's missiles. However, the second warhead cannot be used to target another missile (or flight of missiles) coming from a second or third attacker.

In desperation, a character can fire an antimissile at another target (*Zebulon's Guide, re-mastered*, p. 67-68). It will explode and has a blast radius, but it is generally not as effective as it is against missiles and rockets, hence the decreased damage rate.

ELECTRICAL DISCHARGE

Releasing a high charge of electrical energy

WEAPONS CHARTS

WEAPON TYPE	DAMAGE	AMMO	ROF	DEFENSE	RANGE PB/S/M/L/E
Micromissile	5d10+2	—	1	Inertia	—/100/300/500/1km
Popper	5d10+2/ missile hit	6 micromissiles	2	Inertia	"
Rocket Launcher	15d10	1 small rocket	½	Inertia	—/70/200/500/1km
Medium Rocket Launcher	20d10	1 medium rocket	½	Inertia	—/200/500/1km/2km
Large Rocket Launcher	10d10 x 3	1 large rocket	½	Inertia	—/200/500/1km/2km
Small Rocket Pod	15d10/ rocket	12 small rockets	1-12	Inertia	—/70/200/500/1km
Medium Rocket Pod	3d10x10/ rocket	6 medium rockets	1-6	Inertia	—/200/500/1km/2km
Large Rocket Pod	4d10x10/ rocket	3 large rockets	1-3	Inertia	—/200/500/1km/2km
Guided Missile Platform 1	30d10 or 60d10	1 GM	1	Inertia	—/2km/4km/10km/20km
GMP-2	"/missile	2 GM	1-2	Inertia	"
GMP-3	"/missile	3 GM	1-3	Inertia	"
GMP-4	"/missile	4 GM	1-4	Inertia	"
Missile I	1 Warhead	—	½	Varies	—/250/1km/3km/5km
Missile II	2 Warheads	—	½	Varies	—/500/2km/6km/10km
Missile III	3 Warheads	—	½	Varies	—/750/3km/9km/15km
MLTC Type I-2	Varies	2 Missile I	1-2	Varies	—/250/1km/3km/5km
MLTC Type I-4	"	4 Missile I	1-4	Varies	"
MLTC Type I-6	"	6 Missile I	1-6	Varies	"
MLTC Type I-10	"	10 Missile I	1-10	Varies	"
MLTC Type II-3	Varies	3 Missile II	1-3	Varies	—/500/2km/6km/10km
MLTC Type II-6	"	6 Missile II	1-6	Varies	"
MLTC Type II-8	"	8 Missile II	1-8	Varies	"
MLTC Type III-3	Varies	3 Missile III	1-3	Varies	—/750/3km/9km/15km
MLTC Type III-6	"	6 Missile III	1-6	Varies	"
MLTC Type III-12	"	12 Missile III	1-12	Varies	"

when it strikes, the electrical discharge warhead short-circuits every device in the blast radius including computers, chronocons, and other normal electronics. It can stop an unshielded vehicle, warbot, etc., dead in its tracks, requiring extensive repairs. The ED warhead acts as an electrostunner set to damage for every bioform in the primary blast area.

Zebulon's Guide provided little guidance for how to use this type of weapon. This subject was later covered in the January 1988 issue of *Dragon Magazine* in a story on powered armors. The following rules are based on the description of the Electronic Countermeasures (ECM) Rifle.

The chance of disabling an electronic device is based on the amount of energy that is used. To determine the base chance of success, multiply the number of SEUs used by five. In this case, the ED missiles are area effect weapons, rather than a beam of energy from an ECM Rifle hitting a specific target. Even if we assume

that a Type I warhead has 20 SEUs to work with, this energy is being spread over a 5-meter primary blast radius, so the base chance of success is lower: we will assume that the base chance of success for all three missile warheads is 70 percent.

Computers, robots, mines, and other electronic equipment have a resistance level to avoid shorting out. This resistance level is the robot or computer's level—for landmines, it is the sensor level minus 1. (Sorry, you will have to wait until Part 5 to find out more about handling these weapons). Multiply the resistance level by four, then subtract this from the warhead's base chance of success; this will yield the chance of a malfunction—see the Electronic Discharge Warhead Chance of Success Table. When a malfunction occurs, roll on the malfunctions table for the results. A failure of 99-00 always means that the target resisted the attack regardless of what the success rate was.

Unfortunately, the Dragon article on powered armor failed to provide any suggestions of resistance levels for vehicles. Issue 15 of Star Frontiersman magazine featured an article by Larry Moore on vehicle combat, which is an update of the older "Tanks a lot!" article in Dragon. In that article, Moore presents several vehicle "duty" types—including corporate, security, paramilitary and military—which are beyond the mere civilian types found in the Alpha Dawn rule book.

Assume that most civilian vehicles will only have a resistance level of 1, except Explorer vehicles which will have a resistance level of 3. Corporate-Duty vehicles will have a resistance level of 2; while security-duty and paramilitary-duty vehicles will be level 3; and average military-duty vehicles will have a resistance level of 4.

Please see the Electronic Discharge Warhead chance of success table to determine if a given robot, computer, device or vehicle resists the effects.

These warheads will cause 5d10 points of electrical damage to living targets within the primary blast area no matter what the size is. Beings in the secondary blast area receive half damage.

If the target is specially insulated, the damage can be negated.

A gauss screen will offer complete protection, but its power pack is drained by 1 SEU per SEU used by the ED warhead (20). An anti-shock implant will reduce damage by half to living beings. If the target robot or computer has an anti-shock implant, subtract an additional 20 percent from the modified chance of success for causing a malfunction. In other words, a Type III normally has a 98 percent chance of success to disable unshielded robots of any level. But, with A-S implant, it only has a 78 percent chance of success.

A character can also choose to purchase electromagnetic pulse (EMP) insulation for his devices. This insulation was featured in issue 17 of Frontier Explorer magazine in the article "Robots Rules of Order Revised." EMP shielding is not a power screen, but rather an extensive hardening of a device's/robot's/vehicle's internal circuitry that is much more comprehensive than installing an anti-shock implant.

If EMP shielding is included as part of the robot's (or vehicle's, computer's, or device's) initial construction, the cost is an additional 50 percent of its body style while weight only increases 10 percent. If this shielding is installed later, the modification is an added 90 percent of the robot's body style cost while weight increases 20 percent.

ELECTRONIC DISCHARGE WARHEAD CHANCE OF SUCCESS TABLE

WARHEAD TYPE	BASE CHANCE	RESISTANCE LEVEL 1	RESISTANCE LEVEL 2	RESISTANCE LEVEL 3	RESISTANCE LEVEL 4	RESISTANCE LEVEL 5	RESISTANCE LEVEL 6
I	70	66	62	58	54	50	46
II	70	66	62	58	54	50	46
III	70	66	62	58	54	50	46

- The resistance levels of robots and computers are based on their level.
- The resistance levels of mines are based on their sensor level minus one.
- An automatic failure roll of 99-00 means that the target has resisted the attack.

MISSILE WARHEADS

WARHEAD	COST (CR)	WGT (KG)	DAMAGE/EFFECT	BLAST RADIUS	DEFENSE
Sensor	200xMsl#	1xMsl#	+30% to hit	None	Varies
Antimissile	100xMsl#	1xMsl#	3d10/destroys incoming missile	3xMsl#	—
Electrical Discharge	150xMsl#	1xMsl#	Elect. Short	5xMsl#	Insulation
Field Crusher	150xMsl#	1xMsl#	6d10 x Msl# vs. fields	Target	—
Standard Explosive	175xMsl#	1xMsl#	6d10 x Msl#	5xMsl#	Inertia
High Explosive	200xMsl#	1xMsl#	8d10 x Msl#	7xMsl#	Inertia
Foam: Acid	100xMsl#	1xMsl#	(2d10xMsl#) + 10/turn	6xMsl#	Basegel
Foam: Chemical Defoliant	100xMsl#	1xMsl#	Defoliates	6xMsl#	—
Foam: Dye	100xMsl#	1xMsl#	Marking	6xMsl#	RS check -5% x Msl#
Foam: Extinguish	100xMsl#	1xMsl#	Smother Flame	6xMsl#	—
Foam: Irritant	100xMsl#	1xMsl#	1d5/turn	6xMsl#	Special
Foam: Slick	100xMsl#	1xMsl#	Slick surface	6xMsl#	Slow movement
Foam: Solid	100xMsl#	1xMsl#	Entrapment	6xMsl#	RS check -5% x Msl#
Foam: Rad-Blast	100xMsl#	1xMsl#	Blocks radiation	6xMsl#	—
Gas: Doze	100xMsl#	1xMsl#	Sleep	10xMsl#	STA check -5%xMsl#
Gas: Dusk	100xMsl#	1xMsl#	Dim light	10xMsl#	IR, scanners
Gas: Nightfall	100xMsl#	1xMsl#	Darkness	10xMsl#	IR, scanners
Gas: Poison	100xMsl#	1xMsl#	S5/T10	10xMsl#	STA check -5% x Msl#
Gas: Smoke	100xMsl#	1xMsl#	-10% to hit	10xMsl#	IR
Incendiary	150xMsl#	1xMsl#	4d10 x Msl# + (1d10 x 3turns)	10xMsl#	Asbestos
Sonic Bomb	175xMsl#	1xMsl#	8d10 x Msl#	5xMsl#	Sonic
Sonic Stunner	175xMsl#	1xMsl#	Stun	5xMsl#	Sonic, STA -5% x Msl#
Tangler	150xMsl#	1xMsl#	Entanglement	5xMsl#	RS check -5%xMsl#

Effects: If a target has EMP shielding, subtract an additional 70 percent from the modified base chance of success. This effect is cumulative with A-S implant and a gauss screen. Of course, an automatic hit by an EMP weapon will overcome any protection.

