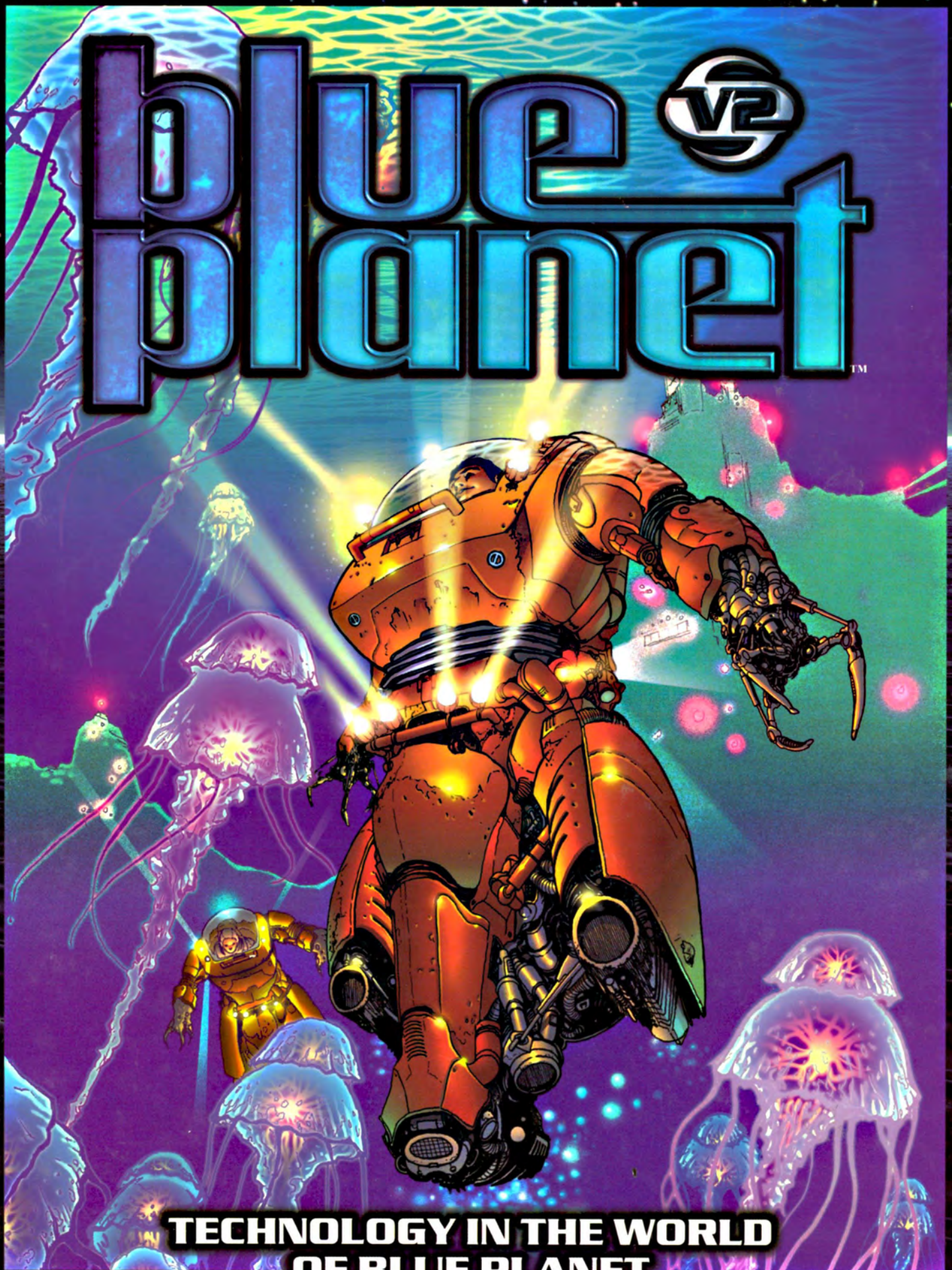
FLUID MECHANICS



blue planet V2

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The dim lights of the submersible bay reflect against ripples on the water as a tiny object bobs to the surface. With a click and a whispering buzz the remote snaps open and lifts into the air. A quick patrol tells the operator their entrance will go unobserved. Heads break the surface and slick bodies crawl silently from the water.

Wetsuits morph from the inky black of the sea to the dirty gray of the deck plates as they are stripped off and dropped to the floor. A constellation of spider-like remotes is scattered on the ground and scampers off—the intruders must know what awaits them.

Hoods are pulled up and intrusion suits seem to ripple like the water as their colors change to match their surroundings. Weapons are charged and the intruders plug coiled fiber optics into jacks at their wrists. Low power, burst transmissions pass between the interlopers. Sensory recorders activate, spyware comes online, and engineered pupils dilate, turning eyes to black.

The pointman moves through a maze of hard suits, CICADAs, diving gear, and dismantled submersible parts, his sonar guiding him in the half-light. He approaches a hatch and "juices" the lock. It melts away, dripping down the frame. Several remotes skitter through the hole to recon the corridor. All is clear and the team moves into the passages beyond.

Another transmission and they stop. Nostrils flare as enhanced receptors pick up the smell of sweat and modified ears sense the quiet fall of footsteps on the bioplastic decking. Multiglands still hands and focus attention. A remote clinging to the ceiling transmits an image of a man in another passage, moving towards the team. Seconds pass. He steps blindly around a corner as a stunner fires. He convulses and drops to the floor.

The team moves faster now—stunners are not subtle weapons. Implant computers overlay deck plans in their minds' eyes, and as if by memory, they know which way to go. Security monitors cover the intersections, but a bug hunter sent ahead has disabled them. Hover remotes armed with stunners and worse now cover their retreat and clear a path to their target. Stunner blasts and the occasional shout drift down the corridors to meet them.

The entrance to the lab is just ahead. No time for solvent—one of the team members smears the door with breaching gel. Seconds pass, and the door falls in with a deafening blast. Smoke fills the passage and fire alarms begin to wail.

A flash-bang detonates, and then a second. The team enters the room as their stunners play over the lab, shattering glassware and dropping the blinded and deafened technicians to the deck. Two of the intruders move to a row of tanks to collect the samples they have been sent to secure. The others cover the door.

A perimeter remote reports.

Security is on its way.

Now it's time for the real work to begin...

BLUE PLANET V2: FLUID MECHANICS

Fluid Mechanics is the first supplement for the **Blue Planet v2** roleplaying game. It is a resource that details the technology of the setting, providing players with descriptions and game stats for new equipment, gear, biomodifications, weapons, and vehicles of all kinds. The book is more than just an equipment catalog, however. *Fluid Mechanics* is also a window into the world of **Blue Planet**, providing players with insight into the role of technology within the setting and within the daily lives of Poseidon's colonists.

The various descriptions not only detail the function of a given technology, but they often generalize about its design, manufacture, advantages, shortcomings, and uses. Though some entries describe specific models, others provide general information about whole classes of technology. Such information is presented to encourage players and moderators alike to extrapolate these ideas, expanding on what is presented or creating their own unique devices.

The world of **Blue Planet** is one in which most people's lives are seamlessly integrated with a sophisticated technological infrastructure. From orbital shuttles and fusion reactors to implanted computers and replacement organs, high technology is everywhere. To most people, this technology is so common and reliable that it has become an invisible part of their surroundings.

Though invisible, such a diverse and reliable technology is uniquely empowering. Through remote access and telepresence individuals, are no longer restricted by geographical limitations, and through cybernetic and genetic modification they are no longer restricted by biological inheritance. This technological empowerment is a key aspect of society in the world of **Blue Planet**, one that shapes the culture and drives the economy. *Fluid Mechanics* is intended to give players an appreciation of this power and to encourage them to take advantage of it in their games.

TECHNOLOGY KEY

The following descriptors offer certain conventions that are helpful in guiding the use of technology in **Blue Planet** games.

DIMENSIONS These values represent the average size, mass, and volume of the described item.

POWER SOURCE This identifies the typical power source, if any, for a given item.

AVAILABILITY This is a description of the relative availability of a device. There is no connotation of legality, only of abundance. A given item may be abundant and still be illegal.

Very Common The item is easy to find, and can be bought almost anywhere.

Common The item is available in many places and can be obtained with minimal difficulty.

Uncommon The item is somewhat unusual and can be obtained only in specialty shops.

Scarce The item is difficult to find and may require special knowledge or contacts to obtain.

Rare The item is extremely difficult to find because of such factors as production difficulty, expense, or legality.

RIGGING VALUE This is a relative description of how easy it is to repair, modify, hack into, or otherwise tamper with a given piece of equipment.

Basic Such classes of equipment are easily modified or repaired, even without special tools or spare parts. Characters modifying or repairing equipment with this rigging value receive a +2 target number bonus.

Standard This sort of hardware requires at least basic tools and specific parts for effective modification or jury-rigging. Characters modifying or repairing equipment with this rigging value receive no target number modifier.

Impossible Such devices are impossible to modify or repair without the resources and engineering skills used to manufacture them. Often, these may still not be sufficient to effect repairs.

DURABILITY This special attribute is a description of the relative dependability and ruggedness of a given piece of equipment. Moderators and players should use durability to gauge the level of use and abuse a device can take before failing to function. If a piece of equipment is damaged (see page 6), players must make an attribute roll against the device's Durability to determine the extent of the damage.

LEGALITY This describes the relative legal restrictions on possessing or using a specific item. These ratings vary widely depending upon legal jurisdiction, especially among the Incorporate. The values provided here are in accordance with GEO statutes.

Legal The use and possession of these items are unregulated.

Restricted Typically, depending on exactly where and how such items are being used, there are permits and regulations regulating their possession.

Proscribed Such classes of equipment are prohibited in all forms and for all uses.

COST This represents the standardized relative value of an item, in corporate scrip, with no regard to its legality or availability. Legally restricted or hard to find merchandise will fetch higher prices, regardless of their standard cost. Because of the extreme variety of circumstance in **Blue Planet**, game moderators should consider availability, legality, and the character's situation before setting a final price for a given piece of equipment.

RATE OF FIRE This is the number of rounds or bursts the weapon can fire in a single action round. Weapons capable of full-automatic fire are listed with a second value in parentheses. This is the number of bursts the weapon will fire in full-automatic fire mode.

BURST FIRE VALUE This is the number of rounds the given weapon fires in a single burst (PG 113).

DAMAGE RATING This is the value for a given weapon's damage potential (PG 117).

RANGES These are the effective weapon ranges for a given weapon, listed for point blank, short, medium, and long (PG 112).

ARMOR RATING This is the value of the protection offered by a given type of armor (PG 117).

FORM This describes the state of a given drug, tablet, injection etc.

DOSAGE This describes the frequency of use or duration for a given drug.

EQUIPMENT DAMAGE

The technology used on Poseidon is generally rugged and durable, but even the highest quality gear can be damaged during the course of the characters' adventures. Bullets, falls, vehicle crashes, and other mishaps can all damage a character's personal equipment.

Whenever the moderator determines that a device or piece of equipment has potentially been damaged, he should assign the mishap a damage rating and roll for damage as described in the basic rules (PG 117). Each die that rolls equal to or less than the damage rating represents one damage level.

MINOR DAMAGE

The gear has sustained sufficient damage to impair its functioning, and the character receives a –1 penalty to all task rolls dependent on the device. The damage was not severe enough to render the equipment inoperable altogether.

SERIOUS DAMAGE

The equipment has sustained significant damage, and the character receives a -2 penalty to all task rolls dependent on the device. The player must also make a Durability roll for the gear, applying only the –2 penalty for the serious damage just sustained. If the player scores an action value of –5 or worse, the equipment is rendered inoperable. If the roll fails by less than 5, the moderator should halve the effects of one or more of the device's relative performance characteristics, rounding down. For example, a handgun's rate of fire might drop from 3 to 1, the storage capacity of a DNA memory core might drop from 10 to 5 exabytes, the rating of body armor may drop by half, or a personal comm's effective range might drop from 10 kilometers to 5.

CRITICAL DAMAGE

The device has sustained severe damage, and the character suffers a –3 penalty to all task rolls involving the equipment. The player must also make a Durability roll applying the –3 penalty for the critical damage. If the player scores a –5 action value or worse, the device is destroyed. If the roll fails by less than 5, the equipment is rendered inoperable but may be repaired. If the roll succeeds, one or more of the device's operational characteristics are halved, as for serious damage, but the device continues to function subject to the –3 target number penalty.

EQUIPMENT REPAIR

Gear may be repaired by spending the necessary time and succeeding at a relevant task roll, usually Computers, Electronics, or Mechanics. The roll is modified by the device's total impairment penalties and rigging value. The mechanic will also typically receive target number bonuses for tools and repair facilities.

Minor damage takes about one hour to repair, serious damage takes a day, and critical damage usually takes at least a week to repair.

HARDWARE

CHAPTER 01

HARDWARE

Since the launching of the Athena Project, the colonization of Poseidon has required extensive technological resources. While the technological infrastructure of the colony world received a stunning blow during the Abandonment, post-Recontact efforts have resulted in a technological resurgence that extends from Poseidon's major settlements into the most isolated native villages in the waterworld's outback.

For all but the most conservative natives, technology marks the difference between death and survival on the colony world. While Poseidon's industrial capability remains underdeveloped, an increasing percentage of the hardware available on the colonial markets is manufactured on the planet. The formidable cost of shipping durable goods from the Solar System has provided a powerful incentive for the development of planetside manufacturing efforts.

CONSTRUCTION

While much of the hardware either produced or in common use on Poseidon is identical to that available on Earth, there are a number of differences that will be readily apparent to the newcomer. The most obvious characteristic of equipment manufactured or designed for use on Poseidon is its durability. Virtually every mechanical or electronic device is designed to function while immersed in saltwater—or at least, to survive prolonged exposure with no ill effects. Wherever possible, hardware is constructed of non-corrosive alloys, ceramics, and bioplastic.

For applications in which this impossible, such as many microelectronic components, the entire electronic assembly and its power source are cased in environmentally sealed, non-conductive polymers. These polymers are designed to be depolarized by high levels of specific radio frequencies. The intensity of the radio waves can change the consistency of the polymer from its normal rock-hard state to that of thick clay, allowing it to be molded around objects. If intense enough, the polymer flows like water under the radio bombardment. In the latter case, it can be dissolved in fluorocarbon-based solvents to remove all traces from the equipment being serviced, and a simple distilling apparatus allows recovery of the material and solvent for reuse when repairs are completed. Structural and armor polymers do not have this vulnerability and are used on a device when the internal components are meant to be tamper-proof. Chipping the material away without damaging the contents is very difficult—more so if the manufacturer designs it specifically to prevent reverse engineering.

As a result of this extreme level of environmental sealing, hardware manufactured on or designed for Poseidon utilizes non-contact ports for almost all input and output. Induction pads, rather than connecting plugs, are used to recharge batteries. Information is transferred via ultra-low-power radio or short-range optical links. There is no metal-to-metal contact that might be corroded or compromised by the environment. Every portable device that requires power has its own internal battery. For long-term use, an inductive charger is plugged into a household or vehicle power source, or linked to a kinetic generator. Electronic standardization means that quite complex devices can sometimes be assembled from other components and subassemblies, with the assembled device simply encased in a larger mold of foamed bioplastic.

TECHNOLOGY LEVEL

Due to the unique history of the colonization effort, the level of technology on Poseidon varies widely. Modern gear found in the orbitals, major colonial settlements, and company towns requires specialized industrial infrastructure to manufacture and maintain. Outlying, isolated areas or those with weaker economies and limited industry make do with what they can design, build, maintain, and repair themselves. This equipment is often still mechanically sophisticated, but lacks the microelectronics, integrated microcomputers, or other specialized components common in modern gear.

Many new arrivals to Poseidon arrive with equipment they purchased on Earth. This equipment often gets junked or sold for discount prices when the newcomers find that local equipment is almost always superior, having been designed and built precisely for the local conditions, rather than being modified from tropical or underwater Earth equipment.

This imported equipment can often be had for a small percentage of its normal price but always has some drawbacks. It might be cased in stainless steel and weigh six times as much as normal. A weapon might use difficult to procure ammunition, electronics might not be compatible with the local CommCore network protocols, the anti-fungal

additives might not be precisely applicable to the local environment, and so on. Many skilled mechanics purchase such equipment at huge discounts, then upgrade and modify it for use on the waterworld. This "rigged" gear is often available at discounts up to 50% and can serve as inexpensive backups or temporary replacements for even veteran colonists.

MANUFACTURERS

On Earth, there are literally thousands of companies both large and small involved in general manufacturing. Only a handful of the Incorporate states, however, have the resources to either transport finished goods to Poseidon or maintain full-scale planetside manufacturing and distribution operations. Of these, Hanover Industries and the Nippon Industrial State control the vast majority of the colonial market. Other Incorporate states support smaller operations in specialized industries, such as Hydrospan's leading role in the manufacture of underwater equipment and cetacean technology or Lavender Organics' prominent position in the computer industry.

Both Hanover and the NIS have established extensive manufacturing facilities on Poseidon. Based in the company towns of Lebensraum and Simushir, these factories are turning out an increasing variety of consumer goods designed for use on the waterworld. Due to the still-limited availability and relatively high production costs of these goods, prices remain very high in the colonial markets. However, the Hanover and NIS manufacturing efforts—and to a lesser extent, those of the other major Incorporate states—have at least begun to address the extreme shortages of finished goods on Poseidon. A colonist may have to pay a premium for products manufactured in Lebensraum or Simushir, but it's far less likely that he'll be placed on a lengthy waiting list, as was the usual case only a couple years ago.

POWER SUPPLIES

On Poseidon, electricity powers almost all forms of personal technology. Survival equipment, tools, computers, guns, and even many vehicles are typically powered by rechargable, often integrated, batteries. The **Blue Planet v2** *Player's Guide* (PG 123) describes the portable battery technology available in 2199. On a larger scale, orbitals, starships, and major settlements rely on fusion reactors, benefiting from cheap and effectively unlimited electricity and distributing it via superconductor powergrids. Other localities exploit Poseidon's abundant wind, wave, or solar potential as smaller scale but sufficient power sources.

FUSION REACTORS

The history of controlled nuclear fusion began in 1950 in the Soviet Union when Andrei Sakharov and Igor Tamm designed the Tokamak, "*toroidolnya kamera ee magnetnaya katushka*" (toroidal chamber and magnet coil). In spite of intense international competition, the first fusion reactor did not reach breakeven—actually produce more energy than it used—until 2007 when it was achieved by Japan's Yoshikawa reactor. The first commercial deuterium-tritium fusion reactor began producing energy in 2019. With costs comparable to those of fission plants, fusion plants remained relatively rare until the last half of the 21st Century. The breakthrough came in 2057 when McCluskey's Starfire reactor design, a modified Yoshikawa, demonstrated such a great increase in efficiency that all existing fission and fusion reactors were replaced by "McCluskeys" within a decade.

Starfire reactors, colloquially referred to as McCluskeys, are reversed field pinch, deuterium-deuterium reactors that utilize plasma shaping and nuclear-spin polarized fuel to increase efficiency. The energy produced by a McCluskey consists of highly-energetic neutrons that superheat the transfer fluid to drive a turbine to produce electricity, and even with modern materials the turbine weighs more than the reactor itself. Lightweight, low-activation ceramic composites are used as shielding around the reactor core and comprise about one third of the mass of a typical commercial reactor.

A few modified Yoshikawas using deuterium-helium-3 reactions are also in use. Helium-3 is an extremely rare element mined from the moon and the asteroid belt, however, the deuterium-helium-3 reaction produces highly energetic protons that can produce electricity by direct electromagnetic conversion. Since they don't need a turbine, modified Yoshikawas are half the mass of comparable McCluskeys and are used in circumstances where their small size compensates for their exotic fuel requirements.

With advances in materials technology and high-temperature superconducting electromagnets, modern reactors range in size from two to several

hundred tons. The smallest reactors can be used to power industrial and military vehicles, and the largest provide electricity to urban power grids. Fusion reactors are effective, clean, and efficient but they are not cheap, ranging in cost from three to 150 million scrip. Fuel costs for McCluskeys over their typical 30-year operating life are less than 10% of the cost of the reactor. Yoshikawas are universally smaller and less expensive, but the annual cost of their fuel is typically 10 to 15% of their cost.

Modern fusion reactors are failsafe since the plasma cools quickly if the reaction is interrupted either on purpose or by accident. The energetic particles produced during operation are lethal even in small amounts, but the reactor core shielding normally absorbs all of them. However, reactor shielding that is used past its designed lifetime of 30 years begins to "leak" neutrons and can be very dangerous. The shielding itself acquires some residual radioactivity, but unlike fission byproducts, the radiation dose is small and decays rapidly with a half-life of about six months.

Dimensions: 2 to 225 metric tons
Rigging Value: Impossible
Durability: 4
Legality: Restricted
Availability: Rare
Cost: 3 million to 150 million cs

HYDROGEN STILL

Even though there are a growing number of fusion reactors on the colony world, Poseidon is powered primarily by fuel cells (PG 125). Most of the hydrogen that in turn fuels these cells is produced by electrolysis of seawater using hydrogen stills.

Hydrogen stills are ubiquitous on the waterworld. Even the most primitive colonial outpost is dependent on some level of hydrogen cracking capability to at least fuel its electrical generators and vehicles. The smallest produce only a few liters of liquid hydrogen per day, while the largest can collect hundreds of thousands of liters per day. Stills are typically set up on beaches or docks for ready access to a water supply. They can be equipped with storage tanks, integrated into pipelines, or they can fuel vehicles directly.

Dimensions: 12 kilograms to 3 metric tons
Power Source: Various
Rigging Value: Impossible
Durability: 0
Legality: Legal
Availability: Common
Cost: 1,850cs to 4,500,000cs

KINETIC GENERATOR

Kinetic generators are a class of integrated devices that are used to harvest the energy inherent in the repetitive body movements of the user. Depending on the application, kinetic generators are tiny pump, gear, or electrostatic assemblies that generate a trickle charge that is used to power tiny, integrated storage cells or capacitors. Kinetic generators are common technology in gill and wet suits (PG 137), body armor, thermal clothing, and even hiking boots.

Dimensions: 0.1 kilograms and 0.02 liters
Power Source: None
Rigging Value: Standard
Durability: 0
Legality: Legal
Availability: Common
Cost: Included in the cost of the powered item

SOLAR PANEL

For low power applications or use in remote locations, solar panels are a common and reliable source of power. Most panels consist of thin semiconductor film plated onto semi-rigid bioplastic sheets. The resulting panels are durable, flexible, and resist minor damage. They can be rolled for storage, glued or nailed to convenient surfaces, and can suffer small punctures without significant performance loss.

Solar panels supply full power in normal sunlight, one quarter in overcast conditions, and no power in darkness. They can be used to power low demand devices or to trickle charge batteries. Normal output is about 3,000 watt-hours per day per square meter, and each square meter has a mass of 0.5 kilograms and almost negligible volume.

Permanent panel arrays are designed to be furled or taken down in the event of severe weather, but many low-power consumer items have solar panels incorporated into their designs. This increases the base cost by 10%, but as long as the device receives frequent exposure to light, it can be assumed to always be adequately charged.

Bodycomps and communication gear typically include integral solar chargers.

Dimensions: 200 grams and 0.25 liters per square meter
Rigging Value: Impossible
Durability: 2
Legality: Legal
Availability: Very common
Cost: 90cs per square meter

WINDCUTTER

Strong winds are common throughout most of the Pacifica Archipelago, and in many remote areas wind can be harnessed as a reliable power source. A windcutter is a 300-watt windmill with reliable design and a rotor sweep of about one meter. It can be permanently mounted or used with a versatile telescoping mast. On land, ocean-land wind cycles provide several hours of reliable power per day for an average output of at least 2,000 watt-hours a day. Cutters are quiet, self-adjusting, and built to withstand the extremes of Poseidon's weather with little maintenance. Small wind farms are common sights in some remote regions and often serve as a village or colony's primary power source.

Dimensions: 10 kilograms, 10 liters
Rigging Value: Standard
Durability: 3
Legality: Legal
Availability: Very common
Cost: 500cs

POWER TOOLS

3AX

This item is a three-axis machining device. Not all parts molded from bioplastic are perfect—small parts need hand-finishing and precise parts need to be machined from blocks of bioplastic. A 3AX is a spider-like device a little less than a meter in diameter containing precise inertial positioners and a handful of interchangeable diamond-tipped machining tools. If given a proper program and room to work, it can carve all but the smallest objects out of any kind of bioplastic. For very large items it simply starts at one end and crawls its way to the other. Because of its very slow and precise maneuvering, it has no combat potential unless the target is sleeping or unconscious. Items of low complexity can be machined at a rate of one liter per minute. Complex items require 10 times as long, with a minimum of a minute for any item.

A 3AX is not as fast or efficient as an industrial assembly line, but with the proper database it can carve out just about any purely mechanical device. Complex devices require precision assembly from the parts created. A 3AX can work for about an hour on a heavy cell but is usually tethered to a larger power source.

Dimensions: 5.0 kilograms
Power Source: Heavy cell
Rigging Value: Standard
Durability: 1
Legality: Legal
Availability: Uncommon
Cost: 3,000cs

DEPOLARIZER

A depolarizer uses EM emissions to soften environmental sealing polymers (see page 15). It has several settings and probes for area or pinpoint use. The device can affect a volume of approximately three liters at a range of no more than 20 centimeters. Depolarization has no effect on bioplastic.

Dimensions: 0.20 kilograms
Power Source: Mini cell
Rigging Value: Standard
Durability: 0
Legality: Legal
Availability: Scarce
Cost: 200cs

SASER TORCH

This is a short-range, industrial version of a saser weapon (see page 56). A saser torch focuses its energy at a point three centimeters beyond its nozzle, and cutting power, depth, and spread are adjustable and computer controlled. The torch is effective as an underwater construction and demolition tool, with a contact damage rating of 10. It readily slices through corals and soft stone, and on wide focus it quickly strips organic encrustation from boat hulls. An integrated battery provides about one hour of power, and for extended use, an external power source is required.

The cavitation caused at the cutting point generates a large stream of bubbles, and ultrasonic interaction with the target makes the device sound like an underwater buzz saw. Though not practical as a melee weapon, a saser torch is extremely dangerous under the right circumstances.

Due to the powerful sonic output, cetaceans cannot tolerate proximity to active saser torches, and torches even give headaches to humans with unprotected ears.

Dimensions: 3.5 kilograms and 4 liters
Power Source: Heavy cell
Rigging Value: Impossible
Durability: Medium
Legality: Restricted
Availability: Scarce
Cost: 1,250cs

SENSORS

GPS UNIT

This device is usually integrated into a bodycomp (PG 126), nav suite (PG 139), or wrist unit. It can continuously track the user's position to an accuracy of 0.5 meters via satellite transmission. It can play back past positions, plot optimum courses, and compute ETAs. It can also download public or custom map databases, assisting navigation in unfamiliar areas. GPS satellite signals do not penetrate water to any appreciable depth and may also be blocked by large masses of plastic, metal, or heavy foliage.

Dimensions: 20 grams
Power: Micro cell
Rigging Value: Impossible
Durability: 0
Legality: Legal
Availability: Very common
Cost: 50cs

MARNOC

A millimeter-wave radar binocular, or marnoc, is a portable unit that can detect and analyze objects at range. Its resolution is poor, but it can be tuned to penetrate thin materials and generate usable reflections of any objects underneath. The most common use of marnocs is as remote weapons detectors. They can reveal concealed blades, firearms, or body armor under normal clothing or hidden compartments in light vehicles. Marnocs are also common medical tools used to locate foreign bodies, bone breaks, and cyberware.

Radar confounders (see page 23) can confuse a computer controlled marnoc, but an operator can readily detect that a countermeasure device is at work.

Dimensions: 0.60 kilograms and 0.5 liters
Power Source: Standard cell
Rigging Value: Impossible
Durability: 0
Legality: Restricted
Availability: Scarce
Cost: 2,000cs

NUMAR

A nuclear magnetic resonance detector is a portal device rather than a ranged scanner. It induces low-level electromagnetic emissions from the molecular structures of nearby objects and analyzes these emissions to determine the objects' composition. Common security devices used to scan for the components of binary propellants and explosives, they can sound alarms, signal security personnel, or bring down security barriers. Transponders in weapons or weapon permits prevent the activation of security alerts in locations with many armed personnel.

Numars are also used to scan for contraband drugs, explosives, or other illegal compounds. Most large commercial transport operations use numars, both for passengers and for cargo. Numars are not vulnerable to any known countermeasures and can only be bypassed by reprogramming, sabotage, or bribery and extortion.

Dimensions: 20 kilograms, volume as per target portal
Power Source: Heavy cell or external power
Rigging Value: Impossible
Durability: 0
Legality: Restricted
Availability: Scarce
Cost: 5,500cs

SMOO

Self-Mobile Oceanographic Observatories are autonomous, weather-monitoring buoy stations, deployed and maintained by the GEO. They are considered sacrosanct by most of Poseidon's inhabitants, as they provide invaluable long-range weather and oceanographic data free to anyone monitoring Metwatch broadcasts. Forecast data is relayed planetwide, and composite weather, current, and sea-state data are also available. Solar and wind powered, they maintain specific coordinates with stationkeeping waterjets.

A SMOO is durable, but in the event of extreme weather, the entire unit submerges below the storm

surge and remains there until sensors indicate it is safe to surface. Newer SMOO designs contain emergency transponders that can be activated by castaways with no other means of signaling for help.

Dimensions: 6 meters and 0.5 metric tons
Power Source: Solar, wind
Rigging Value: Standard
Durability: 3
Legality: Legal
Availability: Rare
Cost: 16,000cs

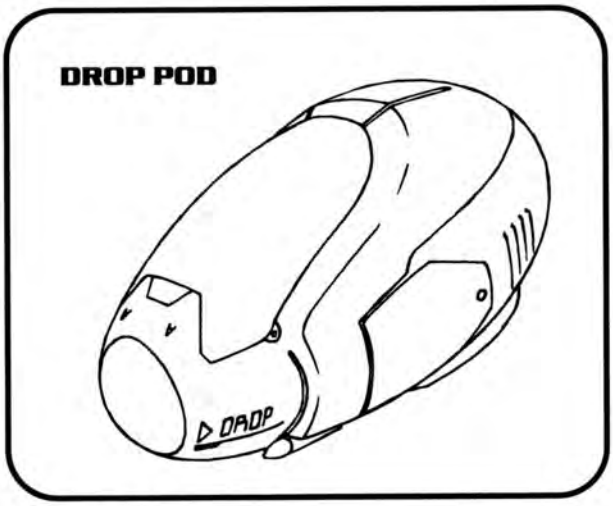
LIFE SUPPORT

ATMOSPHERIC INSERTION POD

Also known as a drop pod, this military device is designed to drop a fully equipped soldier to specific planetside coordinates from orbital and suborbital assault craft. It has armor rating 7, ablative shielding, braking thrusters, and a high-velocity parachute. Drop pods fall from orbit like proverbial rocks, firing their brakes and deploying their parachutes only within a few thousand meters of the ground, slowing the pod just enough to mitigate the crash landing. The high-speed entry minimizes vulnerability and most designs are further protected by various stealth features and target countermeasures.

Drop pods employ the equivalent of crash protection systems (see page 110), and upon impact, explosive bolts open the pod shell and blow away the hardened foam. Pods contain minimal life support intended to last for only the short insertion flight.

Dimensions: 100 kilograms, 3 cubic meters
Power Source: Heavy duty cell
Rigging Value: Standard
Durability: 4
Legality: Restricted
Availability: Rare
Cost: 22,500



FIREBALL

This is the colloquial term for a specific rescue ball design used for vacuum survival. It utilizes integrated, self-piloting thrusters and a thick layer of ablative foam armor that encases the ball during the inflation process. A fireball is capable of plotting proper approach trajectories and surviving atmospheric reentry. Though tests have proven that reentry R-balls can work, the same tests also indicate that, given the choice, awaiting rescue is the safer option.

Activated from any reasonably stable orbit, an advanced rescue ball has an 80% chance of reaching the lower atmosphere without burning up on reentry. Even if the user survives, he suffers a damage rating 3 attack due to the extreme heat and violent buffeting.

Dimensions: 15 kilograms, 10 liters deflated
Power Source: Heavy cell
Rigging Value: Standard
Durability: 3
Legality: Legal
Availability: Rare
Cost: 2,500cs

PERSONAL PROPULSION

COME-ALONG

This useful device is a semi-autonomous MHD (PG 141) cargo sled. It can be programmed to follow a pre-plotted course or tail a diver or fin. It can be integrated with a navigation system or follow a homing signal. Speed, cargo capacity, and operational depth vary with design but most can carry at

least 100 kilograms at 20 kilometers per hour and function as deep as 500 meters.

Dimensions: 0.5 meters long, 0.5 meters wide, 0.5 meters high, 100 kilograms
Power Source: Heavy cell
Rigging Value: Standard
Durability: 2
Legality: Legal
Availability: Uncommon
Cost: 2,000cs

SAIL KITE

Though a much more common technology among cetaceans (see page 43), sail kites are beginning to catch on with the native population. Human sail kites are similar to fin models and consist of large, durable, bioplastic wind kites, rigged to control/tow harnesses. The control lines are fed out and adjusted by integrated servos in the harness, which are in turn controlled manually or through an interface. The aquaform uses swim fins and hand rudders to control tacking movements and orientation as he is dragged just below the surface of the water.

Sail kites are subject to the vagaries of the wind, but they typically decrease travel time for long trips by at least half, and allow even exhausted swimmers to keep on the move.

Dimensions: 0.25 kilograms and 1.75 meters for the kite and 0.4 kilograms for the harness.
Power Source: Wind
Rigging Value: Basic
Durability: –1
Legality: Legal
Availability: Uncommon
Cost: 200cs

SMART FINS

Standard diving fins greatly improve the user's ability to generate thrust in the water, increasing swimming pace by one meter per action. Smart fins contain acceleration sensors and variable density, electrically sensitive plastic stiffeners. The stiffeners automatically vary rigidity during different parts of the thrust curve, increasing the stroke's relative power. Smart fins increase the user's swimming pace by two meters per action.

Dimensions: 0.3 kilograms
Power Source: Mini cell
Rigging Value: Basic
Durability: 2
Legality: Legal
Availability: Common
Cost: 200cs

WATER SOCK

Water socks are a common native item that several small planetside companies have begun producing commercially in hopes of capturing the native and enthusiast markets. Water socks consist of two form-fitting elastic leggings that run from the user's toes to his knees. Stretched between them along their length is a fabric "blade" containing several plastic stiffeners. With a dolphin-like kick, the blade generates thrust much like traditional swim fins and propels the user forward.

Water socks have several advantages over standard swim fins. They are lighter, more comfortable, and the user can readily walk in them. They are typically less expensive and can be rolled up and carried in a pocket or tucked in a belt.

Water socks add one meter per action to the user's swimming speed. They also provide a +1 bonus to the user's Aquatics skill and Endurance for the purposes of long distance swimming.

Dimensions: 0.2 kilograms
Power Source: None
Rigging Value: Basic
Durability: 0
Legality: Legal
Availability: Common
Cost: 25cs

MATERIALS

ELECTRICALLY ACTIVE POLYMERS

Electroflex™ and Polyflex™ are specific brands of a class of high strength plastic polymers that react in various ways to the flow of electric current. Electroflex is a hard, rigid plastic that becomes flexible along the flow axis when subjected to electric current. Polyflex is normally a pliable, flexible plastic, but stiffens and becomes rigid when electrified.

There are hundreds of commercial and industrial uses for these materials in everything from aeronautics and cybernetics to medical and military applications. One common use of Polyflex is in the manufacture of protective clothing and personal body armor (see page 17). Integrated with industrial bioplastic fibers, woven Polyflex cloth makes for effective and uniquely comfortable protection.

Dimensions: 1.4 kilograms per liter
Power Source: Various
Rigging Value: Impossible
Durability: 3
Legality: Legal
Availability: Common
Cost: 150cs per liter

ENVIRONMENTAL SEALING POLYMER

Enviroseal™ is a brand name for a class of unique artificial polymers with molecular structures that are altered by specific low-energy electromagnetic frequencies. Enviroseal is not as cheap or durable as bioplastic, but it can be molded, poured, and reused with ease. When exposed to low band emissions, enviroseal softens and flows. This makes the substance easy to manipulate, inject into forms, and pack around small or complex components. When the exposure stops, the polymer cures and quickly hardens in its new shape.

Enviroseal has countless applications and is commonly used to embed electronic circuits and other fragile components to protect them from shock, impact, and the elements.

Dimensions: 1.4 kilograms/liter
Power Source: None
Rigging Value: Basic
Durability: 3
Legality: Legal
Availability: Very Common
Cost: 80cs/100 liters

DIAMOND GLAZED PLATING

DGP or glaz is typically used when strong, truly transparent structures are required. Glaz is made of synthetic plastics sandwiched between layers of diamond laminate and is commonly used for armored windows and vehicle windscreens. The material is shatter- and scratch-resistant and can withstand years of abrasion with little wear. Glaz is relatively expensive to manufacture, especially in larger panels. It is therefore only used when cheaper alternatives are unacceptable.

Dimensions: 1.6 kilograms/liter
Power Source: None
Rigging Value: Basic
Durability: 4
Legality: Legal
Availability: Common
Cost: 110cs per liter

STRUCTURAL READY-MOLDS

Many pilot colonies, scientific outposts, and temporary military camps on the frontier depend on ready-molds, or EZ molds, for their infrastructure. EZ molds are full size, inflatable structural forms that contain dormant, foamed bioplastic wash (PG 144). When activated with an infusion of water, the plastrobes grow rapidly, and in just a couple hours, expand the forms into rigid, durable, semi-permanent structures. Ready-molds are available for dozens of structural forms, including cabins, huts, storage sheds, vehicle hangars, cisterns, docks, and comm towers. More expensive models are available that contain interior dividers, integrated electrical wiring, and transparent window panels. For double the cost of the standard mold, customers can even have custom structures produced.

EZ mold buildings and structures are durable, but not intended for permanent habitation. Once the plastic skin of the mold begins to wear, the foamed bioplastic beneath is subject to fast fungus (MG 168) infection, and the structure begins to degrade. Antifungal additives slow the process, but even then, most EZ mold buildings, especially in the outback, are seldom habitable for more than six or eight months.

Dimensions: 3 to 350 kilograms packed and folded, variable when inflated.
Power Source: None
Rigging Value: Basic
Durability: 1
Legality: Legal
Availability: Uncommon
Cost: 55cs to 1,450cs

ARMORING

The armor ratings for various common materials are listed below. The ratings are given for one centimeter thicknesses and are modified by +1 each time the thickness is doubled.

EXAMPLE

A one-centimeter-thick industrial bioplastic armor plate has an armor rating of 9. If it were two centimeters thick, it would have an armor rating of 10, and if it were 4 centimeters thick, the rating would be 11.

Note that these numbers are higher than the armor ratings of various types of body armor that employ these materials. This is because the ratings of body armor are abstracted to represent both the degree of coverage and the grade of the armor.

Material (1 cm)	Armor Rating
Bioplastics	
Foamed	3
Translucent	3
Standard	6
Industrial	9
Enviroseal	3
Polyflex	6
Glaz	3

BODY ARMOR

Almost all body armor is made from either rigid or woven industrial bioplastic, sometimes both. Most is completely passive in nature, absorbing and redistributing the energy of an attack. More advanced armors may have active features such as phototropic or adaptive camouflage ability.

HARD TARGET™ ARMORED BATTLEDRESS

Designed by Atlas Materials' Defense Industries division, the Hard Target Armored Battledress is effectively a one-man, multi-environment combat vehicle. At present, it is still in field tests, with a number of systems up for consideration. Among the design team, one camp feels each suit should have full mobility, including hover turbines, while another feels that the MHD and thruster pack are unlikely to both be needed at the same time and that a hardpoint for mounting the appropriate unit is all that is required.

Common features of all battlesuits include full, state-of-the-art combat electronics, fuel cell and battery power supplies, and bacterial life support systems. Servomotors increase the wearer's effective Strength by 2 (3 in zero gravity or underwater

environments), and finer computer control decreases Agility penalties to 1. Weaponry is usually integrated into the suit, but standard handheld weapons can be used if needed. Standard armor is about 16 millimeters of industrial grade bioplastic, plus insulation and padding, for a base armor rating of 13. Four millimeters of ablative armor increase this rating by 12 against explosions and shaped charges. The ablative armor does not respond to explosions with a damage rating of 6 or less. Normally, all input is through remote sensors and a virtual HUD, but the armored faceplate can be lifted to reveal a diamond-plated glaz faceplate.

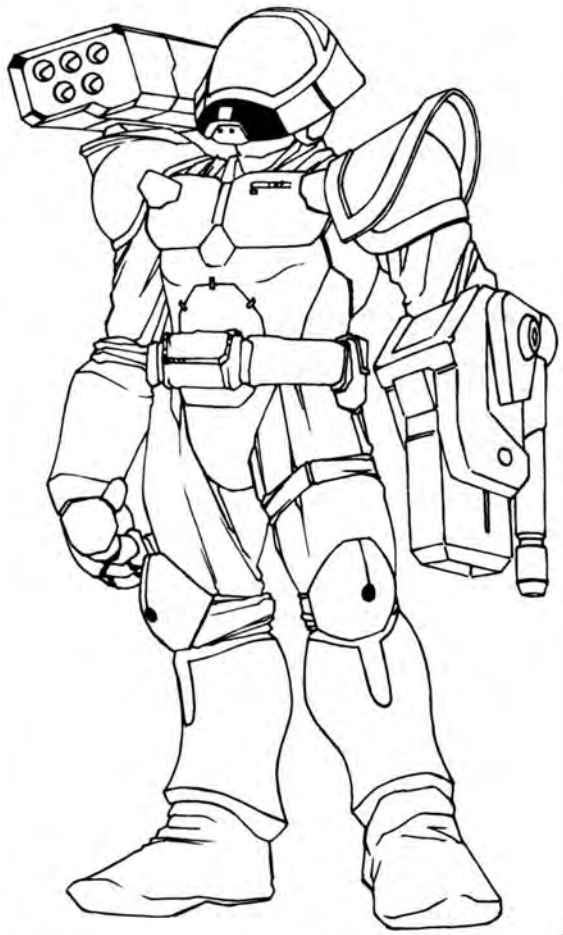
Getting in or out of a battlesuit typically takes several minutes for verifying proper seals and internal system checks. In the unlikely event of a catastrophic systems failure that immobilizes the wearer, the battlesuit can be blown open by a chin-operated eject switch that is independent of other circuits. This leaves the wearer with the equivalent of a light-duty space suit and the bacterial life support unit.

Dimensions: 150 kilograms
Power Source: Heavy cells, fuel cell
Rigging Value: Impossible
Durability: 4
Legality: Restricted
Availability: Unavailable
Cost: Unknown
Armor Rating: 13 (25 against explosive weapons)

POLYFLEX ARMOR

Polyflex™ is a specific brand of high-strength polymer that alters its flexibility when exposed to electric current (see page 15). In its default state, Polyflex is relatively light and flexible, with advanced impact sensors and high-speed microprocessors integrated into the vest's material. When a projectile contacts the material, the electric current is activated and the vest hardens in nanoseconds. Polyflex armor will typically remain rigid when it detects and responds to several projectile impacts in a relatively short period of time. In these high-threat situations, Polyflex armor imposes a –1 penalty on the user's Agility until the material returns to its flexible state. The processors in Polyflex armor are typically networked to the user's bodycomp, implant microcomputer, or combat HUD, so the armor's flexibility can be controlled automatically.

ARMORED BATTLEDRESS



ASSAULT POLYFLEX

Assault Polyflex is a thin, concealable vest with extension flaps providing protection for the upper arms and legs. In its flexible state, the armor rating of assault Polyflex is 3, but increases to 6 in its rigid state.

Dimensions: 2.2 kilograms
Power Source: Standard cell
Rigging Value: Standard
Durability: 4
Legality: Legal
Availability: Rare
Cost: 1,000cs
Armor Rating: 3 (6)

LIGHT POLYFLEX

This armor is thinner and lighter than the assault version, and does not protect the extremities. In its flexible state, the armor rating of light Polyflex is 2, but increases to 4 in its rigid state.

Dimensions: 1.4 kilograms
Power Source: 3 mini cells
Rigging Value: Basic
Durability: 2
Legality: Legal
Availability: Rare
Cost: 700cs
Armor Rating: 2 (4)

COMPUTERS AND COMMUNICATIONS

COMPUTERS

In 2199, computer technology is distributed and invisible. With the exception of powerful maincomps and network servers, the desktop office furniture that dominated the early years of the computer revolution is obsolete. Microcomputers are integrated in most every electronic and mechanical device, and most are capable of communicating with each other over personal, local, and global networks. The computer infrastructure of modern civilization is so well integrated into daily life that most people take for granted such features as universal networking and cross-device compatibility. Processing power is inexpensive enough that the cost of designing the simplest devices with sophisticated computing and communications capabilities is negligible. Information can be stored and transferred at staggering rates, and the resulting information chaos is managed by highly capable software and very little human intervention or oversight.

This information infrastructure is beyond the technical understanding of most people. The technology is extremely user friendly and allows them to accomplish necessary tasks—the details of its design, organization, and operation are unimportant. Only those with some level of training in computer programming or engineering are able to access the nuts and bolts of the infrastructure—the average person can only rearrange the components and customize the interface to suit his needs and preferences.

The computing power a person has at his disposal is limited only by money and privacy. In principle, a person could use a bodycomp to access a sophisticated expert application via CommCore that must be stored on a DNA core and run on a high-end maincomp. The user would query a data services provider (DSP) and transfer the necessary scrip, and the request would automatically be routed to an available computer somewhere on the network. When the job is processed, the DSP would transfer the data in a prearranged format, and the charges would be automatically applied to the user's designated account. As convenient and empowering as this technology is, privacy is a real issue: The user's identity, the program he executed, and the data he acquired would be logged and stored by the DSP and server on which the task was performed and could conceivably be accessed at any point along the chain of transmission. Whenever it is practical, users concerned with data security use only familiar computers and networks and personal encryption codes.

HARDWARE

Silicon microchips had reached the physical limits of efficiency by 2020. Previously, computer engineers had achieve rapid increases in computer power by steadily increasing the number of transistors they could fit on a silicon chip. Eventually, however, the distance between the transistors became so small that quantum interference rendered the chips useless. Engineers had been well aware of this problem for more than 30 years, however, and had been researching new technologies that could exceed the limits of silicon.

