

The Star Frontiers Article Collection

from Ares Magazine



TITLE	SUBJECT	SOURCE
???	- Science for Science Fiction - The Attack on Nu Lub - The Alpha of Omega	Ares 14
Matters of Fact	von Neumann machines	Ares 15 pp 6-8
Into the Void story		Ares 15 pp 47-52
Into the Void module	SF: AD & KH Mini-Module	Ares 15 pp 53-60
"Zamra"	Yazirian Cultural Weapon	Ares 17 p 41
"Fire At Will"	Miniature Use	Ares 17 pp 42-46
Into the Void Game Errata	Error fixes for "Into the Void module"	Ares 17 p 62
Frontiers of the Mind	psionics	Ares Special Ed. 2
Home Sweet Home		Ares Special Ed. 2
Ares Special Ed. 2 TOC		

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Article listing courtesy of Timothy R. Norris

Ares 14 Spring 1983 \$6

Game: The Omega War by David Ritchie

Strategic warfare for control of North America in 25th Century, 2 players

22x34 map, 200 ctrs, 16p rules

Science for Science Fiction: Ed. John Boardman, PhD p4

- various topics

Science Fact:

- The Troubled Sun Dave Stover p6-9

Film & Television: Christopher John p10-11

- High Road to China

- Videodrome

- Blue Thunder

Fiction:

- Braskan Gambit, The Attack on Nu Lub David Ritchie, Timothy Truman p13-24

Designers Forum:

- The Alpha of Omega David Ritchie p42-45

Software: Ian Chadwick p46-47

- Crush, Crumble and Chomp

- Sword Thrust #1: The Kings Testing Ground

Books:

- 7 books listed Greg Costikyan p48,52

Games: Steve List p49-51

- Invasion: Earth (GDW)

- Dragon Pass (Chaos)

Media:

- Agitation in the Racks David Schow p52

A DragonQuest Supplement

- The College of Rune Magics David Ritchie, Edward Woods p53-62



MATTERS OF FACT

ARES #15 pp 6-8

2010: One Mystery Solved

Stanley Kubrick's now classic film of Arthur C. Clarke's *2001: A Space Odyssey*, released in 1968, left moviegoers with a host of questions: Who or what transformed astronaut Dave Bowman into a Star-Child? Was HAL, easily the best known computer in all of literature or film, really insane? And perhaps the most puzzling question of all: What purpose lay behind the black monolith on the moon and its much larger brother orbiting Jupiter? At the close of Clarke's original novel, Bowman takes a space pod out to investigate the Jupiter monolith and utters his final, enigmatic statement - "My God, it's full of stars!"

Before long moviegoers will have answers to several of these questions. Clarke's sequel to 2001, *2010: Odyssey Two*, was published last year, and the film version, although now snarled in Hollywood politics, is sure to be forthcoming.



Clarke's sequel clears up the matter of the monoliths, among other things. In 2010, the Jupiter monolith descends to the surface and, after reproducing itself millions of times, turns Jupiter into the solar system's second star. "I know what they are! They're von Neumann machines!" cries one of Clarke's characters as he watches this incredible spectacle. "Suppose you had a very big engineering job to do ... like strip-mining the face of the moon," he explains. "You could build millions of machines to do it, but that might take centuries. If you were clever enough, you'd make just one machine - but with the ability to reproduce itself from the raw materials around it."

The von Neumann machine is the brainchild of mathematical John von Neumann (1903-1957), generally regarded as the father of the computer. Von Neumann, in the 1930s, considered the

then widely held notion that machines somehow follow a law of complexity - that the tasks performed by the machine must be less complex than the machine itself. In other words, any machine produced by another machine must be less complex than the original. Noticing that living systems - cells, cats, and humans among them - routinely produced new systems at least as complicated as themselves, von Neumann suspected that there was in fact no law of complexity. He then went on to demonstrate it mathematically, in his "General and Logical Theory of Automata", published in 1950.

Von Neumann not only showed that it was theoretically possible to build a machine that could reproduce itself, but also showed that it was possible to build a machine that will produce any other machine, no matter how complex. All it needs is raw materials and sufficiently detailed instructions. Moreover, such a machine need only have four parts - an assembler or "factory" that puts together raw materials according to instructions, a set of instructions, a duplicator to make copies of instructions, and a controller to feed instructions to the factory. Such a machine can not only reproduce itself, but can produce new machines of superior complexity. Decades after von Neumann's original work on self-producing machines it was shown that DNA, the stuff of life, is made up of four parts and works exactly as von Neumann described.

Fans of the original film will be pleased to know the sequel does not clear up all the mysteries. There are enough questions left open to warrant a third, perhaps even a fourth installment of the tale that begins in 2001.

IN GAMING TERMS

by David Cook

The idea of a reproducing machine was a common one to science fiction even before von Neumann set out to study it. If a referee wishes to include these machines in a STAR FRONTIERS™ game, the following information covers possible situations.

History: The first known use of a von Neumann-type of machine in the Frontier came shortly after the entry of Human colonies into the area. Once the first Human bases were established, the now-overthrown government of Theseus sent 10 Independent Material Processing Plants (IMPPs) into space. Each IMPP was sent in a fully automatic starship with the following tasks to complete:

1. Locate a Human-habitable world currently not recorded.
2. Construct copies of an IMPP unit to computed maximum efficiency number.
3. Process raw mineral resources of a planet into usable form.
4. Proceed with cycle again.

The idea was that the IMPPs would be forerunners of Human expansion into the Frontier. When a colony ship arrived at a new planet there would be a good chance that large quantities of mineral ore would have been mined and refined before the Humans even landed. Unfortunately, there were problems.

The worst of these was the fact that the machines were instructed to only avoid planets they had not previously recorded. Through an immense error, the machines were not instructed to check for life forms before beginning work. This oversight resulted in the environmental

destruction of several Human-habitable planets, the destruction of at least one intelligent primitive race, and a full-scale war between the machines and a Vrusk colony. Given the events that occurred, the IMPP project was abandoned and all known IMPPs were destroyed. However, not all the machines were found.

The other major use for von Neumann machines has been recently devised by the Sathar. Fragmentary messages from the edges of the Frontier and beyond have reported raids and attacks by Sathar and machines working together. The new facts available seem to indicate the machines are of the von Neumann type.

Referee's Information: The following gives the information the referee needs if he wants to have an encounter between the player characters and a von Neumann machine. The types of machines covered here are both the IMPP and the Sathar war machines.

IMPP (Independent Materials Processing Plant)

There are 3 main units to an IMPP, They are:

Starship

This unit is an unmanned spaceship capable of interstellar travel. It is the heart of the IMPP, containing the level 6 main computer (the controller/duplicator), the memory banks, an assembler unit, 50 hunter units, 8 orbital shuttles, sensors, full maintenance services, the starship controls, and the drives. Upon detecting a suitable planet, the computer places the ship in a geosynchronous orbit above the equator, locates an easily accessible deposit of raw material, and sends the assembler unit to the surface. This unit then begins to build the next major unit of the IMPP, the plant.

The starship unit is 500 meters long and 100 meters in diameter. Although unmanned, it does have access passageways and hatches for Human maintenance crews. The inside of the ship is not pressurized, however.

The Plant

This unit begins its work once it is assembled in the surface of a planet. The plant unit has three functions - to create a pre-determined number of copies of itself, to produce hunter units, and to then become a processing center. The plant is a semi-mobile operation controlled by its own level 6 computer. Composed of modules, each module has a set of tracks that allow it to move cross-country very slowly. Once the original plant has created a second, the second moves to a new location and begins to build another plant. The number of plants grows like a spreading wave from the original. After a set number of plants have been built in an area, hunters (the third unit) are produced. Each plant will produce 1000 hunters. These hunters will be under control of that plant, which is in turn under the direction of the main controller. After the hunters are produced, the plant begins to process raw materials, generally in the form of bars or sheets. These are sealed in a urethane coating to prevent oxidation.

A plant looks like a collection of huge tank-like vehicles, interconnected by huge pipes, conveyers, wiring, etc. The area is almost always desolate-looking, with slag heaps, waste, soot, and smoke surrounding the plant.

The Hunter

Top Speed/Cruise Speed: 60 kph/30 kph

Passengers: None

Cargo Limit: 20,000 kg, 40 cubic meters

Mission: Variable

IM: -3

To Hit: 40%

The third major unit of the IMPP is the hunter. This is a small (6 meters by 4 meters), mobile unit that serves as the legs and hands of the entire operation. The hunter's task is to gather the raw materials, carry them to the plant, and move the processed materials to a storage location.

The hunter resembles a cross between a dump truck and a backhoe with three extra mechanical arms attached. One arm is fitted with a clamp hand and is capable of lifting 1000 kilograms. Any character clamped by this hand will suffer 5-50 points of damage each turn. The second arm is an articulated hard rock drill used for mining. This drill will do 10-100 points of damage to any character it hits. The third arm is a sample probe, used to take mineral samples and perform preliminary analysis on them. If a character is struck by the probe he will only take 1-10 points of damage. However, the probe will inject several chemicals, doing S20/T3 unless neutralized by an injection of an antidote.

Each hunter is run by a built-in level 3 computer. The mission of the hunter is usually to gather raw materials (ore) and carry finished materials to the storage area. A hunter will almost never bother living creatures. However, a hunter will be attracted to large deposits of metal such as a spaceship or a vehicle. If these are in the area, the hunter will attempt to dismantle them and carry the parts to the plant.

Sathar Ravagers

Very little is known about these machines and there are still serious questions to be answered concerning their true purpose, construction and use. It is considered unlikely that the Sathar would create reproducing war machines without some type of control over their numbers and activities. So far, only one type of machine has been positively identified. However, reliable reports of automated factories have supplied enough information to positively identify these machines as being of the von Neumann type.

Skimmer Ravager

Top Speed/Cruise Speed: 200 kph/150 kph

Passengers: None

Cargo Limit: Not carried

Mission: Unknown

Weapons: Turret-mounted heavy laser

To Hit: 60%

Damage: 8-80 points

Defenses: Albedo covering

The Skimmer Ravager is a hovercraft vehicle approximately 2.5 meters long, 2 meters wide, and 1.5 meters high. The entire outside of the vehicle is covered with albedo armor, giving it protection from laser fire equal to an albedo suit. The turret located on the top center of the vehicle gives the laser a 360 degree field of fire. The laser always seems to fire at the same power setting (8). The machine has never shown any inclination to conserve ammunition.

The machine is equipped with full sonar/radar/infrared/visible light/radio scanning. Each machine is connected to a main battle computer located some distance away, but is also capable of independent action if this link is jammed. However, when on independent, the machines are handicapped as they cannot work together as a unit; each machine can only do what it is programmed to think best at the moment.

Although the exact nature of the programming is not known, experience has proven the machines are instantaneously hostile to most lifeforms, including all character races.

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Ares 15 Fall 1983 \$6

Game: Nightmare House by David Marshall, David Ritchie
A Gothic Horror game
22x34 map, 200 ctrs, 16p rules

Matters of Fact Frank Kendig p5-8

Reviews:

Film Christopher John p10-15

The Return of the Jedi

War Games

Psycho II

The Hunger

Something Wicked This Way Comes

Lexicon David Schow p15-16

Games Steve List p16-17,41-42

Star Fleet Battles (Task)

Striker (GDW)

Moon Base Clavius (Task)

Books Greg Costikyan p42-43

Millennium (J.Varley)

Lyonesse (J.Vance)

The Prisoner of Zharanak (L.Sprague de Camp)

Fiction:

Visitation David Schow p18-24

Haunted Places David Schow p44-46

Fiction:

Into the Void Carl Smith p47-52

RPG: A Star Frontiers Mini-module

Into the Void Carl Smith p53-60

INTO THE VOID

By Carl Smith

Llewellyn sweated. Scanning the digital readouts on the console, he edged the XV-1 into raw space. For a moment the old panic of being in charge and the pressure of lives depending upon him returned. If he judged wrong, a torpedo or burst of fire from a laser battery would leave him and the survivors from the freighter dead and charred in space. What if the Sathar attack ships expected the freighter to jettison the prototype, or what if some of the Sathar mercenaries aboard the *Prachil Star* had communicated

with the warships outside and were waiting like carrion crows?

Chewing his gum fiercely, Llewellyn squinted at the console lights, taking the escape vessel out the jagged hole. Not too close to the edges, or he'd open the prototype like a can of sardines. He had seen the effects of explosive decompression on humans and felt that it was one of the uglier ways to die. Gently his fingers touched the control panel, and the XV-1 slipped forward.

A drop of sweat slid down behind his ear, and ran down his neck, making him think of the centipedes on Pavan. Swallowing to clear his throat, he announced, "We're just about to clear the freighter. Once we're free of it, I'm going to goose this and get us going."

A bright light flared to the port side of the XV-1 and he flinched. Dammit, he thought, this is no time to let the pressure get to you. You've been shot at before and you've been hit. Of course, that was small-arms fire and if a gun this big hits you, you'll never know it.

Eyes slitted against the glare of another close miss, he nudged the XV-1 free of the wounded *Prachil Star*. Those Wormies



weren't good shots. Either that or they were missing on purpose — and that didn't make sense. He'd never heard of Sathar taking prisoners.

He wanted to slam the void drive on and put light years between himself and here, but he fought the impulse. Take it easy, make sure you have everything ready. . . .

Another close shot rippled the blistered hull of the freighter, registering on the XV-1's screens. Today had started out no worse than a hundred other days, he told himself, reaching for the protective cover of the void drive and flipping it open.

Thinking about it, today had promised to be another in a long string of dull days.

A Sathar loomed close, firing. The screens of the XV-1 deflected the bursts from the Sathar's laser batteries. Checking the console, everything seemed in order, and he punched in the void drive. Today had sure gone to hell in a hurry.

Routine governed Dai Llewellyn's life, from roll-call to lights-out. Part of him detested the regimen while another, more secret, part loved the security of an ordered society. That was what the Pan Galactic Corporation was all about — order. But even order had its limits . . . and guard duty aboard a transport was one of them.

Dai scratched his chin with the back of one hand, and wished the PGC did not have the standing order making twenty-four hours a year of duty in exo-suits mandatory. Sure, they did deep space duty occasionally and wore the suits, but most of the time the PGC pulled duty on a planet with some sort of atmosphere. Outside the ship, the bulky space suits saved lives. Inside a

illustration by Clyde Caldwell

controlled atmosphere, the suits were as cumbersome as power-armor. The system of gaskets and self-sealing joints insured that the exo-suit was uncomfortable, but the training manual said twenty-four hours a year, and twenty-four it was.

Colonel Gaedynn, head of security aboard the freighter, briefed Llewellyn's watch. Ever a man for regulations, Gaedynn called roll, waiting patiently for the slow Dralasite to answer, nodding at the precision of the Vrusk's answer, and ignoring the measured insolence of Viyizzi the Yazirian's answer.

As Viyizzi's commanding officer, Captain Llewellyn started to reprimand her, but caught himself. The Yazirians were a proud race. They looked like so many tall, skinny monkeys to most humans, but they could glide between trees, were loyal to their friends, and carried a long grudge.

Earlier this year, Gaedynn had chewed Viyizzi out on the small-arms range. She had been showing off, firing both pistols from the hips and knocking down targets as soon as they popped up. Unquestionably, she was the best shot in the squad, but the small-arms range was not a place for showing-off.

"Here . . . sir," answered Viyizzi with measured disrespect. Yoe, the other Yazirian in the squad, flinched and elbowed her. Yoe was the pilot and ship's gunner. In contrast to Viyizzi's whiplike gauntness, Yoe was so heavy that he could glide on only the lightest-gravity planets.

Not to be outdone, Viyizzi jabbed back at him with a sharp elbow. Llewellyn liked her for all her brass — she didn't let anyone put anything over on her and she didn't take anything from anyone either. Yoe ignored her. Colonel Gaedynn continued with roll call, calling Sergeant Slard's name last.

"Here, sir," Slard was too crisp, too polished, almost too perfect. Dai could not nail down what it was, but there was something about Slard he did not like.

The Sergeant spent too much time with the XV-1 — it seemed almost an obsession with him. Why, Llewellyn couldn't figure out. Machines were tools, nothing more and nothing less. Some people personified and romanticized robots. Hota Lea, his squad robotics expert, was like that. Dai couldn't picture himself getting excited over a hammer, and couldn't fathom Slard's fascination with the experimental vessel.

Roll call finished, Colonel Gaedynn paused and flipped to a new page on his clipboard. "As you know, we are aboard the *Prachil Star* to escort our . . . cargo . . . to homeworld for evaluation. Possibly it will be adopted for use after testing. What happens after it arrives, we cannot control, but that is not why we are here. We are to guard the XV-1. As you know, the Sathar have intruded in this area before, but it has been quiet for the

last two weeks. From all appearances, this old freighter will get us to homeworld with no problems. We might be transporting history."

Abruptly, he changed the subject: "Anyway, you have your assignments. They have not changed in the last five days. This is a security area. No one is to enter this cargo hold without a pass. No unauthorized personnel are allowed in the same area as the XV-1. You are not to leave your posts unless officially relieved. Any questions?"

Llewellyn would have been surprised if there had been. For the last week in-transit they had heard the same speech twice a day, once on each four-hour shift. Gaedynn called them to attention and then turned them over to Llewellyn, who dismissed them.

Hota Lea stopped to pull out her compact mirror and check her make-up. Passing close by, Viyizzi joked, "Prettying yourself for Vi?" and took up her post by the XV-1. Hota blushed slightly, snapping the compact shut.

Dai caught up with Hota before she entered the XV-1 and whispered, "How about a date — dinner perhaps when we arrive homeworld?"

Hota Lea flushed. "Sir, officers do not date subalterns, not until they are lieutenant j.g., anyway." She spoke loud enough for others close by to hear, but then dropped her voice to a lower tone, "It is a nice thought . . ."

Llewellyn grinned. "The offer goes — as long as you don't bring Violet."

Immediately Hota became defensive. "What's wrong with Violet?"

"Nothing, absolutely nothing. She's perfect. Never makes a mistake." He shrugged, "I prefer your company to that of our robot medic." His voice took on a more serious tone. "In the corporation on Pavan, we didn't have them. The sand screwed up their circuits."

Hota grew a little angry. "If more people took a lesson from robots . . ."

Llewellyn shook his head. It irritated him that she was so close to the robot. "Who wants to be a robot? It puts my teeth on edge when you treat it like it's human. People are people and . . ."

Hota's grin was sharp enough to cut. "I know . . . and robots are robots. We've had this discussion before, Da . . . Captain Llewellyn."

Llewellyn realized he had blown it again. "Let's get Violet aboard the XV-1 and check out the life support systems." If they had checked it once, they had checked that damned experimental escape vessel twenty times. For all he knew, the thing could punch its way through the hull of the freighter like it was paper, and jump the void to wherever they wanted to go.

They checked the sublight drive, the void drive to jump into the void, the laser cannons mounted in the bow, the sub-space and void-communication systems,

the three life support systems, both exo-suits in the weapon's locker, the grav-couches, and the reprocessing plant for food. To get at these systems, Dai had to remove a score of access panels, crawl through the engineering rear section, and plug Violet into the XV-1's main computer. As usual, all worked. Leaving Hota Lea working with Violet inside the craft, Dai popped a piece of gum in his mouth. He offered some to Dorf the Dralasite and Viyizzi who stood guard by the XV-1's port hatch.

Viyizzi grinned evilly. "How's the fairy princess?" She was clearly referring to Hota Lea. Dai tried to fight a smile and only partially succeeded.

"She's all incensed about a remark I made."

With her usual insight, the irrepressible Yazirian chuckled, "You knocking her tin heap again?"