Most unshielded robots, vehicles, computers, and devices will need extensive repairs if they suffer an electronic discharge attack. However, those that have EMP shielding have

a cumulative 5 percent chance per turn of "rebooting" and being able to resume operations.

Within the secondary blast radius, the ED warhead will "stun" an unshielded robot, vehicle and other electronic systems for 1d10 turns/warhead size. To determine the chance of success, use the warhead chance of success table. Unshielded bioforms need to conduct a Stamina check with a + 20 percent modifier or likewise will be stunned for 1d10 turns. For example, a robot within the secondary blast

TYPE I WARHEADS

WARHEAD	COST (CR)	WGT (KG)	DAMAGE/EFFECT	BLAST RADIUS	DEFENSE
Electrical Discharge	150	1	Elect. Short	3/5	Insulation
Field Crusher	100	1	6d10 vs. fields	Target	—
Standard Explosive	80	1	6d10	3/5	Inertia
High Explosive	100	1	8d10/6d10	3/5	Inertia
Foam: Acid	80	1	2d10+10/turns	3/5	Basegel
Foam: Chemical Defoliant	80	1	Defoliates	3/5	—
Foam: Dye	80	1	Marking	3/5	RS -5%
Foam: Extinguish	80	1	Smother Flame	3/5	—
Foam: Irritant	80	1	1d5/turn	3/5	Special
Foam: Slick	80	1	Slick surface	3/5	Slow movement
Foam: Solid	80	1	Entrapment	3/5	RS -5%
Foam: Rad-Blast	80	1	Blocks radiation	3/5	—
Gas: Doze	80	1	Sleep	5/—	STA -5%
Gas: Dusk	80	1	Dim light	5/—	IR, scanners
Gas: Nightfall	80	1	Darkness	5/—	IR, scanners
Gas: Poison	80	1	S5/T10	5/—	STA -5%
Gas: Smoke	80	1	-10% to hit	5/—	IR
Incendiary	100	1	4d10 + (1d10x3turns)	5/8	Asbestos
Sonic Bomb	80	1	8d10	3/5	Sonic
Sonic Stunner	80	1	Stun	3/5	Sonic, STA -5%
Tangler	80	1	Entanglement	3/5	RS -5%

Note: High explosive warheads are designed as anti-personnel munitions. Use the first number—8d10—to determine damage to living things. To determine damage to non-animate objects such as vehicles, robots, buildings, etc. that are within the blast zone, use the second number (6d10) after the slash.

radius of a type III missile ED warhead will be stunned for 3d10 turns.

Any bioform, robot, vehicle, computer, or device shielded by a gauss screen or A-S implant will be fully protected from an ED warhead if they are within the secondary blast area.

STANDARD EXPLOSIVE AND HIGH EXPLOSIVE

Standard explosive warheads will cause normal damage to people, structures, robots, vehicles, and other objects within their primary and secondary blast radii.

High explosive warheads are more designed to inflict maximum damage to “soft targets”—i.e. people, animals, light structure buildings. But, when used against robots, vehicles, buildings, spaceships, characters in powered armor, etc. the amount of damage they inflict is similar to a standard explosive bomb.

FIELD CRUSHER

This warhead only damages force fields and other energy screens such as inertia, albedo, gauss, light shift, simp, sonic, shimmer, etc. Refer to the Weapons Charts for the amount of damage it will cause within the immediate blast area to

these types of fields.

Field crushers will cause holographic screens to collapse, draining an equivalent amount of energy from their power sources as it would by damaging other screens. It only inflicts half-damage on protective screens in the secondary blast area. Otherwise, these munitions have no other effect on bioforms or electronics.

FOAM

This warhead behaves similar to a foam grenade of the same type (see “Things that go boom! Part 1” page 18), but there is more foam, so it is more persistent. The foam will fill the blast radius with opaque, dense foam that cannot be visually penetrated without the aid of radar or other scanners. Most foams will dissipate after 10 turns times the missile type, but a solid foam warhead will last for 100 turns times the missile type.

Within the secondary blast radius, cut the foam warhead’s effects in half. For example, if a chemical defoliant bomb is used, not all vegetable matter within the secondary blast radius will be hit (a 50 percent chance of not being hit); an extinguish foam will only put flames out half the time in the secondary blast radius; etc.

Irritant foam warheads only cause temporary, non-fatal damage—unless a being drops below 0 STA, at which point it stops causing the character damage but then the character loses 1 STA point per turn until they are beyond the point of revival. The temporary damage heals at the rate of 2 STA points per 30 minutes of rest. . Characters can defend against this foam by wearing goggles and filter masks. This foam can be flushed off with water.

Because warheads are much larger than grenades, they will affect larger creatures easier. For instance, a large animal might be able to break free from the effects of a solid grenade, but it will probably be caught by a Type III solid warhead going off.

GAS

This warhead behaves similar to a gas grenade of the same type; however, it is much more persistent. Assume that the resulting gas cloud—barring a fierce wind—will last for 2 turns times the weight of the warhead. Thus, the doze gas cloud from a Type I missile weighing 1 kilogram will last for 2 turns but the cloud from a Type III missile, which weighs 3 kilograms, will last for 6 turns.

A breeze will cause such a cloud to drift from its original location, following the direction of the wind. The length of the chemical cloud would be four times its width. For example, a Type III poison gas warhead has a burst radius of 15 meters. The resulting cloud would extend 60 meters downwind!

Any gases will sink into lower lying areas. So, if a character is taking cover in a ditch, the gas cloud from a poison bomb may drift to where he is at.

Since the size of warheads, bombs, and artillery shells are much larger than grenades, the gas will affect larger creatures as if multiple grenades had been successfully thrown at it. If characters do not escape a gas cloud or do not have any kind of gas mask, they will need to keep rolling each turn they remain in the area of effect to avoid falling victim to its effects.

INCENDIARY

This warhead causes fire damage, with the flames continuing to burn long after the initial explosion, which causes more damage. Keep in mind, if an incendiary warhead is used in a highly combustible location, such as a building, forest, etc., it will probably start a conflagration that will spread and grow even after the effects of the incendiary device have passed.

In the secondary blast radius, characters can make a Reaction Speed check to avoid damage. Otherwise, they receive half-damage from the

incendiary warhead.

SONIC BOMB

Based on the Boomer grenade, this weapon generates damage through the use of high frequency sound waves. The damage is halved if someone is using a sonic screen or sonic headphones.

SONIC STUNNER

Zebulon's Guide only offered the sonic stunner warhead. Anyone failing a Stamina check within the immediate blast area will be stunned for 1d100 turns. In the secondary blast radius, a character receives a +30 percent bonus to avoid falling victim to the stunning effect, which would only last 1-50 turns.

TANGLER

These warheads throw out hundreds of strong, sticky polymer threads. These threads stick to everything within the blast radius. Characters can try to avoid this effect with a Reaction Speed check. An entangled individual cannot move until the threads decay (in 30 minutes) or until solvaway is spread over the threads. Any creature with more than 100 stamina points can break out of tangler threads in one turn.

Note, because warheads cast far more tangler threads than a grenade, even if a character avoids being entrapped in the polymer threads, they may be trapped in the "safe" area that they sought shelter until the threads decay.

Characters, robots and creatures within the secondary blast radius also need to make a RS check to avoid entrapment; otherwise they are snared for 15 minutes. Any creature with more than 50 stamina points can break out of the threads in the secondary blast area in one turn.