The optical chip became the eventual successor. Extremely efficient three-dimensional processor blocks can be constructed with this technology, because the laser beams used by optical chips can pass through one another without interference. Unfortunately, the technology remained in its infancy throughout the first part of the 21st Century, and optical computers with the processing power of conventional commercial systems typically occupied entire rooms in university computer labs. Once the technology matured, however, it drove the computer industry to new heights. Along with protein- and DNA-based data storage, the optical chip made possible the commercial manufacture of computers sophisticated enough to support other technologies that were developing at the same time, such as direct neural interface and truly immersive virtual reality environments.

SOFTWARE

The variety of commercial and specialized software available in 2199 is truly staggering. CommCore is the centralized repository of literally millions of applications, from freeware entertainment programs to sophisticated expert-expert systems designed to record, analyze, and predict planetary weather patterns. Most users only install the most commonly used applications on their personal computers and networks, preferring to rent software and, if necessary, processing power as it is needed from DSPs on CommCore or regional networks. Operating systems have been standardized for decades, and all commercial software features "fluent" voice recognition and fully customizable user interfaces. Mainstream software is smart enough that even computer illiterate users can accomplish sophisticated tasks with relative ease.

Specialized software even handles most of the work of computer programming and new software design. Most programs are so large and complex that a single commercial application might require millions of man-hours of programming work. As a result, it is effectively impossible—or at least cost inefficient—for humans to code all but the simplest commercial applications from scratch. Programming software assists programmers, working from initial concepts, design parameters, and application objectives to the finished product. These design tools range from self-organizing iconic programming languages to quick learning expert systems capable of working from context-sensitive voice input. More often than not, the programmer is a troubleshooter who supervises the machine as it builds millions upon millions of lines of code.

The following are various classes of common commercial applications. There are hundreds of brands and variations within each category, and the actual capabilities of individual programs will vary widely. Most commercial software is updated constantly, and subscribers can access regular upgrades at a fixed annual fee.

Analysis

These programs combine features of relational spreadsheets and statistical analysis tools. They can link, correlate, and compare terabytes of data according to any designated input parameters. Most simple analysis tasks can be performed in real time on standard bodycomps, though a very high volume of data, complex data sets, or advanced analysis can push the limits of most personal systems. For these tasks, users who do not have personal access to a maincomp system usually rent processing power and storage through CommCore or a regional network. Basic analysis programs cost about 500cs, though highly specialized systems can cost several thousand scrip.

Communications

This program suite provides the basic system infrastructure for networking, personal communications, and CommCore access. Most communications programs include a broad array of CommCore tools, from smart search engines that interface directly with the computer's familiar to encryption and privacy protocols. Basic communications suites come standard on all commercial bodycomps, but high-end versions with advanced features can cost from 100 to 300cs.

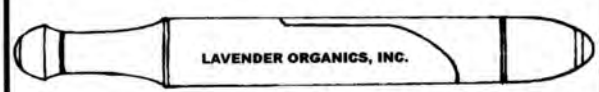
Encryption

This program uses advanced data-mangling techniques to supplement standard file encryption and communications protocols with an added layer of security. Encryption programs can use keys specific to a destination system, preventing eavesdropping on the transmission to acquire decoding clues. Both commercial versions and those designed specifically for a government or corporation for internal use are available. The cost of advanced encryption systems is about 1,000cs, though it varies widely depending on the security needs of the user.

Familiar

This is the common name for the basic user interface of most personal computers and networks. A familiar is fully customizable and sophisticated enough to learn and adapt to the user's quirks and preferences. The user can interact with the familiar by voice, and the familiar interacts with all the other applications on the system and all the other computers in the user's personal network. Basic familiars come standard with bodycomps and per-

DATASPIKE



sonal network systems, but most users who can afford it choose to purchase more sophisticated programs with advanced capabilities and greater customizability. These familiars feature themed designs and distinct personalities, from popular celebrities, to historical figures, to anthropomorphic animals. Because the programs learn and adapt to their users, they are able to mimic human personalities very effectively. As a result, many users treat their familiars like trusted friends or beloved family members.

Familiars that have had sufficient time - usually a minimum of 30 days—to adapt to their user's preferences confer a +1 target number bonus to all of the user's task rolls using the interface. Typical packages cost about 100cs, though the cost can range as high as 1,000cs for software with the latest features and most advanced programming.

Navigation

When combined with a GPS unit and map database, this software gives the user's bodycomp or onboard vehicle computer all the capabilities of a portable navigational suite (PG 139). Vehicle navigation software also communicates with the GEO's TravNet system for traffic control and collision avoidance in Poseidon's major cities and larger settlements. Most navigation suites can access customizable map databases on CommCore; however, while detailed and accurate databases exist for most regions of Earth, they are not available for many parts of Poseidon. Hydrospan's SmartGuide™ navigation software was designed specifically for Poseidon and interfaces directly with the user's familiar, allowing it to assume the persona of a patient, experienced native guide. Owners of the SmartGuide suite are also authorized to access Hydrospan's proprietary mapping database of the Pacifica Archipelago's seafloor, and this database is generally considered one of the most complete of its kind. Navigation suites range from 100cs to 500cs for high-end packages like SmartGuide.

Personal Network

This software allows all of the user's equipment and possessions equipped with a microchip gremlin to communicate with each other, sharing tasks and data. This allows the user to monitor and control each of the devices from a central hub, usually a bodycomp, implant microcomputer, or maincomp. In terms of the game mechanics, the user gains the +1 target number bonus of his familiar when using any of the networked peripherals. Personal network software costs between 50cs and 100cs, depending on features.

Tutorial

These are interactive databases that effectively give the user's familiar a defined knowledge base and the tools necessary to guide the user in its application. Tutorial programs covering most of the skills used in **Blue Planet** are available, and assuming the user has time to apply the program to the specific task at hand, grant a +1 target number bonus to relevant task rolls. The price of tutorial programs averages about 100cs, though tutorials covering obscure or illegal skills can cost substantially more. Expert tutorials can be accessed from a variety of CommCore sites that grant the user a +2 bonus to associated task rolls, but they are very expensive. Most DSPs charge between 50 and 100cs per hour for access to these systems.

COMMUNICATIONS

Most electronic devices communicate by short-range optical or micro-power radio links in the high gigahertz range. These links have excellent data transfer rates but do not penetrate obstacles very well. More powerful radio links are used for most of Poseidon's conventional communication infrastructure.

Personal communications devices operate on spread-spectrum principles. The transmitter breaks a signal down into several smaller signals on different frequencies. Individually, these signals are about the same intensity as background noise. The receiver picks up the component signals and combines them to get a usable signal. Basic communications devices use a handful of frequency bands, while larger or more expensive ones can spread their signal more finely and over a larger frequency range, constantly monitoring the radio bands to find the clearest channels and hopping up and down the spectrum many times a second.

This is a complex process, but it has a number of advantages. It minimizes natural interference, since some of the frequencies used will be less affected than others. Frequency hopping also makes it harder to artificially jam radio signals. It can also make eavesdropping harder, since most of the individual signals must be located and monitored in order to reconstruct the transmission, and the individual signals are hard to pick out from the background noise.

Signals are also scrambled as a matter of course, though for most civilian applications, the scrambling is relatively simple for a professional to crack. For legal purposes, any radio communication is considered a private conversation for eavesdropping purposes if it uses a standard protocol of spread spectrum and scrambling. It isn't technically illegal to listen in or unscramble radio traffic, but it is criminal to record, retransmit, or profit from data acquired in this manner. Nonetheless, data piracy is a thriving criminal industry.

Communications devices usually trade frequency-hopping and scrambling codes at the start of a transmission, using one of several standard frequencies, so that each device knows where to look. After the initial data is transmitted, each device's internal clock adjusts the codes and frequencies according to the protocol of the least sophisticated device until the end of the transmission. This makes the start of a transmission the best time to eavesdrop. With sufficient computer power, the information acquired can enable a third party to follow and decrypt each end of a conversation or data stream quite easily. Directly networked devices can exchange data in a secure environment and retain all the information needed between transmissions, making them much harder to eavesdrop on. Major installations have a large library of encryption methods and use a global time standard, such as an atomic clock, to make sure each device is using the correct frequencies and codes at any given time. New encryption protocols and spread-spectrum patterns can be physically transferred via dataspike or transmitted over secure channels.

Communication devices with the sophistication of a personal communicator have integrated networking capabilities. They can be programmed to link into local networks or communicate with each other. Personal communicators—including those integrated with most commercial bodycomps—can therefore be used as moderately secure two-way radios within their range, or as full-function videophones as long as the user is within range of a repeater station or has access to a satellite net.

HOLOCAM

This is a misnomer as the device does not record holographic images, which require sensors on all sides of the recorded object. A holocam records digital video and sound footage using three separate image sensors and microphones. The holocam then uses interpolation software to fill in the gaps and build a true three-dimensional representation of the recorded object. About 100 hours of holographic footage can be downloaded and stored on a standard dataspike.

Personal communicators with integrated holocams are also available and both features are commonly included in high-end bodycomps.

Dimensions: Typically about 100 grams and 0.25 liters
Power Source: Mini cell
Rigging Value: Standard
Durability: 0
Legality: Legal
Availability: Very common
Cost: 200cs

HYDROPHONE

Hydrophones are an old but useful technology, allowing for coherent, close-range underwater communication. Hydrophones translate the acoustical vibrations of airborne sounds into vibrations in the surrounding water and visa versa. Hydrophones are commonly found in diving masks (PG 136), boat hulls, CICADAs (PG 142), submarines, and underwater habitats. They are also used passively in underwater security applications and by scientists studying the myriad waterborne sounds of Poseidon.

Personal hydrophones have an effective range of about 50 meters. Hydrophones used in submarines or on underwater facilities have a range of about 100 meters.

Dimensions: 0.5 to 3 kilograms and 0.25 to 4 liters
Power Source: Standard cell or facility power grid
Rigging Value: Standard
Durability: 1
Legality: Legal
Availability: Common
Cost: 130cs to 340cs

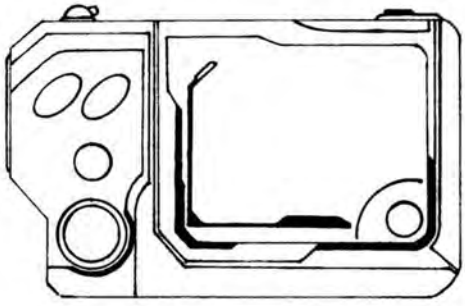
MULTICOMM™

This high-end bodycomp unit is manufactured and distributed by the NIS. It combines standard computer features with a full-function personal communicator and holocam. Manufactured on Poseidon and designed for waterworld conditions, the MultiComm is durable, reliable, and fully waterproof. Notable features include voice-activated calling, caller identification, and sophisticated frequency-hopping protocols. The MultiComm

accommodates neural or trode interface, as well as a conventional earpiece, microphone, and retinal display.

Dimensions: 160 grams and 0.25 liters
Power Source: Mini cell
Rigging Value: Standard
Durability: 1
Legality: Legal
Availability: Common
Cost: 2,000cs

MULTICOMM™



ULTRASOUND COMMUNICATOR

This device is routinely used for short-range underwater communications. For convenience, most versions operate on the same frequencies as cetacean communication. These units convert electronic signals into ultrasonic streams that carry far better through water than light or radio waves. Range is approximately 100 meters, but it is unaffected by visibility or water conditions.

Advanced ultrasound communicators can perform basic translation of cetacean concept strings, though the intelligibility of the conversation depends on the familiarity of each species with the other's language.

Dimensions: 100 grams and 0.15 liters
Power Source: Mini cell
Rigging Value: Standard
Durability: 0
Legality: Legal
Availability: Very Common
Cost: 100cs

INFRASOUND COMMUNICATOR

Low-frequency sound can carry for thousands of kilometers underwater, making it ideal for marine communities. However, the equipment is bulky and low frequencies can only support a very low rate of information transfer. Infrasound communicators are commonly used for short audio transmissions or low-speed data transfer between underwater facilities or vehicles.

Dimensions: 5.0 kilograms and 5.0 liters
Power Source: Heavy cell
Rigging Value: Standard
Durability: 0
Legality: Legal
Availability: Uncommon
Cost: 1,000cs

ESPIONAGE TECHNOLOGY

BUG HUNTER

Bug hunters comprise a class of specialized autonomous robots that search out and disable electronic surveillance devices. In 2199, audiovisual bugs have become so small, mobile, and sophisticated that manually scanning for and destroying them is impractical on any continuous basis. Therefore, secure facilities such as Incorporate offices and military bases typically employ a small army of bug hunters to sweep for surveillance devices 30 hours a day.

The typical hunter is a small, insect-like, ambulatory drone that is programmed to search a specified area for any errant electromagnetic emissions that do not match the signals in its approved database. Depending on its programming, a hunter usually has several options when it detects an unidentified EM signal. It can notify security computers or personnel of the location and then continue its search. It can temporarily disable most such devices with a static discharge, or it can permanently burn out most small bugs with an ECM pulse.

Dimensions: 150 grams, 0.12 liters
Power Source: Mini cell
Rigging Value: Impossible
Durability: –1

Legality: Restricted
Availability: Uncommon
Cost: 1,250cs

CONFOUNDER

This device generates a random broadband signal designed to reduce the effectiveness of remote sensors. It includes broadband white noise and low level microwave energy, as well as subsonic, infrared, and ultraviolet strobe effects.

A confounder does not prevent detection and in fact typically makes detection easier. It does, however, make resolving content and detail extremely difficult. It can mask conversations, prevent clear or detailed holographic or video recording, prevent sonar imaging, and confuse rangefinders.

Dimensions: 0.5 kilograms and 0.5 liters
Power Source: Mini cell
Rigging Value: Standard
Durability: –1
Legality: Restricted
Availability: Scarce
Cost: 620cs

COUNTER-SURVEILLANCE SCANNER

A combination scanner and countermeasure device, a "sweeper" monitors a broad radio spectrum and can localize low-power transmissions. If an area is badly infested with microbugs, all other electronics are removed and a short range EMP device is brought in to electronically sterilize the area. For individual bugs, the sweeper has its own centimeter-range EMP generator, sufficient to fry some part of a microbug's delicate circuitry. Sweepers are licensed tools, since their EMP generator can be used to disable or damage many commercial devices as well, such as personal communicators, bodycomps, door locks, etc. Civilian versions of the sweeper, without the EMP are available for about half the size and cost, and they use a mini cell instead of a standard cell for power.

Dimensions: 0.20 kilograms, 0.25 liters
Power Source: Standard cell
Rigging Value: Impossible
Durability: 0
Legality: Restricted
Availability: Scarce
Cost: 400cs

CURRENT DETECTION GLOVE

A CDG, or "bad mitten," provides some of the same functions as spyware (PG 169), allowing the user to scan for electrical signals, follow hidden electrical conduits, and detect operational devices, including audiovisual bugs. If the glove is used while gripping the wrist or throat of a subject, the user can make an Awareness roll with a –1 penalty to determine if the subject is lying based on the physiological symptoms of deception. Skilled liars, especially those with Fast-Talk skill, may impose additional penalties on the roll.

The typical CD glove is nondescript and can be stylish or simply functional as the circumstances require. The integral circuitry is physically undetectable, and a small lead can be plugged into a bodycomp, a neural jack, or a neural transceiver.

Dimensions: 0.27 kilograms, 0.20 liters
Power Source: Micro cell
Rigging Value: Standard
Durability: 1
Legality: Restricted
Availability: Rare
Cost: 3,600cs

FACIAL DISGUISE KIT

These kits are almost impossible to find on the open market and are most commonly available within security or covert operations departments. Disguise kits are expensive, must be custom fit, and agents must have significant training to use them properly. A given kit contains molds matched to a specific user's facial structure and a number of modular implants and appliances. The mold is used to cast any number of complete or partial facial masks using a unique bioplastic grade that imitates real skin. The implants and appliances can be integrated into the mold to create various effects such as pigmentation, scarring, simulated injuries, body heat, or even nervous twitches. Various contacts, hairpieces, and other deceptive elements are also common features in such kits.

A disguise kit will give an untrained user an effective Disguise skill of 2. A trained user receives a +4 bonus to any disguise attempt in which the kit is applicable. If used to imitate a specific individual, the bonuses are only +1 and +2 respectively. Infrared imaging, echolocation, biomonitors, radar, and certain other forms of scanning or detection eliminate any skill bonus.

Dimensions: 3.5 kilograms, 6.4 liters
Power Source: Standard cell for the kit, micro cells for the implants
Rigging Value: Standard
Durability: –1
Legality: Restricted
Availability: Rare
Cost: 14,300cs

FIBER OPTIC TAP

This small device is used to secretly access the flow of data through fiber optic cable. The device is essentially automated and requires no special skill to operate. The small box-like apparatus is simply clamped around the target cable and then activated. A small optical reader with an integrated cutting head then splices itself into the light path with almost negligible interruption in the data flow or signal strength. A tap can store up to five terabytes of information, transmit the data continuously, or burst transmit the stored information at intervals.

For three times the price of a standard tap, a similar device can be integrated into recon or surveillance remotes.

If the optical cable is inactive at the time of the intrusion, the tap operates with a Tech aptitude of 3 and an Electronics skill of 7. If the cable is active, the device operates with a Tech aptitude of 2 and a skill of 5. If the player succeeds at the roll, the presence of the tap goes undetected. If he fails, maintenance or security programs will detect the interference.

Dimensions: 0.3 kilograms, 0.44 liters
Power Source: Micro cell
Rigging Value: Impossible
Durability: –1
Legality: Restricted
Availability: Rare
Cost: 5,200cs

HOLOGRAPHIC DIVERTER

Though this device is only useful under specific conditions, it can mean the success or failure of an operation. A diverter is a small holographic emitter that is used to distract, decoy, or otherwise confuse the opposition—guards, soldiers, lookouts, or even simple security equipment. Diverters are self-contained devices that can be placed, dropped, or scattered almost anywhere. When activated, they project preprogrammed sequences of dynamic, distracting holograms of any pre-generated or prerecorded scene. With most models, these high-res holos can actually be manipulated via remote, like hi-tech puppets, for a more realistic or specific appearance. These high-end designs can also broadcast recorded and synthesized sounds to enhance the deception.

Diverters have a maximum projection field of 1,000 cubic meters and are most effective when used in dark or shadowed conditions and at some distance from the intended observers. Thermal imaging, echolocation, radar, and other specific forms of scanning make holographic diverters useless, and even worse, will quickly alert observers to the fact that someone is trying to dupe them.

Diverters, in addition to any confusion their clever use creates, give human or fin guards a –3 penalty to visual Awareness target numbers, and a –1 penalty to the function of any visual electronic security systems.

Dimensions: 0.1 kilograms, 0.17 liters
Power Source: Micro cell
Rigging Value: Impossible
Durability: 1

Legality: Legal
Availability: Uncommon
Cost: 325cs

HOTWIRE

Hotwires are a class of mostly homemade breaking and entering tools used to cut through lighter grades of bioplastic. They consist of a stiff alloy cutting wire, control circuitry, and a large battery built into a grip handle. When activated, the wire heats instantly to temperatures in excess of 1,000°C and will therefore quickly melt anything less than industrial-grade plastics. The rod is typically less than half a centimeter in diameter and of variable length. A wire can be plunged into plastic point first or used like a blade.

A hotwire can cut through plastic of various thickness, but the thicker the material, the slower the cut. Up to one centimeter will cut at a rate of one meter per action round. From one to five centimeters cuts at a rate of one meter per five action rounds. More than five centimeters, up to the length of the cutting rod, will cut at a rate of one meter per ten action rounds.

It is not unheard of for hotwires to be used as improvised or particularly intimidating weapons. In a fight, hotwires have a damage rating of 5, and they reduce the effect of personal body armor (PG 145) by 1.

Dimensions: 0.13 kilograms, 0.28 liters
Power Source: Standard cell
Rigging Value: Basic
Durability: Medium
Legality: Restricted
Availability: Uncommon
Cost: 55cs

INTRUSION SUIT

The intrusion suit is a form-fitting body stocking that contains thermal wiring and hundreds of small chemical reservoirs. During operation, temperature pickups and integrated processors match the wearer's thermal signature to the ambient temperature. This is accomplished through modulated heating and cooling using the thermal wiring and exothermic reactions in the chemical reservoirs. The suit makes the wearer effectively invisible to thermal imaging, giving the user bonuses of +3 on his

Hiding and Sneaking target numbers against infrared scanners. A thermal suit can operate for approximately three hours on a single chemical charge, but this period ultimately depends on ambient temperature.

Intrusion suits typically also have chromatophoric capabilities similar to those for phototropic clothing (see page 27).

Dimensions: 0.65 kilograms
Power Source: Standard cell
Rigging Value: Medium
Durability: 1
Legality: Restricted
Availability: Rare
Cost: 3,355cs

JUICER

"Juicer" is the slang term for any small, pressurized spray canister containing bioplastic solvent. Though these highly reactive solvents are typically only used in industrial or construction applications, they are also commonly used by thieves and agents to disable surveillance equipment, cut through doors and panels, short power cables, or otherwise quickly dissolve most non-industrial grades of bioplastic.

Juicer canisters are typically made of some alloy or other inorganic compound, with a trigger nozzle and sufficient pressure to spray a fine stream of solvent about 10 meters. The solvent is an enzyme analog that rapidly turns bioplastic into a thick but inert fluid, and one liter of solvent can dissolve approximately five kilograms of bioplastic. The reaction takes only minutes, and a narrow stream can slice through centimeter-thick plating almost as quickly as the solvent can be applied.

Oddly enough, bioplastic solvent appears to be useless in any other application and is no more irritating than soap if sprayed on the skin or in the eyes. Additionally, the reaction is notable for generating an odor akin to that of rotting fish, which clings to anyone unfortunate enough to touch the resulting goo.

Dimensions: 0.29 kilograms and 0.25 liters
Power Source: Inert, pressurized gas
Rigging Value: Basic
Durability: 1
Legality: Restricted
Availability: Scarce
Cost: 230cs

MATADOR

Named for the "suit of lights" once worn by bullfighters, the matador is an extremely rare and expensive piece of intrusion equipment. The hooded suit is form fitting and laced with a matrix of tiny electromagnetic pickups and displays. An integrated computer measures incident light vectors, calculates trajectories, and then emits the same frequency from opposing displays on matching paths. The result is that all forms of visible and near-visible light appear to pass through the wearer, rendering them invisible from cursory visual scans. The effect is best realized when the user is motionless, giving him a +7 bonus to Hiding and Sneaking target numbers. When the user is moving the bonuses are only +3 as the suit shimmers and glares while it struggles to keep up with the changing light vectors.

When used in conjunction, a thermal suit and matador provide their respective skill bonuses in full.

Dimensions: 0.78 kilograms
Power Source: Standard cell
Rigging Value: Impossible
Durability: –2
Legality: Restricted
Availability: Rare
Cost: 85,500cs

MICROBUG

A microbug or "dust mite" is a one chip microphone, a radio transmitter, and nano cell battery combined in a single tiny package. Microbugs can be distributed one at a time or scattered by the handful, where they can dissappear into floor cracks, carpeting, sand, and other inconspicuous places. Their tiny power supplies do not permit constant transmission, but rather, dust mites store data until their memory buffer is full, then use burst transmissions. Range is limited to approximately 50 meters, but small, inconspicuously planted relay stations are typically used to boost the signals.

Video microbugs are slightly larger and more expensive. These are almost always deployed in groups with a muliplex processor and relay station. Individually they can only transmit single frames of video every few seconds, but integrated with a number of other bugs, the result is a grainy but panoramic full video.

To recharge their nano cells, both microbugs use tiny inductive and photovoltaic chargers.

Dimensions: 0.05 and 0.25 grams, 5.5 and 10.5 microliters for audio and video bugs, respectively
Power Source: Nano cell
Rigging Value: Impossible
Durability: –2
Legality: Restricted
Availability: Rare
Cost: 100cs and 170cs for audio and video bugs respectively, and 50cs and 1,200cs for corresponding booster units

MICRO CORD REEL

Micro cord, or "spider web," is a versatile form of high-strength monofilament line that is in every second-story man's bag of tricks. Web is translucent, one millimeter in diameter, and has a tensile strength of approximately 1,000 kilograms. Web comes in a spring reel containing 2,000 meters of line, an integrated, motorized ascender/descender, a line cutter, and a packet of adhesive patches. The reel can be mounted on a harness and the ascender has sufficient torque to lift 500 kilograms. Web is an organic polymer, and the adhesive patches allow the line to be glued to itself with no significant loss in strength.

Dimensions: 1.78 kilograms
Power Source: Standard cell
Rigging Value: Basic
Durability: 1
Legality: Legal
Availability: Uncommon
Cost: 640cs

PHEROMONE SCANNER

Pheromone scanners are a reliable and practical method of positive identification. Genetic screening is usually more accurate, but requires time and sophisticated equipment. P-scanners are much more efficient, providing accuracy and versatility in a device that can analyze and ID target patterns in only seconds.

P-scanners are typically handheld sensor devices, but they can be integrated into door locks, safes, vehicle controls, and even weapons. A P-scanner is essentially a biomonitor (PG 132) that contains chemical sniffers keyed to human pheromones. The device can either sample baselines from actual subjects or be programmed with baselines from some other sources. When subsequently pressed against the skin of a target, usually the side of the neck or the inside of the wrist, the scanner attempts to match the subject's pheromone emissions and metabolic baseline against those in the database.

P-scanners are difficult to fool, and successful physical deception depends on not only matching metabolic variables but also pheromone emissions. This is rarely successful, and then only with the use of multiglands (PG 175) and synthetic pheromones matched to a specific user. Attempting to deceive a pheromone scanner without these tools incurs a –7 penalty on any attendant skill rolls. Using multiglands and pheromone spray incurs a penalty of only –3.

Dimensions: 0.13 kilograms, 0.28 liters
Power Source: Micro cell
Rigging Value: Impossible
Durability: –1
Legality: Legal
Availability: Common
Cost: 1,150cs

PHOTOTROPIC CLOTHING

Commonly used by agents, thieves, and operatives, phototropic garments come in a variety of styles. Phototropic clothing is similar to phototropic BDUs (PG 145) and is typically made of light fabrics laced with chromatophoric elements. When inactive, the clothes appear inconspicuously normal in color and cut. When active, integrated visual pickups and a dedicated processor sample surrounding shades and quickly change the color of the clothes to match.

When wearing phototropic clothes, a user gains a +2 bonus on his Hiding and Sneaking target numbers. Some phototropic clothing contains built-in hoods, gloves, and even gaiters folded into secret pockets within the garment. When using these, the bonus is +3.

Because these suits are typically dark colored when inactive and tailored as evening wear, they are often referred to in the occupational slang as "tuxes."

Dimensions: 0.48 kilograms
Power Source: Micro cell
Rigging Value: Impossible
Durability: 2
Legality: Restricted
Availability: Uncommon
Cost: 950cs and up depending on the cut and quality of the base suit

VOX

A vox is a small digital-mechanical modulator that is temporarily implanted in the larynx of the user. The device is painful to insert, uncomfortable to wear, and requires a qualified technician to implant. When active, the device adjusts the response of the user's vocal cords, changing the tone and pitch of his voice. The device can be used to simply change the way a person sounds, or it can be used to match the voice of a specific individual. The device can even render male voices female and vice versa.

Voxes are most commonly used as part of a disguise, or in an attempt to fool human listeners or electronic voice locks. When used in this way, the device provides a +2 bonus to all attendant target numbers.

Dimensions: 20 grams, 1.8 milliliters
Power Source: Nano cell
Rigging Value: Impossible
Durability: –1
Legality: Restricted
Availability: Rare
Cost: 5,500cs

MEDICAL TECH

The incredible pace of advance in medical technology seen in the years before the Blight was largely paralyzed by the absolute lack of available resources resulting from humanity's effort to combat the ecological catastrophe. Health care systems paralyzed by millions upon millions of starving citizens and overwhelmed by the ever-increasing numbers of disease-promoting corpses simply did not have the funds to promote research other than that absolutely essential for the effort to defeat the Blight. As a result, the state of the medical art in 2090 had not changed substantially by 2157. The only major exception to this was in the field of emergency starvation nutrition.

Revolutions in genetic technology and in information sciences since the end of the Blight have taken medicine to heights undreamed of in the darkest days of the Fischer epidemic. The modern healing arts are limited largely by the environment and available resources. Nearly anything can be achieved in a well-funded major research center. Unfortunately, these are few in number on Earth, sparse on Luna and Mars, and nearly absent on Poseidon. The two major exceptions to this are the College of Human Health at HIST and the private surgical clinics in Dyfedd. These two institutions provide near-miracle cures and astounding surgical procedures on a daily basis, and also treat the everyday ailments and cosmetic complaints of Poseidon's citizens, from the poor to the super-rich. These facilities are capable of performing essentially any cybernetic or genetic alteration, grafting transplanted or cloned organs into patients, treating nearly any infectious or inherited disease, or changing nearly any aspect of a person's appearance. Although these therapies are certainly not always successful, they provide opportunities where there would otherwise be none.

Haven and Dyfedd, though, account for only a fraction of Poseidon's population. The medical community is simply not large enough to serve the hundreds of far-flung, isolated settlements. Instead, a sort of "medicine of stabilization" has developed as the most common form of medical care in the Serpentis System. People who fall victim to trauma, poisoning, or infection are treated locally by minimally trained medics or by highly specialized automated instruments. Although not sufficient to completely effect a cure, this treatment is intended to keep the patient alive long enough to reach a medical center, where the ailment can be definitively treated. This philosophy was the driving force behind the development of bleeder patches, field surgery kits, and so-called "doc-in-a-boxes" (see below).

The major teaching hospitals are complemented in outlying areas by community medical facilities. Local hospitals are an important feature of Poseidon's larger Incorporate and GEO settlements. Able to handle the most common ailments and accidents on their own, these facilities are scattered throughout the Pacifica Archipelago. Sizeable facilities in Erasmus and Point du Boux handle the medical needs of colonists in Poseidon's outback. The community hospitals also serve as referral sites for the big research institutions.

The medicine most familiar to the native communities stands in stark contrast to the sterile temples to science in Haven and Dyfedd. "Natural products chemistry," or the medicine of local healers, shamans, and juju men, is touted as being just as effective as that of the "modern" Incorporate. Distilled from local plants, molds and fungi, and indigenous animals, and coupled with a powerful psychological component, native medicine is nothing to sneer at, especially when administered by an experienced, accomplished practitioner.

AUTODOC

The latest in medical technology, the automated field surgery kit, commonly referred to as an "autodoc" or "doc-in-a-box," was designed to bring the capabilities of a moderately well-equipped regional hospital to remote areas that cannot afford a full-time trauma surgeon. The full-size device uses an external power source and integrated maincomp with expert software to diagnose and treat most traumas. Equipped with a staggering number of manipulable medical instruments, sensor probes for nearly any type of imaging imaginable, and a complete range of pharmaceuticals, the autodoc is specifically designed for the emergency stabilization of critical patients. For example, in the case of a limb amputation, the field surgery kit

would stop any bleeding, apply a bandage impregnated with powerful antibiotics and growth factors, administer an appropriate amount of blood products and fluid rehydration, provide for pain control, and attempt to maintain the patient's general functional status until transfer to a better facility could be arranged.

A smaller, mobile unit has also been developed. Considerably less elaborate than the fixed model, the mobile unit runs off an industrial cell and is designed to be mounted in a mid- to large-size vehicle. Intended to accompany large research or military expeditions, the mobile unit is limited to the barest of life-saving measures. Nevertheless, according to its manufacturers, even the mobile unit is more capable than the best of trained medics when a surgeon is not available.

As with any state of the art medical technology, autodocs do not entirely live up to the promises of their manufacturers. When they work, these devices save lives. When they fail, the results tend to be rather gruesome. Autodocs have strong Medicine aptitude and a rating of 6 in each Medicine skill. The units can perform first aid and general medical care, just like a human physician. Failed operations tend to be more spectacular than is common for a human doctor, as the autodoc blindly follows its programming and lacks any real judgment—overdoses of improper narcotics are administered, life threatening injuries are ignored while minor ones are treated with excruciating care, and additional trauma is caused by improperly calibrated surgical incisions.

Dimensions: 3.5x2.2 meters, 250 kilograms, and 350 liters
Power Source: External, industrial cell backup
Rigging Value: Impossible
Durability: 0
Legality: Legal
Availability: Rare
Cost: 22,500cs

INDUCTION BLOCK

Using direct electrical induction, nerve blocks prevent the transmission of sensory information from peripheral nerves to the brain and motor commands from the brain to the body. Blockers can be attached directly to the shoulder to block the nerves that support the arm, to the groin to block leg nerves, or to the back of the neck to block the entire body, with the exception of the head. Patients with an induction block in place feel no sensation in the blocked limb or body part and are utterly unable to move the blocked part. A failed General Medicine roll by the attending physician indicates that the block has been improperly placed or that its induction settings have been set incorrectly, in which case the patient will continue to have use of and continue to feel sensations from the blocked body part. An action value of –5 or worse when placing an induction block on the neck indicates that the nerves that supply the diaphragm have been blocked, and the patient can no longer breathe unassisted. If the block is not removed, deactivated, or repositioned, or the patient is not immediately placed on a ventilator, he will suffocate.

Dimensions: 0.1 kilograms and 0.05 liters
Power Source: Standard cell
Rigging Value: High
Durability: –1
Legality: Restricted
Availability: Uncommon
Cost: 190cs

MULTISPECTRUM IMAGER

From the earliest days of medicine, one of the greatest challenges to the health care professional has been to discover what is actually going on inside the human body. This device is a portable imaging system that combines synthetic-aperture pulse Doppler ultrasound, nuclear magnetic resonance, x-ray, focused radar, and electrical impedance mapping to provide a detailed multispectrum picture of the internal operation of the body. The Doppler ultrasound provides one-millimeter resolution for examining vascular structures. Radar, x-ray, and NMR imaging provide information on bones and soft tissue structures. The built-in impedance mapper can indicate the location and function of nerve and muscle structures. Successful operation of any multispectrum imager requires a General Medicine roll and provides a +3 bonus to any subsequent Medicine roll.

Dimensions: 15.0 kilograms and 16.0 liters
Power Source: Heavy cell
Rigging Value: Impossible
Durability: Low
Legality: Legal
Availability: Rare
Cost: 11,000cs

TRANSDERMAL CHARGER

In an effort to develop a method of drug administration that avoided the rigors of the digestive tract and did not have to rely on single-use needles, the planners of the original Athena expedition developed a technique whereby patches of absorbent material could be applied to the skin and made to release a pre-delivered drug dose through the skin over a period of time. Ready-made uncharged patches can be loaded into a charger, and metered doses of a drug can be applied to the patch any time up to a week before use. Although legal, derm chargers are particularly popular with users of recreational drugs and are likely to encourage uncomfortable curiosity from law enforcement if not accompanied by the proper prescription paperwork.

Dimensions: 0.2 kilograms and 0.2 liters
Power Source: Standard cell
Rigging Value: Standard
Durability: 0
Legality: Legal
Availability: Common
Cost: 90cs per charge, 2cs per patch

TRAUMA CUFF

An outgrowth of early cryo-oxygenation technology, trauma cuffs are designed to stabilize potentially life-threatening limb injuries. Crush injuries or limb amputations often prove too extensive and traumatic for treatment with coagulant pads. These wounds can result in unnecessary deaths in the field before patients can be transported to a well-equipped trauma center. Trauma cuffs are designed to be applied either mid-limb or at the end of a stump in the case of an amputation. Designed to be operated by medical techs with little training while in the field and under stressful circumstances, trauma cuffs can be attached to the injured extremity in a matter of minutes, after which automated subroutines take over the management of the injury. An attached biomonitor determines the severity of the patient's condition, and administers antibiotics, anti-shock, and analgesics as needed. Tiny injectors and spray heads can apply clotting factors and use electrically charged jets of argon gas to stop even massive bleeding.

Trauma cuffs may be used whenever a character suffers a critical wound that the moderator determines was caused by severe trauma to an extremity. The operation of a trauma cuff requires a successful First Aid roll and eliminates all trauma effects from the treated limb. If a separate trauma cuff is applied to the amputated part, it has a significantly greater chance of being reattached if it and the patient can be delivered to a major surgical center within 15 hours.

Dimensions: 2.3 kilograms and 4.0 liters
Power Source: Standard cell
Rigging Value: Impossible
Durability: 0
Legality: Legal
Availability: Rare
Cost: 3,500cs

PHARMACEUTICALS

ANTIMICROBIALS

When Alexander Flemming discovered the antibacterial activity of the penicillium mold, what he found was a naturally occurring defense mechanism that made the mold better able to compete for resources in an environment overflowing with microbial rivals. Poseidon introduced an entirely new crop of microbial pathogens. Those pathogens, however, were striving in an environment rich in competition, resulting in an ever-evolving environment of microbial attack, defense, and defense-avoidance. To combat this micro-ecology's effect on humans, many of the Incorporate states have sizeable research interests in developing new antibiotics, antivirals, antifungals, and their Poseidon equivalents.

Many of the antimicrobial drugs in common use, and especially those intended for use against Earth-native infections, can be particularly harsh on the patient. Expect anybody treated for a serious infection to develop nausea and vomiting and possibly severe diarrhea as a result of the drugs ravaging of the digestive tract. Patients being treated with drugs specific for infections native to Poseidon are at a substantial risk for the development of an allergic reaction. A failed Fitness roll indicates an anaphylactic reaction, including fluid collections in the lungs and substantial airway swelling. Patients with the osmoform modification can avoid danger by immersing themselves in water and allowing their gills to operate normally. Otherwise, the physician must make a successful General Medicine roll within an hour or risk losing the patient to suffocation. Patients with the multiglands or immunological symbiote modification are immune to anaphylactic reactions.

Form: Injection, transdermal, or pill
Dosage: Dosage based on weight
Legality: Legal
Availability: Common
Cost: 0.25cs to 500cs per dose

HYPNOTICS

Although the term was traditionally used to refer to drugs that would induce sleep, modern hypnotics are drugs that aid the user in suppressing unwanted stimuli and concentrating exclusively on a single sense. The only form in widespread use is designed to allow the user to focus on input from NIC-assisted devices. Users who dose with hypnotics receive a +2 bonus when operating remote devices, but incur a –3 penalty to Awareness or sense rolls for local events. Since users without NIC input typically enter an extremely relaxed, detached state, hypnotics such as Lavender Organics' Clarion™ have a high abuse potential and are controlled substances. A substantial culture of "drug enlightenment" has developed around the trance-like states these drugs induce. However, their addictive potential is quite low.

Form: Injection, transdermal
Dosage: Metered doses last from 30 minutes to six hours
Legality: Restricted
Availability: Uncommon
Cost: 125cs per 6-hour syrette

THE BARON'S FARE

One of the better-known native cures, the Fare is a natural products remedy intended to treat a multitude of conditions. Its name refers to Baron Samedi, the voudou loa revered as the god of crossroads and death, and it has become relatively popular in some settlements in the Zion Islands. The Fare, rather than sending patients to see the Baron, is intended to "pay their ransom and carry them through the crossroads." The drug, which is distilled from the crushed seed pods of a creeping native vine, is known to increase cardiac output and help to reverse heart failure and treat shock due both to blood loss and to allergic reaction. Significantly, its mechanism of action has not been established. Additionally, the formulation's activity against shock due to trauma is far greater than would be expected when compared to its activity against other forms of circulatory collapse.

The treatment of shock is still a significant challenge, and a new method for its treatment could prove quite profitable. As a result, a number of biotech firms—especially Lavender Organics and Gendiver—have been aggressively seeking information on the specific plants used in the Fare's production, and the exact techniques used in its preparation.

Form: Herbal tea
Dosage: Varies
Legality: Legal
Availability: Uncommon, generally unavailable outside of the native settlements of the Zion Islands
Cost: 10cs to 25cs or by barter

IMMUNE MODULATORS

The immune system remains one of the most complicated, least understood components of mammalian physiology. Its effects are staggering in scope, and can have effects on everything from rejection of transplanted organs or cybernetic grafts to an individual's ability to survive in Poseidon's hostile environments.

Immune augmenters are designed to enhance an individual's natural defenses and are used if exposure to a pathogen is expected or has recently occurred. Biogene specifically developed PolyMune™ for the original Athena colonists, and it remains one of the most effective drugs in its class. Variants also exist for individuals who expect to come into contact with cancer-causing radiation or carcinogenic substances, and have been demonstrated to be very effective in preventing the development of new tumors.

Immune suppressors are intended to shut down the immune system of transplant recipients, patients with lymphomas and cancers who are unable to obtain curative Long John therapy, or patients with induced autoimmune diseases. Patients with the active variant of Silva Combined Immune Deficiency require regular, carefully monitored doses of Cytaprone™ for survival.

Form: Injection or nasal spray
Dosage: Augmenters can be delivered in metered nasal spray doses. Suppressors require careful dosing by trained medical professionals.
Legality: Restricted
Availability: Augmenters – common, suppressors – rare
Cost: Augmenters – 75cs per dose, suppressors – variable, most more than 180cs per dose

PIGMENT INDUCERS

A favorite of newcomers still recovering from IHMS and covered in the spots, "tanners" act on melanocytes in the deeper skin layers, prompting them to produce substantially greater amounts of pigment. These drugs can cause a deep overnight tan, and if used for more than a few days, can darken a moderately shaded individual to rival the darkest African. These drugs are essentially harmless and are often a favorite of schoolchildren, disguise artists, partygoers, and tourists. Melanocyte inhibitors also exist and have become quite popular with the fashion conscious, imparting a pale, almost transparent cast to normally fair-skinned individuals. Dark-skinned persons can expect a mild to moderate lightening of skin color over a significantly longer time.

Form: Pill, transdermal
Dosage: Two pills can equal several days exposure to strong sunlight.
Legality: Legal
Availability: Common
Cost: 35cs to 45cs per dose

RESCUE HIBERNATORS

Designed to improve trapped accident victims' chances of rescue, these devices combine a powerful sedative and a drug that induces mild muscle paralysis. Developed as an outgrowth of the IHMS technology that makes mass transit between Earth and Poseidon possible, these agents act to place the user in a light coma and cease nearly all voluntary muscle activity. This substantially decreases the brain's oxygen requirement and reduces O^2 usage to minimum levels. Used with conventional emergency devices such as rescue balls, hibernators can extend an accident victim's survivability by as much as a third. These drugs have an obvious drawback in that users are unconscious and utterly unable to take action to protect or defend themselves for up to 30 hours after taking a standard dose.

Form: Injection
Dosage: Single measured dose, takes full effect in 10 minutes
Legality: Restricted
Availability: Common
Cost: 250cs per dose

SPOX™

An alternative method for dealing with "the spots," Spox™ is a product of Lavender Organics. Not precisely a drug, Spox is instead a single-celled organism that is stored in an anhydrous gel in its encysted state. The cysts are smeared onto the affected area and then the region to be treated is immersed in water. The water slowly permeates the gel and causes the tiny rotifers to break out of their cysts and begin hunting for food. The Spox organism has a particular appetite for diseased or damaged human skin. These microscopic animals will consume dead surface skin or dermal tissue that has been exposed to nearly any sort of trauma. When only healthy skin remains, the rotifers die.

Although its most common use is in removing the skin traumatized by the IHMS electrodes, Spox is most successful in treating burns, frostbite, and severe wound infections.

Form: Gel
Dosage: 1 application is sufficient for treatment.
Legality: Legal
Availability: Uncommon
Cost: 110cs to 135cs per application

HEMOMAX™

The descendent of a drug developed by Biogene during the early days of the Athena Project, HemoMax is the latest in a series of medications designed to increase the oxygen carrying capacity of the red blood cell. HemoMax is actually a combined formulation, having effects on the amount of hemoglobin in the red cell, the number of red cells, and the O^2-dissociation curve of the hemoglobin molecule itself. Individuals who take HemoMax over a period of weeks develop an increased ability to hold their breath and to utilize the oxygen available to them. HemoMax users can expect a 20% increase in the time allotment in tanked O^2 supplies. They also undergo a steady increase in the maximum amount of aerobic work they can do. Genetically modified individuals with the diver package experience a similar 20% increase in the maximum time they can stay submerged because of their increased ability to use the oxygen in the air they breathe.

Patients who overuse HemoMax can experience a drastic increase in the number of red blood cells. This can thicken the blood to a dangerous degree, leading to the formation of clots within the circulatory system. In this situation, patients rapidly experience multiple heart attacks and strokes and will die within hours if they do not receive prompt medical attention. Additionally, patients who stop tak-

ing HemoMax undergo a rapid turnover in red blood cells. Patients who start and stop HemoMax therapy frequently can develop liver failure due to chronic iron poisoning.

Form: Transdermal, injection
Dosage: Transdermal patches are applied once a week. Injections are required twice per week.
Legality: Legal
Availability: Common
Cost: 80 to 120cs per dose

TURSIPROSTONE™

Although rare, impotence is a far more psychologically devastating condition among cetaceans than in humans. Dolphins' highly developed sexuality is generally resistant to the kinds of mental disorders more common in humans. No amount of cultural acceptance of sexuality, however, can prevent cardiovascular or neurologic damage that can significantly impair sexual functioning in both dolphin genders. Tursiprostone is a combination formulation, consisting of a mixture of the major dolphin sex hormones and sympathetic neurotransmitters. It is designed to restore sexual functioning in those individuals who experience difficulty due to organic causes. The drug is delivered through a patch specially formulated to penetrate the thick cetacean skin. Because of its powerful effects, this drug has a high potential for abuse. It is considered a controlled substance by the GEO.

Form: Transdermal, injection
Dosage: One patch or two injections per week.
Legality: Restricted
Availability: Uncommon
Cost: 50 to 80cs per dose

TOXIN SCAVENGERS

Designed to dry out drug abusers and alcoholics, tox-binders are a group of proteins engineered to bind to and inactivate a broad spectrum of illegal or controlled substances. Tempran™ is a specific binder that scavenges ethanol in the user's bloodstream and can take a patient from insensate drunkenness to cold sobriety in 15 minutes. Alternative formulations exist for single agents as well as for groups of drugs or poisons.

A number of military, security, and Incorporate organizations have developed specific tox-binders designed to counter commonly used poisons. The military-grade binders are intended to protect against nerve gasses or similar agents, whereas the more common civilian variants are designed with the paranoid executive in mind. A related formulation available on the open market acts in the digestive tract to "scoop up" and inactivate the bacterial toxins responsible for most forms of traveler's diarrhea.

Tox-binders intended to be used against street drugs should only be administered by trained medical professionals, as the instant withdrawal induced by a dose can occasionally be fatal.

A number of dealers in and around the Haven area have begun to cut their products with varying amounts of toxin scavengers tagged to their product. Their intent is to drastically reduce the effect produced by a given volume of drug. Of course, there's nothing illegal about this...or rather, nothing any more illegal.