As usual, she was on target. Llewellyn shook his head, amazed at Viyizzi's perception. "How do you do it?"

She chewed her gum noisily, smacking her lips. "Do what? I just watch you humans and grin. You're easy to read — and amusing."

Dai nodded in agreement. "I'll try to pay more attention."

Viyizzi gave a little shrug. "Yazirians and humans aren't so different. You could have been just like me — if your ancestors hadn't been thrown out of the tribe for taking too many banana breaks." She grinned to show that no real disrespect was meant.

The ship rocked. Llewellyn was knocked to the floor. The sound was felt more than heard. Lumbering to his feet, Dai bellowed to Viyizzi, "Stay here. Tell Hota and Vi to stay put." Viyizzi had her weapon out. She hesitated and then nodded.

Pulling his 9mm pistol from his holster, Dai ran to the doorway. He pushed the button and stepped cautiously into the corridor. A beam of light flickered by him, drilling a neat little hole in the metal by his shoulder. Figures were moving down the corridor, firing. Someone knelt ahead of him.

"Slard?"

Startled, the kneeling figure turned, laser drawn. For a moment Dai thought the kneeling Slard was going to fire at him. Then Slard turned away, squeezing off a shot down the corridor. Llewellyn noticed the prone form of Colonel Gaedynn.

"How is the Colonel?"

"Dead."

Crouching, making his way to Slard, Dai checked the Colonel. His body was still warm, but he was dead. A neat little hole exited his forehead. There were no burns on his forehead, so it had to be the exit wound. Dark shapes filled the corridor, coming towards them, firing lasers. Slard returned their fire. Both he and Llewellyn saw his hasty shot splatter

harmlessly off an albedo suit.

"Damn," Slard muttered.

Llewellyn slapped him on the shoulder. "Let's get inside the cargo area. In there we can link up with the others and then we can hold them off . . ." a bolt from a laser made him shift nervously. He snapped back a shot. The 9mm slug slapped the firer down. Albedo suits weren't worth a damn against projectile weapons.

"Cap'n," Slard said, "I've got an idea. How about you taking the others and heading up the corridor. I'll stay in the cargo area and hold off these pirates . . ."

Orders were orders — and orders were that no one who was unauthorized would get their hands on the XV-1. If these were pirates, they'd leave once they'd lost a few men, but if they were Sathar or mercenaries, they'd fight until the last one was eliminated.

From outside there were dull whumps against the door. Whoever was out there wanted in badly enough to throw some pretty heavy firepower against the cargo door.

Viyizzi was beside Dai, her gun ready. She was making a low growling sound in her throat.

"Viyizzi," he said, "get me a helmet

The melting metal ran onto the floor.

"Now!" yelled Dai, snapping his safety line onto a stanchion. He heard no sound, but felt a vibration; then he was jerked off his feet and dragged backward until the safety line was taut. Those at the cargo bay door were sucked right through the cargo bay and out through the plate-sized hole into space. Inside their suits, their mouths formed silent "O's" and then they disappeared. Whoever they were, they were gone.

"You OK, sir?" It was Yoe's voice.

Dai ached where he had jerked against the cable with the sudden decompression and no doubt he'd sport a bruise tomorrow. "I'm fine," he said, standing.

"Coming aboard . . . sir?" It was Viyizzi.

"Soon, but first I want to find something to seal this hole. Meanwhile, make sure everyone stays inside. I'll keep you informed."

"Whatever you say . . . sir."

Checking the cargo bay was futile. No sealant kits were around, but he was certain some had been loose on the repair table. Most likely, they'd gone out the hole with the intruders. Maybe some were in the corridor emergency locker.

Approaching the melted cargo door, a figure suddenly appeared and Dai hesitated. The others had been mercenaries, but this was a Sathar, the first he'd seen in years. The Sathar fired through the cooling hole in the doorway, swinging his beam weapon in a broad arc. Llewellyn leapt, careening against the ceiling. His 9mm did not have its open-space adaptor on and was useless. Holstering it, he pulled his flechette pistol from his shoulder holster. The figure in the doorway shot again.

Using his feet against the ceiling, Dai avoided the beam weapon's blast which scorched the area where he had just been. Hitting the floor with teeth-jolting impact he rolled and came up firing. Of the three flechette rounds, two were on target. The Sathar exploded in a pinkish mist. The round which had missed exploded against the far bulkhead.

"Pavan's pink moons," growled Viyizzi in his earphone, "what's going on out there?"

"Nothing I can't handle. Is the airlock functioning?"

"I think so." There was a pause and a muddled conversation. In a few seconds Viyizzi's voice was back. "Old Yodler says 'Can do!'" She hesitated. "I thought you were going to seal the outer hull?"

"We've got bigger problems than that — Sathar. Tell Yoe to get everyone belted down and get the airlock open."

"Sir?" She sounded puzzled.

"I'm coming in. Then we're going to get out."

Exactly how do you plan to do that . . . sir?"

Dai lost any further conversation as he leapt toward the XV-1. His jump was a

Orders were orders — and orders were that no one who was unauthorized would get their hands on the XV-1.

This suggestion surprised Llewellyn. He was not sure why, but he had never thought of the Sergeant as the heroic type. Maybe he had underestimated the man. Still, the suggestion did not feel right coming from Slard.

Llewellyn pulled the trigger again. "Get in the cargo area. I'll cover you."

"Sir, I'll cover you."

"No, get moving, Sergeant!"

"Sir, why don't . . ."

"That's an order — move out!"

Llewellyn heard the squeak of Slard's boots as the Sergeant obeyed.

An eternity later, Slard yelled, "I've got you covered. Come on."

Dai fired again, whirled, and dove at the door. Slard fired down the hall, one of his shots ricocheting where Llewellyn had stood an instant before.

Rolling through the cargo bay doors, there was a whine and a hiss. The triple-plated cargo doors slid shut as the floorplates quivered. A grenade launcher, most likely. Viyizzi was there and helped him up. He looked at Slard, wondering about the close shot, but dismissed it as an accident.

Viyizzi had her gun drawn, "Having trouble . . . sir?"

"Thanks," he answered, and then yelled to members of the squad standing around the XV-1. "Get inside the vessel."

"Why'd you do that?" asked Slard. "I thought you liked my plan to . . ."

"We can't. I got a look at that metal mess that was our escape route. Nothing short of a Mark VII Hover Panzer could get through there." Llewellyn did not add that they were stuck here.

Llewellyn wondered who the intruders were, not that it made any real difference.

for this exo-suit." An idea was forming. It might not be necessary to do what he had in mind, but it never hurt to be prepared.

"Just where do you think you're going . . . sir?"

"Nowhere right now, but I think I know how to make things rough for our visitors."

Gun in hand, he watched the door. While she was gone, he tried the communicator by the door, but could get only static on it. In a minute, she returned with his helmet. Dai snapped it in place with her help and then he cut on the intercom.

"Viyizzi, get everyone aboard the XV-1 and close its airlock. Have Yoe take the co-pilot's seat. Leave the pilot's seat empty. Have him monitor me — when I give the signal have him blast a hole through the hull."

"That's crazy," she shouted, "you'll be sucked into space with the sudden decompression," and then she added, "sir."

Dai grinned. "I'll be secured, but I don't think our friends outside will be. I think the intruders will be in for quite a nasty surprise." He pushed her toward the vehicle. "Now get ready."

Nodding, she ran off. Dai knew she was worried. When Viyizzi was too upset to make a slur at an officer, she really was upset.

Time oozed by while thumps and whumps came from outside the cargo door. It began to glow, turned a cherry red, then pink, and finally white.

"Ready, Yoe?" he asked into the helmet intercom.

"Ready when you are, boss."

little low, failing to carry him over the top. Rolling over the tear-drop shaped surface, he used a handhold near the airlock to pull himself down.

Pushing the entry button, there was a pause and a hiss he could hear over the suit's audio unit. The outer airlock opened. Inside was just enough room for a man in an exo-suit to stand. Pushing the button, the outer doors closed. Gravity returned, and the inner door opened.

Everyone was in their gravity-couches and they turned their faces toward him. The pilot seat was empty. Stuffing himself into it without removing his exo-suit took some doing, but Dai thought he accomplished it rather well.

"What's happening out there . . . sir?" demanded Viyizzi.

"Intruders. They've blown the corridor up and they've burned through the cargo door. We're going to get this vehicle out of here." While speaking, Llewellyn slid his hands over the familiar controls. Although no flyboy by a long shot, he considered himself a fair hand at moving one of these when the occasion arose.

"Would leaving be wise, sir?" Slard's tone indicated that he thought it was unwise. "We don't even know what's out there . . . or even if this craft actually works."

Llewellyn laughed. "We're going to find out."

Small-arms fire pinged on the hull.

Powered, the console lit. With the flick of a switch, the ship moved slightly. Dai found the button he wanted. It was under a protective cover. Lifting it, he pressed the button. Bolts of energized light tore through the soft inside of the freighter's hull, widening the hole Yoe had made earlier and opening an escape route.

"This is insane," yelled Slard, "risking our lives on a vessel we don't even know works! We'd be better off chancing surrender."

With a curled lip and disgusted snarl, Viyizzi delivered her answer. "When was the last time you met a Sathar captive? They don't take prisoners, fool!"

"At ease!" Llewellyn ordered. "This is an escape craft," he muttered as much to himself as to his companions, "and that's just exactly what we're going to use her for. We're supposed to keep this out of unauthorized hands, and that's what we'll do. I've been told this is a void-jumper — we may give that a try."

"You intend to jump from inside a freighter?" asked Slard.

"Not exactly. First we get outside, and then I'm going to jump her well away from here."

More shots pinged off the hull.

"Pavan's pink moons," cursed Viyizzi, "step on it and get us outta here. Going down fighting, or with my boots off in bed is one thing, but strapped down in a grav-couch is no way for this furry female to check out."

Slowly the teardrop-shaped vessel

approached the hole in the hull.

Cautiously it emerged, a featured ballerina in *Swan Lake*, with Sathar warships attending. Clearing the hull, Llewellyn saw three Sathar assault scouts turn toward him, anxious to catch him.

One of the Sathar scouts was faster than the others. It sped toward the slow XV-1. Evidently it was not aware that the XV-1 was armed. Cursing, Dai punched the firing button to the laser cannons. In a white ball of light, the Sathar blew up. Its companions hung back.

Dai pushed the button to lock in the void-computer and then hit the void-drive button as one of the assault scouts fired on the XV-1. The torpedo reached the XV-1 as she leapt into the void. The digital displays blinked as the ship streamlined between space as the crimson ball collided with the hull, shaking the inhabitants in their grav-couches.

Dai's head snapped back against the headrest of his grav-couch. Needles on the screen sensors jumped to the danger line and slowly receded. The ship popped out of being while faerie fire from the near-miss blistered her hull. Dai blacked out.

Ears ringing, the darkness in his mind was traded for the vast darkness of space before his console. Violet, the medic-robot, injected him with stim-dose. Its metallic voice asked, "Are you all right, Captain Llewellyn? Your vital signs read well, but that is never a certain indicator of your mental state, although your alpha waves scan well."

He rubbed the lump left by the auto-injector. "I'm fine, Vi. How're the others?"

"All personnel have been checked, and appear to be in excellent condition, except for Yoe. He is overweight. I have not injected any others yet. Since you are in the pilot's seat, I felt it was logical to revive you first, and then see to the needs of others."

"Good. Vi, can you tap into the ship's sensors and give me a damage report?"

"In a moment sir. I am a Mark V robot, but even I have my limitations. My primary function is to care for the sick and wounded. Once that is finished, I think I can access the data banks and vocalize the damage report." It whirred with a soft, competent tone, sliding over to the others, a metallic Florence Nightingale.

It spent time with each one, pausing over Dorf the longest.

"Is there anything wrong?"

"I do not believe anything is amiss," answered Vi.

"Are you sure?" asked Dai.

"No," said Vi slowly, as if contemplating the idea. "I seem to have sustained a bit of structural damage. I am having a little more difficulty in accessing information about Dralasites than anyone else. That should not be. I seem to have no trouble accessing humans, Vrusk or Yazirians — only Dralasites. That

is curious."

"Can you tap into the computers now?"

"Yes, Captain Llewellyn."

"Would you . . . please?" asked Llewellyn.

"Certainly, sir." Vi removed a service panel; its multi-fingered metallic appendages, remarkably delicate, manipulated several wires and finally attached a jack into its circuitry box. It sat quietly humming for two and a half minutes, and then unplugged itself.

"Well?" asked Llewellyn.

"I know of vessels surviving with much worse damage," was the robot's answer. "The XV-1 seems to have sustained damage to its shields, and is operating at 60% efficiency. The life support systems are functioning well. The subspace communication is in good condition, but the void-communication is gone. I think the torpedo blast did that. Sublight drive appears in excellent shape, but there is some fused circuitry in the void-jump panel and I cannot assess the severity of its damage. The astrogation received some of the secondary effects of the near miss."

Viyizzi shook her head to clear away night and mental cobwebs. "And just what does that mean?"

Hota Lea answered: "Vi is saying that we cannot tell where we are and that we cannot call anyone to ask for help. Also, it seems to be advising us against using void drive."

"Pavan's pink moons," muttered Viyizzi, "first Sathar agents out the kazoo, then warships fire on us and now we're stranded who knows how far from the nearest banana bush."

"Tree," corrected Violet. "Bananas grow on trees."

"Find me one and I'll tell you." The Yazirian lapsed into disgruntled mumbling, the general gist of which was heaven help any Sathar who came her way.

Dai sat quietly throughout the exchange. His eyes met Hota Lea's across the cabin and locked with hers. She returned his look without turning her eyes away.

"Well," Dai asked her, "you're the technician, do you think you can fix it?"

Hota gave a wistful half-smile.

"Anything can be fixed with the right tools and equipment. The biggest problem will be spare parts; I don't think we have any. If we don't have any spare parts, our dilemma is this: Do we suffer along crippled, or do we cannibalize what we've got? We can probably trade off shields for void communication by cannibalizing. But we don't know if anyone we would want to hear us would hear and respond. As far as the damaged void drive goes, trying to fix it blindly would be like trying to invent star drive using a screwdriver and lead pipes."

"We got problems," said Viyizzi.

"Very astute observation and summary," commented Violet.

"Troubles ain't all we got," said Yoe. "I've been watching this screen, and I think we're going to have visitors."

Llewellyn returned his eyes to the dull white console. "Visitors?"

"Yup. Sathar, I'd say."

"How many would you guess, Yoe?"

"Looks like one, maybe two in a tight formation, sir." Yoe was silent a moment, then added, "I'd like to know how they found us."

"Just a guess, Yodler," answered Viyizzi, "but I'd say that torpedo must've done enough damage to us to leave a particle trail that even you could follow."

Dai carefully folded a piece of chewing gum and put it in his mouth. He chewed vigorously, but not nearly so fast as his mind raced. If Sathar were here, they wanted this vessel, or they wanted the crew, or both. Any way he looked at it, the crew of the XV-1 was in for a rough time. He reached for the void drive, intent on putting light years between himself and the Sathar and stopped. What had Vi said? There appeared to be a malfunction, something about the circuits. He hesitated, and then he made up his mind. His hand cut on the computer to coordinate the jump, and then reached for the switch to pop them into the void. A chance at escape, any chance, was better than blind acceptance of fate. No guts, no glory.

The computer hummed, cycled, and indicated readiness. He hit the button and the ship lurched. According to his astrogation gyro, they had moved. According to the stars he could see, they hadn't. Something wasn't quite right. The console digitals indicated some void movement, and he stared at them a few seconds, trying to make sense out of what he saw. If anything, he decided, he was farther away from his destination than he had been before the jump. His relative position to certain stars had increased — they had jumped back! The computer verified his suspicion. Damn, this was just great! Here they were, in a battered experimental escape craft, their shields functioning at about half power, and Sathar coming after them. No void-drive, and not enough sublight to outmaneuver the Sathar assault scout.

Yoe nudged him. "Whadda we do, boss?"

"Surrender the vessel," said Slard.

What was Slard saying? Dai turned to face him, and stared straight at the laser aimed partway between Yoe and himself. Slard could move his wrist slightly and burn either one of them.

Suddenly it began to make sense. The exit wound had been in Colonel Gaedynn's forehead. That meant someone had shot him from behind. Most likely, Slard. Chances are, Slard's nearly hitting him in the cargo corridor had not been an accident.

"Why?" Dai asked.

"It pays well," Slard answered with a small shrug of his shoulders.

Slard's fascination with the XV-1 now made sense to Llewellyn.

"Clan-killer!" snarled Viyizzi, half-rising.

"At ease!" yelled Dai, as Slard turned his gun toward her.

Viyizzi gave Dai a murderous look. She was trembling, her hands clenched on the armrests of her grav-couch; but slowly she eased herself down into it. Slard kept his laser pointed in her direction.

"Don't throw your life away, Viyizzi," Dai said. With his hand hidden by the back of the grav-couch, he unbuckled his seat belt, and edged his fingers near his pistol.

"Good advice. Listen to him, Viyizzi," said Slard. "The Sathar might kill you, or reprogram you, but you don't know that for a fact. Who knows, they might even make you a very lucrative offer." Slard's tone took on a goading note. "Why die any sooner than you have to?"

"Because I don't want to live like you," she spat.

Whatever else he was, Slard was no fool. Out of the corner of his eye, he caught a movement as Dai jumped from his grav-couch, gun in hand.

Slard whipped a shot at Dai which missed, frying the naugahide on the back of the grav-couch. Llewellyn's 9mm was in his hand. It roared three times, the slugs catching Slard twice in the chest, and once in the forehead. Even as Llewellyn fired, Viyizzi's laser was in her hand. She put four holes in Slard before Dai finished firing. Slard half-spun, half-jerked and dropped like he'd been fileted.

Dai didn't need Vi to tell him Slard was dead.

"Not bad shooting . . . sir," said Viyizzi. "The way I see it is, one down, six to go."

"Six?" asked Hota Lea.

"The assault scout's crew," explained Violet. "We still have to deal with them."

"Buckle in," Dai ordered, sliding into his grav-couch and buckling his seat belt. The Sathar scout closed. He chewed his gum, thinking. It had to be this vessel they wanted. If the Sathar wanted the crew dead, they could easily have managed that without closing. He bet they wanted this vessel intact, if possible. If that was the case, they'd be a little hesitant to fire on it for fear of damaging it. Most likely, the Sathar would try to board and they would accomplish that by approaching from the rear. They wouldn't want to put themselves in front of his laser cannons. They had seen what the little tear-drop shaped ship could do. An idea grew slowly. The Sathar would cut speed and stop, and then attempt to board. If only he could get them in front of his guns . . .

A metallic hiss came over the intercom. He had heard tapes of Wormies' voices

before, and each time it had given him goosebumps. On the astrogation scanner, a blip appeared, closing with the center, his ship. A small trickle of sweat inched its way between shoulders that were hunched with anticipation. Closer, closer, he thought.

"Surrender," the voice said. "Surrender, and you will be well-treated."

In a pig's eye, he thought. Still, he cut the sublight drive off. At the same time, he switched the void-computer on, punching in a small jump forward. The red light on the console winked, blinking steadily. The coordinates were engaged, not that they mattered.

"Captain," Viyizzi asked, "what are you doing?" She was concerned, he knew — she had forgotten to be disrespectful. "I thought we were going to escape, not surrender — you've cut the sublight off."

"Yeah, but I put the void-drive on."

"Sir," interrupted Violet, "perhaps you have forgotten your last little experiment with the void drive. It is not functioning properly."

Llewellyn forced a grin. "I'm counting on the damaged circuits to do just what they did before . . ."

"Wait a minute," Viyizzi scowled, "they didn't jump the void; in fact, we lost distance. How can we escape by moving backwards?"