NEW/OLD SKILLS

Referees could handle missile weapons in a couple ways. Since characters with the Gyrojet weapons skill can already fire small rockets, one could assume that they can also use missile weapons. Or the referee could convert one of the Zebulon's Guide skills to the Alpha Dawn system,

Weapons: Missiles

Type: Military PSA

Success Rate: ½ DEX + 10% per level

While characters with the Gyrojet skill can fire the Alpha Dawn rocket launchers, the missile skill enables a character to target and fire heavy missiles, including the types I through III missiles listed here. This skill also gives a character full knowledge of missile warheads, allowing them to swap warheads and repair missiles. A character with this skill, rather than Gyrojets,

TYPE II WARHEADS

WARHEAD	COST (CR)	WGT (KG)	DAMAGE/EFFECT	BLAST RADIUS	DEFENSE
Sensor	300	2	+30% chance to hit	N/A	Jamming
Antimissile	200	2	3d10/destroys incoming missile	6/—	—
Electrical Discharge	160	2	Elect. Short	6/9	Insulation
Field Crusher	200	2	12d10 (only vs. fields)	Target	—
Standard Explosive	160	2	12d10	6/9	Inertia
High Explosive	200	2	16d10/12d10	6/9	Inertia
Foam: Acid	160	2	4d10+10	6/9	Basegel
Foam: Chemical Defoliant	160	2	Defoliates	6/9	—
Foam: Dye	160	2	Marking	6/9	RS -10%
Foam: Extinguish	160	2	Smother Flame	6/9	—
Foam: Irritant	160	2	1d5/turn	6/9	Special
Foam: Slick	160	2	Slick surface	6/9	Slow movement
Foam: Solid	160	2	Entrapment	6/9	RS check
Foam: Rad-Blast	160	2	Blocks radiation	6/9	—
Gas: Doze	160	2	Sleep	10/—	STA -10%
Gas: Dusk	160	2	Dim light	10/—	IR, scanners
Gas: Nightfall	160	2	Darkness	10/—	IR, scanners
Gas: Poison	200	2	S5/T10	10/—	STA -10%
Gas: Smoke	160	2	-10% to hit	10/—	IR
Incendiary	160	2	8d10+ (1d10x3turns)	10/15	Asbestos
Sonic Bomb	160	2	16d10	10/15	Sonic
Sonic Stunner	300	2	Stun	10/15	Sonic, STA -10%
Tangler	200	2	Entanglement	6/9	RS -10%

Note 1: To determine the cost and weight of a missile, add the above figures to the appropriate Type II missile. Since the Vigilant only has space for one warhead, it cannot mount the sensor or antimissile. The Astra missiles have a built in sensor and only mount one other type of warhead. The Standard Type II missile can mount two warheads.

Note 2: To determine the damage done to living objects from a high explosive warhead, use the first number before the slash. Use the second number to determine damage against inanimate objects.

can advance to fire Knight Hawks-style assault rockets and missiles.

NOTES ON THE WEAPONS CHARTS

The abbreviation "Msl#" refers to the missile type. So, if you wanted to calculate the cost, weight, damage effects and blast radius of a Type II standard explosive warhead, the cost would be 175 multiplied by 2, which equals 350 Credits. The weight would be 1 times 2, which is 2 kilograms. The damage would be 12d10 (6d10 x 2). The blast radius is 5 meters x 2 which is 10 meters. The secondary blast radius would then be from 10-15 meters.

For the blast radius column, the first number is the primary blast radius. Every character, robot, vehicle, structure, or other item within that area will take damage. Roll individually and then

determine what effect armor, defensive shields and other cover may have on the result. The second number is the secondary blast radius. Anyone (including robots) in this area must pass a Reaction Speed check. Characters who fail the check must roll on the Secondary Blast Radius: Effects Resolution Table.

COUNTERMEASURES AND OTHER EQUIPMENT

Electronic countermeasure (ECM) devices are another form of defense which is intended to scramble other types of electronic detection and targeting systems including those that are based on radar, sonar, infrared, etc.

One of the drawbacks is that opponents will know someone is jamming them.

TYPE III WARHEADS

WARHEAD	COST (CR)	WGT (KG)	DAMAGE/EFFECT	BLAST RADIUS	DEFENSE
Sensor	450	3	+40% chance to hit	None	Jamming
Antimissile	300	3	3d10/destroys incoming missile	9/—	—
Electrical Discharge	240	3	Elect. Short	9/14	Insulation
Field Crusher	300	3	18d10 (only vs. fields)	Target	—
Standard Explosive	240	3	18d10	9/14	Inertia
High Explosive	300	3	24d10/18d10	9/14	Inertia
Foam: Acid	240	3	6d10+10/ turn x 3	9/14	Basegel
Foam: Chemical Defoliant	240	3	Defoliates	9/14	—
Foam: Dye	240	3	Marking	9/14	RS -15%
Foam: Extinguish	240	3	Smother Flame	9/14	—
Foam: Irritant	240	3	1d5/turn x 3	9/14	Special
Foam: Slick	240	3	Slick surface	9/14	Slow movement
Foam: Solid	240	3	Entrapment	9/14	RS -15%
Foam: Rad-Blast	240	3	Blocks radiation	9/14	—
Gas: Doze	240	3	Sleep	15/—	STA -15%
Gas: Dusk	240	3	Dim light	15/—	IR, scanners
Gas: Nightfall	240	3	Darkness	15/—	IR, scanners
Gas: Poison	300	3	S5/T10	15/—	STA -15%
Gas: Smoke	240	3	-10% to hit	15/—	IR
Incendiary	240	3	12d10 + (1d10 x 3turns)	15/23	Asbestos
Sonic Bomb	240	3	24d10	9/14	Sonic
Sonic Stunner	450	3	Stun	9/14	Sonic, STA -15%
Tangler	300	3	Entanglement	9/14	RS -15%

Note 1: To determine the cost and weight of a missile, add the above figures to the Type III missile.
 Note 2: To determine the damage done to living objects from a high explosive warhead, use the first number before the slash. Use the second number to determine damage against inanimate objects.

INFRARED JAMMER

IR jammers make the vehicle invisible to infrared sensors. They can only be mounted on size 1 vehicles and larger.

Effect: Prevents infrared sensors from locking on; -30 percent penalty for targeting units relying on IR.

Power Usage: minimum of 2 SEU per turn per vehicle size. For example, an IR jammer on a size 3 ground car would use 6 SEUs per turn of use. A similar jammer on a size 1 hover cycle would only use 2 SEUs. Mass: 4 kilograms. Cost: 500 Credits.

RADAR JAMMER

Radar jammers may also interfere with the radar systems of nearby friendly units. They can only be mounted on size 1 vehicles and larger.

Effect: Prevents radar-based sensors from locking on; -30 percent penalty for targeting

units relying on radar.

Power Usage: 2 SEU per turn. Mass: 4 kilograms + 1 kilogram per vehicle size. Cost: 500 Credits + 100 Credits per vehicle size.

CHAFF POD

Chaff pods are carried by aircraft and are dropped after a missile has locked on. The pod explodes, releasing hundreds of metallic coated fibers that cover a large area and provide many false returns. Modern Frontier chaff is useful against radar, sonar, LIDAR, shape, infrared and other sensors. The debris cloud lasts for up to 1-5 minutes unless there is a fierce wind to disperse the chaff.

Effect: 40 percent chance to disrupt a missile lock-on, including guided missiles. The pods take up one hardpoint on a vehicle. Mass: 25 kilograms per pod. HP: 1. Cost: 100 Credits.

VEHICLE SIZE TABLE

SIZE	EXAMPLE(S)
0	Bicycles, mopeds, 1-person transport pods, go-karts.
1	2 person cycles, ATVs, "golf" carts.
2	2-4 person small cars
3	Mid-size cars (standard Star Frontiers ground cars and hover cars)
4	Small cargo trucks or vans. (Standard Frontier size)
5	Large cargo haulers, tractor trailers.
6	Truly large vehicles but excludes mass transports such as monorails, ocean freighters, etc.

CORNER REFLECTOR POD

Similar to chaff pods, corner reflector pods release many-sided objects that re-radiate sensor signals, mostly back toward the source and disrupt missile lock-ons. The debris cloud only lasts 1-10 turns. The pods take up one hardpoint of space.

Effect: 60 percent chance to disrupt a missile lock-on. Mass: 25 kilograms. HP: 1. Cost: 200 Credits.

CLUSTER WARHEAD MOUNTS

In its quest to gain an upper hand over the Galactic Task Force, MercCo's top officers figured that if a Type II missile was larger, it could carry four Type I warheads while a Type III missile could carry nine Type I warheads. It soon developed a deadly missile package, allowing multiple warheads to saturate an area.

At Type II Cluster Warhead Mount will hold four Type I warheads, all of which must be the same type. It can only be used with the Standard Type II missile and these units take twice as long to mount and dismount. If an attack is successful, one of the three warheads will strike the target square while the other three fall within 5 meters of the target. Cost: 500 Credits.