Form: Inhaler, transdermal, pill
Dosage: Metered doses act over five to 30 minutes
Legality: Restricted
Availability: Common
Cost: 15 to 60cs based on number of toxins

RECREATIONAL DRUGS

Devil's Dance

Harvested from the Sierra Nueva marsh devil, Devil's Dance is a potent stimulant and hallucinogen, commonly found throughout the islands of the Northwest Territories. In the marsh devil, the substance is believed to give the animal its tremendous speed during predatory attacks. The potent oxidizing compounds in the drug act to accelerate reactions in muscle tissue, in the digestive tract, and in the brain. Users experience eight to 10 hours of incredible energy and often move about at a frenetic pace because they simply cannot sit still. Accompanying this physical overdrive is a similar increase in sensory activity. Users experience visual, auditory, and tactile hallucinations of uncanny reality. First-time users must make a Will roll or experience exquisite tactile hallucinations. For example, the user may be convinced he is covered in hundreds of deadly insects and use any means at hand to get them off.

Form: Injection, transdermal
Dosage: Dose varies with purity of extract. One dose begins to act over 30 seconds to one minute, with duration from several minutes for very impure samples to up to 10 hours for very pure drug.
Legality: Restricted

Availability: Varies. Most common in the Sierra Nueva Cluster and surrounding areas.
Cost: 35 to 175cs per dose

Fish Food

"Fish Food" is the name given to a powerful psychotropic substance used exclusively by cetaceans. Its proper name, a string of unpronounceable cetacean vocalizations, has no clear translation into most human languages. Its meaning has been interpreted as such varied terms as "the Deity's blessing on all at once" to "the nourishing milk from the nipple of God" to "the clarity/transparency of mind/sight/thought found only in the deepest/oldest/most holy ocean/life."

Humans typically experience a strongly dystonic reaction to Fish Food, becoming agitated, anxious, emotionally depressed, and aggressive. Cetaceans, on the other hand, experience an increased ability to concentrate and process complex information, detect subtle stimuli in a field of distracting "noise," and recall detailed information. Their subjective descriptions of the drug's effects are of a feeling of openness of mind or elevation of consciousness. This drug is used heavily during ceremonies of the Church of the Whalesong Theogony.

Fish Food itself is derived from an exotic sesquiterpine alkaloid found in the skin secretions of a deep-water tube worm. It is refined for purity and sterilized, and then taken orally in essentially its native form. This drug has not been restricted by the GEO's Justice Commission. It has no known addictive characteristics.

Form: Oral suspension
Dosage: Dose varies with purity of extract. One dose begins to act over one hour to 90 minutes, with duration up to 12 hours.
Legality: Legal
Availability: Rare
Cost: 65cs

ROBOTS AND REMOTES

INTERFACE TRANSCEIVER

An interface transceiver is a dedicated computer and comm system that provides the user of a standard neural jack (PG 167) or trode interface (PG 126) the same capabilities as an individual with the more versatile uplink neural jack (PG 167). Accessed via fiber optic connectors, transceivers process and broadcast the neural query and control signals from the user, and in turn, receive and translate the data stream and slave signals from the remote device.

Transceivers are typically worn on a belt, as a pendant, or even stuffed in a pocket. For twice their given list price, bodycomps can be outfitted to serve as neural interface transceivers.

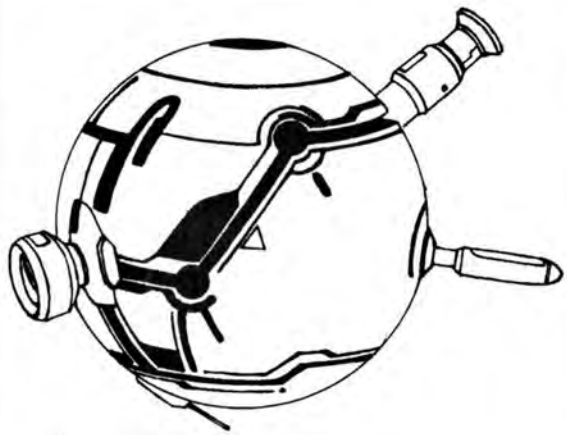
Dimensions: 0.24 kilograms
Power Source: Standard cell
Rigging Value: Impossible
Durability: 0
Legality: Legal
Availability: Common
Cost: 2,250cs

REMOTE CONSTELLATION

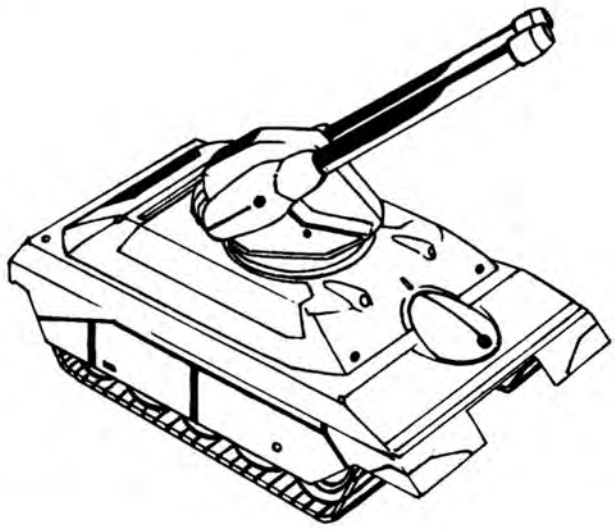
A remote constellation is a versatile tool, but one that requires training and practice to use effectively. A typical constellation consists of four to eight individual, semi-autonomous remotes interlinked and interfaced through an expert control program on an implant or body computer. The remotes may be all of a type, or may consist of a collection of different integrated designs, providing the user with more robust capabilities.

Using a constellation has been compared to playing a piano. While playing the instrument, the musician is seldom aware of the individual notes,

RECON REMOTE



TRACKED COMBAT REMOTE



but instead plays whole chords that together form music. A user running a remote constellation controls the movements of the remotes and interprets their data stream in much the same way. The expert program keeps the individual remotes on task, following the user's instructions, but without the user having to give specific input to each device. The interface program in turn correlates the information from the remotes, providing the user with a rich composite of what the remotes are seeing and doing.

Remote constellations offer a significant advantage in a variety of circumstances, particularly where there is a large area to be observed or where the action or circumstances are chaotic. Constellations are therefore particularly useful in military and law enforcement operations. They are also popular with media producers at large public or sporting events, and with scientists exploring Poseidon's outback.

The enhanced data stream of a constellation gives users a +2 bonus to their Awareness when working through the remotes. However, a character must have a Remote Operations skill of 4 or more to effectively use a remote constellation.

Dimensions: Variable by number and type of remotes
Power Source: Standard cells
Rigging Value: Standard
Durability: 0
Legality: Legal
Availability: Uncommon
Cost: 1,750cs for the simplest four-unit observation rig and program

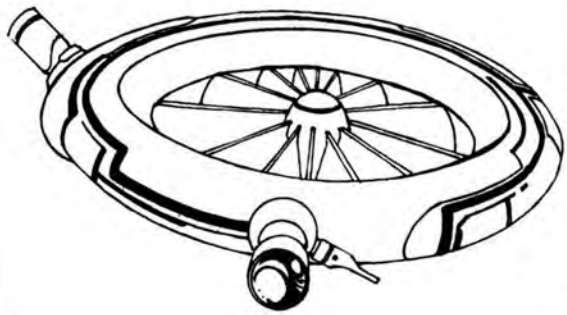
REMOTE OPERATION SUITE

A remote operation suite is the integrated comm system that allows a device or vehicle to be controlled via telepresence. The sophistication of these systems varies widely and is typically comparable to the level of computer control in the specific device. Modern equipment with computer controls typically has some level of remote operation capability, and most allow for fully integrated remote access.

Sometimes, however, older vehicles or cheaper equipment may lack remote operation capabilities. In such cases, if the device has integrated computer control, remote operation suites can be installed. This typically costs from 10 to 20% of the original purchase price, but the increased versatility of the updated equipment is often worth the expense.

Dimensions: 0.95 to 2.4 kilograms, 1.1 to 3.2 liters
Power Source: As per device
Rigging Value: Impossible
Durability: 0
Legality: Legal
Availability: Common
Cost: 350cs and up

HOVER REMOTE



REMOTE SIMULACRUM

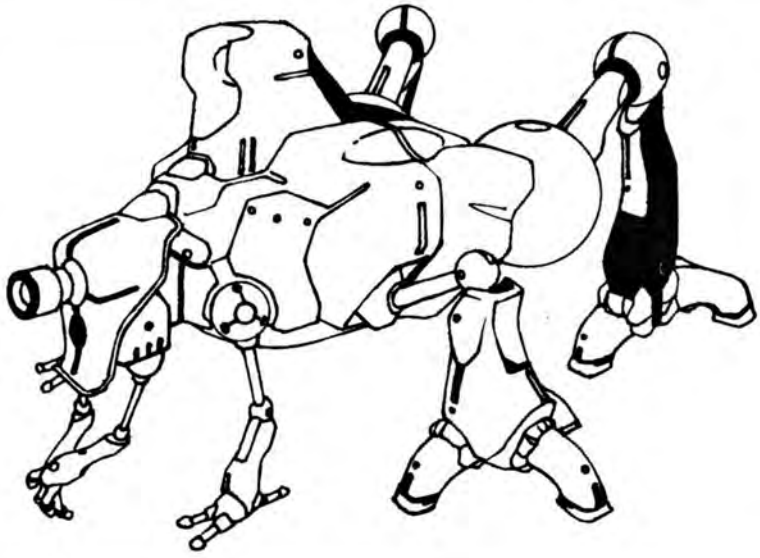
Remote simulacra are a class of remote devices used primarily by reconnaissance specialists, scientists, and hobby enthusiasts. Simulacra are typically designed to mimic animals, usually doing well enough to pass—at a distance—as actual living things. Military and law enforcement personnel favor tiny insect-like remotes that can creep or buzz around a building or forest, passing unnoticed as a common pest. More imaginative designers have even made recon remotes in the forms of common objects such as crumpled papers, coffee cups, and standard battery cells. These have proven uniquely effective in the practice of industrial espionage. Scientists use models of avian and marine analogs to make close-up studies of animal behavior and ecology, and enthusiasts buy or build toys ranging from simple aircraft and racecars to spaceships and actual flying dragons.

Dimensions: Widely variable
Power Source: Micro to heavy cells
Rigging Value: Variable
Durability: 0
Legality: Legal to restricted
Availability: Scarce
Cost: 85cs and up

TRIAGE REMOTE

A triage remote is actually a fully autonomous robot, but one that can be co-opted by a human medic for more sophisticated function. Triage remotes are common within military forces, and some larger metropolitan ER Teams employ them as well. A typical triage remote is a large, spider-like robot that skitters about a battlefield or disaster site looking for and administering first aid to casualties. Triage remotes are run by expert systems and carry the integrated equivalent of an abbreviated field surgery kit (PG 133). Their all-terrain legs move them quickly over rugged ground and their underbellies are slung with an assortment of medical tools, probes, and waldos. Most triage remotes also carry a load of short-range locator beacons with which they tag each patient before moving on to the next casualty.

TRIAGE REMOTE



Triage remotes function with strong Medicine aptitude and a First Aid skill of 5. If the patient is conscious and can answer a few interactive questions, the remote's skill increases to 7.

Dimensions: 24 kilograms and 16.2 liters
Power Source: Heavy duty cell
Rigging Value: Standard
Durability: 1
Legality: Legal
Availability: Rare
Cost: 14,400cs

SURVIVAL GEAR

EMERGENCY BOTTLE

Emergency bottles are common accessories in submarines, hard suits, and on shallow-depth undersea installations, and are used during catastrophic flooding or evacuation. Emergency bottles are actually more mask-like than tank-like, as current materials technology has reduced the size of the air reservoir to approximately half a liter. Emergency bottles are one-size-fits-all full facemasks, containing integrated regulators, air bottles, hydrophones (see page 21), headlamps, and locator beacons (PG 138).

Emergency bottles provide up to 15 minutes of air, depending on depth and activity level. These rescue devices can save lives but do nothing to mitigate the effects of freezing temperatures or pressure, so users must be wary of their circumstances.

Dimensions: 0.95 kilograms and 2.7 liters
Power Source: Standard cell
Rigging Value: Standard
Durability: Medium
Legality: Legal
Availability: Very Common
Cost: 630cs

EMERGENCY POD

The classic example of this deep-sea emergency device was initially a spin off derived from the inflatable balloon tanks used on interstellar spacecraft (see page 106). The spherical pods are constructed of a flexible carbon buckytube mesh that can be tightly packed around a structurally reinforced carbon frame. Chambers within the flexible skin are filled with pressurized CO^2 and designed to be inflated on contact with water, providing not only structural stability but added buoyancy as well. Emergency pods are designed as evacuation vehicles when an underwater facility suffers a catastrophic loss of life support and structural integrity. With their extremely strong construction and sturdy—if cramped—airlocks, emergency pods are operational at depths up to 2,000 meters.

Emergency pods range from three to five meters in diameter, with part of their area devoted to a power cell and drive assembly for a small propeller. Storage compartments in the pod contain folded blocks of survival plastic, a portable navigation unit, a battery-powered rescue locator, personal flotation devices, a first aid kit, and a solar still. The inflated pod can comfortably hold six individuals, but can carry more than twice that number without foundering. Such rafts have helped to save hundreds of lives on Poseidon. They are commonly found in GEO and Incorporate deep-sea facilities, but private citizens can rarely afford them.

Dimensions: 120 kilograms, 1.5mx1.0mx1.0m when packed, 3.5x2.0mx1.5m when inflated
Power Source: Heavy cell
Rigging Value: High
Durability: 4
Legality: Legal
Availability: Common
Cost: 34,000cs

GEO POSEIDON BIOLOGICAL SURVEY #POS-103

Biological Survey #POS-103 is an ongoing study intended to identify and classify important flora and fauna on the colony world. Subtitled *Resource and Hazardous Species of Poseidon*, the project hopes to identify those plants and animal species that either pose serious threats to humans or can serve as valuable sources of food, pharmaceuticals, or other natural products. The study is in its earliest stages, and though thousands of species have been classified, countless others remain to be discovered. The native population has been invaluable in identifying many species and a number of native hunters, guides, and healers have been recruited to help continue the work.

For a nominal fee, anyone can purchase a subscription to an abridged project report from the High Commissioner for Science and Technology. This field guide provides holographic images, if available, for each species, as well as information on range, habitat, and behavior. The guide also details the nature of the threat posed or resources

offered by each species. The report is subject to periodic updates and undergoes constant revisions as new species and new information are discovered.

Players whose characters purchase access to the report should be allowed to read any of the entries in any **Blue Planet** publications that are designated as part of the biological survey report, including the flora and fauna entries in the **Blue Planet v2** *Moderator's Guide* (MG 163).

Legality: Legal
Availability: Very common
Cost: 25cs per download, 120cs for a subscription

NUTRITIONAL CATALYST

Nutritional catalyst, or "chew goo" as the Peackeeper infantry has dubbed it, is a military survival tool that is now available on the civilian market. Nutritional catalyst is a suite of artificial enzymes and digestive chemicals that is used to pre-digest just about any natural organic material, allowing it to be utilized as food.

Chew goo is a thick paste that comes in a simple squeeze tube. When mixed with water and organic material, such as grass, twigs, crab shells, or fish bones, the catalyst breaks down the organics into their component molecules, allowing humans to consume what would otherwise be indigestible material. The resulting goo is variably thick or runny, depending on the raw materials, and it tastes uniformly awful. The goo is highly nutritious, however, and can be the difference between life and death when more palatable food is unavailable.

Some brands of catalyst contain additives intended to neutralize most of the known plant and animal toxins on Poseidon. Unfortunately, there remain hundreds—if not thousands—of unknown toxins and so it is recommended that whenever possible, only familiar species be utilized as food.

One tube of chew goo can produce 50 man-days of nutritional soup.

Dimensions: 0.25 kilograms
Power Source: None
Rigging Value: N/A
Durability: N/A
Legality: Legal
Availability: Uncommon
Cost: 65cs

PEST SPIKE

A pest spike is an unlikely device, but even experienced frontiersmen swear by its effectiveness. A spike emits various invisible electromagnetic frequencies that do a reasonable job of keeping most of Poseidon's biting insect analogs at bay. The device plants in the ground and the emitter extends on a telescoping mast. One spike will keep an area about 20 meters in diameter relatively free of most insect pests. Considering the lethality of some of Poseidon's more poisonous species, a pest spike, though cumbersome and expensive, is a valuable addition to any camp kit.

A manufacturer's warning is included with pest spikes, as well as a denial of liability. Field tests have shown that under unpredictable conditions spikes may attract the attention of non-insect species, including dangerous predators. It is therefore advised that spikes only be used when the threat of insect poisoning is highest, or when the local non-insect fauna pose little threat.

Dimensions: 1.8 kilograms, 2.5 meters extended
Power Source: Standard cell
Rigging Value: Standard
Durability: 1
Legality: Legal
Availability: Uncommon
Cost: 1,340cs

RESCUE DYE

Rescue dye is a useful item, but only under specific circumstances. Rescue dye is a fluorescent chemical that comes in small, pressurized containers. Several containers are typically included on small boats, rescue rafts (see page 39), and in aircraft survival kits. When activated, a canister expels the dye under force, spraying it over an area about 10 meters in diameter. Typically used to signal aircraft from the water, the dye quickly spreads and is bright enough to mark an area of several hundred square meters before diluting. Most dyes contain reflective powders that serve to improve the effectiveness of EM-based search techniques such as radar or laser reflection. Some versions of rescue dye also contain additives that are intended to chemically deter predators by masking a swimmer's scent with stronger odors. The effectiveness of these additives is debatable.

The use of rescue dye by the target of a search gives the searchers a +3 bonus to any visual or electronic task rolls.

Dimensions: 0.87 kilograms, 0.6 liters
Power Source: Compressed gas
Rigging Value: Basic
Durability: 2
Legality: Legal
Availability: Scarce
Cost: 125cs

RESCUE RAFT

Self-Contained Autonomous Rescue Rafts (SCARRs) are small life boats and are often standard equipment on most small ships and personal aircraft. Each raft is intended to support up to four people for extended periods, under all but the harshest marine conditions. SCARRs are compact but heavy when stored and deploy into durable, inflatable boats with an array of useful features.

The hull contains storage batteries that power a small, propeller-driven outboard and are recharged by a solar panel integrated in the cockpit roof. The inflatable roof encloses most of the hull, providing protection from sun, rain, and over-washing waves. A locator beacon (PG 138), navigational suite (PG 138), and satellite uplink (PG 127) are included in most designs, as are water purifiers (PG 140) and 150 man-days of freeze-dried nutritional concentrates. Fishing gear, rescue dye (see page 38) and a dedicated survival guide (PG 140) are also typical components aboard SCARRs.

Dimensions: 275 kilograms, 65 liters packed, 5 meters deployed
Power Source: Heavy cell
Rigging Value: Basic
Durability: 3
Legality: Legal
Availability: Common
Cost: 9,200cs

SOLAR BLANKET

Solar blankets are versatile—though somewhat fragile—solar panels designed for use in the field and under survival conditions. Solar blankets come in various sizes and are stored in compact satchels. They are deployed by simply spreading them on the beach, draping them over a vehicle, or even floating them on the surface of the water. Solar blankets consist of a photovoltaic matrix embedded in a delicate, foil-like material, and they continue to function effectively even if torn or punctured.

Solar blankets are typically used to trickle charge storage batteries and equipment, but they can also be used as direct energy sources for low power devices such as water purifiers (PG 140) and hydrogen stills (see page 10). Solar blankets come with an attached transformer and several adapters that make them compatible with most equipment.

Dimensions: 0.85 kilograms and 2.3 liters per 100 square meters
Power Source: Solar
Rigging Value: Impossible
Durability: 0
Legality: Legal
Availability: Common
Cost: 350cs

SOLAR STILL

Although most of Poseidon's surface is covered by ocean, the majority of exposure fatalities among unmodified humans on the planet occur due to dehydration. The electrolyte content of Poseidon seawater is high enough to actually decrease free water reserves in those who drink even moderate amounts. Solar stills are inflatable evaporation chambers designed to produce drinking water from seawater. Measuring anywhere from one to more than three meters in diameter, these floating pyramids automatically fill with a few centimeters of seawater and allow solar heating to evaporate the water, leaving the salts behind. The water vapor condenses on the inside of the still's plastic cover and trickles down into catch basins. The largest stills can produce more than 15 liters of water on a warm, sunny day. The smallest stills provide one or two liters of drinking water per day. These simple devices can often be found lashed to small ocean-going craft or dotting the harbors of freshwater-poor native camps.

Dimensions: 2.0 kilograms and five to 20 liters inflated, 0.25 to 1.5 liters packed
Power Source: None
Rigging Value: High
Durability: 1
Legality: Legal
Availability: Common
Cost: 50 to 130cs

TEMPORARY SHELTER

Temporary shelters or "temps" are more versatile than tents, typically offering more spacious, durable, and weatherproof accommodations. Temps are easy to assemble and disassemble and

can be used as daily or as semi-permanent structures. Temps are made of various grades of bioplastic and come in a number of designs. Some are small one- or two-person, tent-like shelters, while others are larger, multi-room structures suitable for base camps or field stations.

Regardless of size or design, temps have a number of common features and most support modular accessories available from their manufacturers. Temp panels contain electrically sensitive plastic frames that, when activated, stiffen and support the structure's roof and walls. To set up most designs, the user simply unrolls the temp and pushes a button. The frames stiffen and the shelter raises itself. Most have integrated solar panels that trickle-charge small storage batteries used to maintain the stiffeners and power built-in lighting strips.

Dimensions: 3.4 kilograms to 210 kilograms, and up to 450 square meters
Power Source: Standard cell and solar panels
Rigging Value: Standard
Durability: 3
Legality: Legal
Availability: Very common
Cost: 345cs to 2,300cs

CETACEAN HARDWARE

BAGGIES

Baggies are an increasingly common item at social gatherings that include cetaceans. They are found at waterfront bars, beach parties, weekends on the yacht—anywhere humans and cetaceans take a load off, relax a little, and tie one on.

"Baggy" is a general term for an increasing variety of intoxicants packaged for convenient consumption by fins. An individual baggy consists of a gelatin membrane filled with liquid chemical. The membrane is readily digestible in the stomach fluids of a cetacean, allowing its contents to be quickly absorbed into the fin's bloodstream.

Typically, a bartender loads the baggy with the requested drug and simply tosses it into the water where it is gulped down by the cetacean customer. Within a few minutes, the expectant fin usually begins to feel the drug's effects and within five minutes the intoxicant is in full effect.

The sorts of chemicals used in most baggies are mild, having the same level of effect on fins that a few beers might have on a human. Cetaceans, however, do not seem to enjoy the feeling brought on by alcohol, so "baggy water" is usually one of several forms of mild hallucinogen. Fins make various claims about how the drugs increase the richness and fidelity of the sound images they form by echolocation. It is therefore not uncommon for cetaceans that have imbibed a few to echolocate almost constantly. It is convenient that the human ear is not sensitive to most sounds fins use when in this state.

There have been documented cases of a few cetacean drug addicts who use baggies as their fix of choice, filling the membranes with harsher and more dangerous chemicals. Such fin junkies are uncommon, however, as the addictive personality traits that plague humans seem rare in cetaceans.

Humans without anti-poison biomods are advised to refrain from consuming the contents of fin baggies. Though there are reports that some humans use baggy water recreationally, there are also documented cases where human use has proved lethal.

Some common baggies are described below:

Hammer

This is a particularly potent mixture, and is analogous to a "double" for a human.

Floater

This is any type of baggy served inside the body cavity of a gutted fish.

Spy Hopper

Fins respond to this baggy like humans respond to coffee, only with a rather more intense effect.

Sleeper

This one puts most cetaceans into a sort of light trance and is the baggy of choice at musical concerts.

Form: Digestible membrane envelope
Dosage: 0.5 to 1.0 liters
Legality: Legal to restricted
Availability: Common
Cost: 2 to 5cs

FIN BLADES

Fin blades vary in design, but they are always formidable melee weapons. A typical fin blade consists of a padded, industrial plastic or alloy blade strapped along the leading edge of a fin or fluke. A full rack of fin blades consists of five separate weapons—two pectoral, two tail, and one dorsal blade—and a fully strapped fin is a frightening melee opponent. Though rare among GEO or Incorporate troops, such weapons are becoming increasingly common among the native resistance, serving as both a source of intimidation and as a lethal threat.

Cetaceans equipped with one or two blades get one attack per action, and those with more than two get two attacks per action with a successful Agility roll. Successful attacks have a damage rating of Build + 3.

Dimensions: 0.85 kilograms, 0.75 to 1.5 meters
Power Source: None
Rigging Value: Basic
Durability: 3
Legality: Restricted
Availability: Scarce
Cost: 50cs to 250cs
Damage Rating: Build + 3

HEADGEAR

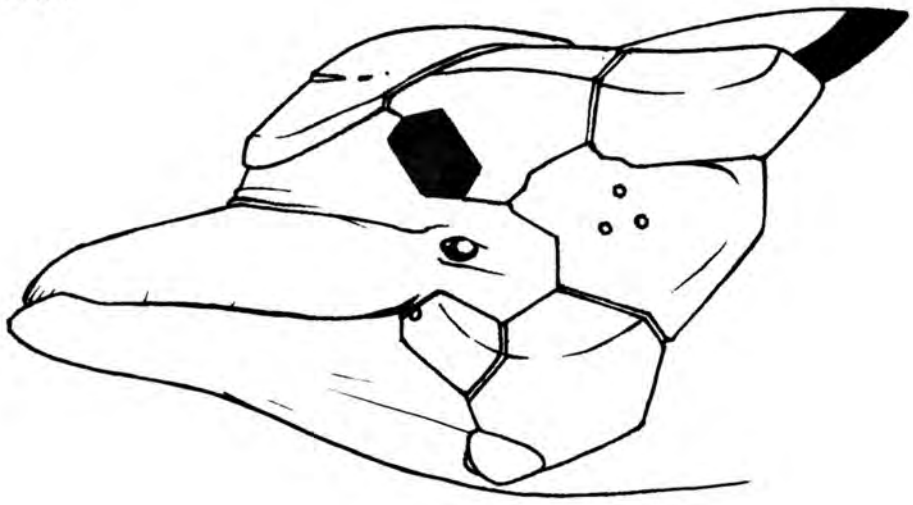
Headgear is a common term used to describe a variety of enhanced sensory arrays built specifically for cetaceans. Headgear typically consists of a streamlined, form-fitting, bioplastic hood in which is mounted an array of digital systems that pick up, process, amplify, and transmit signals via integrated trodes, directly to the user's brain. This equipment is broadband, detecting and processing acoustic and electromagnetic signals well outside the normal range of cetacean senses. Headgear quadruples the effective range of cetacean sonar, while giving them the 360° equivalent of night vision, telescopic vision, infrared sensors, and with some more comprehensive designs, an artificial olfactory sense that is almost as acute as the enhanced smell biomod.

Dimensions: 0.65 kilograms, 1.75 liter
Power Source: Standard cell
Rigging Value: Impossible
Durability: 1
Legality: Legal
Availability: Scarce
Cost: 1,200cs to 2,000cs

MONKEY NET

"Monkey net" is a slang term used to describe any of a variety of towing harnesses used by both orcas and dolphins. A net harness is a form-fitting cargo sling that straps around a cetacean body just in front of the pectoral and dorsal fins. The length of

HEADGEAR



the net trails along behind and is used to carry cargo, but more often as the name implies, the net is used by human coworkers hooking an easy ride. These hitchhikers simply grab hold and are dragged along, flapping in the current. Monkey nets are typically made of bioplastic fiber, except on the native frontier where they are often odd collections of rope, cord, or line, scavenged from various sources.

A dolphin loses three meters per action from his movement pace and incurs a –1 penalty on Agility if he is towing only a net. If he is pulling one passenger, he loses five meters per action, incurs a –2 penalty to Agility, and incurs a –1 penalty to Endurance. If he is pulling two passengers he loses eight meters per action and suffers a –3 penalty to Agility and Endurance. Orcas are unhindered by the net alone and can pull twice as many passengers as dolphins at the same penalty levels.

Dimensions: 2.0 kilograms, up to 3 meters
Power Source: None
Rigging Value: Basic
Durability: 2
Legality: Legal
Availability: Common
Cost: Salvage or up to 150cs

PHOTOTROPIC BODY SKIN

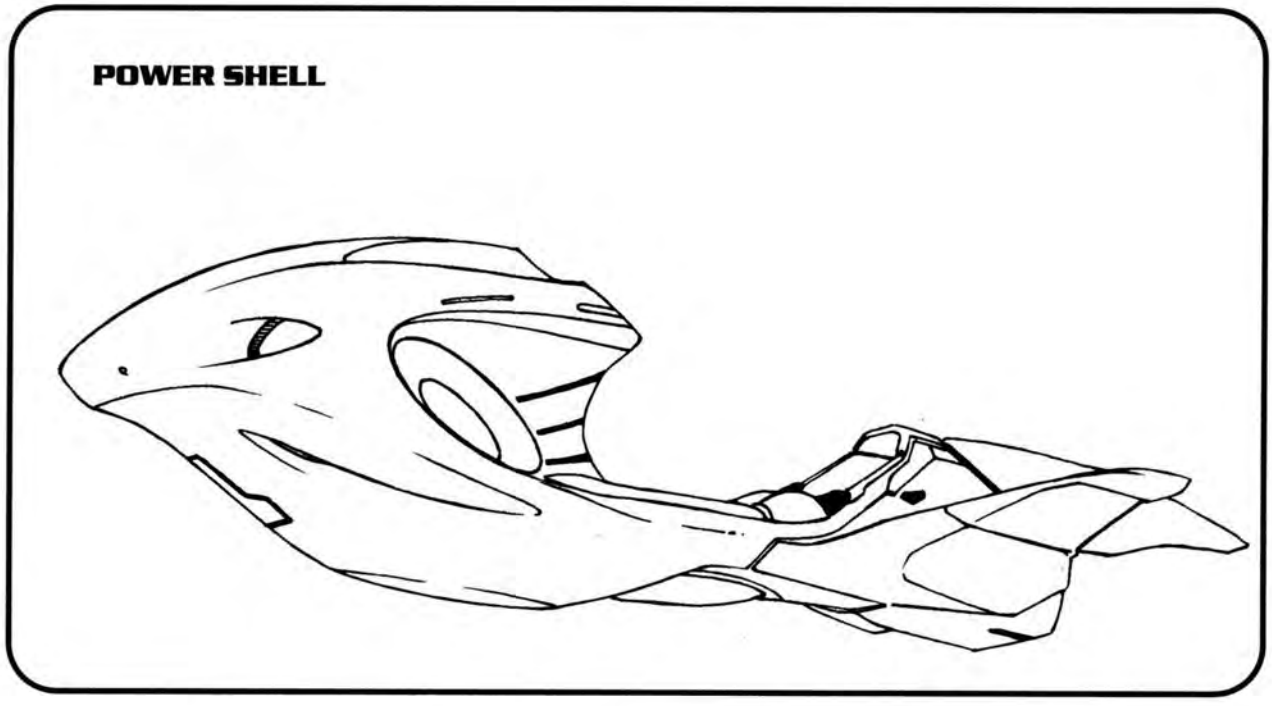
This item is akin to the phototropic BDU (PG 145) used by many military ground troops. The body skin is woven of elastic bioplastic fibers, laced with phototropic implants, and powered by integral batteries. The skin is tight and form fitting but does increase drag, reducing the wearer's top speed by two meters per action.

When active, the skin automatically adjusts its displayed colors to best match the surrounding background, giving anyone visually searching for the wearer a –4 penalty as the wearer simply seems to fade into the surroundings. Though this may be of dubious value against some of Poseidon's more versatile predators, the skin does provide an armor rating of 1, and therefore valuable protection.

Dimensions: 2.0 kilograms for dolphins, 8.0 kilograms for orcas
Power Source: Standard cell
Rigging Value: Impossible
Durability: 3
Legality: Legal
Availability: Rare
Cost: 1,300cs for dolphins, 2,200cs for orcas

COMBAT POWER SHELL

In an effort to provide cetaceans with superior combat capabilities, defense engineers under contract with the GEO have developed a line of mili-



tary MHD sleds for use by both dolphin and orca soldiers and security personnel. The devices are essentially combat-capable variants of standard power shells (PG 159). The heavily armored, form-fitting forward cowling snugs securely around the cetacean's anterior body. High-performance MHD drives are positioned just below the user's tail and provide tremendous speed and power. Sensitive mechanical linkages relay the pilot's own instinctual body movements to the rudder surfaces, allowing subtle control of the fast and nimble craft.

Like conventional power shells, Hydrospan's military variant increases a cetacean's speed, endurance, and cargo capacity, but not his depth limits. Standard designs provide artificial gill life support and a variable suite of sensory equipment and computer power. Interfacing with the onboard systems is accomplished through neural jacks or sonic trodes.

The design features hardpoint attachments for a variety of weapon systems—dolphin shells are equipped with three hardpoints, while orca power shells feature five. Common power shell weaponry includes heavy sasers and guided minitorps.

Military power shells are constructed of various composites of synthetic polymers, bioplastic, and ceramics. This heavy construction afford them an armor rating of 6. Due to their increased energy requirements relative to conventional shells, all military variants are powered by small fuel cells.

Dimensions: 4.5 meters
Power Source: Fuel cell
Rigging Value: Standard
Durability: 3
Legality: Legal for civilian, restricted for military
Availability: Uncommon
Cost: 150,000cs
Armor Rating: 6

SAIL KITE

Similar to equipment used by water sports enthusiasts, a cetacean can use a sail kite as an efficient and inexpensive method of long distance travel. A sail kite consists of a large, durable, bioplastic wind kite rigged to a combination control/tow harness fitted to the user. The control lines are fed out and adjusted by integrated servos in the harness, which are in turn controlled by sonic input. The cetacean's own fins act as control surfaces and allow the user himself to function and travel much like a conventional sailboat.

A kite rider races along just below the water's surface and a skilled rider can actually make repetitive, long, kite-assisted leaps that reduce drag and increase speed. Sail kites are sometimes troublesome to deploy and are subject to the vagaries of the wind, but they typically decrease travel time for long trips by at least half and allow even exhausted fins to keep on the move. Formal training with sail kites is represented by the Sailing skill.

Dimensions: 0.25 kilograms and 1.75 meters for the kite and 0.4 for the harness for dolphin rigs, and double these dimensions for orca kites.
Power Source: Kite
Rigging Value: Basic
Durability: –1
Legality: Legal
Availability: Uncommon
Cost: 180cs for dolphins, 280cs for orcas

SLIDE LOADER

A slide loader, or slider, is a water-level ramp that is either built into or attached to the hull of a watercraft. The ramp is a water-level wet slide that allows cetaceans easy entrance to or egress from the boat. Most sliders are large enough only for dolphins and dump into a travel cradle (see page 44) secured within the craft. Sliders are cumbersome and add significant weight to a craft, but they are a convenient and versatile way to integrate human-cetacean marine activity and transport.

Only the largest craft can support orca-size sliders, and these typically enter the hull via specific ramp doors. Such craft most often support military or industrial operations and are rare.

Dimensions: 25 to 45 kilograms without cradle, 1 to 2 meters
Power Source: None
Rigging Value: Basic
Durability: 3
Legality: Legal
Availability: Common
Cost: 250cs as an accessory, 1,400cs as part of the hull design

TOW POD

Tow pods are versatile cargo shells that can be towed along behind swimming cetaceans. The pods are exceptionally hydrodynamic and there-

fore create little drag to slow and fatigue the user. They are slung from a small harness and trail out on a long, thread-like cable. Guiding fins force the pod to ride above and behind the swimmer, keeping the pod and its tow line clear of the cetacean's tail stalk and flukes.

Pods come in a variety of sizes and have only the slightest positive buoyancy when properly loaded with cargo or ballast. The largest dolphin pods can carry up to 30 liters and 60 kilograms, while orca pods can carry 80 liters and as much as 160 kilograms.

A cetacean towing an empty pod loses four meters per action from his top speed and incurs a –1 penalty on Endurance, while those towing a full pod lose six meters and suffer a –2 penalty on Endurance.

Dimensions: Up to 10 kilograms empty, 70 liters
Power Source: None
Rigging Value: Basic
Durability: 2
Legality: Legal
Availability: Uncommon
Cost: 240cs to 600sc

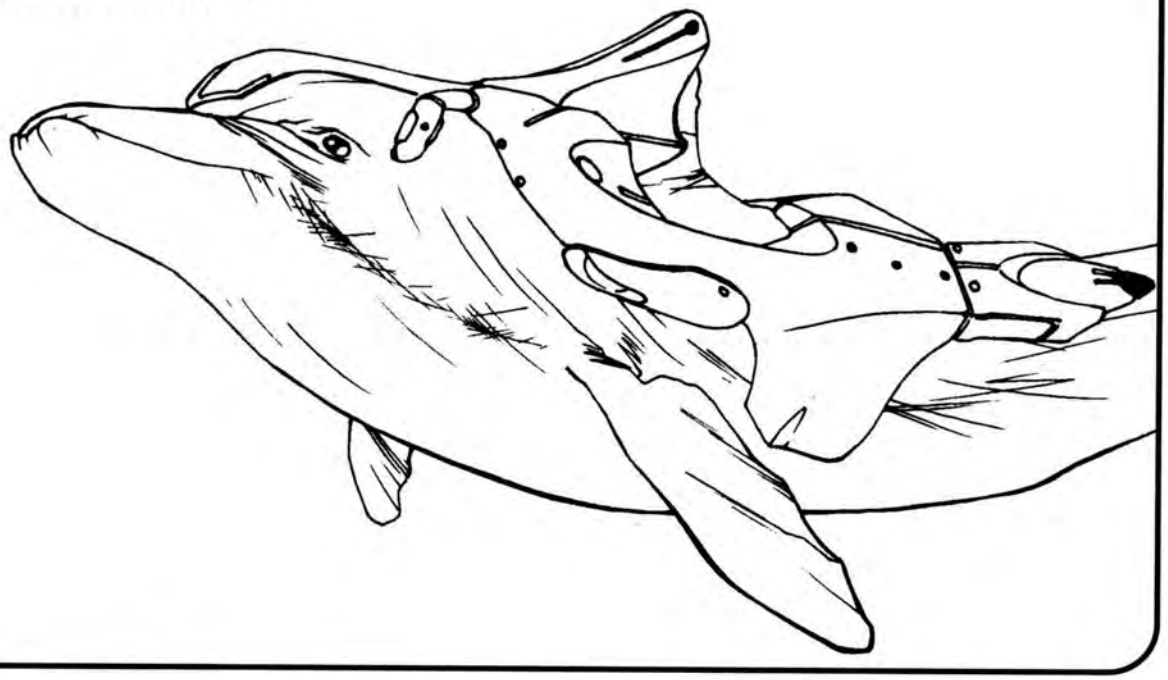
TRAVEL CRADLE

Travel cradles or travel tanks are sturdy watertight pods used by cetaceans needing to function outside the physical support of their natural environment. When unsupported by water, the crushing effect of his own weight can injure or even suffocate a cetacean, and so for long trips or terrestrial activities, it is best that fins be supported in a volume of water.

The cavity inside a T-tank is cetacean shaped, and though the result is often claustrophobic, the shape reduces the amount of water actually required to support the fin's body. Transparent panels typically surround the head section, and a hatch seals against sloshing water, even under rough or high-g conditions. Travel cradles are fitted with life support units that filter the water and airspace and regulate temperature. They also typically have integrated sonic trodes (PG 143) with speech synthesizers and dedicated remotes.

Most T-tanks are fitted with large eye rings so they can be lowered into the water to take on a passenger and then lifted aboard a transport. Some models are even fitted with a suspension undercarriage, drivetrain, and wide rubber tracks, giving them additional mobility. Though rather slow and expensive, such vehicles provide cetaceans with valuable capabilities.

UTILITY HARNESS



Dimensions: 145 kilograms for dolphins, 230 kilograms for orcas (dry weight)
Power Source: Standard cell
Rigging Value: Standard
Durability: 2
Legality: Legal
Availability: Scarce
Cost: 3,500cs for dolphins, 4,600cs for orcas

UTILITY HARNESS

Utility harnesses are almost as common as CICADAs in the cetacean work force. These cybernetic devices strap on to a cetacean's torso, and though sometimes bulky, they are useful tools. Each harness is variously equipped for particular tasks, though many are modular in design, increasing their versatility. Commonly controlled through sonic trodes, utility harnesses support onboard bodycomps, numerous waldo arms, grippers, cutters, torches, lights, tow-lines, D-rings, and even small cargo spaces.

Dimensions: Up to 15 kilograms
Power Source: Standard cell
Rigging Value: Standard
Durability: 2
Legality: Legal
Availability: Common
Cost: 1,800 to 3,600cs

UTILITY MANDIBLE

Utility mandibles are useful and versatile cetacean tools. These devices consist of a thick bite-plate of molded bioplastic with a universal mounting bracket and an integrated sonic trode. The bite-plate allows a cetacean to grip such a device with his teeth and manipulate any of a variety of interchangeable tools that mount on the bracket. The trode is used to control cybernetic or electronic accessories as well as various releases, locks, and bracket settings on the device. Typical mandible accessory tools include grippers, cutters, drills, tow-lines, lights, sensory arrays, and even weapons

Dimensions: 4 kilograms
Power Source: Standard cell
Rigging Value: Standard
Durability: 2
Legality: Legal
Availability: Common
Cost: 745cs, with various tool accessories from 100 to 2,300cs

WETSUIT

A wetsuit is a skin tight, bioplastic body stocking that covers a cetacean from head to flukes and serves to keep the fin's skin moist during extended exposure to air. The mouth, eyes, and blow hole areas are open and fitted with seals, and there is a small integrated filtration unit mounted just behind the dorsal fin that prevents pooling and keeps the water clean. Under normal conditions, the filter system has sufficient power for 200 hours.

Wetsuits were originally developed by Hydrospan and are most commonly used by cetaceans living and working in zero-g, such as pilots and orbital residents. Wetsuits are also commonly used by cetaceans forced to travel in vehicles lacking T-tanks (see page 44).

Dimensions: 6.0 kilograms for dolphins, 13.5 kilograms orcas
Power Source: Standard cell
Rigging Value: Standard
Durability: 2
Legality: Legal
Availability: Scarce
Cost: 1,100cs for dolphin units, 1,650cs for orcas

WATER HUT

"Water hut" is the generalized term for any of a number of temporary and semi-permanent aquatic shelters designed for use by cetaceans. Though their structures and features vary, most water huts share a number of common characteristics. The primary purpose of a water hut is to provide cetaceans with a safe, predator-proof environment in which to work and rest. To this end, most huts are constructed on a modular cage of industrial bioplastic that provides protection against all but the largest of Poseidon's predators.

A number of pontoons buoy the hut at the surface, and access is usually gained through a submerged gate that actuates with a sonic command. Smaller huts are anchored to the bottom with elastic cable, and larger habitats may even have small station-keeping MHD drives that hold them in position.

The interior of a typical water hut contains storage racks and bins for equipment and supplies, as well as watertight pods and dry shelves for less durable items. Lights, computers, communications, and security equipment are features of water huts, and are powered by storage batteries that are in turn charged by floating solar arrays. Integrated charg-

ing stations are common and used to recharge equipment such as remotes and CICADAs.

Depending on the level of interactivity with humans, water huts may support an upper deck with enclosed spaces where humans can get out of the weather, work, and store gear. In such huts, a portion of the shelter's floor is typically open to the upper cage surface so the fins can access the human workspace, facilitating interaction.

Dimensions: 250 to 1,700 kilograms, 10 to 100 square meters
Rigging Value: Basic
Durability: 2
Legality: Legal
Availability: Rare
Cost: 340 to 8,500cs depending upon features

ZERO-G THRUSTER PACK

As odd as it may seem, cetaceans are well adapted to life in zero-g. Three dimensional activity underwater is similar to activity in a weightless environment and fins are innately more capable as a result. Their own unsupported weight, such a threat on dry land, is not an issue in space. With a wetsuit (see page 45) and thruster pack, fins are as adaptable as humans to life in orbit.

Zero-g thrusters consist of a set eight small, quiet ducted fans mounted on a utility harness (see page 45). These fans are omnidirectional and reversible and their function is integrated through a dedicated chip. Though slow and rather blimp-like, with practice a fin can pilot himself around the confines of an orbital or starship with grace and ease.

Dimensions: Up to 18 kilograms
Power Source: Standard cell
Rigging Value: Standard
Durability: 1
Legality: Legal
Availability: Scarce
Cost: 830cs plus the cost of the utility harness

WEAPONS

CHAPTER 02

WEAPONS

Weapons technology at the end of the 22nd Century represents an evolution of historical technologies. Weapons are smarter, faster, easier to use, and more destructive, but the basic platforms have remained relatively unchanged for the last 300 years. The vast majority of weapons in both civilian and military use are slug throwers—weapons that fire kinetic-energy and explosive projectiles. Development of energy-weapon technologies has continued throughout the last 200 years, resulting in a few viable designs such as sonic stunners and saser weapons.

For the most part, though, alternative weapon technologies have been limited to large systems designed for very specialized roles, such as atomic lasers designed for missile defense. Likewise, chemical and biological weapons—technologies first developed during the 20th Century—have been abandoned by most governments in the face of unified political pressure in the wake of the Blight. Many states still maintain nuclear stockpiles—including the GEO, several Incorporate states, and a few Independent nations, such as the United States, China, India, and the UIR—but these weapons have not been used in war since the Blight Years.

FIREARMS

Small arms in 2199 are still based on chemical projectile technologies, though the development of binary-propellant systems has resulted in several innovations in firearms design. Caseless ammunition has replaced jacketed slugs, greatly increasing the capacity of standard magazines. The chemical propellant is more efficient and enjoys more compact storage, decreasing a loaded weapon's minimum size and weight. Many firearms also have propellant selector switches, allowing the user to adjust the quantity of propellant injected into the firing chamber, and therefore the weapon's muzzle velocity and stopping power as well.

Most modern firearms are equipped with integrated microchips, called gremlins, which facilitate safety training, maintenance, repair, and basic operation. Firearms gremlins are smart enough to alert the user when a weapon requires cleaning and to instruct him on the basic procedures for doing so effectively. A gremlin can identify malfunctions and either assist the user with basic repairs or connect to a personal or local-area network to schedule repairs with a qualified gunsmith. An interactive access chip will inform the user when the weapon is loaded and when the safety is disengaged. Depending on how the user programs it, the chip will even disable the weapon unless the user inputs a predefined access code. The chip will also provide information on ammunition type and remaining quantity, propellant levels, and even detailed logs of usage patterns.