Dai ignored her. He swallowed, his finger shaking slightly as it hung above the blinking red button, ready to push it and engage the void drive. He watched the blip come closer on the screen. Just a little closer, he prayed. His throat was dry. He strained his ears for the slightest sound.

"Yoe," Dai said, his voice a dry whisper, "engage the target computers."

Yoe gave Dai a peculiar look, but then none of this made any sense to him. Stress did strange things to some men, but he had never known the Captain to panic. With forward-firing guns, and the enemy closing behind, what good would it do to fire at an enemy that couldn't be hit?

"Sir," Yoe began, "do you mean . . ."

There was a metallic scraping, as the Sathar extended a boarding tube. Llewellyn's whisper was urgent, "Gunnery computer engaged?"

Yoe's head filled with questions, but finally his hand flipped the correct switch. "Engaged, sir."

Dai let out a slow breath and punched the void-drive. XV-1 bucked like a turpentine Stillar's Bovine and jumped back. The targeting computer whined, indicating a target and Dai depressed the laser cannons' button twice. The first shot took the Sathar scout in the rear; the second sent it into eternity with a burst of white light.

Viyizzi's mouth hung open. Finally she cleared her throat. "Good shooting, sir." Then she added, "But we're still lost."

Dai shrugged. "We're alive, and now we've got time. That's what counts." A

INTO THE VOID

By Carl Smith
ARES #15 pp 53-60

STAR FRONTIERS: ALPHA DAWN™ and STAR FRONTIERS: KNIGHTHAWKS™ are role-playing rules of conquest and combat in outer space. Man and allied extraterrestrials stand side by side to fight the menace of the dreaded Sathar.

The Sathar are an evil and warlike race. Resembling giant, multi-legged worms, they have infiltrated the United Planetary Federation (UPF). The Sathar's goal is to destroy the UPF and all non-Sathar life forms, and they use traitors and the technology of tomorrow to achieve it. Only a few adventurers and professionals stand between the Sathar and the fate of the universe.

To play this game, players need the original STAR FRONTIERS: ALPHA DAWN and the new STAR FRONTIERS: KNIGHTHAWKS. Also needed are three 10-sided dice and scratchpaper. Beyond that, add a little creativity and imaginative role-playing, and begin your adventure in the future.

This mini-module is meant for the referee. It is based on the short story, "Into the Void," in this issue. If you intend to play a character in this module, read no further. (Sections meant to be read aloud are in large type.)

The scenario begins aboard a freighter, the United Planetary Federation's *Prachil Star*. It is bound homeworld, carrying cargo from several galaxies. In one cargo hold, it carries a precious burden: an experimental escape vessel prototype. Because of the prototype's nature, several agents of the Pan-Galactic Corporation (PGC) have been assigned to guard it while it is in transit.

Pirates have attacked several ships in this area and the possibility exists that Sathar agents would like to steal the experimental ship for its compact void drive system.

Members of the PGC are to guard the vessel, see that it does not fall into unauthorized hands, keep unauthorized personnel out of the cargo bay where it is stored, and repulse anyone seeking to sabotage or steal the prototype.

Colonel Gaedynn is commander of the PGC force aboard the *Prachil Star*. Other members of the PGC are on board the freighter, but are not with the group at the cargo bay. The adventurers have just reported for a four-hour shift of duty.

CARGO BAY WHERE THE XV-1 IS STORED

The cargo bay is bare metal. A few common tools lie on a work bench near the cargo doors. An emergency repair kit for the hull of the freighter lies under the work bench. The XV-1 is the only item in the cargo hold other than the tools and repair kit that is not a molded part of the freighter's hull.

Above the door is a speaker and the emergency light. In case of attack, or depressurization of the outside corridor, the light and its accompanying alarm come on. Using the speaker and the

on-off switch, a person inside can communicate with someone outside of the cargo bay without opening the cargo door.

A button on a panel to the left of the cargo door controls the two-way speaker. Just below that button are three other buttons which control the door. They read "Open", "Close", and "Lock". Once locked, only a security card and thumbprint can open the door from the outside. From inside, the door can be opened by simply depressing the "Lock" button a second time. When the door is locked, the "Lock" button is red. When unlocked, the button is unlit.

The XV-1 faces the front of the *Prachil Star*. Its starboard airlock is next to the outside bulkhead of the freighter. Anyone on the starboard side of the XV-1 cannot see the cargo bay door.

The floor of the cargo bay had mini-stanchions every ten feet. A safety line can be secured to the stanchions for zero-gravity cargo. A player in a space suit can secure his safety line to one of the stanchions by snapping it on for zero-gravity repairs inside the cargo bay.

BATTLE IN THE CORRIDOR

Everyone has a duty station. Listed below are where the PCs can be stationed prior to the beginning of this encounter:

Cpt. Llewellyn	Inside cargo bay doors
Hota Lea	Inside XV-1
Violet (robot NPC)	Inside XV-1
Dorf	By starboard airlock of XV-1
Gillimk	By starboard airlock of XV-1
Viyizzi	By port airlock of XV-1
Yoe	By port airlock of XV-1
Slard (NPC)	In corridor outside cargo bay
Col. Gaedynn (NPC)	In corridor outside cargo bay

During this four-hour watch, the ship is attacked. To find out when it is attacked, roll 1d4 for the hour of the watch. If the attack occurs during the first hour, give the diagram of the XV-1 to the adventurers inside the vessel in the cargo area. Do not let others see it until they enter the XV-1.

If the attack occurs in the second, third, or fourth hour, let everyone look at the XV-1 plan. No NPCs are inside the cargo bay, and PCs are never stationed outside the cargo bay.

Every hour, have one of the PCs go outside the cargo bay to check the NPC on guard duty. When the attack occurs, the PC opens the door and is fired upon by a mercenary NPC.

SATHAR AND MERCENARY STATISTICS

All Sathar and mercenaries move at a standard human rate. Specific Sathar statistics are: Str/Sta 45/45, Dex/Rs 35/35, Int/Log 40/40, Per/Ldr 55/55, Im 4, Walk/Run/Hour 10m/30m/5km. All mercenaries have the following statistics: Str/Sta 40/40, Dex/Rs 40/40, Int/Log 45/45, Per/Ldr 40/40, Im 4, Walk/Run/Hour 10m/30m/5km.

Eight Sathar, each armed with a laser rifle, are aboard the *Prachil Star*. Each Sathar commands six mercenaries (total 48). Three (of the six) are armed with projectile rifles and

pistols; one has a grenade launcher and a pistol, and the other two have laser pistols and rifles. Each mercenary has three magazines for each weapon. The mercenary with the grenade launcher has four grenades. Two of the Sather-led groups have a heavy laser each. When the PC foes into the hall, start the attack. Read the following to the PCs:

The *Prachil Star* shudders and throbbing floorplates shake the cargo bay. The red light over the door of the cargo bay goes on, and an alarm begins whining - it's the battle alarm. A figure in a PGC uniform kneels in the corridor. Beside him lies another figure, an officer who is not moving. The figures are under fire from someone at the end of the corridor. There is a buzz, the metal of the cargo bulkhead glows, and then blackens. Several figures at the end of the corridor fire laser and projectile weapons.

If the PC checked the two in PGC uniforms, he discovers that Col. Gaedynn lies dead at Sgt. Slard's feet. The Sathar down the hall are firing at Slard and the PC.

There are two Sathar and three mercenaries. The Sathar have lasers, and the mercenaries are armed with projectile weapons. At this range, they have a flat chance of hitting Slard of the PC on:

Laser 10%

Gun 05%

Every turn equals six seconds. For each turn the PC and Slard remain in the hall, a mercenary joins the troops firing at them. The first five have projectile weapons, and the sixth has a laser, and this pattern is repeated as long as PCs stay in the corridor.

If Slard or any PC is hit, they take a standard 1d10 of damage, because all weapons are set on their lowest setting to minimize chances of damaging the XV-1.

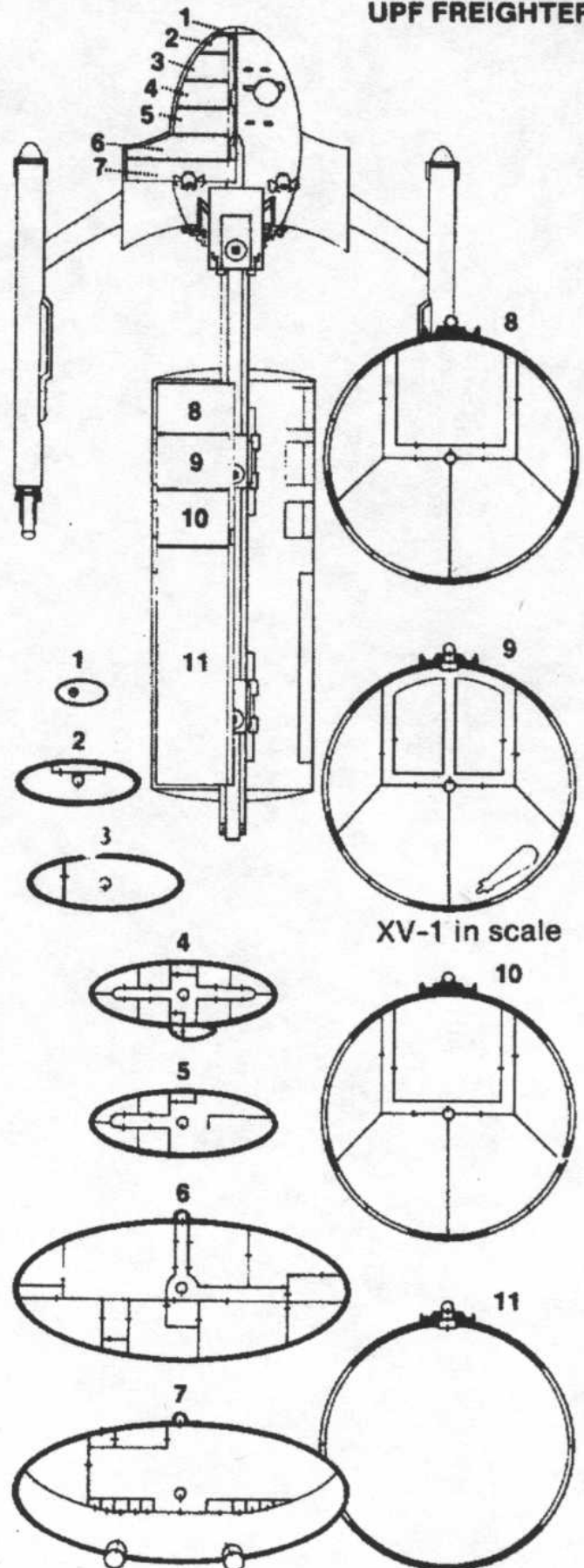
Attackers keep coming until Slard and the PC retreat to the door of the cargo bay. If anyone stays in the corridor for more than two minutes, he comes under fire from the corridor behind him. Sathar agents have worked their way behind the PCs by way of the port cargo door corridor. Any shots fired by the five Sathar attackers misses the first turn they sneak up behind the PCs. Thereafter, those Sathar behind the PCs stand the same chance of hitting as the Sathar in front of the PCs.

- 1 Observation Dome
- 2 Upper Bridge
- 3 Lower Bridge
- 4 Crew Quarters
- 5 Crew Quarters/Galley
- 6 Recreation Rooms/Sickbay
- 7 Maintenance/Repair
- 8- Cargo Holds
- 11 Cargo Bay Where XV-1 is Kept
- *9

OVERALL LENGTH: 315m
 OVERALL WIDTH: 166m
 OVERALL HEIGHT: 75m

CARGO POD LENGTH: 166m
 CARGO POD WIDTH: 64m
 ENGINE LENGTH: 154m

PRACHIL STAR UPF FREIGHTER



THE BATTLE IN THE CARGO BAY

Treat the cargo bay door as having 50 + 2d10 worth of structural points. The first turn after the PCs go inside the bay, the Sathar fire a grenade rifle at the cargo door. The grenade hits the wall beside the door, causing half its normal 8d10 damage to the door.

There is a loud, muffled explosion in the corridor. It sounds as if someone threw an explosive charge against the cargo door.

On the third turn, the Sathar use a heavy laser on the door. It is set to use 20 Standard Energy Units (SEU) per shot/turn. A Sathar continues shooting the heavy laser at the door until the door is burned through. The first turn after the door is burned through, the hole is too hot to enter. It is cool enough not to burn through space suits on every turn thereafter.

The door then begins to get warm. The metal changes colors, glowing, sagging, and turning molten. A 24-inch hole appears.

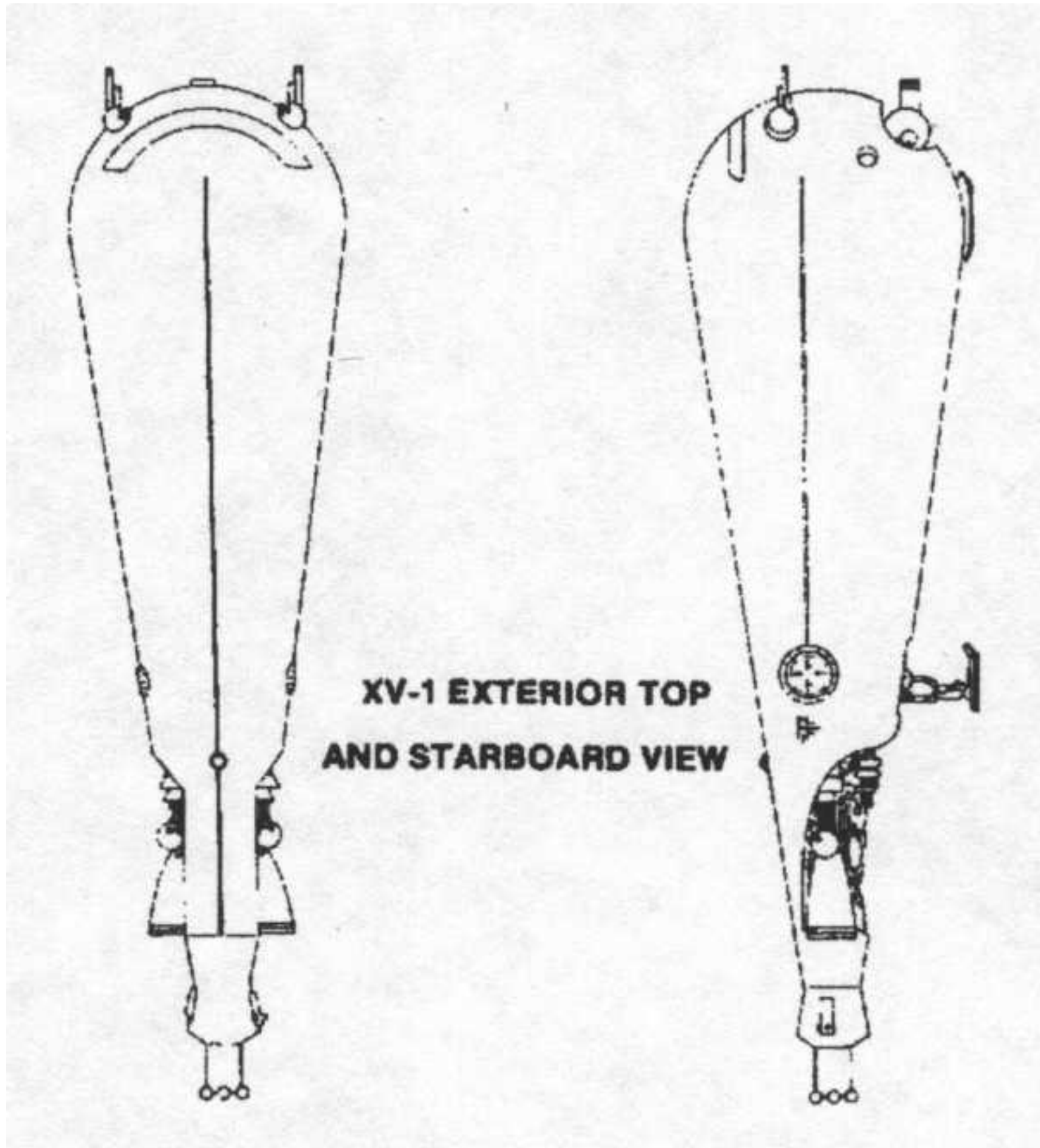
On the first turn the doors is burnt through, one Sathar mercenary may fire either laser or a projectile weapon through it per turn. Through the hole in the cargo door, the mercenaries can see only the port side of the XV-1.

Sathar mercenaries fire at targets in the following order:

1. Anyone close to the door.
2. Anyone in the cargo bay not near the XV-1.
3. Anyone in the port airlock of the XV-1 or hiding behind the vessel and shooting at them.
4. The XV-1 itself.

Players may fire at the Sathar or attempt to board the XV-1. To board the vessel, they must go to an airlock and step inside. They may not fire during that turn, as they need both hands to get aboard the XV-1.

PCs firing at any Sathar coming through or firing through the door do so with the penalty for firing at a target behind cover. Sathar receive a penalty for firing at PCs on the starboard side of the XV-1 (treat as hard cover).



INSIDE THE XV-1

PCs inside the XV-1 cannot see what is going on outside unless they are in either the pilot or co-pilot/gunner's seat. All PCs have some ship-handling skills, but Llewellyn is the best pilot, followed by Yoe.

It takes one turn to ready the XV-1's weapons, sublight, void, life support, and communication systems. Using the console microphone, those inside can communicate with Llewellyn (or any

PC) who is wearing an exo-suit (s space suit) equipped with an intercom.

Once someone takes one of the two pilot's chairs, the others may choose any seat #3-7. Slard, an NPC, automatically takes seat #8.

Once aboard, Slard voices his uncertainty about the safety of the craft. He complains about the risk they are taking in using an untested experimental vessel, and how dangerous flying near the Sathar warships is once the XV-1 gets outside the *Prachil Star*.

Whoever is in the pilot or co-pilot's chair knows what is going on outside the XV-1. Tell that PC (and he can inform the others):

You see the PCs outside the ship moving away from the cargo door. The cargo door appears to be melting.

If the PCs switch on the vessel's power so its sensors can be used, they hear a PC say shots are being fired. Once the door has a hole melted through it, the sensors reveal life forms in the corridor outside the cargo bay.

The XV-1 is capable of sublight and void travel. Its console is no more complex than an orbital craft's.

Players inside the XV-1 should be made aware that they have very little chance of fighting their way through the corridor. If necessary, they may contact other areas of the freighter. The advice they receive from the other areas of the ship is to stay put and not attempt to enter the corridors.

Make the players aware of the capabilities of the FF laser cannon on the XV-1. The cannon has a possible 10,000 SEU at its disposal. It can be fired in increments as small as 10 SEU or as large as 100 SEU.

As soon as the players are aware that the FF laser cannon can destroy a portion of the wall, it is up to one of them to know that the XV-1 can blast a hole through it, and they can escape. If they do so, point out that one of the primary directives is to keep the XV-1 out of unauthorized hands.

The exterior wall of the ship has a value of $50 + 2d10$. If the PCs attempt to blast through the wall, the canon is set at 50 SEU. To create a hole large enough for the XV-1 to pass through, the PC must get three hits on the wall, or a total greater than the value of the wall.