The Type III CWM will hold nine Type I warheads, all of the same type. At least one warhead will strike the target square and the remaining warheads will saturate the area within 5-15 meters. Cost: 800 Credits.

FINAL THOUGHTS

Translating Zebulon Guide's missile statistics into the Alpha Dawn system has been somewhat challenging due to conflicting information in the source material.

Yet, this article will hopefully allow a referee to successfully integrate these weapons into a game. Future segments of this topic will look at other area effect weapons including mines, artillery pieces, bombs, and demolition explosives.

HOW DOES IT WORK?

LOOKING AT EXOSKELETONS

BY JOSEPH CABADAS



IMAGE BY BRIAN PHONGLUANGTHAM

The only mention of exoskeletons in the Alpha Dawn rules is in the Equipment section. These rules state that exoskeletons are “specially fitted to the character that will wear it, and cannot be worn by anyone else.” Some of its benefits include allowing the wearer to move “twice as fast as a normal character, can jump 5 meters straight up (in 1g), gains a bonus of +20 percent chance to hit in melee and does +10 points of damage in melee.”

Although weighing only five kilograms, the exoskeleton is a mechanical and metal frame worn on the outside of a character’s body and uses 1 SEU per minute while in operation, which is far less power efficient than a robot.

What follows are some house rules for handling exoskeletons which are based on discussions on the starfrontiers.us website by numerous contributors but especially by the user known as w00t (Larry Moore)!

EXOSKELETON USAGE

To properly know how to use an exoskeleton, a character should have Machinery: Operate, which is a Technician (TechEx) skill, or Powered Armor, which is an Enforcer (Military PSA) skill. Otherwise, unskilled characters have a -30 percent penalty when performing any tricky maneuvers. When attacking in melee, an unskilled character suffers a -15 percent penalty.

When worn and powered, the weight of these rigs does not count against a character’s carrying capacity. Note, the LoCo Exo rig is considered to be character-powered.

Fastening/Unfastening—The time it takes to put on an exoskeleton (fastening) or taking one off (unfastening) depends upon the type of exoskeleton a character is using. Unskilled characters must make a Dexterity check to see if they can shave

off a turn or two to get in or out of the contraption. Skilled characters can reduce the time by 1 turn per level they possess.

TYPES OF EXOSKELETONS

Characters can purchase six basic exoskeletons including the A-D model; custom-fit; low-cost, nonpowered exoskeleton (LoCo Exo); adjustable powered; labor; and explorer/enforcer rigs.

The explorer/enforcer (E/E) rigs form the basis for the Frontier’s basic powered armor outfits. Referees may add other types of exoskeletons with different capabilities as they see fit, such as a medical exoskeleton that can be used instead of bionics.

A-D EXOSKELETON

The A-D (Alpha Dawn) rig was the first custom-made, lightweight exoskeleton made for the Frontier. While some con-

sider it to be outdated due to some of its drawbacks, it is still manufactured and sold.

The A-D exoskeleton is a mechanical, metal frame that is worn on the outside of a character's body. It follows the body's movements and increases the strength of its wearer. Each joint has its own miniature motor. An exoskeleton must be specially fitted to the character that will wear it, and cannot be worn by anyone else.

Getting into or out of an A-D exoskeleton takes 1d10+10 minutes. The character wearing this rig can move twice as fast as normal, can jump 5 meters straight up (in 1g), gains a bonus of +20 percent bonus to hit in melee and does +10 points of damage in melee.

The A-D exoskeleton provides no protection to the wearer, but can be worn along with a powerscreen and defensive suit. It must be plugged into either a power backpack or backpack and uses 1 SEU per minute of operation.

Cost: 2,000 Credits

Weight: 5 kilograms

CUSTOM-FIT EXOSKELETON

This rig is custom-made for the wearer and cannot be worn by someone else of the same race without modifications by a TechEx. Getting in or out of the outfit takes 1d10 + 10 turns.

When wearing the exoskeleton, a character receives the following benefits:

- All movement rates are doubled, including walking, running, climbing, jumping, and swimming. (Yes, these devices are waterproof),
- Jumping five meters straight up (in a 1G environment) without a running start.
- Gains a bonus of +20 percent to hit in melee and does an extra +1d10 points of damage in melee.
- Can lift an extra 40 kilograms without being encumbered.

An exoskeleton provides no protection to the wearer, but it can be worn along with a power screen and defensive suit. Another benefit, because it is so lightweight and slim, a character wearing a custom-fit exoskeleton can easily get in and out of

vehicles without needing to modify the vehicle's door openings or seats.

Cost: 3,500 Credits

Weight: 5 kilograms

Power: 20 SEU battery, though it can be plugged into a 50 SEU Backpack or 100 SEU Backpack (sold separately)

Power Usage: 2 SEU per hour.

LOW-COST, NONPOWERED EXOSKELETON

Also called the "LoCo Exo," this model is a mostly mechanical exoskeleton that allows the user to overcome many of the negative effects of higher gravity worlds (those with more than 1 G gravity). Specifically, when a character wears one of these exoskeletons, he will not suffer a decrease in normal carrying capacity, can leap and vault normally, and safely jump the same distance as a character in a standard 1 G environment. However, it will not eliminate any additional damage taken in a fall (+2 points per 0.1 increase in gravity).

When used in a 1 G environment, it would allow a character to carry 10 extra kilograms without being encumbered. For every tenth of a gravity less than 1 G, a character can carry an additional 2 kilograms above and beyond the level stated in the Alpha Dawn rules under "Movement: Gravity, Weight and Mass."

When worn, the unit does not count against a character's carrying capacity. The wearer receives a -10 percent modifier to all Reaction Speed and Dexterity checks—including a -1 Initiative Modifier.

The low-cost exoskeleton is adjustable, but it can only be used by someone of the same racial type—i.e. a Vrusk can only wear an outfit made for a Vrusk, a Yazirian must wear a Yazirian model, not one for a Human or a Dralasite, etc.

Initially getting in or out of a LoCo Exo takes 1d10+5 turns. A character can speed up the time it takes to "suit up" by expending experience points. For each experience point used, the character can trim 1 turn off of the time it takes to put on or take off the exoskeleton. The minimum amount of time it takes to put on or take off this rig is 6 turns.

The outfit provides no protection to the wearer, but it can be worn along with a power screen and defensive suit. Like the custom-fit models, the LoCo Exo is slim enough where a character can operate most vehicles without needing to modify

door openings or seats.

Cost: 300 Credits

Weight: 10 kilograms

Power: N/A.

ADJUSTABLE POWERED EXOSKELETON

This type of powered exoskeleton sacrifices strength for decreasing the amount of time it takes to put on and take off while also being adjustable so it will fit others of the same race. Slightly heavier than the custom-fit models, it is a blend of robotics and bionic technology. Its mechanical/metal frame has miniature motors at each joint to follow the wearer's movements while amplifying strength.

Initially getting in or out of an exoskeleton takes 1d5+5 turns. A character can speed up the time it takes to "suit up" by expending experience points. For each experience point used, the character can trim 1 turn off of the time it takes to put on or take off the exoskeleton; the maximum reduction is 5 turns so then it would take a highly experienced user only 1d5 turns.

A character in this type of exoskeleton can move twice as fast as normal (in including walking, running, climbing, jumping, and swimming), can jump five meters straight up in a 1G environment, gains a bonus of +5 percent to hit in melee and does an extra +1d5 points of damage in melee. An exoskeleton provides no protection to the wearer, but it can be worn along with a power screen and defensive suit.

The wearer can carry an extra 15 kilograms without being encumbered or can carry up to 30 extra kilograms. Another benefit, because it is so lightweight and slim, a character wearing a custom-fit exoskeleton can easily operate vehicles without needing to modify any door openings or seats.

Cost: 1,500 Credits

Weight: 8 kilograms

Power: 20 SEU battery, though it can be plugged into a 50 SEU Backpack or 100 SEU Backpack (sold separately)

Power Usage: 2 SEU per hour.

LABOR RIG

This this exoskeleton is used for pure strength. It is bulkier and heavier than the standard models, hence a reduction

in reaction speed. Commonly used for lifting, pushing and carrying heavy loads, the labor rig is typically used in warehouses or on planets with high gravity. It provides a +25 bonus to Strength (STR) but cuts Reaction Speed (RS) by -15 RS. The wearer can lift up to 250 kilograms without being encumbered or up to a maximum of 1,500 kilograms.

While this may appear to be an ideal suit for mounting heavy weapons, the rig's pilot suffers a -2 penalty to his Initiative Modifier and a -20 percent modifier to-hit while using ranged or melee weapons because it is not made for combat. But a successful melee strike will cause 4d10 points of damage!

It takes a character 1d5+5 turns to suit up or properly exit the rig.