Traditional small-arms classes are still in use in 2199. Handguns range from small holdout and concealable designs firing small-caliber, low-power rounds to heavy magnums with stopping power sometimes exceeding that of carbines and light rifles. Longarms come in a dizzying variety of designs and formats, from compact submachine guns and riot shotguns to traditional shoulder-fired rifles. Designs range from the conventional to bullpup configurations in which the ammunition magazine and firing chamber are built into the weapon's stock, making for a much more compact design without compromising barrel length. Most small arms look very much like their 20th Century ancestors, except that metal housings, firing mechanisms, magazines, and wooden grips and stocks have been replaced with various grades of impact-resistant bioplastic.

HEAVY WEAPONS

Military support weapons have benefited from the same innovations as small arms. Interactive tutorials, electronic fire-selectors, and digital usage logs facilitate basic training and safety instruction. Caseless ammunition allows for larger and lighter magazines, and in explosive weapons, heavier payloads and more powerful warheads. Advances in materials technology and manufacturing techniques allow for improved accuracy and armor-piercing characteristics over extreme ranges. Crew-served weapons, such as artillery, have benefited from battlefield computer networking, allowing each member of a gun crew or fire-support team to share real-time data and communications, from rangefinding and fire coordinates to flight vectors of enemy aircraft. As with small arms, there is a broad range of heavy-weapons platforms and formats available, including machineguns, autocannons, direct-fire rocket launchers, mortars, and countless artillery systems. Servo-assisted weapon harnesses allow individual soldiers to carry many heavy weapons that would otherwise require bipods, tripods, or vehicle mounts.

GUIDED WEAPONS

Guided-weapon systems have benefited more from advances in computer technology than any other weapons category. State-of-the-art guided weapons are smart enough that they can be considered robotic weapons-delivery systems. They can identify, track, and pursue targets based on visual characteristics or infrared, radar, sonar, or electronic signatures. Drawing on sophisticated onboard databases, they can attack their targets at their most vulnerable points, swooping down to impact a battle tank's thinly armored gun turret or circling to hit a strike-fighter's rear engines. When maneuvering, they can evade defensive fire, and if they lose their target momentarily, they will circle in a holding pattern until a new attack opportunity is presented or their propellant is exhausted.

Targeting systems are as varied as the weapons themselves. Infrared, radar, and sonar-guided weapons are still common in appropriate roles. Many man-portable infantry weapons are remote operated, using either joystick or voice controls integrated with the launcher. Characters use the Remote Operations skill to fire and guide these weapons, using visual or direct-neural targeting data in real time from onboard cameras and sensors. Many vehicle missile systems are laser-guided, following a laser designator—integrated with the weapon system or controlled by a forward observer on the ground—unerringly to the target. On the battlefield, guided weapons are often networked to each other, their launch platforms, and to command-and-control centers behind the lines. This allows the weapons' onboard computers to share real-time combat data and organize truly devastating coordinated attacks.

MANUFACTURERS

The weapons industry is dominated by two Incorporate states: MacLeod Enforcement and Hanover Arms, a division of Hanover Industries. Both were very active in the early Blight Years, acquiring firearms manufacturers and defense corporations as economies collapsed and stock markets crashed. A few other Incorporate states and countless private corporations are also active in the firearms and defense industry, but MacLeod and Hanover split a dominating market share. The GEO and major Independent nations also maintain their own R&D labs and contract with private defense corporations and arms manufacturers. Other than those issued to GEO military and law enforcement personnel, however, Hanover or MacLeod manufacture the vast majority of the firearms owned (legally or illegally) on Poseidon.

While both MacLeod and Hanover manufacture and support a full line of firearms and weapon systems, they are also characterized by distinct strengths and weaknesses in the market. MacLeod produces a huge line of handguns with more than 100 models currently in stock. MacLeod sidearms are renowned for their quality and reliability, from the ubiquitous Black Viper 10mm semiautomatic to the rare, exotic, and greatly oversized Silva Special 14mm Magnum multi-ammo revolver. Hanover Arms is better known for its excellent law enforcement and military-grade weapons, especially its submachine guns and assault rifles. The HA-MP9 submachine gun is the latest in a long and prestigious line and is generally considered the best in its class. The HA-G11 5mm assault rifle features a compact, battle-tested bullpup configuration and excellent integrated targeting interlink and is in widespread service in the militaries of both the Incorporate states and Independent nations. All military-grade weapons from Hanover Arms feature a "combat trained" interactive access chip that is far more useful—and less annoying—to soldiers on the battlefield than standard firearms gremlins.

ON THE HORIZON

Research and development of alternative weapon technologies continues, but thus far these weapons have proven more expensive to produce, less durable, and often less effective than traditional slug throwers and explosive weapons. Like sasers, which are used exclusively in underwater military operations, these weapons have been restricted to very specialized roles ill suited for traditional weapons. Most R&D efforts have focused on improving and refining existing platforms and technologies. The role and integration of computer and network resources with firearms and weapon systems is also expanding and becoming more sophisticated and reliable. Targeting interlinks and other cybernetic and computer accessories offset the poor or nonexistent training and experience of many users. As a result, while there has been no revolutionary change in the design and base technology of many weapons for more than 200 years, these weapons are, in practical terms, becoming more accurate and deadly than ever.

MELEE WEAPONS

KNIFE

Knives are ubiquitous, and unless the user has an inflated sense of ego or extremely large hands, the type is fairly standard. This form incorporates a double-edge blade of industrial-grade bioplastic, one side sharp, half the other side serrated and sharp, with a flat, chiseled tip instead of a point and an enlarged pommel. The chisel tip can be used to pry or scrape and the pommel used as a makeshift hammer. The chisel tip remains quite sharp in theory, but repeated use tends to make it the dullest part of the blade. The tips of the handguard may be functioning screwdrivers, and there may be cutouts in the blade for common bolt sizes, allowing the knife to be used as a makeshift wrench. All knives include a secure belt clip that can also be attached to a standard diving harness.

Dimensions: 0.2 kilograms
Power Source: None
Rigging Value: Basic
Durability: 2
Legality: Legal
Availability: Very common
Cost: 20cs to 100cs
Damage Rating: 2

MACLEOD CARBONEDGE™

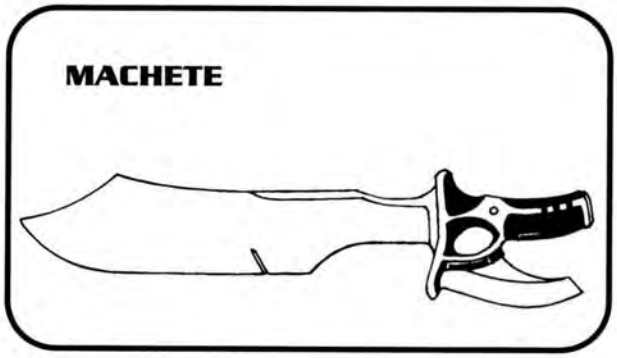
This MacLeod line has become the standard by which other diamond knives (PG 145) are judged. Well designed both functionally and aesthetically, CarbonEdge knives and their clones account for perhaps a third of all diamond blades on Poseidon. Unlicensed imitations have become such an issue that MacLeod now certifies approved dealers. CarbonEdge blades range from basic, utilitarian designs to the Bushman, which features a 25-centimeter blade, custom-fitting electroflex grip, pommel flashlight attachment, and an emergency transponder integrated in the handle.

Dimensions: 1.2 kilograms
Power Source: Mini cell
Rigging Value: Basic
Durability: 3
Legality: Legal
Availability: Very common
Cost: 1,250cs
Damage Rating: 3

MACHETE

These large, general purpose blades are used for clearing vegetation, and occasionally for self-defense against dangerous predators. The blade is single edged and typically about 50 centimeters long, with a small serrated section near the grip. The tip of the blade is rounded and unsuited for stabbing attacks. Due to the machete's length, the blade is made of flex-grade bioplastic and does not hold an edge as well as a knife.

Dimensions: 1.4 kilograms
Power Source: None
Rigging Value: Basic
Durability: 1
Legality: Legal
Availability: Very common
Cost: 100cs
Damage Rating: 3



DIAMOND MACHETE

These diamond-edge tools are similar in most respects to conventional machetes, but the industrial diamond laminate allows them to hold their edge indefinitely.

Dimensions: 1.5 kilograms
Power Source: None
Rigging Value: Basic
Durability: 2
Legality: Legal
Availability: Very common
Cost: 700cs
Damage Rating: 4

PARSONS ENFORCER™ NIGHTSTICK

Parsons Industries is a small, family business that fills a niche market in security products, using low overhead and low profit margins to compete with larger concerns like MacLeod Enforcement. The Enforcer is unique among the security nightsticks on the market in that it is made with a combination of flex-grade bioplastic and Electroflex™ and Enviroseal™ polymers. A built-in depolarizer allows adjustment of its hardness, allowing it to survive impacts that would shatter conventional nightsticks. The Enforcer can also be softened to the flexibility of rope for use as improvised hand restraints, steering-wheel locks, or other immobilizers. A removable security key in the handle prevents unauthorized use of the depolarizer.

Dimensions: 1.2 kilograms, 45 centimeters long
Power Source: Mini cell
Rigging Value: Basic
Durability: 2
Legality: Legal
Availability: Very common
Cost: 70cs
Damage Rating: 2

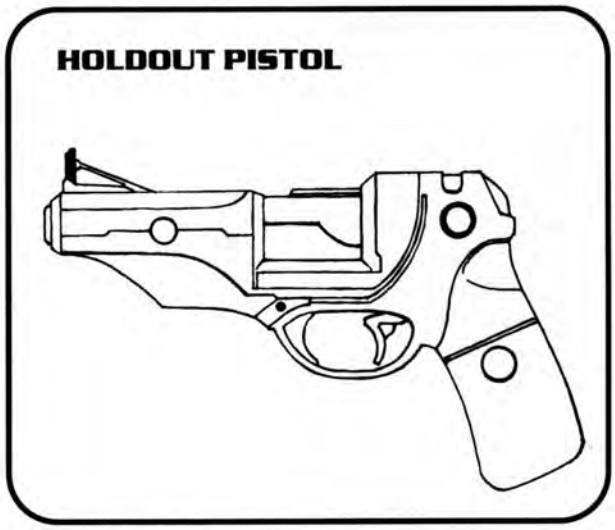
FIREARMS

CONCEALABLE HANDGUNS

HOLDOUT PISTOL

This is an extremely compact, high-power disposable firearm. It is not very accurate but is extremely concealable and designed to evade detection. Possession of a holdout pistol is treated by the GEO Patrol as intent to commit a criminal act. It is a single-barrel weapon using large-caliber ammunition and a simple electrical firing circuit. It can be fired twice and then is thrown away. It is often loaded with a non-standard form of ammunition, typically armor piercing or explosive.

Dimensions: 0.10 kilograms
Power Source: Mini cell and binary propellant
Rigging Value: Impossible
Durability: 0
Legality: Restricted
Availability: Scarce
Cost: 75cs
Ammo Capacity: 2 rounds, non-reloadable
Rate of Fire: 2
Range: Point Blank/2 Short/3 Medium/6 Long/18
Damage Rating: 6



TLI RAPID™

Tether Light Industries is a small orbital concern leasing space on Prosperity Station to manufacture a number of specialized items on private contract. After the contract expires, TLI will keep the rights to manufacture the product. The original contractor for the Rapid remains sealed in TLI's archives, but it is known that the commercial version did not reach the Poseidon market until several years after the contract expired.

The Rapid is a concealable pistol of unusual design. It has 10 small barrels and is about the size of a nightstick handle or regular pistol grip. Aimed with an integral laser sight, it fires either single shots or a pair of five-round bursts. Reloading is a tedious process, as each barrel must be loaded manually. A small selector switch allows the user to choose the firing chamber used for each shot, and many users take advantage of this feature by loading multiple ammunition types.

Dimensions: 0.30 kilograms and 0.30 liters
Power Source: Mini cell and binary propellant
Rigging Value: Impossible
Durability: 0
Legality: Legal
Availability: Rare
Cost: 400cs
Ammo Capacity: 10 rounds
Rate of Fire: 3(5)
Range: Point Blank/3 Short/5 Medium/10 Long/30
Damage Rating: 5

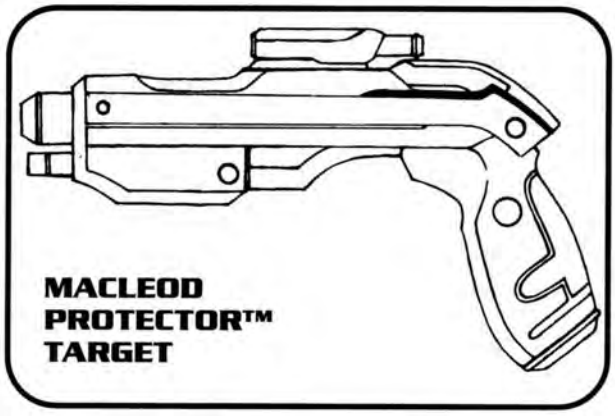
LARGE-CALIBER HANDGUNS

MACLEOD PROTECTOR 43™

This is a large handgun of efficient design, produced mainly for self-defense and civilian use. It is the latest version of a long line of similar weapons (model 4, revision 3) and can interface easily with all non-restricted technology. All surfaces are diamond plated and textured for easy use, even underwater. Disassembly is easy, and subassemblies are modular to prevent the loss of small components. The Protector is equal in quality to most other pistols in its size range, but one pays a small premium for the MacLeod name.

MacLeod is currently conducting a discrete investigation into an illegal subassembly sold as a drop-in replacement for the Protector 43's firing circuitry. This mod allows the pistol to fire in a three-round burst mode. Examples of the modification suggest that inside information was used to create it, and all current and past employees with access to that information are under investigation. While the weapon can handle the stress for burst fire, heavy use may cause premature and distinctive wear marks. Protector 43s brought in for warranty service are carefully checked, and the owner, purchase date, and weapon history are added to the investigation files.

Dimensions: 1.0 kilogram and 1.0 liter
Power Source: Mini cell and binary propellant
Rigging Value: Basic
Durability: 1
Legality: Legal
Availability: Common
Cost: 800cs
Ammo Capacity: 25 rounds/magazine
Rate of Fire: 3
Range: Point Blank/5 Short/10 Medium/25 Long/90
Damage Rating: 7



MACLEOD PROTECTOR™ TARGET

MACLEOD PROTECTOR 43 TARGET™

This weapon uses the same molds and tooling as the standard Protector 43 and fires the same ammunition. It has a slightly longer barrel and has all the parts hand polished and fitted by a qualified gunsmith, giving it improved accuracy compared to the basic factory model. It is slightly less concealable and slower on the draw as a result of the length and larger sights. Attacks with the P-43T receive a +1 target number bonus at all ranges.

Dimensions: 0.80 kilograms and 0.8 liters (extra clip .20 kilograms)
Power Source: Mini cell and binary propellant
Rigging Value: Basic
Durability: 2
Legality: Legal
Availability: Common
Cost: 1400cs
Ammo Capacity: 25 rounds/magazine
Rate of Fire: 3
Range: Point Blank/6 Short/12 Medium/30 Long/105
Damage Rating: 7

MARSHAL PEACEMAKER

The reputation of the GEO Marshal is a formidable one, made all the more so by the array of equipment at his disposal. However, the most notorious piece of hardware in his gear locker is the special-issue Marshal Peacemaker. Though the weapon is hardly the exaggerated cannon with a built-in AI that recent action holovids have made it out to be, the Peacemaker remains an exceptional handgun.

Taking its name from the lawman's gun of choice in another era, the Peacemaker has been part of the GEO Marshal's arsenal for more than 60 years. In that time, the weapon has undergone countless design improvements and the current version has little in common with earlier models. Designed and built entirely within the GEO defense labs, the exact specifications remain highly classified. The weapon itself is issued only within the Marshal Service, and as a result, is unavailable to the public, even on the black market.

The Peacemaker is a huge, multi-ammo revolver (PG 146) firing .50 caliber ammunition of various types. The frame and barrel are constructed of laminated ceramics and are virtually indestructible. The grips are custom fit to each officer, and the various onboard electronics are embedded within

the frame itself. Several additional design features also make the weapon unique.

Access to the targeting interlink system (PG 152) used in the Peacemaker is not restricted to a standard fiber optic or uplink jack. Instead, Marshals typically undergo surgical implantation of dermal circuits that turn the skin of their palms into direct contact interfaces. This access mode gives Marshals an advantage in situations where standard interfaces are impractical.

The direct interface also makes triggerless firing a practical option in the Peacemaker. The elimination of the trigger provides two primary advantages. The first is a matter of security. The weapon is useless to anyone who does not have a cybernetic interface, so it cannot be turned on the Marshal or any other target without the proper interface codes. The second advantage is that the lack of a trigger improves the weapon's accuracy. The gun fires by digital command, eliminating the need to squeeze a trigger and potentially affect the weapon's aim. Triggerless firing gives the shooter an additional +1 bonus when aiming.

The weapon's interactive access chip (PG 125) is as sophisticated as most bodycomps, and in addition to its normal functions, the computer is able to integrate targeting programs that serve to make the user a perfect marksman (PG 152). The onboard computer can also store data and run standard programs, allowing Marshals without implant computers to essentially use these sidearms as such. This has cultivated the disconcerting rumors that Marshals "talk to their guns."

Dimensions: 1.5 kilograms and 1.5 liter
Power Source: Mini cell and binary propellant
Rigging Value: Impossible
Durability: 2
Legality: Restricted
Availability: Rare
Cost: Classified
Ammo Capacity: 24 rounds, 6 each of up to 4 different types
Rate of Fire: 4
Range: Point Blank/9 Short/19 Medium/45 Long/160
Damage Rating: 8

STUN GUNS

NIS DOPPLER™

Used almost exclusively by NIS security forces, this handheld stunner (PG 147) can fire a wide-dispersal beam that can sweep an area, as well as a focused beam directed at a single target. An ultrasonic ranging pulse measures the volume of the room it is aimed into, and the sonic output is designed to fan and bounce around this volume. The Doppler is not as effective in this role, giving targets a +1 bonus to their Fitness roll for every three meters of the room's longest dimension. For example, the target of a Doppler on wide-dispersal in a room 10 meters across would receive a +3 bonus to his Fitness roll to resist the effects of the stunner. All Dopplers are ID coded for a specific user and will automatically burn out their circuitry if the user does not reinitialize the weapon at least once every 30 hours. Dopplers are not available on commercial markets.

Dimensions: 1.1 kilograms and 1.1 liters
Power Source: Mini cell
Rigging Value: Impossible
Durability: 0
Legality: Restricted
Availability: Rare
Cost: 900cs
Ammo Capacity: 20 shots
Rate of Fire: 3
Range: Point Blank/3 Short/5 Medium/10 Long/30
Damage Rating: Special

SIMSAT™ POCKET STUNNER

This is a very compact stun gun manufactured by Hanover Arms. It is slightly less effective than a standard stunner but far more concealable. Fitness rolls to resist the effects of the weapon receive a +1 bonus compared to normal stunners, and the impairment penalty is –6 if the roll is failed. The pocket stunner is the sort of weapon a person might acquire if they don't feel comfortable with a firearm but want a ranged weapon for protection. A common street modification involves tweaking the firing circuit so the weapon fires two five-charge bursts. This makes the pocket stunner markedly more effective: All Fitness rolls suffer a –1 target number penalty compared to normal stunners, and the penalty for failure is –8 instead of –7. However, overloading the circuitry in this way occasionally causes the weapon to explode in the user's hand, dumping all its energy into the user rather than the target.

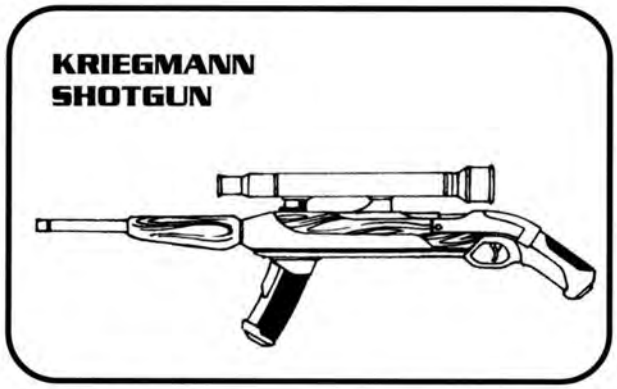
Dimensions: 0.5 kilograms and 0.7 liters
Power Source: Mini cell
Rigging Value: Impossible
Durability: -1
Legality: Legal
Availability: Common
Cost: 350cs
Ammo Capacity: 10
Rate of Fire: 3
Range: Point Blank/3 Short/5 Medium/10 Long/30
Damage Rating: Special

LONGARMS

KRIEGMANN SHOTGUN

These legendary weapons bear no name or model number, other than that of the family who handcrafts them, virtually one at a time. The Kriegmann has remained functionally identical since the first one was handmade nearly 50 years ago and is currently the sole income provider for several of the designer's grandchildren. The Kriegmann is an extremely robust semiautomatic design with high-quality components and a great deal of aesthetic appeal. Native woods are boiled in a resin-impregnated solution, offering a stock that is slightly heavier than normal bioplastic but with a character unique to the wood selected. All bioplastic hardware is reinforced with high-strength metal alloys and ceramics, and all moving parts are diamond plated. Power for firing is provided by piezo-electric crystals, and the only accessory available is a plain telescopic sight. No interface for any form of electronics is provided, and the weapon has no battery to power them. Despite these limitations, there is a one-year backlog of orders waiting to be filled, and used models command the same prices as new ones.

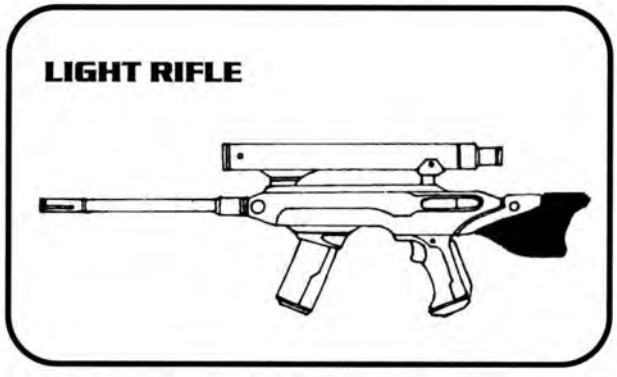
Dimensions: 2.4 kilograms and 2.6 liters
Power Source: None
Rigging Value: Impossible
Durability: 2
Legality: Legal
Availability: Uncommon
Cost: 3,500cs
Ammo Capacity: 20
Rate of Fire: 3
Range: Point Blank/5 Short/15 Medium/30 Long/60
Damage Rating: 8



LIGHT RIFLE

Designed for personal protection and small game hunting, these rifles are light and easily carried. They are effective weapons and very common, with quality and features varying by region and manufacturer.

Dimensions: 0.7 kilograms and 0.7 liters
Power Source: Standard cell and binary propellant
Rigging Value: Basic
Durability: 1
Legality: Legal
Availability: Very Common
Cost: 450cs
Ammo Capacity: 30 rounds/magazine
Rate of Fire: 3
Range: Point Blank/12 Short/30 Medium/75 Long/260
Damage Rating: 6



LONG RIFLE

Handcrafted and used only in Poseidon's most isolated native settlements, these archaic weapons constructed from indigenous woods or homebrew bioplastic use black powder ignited by a battery spark to fire crude projectiles. While the reloading times are long, long rifles are not dependent on any imported or manufactured components. With a small solar cell attached to the stock to recharge the

battery, a native who knows how to make black powder can use and maintain the weapon indefinitely. Since the rifle only holds one shot, the weapon must be powerful and accurate enough to make it a good one.

Dimensions: 3.0 kilograms and 3.0 liters
Power Source: Mini cell and black powder
Rigging Value: Standard
Durability: 1
Legality: Legal
Availability: Uncommon
Cost: 300cs
Ammo Capacity: 1
Rate of Fire: 1
Range: Point Blank/23 Short/56 Medium/140 Long/490
Damage Rating: 8

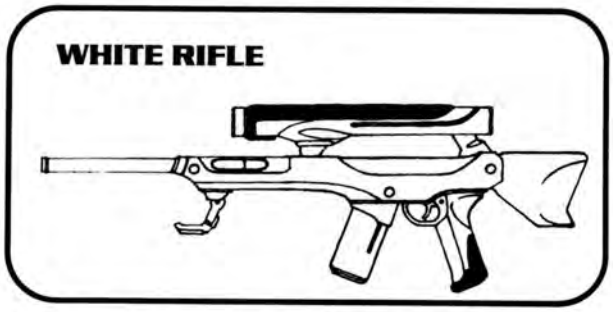
RANCH CARBINE

This popular weapon falls somewhere between a light rifle, submachine gun, and hunting rifle. It features the ammunition capacity of an assault rifle, a little more power than a submachine gun, and the accuracy of a good hunting rifle. The ranch carbine does not have autofire capability. Models of varying quality are available in most gun shops and trading posts on the colony world.

Dimensions: 2.0 kilograms and 2.0 liters
Power Source: Standard cell and binary propellant
Rigging Value: Standard
Durability: 1
Legality: Legal
Availability: Common
Cost: 1,300cs
Ammo Capacity: 100 rounds/magazine
Rate of Fire: 3
Range: Point Blank/18 Short/45 Medium/110 Long/380
Damage Rating: 7

WHITE RIFLE

This huge firearm is the modern colonial equivalent of an elephant rifle, and is designed to be used against Poseidon's most dangerous predators, such as the lesser white. The design is drawn from archaic anti-tank rifles, and owners usually have permits for a limited quantity of armor-piercing ammunition to go with the weapon. The weapon's light weight combined with its high power makes firing it an unforgettable experience.



Dimensions: 3.1 kilograms and 3.1 liters
Power Source: Standard cell and binary propellant
Rigging Value: Impossible
Durability: 1
Legality: Legal
Availability: Uncommon
Cost: 3,200cs
Ammo Capacity: 10 rounds/magazine
Rate of Fire: 3
Range: Point Blank/25 Short/65 Medium/165 Long/575
Damage Rating: 10

FAZER™

A painfully irritating chemical agent, faze is packaged in pressurized spray canisters with a pistol grip and marketed by MacLeod Enforcement as the Fazer™. It is widely distributed and very popular throughout Earth and the Colonies as a non-lethal self-defense weapon. The targeting system is a surprisingly sophisticated disposable sonar rangefinder, and the chemical agent is sprayed through a variable-geometry nozzle. When the Fazer is fired, the targeting system measures the range and disperses enough faze to incapacitate a human-size target. Because of the dispersal pattern, the weapon uses two shots at medium range and four shots at long range. The dispersion nozzle gives the attacker a +1 target number bonus. The standard Fazer holds twelve shots of spray.

The chemical agent in a Fazer is extremely debilitating, inducing extreme nausea and causing the eyes, lungs, and exposed skin to burn painfully. The effects of faze are treated as a damage rating 5 attack, each round for five rounds. However, faze cannot inflict critical wounds. The player should roll three dice as normal for damage, but ignore the lowest result. Faze has no effect on anyone with a sealed or self-contained breathing system.

FAZER™

Fazers have been illicitly modified by draining off the faze and replacing it with other chemicals. These range from illicit drugs, to the mix used in glop grenades, to a methane-laced gelatin mix that, with the addition of a spark coil, transforms the Fazer into a small, disposable flamethrower (see the burning damage rules, PG 119).

Dimensions: 0.50 kilograms and 0.5 liters
Power Source: Mini cell (1)
Rigging Value:
Durability: 0
Legality: Legal
Availability: Common
Cost: 50cs
Ammo Capacity: 12
Rate of Fire: 1
Range: Point Blank/2 Short/3 Medium/6 Long/18
Damage Rating: 3

SASERS

A SASER is a weapon that works on Sound Amplification through Stimulated Emission of Radiation. It is much like a sonic laser, in which a cylindrical matrix of silicate beads is excited by an ultrasonic compression wave along its axis. This initiates several resonance states that amplify each other down the length of the matrix, exiting the weapon as a highly collimated burst of ultrasound. The weapon is further enhanced by use of a low-power guide pulse that measures the acoustic response of the medium it is fired through, and adaptive acoustics that adjust each weapon pulse for optimum focus when reaching the target. Saser pulses carry much better in water than in air, and their listed range is for underwater use. When fired through the air, sasers function like conventional firearms fired underwater—damage ratings are halved and ranges are reduced to 10% of the standard values (PG 146).

Sasers tend to shatter or melt bioplastic and cause explosive shock waves in any water-containing tissue. There is a theoretical limit to the damage a saser can do before it begins causing destructive interference in the medium it is fired through—the pulse can boil the water it passes through, disrupting the beam. Personal saser weapons are therefore limited to damage rating 8, though the use of multiple converging beams allows vehicle sasers to exceed this limit.

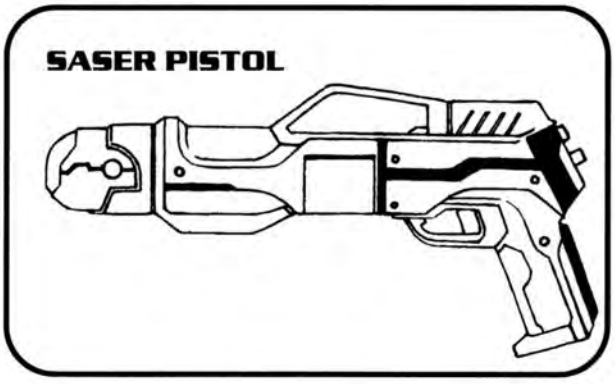
The ultrasonic pulses generated by saser weapons are painful and disorienting to nearby cetaceans and many marine animals. While they are effective underwater weapons, sasers may also draw the attention of creatures best left undisturbed. Above the surface of the water, a saser is almost completely silent except to creatures whose hearing extends to ultrasonic frequencies.

Most saser models come equipped with a selector switch that allows the user to adjust the weapon's damage rating. Dropping the damage by a quarter doubles the number of shots that can be fired on a single power cell, and dropping damage by half multiplies the available shots by four. All fractions are rounded down.

SASER PISTOL

This weapon looks somewhat like a cross between a large-caliber handgun and handheld stun gun. The long, wide barrel is capped with a bulbous casing for the adaptive acoustic system. Saser pistols feature an internal power cell, but an external battery pack or vehicle power supply can be connected inductively for extended operation.

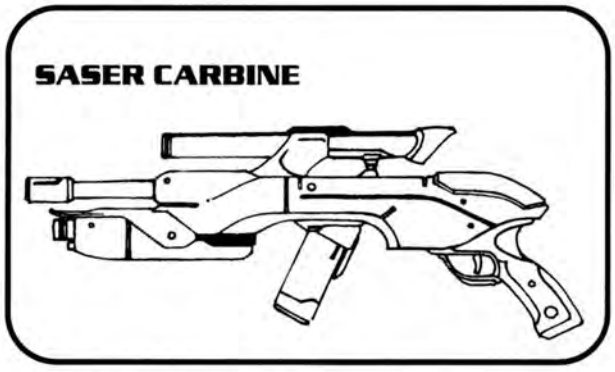
Dimensions: 1.1 kilograms and 1.1 liters
Power Source: Standard cell
Rigging Value: Standard
Durability: 0
Legality: Legal
Availability: Scarce
Cost: 850cs
Ammo Capacity: 20 shots internal
Rate of Fire: 3
Range: Point Blank/5 Short/10 Medium/25 Long/90
Damage Rating: 7



SASER CARBINE

A saser carbine is similar in appearance to a submachine gun, but features a thicker barrel with a cylindrical bulge underneath for expanded energy capacity. It contains a large internal power cell, with inductive connectors for external power supplies. Saser carbines are capable of burst fire and are subject to the same legal restrictions as any other autofire weapon.

Dimensions: 2.5 kilograms and 2.5 liters
Power Source: Heavy cell
Rigging Value: Standard
Durability: 1
Legality: Restricted
Availability: Scarce
Cost: 2,100cs
Ammo Capacity: 40/power cell
Rate of Fire: 3(5)



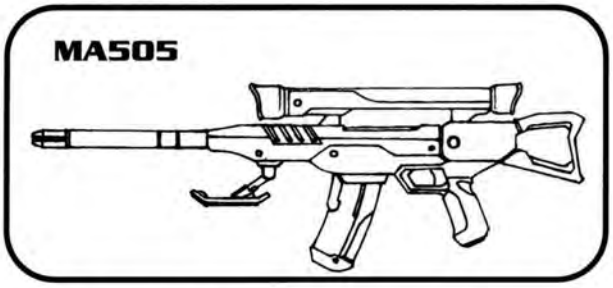
Burst Fire Value: 3
Range: Point Blank/7 Short/17 Medium/40 Long/140
Damage Rating: Single Shot 8, Burst Fire 11

HEAVY WEAPONS

HANOVER ARMS MA505 INFANTRY SUPPORT CANNON

This massive weapon is effectively a light, single-shot cousin of the autocannon commonly used as close-range firepower for combat vehicles. Its role is similar to that of sniper rifles, but the MA505 and others of its class provide pinpoint fire support at significantly greater ranges and with enough power to penetrate and damage armored vehicles. MA505s are often outfitted with advanced electronic scopes using millimeter-wave radar technology. Along with armor-piercing ammunition, this allows them to identify and strike at targets protected by lightly armored barriers. MA505s are far too heavy and bulky to be wielded effectively without tripod or vehicle mounts. These cannons can be mounted on weapon harnesses, but still suffer the standard –2 target number penalty for recoil on multiple shots.

Dimensions: 1.5 meters, 18 kilograms, 7.5 liters
Power Source: Heavy cell
Rigging Value: Standard
Durability: 1
Legality: Restricted
Availability: Rare
Cost: 12,500cs
Ammo Capacity: 20/magazine
Rate of Fire: 3
Range: Point Blank/50 Short/200 Medium/500 Long 1,500
Damage Rating: 13



HEAVY SASER

Backed by a large power source and a vehicle computer, this saser weapon has greatly improved range but faces the same limits on maximum damage. This limitation is bypassed by using several saser arrays that are precisely linked to converge on a single point target. Each doubling of the number of sasers increases the damage rating by 1.

Dimensions: 25 kilograms and 23 liters
Power Source: Industrial cell
Rigging Value: Impossible
Durability: 1
Legality: Restricted
Availability: Rare
Cost: 20,000cs
Ammo Capacity: 50
Rate of Fire: 3
Range: Point Blank/15 Short/30 Medium/75 Long/260
Damage Rating: 11

FIREARMS AMMUNITION

EMP ROUNDS

Electromagnetic pulse rounds for the Peacemaker are a little-known tool in the GEO Marshal's arsenal. They do little or no physical damage but generate a single pulse on impact, sufficient to damage the electronics of small or handheld items or cause temporary glitches in larger items. While most electronic circuitry is based on optical technology, it still requires electrical power and electronic components to operate. In practice, this means that the operation of an electronic device will often be compromised by EMP, but any data stored on the device will remain intact.

EMP rounds have an effective radius of one meter, usually sufficient to affect any devices held or carried by the target. Any electronic device affected by an EMP round must make an immediate Durability roll with a –2 penalty to the target number. Military shielding will afford these devices a +3 target number bonus to such Durability rolls.

Legality: Restricted
Availability: Rare
Cost: 250cs/magazine

HARPOON ROUNDS

This ammunition is designed for conventional weapons when used in underwater engagements. Harpoon rounds are heavy, elongated projectiles whose streamlined form improves underwater performance. These rounds lose damage underwater just like conventional ammunition, but ranges are reduced to only 50% of normal, rather than 10%.

Legality: Legal
Availability: Rare
Cost: 75cs/magazine

TRAUMA ROUNDS

These are projectiles pre-stressed to fragment on impact, littering the wound channel with shards of ceramic or bioplastic. Trauma rounds increase a firearm's damage rating by 1, but the rating of any armor is increased by 2. Trauma rounds are rarely used in underwater environments.

Legality: Legal
Availability: Scarce
Cost: 30cs/magazine

GEL ROUNDS

These are made from a combination of foamed and flex-grade bioplastic and look much like small rubber balls. Like suppression rounds (PG 151), they are significantly less lethal than regular rounds and are sometimes used by light security forces in pressurized or fragile habitats. Gel rounds do not inflict critical wounds, and the rating of any armor protecting the target is doubled. When rolling damage for a gel-round attack, roll the usual three dice and ignore the lowest roll.

During the manufacturing process, gel rounds are laced with a silver nitrate solution that indelibly marks the skin and plants hundreds of tiny microtags that take weeks to work their way out of the dermis. Gel rounds have also been manufactured with non-lethal contact toxins.

Legality: Legal
Availability: Scarce
Cost: 30cs/magazine

POWERHEADS

These are special tips for spear gun projectiles. Powerheads are armed with small explosive warheads detonated by an impact trigger. Fitted with powerheads, a spear gun's damage rating is 7. Powerheads screw onto a spear tip in place of the normal point and cost 10cs each. Screwed onto the end of a pole with a handgrip, the weapon is called a bangstick and is often used against hostile marine life.

Legality: Legal
Availability: Uncommon
Cost: 10cs

EXPLOSIVE WEAPONS

BINEX™

Binex is the proprietary name of a binary explosive compound manufactured by Atlas Materials and used by both industry and the military. It comes in standard packages of 0.10, 0.50, and 2.5 kilograms, with the 0.50 kilogram size being the most common. Binex charges are activated by pulling the safety tab and lifting the separator bar, which allows the mixing of the individual inert components. When the compound is properly mixed, the Polyflex packet stiffens and changes color. Binex pouches are available in a number of configurations, depending on the intended application. Some are cylindrical and used in boreholes, others are packaged in a long flexible tube and can be wrapped or tied around obstacles, and still others have removable adhesive backing for placement against vertical surfaces.

Binex has an explosive damage rating of 8 for a 0.10-kilogram charge. The damage rating increases by 4 each time the quantity of explosive is multiplied by 5. Binex shaped charges double their direct damage to a contact target, but decrease overall blast damage by 4. For example, a 0.50-kilogram Binex charge has a damage rating of 12. If prepared as a shaped charge, it would have a contact damage rating of 24, but the surrounding blast effect would drop to damage rating 8.

Binex Charge	0.1kg	0.5kg	2.5kg	12.5kg
Damage Rating	8	12	16	20

Binary propellant canisters can be used as improvised explosives. The damage rating is 4 less than for the same quantity of Binex. Binex is a completely different formulation than standard firearm propellant and will explosively destroy a weapon if the user attempts to use it as such.

Dimensions: 0.10 to 2.5 kilograms
Rigging Value: Impossible
Durability: –1
Legality: Restricted
Availability: Uncommon
Damage Rating: 8, +4 for each 5x quantity
Cost: 20cs per 0.10 kilograms

BREACHING GEL

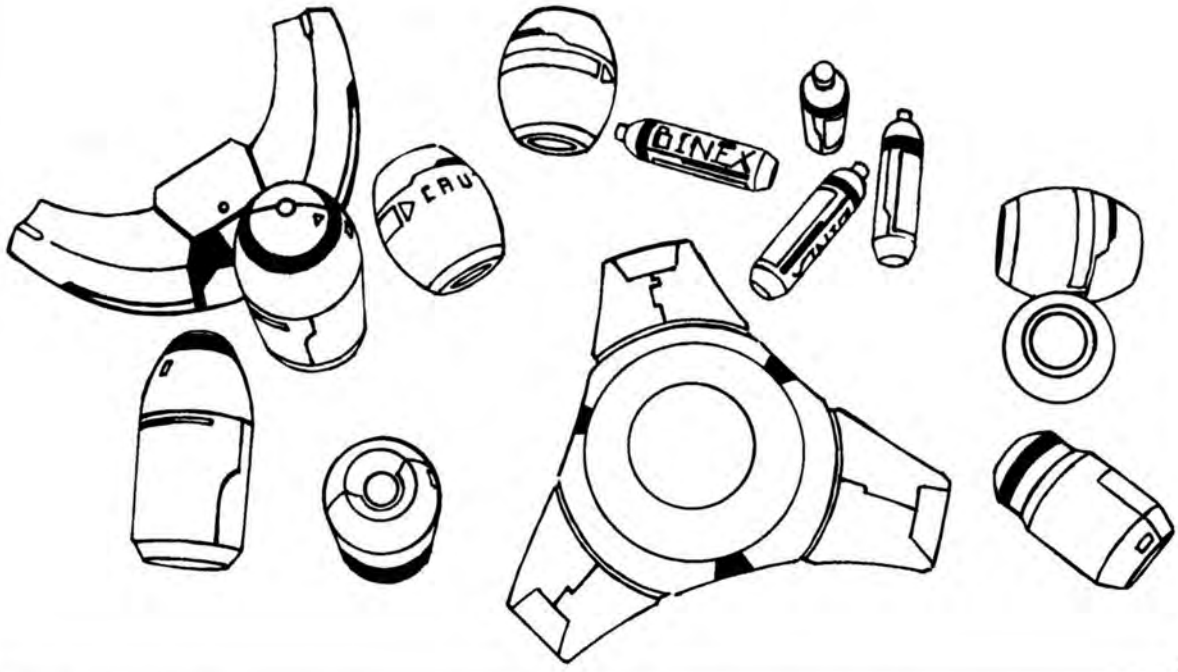
Breaching gel is a useful but potentially dangerous tool designed to instantly burn through most doors and structural walls. B-gel is a binary explosive that comes in a complimentary pair of pressurized dispensers. The first canister delivers a sticky gel that can be applied to any surface, in any pattern. The second, smaller canister contains the activator, which when sprayed on the gel initiates an explosive chemical reaction. When activated, the gel begins to foam, expanding to fill in crevasses, holes, and seams. Ten seconds after the activator is applied, the foam ignites in a brilliant flash of light and intense heat. The back blast is minimal, but the rush of superheated air is loud and startling.

A single application of breaching gel will cut through up to 10 centimeters of lighter materials like foamed bioplastic or wood, and through five centimeters of heavier materials such as standard bioplastic. B-gel is useless against all but the thinnest metals or industrial-grade plastics, but is particularly effective when used on hinges or locking mechanisms.

Breaching gel was designed for use by law enforcement and military personnel, but has become available on the black market. Though not intended as a weapon, B-gel can be lethal. If used on a living target, the game moderator should follow the rules for burn damage (PG 119) but start with a damage rating of 10.

Dimensions: Gel canister – 1.2 kilograms and 0.85 liters; activator canister – 0.3 kilograms and 0.4 liters
Power Source: Pressurized gas
Rigging Value: Basic
Durability: –1

EXPLOSIVES



Legality: Restricted
Availability: Rare
Cost: 1,750cs

DEMOLITIONS KIT

Demo kits vary in content but most military packs contain plastic and binary explosives, detonators, timers, shaping molds, detonation cord, wiring, adhesive patches, tape, and relevant tools. Kits are intended for use by trained experts executing custom demolitions applications. Ready-to-use explosives like mines and grenades are typically not part of demolitions kits. A standard demo kit contains enough explosives to build a charge with a damage rating of 30. This damage potential can be applied to any number of smaller charges whose damage ratings total 30.

A well stocked demo kit will give a user with Demolitions skill a +1 bonus. Some kits contain gremlins (PG 125) which provide a skill bonus of +3. Such access chips give even unskilled users a base Demolitions skill of 2, and for this reason, most demo gremlins require user ID for access.

Dimensions: 3.2 kilograms and 2.0 liters
Power Source: Micro cells
Rigging Value: Standard
Durability: 0
Legality: Restricted
Availability: Rare
Cost: 2,550cs

GRENADES

Almost all modern grenades are electrically fused with a standard delay of three seconds. Most have a small selector that allows adjustment of this time delay and an optical data port that allows the grenade to be integrated with sensors or radio links. Standard grenades include a threaded base to allow attachment of other components, such as adhesives, anchoring spikes, or adapters to allow launching the grenade by using a blank charge from a regular gun.

BREACHING GRENADE

These are shaped-charge grenades used to penetrate heavy armor or barriers. Breaching grenades are not especially effective against heavy vehicles but are capable of destroying doors, breaching environmental seals, and causing heavy damage to unarmored vehicles. When properly placed, they have a directed damage rating of 15 against the target, with an explosive blast of damage rating 4.

Breaching grenades also feature a drogue tail and impact fuse that allows them to be thrown or fired from a weapon.

Dimensions: 0.30 kilograms
Rigging Value: Standard
Durability: 2
Legality: Restricted
Availability: Scarce
Cost: 50cs
Damage Rating: Special

OBSCUREMENT GRENADE

Used for laying down visual and sonic cover, this grenade fills a sphere 10 meters in diameter with visual, thermal, radio, and sonic noise that no sensor can penetrate. Underwater, the primary effect is sonic, generating a huge amount of white noise that is both easily detected and impossible to penetrate. The active duration of the effect is 10 rounds, but in calm conditions or enclosed areas it may last significantly longer. Consider the effect to be a –5 situational modifier (blind fire) for any targeting in or through the effect, dropping by one every two rounds after the grenade's duration ends.

Dimensions: 0.30 kilograms
Rigging Value: Standard
Durability: 2
Legality: Restricted
Availability: Scarce
Cost: 50cs
Damage Rating: None

MINES

ANTIPERSONNEL MINE

These weapons are commonly disk-shaped bioplastic canisters, ranging in size from 10 to 30 centimers. Antipersonnel mines are designed to incapacitate rather than kill, though they are quite capable of causing lethal injury. They are activated by rapid changes in local pressure, with discriminator circuits to prevent them from being detonated by weapons fire or other explosions. Typical mines have neutral buoyancy and can be used in the water as well as on land. At normal minefield densities, a person moving through a mined area has a 1 in 10 chance of triggering a mine each round. If the mines are buried, spotting them requires sensors and slow movement. If on the surface, spotting them requires an Awareness (vision) roll. The moderator should apply a target number bonus for walking slowly and carefully and penalties for moving faster.

When triggered, the antipersonnel mine explodes with a damage rating of 6. The shrapnel is treated as armor-piercing damage, halving the rating of any armor protecting the target. Antipersonnel mines have two multi-position activator dials. The first controls the mine's timing delay, and the second determines how long the weapon will remain operational before deactivating. These time delays range from a minute to 30 days.

Surface-to-surface or air-to-surface missiles can deploy these weapons over an area, and hardpoint-mounted dispensers can do the same job, dispersing about five kilograms or liters of mines per 100 square meters covered.