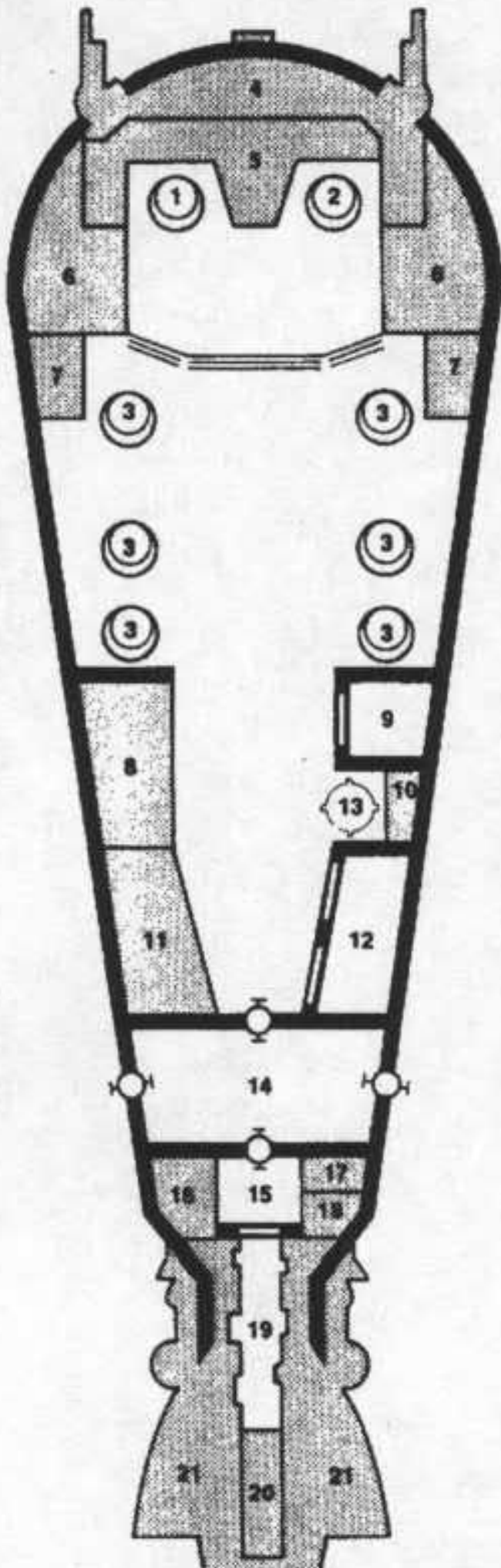
When the PC makes his first hit on the wall, the cargo bay depressurizes. Anyone or anything in the cargo bay or just outside its door is sucked into space unless secured to something safely inside the XV-1. A safety line from a spacesuit can withstand the strain of depressurization, although the sudden loss of pressure will knock a secured PC off his feet.

Any PC outside the XV-1 after the decompression must fight in zero-gravity conditions, and make his way inside the escape craft. On the third turn after decompression, more Sathar mercenaries come to the door and begin firing at anyone in the cargo bay. They all have laser rifles set at 20 SEU.

Should the players be reluctant to blast a hole through the outer hull of the *Prachil Star* and escape, the Sathar and their mercenaries enter the cargo bay. The Sathar and mercenaries take two turns to reach the XV-1. Once they have reached it, they can open the airlocks by pressing the button on the outside. There is no effective way of "locking" it, although the airlock between the cabin and the entry room can be locked from the console; so can the airlock going into the engineering and tail section of the craft. The Sathar can open the "locked" airlocks by firing at them as they did with the door to the cargo bay. Each airlock has a structural value of $50 + 1d10$.

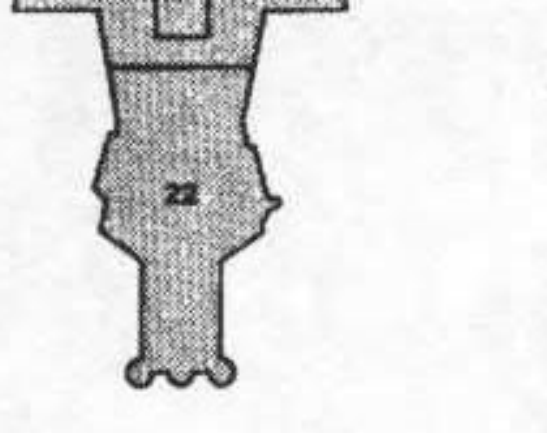
KEY TO THE XV-1

Locations on the XV-1 are numbered for specific locations. General areas are simply referred to as forward, or the passenger compartment; the airlock entry; or the rear section. The key to the deck plan is:



- 1 Pilot's Grav-Couch
- 2 Co-Pilot's/Gunner's Grav-Couch
- 3 Passenger Grav-Couch
- 4 Gunnery Control
- 5 Flight Control Console
- 6 Life Support Console
- 7 Shield Unit
- 8 Food Processing/Recycling
- 9 Chemical Toilet
- 10 Robotic Charging/Service Center
- 11 Medical and Exo-Scanner Computers
- 12 Exo-Suit Storage
- 13 Robotic Mooring Station
- 14 Airlock/Pressurization Area
- 15 Engineering Area
- 16 Astrogation Unit
- 17 Sublight Communication Computer
- 18 Void Communication Computer
- 19 Sublight Drive Access Way
- 20 Life Support System
- 21 Sublight Drive Unit
- 22 Void Drive Unit

Total Length: 22m



DETAILED DESCRIPTION

Item #10, Captain's Control Console. On the console are tie-ins and screens for all computers. From this console are tie-ins and screens for all computers. From this console all interior airlocks and hatches can be locked, as well as all fired weapons and powered defenses. Radio communications outside the hull, to anyone in a space suit on the same band, sublight communication, and void communication originate with the radio here.

Item #17, Robotic Charging and Tie-in Computer. This unit allows Violet to tie-in directly with the XV-1's computers and to inform the crew the extent of any damage. The computer can also fix any damage to Violet requiring fourth level skills or less. violet has the equivalent of three power-packs, and they can be recharged from this unit.

Item #18, Medical and Exo-Scanner Computers. Using these computers, the crew can determine if any accessible asteroid can support human life. Also, the medical computers can identify damage to characters, and recommend treatment. The computer has the equivalent of 10 stimdose, a freezefield with a 2,000 SEU power pack, first aid, diagnosis, minor surgery, 10 anti-tox, communication interpretation, a built-in polyvox, 10 staydose, and 10 telol. It has a success rate of 20% in identifying/treating any life form which is not a PC.

ITEM #19, Exo-Suit and Weapons Storage Locker. Inside are five laser rifles each with three power packs; three laser pistols with a total of 30 power packs; a heavy laser with four power packs and tripod; four machetes; two vibroknives and power packs; three automatic rifles with three magazines each; three automatic pistols with three magazines each and 2,000 rounds of pistol ammunition in a box; six holoflares; eight all-weather coveralls with arctic inserts; and three exo-suits with helmets.

When the PCs use the XV-1 to exit the freighter, they must do so at sublight drive speed. If they attempt to use void drive, the void computer automatically cuts the void drive off. A second attempt results in a flashing message from the computer: *Void drive cannot be activated in a confined space. Move to open space and reactivate void drive unit.*

ATTACK BY SATHAR FIGHTERS

Once outside the hull of the freighter, the PCs are attacked by Sathar Fighters and a Sathar Frigate. The Sathar ships fire bursts of increasing strength (10 SEU, 20 SEU, etc. . . .) until it is evident that the PCs do not intend to stop. The Sathar may increase their power to 100 SEU once the XV-1 fires on one of them and achieves a hit. After that happens, or when the PCs go into void drive, the Sathar Frigate fires its last torpedo.

The torpedo hits the XV-1, but does negligible damage. It damages three different areas of the XV-1 using the STAR FRONTIERS: KNIGHTHAWKS™ Advanced Damage/Location Table. None of the damage is multiple. If the d% indicates more than one hit in an area, roll again. If the void drive is hit, it is damaged. If no die roll results in damage to the void drive, assign damage there. The XV-1 does into the void one time, and thereafter the void drive malfunctions as follows.

After the first void drive attempt any further trials will force the XV-1 to jump backward 10,000 km. The XV-1 may successfully jump into the void as it fights the Sathar Fighters and Frigate the first time, and then it takes void drive damage. Thereafter, any attempts to jump the void results in the XV-1 going backward as outlined.

The XV-1 may take damage to the ammunition supply of its cannon. Treat each 100 SEU as one shot. Under no circumstance is the XV-1 to have less than two shots at the final scenario. Other ammunition may be destroyed, as long as 200 SEU remain.

INTO THE VOID

The XV-1 has jumped into the void successfully. It now lies far away from the ships attacking the *Prachil Star*. The portion of space it occupies is known to all aboard the vessel.

A vast expanse of space lies ahead. The astrogation computers show that the ship has jumped across space into the void.

If the PCs attempt to use the astrogation computers further, give them computer feedback that is gibberish. If the player's think to have the command console run a check on the XV-1's systems, reveal that they cannot fully access void drive, void communication, or astrogation.

If a player thinks to link Violet to the void computer, tell him that the system has sustained minimal damage.

Any further attempts to jump into the void result in the XV-1 jumping backward 1d6 x 10,000 km in a straight line. If the players do not think to jump backward after a reasonable period of time, let Hota Lea attempt to fix the computer. After a brief interval, she announces:

With the equipment we have onboard, attempting to fix the computer is like trying to fix void drive with a screwdriver.

Violet can diagnose what is wrong with the ship, if asked. She can also indicate what will happen if the PCs attempt to use the void drive, i.e., the XV-1 will jump backward up to 60,000 km. If asked to attempt to repair it, Violet answers:

I am one of the finest diagnostic medical robots available. I am not a surgical robot. I am not a robotic repair unit. The damaged circuit is in such a place on the panel that we would have to chance leaving the XV-1 a floating hulk, totally without power. The chances of such an operation succeeding with our limited repair facilities are 11 in 3,736, 941. The chances of compounding the damage with human error are prohibitive. It would be unwise to attempt repairs outside of a qualified and well-fitted repair facility.

Aboard the XV-1, all computers, drives, and numbered areas have an access panel from both the interior and exterior of the ship. To attempt repairs on any of these computers or drives requires a tech Level 5 repairing machinery, and a robotics skill Level 6 altering mission, as well as Level 6 repairing computers.

For sublight drive, a Level 3 repairing machinery is needed. Anyone with any operating machinery skill can fly this simple craft. In order to operate the FF cannon, a person must have a military skill with beam weapons, or the ability to operate machinery, as firing is integral to the operation of the XV-1.

SLARD, THE TRAITOR

Once the vessel has been explored, and the damage assessed, the NPC Slard begins having what the PCs may interpret as "second thoughts" about escaping the battle. He talks to them about how badly damaged the ship is, and how it might be wiser to seek an inhabited planet or habitable asteroid and send out a distress signal on all operating bands. Slard says:

I don't know how much damage this vessel can take. How do we know Violet's right? After all, it is primarily a medical robot - it might have made a mistake.

If the PCs think Slard's assessment is correct, Slard plays along with them until a suitable asteroid is found. To find a habitable asteroid, roll 1d10 every turn. A result of 1 means an asteroid capable of supporting life has been located.

If the PCs do not find an asteroid within then turns, or if they do not agree to Slard's plan, he acts as if nothing is the matter. Soon as he has a chance, he secretly pulls out his weapon, a laser pistol, and orders the XV-1 to go in the direction from which they came: Slard says:

All right, listen to me. I am taking over command of this ship. We're going to turn her right around and go back where we came from. Nobody do anything foolish, and we'll all live a lot longer.

If PCs accuse Slard of being a Sathar agent, he tells them the truth: The Sathar want the XV-1 because they heard rumors about how well it works. They want it to use its drive system and computers on kamikaze fighters for attacks on PGC ships, bases, and planets. Slard says:

What's a traitor? I see which way things are going, and I want to be on the winning side. A traitor becomes a hero when his side wins - he's only a traitor if his side loses. The Sathar pay well, and they aren't going to lose.

Slard is alert. A player must have a reaction speed of better than 5 to catch Slard off-guard. If a PC with a reaction speed of 5 or less attempts to draw his weapon, Slard receives first shot at them.

Players in the grav-couches suffer a -20 to their dexterity. If they draw their weapon, they must also make their dexterity roll or Slard will fire first. A player attempting to draw his weapon, but failing his dexterity roll, still is able to fire. Failure means that he did not draw quickly enough to get first shot.

Players shooting at Slard may hit him. If so, consult the star frontiers chart for damage. If they miss Slard, check what is in their line of fire, and have them roll again to see if they hit anything. All interior items (with the exception of airlocks and separating walls, which have already been covered) have 25 + 1d10 of structural points. If the number of points is exceeded, the machinery of computer is damaged.

When fired upon, Slard returns fire at the nearest target firing at him, or moving toward him. If several targets are equidistant from Slard, he returns fire to the one most nearly in front of him.

Slard also has a doze grenade and a tangler grenade in his suit. On the second round of firing, he throws the doze grenade at those firing at him. On the following round, he throws the tangler grenade at the PCs in the pilot/co-pilot area.

Should Slard die or be incapacitated, the PCs become aware of a blip on the sensor screen. If they ask the computer, it reveals that the blip on the screen is most likely the Sathar Frigate which has followed them into the void.

ENCOUNTER WITH THE SATHAR FRIGATE

When the Frigate appears, the PCs notice a blip on their sensor screen. The Sathar vessel does not attack them at once. It prefers to take the XV-1 undamaged. Over the sublight intercom comes the message:

Surrender! You will be well treated. It is futile to resist. Further attempts at evasion will result in your vessel being destroyed. We offer you your lives.

The offer, of course, is only a ploy to capture the XV-1. The PCs who surrender will be brainwashed and sent back to the UPF as saboteurs. Should any resist, they will be executed on the spot.

If the PCs attempt to escape, the Sathar fires on them with laser cannons. The first Sathar shots automatically miss. Thereafter, the Sathar has a 20% chance of hitting the XV-1. the XV-1 has 150 structural points. All damage from the Sathar is non-specific. If it is important that the players know, roll on the Weapons Table in the STAR FRONTIERS Expanded Game Rules to see where damage would occur, and tell the players that the XV-1 is partially damaged in that area.

The PCs may be able to bring the XV-1 about and face the Sathar. If they do so, allow them to fight normally, but the Sathar has the option of using all weaponry, save the torpedos. The Sathar Frigate fired its last torpedo at the XV-1 in the previous encounter when it damaged the XV-1's void drive system.

If the PCs use the vessel to jump backward and put themselves behind the Sathar, allow them to do so. When they shoot from behind, give them two rolls on the Advanced Damage Chart from

KNIGHTHAWKSTM to show the severe effects of this unexpected maneuver.

If the PCs have not destroyed the Sathar prior to their fourth hit on the Sathar, the fourth hit will blow up the Sathar Frigate.

Once the Sathar is destroyed, the players automatically find an asteroid which is habitable. They cannot repair void drive or void communication, although they have sublight capability in both areas. They may wait for help, or explore the asteroid while awaiting rescue.

PLAYER CHARACTER STATISTICS

Capt. Dai Llewellyn: Str/Sta 50/50, Dex/Rs 55/55, Int/Log 50/50, Per/Ldr 65/70, Im 6. Left-handed human male. Armed with laser pistol, 9 mm service automatic (projectile) pistol, gyrojet pistol and a vibroknife. His skills are: Level 3 beam, projectile and gyrojet weapons, Level 2 thrown weapons, and martial arts; Level 2 operating machinery, detecting alarms, and Level 1 tracking and first aid. He has an albedo suit under his exo-suit (spacesuit).

Viyizzi: Str/Sta 25/25, Dex/Rs 65/65, Int/Log 45/45, Per/Ldr 60/60, Im 7. She is an ambidextrous Yazirian female, armed with a laser pistol, automatic pistol, and vibroknife. She wears an albedo suit, and has the following ability levels: Level 4 beam and projectile weapons; Level 3 deactivating alarms; Level 2 tracking, survival, and stealth.

Yoe: Str/Sta 60/60, Dex/Rs 55/55, Int/Log 40/40, Per/Ldr 50/50, Im 6. He is an overweight Yazirian male able to "glide" only on the lightest gravity planets, and is right-handed. He carries a laser pistol and a vibroknife, and wears an albedo suit. His experience levels are: Level 1 beam and projectile weapons; Level 2 setting charges, following directions; Level 3 operating machinery and repairing machinery.

Hota Lea: Str/Sta 55/55, Dex/Rs 50/50, Int/Log 70/75, Per/Ldr 40/40, Im 4. She is a right-handed human female. She carries a laser pistol and vibroknife and wears an albedo suit. Her experience levels are: Level 1 beam and projectile weapons; Level 2 bypassing security, manipulating programs; Level 3 operating computers, interfacing, and repairing computers; Level 4 repairing robots, altering functions, and altering mission.

Dorf: Str/Sta 55/55, Dex/Rs 45/45, Int/Log 35/35, Per/Ldr 50/50, Im 5. Dorf is a Dralasite who wears an albedo suit, carries a laser pistol and vibroknife, and has a permanent "arm/pseudopod" on his right side due to an accident in the Sathar Wars. His experience levels are: Level 1 beam and projectile weapons; Level 2 martial arts; Level 3 making tools/weapons, and empathy.

Gillimk: Str/Sta 45/45, Dex/Rs 45/45, Int/Log 40/40, Per/Ldr 45/45, Im 5. He is an ambidextrous Vruskan male who wears an albedo suit and carries a laser pistol and vibroknife. His experience levels are: Level 1 beam and projectile weapons; Level 2 operating machinery, repairing machinery; Level 3 first aid, controlling infection.

NON-PLAYER CHARACTER STATISTICS

Slard: Str/Sta 50/50, Dex/Rs 40/40, Int/Log 45/45, Per/Ldr 50/50, Im 4. He is a right-handed human male who wears an albedo suit. He is armed with a laser pistol, a vibroknife, a doze grenade, and a tangler grenade. His experience levels are: Level 1 thrown weapons; Level 2 beam and projectile weapons; Level 3 making tools/weapons.

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THE ZAMRA:

Weapon of the Yazirians

A STAR FRONTIERS® Game Variant

by William Tracy
ARES #17 p41

The zamra has been used by the Yazirians for many centuries; it is a metallic disc about 10 centimeters in diameter, with sharp edges, used as a hurled weapon. Yazirians wear a gauntlet of light metal mesh when using this device so they will not be cut by it.

The zamra was used in the early history of the Yazirians as a dueling weapon. The two Yazirians in the duel would climb separate poles about 20 meters in height with a distance of about 5 meters between them. At a given signal the Yazirians would leap from the poles and glide downwards; each would have one zamra to throw at the other. If the duel was not between enemies, the Yazirians would try to hit each other's wing-like membranes, causing opponents to fall faster. The duelists would try to critically wound or kill each other if they were enemies.

The winner of the duel had to fill several conditions. He had to be alive when he landed, the last one to touch down, and had to land within a two-meter diameter circle which was clearly marked on the ground. One contestant had to meet all these requirements or the duel was considered a draw.

Sometimes duels were carried out using zamras made of softer material. These were generally non-lethal, but sometimes contestants were badly injured or slain with them anyway. Over the years the Yazirians started using the zamra not only in duels but also in any sort of fighting. Even now in the age of space travel, most Yazirians know how to use the weapon.

The statistics for using zamras in STAR FRONTIERS gaming follow:

Weapon Type: zamra

Damage: 1d10 (1d6 if non-lethal variety)

Ammo: 1 (itself)

Rate of Fire: 1/turn

Defense: Inertia

Point-blank Range: 0-5 meters

Short Range: 6-10 meters

Medium Range: 11-20 meters

Long Range: 21-30 meters

Extreme Range: 31-40 meters

A yazirian will carry at most two types of zamras. One type is produced in a variety of colors (except red) and can be used anytime the character wishes. The other type is dark red, and can only be used against that Yazirian's life-enemy. Often the red zamra will be carried as a sign of honor if the Yazirian chooses a life-enemy that is not a living being, such as a disease

or a competitive company. Typically only one red zamra is ever owned by a Yazirian; to own more is considered disgraceful. A character may own as many other kinds of zamras as he pleases.