Humans, Yazirians and Dralasites can use the same type of labor exoskeleton, but Vrusk need their own purpose built unit (no extra cost). The rig does not provide any additional protection to a character wearing it, but they can wear defense suits. Defense screens will not work with this type of exoskeleton unless it is purposely mounted on it (with a 10 percent extra cost).

Because of its size and bulk, a character cannot wear a labor rig and use or even ride in many vehicles (cycles, cars, etc.), but they could be carried in a ground, hover, or air transport and other larger craft.

Cost: 2,000 Credits

Weight: 80 kilograms

Power: 100 SEU Backpack

Power Usage: 4 SEU per hour (6 SEU per hour if lifting more than 250 kg).

EXPLORER/ENFORCER RIG

The E/E Rig, also called the poor man's powered armor, is a robust exoskeleton designed for speed and melee power but not necessarily for a lot of extra carrying capacity. Basically a scaled down ro-

bot for a character, it is made to mount all sorts of equipment and is compatible with a defense field. In its stripped-down form, it will not provide any additional protection but a character could wear a defensive suit.

A character in an E/E Rig can move twice as fast as normal (including walking, running, climbing, jumping, and swimming), receives a +1 Initiative Modifier (IM), can jump five meters straight up in a 1 G environment, gains a +20 percent to hit modifier in melee and does an extra +10 points of punching score (PS) damage in melee combat. It comes with many pockets and attachments to hold additional powerclips and equipment.

This rig can be paired with partial and full polyplate armor (see the Alpha Dawn remastered rules under Optional Equipment). If so, a character cannot wear any other defensive suit and the polyplate armor is actually plates that are mounted over the exoskeleton (add 10 percent to the cost of the armor plus a 100 Credit mounting charge).

Other equipment can be mounted to the E/E Rig such as a toxyrad gauge, chronocom, trace-tags, etc. for an additional 10 percent installation charge. For an additional 5 percent charge (15% total), such equipment can also be made to be removed and used by a character when they are not wearing the outfit. Characters using an E/E Rig double their normal carrying capacity (unencumbered and encumbered) and can lift up to three times their normal maximum weight and carry it for a short distance.

It takes a character 1d10+10 turns to suit up or properly exit the rig; a character can spend experience points to reduce this time (1 XP to reduce 1 turn to a maximum reduction of 8 turns). Humans, Yazirians and Dralasites can use the same type of E/E exoskeleton, but Vrusk need their own purpose built unit (no extra cost).

Although waterproofed, the rig is too heavy for characters to use them to swim unless it is equipped with some kind of ballast tank/flotation device.

Because of its size and bulk, a character cannot wear an E/E Rig and operate or even ride in many vehicles (cycles, cars, etc.), but they could be carried in an explorer or ground, hover or air transport, and other larger craft.

Cost: 3,500 Credits

Weight: 25 kilograms

Power: 100 SEU Backpack (sold separately)

Power Usage: 4 SEU per hour.

EXPLORER/SCOUT TUNING

The E/E Rig can be altered during construction—or an extensive rebuild—to move up to 90 meters per turn (54 kilometers per hour), the same as the maximum speed of a security robot, but it sacrifices strength.

The wearer receives a +3 IM bonus, but it eliminates the bonuses to-hit, punching damage, or the ability to carry extra weight. Additionally, the character can jump 10 meters straight up or horizontally from a standing start or 20 meters with a running start. They can swim at triple their normal speed.

Cost: +1,000 Credits

Weight: N/A.

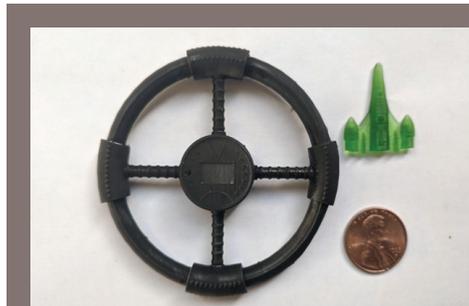
NEW/OLD SKILL

Weapons: Powered Assault Armor

Type: Military PSA

Success Rate: 100% (DEX)

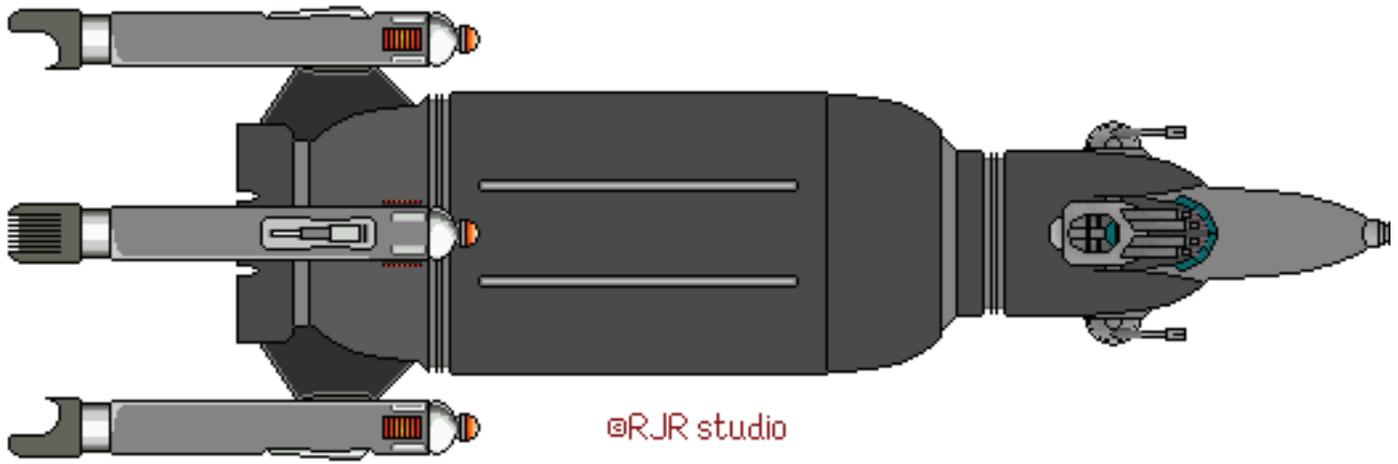
Originally found in Zebulon's Guide, this skill can be used by a character to operate exoskeletons. It only needs to be purchased once at a level 1. A character with this skill can use powered assault armor with complete control including any built-in weapons.



ORDER MINIATURES

If you have custom miniature files you want printed, or would like to order miniatures from some of the model files that Tom Stephens has produced, he has made a miniature printing service available on his **Expanding Frontier blog**. The web page on his blog shows sample prints as well as prices for the starship miniatures he has available and

information on how to order the miniatures. Tom is currently working on finishing up models of all the UPF and sathar ships in order to offer "scenario" packs including ships for the various modules and a "Master Pack" that will include all the ships from the Second Sathar War game in the Knight Hawks campaign book.



BLACK CONDOR CLASS PIRATE FRIGATE

BY RICHARD "SHADOW SHACK" ROSE

"Welcome aboard, scurvy dogs! We be simple men, matey...makin' our way through the Frontier. Our hold's burstin' with swag, but there's always room for more. If not, we can always make room by spacing a prisoner!"

"BLACK CONDOR" CLASS PIRATE FRIGATE

The Black Condor is the most common type of frigate in the service of the pirates. Standard armament includes a forward firing laser cannon, a pair of beam weapon batteries, and a rocket battery with four salvos. There have been occasions where such craft have been encountered with torpedo systems, but it is not known how common this practice may be.

The standard design is a flexible one. Various degrees of armor have been encountered, ranging from no armor to fleet grade and anything in between. This seems to be random, no doubt based on acquired supplies during the time of construction. Various drive systems have also been encountered, ranging from the occasional ion drives to the more common atomic—many of the latter sporting fleet grade performance.

Crew size is also random. While the design allows for up to 40 members, a skeleton crew of the basic pilot, astrogator, engineer, four gunners, and a captain can make do for basic maneuvers. Such skeleton crews tend to have six to eight

troopers on hand as well for any boarding operations, but not always.

The ship's hold can accommodate 2.5 units worth of cargo. A frigate is not designed for hauling duty, but such accommodations do allow for some potential loot storage. Generally speaking, only the most valuable items are taken due to the small space allotment, and other, less valuable items are either left behind or stowed aboard any allied vessels present.

Assuming a full crew of 40, there are no passenger accommodations. Although for smaller crews, vacant quarters can be occupied by temporary guests (read: prisoners). The only vehicles that come standard on a pirate frigate would be the pair of workpods, but additional vehicles can be added either during construction or along the way.