Dimensions: 0.1 kilograms, 0.1 liters
Rigging Value: Standard
Durability: 1
Legality: Restricted
Availability: Scarce
Damage Rating: 6
Cost: 50cs

ANTI-VEHICLE MINE

The proliferation of jumpcraft and hover vehicles has driven several innovations in the design of anti-vehicle mines. Most operate on non-contact sensors, usually a combination of air-pressure sensors and tiny ultrasound rangefinders that "ping" potential targets before confirming a firing decision. Anti-vehicle mines ignore targets less than twice the size of an average human. On detonation, the mine launches an explosive charge into the air that detonates on a plane corresponding to the target's height, up to 20 meters. These weapons typically use dual shaped-charge explosive warheads. These mines can be used underwater but can only affect submersibles within 10 meters of the ocean floor.

The blast of an anti-vehicle mine is damage rating 12. Normal vehicle movement over an appropriately mined area has a 2 in 10 chance per round of triggering a mine. Anti-vehicle mines have similar activation and deactivation cycles as anti-personnel mines, but the delay can be extended to several months. The mines can also be programmed to ignore vehicles of a certain size range, ignore targets during a certain time of day, ignore a certain number of targets per day, or any combination of the above. They can also be remotely armed and disarmed, though this option makes them vulnerable to electronic countermeasures.

Dimensions: 3.0 kilograms, 2.5 liters
Rigging Value: Standard
Durability: 1
Legality: Restricted
Availability: Scarce
Damage Rating: 12
Cost: 200cs

BOUNDING MINE

This weapon is for land use only and is designed to incapacitate or kill several people at once. It launches two meters into the air when triggered by a tripwire or sensor and explodes, inflicting a damage rating 8 attack on all within its blast radius. Like conventional antipersonnel mines, bounding mines are considered armor-piercing weapons.

Dimensions: 0.3 kilograms, 0.3 liters
Rigging Value: Standard
Durability: 1
Legality: Restricted
Availability: Scarce
Damage Rating: 8
Cost: 80cs

CLUSTER MINES

When detonated, these weapons' delivery system spreads a cluster of minelets over a four-meter diameter area. If triggered, the minelets explode with a damage rating of 8. Unless one carefully searches the ground when passing through a saturated area, one or more minelets will almost certainly be detonated. Common delivery systems for cluster mines include grenades, torpedoes, and conventional surface mines. If used underwater, the torpedo deploys a small cloud of neutral buoyancy minelets that will detonate in response to contact or sudden changes in water pressure. They will drift with the currents and dissipate in a matter of minutes. Cluster minelets will deactivate after a programmable delay of 10 minutes to 30 hours.

Dimensions: 0.3 kilograms, 0.3 liters
Rigging Value: Standard
Durability: 1
Legality: Restricted
Availability: Scarce
Damage Rating: 8
Cost: 100cs

GUIDED WEAPONS

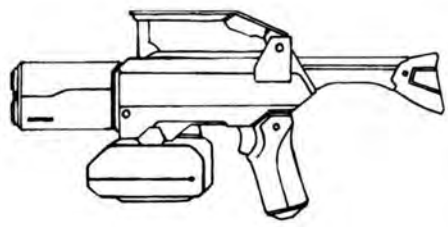
Guided weapons fall into two categories—homing weapons and directed weapons. Homing weapons are "fire and forget." Once launched, they hit or miss based on their own targeting systems and sensors. Directed weapons are guided by humans, usually with neural interface systems or manual joysticks. Most guided weapons on Poseidon are homing weapons, since they are often more accurate—and far more safe for human personnel—than directed weapons.

BLOOP TUBE

This is the colloquial name for a class of infantry launchers that fire small, radar-guided rocket grenades. The weapon fires 60 millimeter radar-guided grenades with integral solid-propellant rockets. Like other guided weapons, the attacker must first acquire a lock on the target before firing (see page 120). The grenades can be fired both underwater and in the air. Underwater range is halved but the damage rating is increased by 3 due to concussion (PG 119).

Dimensions: 5.0 kilograms and 5.0 liters
Power Source: Mini cell (2) and binary propellant
Rigging Value: Impossible
Durability: 0
Legality: Restricted
Availability: Scarce
Cost: 700cs
Guidance: 5
Ammo Capacity: 6 rounds/magazine
Rate of Fire: 2
Range: Point Blank/10 Short/30 Medium/90 Long/360
Damage Rating: Varies

BLOOP TUBE



GUIDED MISSILES

These guided weapons can be launched from standard infantry missile launchers (PG 163) or vehicle launch pods and hardpoints.

CLUSTER MISSILE
These missiles drop three overlapping explosive charges, each with an explosive damage rating of 10, at the points of a triangle three meters on a side. Targets in the blast area suffer separate attacks from each of the cluster munitions.

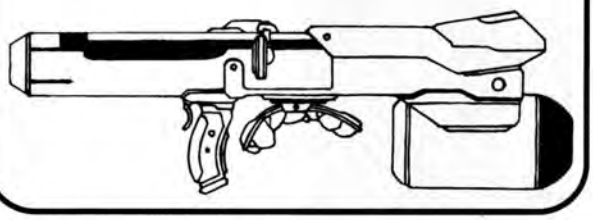
Dimensions: 1 meter, 15 kilograms, 4.8 liters
Power Source: Rocket and standard cell
Rigging Value: Impossible
Durability: 2
Legality: Restricted
Availability: Rare
Cost: 7,500cs
Guidance: 5
Range: 1,500 meters
Damage Rating: 10

HIGH-EXPLOSIVE MISSILE
These weapons feature standard explosive warheads and are commonly used against both light military vehicles and infantry.

Dimensions: 0.75 meters, 12 kilograms, 4.2 liters
Power Source: Solid rocket propellant and standard cell
Rigging Value: Impossible
Durability: 2
Legality: Restricted
Availability: Rare
Cost: 1,000cs
Guidance: 5
Range: 1,500 meters
Damage Rating: 14

HIGH-EXPLOSIVE ANTI-TANK MISSILE
Designed for use against heavy armored vehicles, HEAT weapons use a shaped-charge warhead that is very effective at penetrating armor. The weapon has a base damage rating of only 10, but halves the rating of the target's armor (rounding down).

Dimensions: 0.85 meters, 14 kilograms, 4.4 liters
Power Source: Solid rocket propellant and standard cell
Rigging Value: Impossible
Durability: 2
Legality: Restricted
Availability: Rare
Cost: 3,500cs
Guidance: 5
Range: 3,000 meters
Damage Rating: 10

INFANTRY MISSILE LAUNCHER


INCENDIARY MISSILE
These homing missiles carry a 1-kilogram slow-burn binary compound laced with alkali metals that can burn without the presence of atmospheric oxygen. The missiles cannot be fired underwater, but water does not extinguish their flames. Incendiary missiles can be fired from a standard infantry missile launcher (PG 163), and can also be attached to vehicle missile pods and hardpoints.

Because the binary compound reaches its peak heat immediately after detonation, the damage rating of an incendiary missile starts high and drops every round. A standard warhead inflicts a damage rating of 12 on the first round, and this rating drops by 1 each subsequent round until it reaches zero. Armor will protect the target of an incendiary weapon, but it is destroyed at a rate of 1 armor rating per round. The only way to stop the fire before it burns itself out is to apply a specially formulated chemical counteragent.

MINITORP
Minitorps are tube-launched guided torpedoes of minimal range, the underwater equivalent of the infantry missile launcher (PG 163). They are generic homing weapons loaded with explosive warheads. Target acquisition is provided by an onboard active sonar system, though the launcher can be networked to vehicle sensors or computers to get a more accurate launch picture.

Dimensions: 1.2 meters, 18 kilograms, 5.8 liters
Power Source: Rocket and standard cell
Rigging Value: Impossible
Durability: 1
Legality: Restricted
Availability: Rare
Cost: 2,500cs
Ammo Capacity: 3
Sonar: 5
Guidance: 5
Range: 1,000 meters
Damage Rating: 12

BIOTECH

CHAPTER 03

BIOTECH

For millennia, human beings have used technology to adapt their environment to their own needs. With the development of cybernetic and surgical biomodification, humans learned to adapt and alter their own bodies. And with the advent of genetic engineering, humanity became the master of its own genome. For the first time, humanity could adapt itself to an environment rather than attempt to adapt the environment to humanity.

Driven by the extraordinary capabilities of xenosilicate tools, new developments and techniques in the field of biomodification are appearing almost daily. Diseases have been eradicated, the human lifespan has been extended indefinitely, and wholly new species have been created. In the coming years, humanity will be able to recreate itself in ways limited only by the imaginations of gene engineers and the vision of the Incorporate giants who dominate this explosive industry.

CYBERNETIC MODIFICATION

The colloquial term "cyberware" covers a wide variety of electronic or mechanical devices that are implanted into a living being for some specific purpose. Ranging from simple limb replacements to highly sophisticated internal computers, cybernetic modifications represent humanity's first successful attempts to improve the bodies nature provided.

With the discovery of Long John and the resulting breakthroughs in genetic engineering, cyberware began to be perceived as an outdated, even obsolete technology. However, while cybernetic modifications do not match genetic ones for flexibility and aesthetics, they do possess a number of unique advantages that genetic engineering remains unable to match.

Most importantly, cybernetic technology is capable of making qualitative changes to the capabilities of the human body, while genetic biomods are generally limited to making quantitative changes. That is, biomods can enhance, increase, reduce, or alter basic bodily functions, but generally cannot give the user wholly new abilities. Cyberware has no such limitations. A genetic biomod can enable a human to hear a whisper at 50 meters, but only with cyberware can he receive a radio broadcast without carrying a radio.

For this reason, cyberware is invaluable for any task in which a human interfaces directly with a computer or other electronic system. Neural jacks and implant computers simply have no genetically engineered equivalents and remain the only way to directly interface with an electronic or mechanical device. Pilots, scientists, engineers, and others whose daily routines involve close interaction with computer systems find cybernetic interfaces extremely useful, if not essential.

Cyberware, due to its integration of sophisticated computer technology, is also capable of making decisions without user intervention. Genetically boosted reflexes, for example, enable the user to perceive and react to stimuli faster, but the user's brain must still process the stimuli before he can initiate action. Programmed reflexes, on the other hand, include a dedicated processor that interprets nerve signals and, if necessary, outputs instructions for an appropriate reaction, often before the user is even fully aware of the initial stimulus.

MANUFACTURING

The majority of cyberware components are manufactured in low-gravity, vacuum-based facilities in Earth orbit, on Luna, and in the Belt, and the assembly of the components into finished products is usually completed at these installations as well. Over the past decade, however, a small but growing percentage of cyberware components has been produced in factories in the Serpentis System in an attempt to avoid the extraordinary costs of transporting components or finished goods through the wormhole.

Due to this diversified group of manufacturing sites, as well as the limited market for cyberware, the Incorporate states are far less dominant in the field than in many other industries. Several of the larger Incorporate states—notably Atlas Materials, Hanover Industries, Hydrospan, and Lavender Organics—do manufacture cyberware, but the trade is not their primary business. As a result, cybernetics production is one of the few industries in which smaller manufacturers control a notable market share.

Eagle Bioelectronics, based in Ibrium City, is one of Luna's oldest corporations. While its engineers did not invent the implanted sensory recorder, Eagle was the first company to produce an affordable player for stimulus recordings and was pri-

marily responsible for the development of stims as a popular entertainment medium. Eagle is also a leading producer of sensory cyberware, including a line of cybernetic eye replacements that have inevitably been dubbed "Eagle Eyes."

Moore Microware is headquartered on the asteroid Vesta but also has manufacturing facilities on a number of other asteroids and several platforms in Earth orbit. The company produces a wide variety of implanted computer systems, programmed reflex routines, and specialized industrial cyberware. Moore is also experimenting with customized forms of cyberware designed specifically for hybrids, spacers, and other genies, though the demand for these products has to date been disappointingly low.

Clavius Technology, another Lunar manufacturer, is widely considered to produce some of the highest quality cybernetics available. Clavius implants are made in small quantities from the very finest materials, combining the most modern manufacturing techniques with individualized attention to detail. Commanding astoundingly high prices, Clavius cyberware is as much status symbol as practical modification.

Strike Systems, based on the asteroid of the same name, is another high-end cyberware manufacturer. Unlike Clavius, however, Strike concentrates on maximizing the efficiency and reliability of its implants rather than its image. The company spends almost no money on advertising and produces only a small volume of implants each year, but its reputation has begun to spread among those who want the very best. Rumor suggests that Lavender Organics is quietly investigating the possibility of purchasing Strike Systems to take advantage of this reputation.

MuTech, Inc. is the largest of the cyberware manufacturers based in the Serpentis Belt. The company produces cybernetics of all types for the Serpentis market and is able to offer lower prices than most manufacturers based in the Solar System due to its location. The quality of MuTech's products is generally good if not exceptional, and they are now the most commonly purchased brand of cyberware on Poseidon.

DAMAGE TO CYBERWARE

One of cyberware's disadvantages relative to genetic biomods is that cyberware, unlike living tissue, does not heal. Most cyberware is small and deeply implanted in the body, meaning that any trauma severe enough to damage the cyberware will probably kill the user as well. However, implanted computers, cyberlimbs, and some sensory cyberware are vulnerable to damage in dangerous situations. If a character suffers a critical wound, assume that one of the least durable of his exposed cybernetic modifications, if he has one, has potentially been damaged. The moderator should make a damage roll against a damage rating equal to the attack that injured the character. Cyberware follows the normal rules for equipment damage (see page 6).

Damaged systems must often be removed and replaced, but can be repaired with the proper equipment at 75% of the cost of a new implant. However, at the moderator's discretion, implants repaired in this way may malfunction, or fail entirely, in the future.

SECONDHAND CYBERWARE

Throughout the first half of the 21st Century, cyberware was the most advanced form of personal modification technology available and was extremely valuable due to its rarity and perceived utility. Like any valuable commodity, it soon became a target for thieves. While few criminals had access to the medical and technical know-how and equipment required to remove cyberware from a victim and transplant it successfully into another person, the staggering cost of acquiring cyberware legitimately made "cyberjacking" a viable, though rare, criminal practice.

The sensational nature of the crime ensured that it made headlines whenever it did occur, and the resulting furor was blown out of all proportion to the actual risk. New laws were passed to cover cyberjacking; all cybernetic components were marked with indelible, microengraved serial numbers, and self-defense classes were offered to compliment post-surgical care for cyberware owners. None of these, however, made as much of an impact on the cyberjacking trade as did the law of supply and demand. As cyberware became more affordable, the profits to be made from cyberjacking dwindled until the reward was no longer worth the risk. By the dawn of the 22nd Century, the

practice had almost entirely disappeared, though it remained prominent in urban folklore.

Cyberjacking has reappeared on Poseidon in the years since Recontact, though it is still a very rare occurrence. Some among the colony world's lower classes perceive cybernetic implants as a tool they can use to escape the ghettos and become successful, and they will not hesitate to steal what they cannot afford to buy. Furthermore, some of the more pragmatic segments of the native resistance on Poseidon see no reason for the "tools of the oppressors" to go to waste just because a given oppressor has no further need for them. Those with the right connections can usually find a surgeon willing to implant the cyberware without asking questions about where it came from.

SOCIAL CONSIDERATIONS

Human opinions on cyberware tend to fall into two main categories depending on the nature of the implants. Neural jacks, implanted computers, and other cybernetic tools are generally considered unremarkable; they represent just another type of equipment that an individual can rely on to do his job. Cybernetic limbs and organs, on the other hand, are commonly considered a waste of money. Few people consider cybernetic replacements a viable alternative to regenerative therapy. A person with an obvious cyberlimb is generally regarded as either too poor to afford proper medical care or mentally unstable. And if a limb appears normal but is discovered to be cybernetic, the observer's level of suspicion only increases.

Dolphins are accustomed to using human technology via sonic trodes, and most cannot conceive of any further advantage that could be gained by actually implanting technology into one's body. Fins often consider the users of cyberware with a mixture of sympathy and disgust, and it usually takes them some time to see past the implants when dealing with a cybernetically enhanced human. Hardline members of the Church of Whalesong Theogony are particularly opposed to cyberware, considering it a perversion of nature.

Killer whales often take this belief to the extreme. Many orcas react to a person with cyberware as if he had a contagious disease—and without sympathy, since the presumption is that the human had the cyberware implanted by choice. While they often have a difficult time articulating their feelings about it, orcas tend to view bodily modification through cyberware as morally wrong at a fundamental level. They tend to regard cybernetically enhanced humans with distrust at best and loathing at worst. These feelings are further aggravated if they discover that a friend or acquaintance has disguised or hidden cyberware, since the orcas tend to feel that the human has somehow betrayed their trust by hiding his true nature.

Many of the cetaceans on Poseidon served in the GEO or Incorporate militaries, where cybernetic modification is fairly common. These active and retired soldiers tend to be more accepting of cyberware, often viewing it as a necessary sacrifice for the fulfillment of a soldier's duty.

The rigging value of all cyberware is impossible, since working with the tiny and delicate circuitry in even the simplest cybernetic implant requires highly specialized tools and equipment.

AGILITY CHIP

This NIC (PG 165) and processor complex is a hardwired version of the programmed reflex commonly called Balance (PG 168). Like the program, the chip attempts to moderate the cognitive component of the user's motor control system to improve overall coordination. Unlike the program, the chip is a permanent neural implant and is continually active. As a result, response is notably faster and slightly more effective than with the programmed reflex version.

Users who enter zero-g environments without heavy sedation risk seizures and potential injury.

A character with the agility chip receives a permanent +1 bonus to Agility, and in circumstances where the response is primarily a matter of balance, the bonus is +2.

Healing Time: 3 weeks
Legality: Legal
Cost: 7,000cs

AMBIDEXTERITY FILTER

This dedicated processor is implanted in the user's brain along with a complex of supplementary motor and interconnecting neurons. The biomod models and then simulates the neural pathways and activity of the user's strong hand, facilitating complementary abilities in his off hand. The end result is that the user receives the full benefits of natural

ambidexterity, avoiding all penalties associated with use of his off hand.

Healing Time: 1.5 months
Legality: Legal
Cost: 4,300cs

CYBERNETIC LIMB REPLACEMENTS

As described in the **Blue Planet v2** *Player's Guide* (PG 169), cybernetic replacements are available for hands, arms, and legs. Ordinary cybernetic replacements have no noticeable game effect, except that they mass more than the original limb and thus may impair the user's ability to swim (PG 170). Improved replacements, however, may be designed to include a wide variety of additional advantages.

The user of any cybernetic replacement limb may lock any or all of the limb's joints into place—or unlock them—with a programmed muscle "twitch" command. This can be useful in certain circumstances, but may also be dangerous if used improperly. A character bench-pressing a heavy weight, for instance, could lock the elbow joints on his cyberarms to keep them from bending. However, his shoulders and torso would still need to support the weight, and the locked joints would provide no extra strength. When he could no longer support the weight, the character's cyberarms might swing down onto his legs or back over his head, potentially causing damage either way. In extreme cases, the weight might even tear one or both cyberarms out of their shoulder attachments.

CYBERNETIC ARM

Cyberarms, by definition, include cybernetic hands. However, cybernetic hands and arms must be improved separately. In other words, a character may purchase one standard arm for 15,000cs, which would include a standard cybernetic hand. The character could pay an additional 5,000cs for either the hand or the arm to be enhanced, but would need to pay 10,000cs to improve both.

Durability: 3
Legality: Legal

CYBERNETIC HAND

In addition to granting the user +1 Dexterity per hand (PG 169), enhanced cybernetic hands also provide a +1 bonus per hand to Climbing target numbers. Furthermore, a character with the Unarmed Combat skill who locks his hands' joints before engaging in close combat receives a +1 bonus to the damage rating of his unarmed combat attacks. The bonus is only +1, regardless of whether the character has one or two cybernetic hands.

Durability: 2
Legality: Legal

CYBERNETIC LEG

Cybernetic legs do not significantly improve the user's jumping ability; the legs' increased strength is offset by their increased mass. At 1.5 times the normal cost, however, the user can purchase enhanced cybernetic legs that provide a +1 bonus to Agility for purposes of the user's jumping ability (PG 34).

Durability: 3
Legality: Legal

SPACER LEGS

Spacer legs, or "bird legs," are an exotic and specialized form of cybernetic leg replacement. Like the natural limbs of spacers, these cyberlimbs are

double-jointed and include prehensile feet with an opposable thumb in place of the big toe. Users receive a +1 Dexterity bonus for tasks in which they are able to use all four limbs at the same time, and also receive +1 to Climbing target numbers. The user's Sprinting pace, however, is only 7 meters per action.

At one point, spacer legs were the only viable option for pure-strain humans who wanted to seriously pursue a career as a spacer. Those numbers were never very large to begin with, and with spacer modifications now available as an affordable biomod, demand for such cyberlimbs has almost vanished. They are still occasionally seen among those who work primarily in zero-g, but who travel planetside often enough that they do not want to undergo the full spacer biomods and suffer the corresponding difficulties when working in a gravity well.

Durability: 3
Legality: Legal
Healing Time: 3 weeks, plus an additional 3 weeks of training
Cost: 45,000cs

CYBERNETIC SENSORY ORGANS

CYBERNETIC EARS

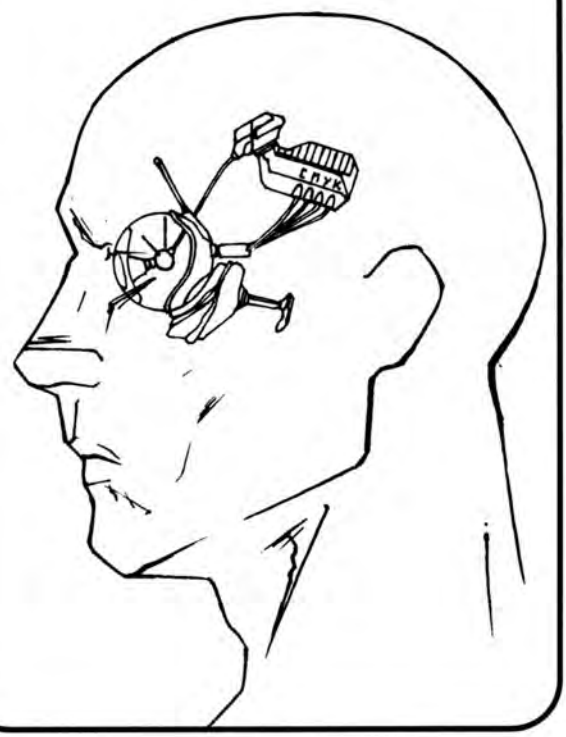
Cybernetic auditory enhancement is available, though uncommon. These tiny electronic devices are implanted deep in the inner ear and are not apparent to visual inspection. When activated, they provide a +1 bonus per ear to Hearing rolls. However, when the user's hearing is amplified, any loud noise such as explosions or nearby gunfire may cause temporary deafness. More expensive designs contain dampeners that automatically reduce the implants' sensitivity when they register a sound above a certain decibel threshold.

Durability: 1
Legality: Legal
Healing Time: 2 weeks
Cost: 5,000 to 7,000cs per ear

CYBERNETIC EYES

A wide variety of enhanced sensory options are available for cybereyes. In addition, individuals with improved cybereyes can change the color of their eyes at will, including colors not found in nature. This is often helpful in disguising one's identity.

CYBERNETIC EYE IMPLANT



Note that the costs listed below are for each eye—while both eyes normally have the same options, cost-conscious users may elect to modify only one eye. If only one eye possesses a given sensory mod, any actions relying on that modification will receive a –1 target number penalty.

Durability: 1
Legality: Legal
Cost: 3,500 each

The following options are available for cybernetic eye implants.

Freeze-Frame

This modification features a digital camera integrated with the cybereye. The camera focuses wherever the user's vision is oriented, and the camera can take advantage of any vision modifications implanted in the eye. The camera can store up to 100 high-resolution color pictures and can download them to an implanted microcomputer or to an external computer through the user's neural jack. Unlike most other cybereye options, there is

no penalty for having this option in only one eye. However, if both eyes are equipped with this option, the user can generate stereoscopic 3D images.

Cost: 950cs per eye

Infrared
Infrared sensors integrated with a cybereye allow the user to perceive infrared and thermal energy as visual stimulus. This gives the user the same abilities as viper implants (PG 168).

Cost: 1,100cs per eye

Light-amplification
Light-amplifying cybereyes provide the same bonuses as the night vision biomod (PG 177). Most models include integrated flash suppression, and any excessively bright input is automatically reduced to a tolerable level.

Cost: 1,050cs per eye

Telescopic Vision
Telescopic cybereyes provide the user with up to 5X magnification. This reduces the distance penalty for any vision rolls by 2. This does include range penalties for ranged combat attacks. However, in order to reduce these penalties, the character must spend at least one action aiming before he fires. The character also receives the normal +1 target number bonus for aiming.

Cost: 875cs per eye

Ultraviolet
Ultraviolet sensors in a cybernetic eye allow the user to perceive the ultraviolet range of the light spectrum.

Cost: 1,200cs per eye

RAF MODULATOR
This relatively simple cybernetic implant artificially stimulates and inhibits the reticulating activating system of the midbrain, allowing the user to consciously control the mechanisms that prevent and induce sleep. With biofeedback, the user of this biomod can remain awake and alert for up to 60 hours with negligible physiological effects. Subsequently, for each additional five hours or portion thereof the user remains awake, he suffers a cumulative –1 penalty to all his attributes.

With an alternate mental command, the user of this implant can also induce a deep and restful sleep in seconds. This induced sleep is no deeper or longer than normal, the onset is simply immediate.

Additionally, the implant can be used to bring the sleeper instantly from a state of groggy semiconsciousness to one of immediate alertness, eliminating any penalties associated with lingering fatigue.

Healing Time: 2 weeks
Legality: Legal
Cost: 5,200cs

WAKER
The "waker" is a small, artificial gland connected to a simple microprocessor and located near the user's carotid artery. When activated by a simple mental command, the microprocessor begins to monitor the user's brainwave patterns, watching for signs of sleep. When a certain user-configurable threshold is reached, the gland is activated, releasing small quantities of stimulants into the user's bloodstream in order to awaken him. If the user also possesses an implanted microcomputer, or is connected via neural jack to a bodycomp, the waker can also be used as a biological alarm clock, releasing its stimulants and awakening the user at a preset time.

The waker is popular among long-haul pilots and traders on Poseidon, as well as certain military personnel. It can be safely used for up to 60 hours of continuous wakefulness. Beyond this point, further use is strongly discouraged, as it can lead to hallucinations, mental disturbances, and other unpleasant side effects.

Durability: 1
Legality: Legal
Healing Time: 3 weeks
Cost: 7,500cs

REFLEX PROGRAMS
While some users prefer to program the reactions of their programmed reflexes implants (PG 167) themselves, the process is more complex and difficult than many realize. As a result, the production of commercial reflex programs is a growing business. Each program is stored in a pocket-size

uploading unit and takes about five seconds to load.

Cost: 500cs for uploader and one program, 425cs for each additional program

CHECKLIST

Originally designed for commercial and military pilots, variations of this routine have begun to appear in a wide variety of fields. In its original form, the program activates whenever the user enters the pilot's seat of his vehicle, and prompts him to complete all steps of a preprogrammed preflight checklist before taking off. This helps ensure a safe flight without depending on the pilot's memory. Variations on this program are becoming available for most occupations or activities where routine procedures are detailed but important.

COOLNESS UNDER FIRE

Many law enforcement and military personnel swear by this reflex program. It is an artificial reflex arc that effectively eliminates the spastic, useless body movements that often accompany a sudden fright or start. Unexpected visual, tactile, or auditory stimuli that might otherwise startle the user are automatically dampened, allowing the user's cognitive center to comprehend the circumstances and act accordingly.

The effect is that the user gains a +2 bonus to his first Reflexes roll for initiative immediately following a surprise or fright.

KATA

This reflex program allows the user to perfect specific martial arts moves by instinctualizing the actions. Given the appropriate stimuli, the user is subsequently able to execute each move precisely and accurately every time. Each move and its associated stimuli must be specified and individually programmed, and each action fills one of the available slots (PG 168) in the reflex implant.

This program gives the user a +1 bonus to his Armed or Unarmed Combat skill, but only when he is performing one of his programmed moves.

LIFEGUARD

A Hydrospan programmer designed this routine after nearly drowning in a boating accident off New Fremantle. He was an accomplished swimmer but panicked after falling overboard and was actually swimming deeper underwater when a cetacean

colleague managed to bring him to the surface. The program is triggered whenever the user is unexpectedly submerged in water. It prevents the user from reflexively inhaling, relaxes all of his major voluntary muscle groups, and positions his body face-up. The user will naturally float upwards, and once he breaks the surface, can deactivate the program, begin breathing normally, and evaluate his situation without panicking.

NO-SHOCK

This program can be a life saver. One of the most immediate dangers associated with life-threatening injury is metabolic shock, which can kill a victim before the actual effects of his injury can prove lethal. The effects of shock are physiological responses to trauma, but they can be aggravated by the mental state of the victim. Fear and high stress accelerate the effects of shock and can dramatically reduce the patient's chances of survival. The no-shock program is a reflex arc that is triggered when certain vital signs reach preset threshold values. The arc interrupts the cognitive biofeedback loops that aggravate the victim's condition, delaying the onset of shock and improving his chances of survival.

A victim using the no-shock program gains a +1 bonus on all trauma rolls.

Legality: Legal
Cost: 425cs

GENETIC MODIFICATION

It is difficult to overstate the significance of genetic modifications to the human race of the 22nd Century. For hundreds of thousands of years, human beings have been limited to the genetic code they inherited through biological evolution. However, since the turn of the millennium, and particularly during the 15 years since the discovery of xenosilicate ores, humanity has discovered ways to improve itself far beyond anything its ancestors could have imagined.

Genetic engineering has been an immense boon for humanity from a purely medical standpoint. Genetic diseases such as sickle-cell anemia, hemophilia, and muscular dystrophy have been completely eliminated throughout most of Earth. Cancer is now treatable, and hereditary tendencies towards heart disease, hypertension, and diabetes are gradually being eliminated from the human gene pool. While new viruses are continually encountered in the remaining corners of Earth's wilderness, researchers are able to analyze them and provide appropriate treatments, sometimes within days of the first reported cases.

Beyond the medical benefits are the personal and cultural changes wrought by the widespread availability of genetic modifications. A person who wants to be taller, thinner, stronger, younger, tanner, tougher, or simply more attractive than he is naturally, needs only money.

There are also, of course, some modifications that are exploring the boundaries of the human. Hybrids, aquaforms, and spacers would have been considered freaks and horror movie special effects in the not-so-distant past, but have gained some measure of acceptance—if not equality—in the human society of the 22nd Century. These genies represent a new evolutionary future for humanity, a future humanity has created entirely for itself.

GENETIC MODIFICATION THERAPY

Considering how widespread the use of genetic modification has become, the scientific principles underlying the modification process are rather poorly understood by the average citizen. Since the completion of the Human Genome Project in the early 21st Century, bioengineers have known the exact sequence of the 100,000 genes in human DNA, and by 2020, the purpose of almost all of those genes had been determined. The challenge has been to determine what modifications need to be made to which genes in order to achieve a desired result.

The earliest steps in genetic modifications involved selectively overwriting small gene sequences so that the production of specific proteins would be initiated or inhibited within the body's cells. For example, several immune system disorders are caused when cells in the victim's bone marrow do not produce a necessary enzyme that enables the immune system to effectively fight diseases. To treat such diseases, samples of the defective marrow cells are extracted from the patient's body and the genes are replaced with healthy ones. The repaired genes are then returned to the patient's body, where they begin to produce the correct enzymes and help recover the patient's health. Some defective genes would still be located within the patient's body, but a sufficient number of healthy cells would be present to ensure his continued health.

The return of the modified cells to the patient's body was, for a long time, the most difficult part of the entire genetic modification process. A variety of vectors were used in attempts to most effectively place the modified cells where they would do the most good. The most effective vector involved placing the modified DNA strands into specially tailored viruses. Viruses have evolved to target a particular cell type in the body and pass on their genetic contents to those cells. Genetic engineers took advantage of these viruses by replacing their genetic payloads with the desired custom genes, then letting the viruses infect the patient's body as they normally would. The possibility of unwanted side effects was a very real concern for the scientists who first attempted to use viral transmission for gene therapy, but eventually the so-called "transform viruses" became the predominant method of achieving genetic changes.

LIMITATIONS

While genetic modifications offer incredible benefits to humanity, the technology is not without its limits. Genetic biomods are capable of speeding up, slowing down, increasing, decreasing, or modifying the basic metabolic processes of the human body, but cannot completely alter the capabilities of organic tissues and organs. The respiratory system can be modified to enable subjects to breathe air low in oxygen content, or air contaminated by normally toxic gases, but it cannot be modified to enable the subject to breathe methane or survive without oxygen altogether.

Mental characteristics are another area where genetic mods are lacking. Characteristics such as emotional stability, intelligence, aggression, and so forth depend at least as much on environment as on genetic makeup. The genetic constitution of cognition is still rather poorly understood by genetic researchers, and successful modifications in these areas are still relatively rare. Multiglands and mind-jobs are capable of changing a person's emotional state, but have so far been unable to accomplish radical, long-term alterations in personality.

INDUSTRY LEADERS

The great majority of new genetic modifications are researched and developed by the major Incorporate states, as they can best afford the massive costs of bringing these products to market. The four main Incorporates in the genetic engineering arena—Anasi Systems, Biogene, GenDiver, and Lavender Organics—control more than 90% of the genetic modification market between them. Smaller companies can and do make significant breakthroughs, but such upstarts are generally bought out almost immediately by one of the "big four."

While each of these Incorporate states has a diverse array of subsidiaries involved in all facets of the genetic modification industry, each has a particular area of expertise where most of their attention is focused.

Anasi Systems specializes in true medical applications of gene therapy and has managed to eliminate more obscure genetic diseases with each passing year. Anasi is also a leading designer of xenosilicate-based longevity treatments. Biogene is also active in the Long John arena, but does surprisingly little other work in human-oriented genetic modifications. Much of Biogene's research revolves around the genetic modification of animal and plant species, and there are persistent rumors that Biogene scientists are once again working on human-animal genetic hybrids. GenDiver has begun to specialize in the security market, developing a number of combat-oriented modifications that make the company extremely successful in its constantly expanding market. Finally, Lavender Organics has focused on the consumer market, specializing in inexpensive cosmetic and functional biomods that appeal to a broad audience.

Because they represent alterations of the subject's genetic code and actual living tissues and organs, biomods have neither a rigging value nor a durability rating.

FULL BODY BIOMODS

DOUBLE JOINTS

"Double-jointed" people do not, in reality, have any more joints than normal people—their joints are simply looser and more flexible. This biomod replicates this condition by making the user's tendons capable of stretching farther without damage. Athletes and dancers frequently receive this treatment on the body's major joints—hips, shoulders, knees, and elbows—while those who require flexibility in their fingers may have it applied to only those small, delicate joints. The joints modified in this way are more susceptible to dislocation, but they also tend to heal more easily.

Users with the large-joint version of this biomod receive a +1 bonus to their Agility in situations where bodily flexibility is important. This is at the moderator's discretion, but examples include crawling through a cramped tunnel or escaping from a straitjacket. Users with the hands-only biomod receive a +1 bonus to their Dexterity in similar situations where flexibility is paramount—picking an awkwardly located lock or working on an internal hover fan without first removing it from the hopper.

Legality: Legal
Transformation Time: 3 weeks
Cost: 10,000cs (large joint)
8,000cs (hands only)

PHOTOSKIN

Photoskin is an unusual new mod from Biogene, one that may herald an extended series of biomods based on plant, rather than human or animal, DNA. The photoskin process involves modifying the

user's skin cells to produce synthetic chloroplasts, the organelles in plant cells responsible for photosynthesis. The modification enables the transformed cells to use sunlight as an energy source for the conversion of water and carbon dioxide into carbohydrates and proteins. These nutrients are insufficient to sustain human life for an extended period. However, with a sufficient water supply, photoskin can help the user stave off starvation in dire circumstances. Extremely small quantities of food can be rationed out for an extended period of time, with the photoskin providing extra nutrients to help compensate for the meager diet. With a combination of the photoskin and salt tolerance biomods, the odds of survival for those stranded in Poseidon's wilderness are greatly increased. Subjects with the photoskin biomod can be recognized by the slight but noticeable green tint to their skin.

Legality: Legal
Transformation Time: 2 weeks
Cost: 8,000cs

SUBCUTANEOUS INSULATION

This mod provides an additional layer of insulating, fatty tissue all over the user's body, in effect providing a natural wetsuit. The slightly obese appearance that results from this biomod is unattractive by prevailing Western standards of beauty, but the modification is very useful for extended deep-sea operations.

Subjects with this biomod reduce the rating of all damage caused by hypothermia (PG 119) by 1. Subcutaneous insulation also provides slightly increased buoyancy, giving the user an effective +1 to his Aquatics skill when attempting to stay afloat.

The aquaform genie package includes this modification.

Legality: Legal
Transformation Time: 3 weeks
Cost: 4,000cs

IMPLANTED BIOMODS

DEXTERITY ENHANCEMENT

This biomod involves a number of lesser modifications that synergistically improve the user's manual dexterity. This complex of enhancements includes insulation of specific motor nerves, isolation and augmentation of various muscle groups, and redesign of various joints, tendons, and liga-

ments. The modification also includes a dedicated processor that improves commonly repeated actions by providing auxiliary muscle control through the use of active digital memory and motor neuron filters.

This modification provides the user with a permanent +1 bonus to Dexterity, but only for the modified hand. If both hands are modified, the bonus is +2 for tasks requiring the use of both hands.

Legality: Legal
Transformation Time: 2 months
Cost: 11,700cs per hand

GLIDER

This rare modification was developed by a small biotech firm based in Arthur on the asteroid Vesta. After undergoing the glider biomod, the subject develops patagia—large, membranous flaps of skin—stretched between his upper and lower extremities. The lower end of the patagia is attached about halfway between the knee and ankle, while the upper end is attached between the elbow and wrist.

As the name suggests, the membranes allow the subject to perform controlled glides and aerial maneuvers in the pressurized, microgravity of an asteroid settlement. The glider receives a +2 bonus to the Freefall skill and can stay aloft in low-g environments indefinitely using the habitats artificial air currents and thermals. The membranes are not large enough to sustain controlled gliding in higher gravity environments such as Luna.

Legality: Legal
Transformation Time: 1 month
Cost: 5,500cs

NICTITATING MEMBRANES

Nictitating membranes are analogs of the "third eyelids" found in many animal species. They are thick, retractable, transparent eye covers that protect the surface of the eye without impairing vision. On Poseidon, they are most often used underwater, but are also useful in dusty or otherwise contaminated environments. Nictitating membranes are an integrated component of aquaform modifications.

Legality: Legal
Transformation Time: 2 weeks
Cost: 5,000cs

ORGAN COMPOSITE

Organ composite is a radical and expensive biomodification that requires multiple surgeries and extensive genetic transformations. The OC mod replaces many of the body's internal organs with a spongy complex of multi-function tissues that decentralizes the glandular, renal, hemo, and hypatic functions of the body's natural organs. Except for the cardiopulmonary and gastrointestinal systems, which remain intact, the body cavity is filled with a soft and flexible tissue composite. This composite disperses the physiological functions of the replaced organs so that, even after suffering significant damage, the body retains vital capabilities.

This modification was originally designed for use in the rumored Mk VI GEO Shock Troopers, but several prototypes have apparently already reached the commercial market. The mod is sure to become popular with mercenaries, frontiersmen, and the underworld element.

Recipients of this mod gain a permanent +1 bonus to their Toughness and a +1 bonus on trauma rolls. Unfortunately, this biomod also imposes a –2 penalty on all Medicine rolls intended to treat the user's internal injuries.

Legality: Legal
Transformation Time: 2 months
Cost: 58,600cs

SKINLIGHTS

Adapted from various species of deepwater fish and certain insects, cells that produce the enzymatic chemical reactions responsible for bioluminescence can be implanted in tissues throughout the body. While the light generated is not particularly bright, it does provide enough illumination to enable individuals with night vision to see at least a few meters in what would otherwise be complete darkness. Bioluminescence can also be used to provide "task lighting" that does not carry very far. Applications for bioluminescent fingers, for instance, range from picking locks in the dark to reading in bed without disturbing one's spouse. Skinlights are also useful as a method of underwater communication, a task for which much of nature's original bioluminescence was evolved. Finally, artistic uses of bioluminescence are common—skinlights are very popular among dancers and musicians as a means of adding extra visual expression to their performances.

Users can turn the bioluminescent tissue on or off at will, though they cannot control its brightness. For an additional investment, skinlights that illuminate in a variety of colors are also available.

Legality: Legal
Transformation Time: 1 week
Cost: 100cs per square centimeter (single-color)
200cs per square centimeter (multi-color)

SWIM BLADDER

The swim bladder enhancement is a uniquely useful biomod for Poseidoners. The modification consists of a number of small, interconnected pockets located in the upper abdomen and pleural cavity, analogous in function to the single swim bladder of Terrestrial bony fishes. These pockets are linked to the user's circulatory system by capillary networks from which, and into which, gases are diffused. Using the bladder, a customer can readily alter his neutral buoyancy to any desired depth, even while carrying a load of up to five kilograms. Additionally, the user is able to remain afloat, his head above the water's surface, with negligible effort.

Users of this modification gain a permanent +1 bonus to their Aquatics skill.

Legality: Legal
Transformation Time: 2 months
Cost: 3,200cs

WEBBED DIGITS

As the name implies, these mods are comprised of artificial webbing inserted between the fingers and toes in order to improve swimming ability. This grants the user a +1 meter per action increase in his swimming pace. The user's fingers are only webbed up to the second knuckle; this causes no impediments to the user in activity on land, except for an inability to wear standard gloves.

Legality: Legal
Transformation Time: 1 week
Cost: 2,500cs

METABOLIC BIOMODS

ADRENAL SHUNT

In times of surprise or stress, the "fight or flight" response that humans have inherited from their animal ancestry can actually be a handicap. It can stun a person into inactivity, or cause him to react inappropriately, or even recklessly. The adrenal shunt is a complex of nerve connections and a glandular reservoir that can inhibit or moderate the hormonal mechanisms that trigger the fight-or-flight response. When a so-called adrenaline rush would normally occur, the shunt traps the associated hormones, arresting their effects and giving the user crucial moments of clear headedness and calm. Subsequently, as the situation warrants, the user can choose to dump the hormones harmlessly into his digestive tract or directly into his circulatory system. The latter causes a sudden, heightened, but expected rush that accentuates the user's awareness, speed, and strength.

An adrenal shunt eliminates any penalties on Awareness, Intellect, and Will due to surprise, stress, or fear. Subsequently, if the character chooses to allow the adrenaline rush to occur, he receives a +1 bonus to both Strength and Reflexes for a number of seconds equal to 10 + (Fitness x 10).

Legality: Legal
Transformation Time: 2 weeks
Cost: 7,500cs

IMPROVED BLOOD CLOTTING

This biomod involves enhancing the fibrin and platelets required to make blood clot in a wound. The improved clotting factors reduce bleeding to a minimum and help reduce further trauma and hemorrhagic shock. Subjects with this biomod suffer a somewhat higher incidence of embolism and stroke.

Characters with improved blood clotting gain a +1 bonus on stun and trauma rolls made when suffering serious or critical wounds (PG 117). The biomod also provides a +2 bonus to characters attempting to perform First Aid on the user.

Legality: Legal
Transformation Time: 3 weeks
Cost: 8,000cs

PHEROMONES

This biomod enables the user to control and concentrate his body's pheromones, the chemical signals that convey social and sexual messages to members of the same species. Despite centuries of advertising to the contrary, concentrated pheromones will not permit users to seduce or dominate others on their whim. Pheromones can, however, provide a slight edge during negotiations, whether those negotiations are financial, personal, or sexual in nature. The biomod can also inhibit the emission of normal pheromones.

The pheromones biomod gives the user a +1 bonus to his Negotiation, Persuasion, and Fast-Talk skills, as long as he is within two meters of the target. It is only useful against targets of the same species group. Pure-strain humans and transhumans are considered to be a single species group, as are squid and divers. Each species of hybrid is considered to be a separate species group, and orcas and dolphins comprise two different species groups as well.

Legality: Legal
Transformation Time: 2 weeks
Cost: 9,000cs

SENSORY BIOMODS

PERFECT PITCH

A very popular mod among musicians, perfect pitch allows the user to precisely identify any musical tone within the range of normal human hearing. This biomod confers a +3 bonus to the user's Music skill. Beyond its artistic benefit, perfect pitch is useful for humans attempting to understand cetacean speech, and allows additional precision in interpreting the results of echolocation data. Users with both the echolocation (PG 176) and perfect pitch biomods gain a +1 bonus to their hearing rolls when using echolocation.

Legality: Legal
Transformation Time: 2 weeks, plus a week of training
Cost: 3,000cs

SENSE OF DIRECTION

This biomod represents an increased sensitivity to a planet's electromagnetic field, permitting the user to orient himself in the direction of magnetic north. This sense can be "tricked" by strong magnetic fields and is susceptible to local variations in planetary magnetism. When traveling in the wilderness, however, it can provide life-saving assistance to a lost traveler. The location and strength of magnetic fields vary widely from planet to planet, so if the modification is not reapplied when the user moves from one planet to another, it is effectively useless.

Legality: Legal
Transformation Time: 2 weeks, plus a week of training
Cost: 4,000cs

GENETIC REDESIGN

At the end of the 22nd Century, humanity has reached a point in scientific development and technical achievement at which it can direct its own evolution. Genetic modifications can be passed down from generation to generation, creating new types of human beings who differ from each other by far more than the superficial variations between the traditional human races.

Individual genetic biomods have become routine by the end of the 22nd Century, and even full-body biomods are widely accepted. The identity of a pure-strain human who, for whatever reason, elects to undergo the spacer transformation remains unchanged, despite the radical changes in his body. His memories, attitudes, and personality are largely unaltered. The creation of a new type of genetic redesign, however, represents a true leap into the unknown. The first representatives of a new species have no parents to emulate and no cultural history to draw on, and no one can accurately pre-

dict how they will react to the world, or vice versa. As the creators of the initial hybrid races learned to their dismay, creating a species designed for a specific purpose does not necessarily mean that the new species will be committed to that purpose.

For this reason, few new redesigns of the human genome have been proposed over the last century, and fewer still have been produced in any significant numbers. A wide variety of genetically engineered animal and plant species have found their way into the ecology of various human-occupied worlds, but humanity as a whole has shied away from creating further variants of itself.

RACE RELATIONS

Despite its technical and scientific achievements, humanity has yet to evolve beyond the discomfort, fear, and even hatred with which many people react to appearances and customs different from their own. The various genie species have been subject to the same discrimination and prejudice that historically affected racial minorities in most of Earth's nations. While the issues are complex and generalizations are problematic, it is possible to provide a broad overview of relations between human species and subspecies. This overview is necessarily a generalization, and it must be emphasized that different cultural systems—especially religions—significantly influence the relations within and between these genetic groups.