When a Yazirian character is created, a six-sided die is rolled to determine the initial skill level the character has when throwing a zamra. A roll of 1-3 means a skill level of 1; a 4-5 roll means a skill level of 2; and a roll of 6 indicates a skill level of 3. This skill level may be improved over time. A character's base chance to hit targets when using a zamra equals one-half the character's dexterity expressed as a percentage, plus 10% per skill level with the zamra, plus range, movement, careful aiming, cover, target size, and thrower's condition modifiers. Use an additional -15% penalty if cast by a gliding Yazirian (such as during a duel).

Other character races may use the zamra, though Yazirians tend to frown upon such practices. The zamra has a significant place in Yazirian folklore and culture, and Yazirians like to see it treated with proper respect (which they don't feel can be given the device by other races). Although they usually won't attack someone seen using a zamra, Yazirians won't necessarily be happy to see this situation, either.

Yazirian battle gauntlets and zamras are made of strong, light alloy; zamras weigh about .5 kilograms. Game characters can never "modernize" zamras by adding devices to make them some sort of energized weapon.

Note: the zamra will always be used before any other weapon carried by a Yazirian if a life-enemy is being fought.

When a Yazirian is using a zamra against his life-enemy, he gains a +10% bonus to the chance that he will go into a battle rage, which will last as long as he is fighting his life-enemy. A red zamra will be used against life-enemies if possible, though other sorts will do.

ZAMRA TRICKS

If cast at a gliding Yazirian, a roll "to hit" that is less than or equal to 1/10th the thrower's normal "to hit" score may (at the caster's option) disable one of the target Yazirian's wing-like membranes, forcing him to cut his gliding distance in half and land quickly.

If two Yazirians are throwing zamras at each other, each has a chance to catch the zamra thrown at him with the battle-gloved hand. The chance is equal to one-half the character's dexterity plus 3% per zamra skill level. If the gloved character is hit by a zamra yet makes his catch percentage, he will take no damage.

Any character with a zamra skill level of four or better has a chance to try rebound shots. For example, the character may be pinned down by gunfire in a corridor, with assailant firing from around the corner. The zamra thrower may attempt to make the zamra bounce off a wall or other surface and strike the assailant. There must be a hard surface for a rebound shot to be attempted, and a zamra can only bounce off one surface to make an effective attack. The following procedure must be used:

1. Basic chance to hit: 1/2 dexterity (round fractions up).
2. Bonus: +5% per zamra skill level.
3. Add or subtract range modifiers, adding 5 meters of effective distance for the rebound itself.
4. Use the rest of the modifiers listed on p.22 of the STAR FRONTIERS Expanded

Rulebook.

5. Subtract 1-4 points from the zamra's damage if it hits the target, as the rebound absorbs part of the zamra's kinetic energy.

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Game: no boardgame, just rpg module

Media David Schow p7-8
- Of Writers, Editors and Horror Stories

Fun Among the Mutants Jams Ward p9-10
- Wreck-creation in the lands of Gamma World

Fiction:
Sword in the Dirt Henry Melton p11-13

Pancake Alley Steve Winter p14-15
- Driving Fast and Dangerously in Car Wars

Fiction:
A Friendly Game of Hoople Timothy Sullivan p16-24

Mongoose & Cobra Nick Karp p25-40
- A Universe Science-Fiction Game Module

The Zamra: Weapon of the Yazirians William Tracy p41
- A Star Frontiers Game Variant

Fire at Will Carl Smith p42-46
- Miniatures Rules for Star Frontiers Knight Hawks game

The Federation Strikes Back Marvant Duhon p47-52
- Enhancing Deltavee Starship Rules for Universe

Sword and Sorcery in Supergame Jay Hartlove p53-54

Reviews:
Games Steve List p55-60
Autoduel Champions (SJG)
Car Wars Game Reference Screen (SJG)
Scouts Rulebook (GDW)
The Klingons (Fasa)
Superworld (Chaos)
Alien Contact (PhoenixE)

Books Greg Costikyan p61-62
Web of the Romulans (M.Murdock)

Stainless Steel Rat for President (H.Harrison)

The Man Who Used the Universe (A.Foster)

Gunner Cade (C.Kornbluth)

Game Errata: p62

Into the Void

Nightmare House

"FIRE AT WILL!"

Miniatures Rules for the STAR FRONTIERS™ KNIGHT HAWKS game

by Carl Smith

ARES #17 pp 42-46

The bridge of the UPF Constellation was bathed in blue light. Flipping the protective cover off the switches on the console before him, the captain powered the ship's defenses and armaments. They'd found the Sathar, and it was now or never.

"CONDITION RED! RED ALERT!" blared the speakers.

The captain nodded shortly. "Lasers locked in, Mister Kandrel?"

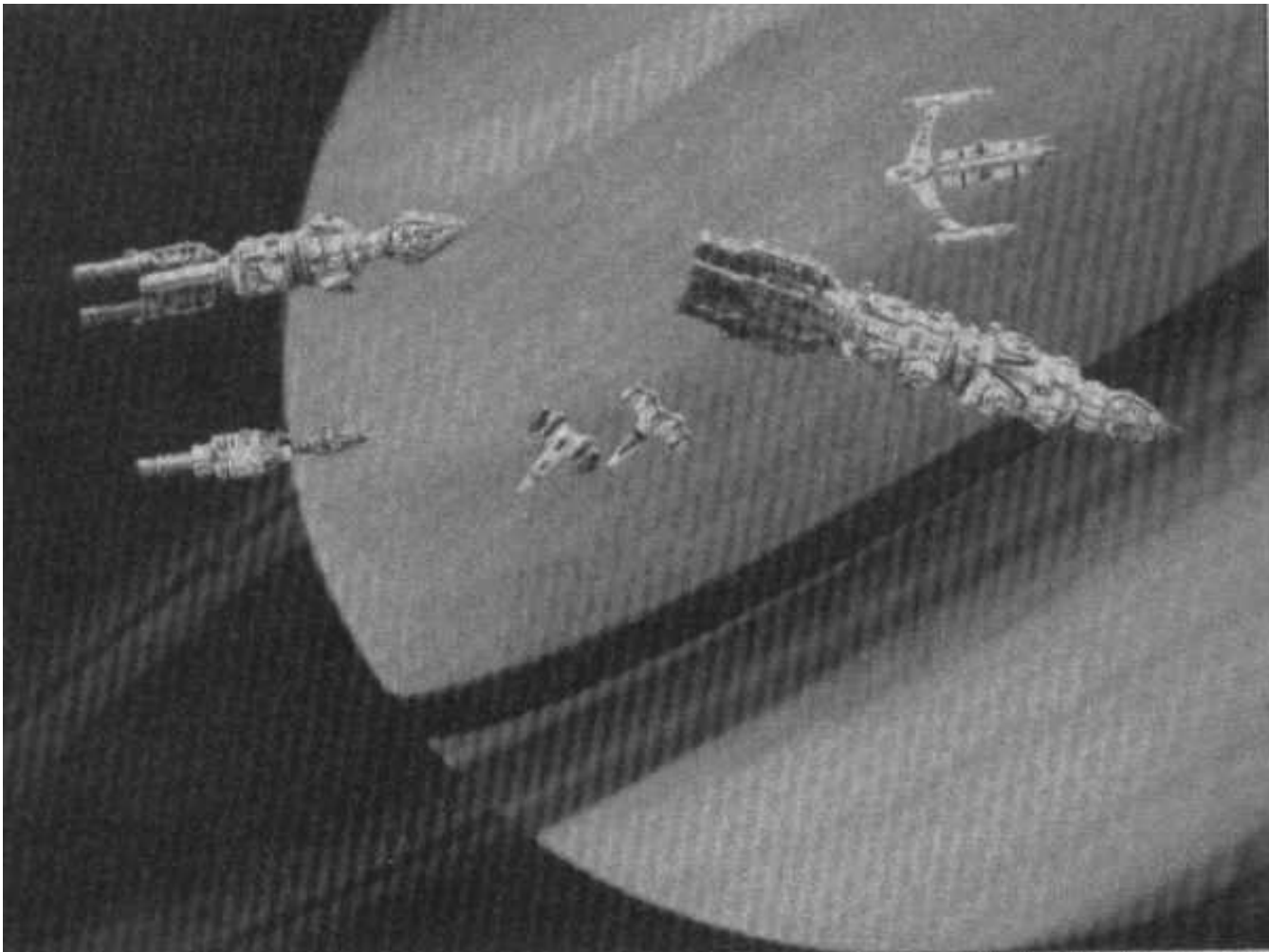
"Locked and ready, sir," called the gunnery officer.

"Bring them to bear on target." The target was a white dot moving across the viewscreen, coded symbols flickering beside it. "Fire at will, Mister Kandrel."

"Aye-aye, sir!" The lieutenant opened the protective cover for the switches. Without hesitation he triggered four on the top row.

All eyes watched the viewscreen intently. A few seconds later it blinked, and the moving white dot was no longer there.

INTRODUCTION



These rules convert the board movement and combat systems given in the KNIGHT HAWKS™ game so they may be used with TSR, Inc.'s KNIGHT HAWKS game miniatures to fight battles in outer space. To use these conversion rules, a player needs to be familiar with the KNIGHT HAWKS game.

Combat results and other game variables are decided by rolling one or more 10-sided dice, to get results from 1-10, 1-100, 2-20, etc. Combat results are shown in the KNIGHT HAWKS game, under the Advanced Game Combat Table.

All miniature figures represent one vessel of a particular class. The only exception to this rule is a grouping of five fighters, molded as a "flight."

TIME SCALE

One game turn equals ten minutes of game time (not real time). During this turn, both players move and conduct all their attacks. Everything occurring in this turn is considered simultaneous.

Players roll a die for initiative before movement each turn. The player winning the roll has the option of being the first or last one to move and fire offensive weapons.

Note: Seeker missiles for either side are always moved last in a turn, after both sides have already moved.

DISTANCE SCALE CONVERSIONS (HEXES-INCHES)

One hex from the KNIGHT HAWKS game maps represents an area 10,000 km across; using miniatures, two inches will equal 10,000 km (so one inch equals 5,000 km in the gamescale). A turn from one hex-side to another in the KNIGHT HAWKS game becomes a 60 degree turn in the miniature version.

MOVEMENT

Each ship retains its specific acceleration and deceleration factor (ADF) as outlined in the rules. All ADFs are measured in increments of two inches (10,000 km).

Players may never willingly "ram" one starship into another. To do so would totally destroy both vessels. Players must move so as to avoid collision whenever possible.

Any evasive movement is noted on the ship log, and that vessel is moved at one-half normal speed.

Turning: A protractor may be used to determine turning angle. For every two inches of forward movement, a player may make one facing change of 60 degrees or less. This may be done in accordance with MR rate, i.e., a player with 2 MR may make no more than two 60-degree changes in his turn. Players do not have to turn during their move if they do not want to. All ships must move 2" forward prior to executing any turns.

Exception: Any player not moving may face his vessel in any direction he chooses, regardless of MR rate.

RANGE

In the KNIGHT HAWKS game, all ranges are measured in hexes (each hex being 10,000 km). When using these rules for miniatures, one inch equals 5,000 km. A weapon with a range of ten hexes thus fires twenty inches. Simply double the range in hexes to find a weapon's range in inches.

Note: Mark a white dot on the front (center) of each miniature's stand. All measurement from one vessel to another should use the white mark as a reference. This dot also serves as a point of reference for all forward-firing (FF) lasers.

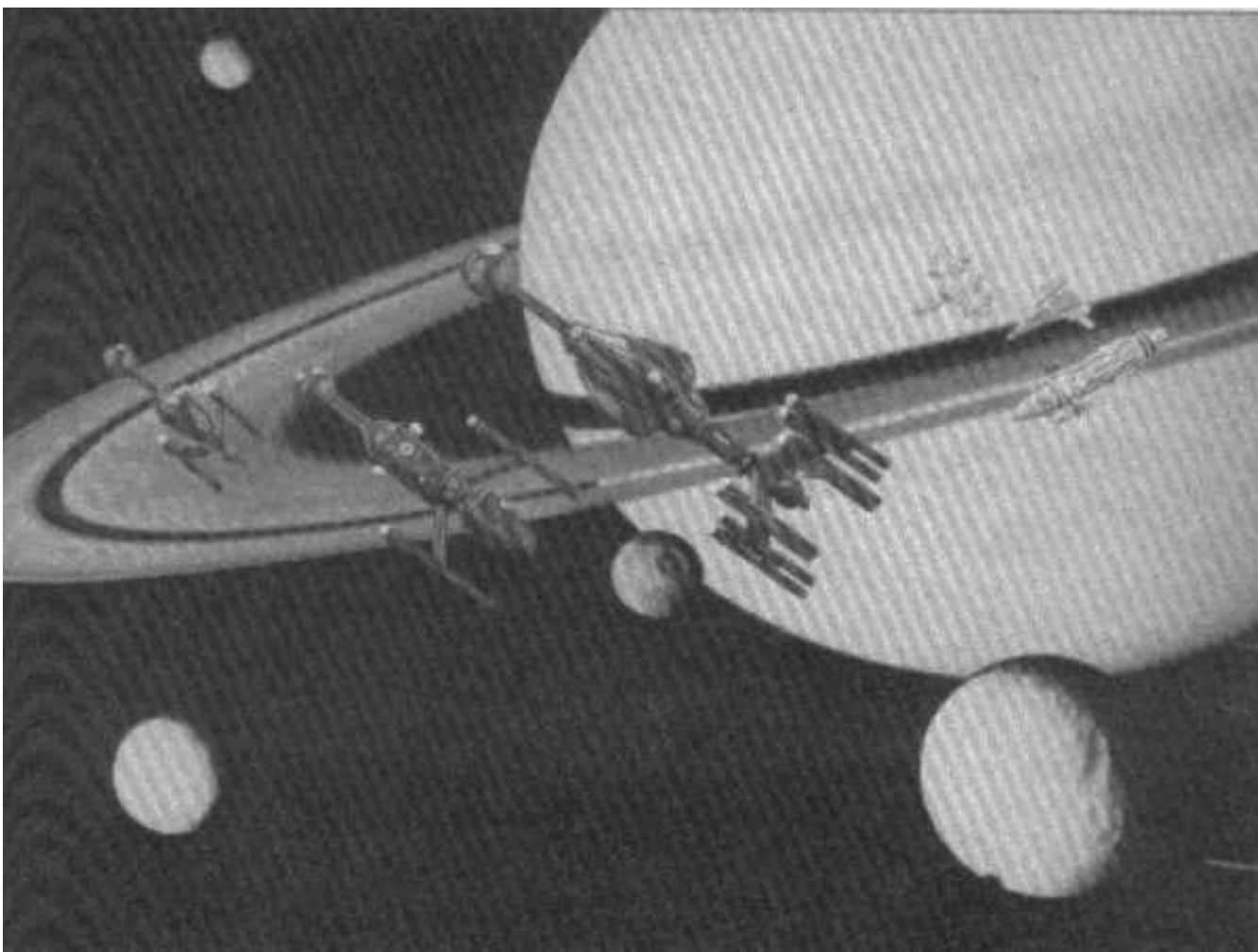
When measuring, round up all fractions of an inch if the distance is half an inch or greater. Round down if the distance is less than half. This is used for determining all movement distances and ranges.

Optional rule: All ranges may be estimated prior to being measured. If a target is out of range, you have wasted your shot. All fire must be "laid-in" (i.e. allocated) before combat begins.

AREA (ZONES OF CONTROL)

No ship may move within one-half inch of another ship. No ship may fire through another vessel. All ships must have a direct line of sight between their guns and their intended target. Destroyers will often "screen" larger ships, intercepting fire intended for the capital ship, by blocking the line of site between it and other ships. Ships arranged with only one-half inch between them "screen" ships behind them from enemy fire.

Exception: Fighters may maneuver between larger ships, enter and exit an assault carrier, and fly in formation in any area of one-half inch. Individual fighters conduct their attacks as part of a formation. Generally a group of fighters will attempt to intercept another group of fighters or an unescorted vessel.



Ships with forward-firing weapons (FF) may fire those FFs only within a 60 degree arc, 30 degrees to either side of their bow (front). Turret-mounted weapons may fire in a 360 degree arc, all around the ship.

Vessels firing in a straight line from their front with FF weapons stand a slightly better chance to hit; use the HEAD-ON charts for this. Any ship firing at a target within 5 degrees of its center line receives the bonus for a "head-on" shot. Use the white dot on the stand to measure these shots.

Defensive fire: During its defensive phase of turn, a ship may fire at any target which is in its unimpeded field of fire. A ship which is screened may not be fired upon. Only laser cannons, ICMs, laser batteries, and rocket batteries may be fired defensively.

All ICMs must be fired at designated incoming attacks. ICMs cannot be allocated to all incoming attacks, but specific ones, i.e., an ICM cannot be used against both fire from a rocket battery and a torpedo. It must be used only against one or the other. If a player wishes protection from both, he must fire at least two ICMs.

Seeker missile fire: Use paper counters to represent Seeker missiles. These missiles have a duration of six turns, and a maximum 24" speed. Because of their size and guidance systems, seekers may change direction up to 180 degrees before moving. Any ship coming within 2" of a seeker will activate it. Seeker missiles always move last in a turn, after all other movement has taken place.

Torpedo fire: Torpedoes have a duration of one turn, and a range of eight inches. Torpedoes must be able to trace a path to their target without coming closer than one-half inch to any other target. If a torpedo comes within one-half inch of a target, it hits that target instead of its original target.

DAMAGE

As noted in the KNIGHT HAWKS™ game, ships have several means of protection which must be indicated on the ship log if used. Examples of ship defenses include reflective hulls and masking screens, and their effects should be taken into consideration before damage is assessed.

All damage take effect at the end of both players' turns. Damage is assessed according to the hit chart (p. 12) in the KNIGHT HAWKS game rules. Any ship receiving 92-97% results has navigation damage, and must follow the

last course written down until the damage is repaired. This means a vessel repeats the entire movement pattern of its precious turn, or follows its last course.

You may attempt to repair damage at the end of every third turn. The KNIGHT HAWKS game rules for damage repair apply.

Ships unable to maneuver may crash into other ships, destroying both. This may occur because of damage to navigation, but never on purpose.

STARSHIP VESSEL TYPES

The following is a list of Federation and Sathar spaceships, with suggested statistics for their speed (S), turning (T), hull points (HP), and weapons (W). All of these miniatures are now available in boxed sets from TSR, Inc.

Federation Ships

<i>Battleship:</i>	S = 2, T = 2, HP = 120, W = 2 laser cannons, 4 laser batteries, 8 torpedoes, 10 rocket batteries.
<i>Destroyer:</i>	S = 3, T = 2, HP = 50, W = 1 laser cannon, 1 laser battery, 2 torpedoes, 6 rocket batteries.
<i>Frigate:</i>	S = 3, T = 3, HP = 40, W = 1 laser cannon, 1 laser battery, 2 torpedoes, 4 rocket batteries.
<i>Assault Scout:</i>	S = 5, T =4, HP = 15, W = 4 assault rockets, 1 laser battery.
<i>Freighter (unarmed):</i>	S =1, T = 1, HP = 75, W = none.
<i>Freighter (armed):</i>	S =1, T = 1, HP = 75, W = 1 FF laser cannon (or 1 laser battery).

Sathar Ships

The Sathar have starships that correspond exactly to those the Federation has (use the above statistics). They also possess the following extra ship types.