The Black Condor first appeared during the Voltornus expedition, the black box recovered from the wreckage of the *Serena Dawn* reveals that the Black Condor was one of two vessels that attacked her during the second expedition to that planet (the other ship being an unidentified freight hauler that docked, thus allowing boarders to spill into the ship). It is believed to have been the capital ship used during the Star Devil's venture in the Zebulon system, and subsequently all future pirate frigates were based on the design. No doubt this very ship whisked the Star Devil himself away prior to the Sathar invasion of that world. The original ship has since been reported

in other systems and is still believed to be in service under the Star Devil faction of space pirates.

STATISTICS

HS:5 HP:35

Powerplant: 3 Atomic B

ADF: 4 **MR:** 3 **DCR:** 50

Crew: 8-40

Armament: LC, LB(x2), RB(x4)

Defenses: RH, MS(x1), ICM(x5)

Communications/Detection: Sub-Space Radio, WNB, Intercom; Radar, Energy Sensor

Misc. Equipment: optional Cargo Arm

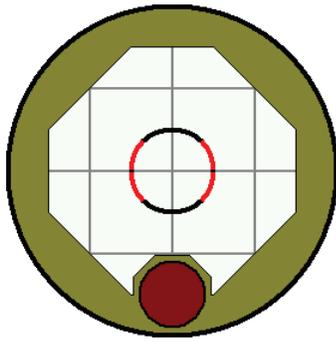
Computer Programs: Alarm (3), Analysis (4), Astrogation (4), Bureaucracy (2), Communication (1), Computer Lockout (5), Computer Security (4), Damage Control (3), Drive (Atomic) (5), Industry (1), Information Storage (1), Installation Security (4), Interceptor Missile (3), Life Support Cap:56 (1), Laser Battery (1) x2, Laser Cannon (1), Maintenance (3), Rocket Battery (2)

Cargo Capacity: 2.5

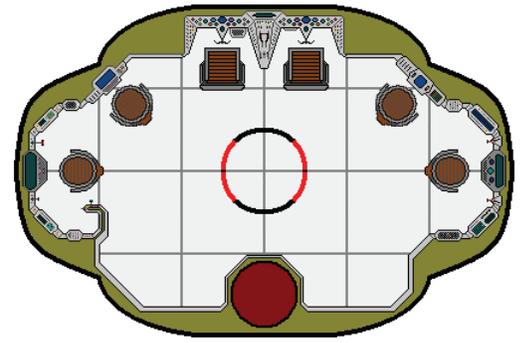
Crew Accommodations: 2 bunk cabins (officers), 2 two-bunk cabins (crew), 2 three-bunk cabins (additional crew), 2 four-bunk cabins (troops)

Passenger Accommodations: 12 (cells @ brig)

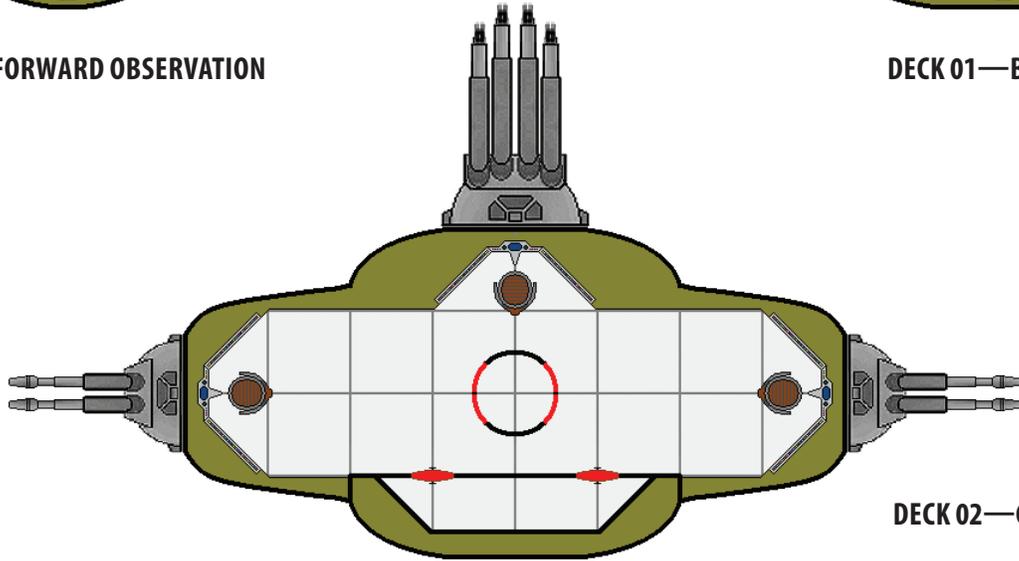
Ship's Vehicles: 2 workpods



DECK 00—FORWARD OBSERVATION



DECK 01—BRIDGE



DECK 02—GUNNERY

DECK PLANS

Scale on all the deck plans is 2 meters per square

DECK 00—FORWARD OBSERVATION

Most of the ship's avionics and sensor equipment can be maintained here along with access to the primary weapon system for diagnostics and service. The central elevator traverses the ship from stem to stern and is a common feature on each deck.

DECK 01—BRIDGE

The helm is centered at the top end with command chairs for a pilot and co-pilot (only one is needed but a second can assist with the cannon). To starboard (far left on the map) is the astrogator station, opposite that to port (right side of map) is the chief engineer's station. A computer technician (optional) may assist and monitor overall ship operations between the helm and astrogator stations, and an optional communications and detection officer can work between the helm and engineering.

DECK 02—GUNNERY

The gunnery deck, located just aft of the bridge, is a simple layout with a rocket bat-

tery taking the dorsal position and a laser battery on both port and starboard positions. The ventral area is a magazine where additional rocket battery arrays are stowed, these can be loaded into the weapon system any time during normal operating conditions (i.e. not during high g combat maneuvers).

DECK 03—OFFICER QUARTERS

A double bunk cabin can be found on both the port and starboard sides, typically one will accommodate the pilot/captain and co-pilot while the chief engineer and astrogator reside in the other. A lounge and dining area is on the dorsal end while a fresher and galley occupy the ventral side.

DECK 04—FORWARD MANEUVER JETS

This deck is surrounded by the reaction control system (RCS) maneuvering nozzle equipment. This deck is rarely visited unless said equipment is in need of service or repair.

DECK 05—FORE CREW QUARTERS

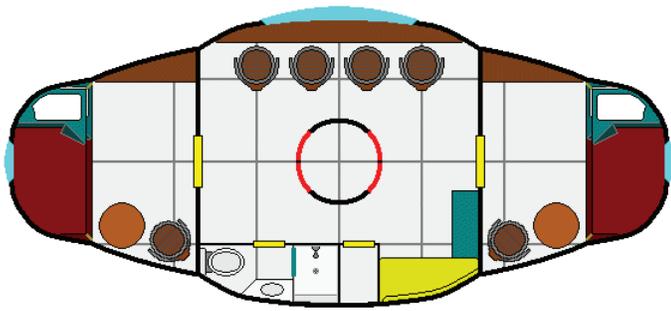
The Fore Crew Quarters occupies the first

deck where the frigate begins to fatten up in size. Two cabins each furnished with a pair of double bunks along with wardrobe closets and a table and chairs can be found port and starboard, typically the gunnery officers and the troop commander will occupy one cabin while the other cabin hosts higher ranking crew members such as medics, roboticists, and auxiliary engineers. A lounge/dining area is on the dorsal end with a fresher and galley on the ventral end.

DECK 06—AFT CREW QUARTERS

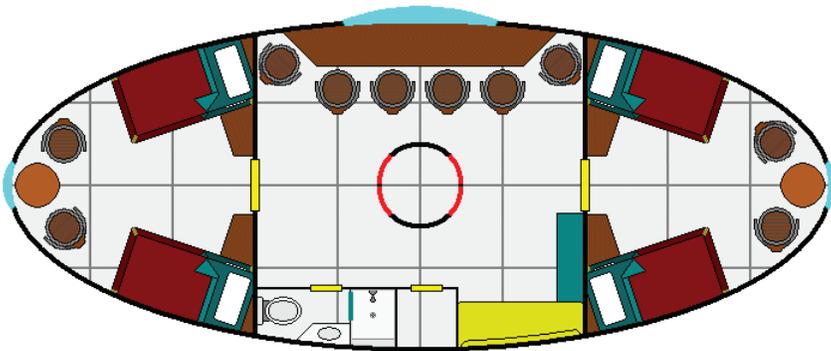
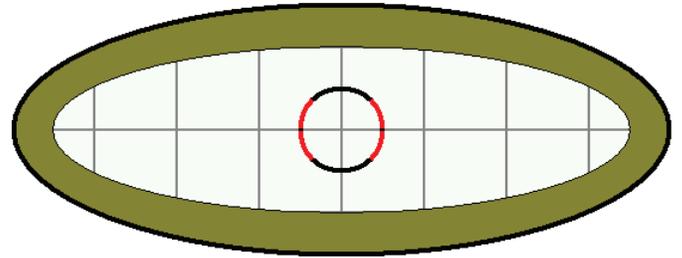
The Aft Crew Quarters is nestled just below the Fore Quarters and is basically the same albeit at a larger scale with a trio of double bunks and additional table and chairs taking up the additional space provided. A lounge and dining area occupies the dorsal side while a fresher and galley take up the ventral side. A small storage closet is adjacent to the fresher that can accommodate tool kits and other work-related items stowed by the crew. Typically, the various techs that keep the ship in operation reside here although additional troops can take up residence here as well.