Pure-strain humans, and even modies who have undergone minor genetic modification, tend to fall into three distinct camps regarding their opinions on the various genie races. The first is the contemporary liberal view. Most people in the developed regions of Earth and the Colonies believe that while genies may look different—in some cases, very different—from pure-strain humans, they can and should be judged on their own merits on an individual basis. No matter how much their genome varies from that of unaltered humans, they are still *human* in the legal and ethical sense of the word. They are entitled to the same rights as unmodified humans, and these rights should be protected by law.

The second camp is most common in traditional religious cultures, as opposed to the homogenized Western global village that dominates much of Earth and the Colonies. In these cultures, many believe that the engineering of the human genome represents a real and ongoing threat to the continued survival of pure-strain humanity—the human race created in God's image. Personal violence against genies is not uncommon in these communities, and the political controversy over genetic engineering of humans has sparked widespread violence, rioting, and terrorism in some parts of Earth. Human genetic engineering is punishable by death in the United Islamic Republic, and the UIR and the Anasi city-state in Beirut have been locked in an effective cold war since Anasi destroyed Damascus with a nuclear missile in 2117.

The final camp is one whose ranks are filled with futurists and visionaries who regard the genie races as the future of humanity, the next step in the species' evolution. Like the anti-genie factions, this group believes that the engineering of the human genome threatens the long-term existence of pure-strain humanity—and they seek to encourage this obsolescence as much as possible.

Interestingly, transhumans are subject to anti-genie prejudices only in the most conservative cultures. Sociologists suggest that Alphas suffer this discrimination to a lesser extent than the "exotic" genie races simply because they are for the most part visually indistinguishable from pure-strain humans. Even people who are opposed to human genetic engineering in principle will often willingly accept transhuman friends, coworkers, and neighbors. Ironically, some transhumans actively participate in the anti-genie movement, apparently believing that they represent the best of "true humanity" and that the other genie races are aberrations against nature.

The two primary types of aquaforms are usually lumped together in the public eye, and indeed many non-aquaforms have difficulty telling squid and divers apart unless the squid's gills are visible. Aquaforms have historically suffered surprisingly little discrimination, largely because they remain very rare on Earth. The first time that unmodified humans came into contact with aquaforms in any significant number was during Recontact, by which time the aquaforms had claimed Poseidon as their own world and developed their own culture. Due to the aquaforms' exceptional familiarity with and adaptation to the waterworld, it was difficult for pure-strain human newcomers to develop any sense of superiority over the aquaforms. The new colonists' familiarity with Poseidon is beginning to breed some contempt for the aquaforms, though, and an increasing number of arriving colonists

view the natives as uneducated primitives. The extent to which the aquaforms' genetic modifications contribute to this prejudice remains unclear.

Hybrids have suffered the worst racial discrimination of any genie species. As the first genie race to appear in any significant numbers, they felt the full brunt of pure-strain human racism before humanity had come fully to grips with the idea of genetic engineering. The hybrids were created in secret using methods of which the public did not approve, and the use of animal genes in their creation made it inevitable that some would consider them subhuman.

The hybrids were created and trained to fight, a role that most did not accept, and when they chose to reject violence they had no "purpose" and were abandoned by those who had created them. As a result of this painful history, most hybrids feel an understandable distrust for pure-strain humans, which tends to develop into a self-perpetuating cycle of suspicion. As for the other genie races, hybrids frequently feel jealous of their younger cousins. Aquaforms and spacers did not have to suffer nearly as much public backlash when they were first created, partly because of the hybrids' difficult struggle for equality and acceptance years before. Some hybrids feel the younger genie races owe them a debt of gratitude, but most simply shrug their shoulders stoically and go on with their lives.

Spacers are, in many ways, the most alien of the genie races. Aquaforms are still recognizably human, and hybrids mix predominantly human characteristics with those of well-known animals. Spacers, however, cannot even be accurately described as "humanoid" due to their distinctly non-human feet and legs. Their gait seems unnatural to most humans and even other genie races, and in most cases, a person seeing a spacer walk for the first time tends to simply stop and stare. As with aquaforms, spacers manage to avoid prejudice from pure-strain humans by avoiding contact with them. Spacers tend to be an insular and close-knit group, keeping very much to themselves even in mixed communities. They tend to lump the other human species, modified or otherwise, together as "downsiders," and affect an attitude of disdain towards any grounder who passes through their domain. Spacers are supremely well adapted to working in space, and they know it; anyone else, as far as they are concerned, is simply passing through and getting in their way.

THE FUTURE OF GENETIC REDESIGN

Human genetic redesign in the traditional sense, that of creating new species in the lab rather than modifying existing individuals, seems to be a practice whose time has passed. With the discovery of Long John, extensive genetic changes can be made on full-grown adults, which is generally much less risky and less expensive than trying to generate a new species from scratch. Unless a new niche is found for a redesigned race—one that requires such extensive modifications that they cannot efficiently be achieved through biomods—there is little economic motivation for any corporation or government to spend the vast sums needed to create and perfect a new design. Small-scale genetic redesign projects are still occasionally undertaken by groups that hope to exploit a niche market before the Incorporates do, or by those who feel that a newly created race can somehow be bent to its creator's will. As the designers of the hybrids can attest, this latter approach is much harder to manage than it appears.

COGNITIVE SYNERGISTS

The early goals of genetic engineering typically focused on the physical performance of the human body, attempting to improve such attributes as speed and strength. The mechanisms for these functions had long been understood, and increasing their performance was simply a matter of enhancing or supplementing existing biomechanics. Conversely, handicapped as physiologists were by their lack of understanding of brain function, gene therapists met with little success in their early attempts to enhance human mental function.

The disparity between physical and mental enhancement remained problematic until the Moore Synergy was accidentally achieved in an Anasi physiology lab by researchers studying the effects of cetacean uplift therapy analogs on human cognitive development. Though the precise causes of the synergy remain poorly understood, subsequent research has produced a form of genetic redesign (PG 170) that produces individuals with significantly higher brain function and increased mental capabilities.

A "Brainchild," as the popular press chose to label such a genie, has an eidetic memory, an IQ of at least 160, and the abilities of a so-called natural calculator. Unfortunately, these benefits come at a significant cost. Brainchildren are prone to severe mood swings and emotional breaks. To combat these problems, most brainchildren require a strict regimen of drug therapy, and in some cases, even mood-regulating cyberware. To date, cognitive synergy has not been achieved post-natally and is an option only available as a full genetic redesign.

Brainchildren who submit to emotional regulation receive the following modifications:

+1 Awareness
+2 Intuition
+2 Intellect
–1 Presence
–1 Will
–1 Reflexes

Brainchildren who refuse emotional stabilization therapy, or who are removed from it for more than a few days, receive the following modifications:

+2 Awareness
+3 Intuition
+3 Intellect
–3 Presence
–3 Will
–2 Reflexes

Legality: Restricted
Cost: 124,000cs

HYBRIDS

While Silvas and Cats comprised the great majority of the hybrids created in the 2060s, several other hybrid species were created in small quantities, and small numbers of some of them have survived to the present day. They are rare, and even more culturally isolated than the other hybrids, but they still manage to perpetuate their species.

MULTI-SPECIES COMPOSITES

"Mongrels," as they have unfortunately been labeled, are the legacy of one of the less successful lines of the same genetic research that produced the feline and gorilla hybrids (PG 171). As their derogatory nickname implies, these genies are not the result of recombinant engineering of human genes and those of a single animal species. They are instead the result of a mixture of trait complexes from a variety of species.

Composites include non-human traits from a number of sources, including canine, ursine, mustelid, and crocodillian genomes. Though undeniably human, their hybrid ancestry is glaringly obvious. They tend to be short and lean, with wiry muscles and dense, reddish body hair. Their eyes are green with almost no whites, and their ears are large, low, and slightly pointed. Their teeth are small, but with an extra set of upper canines. Their hands and feet are wide, have only four digits, and are tipped with tough, non-retractable claws. Their skin is dark, thick, and tough, with large vestigial scales on their forearms, lower backs, and shins.

Composites were deemed "too divergent for project applications" and so were never bred in great numbers. They were active in the Peacekeeper ranks along with their hybrid kin, but because of their low numbers, seldom received the recognition that distinguished the other species. Most of the mongrel hybrids took advantage of the GEO colonial sponsorship (PG 170) and emigrated to Poseidon with the other species, and today there are just over 1,000 registered in official colonial records. However, because of their "divergent" and anti-social tendencies, composites have not been overly successful as members of any of the hybrid communities. Most have opted for independent lives on the edges of frontier society. As a result, actual population estimates are uncertain, and many believe there may be as many as 2,000 mongrel hybrids on the colony world.

Composites have night vision and enhanced hearing and smell. They also have a crude form of infrared sense that allows them to visually sense temperature differentials of at least 10°C.

Composite modifications:

–1 Build
+2 Fitness
+2 Agility
–2 Dexterity
+1 Awareness
+1 Intellect
–3 Presence
+1 Will
+1 Reflexes
+1 Strength
+1 Toughness

SURGICAL MODIFICATION

Surgical modifications involve the grafting of custom-grown organs or other tissues into a patient's body or the structural or cosmetic alteration of existing tissues and organs. New tissues may be modified replacements for the patient's original ones, or may be auxiliary organs designed to supplement what nature has provided. In either case, they represent a middle ground between the wholly artificial implants of cybertechnology and the genetic modifications in which the patient's own body is engineered to grow the new organs.

As with cybertechnology, surgical modifications may appear to be unnecessary in the age of Long John. When customized genetic modifications can be set in motion with the simple injection of a transform virus, the actual surgical insertion of foreign tissues seems almost primitive. Why bother to have gills, or any other desired organs, surgically implanted when your body can simply be instructed to grow its own?

The first and most common answer is "to save money." Despite the technological breakthroughs spawned by the discovery of Long John, the development of transform viruses remains an extraordinarily expensive and difficult process. When a straightforward and established surgical procedure exists to effect a certain type of modification, it is often simply more cost-effective to use the surgery rather than invest time and effort in developing a genetic equivalent. The first transform viruses were developed to generate the most sought-after modifications, and the research required to design them has long since paid for itself. Other surgical modifications are generally rare or highly specialized, and genetic engineers tend to concentrate on the more profitable arenas in which genetic modifications can do what surgical ones cannot.

There are also individuals who are uncomfortable with the idea of genetic modification, even as the 22nd Century draws to a close. Some conservative groups feel that, for moral or ethical reasons, tinkering with human genes is unnatural and prefer to obtain any necessary modifications through surgery or cyberware so that their genes remain "pure."

SURGICAL TECHNIQUES AND RECOVERY

By 2199, almost all surgery that does not directly involve a major internal organ is done on an outpatient basis. Any small-scale operations are performed using surgical lasers, leaving scars that are effectively invisible until they heal completely. Those operations that require the implantation of larger organs, and thus a larger surgical aperture, are still performed with lasers to minimize scarring. The incisions are closed with organic adhesives that break themselves down as the wound heals, and professional medical care almost guarantees that there will be no significant scarring.

Surgical rejection is almost unheard of in 2199. The majority of replacement limbs or organs, whether simple replacements or enhanced structures, are grown directly from samples of the patient's own DNA. In cases where there is insufficient time to grow a gene-matched replacement, "generic" tissues are a practical alternative. These genetically "neutral" tissues are matched to the patient's blood type, rH factor, and several other genetic flags that have been determined to trigger the body's immune system. When properly selected, generic tissues will cause a minimum of complications that are easily compensated for with advanced anti-rejection drugs.

INDUSTRY LEADERS

While there is some overlap between the use of genetic modifications and surgical ones, the leading designers and manufacturers of surgical biomods are not the same as the leading genetic modification companies. Anasi Systems is the single largest purveyor of surgical mods, and its diverse healthcare holdings are a major asset in this field. Anasi surgical mods are frequently designed in Anasi labs, manufactured in Anasi plants, and implanted in Anasi hospitals and clinics, thus capturing the revenue stream from the entire industry for the parent corporation. Anasi is also one of the few companies designing new surgical mods, which are usually available only at Anasi hospitals, thus perpetuating the cycle.

Hanover Industries is the only other Incorporate state that is particularly active in the field of surgical modifications. However, its various research, manufacturing, and implantation facilities are owned by separate subsidiaries that often pursue their own strategies and agendas, making it diffi-

cult for Hanover to seriously compete with Anasi in this arena.

Generic surgical mods developed by smaller corporations are also available for implantation at any moderately well-equipped hospital. However, they generally need to be ordered in advance, as the demand for such mods is so small that the necessary equipment and raw materials are rarely kept on hand. The exception to this rule would be mods such as gills on Poseidon, which are in relatively high demand and usually available on short notice.

GILLS

Similar to those implanted in first-generation squid, these are organically grown gills and support tissues implanted in the user's neck and back and connected to his circulatory system. They permit the user to breathe underwater indefinitely, but confer no other benefits with regard to safe diving depth. Gills only function when the user is immersed in water or similar oxygen-containing liquids—if other liquids are involved, it is still very possible for a character with gills to drown.

Legality: Legal
Healing Time: 5 weeks
Cost: 7,000cs

RIB COVERS

Rib covers, also known as "carapaces," "shells," or "body bags," are designed to reduce the risk of damage to internal organs by stopping knives or any other foreign objects that might otherwise penetrate the torso and damage internal organs. They consist of a tough biopolymer mesh encasing the ribcage and lower abdomen. The mesh has enough flexibility that it "breathes" along with the user, but is strong enough to prevent penetration by all but the slimmest weapons. The mesh also helps reduce damage from blunt trauma by dissipating it over a larger area, leading to extensive bruising but less permanent damage.

In game terms, rib covers provide an armor rating of 1, over and above any other armor the user may be wearing. At the moderator's discretion, extremely thin stabbing weapons, such as a thin-bladed stiletto or icepick, may not be subject to this armor protection.

Professional fighters and soldiers are the only individuals who commonly opt for this mod. Undercover agents and street criminals also occasionally have rib covers implanted. For others, the benefit is usually not worth the cost and lengthy recovery period.

Legality: Legal
Healing Time: 3 weeks
Cost: 7,500cs

SUBDERMAL PLATES

These biomods are also sometimes referred to as "brass knuckles." Despite this nickname, they are neither made of brass nor necessarily located in the hands. They are hard, smooth bioplastic plates implanted directly under the user's skin in various locations depending on their intended purpose.

These implants were originally designed for security personnel at schools, nightclubs, and other locations where traditional weaponry would be inappropriate. At first, the plates were purely defensive in nature, and were implanted along the user's forearms to enable them to block incoming weapon attacks without sustaining major damage—the skin over the plates might be broken, but the bones and underlying tissues generally remained unharmed. Gradually, more offensive versions of the plates were introduced. These were implanted in the various striking surfaces of the user's body—along the outside edges of the hands for open-hand martial arts strikes, along the tops of the fingers for closed-fist punches, around the metatarsal bones of the foot for front kicks, and so forth. Other versions were developed for the elbow

and knee joints, serving both offensive and defensive functions.

Subdermal plates are most commonly used by athletes, from professional fighters seeking an edge to hydroshot players wanting extra protection. Those who travel in dangerous areas but do not wish to travel armed also sometimes get these implants. However, individuals who genuinely want to avoid conflict usually find it more effective to carry an unconcealed weapon as a deterrent, at least in areas where they can legally do so.

In game terms, characters with subdermal plates receive a +1 bonus to the damage rating of their unarmed attacks. Those with defensive forearm plates may parry armed attacks at no penalty.

Legality: Legal
Healing Time: 3 weeks
Cost: 5,000cs

CETACEAN BIOTECH

As a general rule, cetaceans are psychologically averse to most forms of biotechnology, especially cybernetic implants. Though some individuals still opt for cybernetics, most fins who undergo modification choose genetic transformation instead. Biomods are often as radical as any cybernetic modifications, but for some undetermined reason, the organic nature of the process and the biological function of the final form are somehow more acceptable to the typical cetacean. Fin psychologists debate the reasons behind this mindset, but a consensus is still forthcoming.

Despite this cultural attitude against the practice, an increasing number of cetaceans are undergoing modification. As a result, the increasing demand is driving the development of new, strictly biological modifications for cetacean customers. Poseidon is a dangerous place and every advantage means an increased chance of survival.

The **Blue Planet** *Player's Guide* contains descriptions of a number of human biomodifications (PG 173), such as anti-poison, multiglands, or immunological symbiotes, that can be adapted to cetacean users, providing them with uniquely valuable capabilities. In general, these mods have the same effects in game play, but due to the smaller market support, their costs are typically doubled.

AUTONOMIC STREAMLINING

The remarkable speed with which cetaceans can swim and the endurance they demonstrate are in part the result of the unique hydrodynamic characteristics of their skin and body shape. Autonomic streamlining is a complex biomod that enhances these evolutionary traits, adding to the efficiency and speed of the cetacean form.

The primary components of the modification are bundles of muscle fiber that are linked to the autonomic nervous system and the coordination center of the brain. These muscle bundles are grown along the edges of a cetacean's flukes and fins, and serve to adaptively alter fin shape during power strokes and control-surface movements. The end result is increased power and improved real-time streamlining that adds both speed and endurance to fin movement. This modification increases a cetacean's top speed by 3 meters per action and adds a +1 bonus to his Endurance for purposes of long-distance swimming.

Legality: Legal
Transformation Time: 2 months
Cost: 32,000cs

CHROMATOPHORIC PIGMENTATION

Chromatophoric pigmentation gives cetaceans camouflage capabilities similar to those of Terrestrial squid or octopi. The modification provides fins with dermal chromatophores that are controlled by the voluntary nervous system and linked into the visual cortex. With a thought, visual input is coordinated with muscular response and specific colors of chromatophores are expanded while others are contracted. The end result is that almost instantaneously the cetacean's skin takes on the colors, shades, and patterns of its surroundings. Patterns and colors are not static either, and as they shift around the fin, they move similarly across his body. This provides a significantly higher level of visual camouflage than a phototropic body skin, giving anyone visually searching for the user a –6 penalty.

With practice, cetaceans with this biomod can vary their skin colors arbitrarily, displaying, flashing, or otherwise patterning any colors, in any ways they wish. This often makes for some impressive effects when fins have been taking baggies (see page 40) or are listening to live music.

Legality: Legal
Transformation Time: 3 months
Cost: 18,500cs

ENHANCED ECHOLOCATION

This mod does not change the basic capabilities of cetacean echolocation, it simply improves them. Increased neural interface and modified jaw and skull structures serve to double the effective sensory range and to increase the stunning effect of fin sonar. Cetaceans with enhanced echolocation can sonically stun close-range targets with much the same results as a stun gun (PG 147). The effects are similar but ranges are halved and the action penalty for the duration of the stun is only –3.

Legality: Legal
Transformation Time: 1 month
Cost: 10,500cs

IMPROVED BLOOD OXYGENATION

This modification is essentially the same for cetaceans as it is for humans (PG 174), increasing the oxygen delivery capability of the blood and oxygen storage capacity of the muscles. However, because the physiology of an unmodified fin is already so well adapted in this respect, the end result is a compounded effect that improves the capabilities of this mod over those of the human version.

Cetaceans with this modification can hold their breath for an additional 20 minutes, even when active, and they receive a +1 bonus to Fitness and Endurance.

Transformation Time: 2 months
Legality: Legal
Cost: 11,000cs

LARYNX ANALOG

This is a rare modification with problematic function, but as development continues and improvements are made, it could become both much more common and useful. The larynx analog is an artificially designed organ grown deep in the respiratory tract, well inside the blow hole. It contains vocal cord, tongue, and lip-like structures that form and control sounds. The larynx analog essentially gives the cetacean user the power of human speech.

Unfortunately, due to anatomical differences, the end result is not entirely satisfactory. The placement of resonating structures, such as the lungs, the lack of natural lingual structures, and the demands of cetacean breathing prevent this biomod from simulating speech that sounds anything like an actual human voice. The sounds emitted are high-pitched, squeaky, and coincidentally reminiscent of the audible buzzes and clicks of cetacean sonar. Though the words are usually understandable, the voices are universally cartoon-like and comical.

Legality: Legal
Transformation Time: 1 month
Cost: 6,000cs

MANIPULATORS

This is an exceptionally rare modification, but a useful one. The basic version provides cetaceans with two dexterous, tentacle-like structures that can be used to grab, hold, and manipulate objects. These muscular arms grow from, and can be withdrawn into, a pair of folds running from just behind the pectoral fins, along the user's flanks. Drawing the tentacles into these folds allows the user to maintain streamlining and swimming speed.

Each tentacle in approximately one and a quarter meters in length and branches into three separate 20 centimeter manipulators at its distal end. The tendrils can move in opposition to each other, and are each covered with small ridges that provide gripping friction.

A cetacean with this modification gains a base Dexterity of –2, and the arms function with an effective Strength of –2.

Legality: Legal
Transformation Time: 3 months
Cost: 24,500cs

MUSCULAR ENHANCEMENT

This modification enhances the metabolic and structural efficiency, and therefore the strength and endurance, of the major muscle groups cetaceans use for swimming. Though their external appearance remains essentially unchanged, fins with this mod gain a five percent increase in body mass. Users gain six meters per action on their top speed and an additional three meters on their jumping distance. Users also receive a +1 bonus to Endurance for the purpose of long distance swimming.

Legality: Legal
Transformation Time: 4 months
Cost: 85,000cs

OLFACTORY ANALOG

Cetaceans naturally lack any sense of smell. This modification provides that missing sense at an enhanced level. The mod is relatively simple and involves an array of chemoreceptive pores across the cetacean's rostrum. These receptor pores give the fin a Chemical score equal to the cetacean's Awareness.

Transformation Time: 6 weeks
Legality: Legal
Cost: 5,000cs

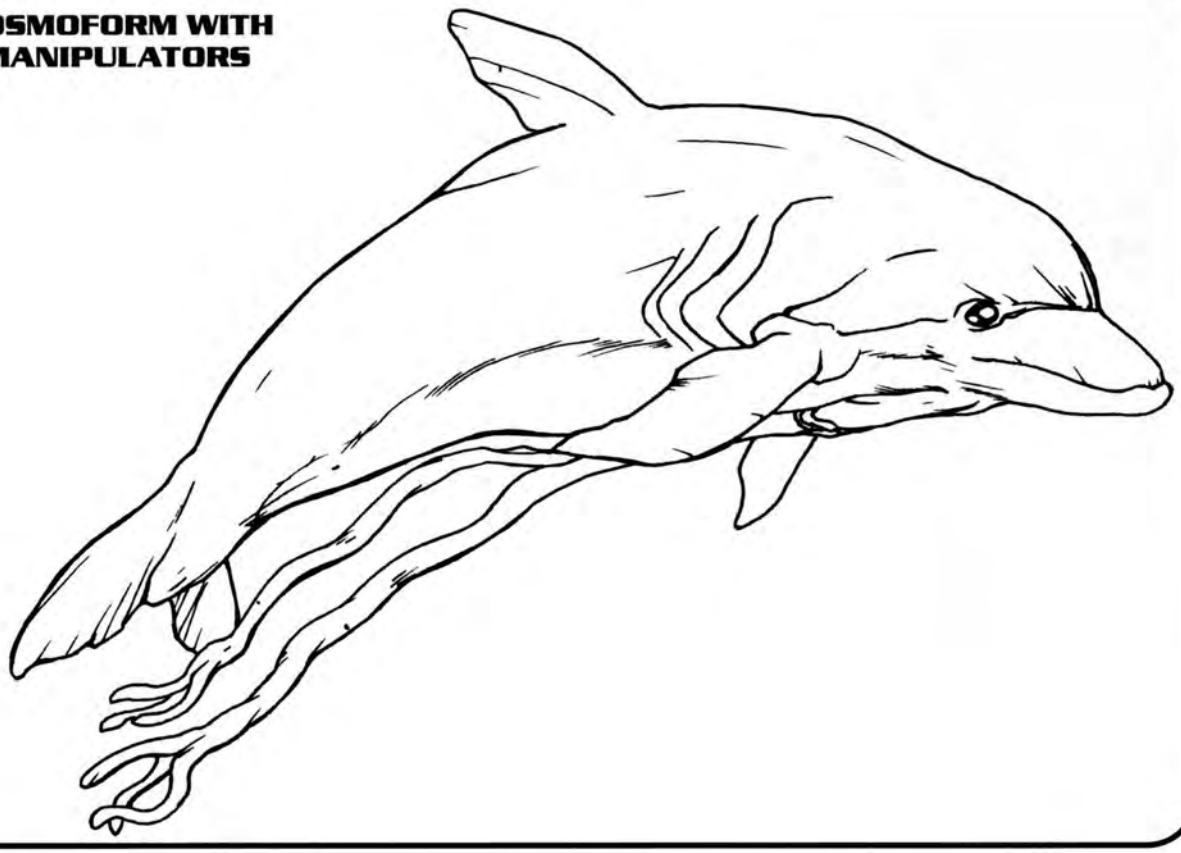
SYSTEMIC OSMOFORM

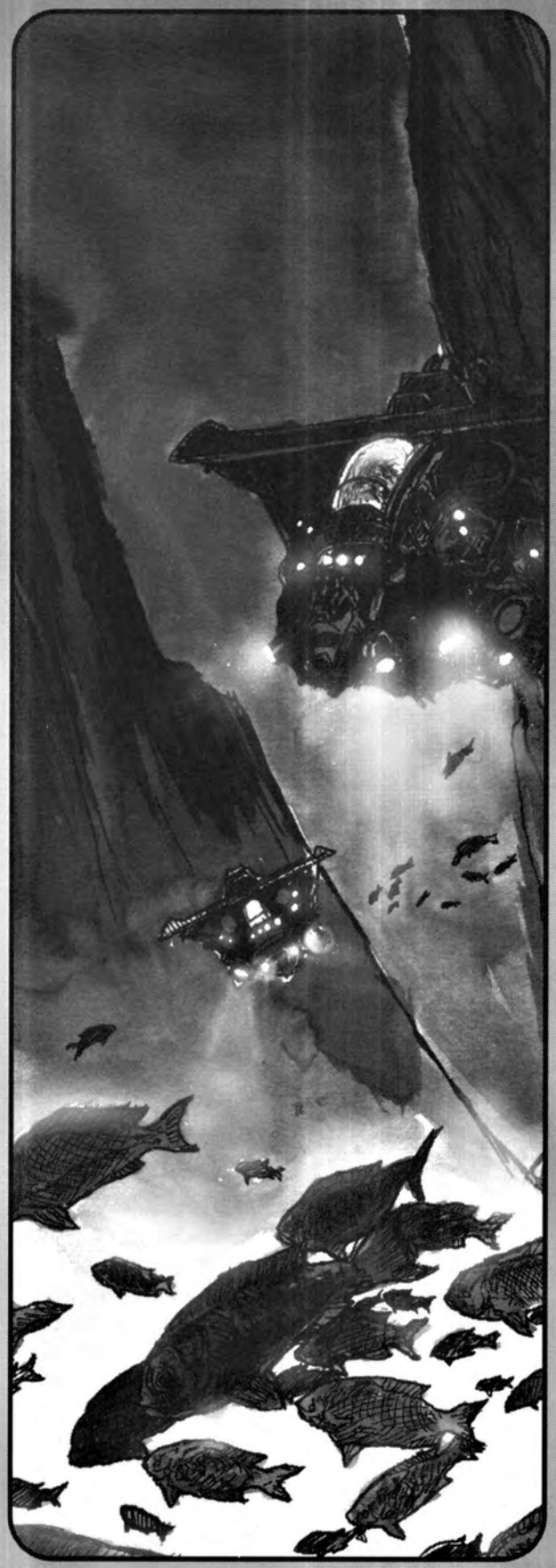
The capabilities of cetaceans would be greatly increased if they were not limited by their need to surface every few minutes to breathe. It follows then that one of the most versatile biomods for fins would be an analog to the human systemic osmoform (PG 170).

For cetaceans, the modification is a bit simpler as they are already well adapted to life in an aquatic environment. The key components of the mod are a gill system and the equivalent of improved blood oxygenation. The gills are unobtrusive structures on the dolphin's flanks, just behind the skull. In shape and appearance, they resemble the gills of a Terrestrial shark. Cetaceans with this biomod can remain submerged indefinitely.

Transformation Time: 3 months
Legality: Legal
Cost: 27,500cs

OSMOFORM WITH MANIPULATORS





VEHICLES

CHAPTER 04

Safe, fast, and efficient transportation, so often taken for granted on Earth, can be difficult at best and often nearly impossible in the far-flung reaches of Poseidon. The thousands of kilometers that separate some settlements from each other might seem inconsequential to tourists who are used to daily New York-to-Tokyo shuttles, but they can be an insurmountable barrier to commerce on Poseidon. The relative lack of manufactured parts and repair facilities adds further obstacles to movement between settlements and makes reliability and ruggedness a key feature in vehicle design.

VEHICLES KEY

The following listings cover many different vehicle classes. As with other equipment in **Blue Planet**, there are certain conventions used to describe the capabilities of vehicles.

DESCRIPTION

This is a description of the typical construction and role of a particular vehicle. In a world where technology is always being improved, there is always variation between designs. These descriptions present the average capabilities, functions, and statistics for each vehicle.

DIMENSIONS

These values represent the average size and mass of the described vehicle.

POWER SOURCE

This indicates the vehicle's type of power plant. Most are powered by hydrogen fuel cells.

AVAILABILITY

This is a description of the relative availability of a vehicle. There is no connotation of legality, only of abundance. A given vehicle may be abundant and still be illegal. Note also that vehicles are typically scarcer in the Colonies than they are on Earth.

VERY COMMON

The vehicle is easy to find, and can be bought almost anywhere.

COMMON

The vehicle is available in many places and can be obtained with minimal difficulty.

UNCOMMON

The vehicle is somewhat unusual and can be obtained only from specialized dealers or through factory orders.

SCARCE

The vehicle is difficult to find and may require special knowledge or contacts to obtain.

RARE

The vehicle is very difficult to find because of such factors as production difficulty, expense, or legality.

COST

This represents the standardized relative value of a vehicle, in corporate scrip, with no regard to its legality or availability. Legally restricted or hard-to-find vehicles will fetch higher prices, regardless of their standard cost. Because of the extreme variety of circumstances in **Blue Planet**, game moderators should consider availability, legality, and the character's situation before setting a final price for a given vehicle.

FUEL EFFICIENCY

This lists the number of kilometers a vehicle can travel using a single liter of fuel.

RANGE

This lists the number of kilometers a vehicle can travel at its cruise speed on a single tank of fuel.

SPEED

This lists the vehicle's cruising and top speed in kilometers per hour. The number before the slash is the vehicle's cruising speed and the number after the slash is the vehicle's top speed.

COMBAT SPEED

This lists the vehicle's movement in action sequences, listed as a number of meters per action round.

CREW

This is the number of people required to effectively operate the vehicle.

PASSENGER/CARGO CAPACITY

This is the number of passengers or the amount of cargo the vehicle can transport.

STANDARD ACCESSORIES

This lists the typical accessories with which a vehicle of the given type is likely to be equipped. Complete descriptions of standard vehicle accessories can be found in the *Player's Guide* on page 161. Additional, specialized accessories are described below (see page 110).

ARMAMENT

This lists the typical weapon systems with which a vehicle of the given type is likely to be equipped.

ARMOR

This is the armor protection provided by the vehicle's frame or actual military-grade armoring materials that have been incorporated into its design.

DURABILITY

This is the vehicle's Durability rating, which determines its ability to withstand serious and critical damage (PG 121).

In addition, the following two vehicle ratings are used exclusively in the rules for chases and dogfights (see page 113).

POWER

A vehicle's Power is a simple, abstract representation of its ability to change its velocity, either by accelerating or decelerating (see page 114).

HANDLING

A vehicle's Handling is an abstract representation of its maneuverability and responsiveness (see page 114).

GROUND VEHICLES

Traditional wheeled vehicles move more people and cargo on Earth than any other form of transportation. On the Moon, wheeled and tracked rovers, rolligons, and truck caravans are the most common form of transport. Mars boasts an ever-increasing volume of airship traffic but still relies on a highly developed system of roads. In comparison, Poseidon, because of its geography, has almost no road infrastructure at all. Still, there are some roads in and around most of the major settlements, and some of the larger islands boast overland tracks built by colonial, mining, and logging operations. Consequently, a few ground vehicles have become relatively common on the waterworld.

SWAMP THING™

Developed by Hiatsu-Cat, an NIS subsidiary, for use over soft, boggy terrain, the Swamp Thing line of buggy tractors is based on a standard design, incorporating an enclosed cab in the front and an open cargo bed in the rear, mounted on a chassis of independent plastic treads. They are all awkward, slow, and offer notoriously bumpy rides. However, these are worthwhile design compromises as Swamp Things can travel through light forest, bog, tidal flat, ice sheet, snow, shallow water, or even soft sand with equal ease.

Dimensions: 3.3 meters, 620 kilograms
Power Source: Fuel cell and twin tracks
Fuel Efficiency: 15 kilometers/liter
Range: 150 kilometers
Speed: 72/144
Combat Speed: 60
Power: –1
Handling: –2
Rigging Value: Standard
Legality: Legal
Availability: Uncommon
Cost: 15,500cs
Armor: 5
Durability: 1
Crew: Driver
Passenger/Cargo Capacity: Two passengers or 400 kilograms
Standard Accessories: Onboard computer
Armament: None

NORTHWIND TRICYCLE™

North American Navigation's low-cost, high-efficiency export to Poseidon, the Northwind Trikes have been a spectacular failure. They function poorly when off prepared roads and in foul weather and they have largely become the vehicle of choice for rank newcomers. In strong winds, the Northwinds are unwieldy and they are susceptible to the effects of fast fungus. In some circles, driving a new Northwind ranks as high on the social scale as the unsightly red spots left by recent IHMS.

Dimensions: 2.3 meters, 215 kilograms
Power Source: Fuel cell
Fuel Efficiency: 40 kilometers/liter
Range: 120 kilometers
Speed: 72/144
Combat Speed: 60
Power: 0
Handling: –1
Rigging Value: Standard
Legality: Legal
Availability: Common
Cost: 7,000cs
Armor: 3
Durability: –2
Crew: Driver
Passenger/Cargo Capacity: 1 passenger or 80 kilograms
Standard Accessories: Onboard computer
Armament: None

HOVERCRAFT

Hovercraft, or air-cushion vehicles, initially saw common use as military landing craft. Popularized in the late 20th Century, hovercraft were used because of their high speed and ability to move over variable but level terrain with ease. Early ACVs were, however, severely limited. They required an incredible amount of power to lift their heavy loads. Even the heftiest military hovers were nearly useless on anything more than a gentle grade. Hills of any kind caused ACVs to veer off course and become almost unmanageable. The result was a progression of craft that were too expensive for anyone but the military or commercial water ferry lines to operate, and then only in specialized missions or heavily traveled routes.

Several major advances brought hovercraft into the popular arena. The first was a series of breakthroughs in fan design that produced a staggering

increase in available thrust. Fan design advances and improvements in materials technology produced much greater thrust at lower power output.

At the same time, increases in speed and decreases in size made an ACV's notoriously poor maneuverability a significant problem. Their tendency to skid in anything but the widest turns made most hovers nearly unmanageable on narrow roadways. The second major innovation that helped mainstream hovercraft was the addition of a suite of road sensors coupled to computer-controlled drive fans to allow more precise course control. When passenger-size hovercraft equipped with more powerful fans and augmented controls hit the market, the popularity of ACVs rose quickly.

Computer guidance and the most efficient fan designs notwithstanding, ACVs are typically limited to beachside communities, marine environments, and tidal flats. Although their limitations are not as severe as the earliest models, even the most current hovers still have difficulty with hills and sloped roadways. Modern hovers range from lumbering 12-fan cargo behemoths, to six-fan assault transports, to three-fan personal models, to single-fan banzai racers. On Poseidon, with its endless bays, beaches, and coastal plains, the hovercraft is among the most ubiquitous forms of surface transportation.

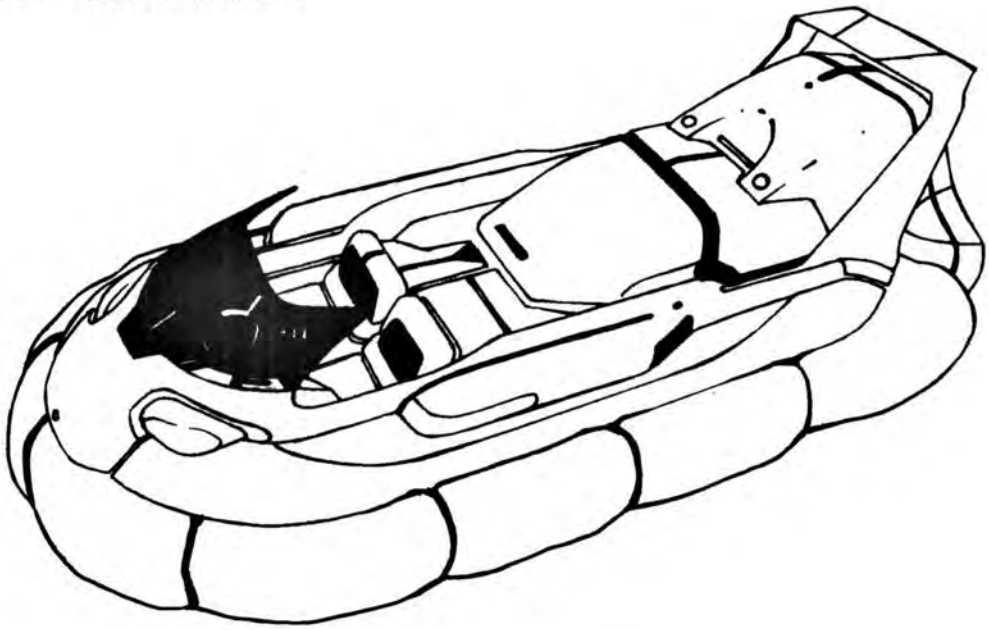
MISTRAL™

The Mistral has built a reputation for itself as an uncomfortable, unattractive vehicle but one of the most reliable on the market. The Mistral's awkward control arrangements and its poorly designed interior discouraged buyers for the first two years of production. However, when consumer organizations began to publish the Mistral's outstanding maintenance records, sales improved.

The latest Mistral models have attempted to address previous concerns over passenger comfort but have been largely unsuccessful. Drivers approaching two meters in height feel crowded by the low roof, and the seats are small and cramped. Nevertheless, its powerful engine and three independent fans—one lift, two drive—provide plenty of reliable power.

Dimensions: 3.8 meters, 816 kilograms
Power Source: Fuel cell, 3 turbofans
Fuel Efficiency: 15 kilometers/liter
Range: 1,125 kilometers
Speed: 100/200
Combat Speed: 83
Power: 1

MISTRAL™ HOVERCRAFT



Handling: –1
Rigging Value: Standard
Legality: Legal
Availability: Common
Cost: 15,000cs
Armor: 4
Durability: 1
Crew: Driver
Passenger/Cargo Capacity: 3passengers, 340 kilograms
Standard Accessories: Onboard computer
Armament: None

JEFFERSON OVERLAND HOVERTRAIN

When Hendrik vaan Klavern first explored the vast plains of southern Prime Meridian, they seemed to him to be an "endless expanse, unbroken by track or trail, unmarked by any feature save the distant mountains, isolated as no other place in the Universe." For 80 years he was right. The families that farmed and ranched the back country of Prime Meridian were almost completely cut off from the rest of the colony. All this came to an end in 2174 when Jefferson Overland began operating its transport routes.

As the services provided by Jefferson Overland have expanded, so have its facilities. In 2193, the company transitioned from large trucks and purchased a fleet of air-cushion vehicles. Designed to operate in a train configuration, two of the 10 hovercraft were built specifically as tractor units. The other eight are equipped only with lift fans and small thrusters to keep them on course. These new hovertrains are equipped with facilities to handle live cattle, refrigerated goods, fragile cargo, and passengers. Two of the cars have been equipped with sizeable vaults, allowing the secure transport of especially valuable items. Jefferson Overland offers guard services for such cargos and it is worth noting that even in the isolated countryside of Prime Meridian, no Jefferson Overland train has ever been successfully robbed.

The hovertrains themselves are an amazing cultural landmark. Without the service of the 34 cars now in operation, many of the smaller farms would fail. Without their predecessors—the single trucks, truck caravans, and lone hovers—many more farms would never have started.

Dimensions: 3 meters wide by 10.6 meters long and 15 metric tons
Power Source: Fuel cell, 4 drive fans (tractor unit), 6 lift fans
Fuel Efficiency: 12 kilometers/liter
Range: 6,000 km
Speed: 86/173
Combat Speed: 72
Rigging Value: Standard
Legality: Legal
Availability: Unique
Cost: 630,000cs
Armor: 7
Durability: 2
Crew: Pilot and 2 engineers
Passenger/Cargo Capacity: 240 passengers, 75 metric tons
Standard Accessories: Onboard computer
Armament: None

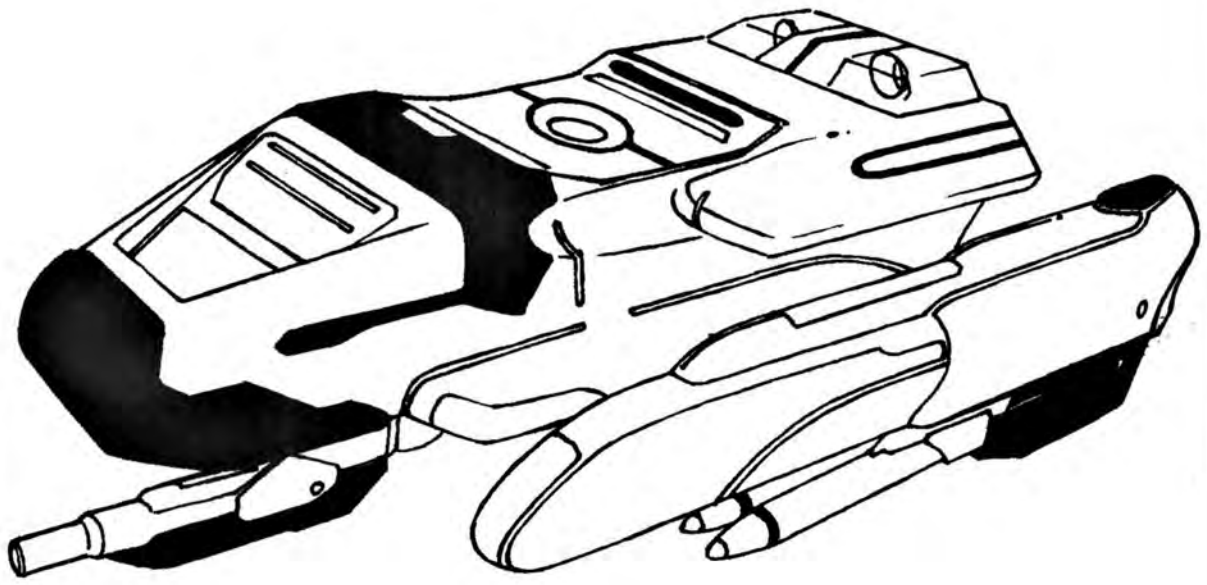
JUMPCRAFT

Jumpcraft are among the most inefficient modes of transportation on Poseidon. However, their relatively high speed, small footprint, and unique maneuverability make them ideal for many different applications. Essentially VTOL aircraft without lifting or control surfaces, the advances in fan design and light, high-output power plants pioneered by the NIS and a consortium of North American aerospace firms were absolutely essential to the development of jumpcraft as a viable concept.

Most early designers were convinced the idea of a craft depending entirely on fans for lift and thrust without the benefit of either ground effect or air cushion was impossible. The NIS, though, resurrected the design idea in 2043 with the development of a wide fuselage with three universal high-thrust ducted fans driven by a diminutive fuel cell. The result was a high-speed police and military transport that could keep up with most VTOLs but had all the maneuverability of a rotary-wing aircraft.

Unrestricted by traditional lifting surfaces, jumpcraft can use controlled "skids" to continue flying in any direction and point in almost any other, making them attractive as assault transports and patrol craft. This lack of any firm directional control is also a drawback. When traveling at high speeds, a jumpcraft's lack of stabilizers gives it an absurdly large turning radius.

MACLEOD MODEL 227™
PATROL JUMPCRAFT



Although the earliest models were priced out of the range of many companies and all but the wealthiest private citizens, the NIS's Dragonfly-series jumpcraft led the way into the consumer market, and the follow-up Skyhook load lifters began a slow revolution in the cargo-hauling market. Modern jumpcraft have gone through several design revolutions. Recent trends have been away from externally mounted fans and towards semi-internal ducted lifters. Computerized flight-dynamic systems and hovercraft-style gyroscopic guidance have improved safety and performance. Jumpcraft remain an inherently inefficient design, but their superior maneuverability and high speeds make them an integral part of the colonization of Poseidon.

MACLEOD MODEL 227™

Operated by the GEO as the Goblin scout jumpcraft, the Model 227 has been a mainstay of the GEO's air mobile and cavalry units for more than 20 years. Initially brought into service as the Model 225, the 227 reflects two decades of experience and changes in jumpcraft design. The result is a vehicle that performs solidly and will likely remain in the arsenals of not only the GEO but several Incorporate states for years to come.

Substantially scaled down from its predecessor, the 227 keeps the same six-fan arrangement, with four fans on external mounts at the nose and waist and two mounted in the rear of the airframe itself. The smaller, more efficient turbofans used in the 227 are rated at a maximum load of 15 fully equipped combat troops or three metric tons of cargo.

The Goblin is essentially an updated Model 225. Designed for operation in the murderously corrosive environment of Poseidon with its ubiquitous salt spray and fast fungus infestations, the Goblin is constructed of a more resistant grade of bioplastic. Another important modification is essential to operations on Poseidon—the Model 227 floats.

Although built primarily as a transport for combat troops, the Goblin packs substantial armament. The Goblin also operates as the primary search-and-rescue vehicle for the Emergency Response Teams. In its SAR configuration, the Goblin-E, the

forward gun mount is replaced with a powerful searchlight and a more elaborate optics suite. The side launch boxes can be replaced with auxiliary fuel tanks, giving the Goblin-E an impressive loiter time.