<i>Heavy Cruiser:</i>	S = 2, T = 1, HP = 100, W = 2 laser cannons, 2 laser batteries, 6 torpedoes, 10 rocket batteries.
<i>Light Cruiser:</i>	S = 3, T = 2, HP = 70, W = 2 laser cannones, 2 laser batteries, 4 torpedoes, 10 rocket batteries.

Pirate Ships

<i>Frigate:</i>	S = 3, T = 3, HP = 40, W = 1 laser cannon, 1 laser battery, 2 torpedoes, 4 rocket batteries.
<i>Assault Scout</i> (Classes A and B):	S = 5, T = 4, HP = 15, W = 4 assault rockets, 1 laser battery.

NEW SCENARIOS

I. Incident 43-C

Four UPF unarmed freighters were in the company of a UPF frigate and one military armed freighter; all were approaching the star system Ktsa-Kar from Kizk-Kar, their last stop. They were in the military jurisdiction of the planet Ktsa-Kar when they were attacked by a Sathar light cruiser and two Sathar frigates. At first they were not disturbed, because of "reasonable" activity by pirates in the area. The convoy sent information to the local military interceptor base, and an assault scout hunter-killer team of two assault scouts was dispatched. When the assault scouts arrived, they were greeted by empty space and the destroyed hulks of the convoy.

Set up: Sathar have one light cruiser and two frigates. They enter at extreme weapon range from the convoy at an eight o'clock intercept angle. The UPF convoy consists of our unarmed freighters, one armed freighter, and one frigate. The two UPF assault scouts enter at a twelve o'clock intercept angle at the beginning of the ninth game

turn. All ships are fully armed and ready.

Victory conditions: The Sathar must destroy all unarmed freighters for a marginal victory, the entire convoy for a tactical victory, and all UPF vessels for a decisive victory. The UPF receives a marginal victory for destroying one Sathar ship, a tactical victory for destroying two Sathar ships, and a decisive victory if *all* Sathar vessels are destroyed.

II. Incident 91-K

Four UPF assault scouts, a destroyer, and a frigate, encountered a pirate assault scout (class B, "gull-wing") near Prenglar as it closed with a UPF freighter carrying war material. In the ensuing combat, the pirate assault scout was easily destroyed. The group proceeded on a four o'clock interception course with Prenglar, but were jumped by a Sathar heavy cruiser on a two o'clock intercept course. The Sathar cruiser surprised the small escort group, destroying two assault scouts and the freighter. In the combat, it badly mauled the destroyer before it was destroyed itself.

Set up: Option A - The freighter and pirate assault scout start together in the center of the playing area. The UPF force approaches at extreme weapons range from the four o'clock area and engages the pirate assault scout. One turn after the assault scout is destroyed, the Sathar heavy cruiser will enter at extreme weapons range from the two o'clock position and engage the UPF fleet.

Option B - Assume the pirate vessel has been destroyed, and arbitrarily halve the number of torpedoes and rocket batteries each UPF ship has to simulate shots fired in their engagement with the pirate. The Sathar is fully armed. It enters from the two o'clock intercept position at extreme weapon range and attacks the freighter and rescue fleet.

Victory conditions: The Sathar player receives a portion of a victory for every vessel he destroys. If the Sathar destroys the freighter, he receives a marginal victory. If he destroys the freighter and either of the capital ships, the Sathar has a tactical victory. If the freighter and two or more of the UPF vessels are destroyed, the Sathar has a decisive victory. The UPF receives a tactical victory for keeping the freighter from being destroyed, and a decisive victory if he keeps the freighter from being destroyed and destroys the Sathar ship.

III. Incident 217-K

A pirate base was discovered off the farthest planet of Zebulon. A punitive expedition under Admiral Kraal, consisting of the UPF *Constellation* (a battleship), the *Port Yzlar* (a destroyer), the *Klikk-T'llicck* (a frigate staffed mainly by Vrusk), two assault scouts, and the military armed freighter, *Rub'n Jamz*, was sent to neutralize the pirate force. Acting as a decoy, the *Rub'n Jamz* fled from the pirates who sent their entire strike force, a frigate and two assault scouts (one a class B "gull-wing", and the other, a class A "arrow wing") after the freighter. Waiting on the sunward side of the planet was the entire UPF assault force.

In the following battle, the entire pirate force was destroyed, with only the loss of one assault scout to the UPF fleet of Admiral Kraal. This region of space remained pacified until three years later when the yacht, *Cassidine Breeze*, was waylaid by an old pirate assault scout which was obviously just passing through the area.

Set up: The *Rub'n Jamz* starts in the middle of the playing area. All pirate vessels start at maximum weapon range on a six o'clock intercept angle. On the second turn, the UPF force enters. The assault scouts start from the ten o'clock position at maximum weapon range from the freighter, and all other UPF vessels start at an eight o'clock interception angle from the UPF freighter at maximum range.

Victory conditions: For every vessel the pirate destroys, he receives victory points equal to the number of hull points of the vessel. A marginal victory is 70 hull points destroyed; a tactical victory is 175 hull points; a decisive victory is any score over 225 hull points. If the UPF player destroys one pirate vessel he receives a marginal victory; two pirate ships, a tactical victory; and three pirate ships, a decisive victory.

IV. Incident 217-L

After Admiral Kraal's victory over the pirates near Zebulon, he was alerted to a sub-space SOS and took his fleet to pick up survivors. In reality, the Sathar had picked up his communications and had hastily sent a fleet consisting of one Sathar heavy cruiser, one Sathar light cruiser, and one Sathar frigate to the area designated by the SOS. When the UPF fleet arrived, they found the Sathar fleet heading toward them on a twelve o'clock intercept course.

In the ensuing battle, the UPF assault scouts, the freighter and the frigate were destroyed. The destroyer was damaged badly and repairs on her were so extensive that she was not recommissioned until the hostilities of the second Sathar war were over. Even Admiral Kraal's flagship, the *Constellation*, was badly damaged and out of action for the better part of a year. The UPF did manage to destroy all the Sathar vessels involved in the action, but at a terrible cost.

Set up: The Sathar and UPF fleets enter on a collision course at maximum weapon range. The Sathar are fully armed, and the members of the UPF have only the armaments remaining to them after their destruction of the pirate fleet (see incident 217-K, scenario III). When the UPF fleet enters, the freighter is screened from the Sathar by the battleship *Constellation*.

Victory conditions: The Sathar receive a marginal victory if they destroy two UPF ships. They receive a tactical victory if they destroy three UPF ships, and a decisive one if they destroy four UPF vessels. The UPF receives a marginal victory if they destroy one Sathar vessel. If they destroy two Sathar vessels, they receive a tactical victory, and a decisive victory if they destroy all three Sathar vessels.

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Article .html conversion courtesy of Timothy R. Norris*

GAME ERRATA

Into the Void

by Carl Smith
ARES #17 p62

The *Into the Void* module for the STAR FRONTIERS® game, in ARES™ Magazine Issue #15, had some errors/omissions that are cleared up below.

Because of a lack of space, the statistics for the robot, Violet, were omitted. Violet is a V Series Medical Robot with arm-like extensions in the upper torso. The robot's head has vocal, audio, light/infrared, pressure, and sensor circuits for exo-biology. A Level 5 Medical robot, Violet has the equivalent of the following experience levels: Level 5 Medical, Level 4 First Aid, Minor & Major Surgery, Level 3 Control Infection, Cure Disease, Level 2 Neutralize Toxins, Analyze Eco-systems, Level 1 Activate Freeze Field, and Communication. Violet is fitted with a poly-vox, an interface for ship computers, and Level 5 security programs. Violet is used to dealing with Hota Lea, and can be difficult when dealing with other members of the crew if they improperly input information.

All ships listed as Sathar assault scouts should be Sathar frigates. The correction was made in the module, but not in the story.

The gray couches on the XV-1 were incorrectly numbered. They should have been numbered from 3-8, with 8 being Slard's seat. The deck plan key and ship map should then have been numbered from 1-27, with 5 added to each numbered location on the ship and in the key starting with area 4 (9), Gunnery Control.

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FRONTIERS OF THE MIND

Psionics in the STAR FRONTIERS™ Game

by Jon Mattson

When I first purchased TSR, Inc.'s new science-fiction role-playing game, I was quite impressed with it and immediately set about adapting my already existing SF campaign to suit the new rules system. After a number of characters had come and gone, however, I realized that something was missing: there were no rules present to cover the use of psionic abilities (paranormal powers derived from the mind), which have become a hallmark of modern science fiction. These abilities have a place in science-fiction campaigns, and the following is a system for using them in the STAR FRONTIERS game.

Psionic ability

When characters are generated, each player must roll for an additional ability score, Psionic Ability (PSI), using the same die-rolling procedure as used for any other score. There are no racial modifications for this roll, although Human characters can add their 5-point bonus to this score, and it is not "paired" with any other ability. In every other respect, PSI is treated as a normal attribute.

The referee should determine how psionic skills are acquired by a character. It may be necessary for someone to seek out a psionic mentor (remember a certain little green fellow on a swampy world?) or a psionic organization that will train him properly. Either way, an interesting series of adventures could be set up in which adventuring groups hunt for such sources of information.

Psionic skill

Psionic powers are actually skills which must be learned just like any other skills. The Psionic Primary Skill Area (PSA) consists of several skills, each of which must be learned separately and can have different levels. A skill cannot be used unless the character in question

has at least one level in that particular ability. In addition, a character who has not chosen the Psionic PSA cannot learn any of the psionic skills unless his PSI score is 60 or higher.

Unlike other skills, there is a limit to the number of psionic skills a character may know. A character who has chosen the Psionic PSA may know a maximum number of skills equal to his PSI score divided by 15 (rounding fractions to the nearest whole number). Characters who do not choose the Psionic PSA may not use any psionic abilities. Psionic characters may bring a number of skills equal to their PSI score divided by 25 (dropping fractions) above level 4, the other abilities remaining at level 4 or less.

(Editors' note: It might be a good idea to limit the number of psionic characters in a campaign to keep game balance and limit the spread of such powers).

Skill Cost Table

	Psionic PSA
Level 1	6(12)
Level 2	12(24)
Level 3	18(36)
Level 4	24(48)
Level 5	30(60)
Level 6	36(72)

As with other skills, the experience point cost is doubled for psionic skills when the Psionic PSA is not taken.

The various psionic skills are described below. The "success rate" is the same as for other skills. "Cost" indicates the number of Psionic Energy Points (PEPs) the character must expend per game turn to use the ability. A character's PEP score is equal to the average of his PSI and (unwounded) STA scores. As psionic skills are used, points are subtracted from the PEP score until it reaches zero (0), at which time psionic skills cannot be used. PEPs are regained at a rate of 3 per hour of rest, or 1 per

hour of activity. If an ability fails (i.e., the success roll is not made), the character will only lose half as many PEPs as would have been expended had the ability been successfully used (round fractions up).

If a psionic character is resting peacefully, he or she may use up to two talents at once as long as one of them is either *Clairvoyance* or *Mind Contact*. In this case, however, the total PEP cost of the two skills is increased by 10% (round fractions up). If any other sort of action is taken, even something as simple as pushing a button, both talents are immediately disrupted and ended. Only one talent at a time may be used otherwise.

The use of psionic abilities requires concentration; if that concentration is broken, the effect will be ruined. Any violent shock (such as a very loud noise, being struck physically, and so forth) has a chance of disrupting a psionic's concentration and ending a talent's use prematurely. The psionic is allowed an ability check vs. LOG to see if he maintains his concentration, possibly with modifications if the referee sees fit under the circumstances (for example, getting shot may produce a severe negative modifier, while someone whispering nearby would produce a positive modifier). The only exception to the above is with use of *Energy Manipulation*, which will absorb part or all damage from a blow automatically before a disruption check is required. If all of the damage from a blow is absorbed by this talent, no disruption check need be made. If some damage "leaks through," then a normal disruption check is made.

A character may also use an ability at a level lower than actually known, useful when one runs low on PEPs. Thus a character with level 6 *Telekinesis* could use this skill at level 5 or less if she wished to save PEPs.

Psionic skills



Clairvoyance

Success rate: 35% + skill level
PEP Cost: level of use + 2

This ability allows a character to get a clear mental picture of a person, place, or object within a radius of 10 meters per level of ability. At level 4 and higher, the user may also mentally "hear" sounds within the area (this is called *Clairaudience*).



Energy Manipulation

Success rate: $\frac{1}{2}$ STA (unwounded)
+ skill level
PEP Cost: 3 per level of use

This ability allows the character to channel energy harmlessly away from his body. Each level of this talent used will absorb 5 points of beam energy or 3 points of kinetic energy (from gyrojet, melee, projectile, or hurled weapons, from falling damage, etc.) Note that the success rate depends upon *actual* skill level with this ability, not the level at which PEPs are being used. This ability will last for one game turn, and may always be activated before other combat actions occur so long as the user is not surprised by an impending attack or damage-causing situation.



Mind Contact

Success rate: $\frac{1}{2}$ INT + skill level
PEP Cost: level of use + 1

This ability allows communication with the minds of other beings in various ways, depending upon the level at which this skill is used:

- Level 1:** This level allows the psionic to Sense the presence of any life forms.
- Level 2:** This level allows the character to use *Empathy* on a being, as per the Psycho-Social skill of the same name.
- Level 3:** This level allows one to *Shield* his mind from other psionic powers, so that he is allowed an ability check vs. PSI to avoid such powers being used against him, over and above any other saves the character may be permitted.
- Level 4:** A psionic may *Read Minds* at this level of ability. The immediate, con-

The referee may create new psionic powers, but should use discretion when doing so.

scious thoughts of other living beings may be detected (in their original language only), but the user cannot send any thoughts to other beings. Any being within the line of sight may have its mind read.

Level 5: At this level, a psionic may simultaneously read the mind of another being and send his or her own thoughts into the being's mind; this is called *Telepathy*.

The range of all *Mind Contact* skills equals the user's PSI score expressed in meters.



Illusion Creation

Success rate: 30% + skill level
PEP Cost: level of use + 4

This ability allows the psionic to exert a form of mind control over another being, such that the being affected will perceive an illusion created by the psionic. The illusion will have visual, auditory, olfactory, and tactile components (i.e., the victim will be able to see, hear, smell, and touch the illusion as if it were real); however, the illusion cannot cause damage by appearing to attack the victim (though it can produce startlement, of course). Anyone viewing the illusion must make an ability check versus LOG with a penalty of 5 times the level of the illusion or will perceive the illusion to be real. If the check is failed, the viewer will know the illusion is not real but may worry that he is "seeing things" unless otherwise aware of the presence of the psionic and his talents.



Mind Control

Success rate: 5 + skill level
PEP Cost: 2 + level of use (initially);
victim's STA/10 per minute thereafter

This ability allows the psionic to control the mind of another living creature;

only one being can be so affected at any time. When the initial attempt is made to control another being, the victim receives an ability check of the average of his LOG and PER scores, with a penalty equal to twice the level of use of this talent, to avoid control. If the check fails, the being is controlled for one minute; each minute thereafter, the psionic must expend PEPs at a rate equal to the victim's STA score divided by 10 (fractions rounded up).

Orders which are very much against the victim's will (such as suicide) will produce another ability check on the part of the victim, with a bonus of +40%. The range of this talent is equal to the user's PSI score in meters, and the victim must be within sight. Once control ends, the victim will be fully aware of what he did while controlled, and will know his actions were controlled and not voluntary. This talent will not work on any being with a higher PSI score than the user.



Telekinesis

Success rate: 30% + skill level, plus or minus modifiers below.
PEP Cost: level of use, squared, per minute

This is the ability to move objects merely by thinking about it. The range of this power equals the user's PSI score in meters. The success rate is modified by the mass of the object to be moved, as given in the table below:

Time	Penalty
1 hour/level	0
2 hours/level	-10
3 hours/level	-20
4 hours/level	-40

The duration of this talent is one minute per use, with continuous use possible so long as PEPs are available. Unwilling intelligent creatures who can grab handholds are allowed an ability

check vs. STR, with a penalty equal to 4 * the level of use, to avoid the attack.



Teleportation

Success rate: 35% + skill level, plus or minus modifiers listed below
PEP Cost: level of use, squared

This ability allows the psionic to instantly transport himself and an additional mass of material (equal to 5 * his PSI score, in kilograms) to any spot of his choice within his line of sight, without crossing the space between. The chance for success is modified in two ways, by the distance across which the psionic is teleporting and by the familiarity of the place teleported to. Modifiers for the above are in the following two tables:

Mass	Modifier to success rate
1g or less	+5
1.1-10g	0
11-100g	-5
101g-1kg	-10
1.1-10kg	-20
11-100kg	-40
101-1000kg (max)	-70

Area is . . .	Modification
In sight*	+5
Very well-known	0
Fairly well-known	-5
Seen once	-10
Never seen, but well-described	-20
Never seen, but general location is known	-40
Random	-60

Distance is	Modification
Up to 1 kilometer	0
10 km or less	-2
100 km or less	-4
1000 km or less	-8
10,000 km or less	-16
100,000 km or less	-28
300,000 km or less (maximum range)	-48

* — "In sight" includes the use of television cameras, *Clairvoyance*, and so forth. If the roll fails, the psionic has a percentage chance equal to his PSI score of not teleporting at all, but if this roll fails the user will teleport randomly, missing his destination by up to 1/10th the total distance he attempted to teleport across. The spot arrived at will be on a straight line between the psionic's

starting point and his planned destination. The referee then determines if the miss was short or long (50%/50% chance), and rolls a random number to place the character somewhere within the maximum miss range and the desired destination.

For example, a character tries to teleport from an orbiting starship to a planet's surface 190 km below. He fails to do so, and teleports randomly. The referee determines that he undershot and rolls a 20-sided die for the number of kilometers he missed by. Obtaining a 4, the character is declared to be 4 km above planet's surface and falling fast. Unless the character has a parachute, the game's over. If a character teleports into a solid object, the character dies instantly.



Other Abilities

The referee may of course create new psionic powers, but should in all cases use discretion when doing so. Having too many psionic characters can throw a campaign out of balance completely. The talents listed here may be used as guidelines for creating others. **A**

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The range of all *Mind Contact* skills equals the user's PSI score expressed in meters.



Illusion Creation

Success rate: 30% + skill level
PEP Cost: level of use + 4

This ability allows the psionic to exert a form of mind control over another being, such that the being affected will perceive an illusion created by the psionic. The illusion will have visual, auditory, olfactory, and tactile components (i.e., the victim will be able to see, hear, smell, and touch the illusion as if it were real); however, the illusion cannot cause damage by appearing to attack the victim (though it can produce startlement, of course). Anyone viewing the illusion must make an ability check versus LOG with a penalty of 5 times the level of the illusion or will perceive the illusion to be real. If the check is failed, the viewer will know the illusion is not real but may worry that he is "seeing things" unless otherwise aware of the presence of the psionic and his talents.



Mind Control

Success rate: 5 + skill level
PEP Cost: 2 + level of use (initially);
victim's STA/10 per minute thereafter

This ability allows the psionic to control the mind of another living creature;

only one being can be so affected at any time. When the initial attempt is made to control another being, the victim receives an ability check of the average of his LOG and PER scores, with a penalty equal to twice the level of use of this talent, to avoid control. If the check fails, the being is controlled for one minute; each minute thereafter, the psionic must expend PEPs at a rate equal to the victim's STA score divided by 10 (fractions rounded up).

Orders which are very much against the victim's will (such as suicide) will produce another ability check on the part of the victim, with a bonus of +40%. The range of this talent is equal to the user's PSI score in meters, and the victim must be within sight. Once control ends, the victim will be fully aware of what he did while controlled, and will know his actions were controlled and not voluntary. This talent will not work on any being with a higher PSI score than the user.