ART BY RICHARD ROSE



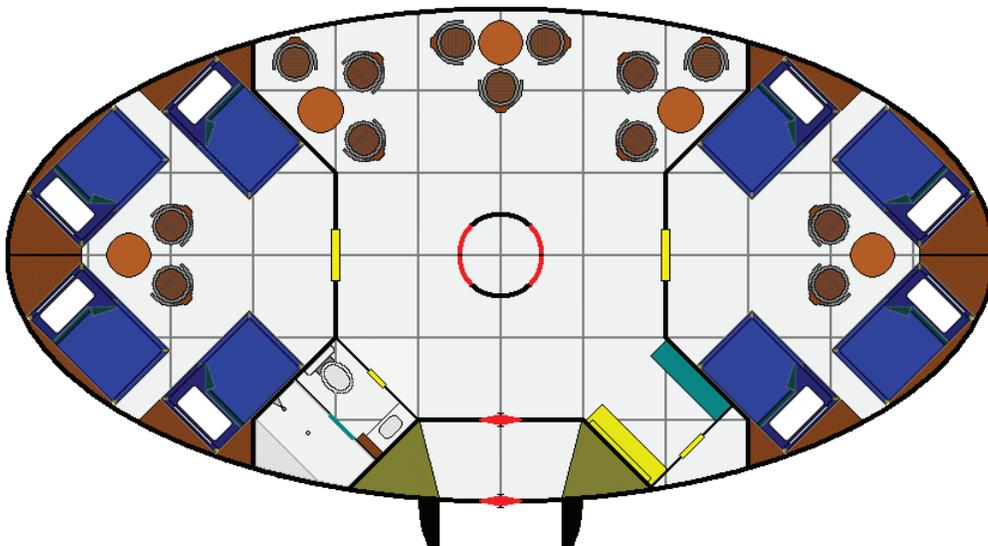
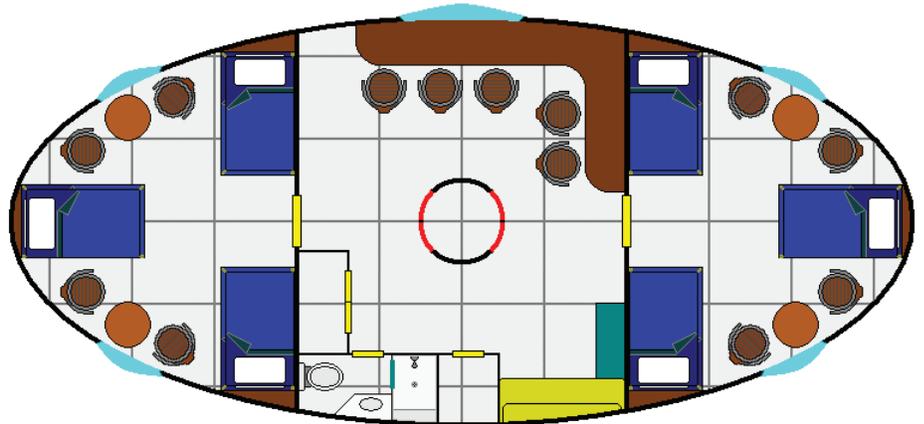
DECK 03—OFFICER QUARTERS

DECK 04—FORWARD MANEUVER JETS

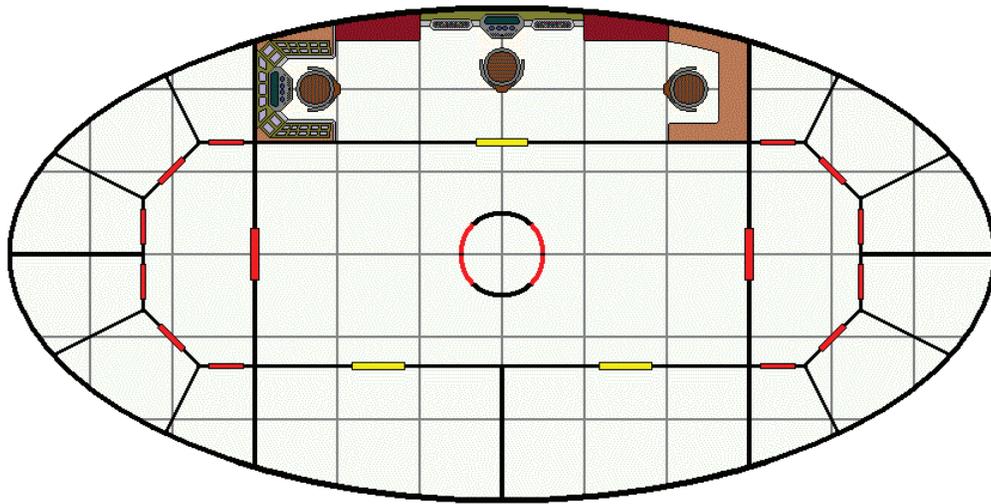


DECK 05—FORE CREW QUARTERS

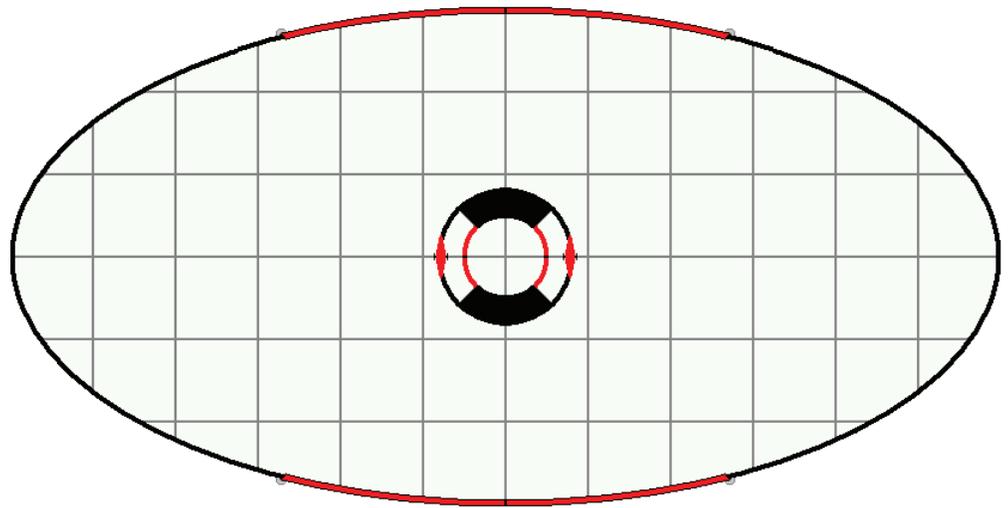
DECK 06—AFT CREW QUARTERS



DECK 07—TROOP QUARTERS



DECK 08—ADMINISTRATION



DECK 09—CARGO HOLD

DECK 07—TROOP QUARTERS

A quartet of double bunks with a table and chairs nestled tightly within occupy the port and starboard sides while a larger lounge and dining area takes up the dorsal side. An airlock with a Universal Docking Collar takes up the ventral side and is flanked by a galley to port and a fresher to starboard. The ship's troops take up residency here regardless of overall crew size.

DECK 08—ADMINISTRATION

The operations center takes up the dorsal area with a computer station, surveillance station, storage racks, and a captain's desk. Brigs with six cells each are located port and starboard, each cell is furnished with a folding bunk, sink, toilet, and a chair. The two rooms on the ventral side tend to be utilized randomly by each crew, they can be converted to medical or scientific labs, storage areas, or additional cabins (typically if the captain is not one of the bridge officers he/she will have a cabin here).

DECK 09—CARGO HOLD

The majority of the widest portion of the ship is the cargo hold. Bay doors are located both dorsally and ventrally, and airlocks are located fore/top and stern/bottom of the elevator shaft. A cargo arm can be affixed between the airlocks if the crew opts for such equipment.

DECK 10—AFT MANEUVER JETS

Like the Forward Maneuver deck, RCS maneuver nozzle equipment surrounds this area with the notable difference being the water purification plant and life support equipment found here. As such, this deck gets a bit more traffic than its forward counterpart.