Dimensions: 7.5 meters long, 3 meters wide, 3.5 metric tons
Power Source: Fuel cell and 6 HO turbofans
Fuel Efficiency: 6 kilomters/liter
Range: 1,200 kilometers
Speed: 288/432
Combat Speed: 240
Power: 4
Handling: 2
Rigging Value: Standard
Legality: Legal
Availability: Uncommon
Cost: 380,000cs
Armor: 8
Durability: 2
Crew: Pilot and copilot
Passenger/Cargo Capacity: 15 passengers or 1.5 metric tons
Standard Accessories: Auxiliary fuel tank, CAT System [3], onboard computer, radar suite [3], security system
Armament: Autocannon

HURRICANE™ JUMPRACER

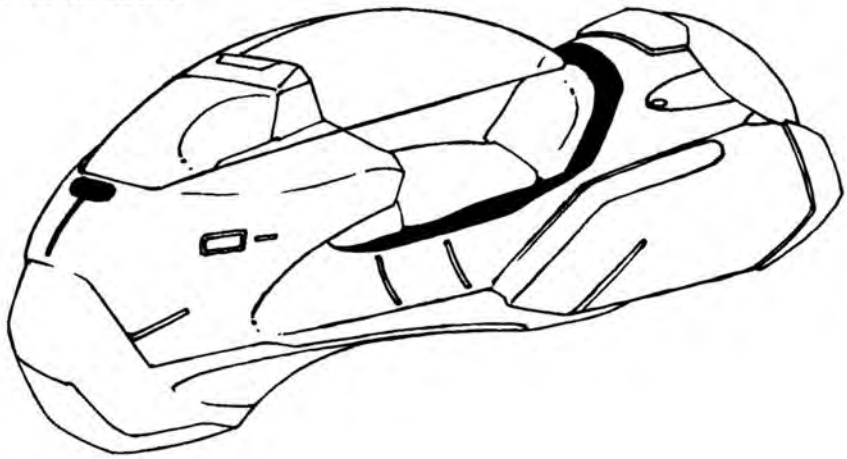
Jumpbike racing traces its roots to a loose organization of North American aerospace enthusiasts who used single-engine pods salvaged off of junked commercial jumpcraft to build fast one-person runabouts. Lakes were a favorite site for jumper drags because of the open, flat spaces they offered and the relatively soft landing they could provide a racer whose engine picked the wrong time to fail. With improved performance, jumpbike racing moved off the open spaces and into natural obstacle courses like river valleys and canyons.

The deaths of star jump racer Sue St. Valentine and four others in an eight-bike pileup during the 2130 North American Grand Nationals in Moab, Utah resulted in the first of a long series of government attempts to regulate the sport. Government intervention raised the price of jump racing out of the reach of most people until 2137, when Mitsu Motors unveiled the first Hurricane. Built mostly from parts manufactured for other, more profitable products, the Hurricane delivered street-legal performance at a price that made it available to the majority of racers.

The basic Hurricane-XC offered a single engine that delivered moderate thrust over a 60-kilometer range, and the controls used less than a dozen moving parts. Mitsu Motors also offered a series of mod kits, including a more efficient fan, more complex control surfaces, strap-on saddle tanks, a series of smaller windscreens, lighter frame, fan bearings, and modified engine intakes and exhaust systems. The kits, while not in themselves restricted, could turn a factory Hurricane into an illegal racer capable of outrunning and outmaneuvering even the most dogged pursuit.

The institution of a special Hurry League made racing available to riders with Hurricanes or Hurricane clones in several different stages of modification, from unaltered stock rides to the ulti-

HURRICANE™ JUMPRACER



mate in customized polycarbonate-frame, supercharged, cutting-edge wind rockets. The sport's popularity leapt ahead, and the North American Jump Racing Annual Circuit (NAJRAC) became one of the most-watched sporting events.

Mitsu Motors was acquired in 2103 by Hanover Autoworks, the vehicle manufacturing division of Hanover Industries. Hanover has been releasing new Hurricane models annually since the end of the Blight.

Dimensions: 2.25 meters and 125 kilograms
Power Source: Fuel cell and 2 turbofans
Fuel Efficiency: 17 kilometers/liter
Range: 85 kilometers
Speed: 160/400
Combat Speed: 133
Power: 5
Handling: 2
Rigging Value: Basic
Legality: Legal
Availability: Scarce
Cost: 32,000cs
Armor: 2
Durability: –2
Crew: Pilot
Passenger/Cargo Capacity: None
Standard Accessories: None
Armament: None

SKYHOOK™ HEAVY-LIFT JUMPCRAFT

The Skyhook jumpcraft breaks many of the design rules for jumpcraft. It has almost no distinct longitudinal axis, built instead with an almost circular fuselage. Instead of relying on its main engines for both lift and directional control, the Skyhook mates six colossal turbofans with a seventh whose output can be ducted through any of a dozen ports to maintain position even in substantial and shifting surface winds. The Skyhook also uses dual controls, adding an entire second flight deck that faces in towards the center of the aircraft and down towards the load. In contrast to many of the aircraft designed specifically for Poseidon, the Skyhook has an elaborate avionics suite. This includes three separate positioning system receivers and a centimeter-band radar, allowing the pilot to keep both the aircraft and the load precisely in position.

At maximum load, a Skyhook can stay on station approximately three hours, and then only if a fueling site is nearby. The NIS sells an aftermarket kit that allows the Skyhook to be continuously refueled from a specially equipped ground site. When so equipped, Skyhooks can remain in the air almost indefinitely. However, mobility is severely limited by the fueling umbilical to a height and radius combination of 500 meters.

Dimensions: 9.5 meters long, 10.5 meters wide, 7 metric tons
Power Source: Fuel cell and 7 turbofans
Fuel Efficiency: 8 kilometers/liter
Range: 1,600 kilometers
Speed: 144/288
Combat Speed: 120
Power: 1
Handling: –2
Rigging Value: Impossible
Legality: Legal
Availability: Rare
Cost: 350,000cs
Armor: 5
Durability: 2
Crew: 2 pilots, 1 loadmaster
Passenger/Cargo Capacity: 8 metric tons
Standard Accessories: Evac pods, onboard computer, radar suite [2], security system
Armament: None

VTOL AIRCRAFT

VTOLs are positioned at the other end of the spectrum that includes air-cushion vehicles and jumpcraft and feature a unique set of advantages. Like jumpcraft, they have little in the way of landing-site restrictions, requiring only a relatively flat, obstacle-free surface. They can loiter above a given point, hovering like traditional helicopters. They are not restricted to as low a service ceiling as jumpcraft and can usually fly above threatening weather or other flight hazards. Like hovercraft, many models have long ranges and load capacities far greater than comparable jumpcraft. This successful combination of range, maneuverability, speed, safety, and cargo capacity makes VTOLs the most common form of air transport on both Poseidon and Earth.

KINGFISHER TURBOPROP™

The craft that launched Hanover's highly successful line of simple, no-nonsense aircraft, the Kingfisher combines high maneuverability and short-field capabilities with relatively low maintenance requirements. In addition to a much better safety record than many of its competitiors, the

Kingfisher has an exceptional cargo and passenger capacity. With a maximum cargo load of nearly 3,100 kilograms at short range and 1,300 at maximum range, Hanover's flagship VTOL is uniquely suited to work in the Poseidon back country and is a favorite with bush pilots around the planet.

The Kingfisher's low-priced simplicity is not without its down side, however. The avionics suite is ridiculously simple, leaving the craft vulnerable to sudden weather changes and making navigation in the absence of clear satellite signals a challenge. Hanover has since recognized this deficiency and now offers a variety of upgrades and aftermarket options.

A substantial drawback to the Kingfisher's rugged construction and enormous paddle-bladed props is the sizeable footprint these features produce on even rudimentary detection gear. Although a number of groups have tried using the Kingfisher in gunship and assault roles, hoping to capitalize on its simple, survivable design, it was not designed as a military craft and performs poorly in that capacity.

Dimensions: 21 meters long, 13.5 meters wide, 14 metric tons
Power Source: Fuel cell, 2 turboprops
Fuel Efficiency: 9 kilometers/liter
Range: 2,300 kilometers
Speed: 216/360
Combat Speed: 180
Power: 4
Handling: 0
Rigging Value: Standard
Legality: Legal
Availability: Common
Cost: 325,000cs
Armor: 7
Durability: 2
Crew: Pilot
Passenger/Cargo Capacity: 25 passengers, 3.1 metric tons
Standard Accessories: Evac pods, onboard computer, radar suite [1], security system
Armament: None

VALKYRIE ASSAULT VTOL

Designed to operate in all environmental conditions, the Valkyrie is a formidable addition to the GEO arsenal. With models used by the Marshal Service, local Patrol offices, the Peacekeepers, several ERT units, and the Marine Corps, the Valkyrie is one of the most popular military airframes in use on Poseidon. With capacity for 20 fully loaded troops or three tons of cargo, the Valkyrie's high cruise speed and featured stealth characteristics help to make it a uniquely capable weapons system.

Built around a pair of powerful turbojets, the Valkyrie's lines reflect its utilitarian purpose. The tail sits high on top of a rather stubby boom, and three vertical stabilizers have as much grace as a matched set of barn doors. The engines are mounted above the wings, with three ducted exhausts aft, fore, and mid-wing. The cockpit is constructed for survivability rather than grace and is fat and bulbous. Generally considered one of the ugliest planes in service, the Valkyrie nevertheless has developed an admirable battle reputation.

In addition to a standard side door and tail ramp configuration, the Valkyrie incorporates a unique method for troop deployment. A belly door can be opened, allowing troops to deploy directly under a Valkyrie that is hovering above the ground or has made a water landing. This allows passengers to exit the craft without the loss of armor protection that opening large side or tail doors entails.

Dimensions: 22 meters long, 16 metric tons
Power Source: 2 hydrogen turbojets
Fuel Efficiency: 6 kilometers/liter
Range: 1,200 kilomters
Speed: 400/800
Combat Speed: 330
Power: 6
Handling: –1
Rigging Value: Standard
Legality: Restricted
Availability: Rare
Cost: 450,000cs
Armor: 9
Durability: 2
Crew: Pilot and copilot
Passenger/Cargo Capacity: 20 troops, 3 metric tons
Standard Accessories: Armor, CAT system [3], evac pods, onboard computer, radar suite [3], security system
Armament: Autocannon

GROUND-EFFECT PLANES

One of the most successful solutions to the unique transportation needs of Poseidon is the ground-effect plane (GEP). Not truly an airplane, hovercraft, or a boat, the GEP combines features of all three. In general, these craft are designed to take advantage of a trick of aerodynamics. As air moves over the wing of an aircraft, some of that air is forced downward. In aircraft traveling more than a few meters high, this overpressure is simply lost to the surrounding air. However, when craft travel low enough this air cushion is reflected back by the ground, creating a region of local high pressure under the vehicle. This higher density air acts to buoy up a moving aircraft as long as it stays within range of the ground effect—usually 10 to 15 meters. The result is an increase in lift for a given wing area, so smaller wings can be used, generating less drag and allowing greater fuel efficiency.

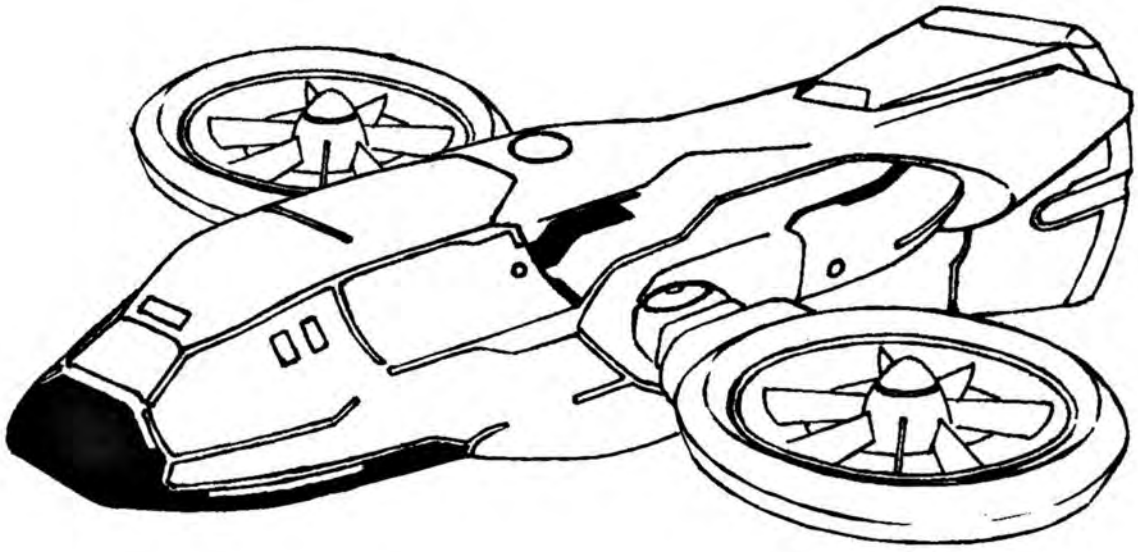
Less maneuverable than traditional aircraft, ground-effect planes trade agility for fuel efficiency, range, and lifting capacity. Their biggest limitation, however, is the terrain over which they can operate. Broken ground, hills, and heavy vegetation prevent the formation of the ground-effect air cushion, robbing the GEP of the extra lift it needs to stay airborne. Although GEPs can carry heavier loads further than typical airplanes, they are restricted to operating over flat ground, tidal plains, wide rivers, or open water. Even heavy seas can reduce a GEP's effectiveness, or ground it entirely. Nevertheless, in a landscape dominated by endless oceans, the GEP is an effective, economical compromise.

CORMORANT™

Built around a cabin that can seat up to 30 people, the Cormorant was designed to allow travel at aircraft speeds, but with lower maintenance requirements and a greater lifting capacity. Although the Cormorant shares the same P2250 turboprop made popular by Hanover's successful Kingfisher, its cargo capacity is more than double that of the more agile VTOL. This comes as part of a compromise, trading much higher wing loading and a service ceiling of 15 meters for its increased lifting capacity and range.

If all passenger accommodations are stripped out, the Cormorant is capable of lifting more than six and a half metric tons of cargo at maximum fuel load and almost eight tons over significantly shorter distances. In keeping with Hanover's no-frills

CORMORANT™ GROUND-EFFECT PLANE



philosophy in designing the Cormorant, they elected to build the Cormorant without conventional landing gear, preferring instead to rely on the GEP's boat hull for water landings.

Although initially designed as a light-to-medium transport, the Cormorant has proven itself to be very reliable, and some models are still in service after more than 20 years. The GEO operates a dozen Cormorants on Poseidon and has distributed them throughout various Commissions, with half in service to the Emergency Response Teams. Cormorants have been modified for low-speed flight to accommodate wildlife researchers from the HIST, and Lavender Organics employs a fleet of Mod-II Cormorants as executive ferries serving Dyfedd. There have even been reports of occasional eccoterrorist groups refitting surplus Cormorants as combat aircraft. The GEO Peacekeepers have begun an investigation into developing an assault gunship based on the Cormorant airframe, but this project is still in the early planning stages.

Dimensions: 20 meters long, 13 metric tons
Power Source: Fuel cell and 2 turboprops
Fuel Efficiency: 20 kilometers/liter
Range: 4,000 kilometer
Speed: 180/300
Combat Speed: 150
Power: 3
Handling: –3
Rigging Value: Standard
Legality: Legal
Availability: Uncommon
Cost: 350,000cs
Armor: 7
Durability: 2
Crew: Pilot
Passenger/Cargo Capacity: 40 passengers, 6 metric tons
Standard Accessories: Evac pods, onboard computer, radar suite [2], security system
Armament: None

SANDPIPER™

Originally designed to fill the classic role of a bush plane, the Sandpiper's current design has proven too unstable to be of much use in the extreme weather common to the Storm Belt. Along with unsolved maintenance glitches in the powerful P1125 turbofans, this has made the Sandpiper an expensive executive toy and light, short-range personal transport, keeping it out of the long-endurance, medium-lift role for which it was originally intended.

Nevertheless, the Hanover designers managed to wrangle a functional aircraft out of the restrictions imposed by management. The passenger accommodations are pleasant, and various options can make them almost luxurious. The baggage compartment reflects the Sandpiper's history, with more room and total weight allowance than anything else in its class. Conformal fuel tanks and optional wingtip pods help increase the Sandpiper's range far beyond that of similar craft.

Dimensions: 18 meters long, 10 metric tons
Power Source: Fuel cell, 2 turboprops
Fuel Efficiency: 24 kilometers/liter
Range: 4,800 kilometers
Speed: 200/360
Combat Speed: 166
Power: 4
Handling: –3
Rigging Value: Standard
Legality: Legal
Availability: Uncommon
Cost: 310,000cs
Armor: 6
Durability: 1
Crew: Pilot
Passenger/Cargo Capacity: 30 passengers
Standard Accessories: Evac pods, onboard computer, radar suite [2], security system
Armament: None

GD-91 RHINO™

Built exclusively at the Hanover aerospace yards in Köln, Germany, only two Rhinos have been imported to Poseidon, but these elephantine GEPs need not be rare to be oddities. The lumbering giants are marvels of engineering. Measuring more than 82 meters long, the Rhino is capable of hauling 100 metric tons over 9,000 kilometers. Reduction of the cargo capacity by installing additional fuel tanks allows an extension of the Rhino's range to more than 15,000 kilometers with a cargo load of just over 60 metric tons.

Hanover incorporated a number of unique design features into the GD-91. Forward and rear ramp docks allow for cargo to be loaded and unloaded simultaneously. The boat-hull fuselage has electrostactic and mechanical features that reduce drag, surface tension, and boundary-layer turbulence, saving fuel during take-off and taxi runs. The fuse-

lage incorporates specialized skins that also reduce drag, further improving fuel efficiency in flight.

The high payload and abbreviated wings of a GEP combine to make a craft that is singularly difficult to maneuver. Wing-loading values are extreme for the Rhino, and anything but gentle turns at such low altitudes are out of the question. This means that, for the most part, Poseidon's Rhinos stick to established routes that are long, straight, and free of obstructions.

Both GD-91s on Poseidon are owned by Hanover and are used in a variety of roles. Both have even been fitted with their own electrolysis and filtration units, allowing them to slowly refuel themselves while at rest on the ocean's surface.

Dimensions: 82.27 meters long, 31.2 metric tons
Power Source: Fuel cells, 12 turbofans
Fuel Efficiency: 10 kilometers/liter
Range: 8,000 kilometers
Speed: 150/260
Combat Speed: 125
Rigging Value: Standard
Legality: Legal
Availability: Scarce
Cost: 1.2 million cs
Armor: 14
Durability: 2
Crew: Pilot
Passenger/Cargo Capacity: 100 metric tons
Standard Accessories: Evac pods, onboard computer, radar suite [2], security system
Armament: None

SURFACE VESSELS

HOBART-CLASS RESEARCH CORVETTE

Constructed of prefabricated parts, the Hobarts were designed to be shipped in pieces to convenient port facilities and then assembled on site. The intent was to provide an inexpensive, efficient vessel that could be used in any number of different scientific disciplines.

The result was a line of slow, ungainly vessels that were prone to breakdowns and mechanical failures of all types. Their one advantage has been their extraordinarily low up-front cost. Nevertheless, the price of owning a Hobo tends to mount over time. Engine overhauls are frequent, prompting many owners to have the engines replaced with newer, more efficient aftermarket models.

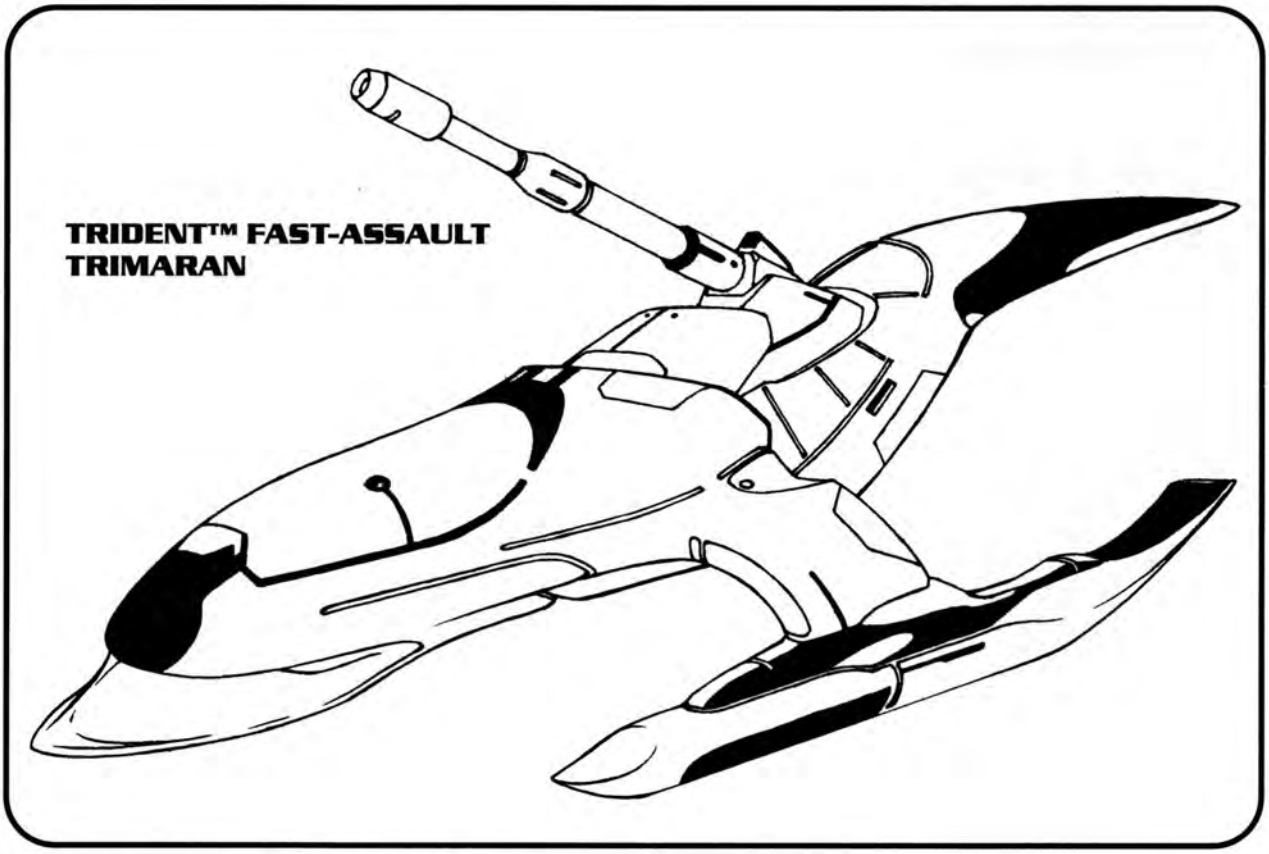
Still, the Hobart has become a common addition to waterfronts on both Earth and Poseidon. Much of the groundbreaking ecological research done on the colony world has either been done onboard one of these vessels or using data collected from them. For all their failings, much of the scientific revolution that has marked humanity's expansion over the face of Poseidon would have been impossible without the Hobart corvettes.

Dimensions: 40 meters long, 12 metric tons
Power Source: Fusion reactor
Fuel Efficiency: 50,000 kilomters/tank
Range: 100,000 to 200,000 kilometers
Speed: 36/72
Combat Speed: 30
Power: 0
Handling: –4
Rigging Value: Standard
Legality: Legal
Availability: Uncommon
Cost: 1 million cs
Armor: 14
Durability: 3
Crew: 4
Passenger/Cargo Capacity: 24 passengers
Standard Accessories: Evac pods, onboard computer, radar suite [3], security system, sonar suite [3]
Armament: None

TRIDENT™ FAST-ASSAULT TRIMARAN

The Trident was originally constructed to operate in shallow, in-shore environments in areas of low-level conflict. Intended to serve in multiple roles, including troop-landing craft, short-range fire support, and medium-range patrol, the Tridents were built according to a design that made extensive use of modular components.

The trimaran hull design was developed as a compromise between survivability, stability, and low drag. The twin engines are mounted in the two outriggers. This makes maintenance during extended patrols difficult, but in the case of engine failure allows entire outriggers to be switched at any moderately equipped port facility. With a top speed of nearly 120 km/h, the Tridents make for a particularly fast raiding platform and have been used effectively by the GEO for many years.



Built under contract for the GEO by Hanover Industries, the Tridents were among the first marine vehicles to make extensive use of remote-piloting technologies. Models built after 2175 do not have a forward windscreen, with all piloting being done through onboard imaging equipment.

The modular design allows the same basic hull to operate in many different roles. Weapons mounts can be traded out to include rocket-assisted torpedo launchers, depth charges, mine racks, antiaircraft missile mounts or high-velocity cannon, direct-fire rotary guns, or even light artillery used in beach landing support. There is even an intelligence-gathering package that includes specialized electronic eavesdropping gear.

Dimensions: 5 meters long, 2 metric tons
Power Source: Fuel cell, twin propellers
Fuel Efficiency: 25 kilometers/liter
Range: 5,000 kilometers
Speed: 72/180
Combat Speed: 60
Power: 1
Handling: –1
Rigging Value: Standard
Legality: Restricted
Availability: Rare
Cost: 240,000cs
Armor: 12
Durability: 2
Crew: Driver
Passenger/Cargo Capacity: 10 troops
Standard Accessories: Armor, CAT system [3], evac pods, onboard computer, radar suite [3], security system
Armament: Autocannon

TSUNAMI™ MOTOR YACHT

Built exclusively at the new marina at Simushir, the Tsunami is the NIS's first foray into the field of pleasure boating. Although intended to be the premiere luxury vessel available to Poseidon's wealthy, the Tsunami is expensive, difficult to maintain, and unusually short ranged. Consumers' biggest complaint with the Tsunami is its remarkably low fuel capacity and efficiency. Even with the optional fuel pods that replace the aft berth, the Tsunami is limited to an average range of 275 kilometers.

NIS designers intended the Tsunami to have all the comforts expected by cultured executives, but berthing for six, an entertainment center, wet bar,

RAPPAHANOCK

The *Rappahanock* has become something of a legend in the waters around the Pacifica Archipelago. More than 50 years old, the *Rappahanock* is the only fully functioning steamship on Poseidon.

Built towards the end of the Abandonment by a group of engineers living in Haven, the *Rappahanock* was intended to take the place of the colony's steadily failing fleet of transport aircraft. Some saw *Rappahanock*'s construction as a symbol that the colony had finally accepted its separation from Earth. Others saw it as an attempt to return to the technological society that had been left behind.

Hull construction used techniques that were, in some cases, hundreds of years old, and in others were completely new. Lumber for the vessel's planks came from hundreds of local trees, and the keel was constructed from a pair of trunks shipped nearly 100 kilometers overland. The only non-native material used in the construction was scrap bioplastic salvaged from original colony structures and reworked to form many of the components of the *Rappahanock*'s steam boiler and drive assembly.

One of the most heated discussions during *Rappahanock*'s construction surrounded its method of propulsion. Eventually, pragmatists settled on the idea of building a side-wheel paddleboat. It was felt that the two wheels would be more easily formed out of native materials, and that the reduced draft required by a paddle-wheeler would more than make up for the loss in efficiency and speed. Fully loaded, she would draw a bare two meters of water.

A complete record of the vessel's checkered history can be found in M.A. Flynn's book, *Romantic* Rappahanock. However, a short discussion of the vessel's most heroic moment is warranted. On the evening of 282.46, *Rappahanock* was moored in the Haven Channel, offloading trade goods from Second Try. At around 2730, an explosion on the island set alarm bells ringing both onboard and all along the dockyard. With the fireball from the town's exploding reactor (MG 18) still rising into the sky, *Rappahanock*'s quick-thinking captain, Earl McManus, had the vessel's fireboxes stoked and gourmet-quality galley raised the cost substantially. The first basic Tsunamis cost more than 80,000cs per unit, and the loaded luxury models topped out at just under 100,000cs. In addition to the Tsunami's high up-front cost, it quickly developed a reputation as a maintenance nightmare. One Haven shipyard took to referring to the craft as the "Super Nummy" in internal communications, earning it a quick libel suit from the NIS. Poor placement of maintenance hatches and tight interior spaces made the Tsunamis difficult to access.

The Nippon Industrial State has made several assurances that simple design fixes planned for the 2200 model year will address many of its customers' complaints. If true, the 2200 Tsunami should prove to be an expensive but otherwise worthwhile upper-class toy.

Dimensions: 9.1 meters long, 3.5 meters wide and 3.2 metric tons.
Power Source: Fuel cell, propeller
Fuel Efficiency: 8.5 kilometers/liter
Range: 2,750 kilometers
Speed: 36/72
Combat Speed: 30
Power: –1
Handling: –2
Rigging Value: Standard
Legality: Legal
Availability: Common
Cost: 85,000cs to 98,000cs
Armor: 10
Durability: 1
Crew: Driver
Passenger/Cargo Capacity: 6 passengers
Standard Accessories: Evac pods, onboard computer, radar suite [2], security system
Armament: None

ERT 14M LIFEBOAT/CUTTER

Built exclusively on Poseidon by Hydrospan under contract to the GEO, the ERT 14-meter lifeboat/cutter has quickly earned an unmatched reputation for reliability and survivability. The 14m design came about in response to a GEO conference on marine engineering, where it was decided that the existing fleet of 10-meter boats were not up to the task of serving in Poseidon's unique environments. The uncompromising advisory board rejected nine separate designs before settling on the Hydrospan Model 317.

Built from the keel up to take on the worst of Poseidon's weather, the Model 317s have exceeded even their exceptional design specifications. The cutters reach a top speed of 85 km/h and readily navigate even the heaviest seas. The boat's strong righting moment, sealed compartments, and integral crash couches means it can capsize yet right itself instantly and continue its mission.

Dimensions: 14 meters long, 4 metric tons
Power Source: Fuel cell, propeller
Fuel Efficiency: 16 kilometers/liter
Range: 2,000 kilometers
Speed: 44/88
Combat Speed: 36
Power: 0
Handling: 0
Rigging Value: Standard
Legality: Legal
Availability: Uncommon
Cost: 50,000cs
Armor: 6
Durability: 2
Crew: Driver
Passenger/Cargo Capacity: 10 passengers, 1.5 metric tons
Standard Accessories: Evac pods, onboard computer, radar suite [3], security system
Armament: None

while commandeering hundreds of meters of pipe and every pump in the dockyard. When *Rappahanock* got underway at 2840, it was as a fully equipped fireboat.

Unable to project water more than 100 meters, skillful maneuvering by Capt. McManus nevertheless brought *Rappahanock* alongside the docks of Old Town. The Colonial Hospital, threatened by flames rapidly advancing along the waterfront, lay just within the reach of *Rappahanock*'s improvised firefighting equipment. A curtain of seawater protected the hospital's north wall and neighboring Lensman Street, halting the advancing blaze. Later renamed McManus Boulevard, the street marked the southern border of the great fire. *Rappahanock* was credited with saving the lives of the three patients who could not be moved, their doctors and nurses, and the irreplaceable hospital itself.

SUBMERSIBLES

Poseidon's unique economic and political landscapes have forced the development of whole new submarine technologies. The freighter submarine, unknown on Earth, is crucial to the survival and economic viability of several of Poseidon's marine habitats. Since Long John is found beneath the waves, underwater mining has forced extensive advancements in technology. In military roles, combat hard suits, strike submersibles, and sub carriers have all been introduced since Recontact.

ATLAS DR-14 MINING RIG

Underwater strip-mining dredges are universally slow, ugly, ungainly machines, and the DR-14 is no different. What the DR-14 has over the competition is the advantage of mobility. Unlike previous models, the DR-14 incorporates a massive MHD drive as part of its hydraulic gear. Where most strip miners require the service of several tugs to move from one site to the next, the DR-14 can redirect the output from its MHD system to separate drive ducts. Coupled with cavernous ballast tanks, the drive makes the rig mobile in three dimensions and can push the behemoth along at a staggering 0.5 kilometers per hour. During normal mining operations, the rig moors itself to the bottom using an extensive grid of anchors and stanchions.

This mobility allows the DR-14 to effectively operate in low-yield xenosilicate fields that might otherwise be unprofitable. The DR-14's onboard holds store up to 2,000 metric tons of unprocessed ore, giving it a cargo capacity that is somewhat smaller than some of the older drag units.

Dimensions: 45 meters long, 18.5 meters wide, 7,000 metric tons displacement
Power Source: MHD Drive, fusion reactor
Fuel Efficiency: N/A
Range: N/A
Speed: 0.5
Combat Speed: N/A
Power: N/A
Handling: N/A
Rigging Value: Standard
Legality: Legal
Availability: Rare

Cost: 1,500,000cs
Armor: 18
Durability: 4
Crew: 5
Passenger/Cargo Capacity: 4 passengers, 2,000 metric tons
Standard Accessories: Evac pods, onboard computer, sonar suite [2], security system

BENTHIC UNIVERSE-CLASS CARGO SUBMARINE

Developed by Atlas Materials to supply underwater research and mining facilities, the *Benthic Universe* was first launched in 2185. Displacing more than 35,000 metric tons when submerged, the *Benthic Universe* was the largest submarine yet built on Poseidon when it was launched, and is today surpassed in size only by her sister ship, the *Benthic Empress*.

In an interesting arrangement, the *Benthic Universe* was built by Atlas, sold to Lavender Organics, and is used in a supply route that mainly services Atlas installations. Lavender wanted to acquire a large, undersea cargo vessel and negotiated a favorable contract under terms that the sub would continue to serve the route between al-Mamlakah and several of Atlas' primary facilities for two additional years.

The Benthic Universe-class submarines are intended as container and bulk-cargo vessels operating at depths of up to 4,500 meters. This allows them to reach all but the very deepest research stations and travel well below even the largest cyclonic storms.

The GEO has purchased one of these supersubs, the *Walter S. Dusquenne*, for the servicing of such facilities as *Down Home Station*. It has also entered into negotiations with Atlas for a smaller version of the Benthic Universe hull to serve as an interceptor sub carrier.

Dimensions: 60 meters long, 3,500 metric tons
Power Source: Fusion reactor, MHD drive
Fuel Efficiency: N/A
Range: 20,000 kilometers
Speed: 28/57
Combat Speed: 24
Power: –2
Handling: –3
Rigging Value: Standard
Legality: Legal
Availability: Rare
Cost: 4.5 million cs
Armor: 16
Durability: 5
Crew: 8
Passenger/Cargo Capacity: 8 metric tons
Standard Accessories: Evac pods, onboard computer, sonar suite [2], security system

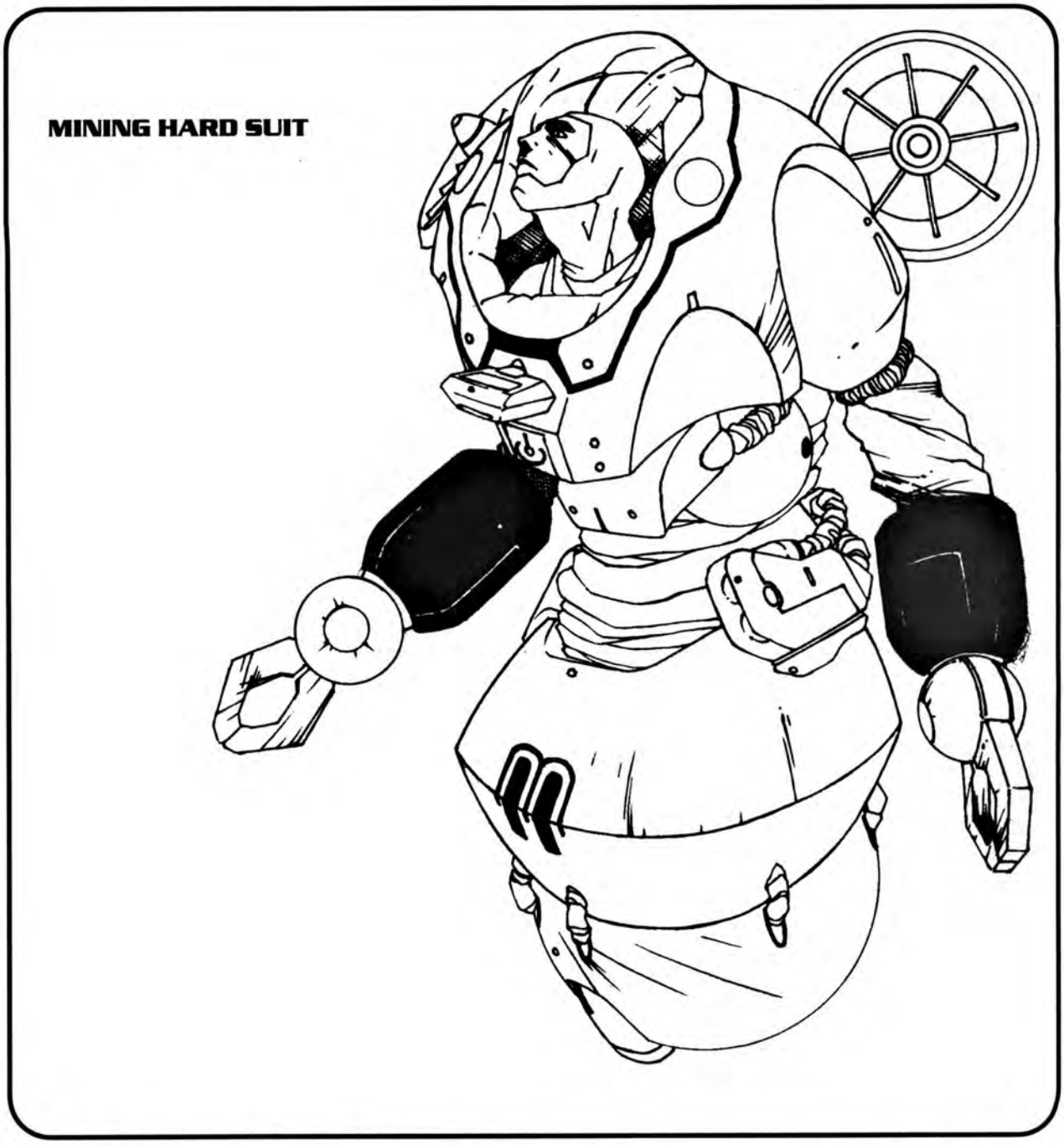
MINING HARD SUIT

Designed to provide individual workers with the maneuverability and dexterity of divers at temperatures and depths that normally require traditional submersibles, the hard suit is crucial to Poseidon's deep-sea mining industry.

Originally developed in the 1970s, hard diving suits are tiny submersibles that are only slightly larger than their single occupant. The first suits were poorly articulated, extremely heavy, and relied on tethers to supply power, air, and communications. Modern suits are often as flexible as their occupants and have self-contained life support and sonic or laser communications.

Atlas Materials' TG-19 mining hard suit is a typical example of a modern hard suit. The suit itself is built around an Electroflex powered exoskelton. Various attachments allow the arms to function as impact hammers, rock drills, or as various fine-scale manipulators. A computer regulator allows the suit operator to control its movements using his own musculature or using the suit's integrated skeleton for heavier work. Motive power comes from the suit's four universal ducted impellers. Stability during heavy work is provided by up to 10 separate anchor lines, each of which is individually tensioned.

Dimensions: 80 kilograms
Power Source: Heavy cell
Fuel Efficiency: N/A
Range: 50 hours
Speed: 28/57
Combat Speed: 24
Power: 0
Handling: 0
Rigging Value: Standard
Legality: Legal
Availability: Uncommon
Cost: 75,000cs
Armor: 7
Durability: 2
Crew: 1
Passenger/Cargo Capacity: None



Standard Accessories: Onboard computer, radar suite [1], sonar suite [1]
Armament: None

SEABAT™ COMBAT HARD SUIT

Built under contract to Hydrospan, the SeaBat combines the agility, independence, speed, and stealth characteristics of a cetacean with the endurance parameters and striking power of a fully equipped fighter sub. The SeaBat corrects many of the design flaws commonly seen with older models.

The SeaBat's shell encloses the operator entirely, with a fused lower segment, a transparent helmet section, and two hydraulically activated arms. The arms can be mounted with any of a number of different attachments. The most popular are manipulators, torpedo cannons, or mine layers. A less common but certainly effective accessory uses a

heavy gripper coupled with a powerful cutting torch for breaching and boarding actions.

Primary propulsion comes from a single MHD that runs along the spine of the suit, and attitudinal thrust is derived from a pair of ducted impellers. Buoyancy is controlled with small tanks and miniature dive planes.

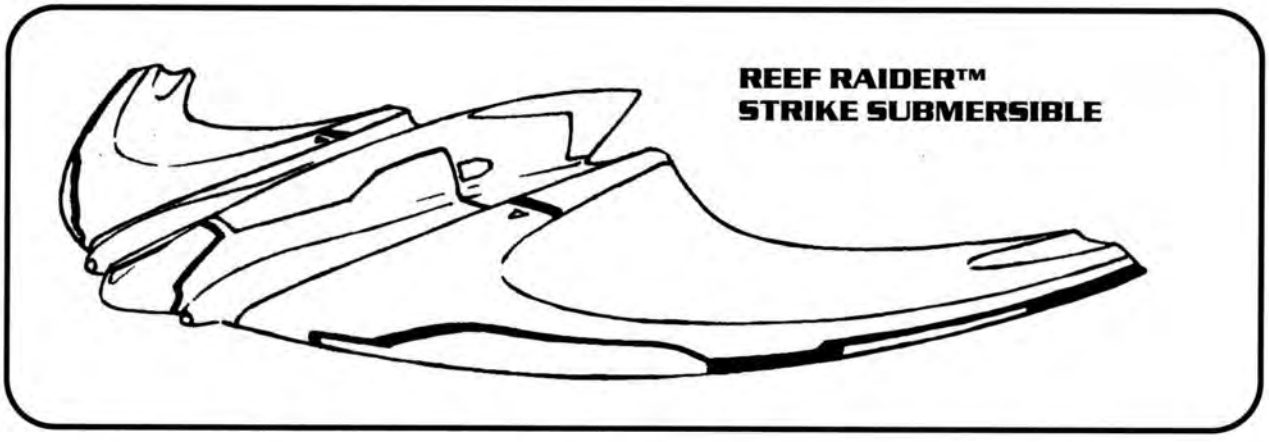
Communications utilize blue-green lasers, fiber-optic cables, or a frequency-agile underwater hydrophones setup. Sensing capability is also modular, with the default package including an effective passive rig and a small, high-frequency active sonar unit. Pathfinder units have had their passive sonar replaced with elaborate electromagnetic gear that can reportedly detect targets from as far away as 10 kilometers.

Dimensions: 100 kilograms
Power Source: Industrial cell
Fuel Efficiency: N/A
Range: 50 hours
Speed: 35/70
Combat Speed: 30
Power: 1
Handling: 1
Rigging Value: Standard
Legality: Restricted
Availability: Rare
Cost: 100,000cs
Armor: 10
Durability: 3
Crew: 1
Passenger/Cargo Capacity: None
Standard Accessories: Onboard computer, radar suite [1], sonar suite [3]
Armament: Torpedo cannon

REEF RAIDER™ STRIKE SUBMERSIBLE

The largest of Hydrospan's line of combat submarines, the Reef Raider is designed to fulfill the marine close-support and strike roles. A complement to the GEO Benthic Universe sub carrier, the Reef Raider incorporates a number of the features that have made Hydrospan's other combat subs so successful. One important change, however, is a noticeable improvement. Early versions incorporated fixed positive buoyancy, which was counteracted by downward force from the dive planes. This was intended to simplify systems and serve as an additional safety measure in the event of a control-systems failure. Unfortunately, the result was a vessel that had to maintain forward motion in order to maintain a fixed depth. This made stealthy approach problematic and was eventually abandoned in favor of a more traditional ballast system.

Dimensions: 3.5 meters long, 1.5 metric tons
Power Source: Fuel cell, MHD drive
Fuel Efficiency: 8 kilometers/liter
Range: 800 kilometers
Speed: 150/300
Combat Speed: 125
Power: 2
Handling: 2
Rigging Value: Standard
Legality: Restricted
Availability: Rare
Cost: 600,000cs
Armor: 8
Durability: 3
Crew: Pilot
Passenger/Cargo Capacity: None
Standard Accessories: ECM suite [3], ejection system, onboard computer, radar suite [4], security system, sonar suite [5], targeting computer
Armament: Torpedoes



SPACECRAFT

ORBITAL CRAFT

Modern orbital craft take many different forms. Passenger sub-orbitals and cargo lifters that take off and land horizontally often use exotic scramjets or multi-stage hybrid engines. Military craft typically use fusion engines because of their greater thrust. Strictly orbital craft most commonly use smaller, more efficient fusion engines for operational economy. Regardless of engine or type of platform, orbital craft have been key to the modern aerospace economy.

MARINE CORPS ASSAULT DROPSHIP

When the Marine Corps was given the mission of providing security to GEO assets on Poseidon, initial logistical estimates were staggering. One analysis suggested that more than two mechanized regular infantry divisions would be required to supply sufficient troops to garrison the system. When asked to provide their input, the Heavy Cavalry claimed they could provide armored rapid response to the entire planet with just two platoons. Although this was later increased to a full company, the Cav has managed to perform its mission admirably and with remarkably few resources.

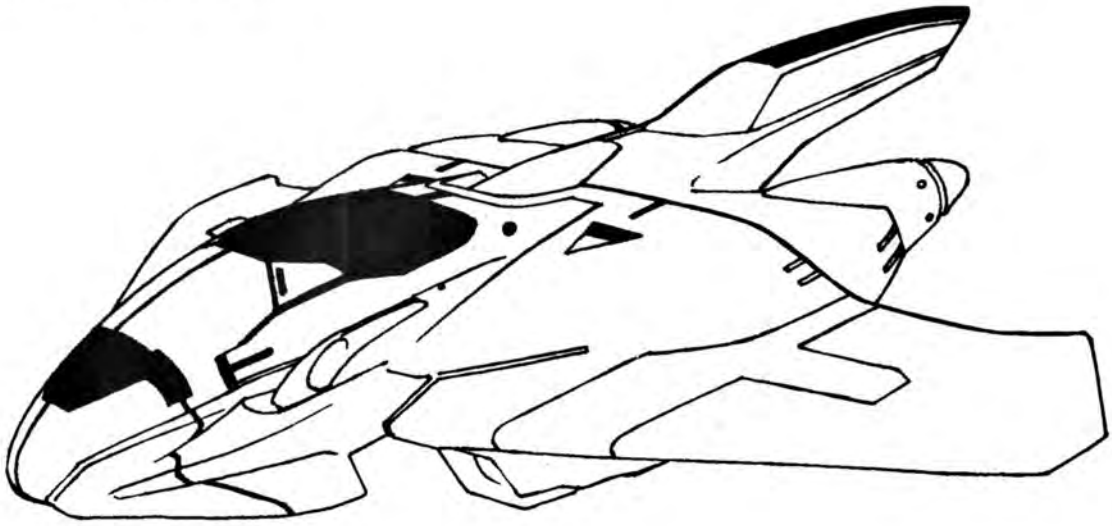
One of the major reasons for this is the orbit-to-ground assault dropship. The assault ships allow a team of soldiers stationed in orbit to drop into a combat zone anywhere on the planet, and usually only in a matter of minutes. Known as "Gargoyles" because of the menacing lines of their monstrous fusion engines, the drop ships are designed to fall from orbit to sea level as fast as possible. Guided only by a pair of stubby wings and a set of forward canards, the dropships rely more on brute force and speed than aerial agility to avoid ground fire and get the job done.