Telekinesis

Success rate: 30% + skill level, plus or minus modifiers below.
PEP Cost: level of use, squared, per minute

This is the ability to move objects merely by thinking about it. The range of this power equals the user's PSI score in meters. The success rate is modified by the mass of the object to be moved, as given in the table below:

Time	Penalty
1 hour/level	0
2 hours/level	-10
3 hours/level	-20
4 hours/level	-40

The duration of this talent is one minute per use, with continuous use possible so long as PEPs are available. Unwilling intelligent creatures who can grab handholds are allowed an ability

check vs. STR, with a penalty equal to 4 * the level of use, to avoid the attack.



Teleportation

Success rate: 35% + skill level, plus or minus modifiers listed below
PEP Cost: level of use, squared

This ability allows the psionic to instantly transport himself and an additional mass of material (equal to 5 * his PSI score, in kilograms) to any spot of his choice within his line of sight, without crossing the space between. The chance for success is modified in two ways, by the distance across which the psionic is teleporting and by the familiarity of the place teleported to. Modifiers for the above are in the following two tables:

Mass	Modifier to success rate
1g or less	+5
1.1-10g	0
11-100g	-5
101g-1kg	-10
1.1-10kg	-20
11-100kg	-40
101-1000kg (max)	-70

Area is . . .	Modification
In sight*	+5
Very well-known	0
Fairly well-known	-5
Seen once	-10
Never seen, but well-described	-20
Never seen, but general location is known	-40
Random	-60

Distance is	Modification
Up to 1 kilometer	0
10 km or less	-2
100 km or less	-4
1000 km or less	-8
10,000 km or less	-16
100,000 km or less	-28
300,000 km or less (maximum range)	-48

* — "In sight" includes the use of television cameras, *Clairvoyance*, and so forth. If the roll fails, the psionic has a percentage chance equal to his PSI score of not teleporting at all, but if this roll fails the user will teleport randomly, missing his destination by up to 1/10th the total distance he attempted to teleport across. The spot arrived at will be on a straight line between the psionic's

starting point and his planned destination. The referee then determines if the miss was short or long (50%/50% chance), and rolls a random number to place the character somewhere within the maximum miss range and the desired destination.

For example, a character tries to teleport from an orbiting starship to a planet's surface 190 km below. He fails to do so, and teleports randomly. The referee determines that he undershot and rolls a 20-sided die for the number of kilometers he missed by. Obtaining a 4, the character is declared to be 4 km above planet's surface and falling fast. Unless the character has a parachute, the game's over. If a character teleports into a solid object, the character dies instantly.



Other Abilities

The referee may of course create new psionic powers, but should in all cases use discretion when doing so. Having too many psionic characters can throw a campaign out of balance completely. The talents listed here may be used as guidelines for creating others. **A**

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HOME SWEET HOME

Creating planets for the
STAR FRONTIERS™ game

by David Cook

Rex Dexter, planet explorer extraordinaire, cracked the hatch of his scoutship open. Snakelike threads of vapor reached into the airlock, then the hatch swung open with a distinct pop. Having studied the aerial maps, he knew the place was bad, but as he looked out, his historic first words were stifled in his throat.

Before him stretched a red plain, strewn with yellow-speckled boulders. To his eye, the ground had the same gentle swelling consistency as his mother's oatmeal. Plants, resembling giant fuzzy blue mold, swayed gently in the roasting breeze; they threw complex shadows from the light of the eight bright moons overhead. The air was dense enough to feel like paste; it clogged his lungs, nearly choking him. His feet dragged, held in the grip of 6 Gs. "Oh s_____" he said, "not again!"



Illustration by Jeff Easley

Does this happen to you? Are your science-fiction characters constantly landing on planets that resemble Gumblyland? Do you keep expecting Duck Dodgers (of the 24th and a half century) to appear around the next rock? Do you have the feeling that the planets you are landing on are not quite realistic?

This article presents a method for creating realistic star systems and planets for use in the STAR FRONTIERS game. The method given below attempts to be accurate, allowing the referee to create planets that are reasonable and scientifically possible. Wherever possible, the best scientific theories and information have been used in making this system. However, at the same time, very little is positively known about how planets are formed or even whether habitable planets are common.

The tables below should be used in the order listed. However, creating planets should not be always done just by dice rolls. If the referee has some plan or idea of what he wants, he should design the planet by choice, not letting random rolls dictate the outcome.

Likewise, the referee should not expect these rules to do everything for him. The planets created will have descriptions of the physical factors — the gravity, size, average temperature, amount of water, etc. It is still necessary for the referee to give the planet "life" — creatures, places of interest, colorful descriptions, and a history. No amount of tables can do this, nor any number of rules. This work must be done by the referee.

If the referee is designing a completely new area, the first step is to create the Sector Map. This may be done using graph paper, hexagon paper, or even a blank sheet of paper. The referee should start by rolling for ten to twenty stars on the Stellar Configuration Table (found below). The General Column of the two die ranges should be used. As the referee learns what each star system is, he should place it on the map (wherever he chooses). The map symbols on the following page may be used to indicate each type of star or object. After the referee has done this, he should place an additional 2-20 stars on the map, this time using the Habitable System Column

of the table. This will ensure that there are at least several habitable systems in the sector. The referee should not attempt to place all the stars that would be found in a sector, since, in reality, a sector map could have hundreds of stars in its area. Only enough stars to provide many exciting adventures need be placed.

Realistically, it is very unlikely that so many habitable systems would be found in one area of space. However, the more realistic possibility of 1 habitable planet every 1,000,000 cubic light years (or thereabouts) is not very exciting or useful for most science-fiction games.

For those referees wanting greater realism for their sector map, the third dimension may be added. Stars do not all exist on the same plane (as a sheet of paper would seem to indicate), they fill an area. This may be done by assigning a plus or minus number to each star. This number is the number of squares above or below the level of the paper the star actually exists on. True distances between stars may then be found by doing some simple math, using the formula for finding the hypotenuse of a



triangle. However, this is not a math class. Furthermore, this math can be tedious if there are many stars involved. Therefore, adding in the third dimension is optional. The diagram below shows a perspective view of this mapping system.

Once a system map has been created, the referee may begin designing the actual systems that are found around each star. The following tables are used for creating star systems. They will determine the arrangement of the stars, the type of star, and the number of planets in the system. If the referee does not need to know this information, these tables may be skipped.

Creating systems

Stellar Configuration: When placing the stars on the sector map, the referee should determine the stellar configuration (or type and arrangement) of the star(s) at each location. This is done by rolling or choosing from the table below. The General Die Roll applies to most stellar systems. If the referee does not want to bother with these stars he may roll on the Habitable Die Roll column of the table.

Stellar Configuration Table

Gen. Die Roll	Hab. Die Roll	Configuration
1-10	01-40	Sunlike star, habitable planets
11-18	41-72	Binary*: sunlike and dwarf, habitable planets
19-24	73-97	Binary*: two sunlike stars, habitable planets
25	98-99	Binary*: sunlike and giant star, habitable planet
26-93	—	Non-sunlike star, non-habitable planets
94-99	—	Any type star, no planets
00	00	Special feature**

* A binary star system is one that has two stars that orbit each other. In this system, the binaries will either be close or far. In a close binary, two stars circle each other so that they almost appear to be touching. In a far binary, one of the stars is at least as far away as Jupiter is from the Sun. It is suggested that most stars in a binary system be far apart from each other.

** Special features represent things in space which either are extremely rare or do not fit into other categories. These serve as sources of possible adventures for the PCs. To determine what the special feature is, the referee should either make one up, select one from the table below, or roll percentile dice and consult the table below. The special features are explained after the table.

Special Feature Table

Die Roll	Feature
01-03	Alien artifact
04	Alien lifeform
05-06	Artificial world
07	Black hole
08-20	Dead star
21-22	Derelect spaceship
23-50	Dust cloud
51	Neutron star
52-71	Protostar
72-80	Rogue planet
81-99	Supernova remnant
00	White hole

Alien artifact: An alien device just floating in space. It could be space mines left from some ancient battle or an unmanned deep space probe. Whatever it is, it is likely to be a source of adventures for the player characters.

Alien lifeform: Some unknown creature, able to live in deep space without any life-support is found here. The referee will have to create the creature.

Artificial world: Instead of a star system with planets, there is a world created or drastically altered by unknown beings. Such worlds could include artifi-

cial suns and planets, ringworlds, or Dyson spheres.

Black hole: A collapsed star with a gravitation field so intense that even light cannot escape its pull. The exact effect of the black hole will depend on the game being played.

Dead star: A burnt out cinder of a star. The surface will still be very hot, but may be able to support some type of alien life.

Derelect spaceship: A spacecraft in deep space. It may be a recent ship, abandoned after a pirate attack, a lost slower-than-light colony ship, a damaged fighting ship unable to return to base, or whatever else the referee desires.

Dust cloud: If a dust cloud is rolled, the referee should roll 1-10. This is the number of cubic light-years filled by the dust cloud. Dust clouds may be a hazard to navigation.

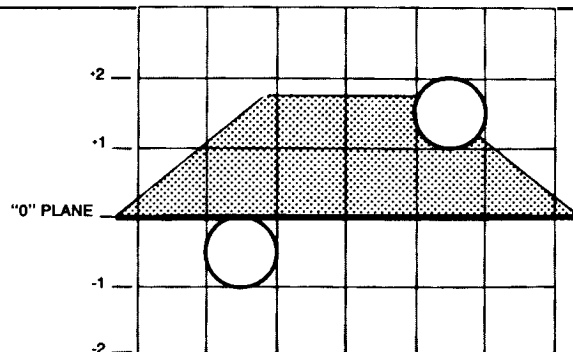
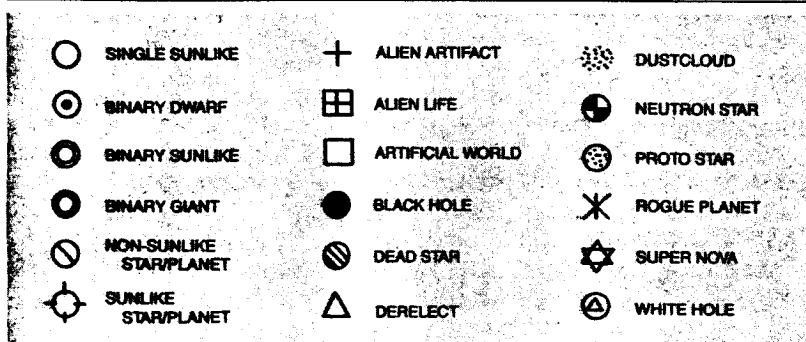
Neutron star: A collapsed star of extreme density and high gravity. Although not as intense as a black hole, a neutron star emits high amounts of energy that could pose a hazard to communication and navigation.

Protostar: This area is considered a dust cloud for the purposes of navigation. It is really a star in the beginning steps of forming.

Rogue planet: A planet pulled out of orbit from its star and now traveling by itself between stars. The planet may have been inhabited, and the inhabitants may still be alive under the surface of the planet.

Supernova remnant: A rapidly expanding aura of hot gases and particles. Long distance communication may be difficult in the area.

White hole: Currently a theorized counterpart to a black hole. Where a black hole absorbs everything, a white hole would release enormous amounts of energy and matter. They could therefore be exit points for the matter drawn in by a black hole. The amount of energy given off by a white hole is so great that any ship of known design would be totally destroyed if it came too



close. Therefore, white holes are considered hazards to navigation.

Stellar class: In astronomy, all stars are given a stellar class to indicate the brightness and size of the star. However, not all stars can support habitable planets. Some are too hot and others are too small and cold. Some stars give off too much dangerous radiation. A small range of stars (from F2 to K1) are thought to be right for habitable planets. These are called sunlike stars in these rules. The stellar class of the sunlike star will have an effect on the number of planets around it. The referee should roll on the table featured right to find the stellar class of the sunlike star in the system.

Class: The letter and number combinations listed give the Stellar Class for information purposes.

Planet Mod.: This is the Planet Modifier. It is used when determining the number of planets in the system, as explained below.

Length of Year: The approximate length of a year in Earth days (24 hours) for an Earthlike, habitable planet.

Range: There are three different orbit ranges that a character-habitable planet can be in — close, middle, and far. These

Sunlike Stellar Class Table

Length of Year						
Die Roll	Class	Planet Mod.	Close	Range Med.	Far	Color
01-05	F2	+2	605	810	1030	Yellow-White
06-10	F3	+2	550	750	970	
11-15	F4	+2	500	675	845	
16-20	F5	+2	450	620	785	
21-25	F6	+1	420	530	690	Yellow
26-30	F7	+1	390	500	635	
31-35	F8	+1	360	470	605	
36-40	F9	+1	335	440	555	
41-45	G0	0	325	380	455	
46-50	G1	0	285	370	480	
51-55	G2	0	260	350	440	
56-60	G2	0	245	315	405	
61-65	G4	-2	215	280	370	
66-70	G5	-2	205	265	335	
71-75	G6	-4	200	250	300	
76-80	G7	-4	195	235	270	
81-85	G8	-4	193	220	255	
86-90	G9	-5	191	210	225	
91-95	K0	-5	190	200	210	
96-00	K1	-5	189	195	200	Red-Orange

will have an effect on the temperature of the planet. You may choose an orbit range or roll randomly to determine it.

Color: The colors for stars listed blend into each other. A G9 star would be orange with a slight amount of red to it.

Planets in the System: Not all star systems with planets will have the same number of planets. Furthermore, not all planets are the same. These rules divide planets into four categories — Planetoids, Minor Planets, Terrestrial Planets, and Jovian Planets. Because of the way planets are formed, the different types will be at different positions from the star. The table below determines the number and type of planets that will be found in a star system. To use the table roll 1-10 and find the proper column. Then roll another 1-10 and add or subtract the Planet Modifier obtained from the Stellar Class Table. Treat modified die rolls of less than 1 as 1 and greater than 10 as 10. Find where the proper row and column meet. The information there will give the numbers and general types of planets in the system. This information is arranged from planets closest to the star to planets farthest from the star.

After this information is found, the

referee should place each planet on a system display or some type of solar map. At the center of the display is the star. Each ring out from the sun is a possible planet orbit. Each planet should be placed on an orbit ring. If there

are more rings than planets in the system, the referee may skip any rings he or she desires. The shaded area of the display is the star's Habitable Zone. All character-habitable planets should be placed in this zone.

Planet Type Table

Second Die Roll	First Die Roll				
	1-2	3-4	5-6	7-8	9-10
1-2	1H	1M/2H	1M/2H/1J1J	1M/1H/1J/1T	2M/2H/1J
3-4	2M/1H/A	1M/1H/2J	1H/A/1J	1M/A/2H/1J/1T	3M/1H/2T
5-6	1M/A/1H/1P	2M/2H/2J	1M/2H/1J/1T	2M/2H/2J/1P	1M/ 1P/1H
7-8	2M/2H/A/3J	3M/2H/3J/1P	3H/A/2J/2T	3H/A/2J/2T1T	2M/3H/4J
9-10	2M/3H/2J/2T	1M/3H/5T	3M/3H/4J/2T	3H/4J/4T	3M/A/1H

Explanation of results

#: The number of planets of that given type.
M: Minor Planet — a small chunk of rock much like Mercury in size.
H: Terrestrial Planet located in the Habitable Zone — Venus, Earth, and Mars are considered Terrestrial planets.

A: Asteroid Belt

J: Jovian Planet — a gas giant planet, more a cloud of gases. Jupiter and Saturn are Jovian Planets.

T: Terrestrial Planet not in the Habitable Zone.

P: Planetoid — a small chunk of rock, barely large enough to be spotted.

Creating Planets

The following tables (Planetary Diameter and Gravity and Satellites) are used to create any planet, whether habitable or not. If the planet is not habitable, these are the only tables used. If the planet is

habitable, the remaining tables of the article are used to generate more information.

Planetary Diameter, Gravity, and Atmosphere: The following table determines the approximate size, gravity, and atmosphere of both habitable and non-

habitable planets. Size and other factors have a great deal to do with the gravity of any given planet. The table below already has these factors figured into its results. The table is divided into four categories — Planetoids, Minor Planets, Terrestrial Planets, and Jovian Planets.

Planetary Diameter and Gravity Table

Second Die Roll		First Die Roll									
Die Roll	Dia.	1	2	3	4	5	6	7	8	9	10
Planetoids											
1-4	Less than 1500	NE	NE	NE	NE	NE	NE	NE	NE	NE	.1N
5-6	1500	NE	NE	.1N	.1N	.1N	.1N	.1N	.1N	.1N	.1N
7-8	2000	.1N	.1N	.1N	.1N	.1N	.1N	.1N	.1N	.2N	.2N
9-10	2500	.1N	.1N	.1N	.1N	.2N	.2N	.2N	.2N	.2N	.2N
Minor Planets											
1-3	3000	.1N	.2N	.2N	.2N	.2N	.2N	.2N	.2N	.2N	.3N
4-6	4000	.2N	.2N	.2N	.2N	.2N	.3N	.3N	.3N	.3N	.3N
7-8	5000	.2N	.3N	.3N	.3N	.3N	.3N	.4N	.4N	.4N	.4N
9	6000	.3N	.3N	.3N	.4N	.4N	.4N	.4N	.5N	.5N	.5N
10	7000	.3N	.3N	.4H	.4H	.4H	.5H	.5H	.5H	.5B	.6B
Terrestrial Planets											
1	8000	.4H	.4H	.4H	.5H	.5B	.5B	.6B	.6B	.6B	.7*
2	9000	.5B	.5B	.6B	.6B	.6B	.7*	.7*	.8*	.8*	.8*
3	10000	.5B	.6B	.6B	.6B	.7*	.7*	.8*	.8*	.8*	.9*
4	12000	.7*	.7*	.8*	.8*	.9*	.9*	1.0*	1.0*	1.1*	1.1*
5	14000	.8*	.8*	.9*	1.0*	1.0*	1.1*	1.1*	1.2*	1.3*	1.3*
6	16000	.9*	.9*	1.0*	1.1*	1.1*	1.2*	1.3*	1.3*	1.4*	1.5*
7	18000	1.0*	1.1*	1.1*	1.2*	1.3*	1.4*	1.4*	1.5*	1.6H	1.7H
8	20000	1.1*	1.2*	1.3*	1.3*	1.2*	1.5*	1.6H	1.7H	1.8H	1.8H
9	22000	1.2*	1.3*	1.4*	1.4*	1.5*	1.6H	1.7H	1.8H	1.9H	2.0H
10	24000	1.3*	1.4*	1.5*	1.6H	1.7H	1.8H	1.9H	2.0H	2.1H	.2H
Jovian Planets											
1	30000	.3B	.4H	.5H	.6H	.6H	.7H	.8H	.9H	1.0H	1.1H
2	40000	.3H	.5H	.7H	.7H	.8H	.9H	1.0H	1.2H	1.3H	1.5H
3	50000	.5H	.6H	.8H	.9H	1.0H	1.1H	1.3H	1.5H	1.7H	1.9H
4	70000	.6H	.9H	1.2H	1.3H	1.5H	1.6H	1.7H	2.0H	2.3H	2.6H
5	90000	.8H	1.0H	1.5H	1.7H	1.9H	2.0H	2.3H	2.6H	3.0H	3.4H
6-7	110000	.9H	1.4H	1.8H	2.0H	2.3H	2.5H	2.8H	3.2H	3.7H	4.1H
8-9	130000	1.1H	1.6H	2.2H	2.4H	2.7H	2.9H	3.2H	3.8H	4.3H	4.9H
10	150000	1.3H	1.9H	2.5H	2.8H	3.1H	3.4H	3.8H	4.4H	5.0H	5.6H

First, find the proper category of planet type. Next, roll 1-10 and find the proper column across the top of the table. Then, roll 1-10 and find the correct row down the side. Find where the column and row meet. To give the gravity and atmosphere of the planet. The diameter is listed beside the second die roll.