DECK 11—ENGINEERING

This is the nuts and bolts end of the pirate frigate...an engineering station occupies the ventral side of this bay and is typically manned by an auxiliary engineer around the clock (50% of the atomic drive overhaul

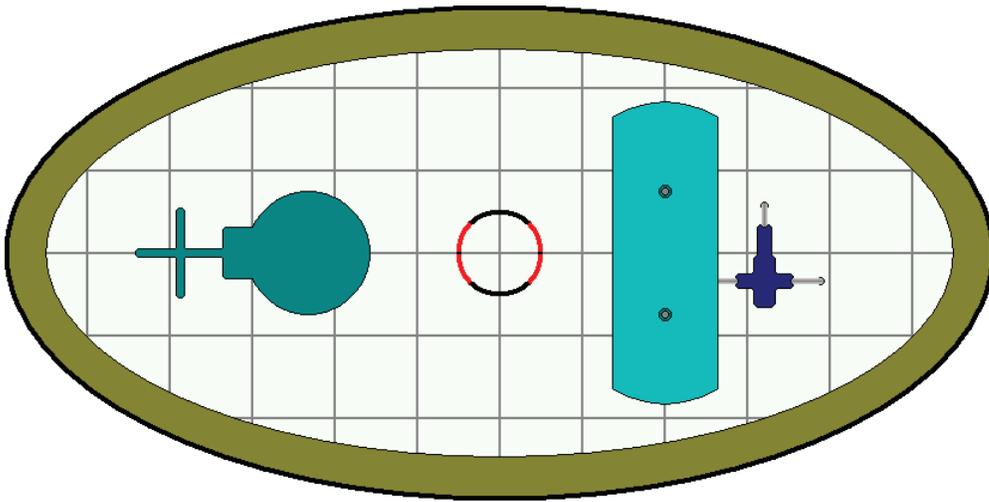
work is spent at this analytical/coordinating center). An additional pair of techs are also stationed here around the clock and can access rumble seats on either side of the command chair for combat maneuvers. The dorsal end houses a generator and power relay station and the open areas are spaced with floor and ceiling panels that can be removed to access the various system conduits within. A workshop occupies the starboard side while a foundry can be found to port. Adjacent to each of those are the workpod pens.

DECK 12—ENGINE ROOM

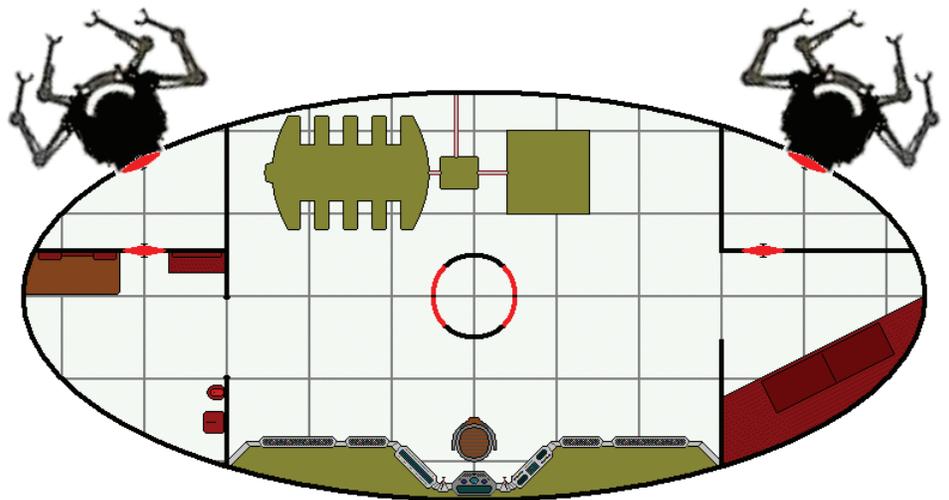
The ship's trio of atomic drives can be accessed here via combination decontamination/airlocks. Monitoring equipment for each drive encircles the main area, the other 50% of overhaul work is spent with this equipment and within the drives themselves. The central area has a trio of techs monitoring the equipment around the clock and a rumble seat folds out of each station for combat maneuvers.

ART BY RICHARD ROSE

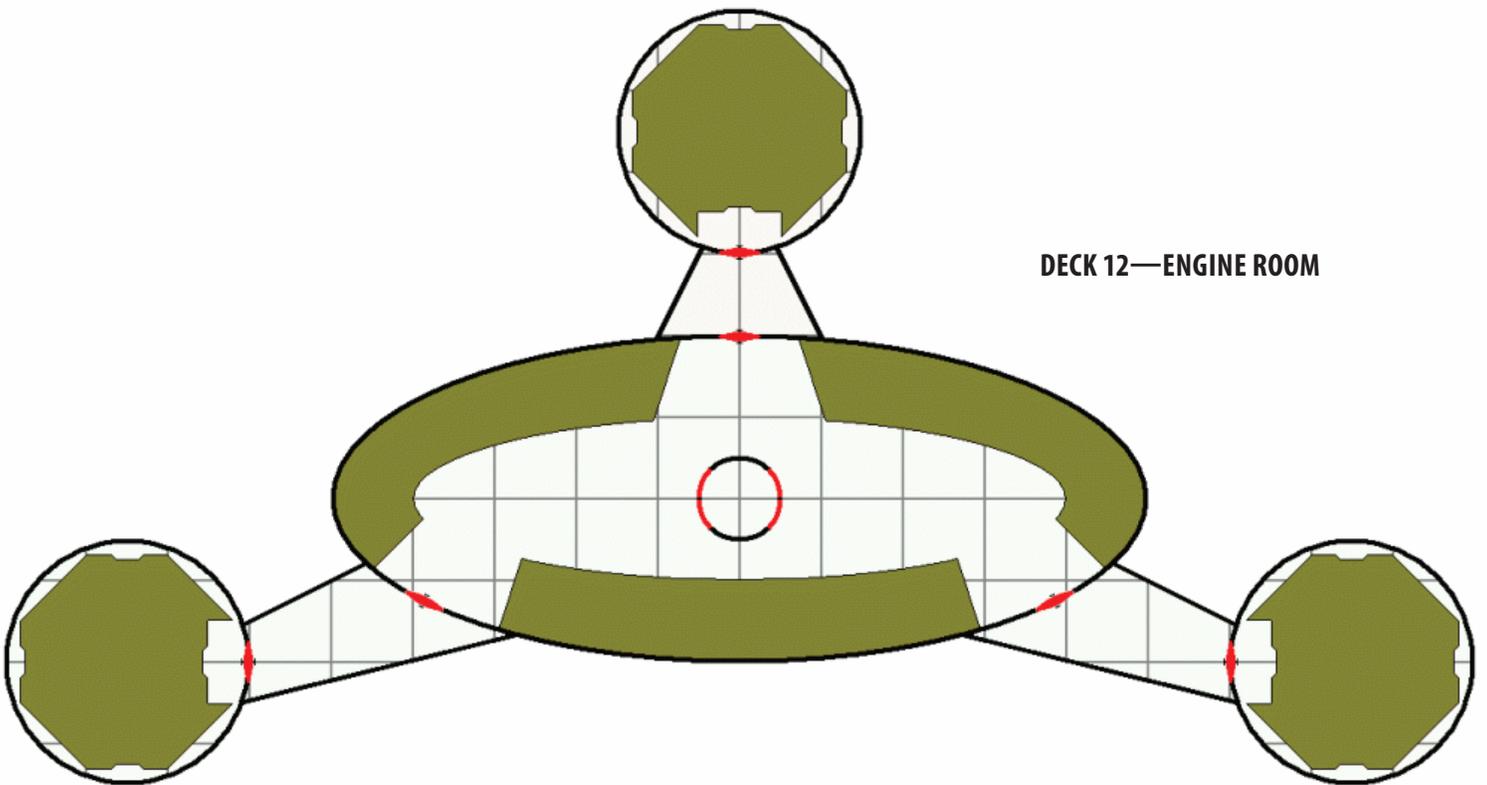
DECK 10—AFT MANEUVER JETS



DECK 11—ENGINEERING



DECK 12—ENGINE ROOM



ART BY RICHARD ROSE

GRYMZ GUIDE TO:

4TH WALL BREAK

THE ESCAPE PLAN
STAFF WRITER'S SHED....
UNDISCLOSED LOCATION....
TEAM BUILDING RPG ACTIVITY.



NOT ZEMP...
HE ALWAYS ROLLS
CRITICALS!

OK ZEMP,
'UR UP...

ROLL FOR
'UR ATTACK.



OOOOUUUW!
NATURAL ONE.

CRITICAL
FAILURE.

LUCKY RIGHT,
HOW BAD CAN
IT BE ???

UH, WELL,
NOT GOOD.



...LIKE CRASHES
THE ILLUSTRATOR'S
COMPUTER, NOT
GOOD...