Explanation of results

Dia.: The number in this column is the diameter of the planet in kilometers.

@.1 through 5.6: The gravity of the planet in tenths of a G; 1.0 equals normal Earth gravity.

NE: Negligible gravity. The strength of the gravity on the planet is not enough to have any game effect. The rules for weightlessness should be used when characters are on the planet. Obviously, the planet will not have an atmosphere. Characters will have to wear spacesuits when on the surface.

N: The planet has no significant atmosphere. Characters will have to wear spacesuits when on the surface.

H: Hostile Atmosphere. The planet has

an atmosphere, but it is not breathable by the player character races. The atmosphere may be poisonous methane and ammonia, hydrogen and helium, frozen solid or any of a number of other dangerous combinations. Characters will have to wear spacesuits while on the planet's surface.

B: The atmosphere of the planet is breathable by the character races, if the planet is in the habitable zone of the star. However, other conditions (gravity, average temperature, etc.) make the planet unsuitable for colonization. No character may remain on the planet for more than six months. If the planet is not in the Habitable Zone on the system display, the atmosphere is considered hostile.

***:** The planet is character-habitable if in the Habitable Zone of a sunlike star. Conditions allow it to be colonized.

Satellites: Many planets will have satellites orbiting them. These will range in size from chunks of rock, barely visible from the ground, to large moons. In addition to satellites, some planets, espe-

cially larger ones, will have rings around them.

To determine the number of satellites around any planet, character-habitable or not, the following table and its modifiers should be used. The referee should find all modifiers that apply to the planet and add them to the roll of 1-100. The modified result should be found on the table below.

Modifiers Gravity * 10 Diameter/1000

Satellites

Die Roll	Satellites
01-107	None
108-118	1-2 planetoids
119-129	Ring*
130-136	1-5 planetoids
137-149	1-10 planetoids
150-170	Ring**
171-250	2-20 planetoids
251-306	2-20 planetoids and 1 minor planet

* If a ring result is obtained, another modified die roll should be made. If the planet already has rings, treat the result as 1-5 planetoids.

** If a ring result is obtained, another modified die roll is made. If the planet already has rings, treat the result as 2-20 planetoids.

If the referee desires, he may determine the diameter, gravity, and atmosphere of the satellite by rolling on the proper section of the Planetary Diameter and Gravity Table. However, if the referee does not intend for the player characters to ever reach the satellite, this is not necessary.

Character-Habitable Tables: The following tables should only be used for character-habitable planets. If the planet is not character-habitable, no further information is required.

Length of Day: The following table is used to find the length of the day (in standard 60 minute Earth hours) on any character-habitable planet. It is possible for a day to be longer or shorter than the amounts listed. However, if this were so, the conditions on the planet would not be suitable for living creatures.

To determine the length of the day, roll percentile dice and read the proper row. This will give a range of hours, either 1-5, 1-10, or 1-20. The referee should then roll the proper die to determine the exact number of hours in the day.

By doing a little simple arithmetic, the

referee can find the length of the year in planet days. Multiply the number of Earth days in the planet's year by 24. Divide this total by the number of hours in the planet's day. The result is the number of planet days in the year. (Year in Earth days \times 24 = hours in year. Hours in year/hours in planet day = number of planet days in year.)

Day Length Table (Earth hours)

Die Roll	# of Hours
01-07	6-10 hours
08-20	11-15 hours
21-50	16-20 hours
51-75	21-30 hours
76-85	31-40 hours
86-90	41-50 hours
91-95	51-70 hours
96-99	71-90 hours
00	91-95 hours

Equatorial Inclination: Most planets tilt on their axis. This tilt will have an effect on the seasons of the planet. The greater the tilt, the more severe the seasons will be. This will affect the average temperature of the planet according to the season. To find the equatorial inclination, roll percentile dice and read the result on the table below. This will list the degree of inclination, the general effect on the seasons, and the Average Temperature Modifier.

Equatorial Inclination Table

Die Roll	Degrees Inclination	Seasonal Effect	Av. Temp Change
01-15	0	No seasons	0°
16-35	10	Mild seasons	+5/-5° C
36-55	20	Earthlike seasons	+10/-10° C
56-70	30	Strong seasons	+15/-15° C
71-85	40	Extreme seasons	+20/-20° C
86-00	50	Drastic seasons	+25/-25° C

Average Temperature: With the orbit range and inclination of a character-habitable planet, the referee can determine its average yearly temperature. To do so, match the planet's orbit range on the table below with the orbit range for the planet on the Stellar Display. This will give a spread of degrees for the average temperature of the planet. The referee should roll 1-10 and add the base number (if any). The result is the average yearly temperature for the temperate zone of the planet. To find the average temperatures for the different seasons, the referee should add and subtract the Average Temperature Change given above for the planet's inclination. The lowest number is the winter temperature, the highest number

is the summer temperature. Remember, these temperatures are only average. Some days will be hotter or colder. Furthermore, many other factors may affect the temperature of a planet (these may be created by the referee).

Orbit Range	Base Temp. In C
Close	20° C
Medium	10° C
Far	0° C

Percentage of Water: All character-habitable planets will have some amount surface area covered by water. Obviously, planets with a low percentage of water will be dry and barren for the most part. Planets with a high percentage of water will have many island chains, and will often be humid or sometimes tropical. It is impossible (by today's knowledge) to have a character-habitable planet that has less than 10% water or more than 90% water. The first would be a dry, barren ball and the second would be a misty globe.

Surface Water Table	
Die Roll	Adjustment
01-25	+10
26-75	0
76-00	-10

To use the above table, roll percentile dice and check the number rolled

To determine the modifier, find the proper stellar class for the star below. The amount listed is either added or subtracted from the die roll.

Stellar Class	Age Modifier
F stars	-2
G0 - G3	-1
G4 - G6	0
G7 - G9	+1
K Star	+2

If the result is positive, that number should be added to the die rolls on the proper tables. If the result is negative, that number should be subtracted.

Lifeforms: If the referee has not decided what types of creatures will inhabit the planet, he may use the following table for a general idea. It is important to note that the categories used are extremely general. Many different kinds of creatures fall under each category. Secondly, the creatures and evolutionary order are all from Earth. This certainly does not mean that these creatures will be found on other planets, only something similar to them. A flowering plant on another planet might be sticky pads of seeds that open, get caught on a passing creature, and eventually drop off the creature at a different place. A semi-intelligent creature might have five small brains controlling different parts of its body and a larger brain controlling the smaller brains. The referee should remember to create all alien creatures with imagination and common sense.

Lifeform Table

Die Roll	Typical Lifeform Equivalents
1 or less	Single celled bacteria, red algae
2	Simple sponges, corals, jellyfish
3	Worms, lichen, snails, clams, green algae
4	Fish, insects, ferns, mosses
5	Lungfish, frongs, Sago palm (not a true palm tree)
6	Lizards, pine trees, snakes, palm trees
7	Dinosaurs, birds, rats, flowering plants
8	Mammals, grasses, oak (and other trees)
9	Apes, chimpanzees, dolphins, whales, primitive man
10+	Intelligent beings (equal to character races)

Optional Tables

Age of Planet: The age of the planet will affect the results of the Lifeform, Resource, and Unusual Features Tables, and should be determined before these tables are used. The young planets will be less likely to have highly developed lifeforms, and will have different resources and unusual features as compared to older planets. Determining the age of the planet will give a modifier that is used on the three tables. It is not necessary for the referee to record this modifier, although he if desired.

To use the table, roll 1-10 and add or subtract the planet age modifier. The result will be the general level of development of lifeforms on the planet.

Special Feature Table

Die Roll	Feature
0 or less	Extreme geothermal activity
1	High air pressure
2	Retrograde spin
3	Twin Planet
4	No feature
5	No feature
6	No feature
7	Violent weather
8	Alien artifact
9	Low air pressure
10	Greenhouse effect
11+	Tainted atmosphere

Explanation of results

Extreme geothermal activity: The planet is still quite hot and active. On its surface are volcanos, geyser basins, and fault lines. There is a 5% chance per week that an earthquake will occur in the region of the player characters.

These quakes will knock characters off their feet and cause minor damage. The referee should place many active volcanos and geyser basins on the world map. **High air pressure:** The air on the planet is denser than Earth normal but still liveable.

Retrograde Spin: The planet rotates in the opposite direction from most planets. The sun will rise in the west and set in the east.

Twin Planet: The planet actually circles another planet and both circle the star. The referee should note the twin planet on the stellar display. Five should be added to the length of the planet's day. The other planet of the twin planet group may or may not be habitable. Roll 1-10; a 1-3 indicates a Minor Planet, a 4-8 is a Terrestrial Planet, and a 9-10 is a Jovian Planet. Determine the size and gravity as a normal planet of the proper type. The length of day will be identical to the first planet.

Violent Weather: Storms and high winds are common on the planet. There is a 50% chance each day, that high

winds will prevent any flying movement and will halve ground movement.

Alien Artifact: Something (a city, wrecked spacecraft, etc.), of unknown alien construction is found on the planet.

Low Air Pressure: The air is less dense than that of Earth. Characters will require oxygen while on the planet. Characters without oxygen will suffer a small amount of damage every 12 hours (or part thereof).

Greenhouse Effect: The ground is always shrouded by a thick cloud cover, casting it into continual twilight. The temperature of the planet is increased by 15 degrees.

Tainted Atmosphere: Some agent in the air (a pollen, chemical, micro-insect, etc.) makes the use of a filter mask required. For every 30 minutes in the atmosphere without a filter mask the character will suffer serious damage.

Technological Stage: If the referee decides or determines that a planet has intelligent creatures, this does not necessarily mean they are equal in technology to the player character races. Instead, the beings are at *some* technological stage. To find their technological stage, roll one die and consult the table below. Each line is divided into four different parts for different areas of technology. These areas are transport, power sources, types of weapons, and information storage. An Earth equivalent for each category is given. The referee, if he chooses to do so, may raise or lower the stage of technology in any of the categories. For example, a 4 is rolled. The referee (because he wants it that way) decides the planet is poor in metals. Therefore, he lowers the Weapon category by two, giving the following combination — sails; water/wind; spear/bow; books/scrolls.

Technological Stage Table

Die Roll	Transport	Technological Categories Power	Weapons	Data
1	Foot	Muscle	Muscle	Memory
2	Animal	Animal	Spear/bow	Painting/carving
3	wheels/oars	animal	metal weapons	alphabet
4	sails	water/wind	crossbow	books/scrolls
5	steam/airship	steam	gunpowder	printing
6	internal combustion	electric/gasoline	rapid fire weapons	radio/television
7	electric	man-made fuel	gases	early computer
8	jet/rocket	fission	nuclear	micro-chip computer
9	interplanetary	fusion	large beam weapon	magnetic bubble
10	Equal to character races			

Settlement Size Table

Adjusted Die Roll	Settlement Size
2-4	10-50 individuals
5-7	10-100 individuals
8-11	100-1000 individuals
12-15	1000-10,000 individuals
16+	More than 10,000 individuals

Settlement Size: To assist the referee in preparing maps of inhabited areas, he may use the above table to find the size of an average settlement on the planet. The result from the table will list the population of an average town on the planet. To use the table, roll 1-10 and add the number of the Technological Stage of the inhabitants.

STAR FRONTIERS™ ALPHA DAWN and KNIGHT HAWKS Game Aids

Abbreviations

The following format is used to outline the most important statistics of an NPC:

1. (NPC Name and rank or position)
2. RW M PS IM RS STA
3. List of Skills
4. List of weapons and defenses
 RW - ranged weapon attack score
 M - melee attack score
 PS - punching score
 IM - initiative modifier
 RS - reaction speed
 STA - stamina score

The numbers following the above abbreviations are the NPC's ratings for these categories.

Skill Abbreviations

Pilot - piloting skill
 Astro - astrogation skill
 Engin - engineering skill
 Rocket - rocket weaponry skill
 Energy - energy weaponry skill
 Medic - medical skill
 Robot - robotics skill
 Comput - computer skill
 Demol - demolitions skill
 1-6 - skill level, when following above

Knight Hawks ship statistics

ADF - acceleration/deceleration factor
 MR - maneuver rating
 HP - hull points
 DCR - damage control rating

Weapons

LB - laser battery
 LC - laser cannon
 AR - assault rocket
 T - torpedo
 RB - rocket battery
 PB - proton beam battery
 EB - electron beam battery
 DC - disruptor cannon
 M - mines
 S - seeker missiles

Defenses

RH - reflective hull
 MS - masking screen
 ICM - interceptor missiles
 ES - electron screen
 SS - stasis screen
 PS - proton screen

Typical Ship Statistics — Advanced Game

Fighter:	HP 8 ADF 5 MR 5 DCR 30 Weapons: AR (x3) Defenses: RH
Assault Scout:	HP 15 ADF 5 MR 4 DCR 50 Weapons: AR (x4) LB Defenses: RH
Frigate:	HP 40 ADF 4 MR 3 DCR 70 Weapons: LC RB (x4) LB T (x2) EB Defenses: RH MS (x2) ICM (x4)
Destroyer:	HP 50 ADF 3 MR 3 DCR 75 Weapons: LC RB (x4) LB T (x2) EB Defenses: RH MS (x2) ICM (x5)
Minelayer:	HP 50 ADF 1 MR2 DCR 75 Weapons: M (x20) S (x4) LB (x2) Defenses: RH ICM CM (x4)
Light Cruiser:	HP 70 ADF 3 MR 2 DCR 100 Weapons: DC LB EB PB RB (x6) T (x4) Defenses: RH ES SS ICM (x8)
Heavy Cruiser:	HP 80 ADF 2 MR 1 DCR 120 Weapons: LB (x2) PB EB DC S (x2) T (x4) RB (x8) Defenses: RH ES PS SS ICM (x8)
Assault Carrier:	HP 75 ADF 2 MR 1 DCR 150 Weapons: LB PB RB (x8) fighter (x10) Defenses: RH MS (x4) ICM (x10)
Battleship:	HP 120 ADF 2 MR 2 DCR 200 Weapons: DC LB (x3) PB EB (x2) S (x4) T (x8) RB (x10) Defenses: RH ES PB SS ICM (x12)
Space Station:	(Statistics for stations vary with the size and type of station.) HP 20-300 ADF 0 MR 0 DCR 1/2HP Weapons: 1 EB, LB, PB, or RB per 50 HP Defenses: RH All Screens ICM (x4-24)

Weapons vs. Armor

Weapon Type	Effect of Armor
Axe, Knife, Club, etc.	Cannot penetrate armor
Gas Grenades	Cannot penetrate armor
Needlers	Cannot penetrate armor
Sonic Weapons	Cannot penetrate armor
Spear, Sword	70% protection
Bullets	65% protection
Laser Weapons	50% protection
Fragmentation Grenade	35% protection
Gyrojet Rockets	35% protection
Electric Sword	30% protection
Vibroknife	25% protection
Electrostriker	Full penetration
Shock Gloves	Full penetration
Stunstick	Full penetration
Tangler Grenade	Full penetration

Puncture Diameter Chart

Weapon	Diam. of Puncture (cm)	Auto-seal%
Electrostriker	0	100%
Pistol bullet	1	100%
Needler weapon	1	75%
Fragmentation grenade	2 (-1d10 holes)	75%
Gyrojet pistol	2	75%
Laser pistol	2	75%
Laser rifle	2	75%
Machine gun bullet	2	75%
Rifle bullet	2	50%
Gyrojet rifle	3	50%
Heavy laser	3	50%
Laser power torch	3	varies
Knife	1d5	varies
Sword	1d5+	varies
Spear	1d10	varies
Vibroknife	1d10	varies
Electric Sword	1d10-2	varies

Structural Points of Spaceship Systems

Ship System or Component	Structural Points
Hatch	200 • 1d100
Hull Sections	200 • 2d100
Control Panel	100 • 1d100
Battery Weapon	300 • 2d100
Cannon	500 • 2d100
Engine (size A)	2d10 x 100
Engine (size B)	5d10 x 100
Engine (size C)	5d10 x 200

Spaceship Combat

Advanced Game Damage Table

Modified Die Roll	Type of Damage
20 — 10	Hull hit: double normal damage
11 — 45	Hull hit: roll normal damage for weapon
46 — 49	Drive hit: lose 1 ADF point
50 — 52	Drive hit: lose 1/2 total ADF (round up)
53	Drive hit: lose entire ADF
54 — 58	Steering hit: lose 1 MR point
59 — 60	Steering hit: lose entire MR
61 — 62	Weapon hit: LC; LB; PB; EB; AR; RB
63 — 64	Weapon hit: PB; EB; LB; RB; T; AR
65 — 66	Weapon hit: DC; LC; AR; T; LB
67 — 68	Weapon hit: T; AR; EB; PB; LB; RB
69 — 70	Weapon hit: LB; RB; T; AR; PB; EB; LC
71 — 74	Power short circuit: lose all screens and ICMs
75 — 77	Defense hit: PS; ES; SS; MS; ICM
78 — 80	Defense hit: MS; ICM; SS; PS; ES
81 — 84	Defense hit: ICM; SS; PS; ES; MS
85 — 91	Combat Control System hit: -10% on all attacks
92 — 97	Navigation hit: lose maneuvering control
98 — 105	Electrical Fire: roll additional damage at +20 each turn.
106 — 120	Damage Control hit: DCR cut in half
117 — 120	Disastrous Fire: DCR cut in half; lose entire ADF and MR; -10% on all attacks; roll additional damage at +20 each turn

Advanced Game Combat Table

Weapon	Defense Reflective Proton				Electron		Stasis		Masking		Hull Damage
	None	Hull	Screen	Screen	Screen	Screen	Screen	Screen	Screen	ICM	
Laser Cannon	75%	60%	75%	75%	75%	25%	25%	—	—	—	2d10
Laser Battery	65%	50%	65%	65%	65%	20%*	—	—	—	—	1d10
Proton Beam Battery	60%	60%	25%	70%	40%	50%	—	—	—	—	1d10
Electron Beam Battery	60%	60%	70%	25%*	40%	50%	—	—	—	—	1d10
Disruptor Cannon	60%	60%	50%	50%	40%	50%	—	—	—	—	3d10
Torpedo	50%	50%	50%	50%	75%	50%	10/	4d10	—	—	4d10
Assault Rocket	60%	60%	60%	60%	60%	60%	-5/	2d10-4	—	—	2d10-4
Rocket Battery	40%	40%	40%	40%	40%	40%	-3/	2d10	—	—	2d10
Mines	60%	60%	60%	60%	80%	60%	-5/	3d10-5	—	—	3d10-5
Seeker Missile	75%	75%	75%	75%	90%	75%	-8/	5d10	—	—	5d10

* Weapons causes half damage (rounded up) on Hull hits.

Damage Table Modifiers

Laser Cannon	0
Laser Battery	0
Proton Beam Battery	+10
Electron Beam Battery	+10
Disruptor Beam Cannon	+20
Assault Rocket	-10
Rocket Battery	-10
Torpedo	-20
Mine	-20
Seeker Missile	-20

Weapon Restrictions

Weapon	Restrictions	Range
Laser Cannon	FF, RD	10
Laser Batter	RD	9
Torpedo	MPO, LTD	4
Assault Rocket	FF, MPO, LTD	4
Rocket Battery	LTD	3
Proton Beam Battery	RD	12
Electron Beam Battery	RD	10
Disruptor Beam Cannon	FF, RD	9
Mines	LTD	0
Seeker Missiles	LTD	unlimited