The ships can carry a fully equipped squad, loading and dusting them through a belly ramp under the tail boom. Intended to support both the Cav and mechanized infantry, dropships are capable of delivering ground transport vehicles and APCs, artillery or crew-served ground weapons, and even some models of light-patrol subs.

Gargoyles are also capable of providing substantial air support. Rotary cannons mounted in turrets under the aircraft's chin and tail boom, as well as pepperbox multi-tube launchers for self-guided antipersonnel and antivehicle missiles, give the gunner a formidable arsenal at his command. Dropships are even capable of making a water landing, unloading troops through side doors.

The dropships do have a few significant limitations. Their enormous fuel requirements coupled with the great weight of both the ship and its cargo limit the Gargoyles to only a few minutes onsite if a return to orbit is planned without refueling.

ORBITAL SHUTTLE



Additionally, the volatile nature of the Gargoyles' fuel, armaments, and cargo put the craft at unusually high risk for explosion if damaged in combat.

GRISSOM-CLASS ORBITAL PATROL BOAT

In the orbital environment of Poseidon where a handful of active spaceports send less than 100 flights to orbit on an average day, control of access to orbit and the near-planet space lanes is possible. The space around Poseidon and in the approaches to both sides of the wormhole are monitored by the GEO and traffic in these areas is tightly regulated. One of the chief instruments of this mission is the Grissom-class patrol boat.

Built specifically for short patrols with multiple thrust periods, the Grissom boat has a relatively large fuel capacity and an exceptional acceleration for its size. Another strong feature is the craft's detection and tracking instrumentation. The hulls of these vessels bristle with radar dishes, optical tracking gear, and radiation detectors.

Early versions of the Grissom patrol boats were equipped with a high-velocity gun tube aimed along the axis of thrust. This main gun fired small projectiles and rockets. Later versions abandoned this arrangement in favor of the current armament of independent, guided torpedoes.

HERCULES HEAVY-LIFT TUG

Transport between worlds, though romanticized, is only part of the process of interstellar commerce. The huge transports would be useless without a means of moving their cargoes to and from the surface. This task falls to the hundreds of shuttles, lighters, and tugs that flock around the great carriers. Among the most common of these are Atlas Materials' Hercules-class tugs.

The Hercules tugs are cursed with an almost comical profile. Tubby, short, and wide, these hybrid lifting body craft are designed to take off horizontally like a conventional aircraft and lift directly to orbit. Cargo is stored in a classic mid-section bay that can be fitted with a pressurized compartment to give the vessel a 300-seat passenger capacity.

Although capable of hauling nearly any load in a single stage, the Hercules tugs can be fitted with a zero stage, a semi-autonomous strap-on booster that uses high-output turbojets designed to operate in the thicker atmosphere around sea level. The addition of a zero stage allows a Hercules to reserve more of its fuel for operating at greater altitudes or in space.

INTERPLANETARY CRAFT

SHANNON MARIE-CLASS TUGS

The Shannon Marie tugs were built by Dundalk Shipbuilding to carry loads between the planets and asteroid colonies of both the Sol and Serpentis systems. The Shannon Maries are also used to shuttle cargo from orbital marshaling yards to and from the larger freighters and orbiting stations. They are also seeing increasing service recovering unmanned cargo pods launched through the wormhole.

These boxy vehicles lack any aesthetic features. The forward surface is a flat plate pitted and pocked with attachment points for tiedowns and hookups for cargo containers. The dual bridges extend far to port and starboard of the rest of the vessel, allowing pilots to see down the length of an attached load of cargo containers. A pair of steerable fusion torches provide power, giving these redoubtable tugs exceptional maneuverability.

INTERSTELLAR CRAFT

From the first Argos probes, those vessels that ply the long night between the stars have been objects of fascination. When men and women began to sail this perilous sea, they became larger than life. Today, there is a cultural fixation with anyone or anything that travels between the stars.

Most modern interstellar craft are cargo vessels, and the vast majority are Incorporate owned and operated. Design philosophies vary between shipbuilders, but enough engineering constants exist to standardize interstellar ship design. Freighters tend to be large and slow, but with enormous delta-V capacity. Recreation and medical facilities are larger than would ordinarily be necessary due to the rigors of long journeys, but life-support systems are smaller due to the limited crew size.

There are two broad classes of interstellar spacecraft in the world of **Blue Planet**. The first class is comprised of state-of-the-art transports built exclusively by the GEO and largest Incorporate states to ship passengers and highly valuable cargo—usually Long John—between the Solar System and Poseidon. These massive vessels can make the run from the inner Solar System to Poseidon in approximately six months, but their design specifications

begin to approach the physical limits of fusion rockets, and they are extraordinarily expensive to design, construct, operate, and maintain. The second class is more representative of the majority of interstellar craft; these ships are designed as general purpose interplanetary craft, and most of them never travel through the wormhole at all. These ships require a significantly longer time to make the long-distance trip than the express transports, but they are much cheaper to build and operate since the reactor designs are far less exacting and the fuel requirements are much lower.

Traffic between Earth and Poseidon is dominated by slow boats in terms of gross tonnage; when it comes to passengers, the two methods are more nearly equal, since a much larger percentage of the express boats' cargo is used for passengers than is the case for slow boats. The truly desperate and optimistic might be willing to risk a multi-year voyage in cold sleep, but most of the really slow voyages are made by unmanned craft carrying only non-perishable cargo, such as ice for the fueling stations at Wormhole-1.

Travel between the Solar and Serpentis systems is complicated by the fact that it is necessary to decelerate before traversing the wormhole. The potential consequences of a ship massing 100,000 metric tons impacting the wormhole's gravity well while moving at millions of meters per second are catastrophic enough that traffic control and approach protocols are exact and strictly enforced. As a result, a ship must first accelerate and then decelerate on each leg of the journey. To maximize fuel efficiency, acceleration and deceleration burns tend to be relatively short and the ship coasts at a constant velocity through most of the trip. At WH-1, new fuel tanks are installed on the ship and filled with liquid hydrogen from the station's refueling facility. Transporting ice to the station's fuel refineries is a major source of income for belters.

FUSION ROCKETS

The drives used in interstellar spacecraft are staggeringly efficient, high-mass-flow fusion rockets. The basic reaction is very similar to the fusion cycle that powers main-sequence stars, such as the Sun and Lambda Serpentis, and involves the conversion of four hydrogen atoms to a single helium atom. This cycle is well suited to interstellar travel since it is fueled by ordinary hydrogen, rather than one of the more rare isotopes.

The exhaust from a fusion drive is roughly as hot as the interior of a star, measured in the millions of degrees. It consists predominantly of alpha radiation (helium nuclei, the final product of the fusion cycle), beta radiation (electrons), and gamma radiation (low-wavelength photons). The high-efficiency drives used in express boats feature power densities on the order of 200MW per kilogram of drive mass. These drives are inherently more efficient than fusion reactors, because they have very little shielding and no turbines for generating electricity. Because these systems represent the vast majority of a fusion reactor's mass, they never exceed power densities of about 10 kilowatts per kilogram of reactor.

These fusion rockets are truly awesome machines and necessarily potential weapons of mass destruction. Their exhaust is so energetic that it barely remains in a plasma state—it is a deadly mixture of alpha, beta, and gamma radiation that extends many tens of kilometers behind the spacecraft. At 100 kilometers, this radiation is about as strong as sunlight on the surface of the Earth, though a much lower percentage of the radiation is visible light. Traffic control is therefore very strict anywhere near inhabited planets or manned stations. Though it has never been officially confirmed, it is rumored that the GEO Aerospace Command is required to use immediate deadly force against vessels committing potentially dangerous traffic violations.

EXPRESS BOAT

The most common, cost-efficient express boats mass approximately 1,000 metric tons, excluding fuel. Roughly half of this mass is accounted for by the fusion drive. The other half includes about 350 tons of payload and 150 tons for the superstructure, radiation shielding, and ship's systems (e.g., sensors, communications, life support, etc.). The express boat's payload corresponds to about 700 passengers in IHMS capsules, but most flights are not completely dedicated to passenger transport. The typical ship in this class is a cylinder about 150 meters long and only four meters in diameter at its narrowest point. The payload module is a fatter, shorter cylinder about 20 meters in diameter and 10 meters long attached to one end of the superstructure. The other end is dominated by the fusion

drive and exhaust port. The long, thin drive structure is designed to get as much distance as is practical between the payload module and the inferno that is the exhaust.

The express boat's fusion drive is capable of generating about 100 terawatts of power, a truly awesome figure that roughly corresponds to about 0.05% of the total power the Earth receives from the Sun. The drive's effective exhaust velocity is 24 million meters per second, or about eight percent of lightspeed. The mammoth drive devours 0.35 kilograms of fusion fuel each second, yielding a thrust of 8.4 million Newtons. The ship's acceleration peaks at about 0.83 g when the remaining fuel approaches zero.

The drive is fueled by liquid hydrogen stored in external inflatable balloon tanks constructed of carbon buckytubes. As each tank is emptied, it is deflated and pulled into the drive chamber to be melted and used as reaction mass. This is highly efficient, and depending on the design, between 10 and 20% of the drive's reaction mass is actually composed of fuel tank materials rather than spent fusion fuel. Waste heat from the drive is radiated into space by a huge, gossamer-thin sheet about two kilometers in radius. The radiator is usually kept folded into the ship, but must be reeled out before the drive can be engaged. While burning, the torchship is a truly impressive sight. The exhaust jet glowing as bright as a sun, surrounded by the huge, brightly glowing halo of the radiator, completely eclipses any view of the ship itself.

Flight plan between Earth and WH-1:

1 Accelerate for 35 days. This burn requires 1,070 tons of fuel. Acceleration begins at 0.32 g and reaches 0.52 g toward the end of the burn. When the acceleration ends, the ship has already moved about 120 AU from Earth.

2 Coast across 590 AU. This takes 85 days at a coasting speed of 12 million m/s.

3 Decelerate for 22 days. This burn requires 650 tons of fuel. Deceleration ranges from 0.52 g to 0.86 g and takes place over about 70 AU.

Flight plan between WH-2 and Poseidon:

1 Accelerate for 9 days. This burn requires 256 tons of fuel. Acceleration begins at 0.59 g and approaches 0.71 g. The distance covered during the burn is about 11 AU.

2 Coast across 60 AU. This takes 23 days at a coasting speed of 4.6 million m/s, 1.5% of lightspeed.

3 Decelerate for 7 days. This burn requires 211 tons of fuel. Acceleration grows from 0.71 g to 0.86 g during this burn. The distance covered during the burn is about 9 AU.

Total flight time: 181 days
Total fuel consumption: 2,187 tons, or about 31,000 cubic meters of liquid hydrogen.

SLOW BOAT

Common slow transports mass 1,000 tons, the same size as the express boat. The drive is about 200 tons, and the remaining 800 tons are divided between 240 tons of structure and 560 tons of payload. These ships can carry about 1,100 IHMS passengers, but they usually only transport cargo.

A slow boat's effective exhaust velocity is "only" 18 million meters per second, and the fusion drive is a less exacting and efficient design than the express boat's. Fuel consumption averages about 0.12 kg/second, and the drive generates about 19 terawatts of power, for a power density of 95MW per kilogram of drive mass. The drive's delivered thrust is 2.16 million Newtons, with a maximum acceleration of about 0.22 g. The ship's radiator sheet is only about 900 meters in radius—2.5 square kilometers.

Flight plan between Earth and WH-1:

1 Accelerate for 52 days, consuming 553 tons of fuel. Acceleration ranges from 0.11 to 0.16 g. The distance covered during the burn is about 80 AU.

2 Coast across 640 AU for 185 days with a coasting speed of 6 million m/s.

3 Decelerate for 37 days, consuming 396 tons of fuel. Deceleration ranges from 0.16 to 0.22 g. The distance covered during the burn is about 60 AU.

Flight plan between WH-2 and Poseidon:

1 Accelerate for 16 days, consuming 171 tons of fuel. Acceleration ranges from 0.17 g to 0.19 g, and

the distance covered during the burn is about 11 AU.

2 Coast across 59 AU for 41 days at a coasting speed of 2.5 million m/s.

3 Decelerate for 14 days, consuming 149 tons of fuel. Acceleration ranges from 0.19 g to 0.22 g, and the distance covered during the burn is about 10 AU.

Total flight time: 345 days
Total fuel consumption: 1,269 tons, or 18,000 cubic meters of liquid hydrogen.

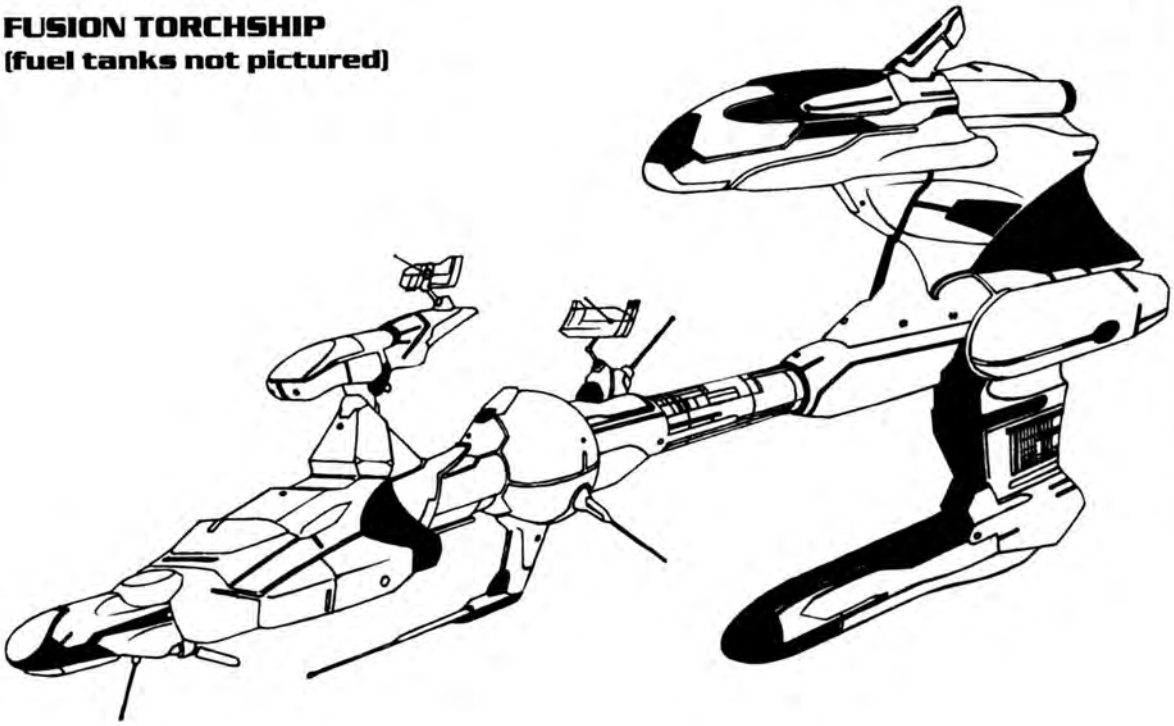
JEBEL MOUSA

The *Jebel Mousa* is unique among all the ships plying the Earth-to-Poseidon run. Named for peaks in the North African mountain range from which Atlas Materials took its name, *Jebel Mousa* and its ill-fated sister-ship, *Jebel Chelia*, were built to carry entire mining operations to the Serpentis System. These two behemoths smashed all previous records for the largest powered objects in space. With its extraordinary displacement, *Jebel Mousa* was a bold venture for Atlas and was designed to operate independent of sophisticated orbital receiving yards. As a result, it carried its own small fleet of tugs, workpods, and remote-operated vehicles.

Construction of the two monster vessels presented innumerable challenges, and the techniques developed during the process helped Atlas, and later partner company Dundalk, stay decades ahead of competitors in the field of orbital construction. Some problems, though, were never satisfactorily solved. Airflows in some of the more distant crew spaces are a persistent problem. The helium flash that eventually wrecked the *Jebel Chelia* could have been prevented had lower fuel flows been acceptable or had Atlas engineers solved the filtering problem.

The *Jebel Mousa* and *Jebel Chelia* were essential to the early days of Atlas' operations on Poseidon. The changing economic conditions of Earth-Poseidon trade, though, have made the continued operation of *Jebel Mousa* questionable. The ship has become a dinosaur. Its engines, once the most efficient in space, have become obsolete. The ship's enormous cargo capacity necessitates long layovers at both ends of the route while cargo is

FUSION TORCHSHIP
(fuel tanks not pictured)



offloaded, and even longer waits while cargo to be shipped is collected and lifted to orbit.

Atlas management is considering a number of options for *Jebel Mousa*'s future. One solution includes dismounting the engines for use as single units in smaller vessels and using the hull as the basis for an orbital manufacturing facility. Other choices include cannibalizing the ship in the same manner as was the *Jebel Chelia* (MG 87). One particularly far-looking design group is working on plans to turn the ship into a deep-space exploratory vessel.

ADM. ROBERT PERRY SURVEY VESSEL

The *Perry* (PG 199) is really just a smaller version of the *Cousteau* (PG 182), which is understandable given the similarity of their missions. Both ships had copious IHMS berthing space, as well as cavernous cargo holds for moving everything up to and including whole fusion reactors. Both were equipped with numerous landers and shuttlecraft for ferrying cargo both from orbit to ground and between ground sites.

However, there were also notable differences. Advances in horticulture and food science allowed a substantial reduction in the volume dedicated to hydroponics, as well as stored foods and seed supplies. Improvements in fusion technology allowed *Perry* to function with smaller fuel and drive assemblies. When constructed, *Perry* was the most advanced spacecraft yet built, and it provided valuable data for the later Ballard-class transports.

Over its lifespan, the *Perry* has "shot the hole" more than 40 times, making it the most-traveled vessel in existence. One object, however, has more kilometers logged than even *Perry* herself. The ship's bell from *Cousteau*, a gift from the original colonists, was placed aboard *Perry* for her trip back to Earth and has never left the ship's bridge. Although the bell and the ship have made the same number of transits through the wormhole, spacer lore insists that its initial trip, and the years spent circling Poseidon, have earned the bell the title of "furthest traveled man-made object in existence."

BALLARD-CLASS INTERSTELLAR TRANSPORT

The third generation of interstellar craft, the Ballard transports used design lessons garnered from construction and operation of the *Perry*. The result is a series of vessels that are reliable, relatively efficient, and easy to operate. They are an incremental improvement over the *Perry*, rather than an entirely new class of vessel.

There are currently 13 Ballards in service, ensuring the departure of at least one GEO sponsored flight from either planet every two weeks. There is considerable variation within the class, with the last ship built, the *Nathaniel Bowditch*, being 26 meters longer than the *Robert S. Ballard* and incorporating drastic changes in onboard automation and scientific packages. *Ballard*, *Shackleton*, *Byrd*, *Norgay*, and *Lowe* are all scheduled for refits in the next two years. This program will increase the IHMS capacity of each to nearly 3,000 and add 4,000 cubic meters to the onboard cargo capacity. This refit will keep the oldest of the Ballards at the forefront of spacefaring technology.

VEHICLE ACCESSORIES

CRASH PROTECTION SYSTEM

This computer-controlled mechanical system detects an impending crash and injects flame retardant, impact-absorbing foam into the interior of the vehicle the instant before impact. The foam dries moments later and crumbles away, facilitating extrication of the passengers and crew. Unfortunately, near misses or radical maneuvering can sometimes activate the system at inopportune times, actually causing a crash.

If a passenger is strapped into a standard safety harness, the CPS will reduce all crash damage ratings affecting the passenger by 2.

Rigging Value: Impossible
Durability: 2
Legality: Legal
Availability: Common
Cost: 2,500cs

HIGH-OUTPUT TURBOFANS

These high-performance turbofans are often used in conjunction with power-assist systems and superchargers to enhance the overall performance of a jumpcraft. A full set of HO turbofans increases a jumpcraft's Power rating by 1 and increases its maximum speed by 20%.

Rigging Value: Standard
Durability: 2
Legality: Legal
Availability: Uncommon
Cost: 5,000cs per fan

POWER-ASSIST SYSTEM

This jumpcraft system consists of custom installed computer-control hardware and flight-control turbofans. The system helps manage power distribution and supplements the craft's standard turbofans for greater flight performance. A power-assist system increases a jumpcraft's Handling by 2, but reduces its fuel efficiency by 2 kilometers/liter.

Rigging Value: Standard
Durability: 1
Legality: Legal
Availability: Uncommon
Cost: 10,000cs

SUPERCHARGER

This array of supplementary batteries is used to augment a jumpcraft's normal power supply to increase acceleration or deceleration. A supercharger increases a jumpcraft's power rating by 2.

Rigging Value: Standard
Durability: 1
Legality: Legal
Availability: Uncommon
Cost: 2,500cs

MILITARY VEHICLE ACCESSORIES

The following vehicle accessories are highly restricted and will typically be available only to government, military, law enforcement, or Incorporate security personnel. They are occasionally available on Poseidon's black market and underground salvage auctions to colonists with the appropriate contacts at 150 to 500% of the listed price.

ANTI-MISSILE DEFENSE SYSTEM

This system is a multi-barrel rotary cannon interfaced with a dedicated targeting computer. The fully automated system is designed to track and destroy incoming missiles. The system has superior aptitude in Military Weapons and the effective target number for the attack is 5. No modifiers for such factors as the speed or size of the incoming missile are necessary. The AMDS can engage multiple missiles in the same round, but each attack after the first suffers a cumulative –1 target number penalty.

Rigging Value: Impossible
Durability: 2
Legality: Restricted
Availability: Rare
Cost: 50,000cs

ARMOR

The body and chassis of an armored vehicle are constructed of military-grade ceramic composites. Each level of armor increases the vehicle's base armor rating by 1, up to a maximum of twice the base armor rating. Each level of armor protection reduces the vehicle's fuel efficiency by 1 kilometer/liter. Unlike other military vehicle accessories, vehicle armor is unrestricted.

Rigging Value: Standard
Durability: 3
Legality: Legal
Availability: Rare
Cost: 5,000cs per armor rating

Ablative Armor

This material is designed to blunt the effects of explosive weapons by generating its own diffusing blast wave on impact. The counterblast destroys a patch of the ablative armor but hopefully saves the vehicle in the process. Ablative armor is sold as flat or curved plates of foamed industrial bioplastic with a proprietary blend of binary propellants in the voids. It counts as foamed bioplastic for armor and weight purposes but has triple the cost. It has six times its standard armor rating against shaped charges and explosions. It must be backed by standard armor of at least this rating to be effective (e.g., to provide armor rating 12 against an explosive weapon, it must be backed by regular armor with a rating of at least 12).

Ablative armor is only activated by an explosive weapon with a damage rating at least triple the

armor's base rating. For example, ablative armor with a base rating of 2 (12 against explosive weapons) would only be activated by an explosive weapon of damage rating 6 or higher. If activated, the effective rating of the ablative armor is reduced by the damage rating of the attack. For example, an explosive weapon with damage rating 6 would reduce the above armor from 12 to 6.

Since ablative armor can also act as a flotation device, its use is very common on Poseidon military vehicles, typically in 16mm or 32mm plates secured by environmental sealant. A one-square-meter plate 16mm thick will have a mass of four kilograms, a standard armor rating of 4, and an armor rating against explosions of 24. A 32mm plate has double the mass, an armor rating of 5, and an armor rating against explosions of 30. Some military body armors now have 4mm plates of ablative armor.

Dimensions: 1 kilogram per 1m x 1m x 4m section
Power Source: Standard cell
Rigging Value: Impossible
Durability: 0
Legality: Restricted
Availability: Rare
Cost: 1,200cs per square-meter of coverage
Armor Rating: 2 (12) per 4mm thickness

CHAFF LAUNCHER

A disposable ECM device, chaff launchers are linked to vehicle sensors and release clusters of electronic mimics that are programmed to exactly match the deploying vehicle's signature in the event that hostile fire control achieves target lock. A chaff launcher provides a +3 bonus to evasion attempts, but this bonus drops by 1 every round as the decoys disperse and enemy computers or weapons begin to distinguish the decoys from the real target. Chaff decoys cost about 100cs per unit, and each use deploys a single unit.

Dimensions: Mass and volume vary by vehicle size
Power Source: Standard cell
Rigging Value: Standard
Durability: 0
Legality: Restricted
Availability: Rare
Cost: 100cs

DIRECTION AND DISTANCE FINDER

The DDF is an accessory for any sort of receiver, usually radio or sonar. Combined with three or more antennas, it allows virtually instant pinpointing of any signal the receiver can pick up, giving directional bearing and distance with a fraction of a percent error. Networked to a GPS unit or computer with a mapping database, it can provide a virtual picture of transmitter locations. With the capabilities of a maincomp network hub and sufficient data, it could identify transmitters by manufacturer, species, or other characteristics often too subtle to be noticed. A DDF reading is sufficient to launch a guided weapon anywhere within its range, provided the weapon is equipped with the same type of receiver.

Dimensions: 50 grams, negligible volume
Power Source: Mini cell
Rigging Value: Impossible
Durability: –1
Legality: Restricted
Availability: Scarce
Cost: 200cs

EXCAVATOR

A heavy plastic blade on a pivot, typically mounted on the front of a wheeled or tracked vehicle. The excavator can tilt, swing, and lift, allowing obstacles to be efficiently cleared without risking damage to the vehicle itself. Excavator blades are typically a meter high and as wide as the vehicle they are mounted on. Made of industrial bioplastic 16 millimeters thick, a blade masses about 75 kilograms per meter of width, including the linear actuators and support structure.

Dimensions: 1-meter high, 75 kilogram per meter of width
Power Source: External
Rigging Value: Basic
Durability: 3
Legality: Legal
Availability: Very Common
Cost: 1,000cs per meter of width

JAMMER

Jammers act on different principles than chaff decoys. These devices generate a harsh signal on all the various bands used for sensing and communications, overloading the weapon's onboard sensors and interfering with its ability to communicate with remote sensors. While a jammer provides a +2 bonus to evasion attempts, it also decreases the

vehicle's Stealth rating by 5 while it is activated. Jammers also require huge amounts of electrical power, typically one kilowatt for every cubic meter of vehicle volume. Jammers provide a bonus to nearby vehicles as well—a +1 bonus for those in close formation. Bonuses from multiple jammers are not cumulative. Jammers can make most radio or sonar communication impossible for distances of several kilometers, and the sonar disruption can be debilitating to cetaceans at close range.

Vehicles using jammers may preset small windows of open radio communication and coordinate this with other vehicles. These millisecond openings constantly jump frequency, and only those linked into the control network will be able to communicate effectively within the jamming zone. These communications windows can still be defeated by enemy jammers, however.

Dimensions: 1.2 kilograms, 1.0 liters
Power Source: External
Rigging Value: Basic
Durability: 0
Legality: Restricted
Availability: Rare
Cost: 2,200cs

STEALTH PACKAGE

A stealth package combines high-end ECM systems and electronics with radar-absorbent hull skins and faceted superstructure components. The maximum Stealth rating is 10.

Rigging Value: Impossible
Durability: 0
Legality: Restricted
Availability: Rare
Cost: 1,000cs x (rating x vehicle mass in tons)

CHASES AND DOGFIGHTS

In the science fiction and action genres, chases and dogfights are among the most dramatic and exciting action scenes. Unfortunately, most roleplaying games focus only on rules for resolving personal combat, ignoring the potential in other kinds of action. This section provides rules that give players the mechanics they need to take advantage of the excitement and fun of vehicle action sequences. Blue Planet is not a wargame, however, it is a roleplaying game. As such, these rules are intentionally abstract, emphasizing the simplicity and streamlined play more in keeping with roleplaying games.

CONCEPTS

Before entering a detailed discussion of the vehicle rules it is worthwhile to define several concepts and terms that are used. These definitions are simply an introduction, as detailed descriptions of the concepts and the way they are used in the rules are discussed at length in the appropriate sections.

PILOT SKILL

The vehicle rules assume the reader is familiar with **Blue Planet v2**'s basic game mechanics. The vehicle mechanics rely heavily on success rolls, opposed rolls, and action rounds. These rules also emphasize the role of the characters. Quite often, modifiers based on technology and situational factors will balance each other out and the difference between success and failure will depend entirely on the skill of the pilot and decisions of the player.

Vehicle action sequences in **Blue Planet** follow the standard action round format (PG 110). As such, most maneuvers in vehicle action sequences will be resolved when characters execute their actions. Most vehicle maneuvers require that the operators make task rolls against their Driving or Piloting skill, as appropriate to the vehicle.

RANGE BANDS

Perhaps the most complicated aspect of vehicle action sequences is the need to determine and track the distance between two or more vehicles. In many chases and dogfights, the distance between two vehicles will be changing all the time, requiring a lot of bookkeeping work for the players and moderator. To keep the game action fast and furious, **Blue Planet** uses range bands to abstract the actual distance between vehicles.

There are five range bands—close, short, medium, long, and extreme. Rather than linking these abstract categories to specific distances, they are defined by what the vehicles—and characters in the vehicles—can do to each other at each range band.

Close: the vehicles are close enough that the pilots can attempt to ram or run each other off the road, and characters can even attempt to leap between the vehicles. The vehicles and characters in them can also exchange fire with any ranged weapon.

Short: the vehicles are close enough that characters can exchange fire with any ranged weapon, including handguns, but no direct physical contact between the vehicles or characters is possible.

Medium: the vehicles are close enough that characters can exchange fire with any ranged weapon larger than a handgun, including longarms.

Long: the vehicles are close enough that characters can exchange fire with any ranged weapon larger than a longarm, including heavy weapons and vehicle weapons.

Extreme: the vehicles are far enough away from each other that characters can only exchange fire with guided weapons.

ENCOUNTER DISTANCE

At the beginning of any vehicle action sequence, the game moderator should select an initial range band for the vehicles' encounter distance. This is the distance between the vehicles at the beginning of the action sequence.

This decision is usually based on relevant factors such as visibility, terrain, onboard systems, such as radar or sonar, and the attribute or task rolls of the characters involved. For example, the moderator might call for an Awareness roll and use the results to gauge the initial encounter distance. Once the moderator has selected the initial encounter distance, he can readily track the distance between the vehicles as the action develops.

EXAMPLE

Marshal Church has traveled to Nomad to track down several suspects charged with sunburst poaching. He has a pretty good description of their beat-up jumpcraft but little else to go on. As he reaches the floating town, Church sees the suspects' jumpcraft lift into the air and decides to pursue. To make sure the chase is an exciting one, the moderator decides to set the initial range band at medium.

The initial range band is a really important factor, as it will go a long way toward dictating the action and pacing of the sequence. Really exciting chase scenes, for example, usually take place in an environment that emphasizes the importance of maneuvering and the pilots' skill, such as the crowded streets of a city or the treacherous twists and turns of an undersea canyon. In these scenes, the initial encounter distance will typically be quite low.

VEHICLE RATINGS

POWER

A vehicle's Power is a simple, abstract representation of its ability to change its velocity, either by accelerating or decelerating. Obviously, Power is very important in common vehicle action sequences, such as chases, races, and dogfights.

HANDLING

A vehicle's Handling is an abstract representation of its maneuverability and responsiveness.

CHANGING RANGE BANDS

Using an action, a pilot may attempt to increase or decrease the distance between his vehicle and another. The operators of the two vehicles make an opposed roll against their Driving or Piloting skills as appropriate for their vehicles. Both operators add their vehicles' Power rating to their target number for the opposed roll. If the acting character wins, he can change the vehicles' range band by one category (close to short, short to close or medium, medium to short or long, etc.). If the operators tie or the reacting player wins the opposed roll, the range band stays the same—the reacting player cannot change the range band if he wins the opposed roll.

This will result in a lot more movement—vehicles zipping in and out of range—than would be truly realistic in some situations. However, it makes for fast, exciting, and easy to play vehicle sequences.

SPEED

Any time a pilot attempts to change the distance between the two vehicles, he must decide how fast he's willing to go. For simplicity, speed is abstracted into five categories. Each provides a target number modifier to all attempts by the operator to increase or decrease the range band. The higher a vehicle's speed, however, the more difficult it is to execute other maneuvers—like turns—and the more damage a crash will inflict on the vehicle and its passengers.

Speed	Modifier
Minimum	–5
Low	–3
Cruise	—
High	+3
Maximum	+5

EXAMPLE

Church, who has Piloting 7, decides he'd better punch it. The pilot of the poachers' jumpcraft has Piloting 4. The player and moderator make an opposed roll, adding their vehicle's Power rating to their target numbers. Church's Patrol jumpcraft has Power 5, while the poacher's utility hopper has Power 2. Church decides he'll push it and accelerate to high speed, while the poacher is only willing to risk cruise speed. Church's target number for the opposed roll is 15, while the poacher's is 6. Church easily wins the roll and the player decides to decrease the range band by one, from medium to short.

ALTITUDE AND DEPTH

The preceding rules give players the tools they need to resolve the movement of surface vehicles. Other vehicles, however, notably aircraft and submersibles, can also move up or down relative to each other. In many cases, such as the chase scene involving the two jumpcraft, it will be important for the moderator to include the effects of altitude or depth in the resolution of a vehicle action sequence.

In most cases, it is sufficient to assume that distance between two vehicles resulting from their altitude or depth is covered by the normal range band. As long as both vehicles can fly or submerge, there is no reason to track their actual altitude or depth. However, in vehicle action sequences involving both aircraft or submersibles and surface vehicles, the former's altitude or depth represents the minimum distance between the two vehicles. In this case, the pilot of the aircraft or submersible should choose a range band to represent altitude or depth, and this range band becomes the minimum for the vehicle action sequence. For example, the pilot of an aircraft may decide to maintain an altitude corresponding to the medium range band, and the vehicles will get no closer than medium range unless the pilot decides to decrease his altitude.

OTHER MANEUVERS

There are many vehicle maneuvers in **Blue Planet** other than accelerating and decelerating. These include turning the vehicle, swerving to avoid hazards, pedestrians, or other vehicles, forcing another vehicle to stop or crash, and numerous combat maneuvers. This section describes some standard vehicle maneuvers, while combat maneuvers are discussed a bit later.

The moderator should use the following table as a guideline for determining the appropriate modifiers as each individual situation dictates. When attempting these maneuvers, the player should add his vehicle's Handling to his target number.

Maneuver	Modifier
Reverse	–5
Soft Turn	—
Sharp Turn	–3
180° Turn	–5
Take-off and Landing	—
Half-Roll	–2
Full-Roll	–4
Reentering/Leaving Atmosphere	–2
Space Docking	–3

The vehicle's speed will also affect the operator's target number, as indicated in the following table.

Speed	Modifier
Minimum	+5
Low	+3
Cruise	—
High	–3
Maximum	–5

TURNS

The difficulty of a given turn and the amount of time it takes to execute is largely a function of the vehicle. As a result, the game moderator should take into account the relative capabilities of the vehicles involved when resolving these maneuvers. Further guidelines for adjudicating the effects of turns by various vehicles in a chase sequence are offered below.

Maneuvering to avoid pedestrians, vehicles, or other hazards can usually be handled by treating them as soft or sharp turns. The difficulty of the turn should be dependent on a variety of factors, such as visibility, the size of the obstacle, its movement, surface conditions, and weather. As always, the moderator is encouraged to use common sense, a detailed description of the action, and target number modifiers to most accurately represent any given situation.

The moderator should always announce the number of action rounds the operator of a vehicle has in which to react and execute a turn. If the pilot has sufficient time, he may be able to execute two or more easier maneuvers, rather than a single difficult one. Note that a turn to avoid a hazard will often result in the vehicle lining up with yet another obstacle, especially in locations with limited maneuvering room, and this may require another maneuver to return the vehicle to its original direction of travel.

The failure of an attempt to turn a vehicle will sometimes not result in its failing to turn entirely, unless the result was a critical failure (–5 action value or worse). In some cases, the moderator should allow the vehicle to turn as much as the roll would allow. If the operator failed a sharp turn but would have made a soft turn, the vehicle should make a soft turn. While not enough to avoid the obstacle altogether, it may be enough to minimize the damage.

While not possible for most watercraft, a 180° turn is actually somewhat simpler for modern hovercraft, jumpcraft, and VTOLs than it is for wheeled vehicles, because they can hover in place. A 180° turn in reverse is referred to as a "bootleg reverse."

CRASHES

Crashes can occur in either of two ways. First, a critical failure on any maneuver may result in a crash. Second, crashes can occur whenever a pilot of a vehicle fails at a maneuver that was necessary to avoid a crash. For example, if the moderator tells the pilot's player that he needs to execute a sharp turn to avoid ramming the cargo hauler that has just pulled in front of his vehicle, the player's vehicle will crash if he only succeeds in making a soft turn.

A critical failure on a maneuver only determines the possibility of a crash, unless the maneuver was required to avoid a crash in the first place. When a player rolls a critical failure on a maneuver, the moderator should allow him to make a success roll against the appropriate skill to avoid the crash. This rule is designed to simulate the panicked reactions that occasionally save a pilot and his vehicle. The moderator should adjust the target number for any relevant modifiers. If the roll is successful, the crash is avoided. However, there should still be some adverse result of the mishap—the vehicle stops or loses speed, is trapped behind the slow-moving cargo hauler, etc. As always, a detailed description of the action should suggest a number of possible results for a near-crash.

Crashes are handled a little differently where aircraft in open space are involved. When a maneuver results in the possibility of a crash for an aircraft, this indicates that the aircraft has gone into an uncontrolled spin, or straight fall in the case of jumpcraft, and will crash into the surface below unless the pilot executes a maneuver to regain control and avoid the crash. An aircraft will lose one range band of altitude each round. Given sufficient starting altitude, this may allow a courageous pilot to make several attempts to regain control before the vehicle crashes. All rolls to maneuver an uncontrolled vehicle suffer a –5 target number penalty.

Submersibles that lose control will sink at a rate of about 30 meters per round. Most subs in use on Poseidon can withstand depths of up to 2,000 meters—a tolerance that will rarely be exceeded in the shallow seas of the Pacifica Archipelago. A submersible that does drop below its designed depth tolerance will lose structural integrity and eventually be crushed by excessive pressure. Otherwise, submersibles are very unlikely to "crash." At worst, a sinking sub will come to rest on the ocean floor and the crew will suffocate when their life support runs out if they are unable to repair the damage to the craft.

EXAMPLE

Church and the poachers race into Haven. The Marshal has linked-in to the traffic-control network, so there isn't much chance of a collision as he works his way down through the congested jumpcraft lanes above the city streets. Unfortunately for the poachers, their onboard computer is down. As the poachers' jumpcraft weaves its way through the jumplanes, the pilot finds a slow-moving cargo jumpcraft directly in his path. The game moderator decides the pilot will

need to execute a sharp turn to avoid a crash. He rolls against the poacher's Piloting 4 and fails. The jumpcraft clips the front of the hopper, accompanied by the sound of grinding metal and splintering industrial plastic.

CRASH DAMAGE

The damage a vehicle suffers in a crash is based on its speed at the time of impact. This is determined by the speed the pilot's player announced when he made his last attempt to increase or decrease the range band. The vehicle's armor rating is subtracted from the base damage rating.

Speed	DR
Minimal	1
Low	5
Cruise	10
High	15
Maximum	20

EXAMPLE

The poachers' jumpcraft is traveling at cruise speed when it crashes into the cargo hauler, so the base damage rating is 12. The jumpcraft has an armor rating of 5, so the effective damage rating is 7. The player rolls three dice, getting 8, 4, and 3. Since two dice rolled equal to or less than 7, the jumpcraft suffers serious damage (see Vehicle Damage, PG 120).

CHASES

In a chase sequence, one vehicle will always be pursuing the other. The most exciting chase sequences are those that take place in a setting that emphasizes the role of maneuver and pilot skill. For this purpose, towns and cities are tough settings to beat, but **Blue Planet** offers a number of unique terrains suited for dramatic chase sequences —a ship's graveyard in a vast sargassum flat, a dark, twisting undersea trench, or the narrow faults of a canyonland.

In a chase, the most crucial maneuvers will be changes in the range band, as the pursued vehicle tries to extend the range and the pursuing vehicle tries to close it. The operator of the pursued vehicle will also often be executing maneuvers intended to elude or escape the pursuer. The pursuer's most effective tactic will be to match the pursued vehicle's maneuvers and attempt closing the distance between them.

These maneuvers can usually be resolved using the guidelines for standard maneuvers. In general, when a pursued vehicle executes a maneuver, the pursuing vehicle will need to match it to continue the chase. In most chase sequences, turns will be the most common maneuver of this sort as the pursued vehicle makes a sharp turn down a side street, or swerves to dodge oncoming traffic while driving the wrong way down a road. Common sense and a few simple guidelines should help players and moderators resolve these maneuvers.

The first step is for the player to simply describe the intended maneuver. Alternatively, if the vehicle operator is a non-player character, the moderator will need to decide what sort of maneuver the operator is attempting. On the basis of this description, the game moderator will decide what kind of maneuver is required, as well as its difficulty. The moderator should always remember to apply the appropriate maneuver modifier based on the vehicle's speed.

Once the difficulty of a maneuver has been assigned, the vehicle operator's player can make the appropriate task roll. If the maneuver is successful, the pursuer will have to match the maneuver on his next action to continue the chase. If the maneuver is unsuccessful, the game moderator will have to determine the result of the failure, based on its description and the circumstances. The moderator is encouraged to use his imagination in deciding the results of a failed maneuver. Crashes can be fun, but so can landing the characters in even deeper trouble.

Because turns of various sorts will be the most common maneuver in a chase, the game moderator should keep in mind the relative capabilities of the vehicles involved. For example, a turn that is considered soft for a motorcycle is going to be very difficult for a jumpcraft to match, and it will most likely overshoot the turn. Likewise, a supertanker isn't going to be able to make a turn that will challenge a small racing boat. Most chases will not involve vehicles with such radically different capabilities, and common sense will usually be sufficient to resolve these maneuvers realistically.

EXAMPLE

Racing into Haven, the two jumpcraft are at short range and have dropped down to only a few meters above the street. Both vehicles are traveling at cruise speed. The poachers are desperate to elude pursuit, and the moderator decides they'll try to make a sharp turn down a side street. The moderator makes the task roll for the pilot, applying the –3 penalty of the sharp turn. The roll fails, but would have been enough to make a soft turn. The moderator rules the poachers have avoided slamming into a building, but are now racing along over a pedestrian sidewalk, about to crash through an awning extending from the front of the building directly ahead.

If the pursuing vehicle successfully matches, or betters, a maneuver executed by the pursued vehicle, it will be able to continue the chase. If the pursuing vehicle fails to match the maneuver, the moderator will need to determine the result of the failure, based on the situation and the level of failure. Usually, the vehicle will lose one range band, or two if the result was a critical failure. The latter will also require the pilot to make a task roll to avoid crashing.

EXAMPLE

Church sees the poachers' vehicle swerve down a side street ahead and decides to follow. Church has Piloting 7 and the sharp turn imposes a –3 penalty, so his target number for the turn is 4. The player rolls and gets a –4 action value! This is a total failure, not even good enough for a soft turn. The game moderator decides this is not bad enough for a crash, and tells Church's player that he's missed the turn and overshot the side street. Church will lose one range band as he turns around and continues the chase.

The moderator should also feel free to require other maneuvers beyond those initiated by the pursued vehicle. Cities, especially, are very dynamic settings where blind alleys, traffic, and pedestrians represent just a few variables that might require the pilots to execute maneuvers. And, of course, in large settlements there may be Patrol officers who will frown on any vehicle racing at unsafe speeds through the streets of their town. The moderator should keep in mind that the more maneuvers the participants in a chase are forced to make, the more exciting the chase sequence will be.

DOGFIGHTS

The complex movement of aircraft and submersibles dogfighting in three-dimensional space requires highly abstracted mechanics if it is to be resolved with any kind of attention to the sequence's pacing. For this reason, **Blue Planet** uses action points to simulate the advantage and disadvantage of position for vehicles involved in a dogfight.

On any action, a vehicle operator involved in a dogfight may attempt to maneuver for position with another vehicle. This maneuver requires a Piloting task roll. Action points are gained or lost equal to the roll's action value. The maximum number of action points that can be gained or lost is equal to the target number penalty the pilot is willing to accept for the maneuver. In other words, the tougher the attempted maneuver, the more can be gained or lost from it.

EXAMPLE

Church is trying to line up the poachers' jumpcraft for an attack with his patrol hopper's autocannon. The player tells the moderator he's simply trying to drop in behind the jumpcraft and stay with it as it zigzags from one side of the street to the other. The player decides to take a –2 penalty on the roll, so he will be able to gain or lose a maximum of 2 action points. The player makes the roll with an action value of +1, so he gains 1 action point.

A vehicle operator's current action point total represents a target number bonus on his next combat maneuver, such as an attack with an unguided weapon, evasive maneuvers, or a target acquisition maneuver.

VEHICLE COMBAT

The vehicle rules in **Blue Planet** make it easy to keep track of the position of two or more vehicles relative to one another, making it much simpler to resolve vehicle combat engagements. Target size and speed are assumed to cancel each other out for the purposes of these rules. The following rules and modifiers apply to attacks with unguided weapons, as guided weapons are discussed on page 121.

SPEED

Attack rolls are modified based on the speed of the attacking vehicle. The attacker receives a –1 penalty for each of the vehicle's speed categories (e.g., –1 at Minimum, –2 at Low, –3 at Cruise, etc.).

AIMING
Manually targeted weapons fired from a vehicle, including those linked to a CAT system (PG 162), use the standard rules for aiming (PG 113).

RECOIL
Integral and mounted vehicle weapons are unaffected by recoil. Personal weapons fired from a vehicle use the standard rules for recoil presented in the combat mechanics (PG 113).

CALLED SHOTS
Players may take called shots with vehicle weapons just as with standard weapons. Even guided weapons can be programmed or directed to make called shots at the vulnerable locations of the target vehicle. The player may increase or decrease the damage rating by 1 for every –1 penalty he accepts on the attack roll.

RANGE BANDS, SENSORS, AND STEALTH
The sensor and stealth capabilities of modern military or paramilitary vehicles make determining the initial range band a little more complex. On Poseidon, military engagements most often occur either above or below the surface of the oceans, so these rules will focus on methods for establishing an encounter distance for vehicle action sequences involving aircraft and submersibles.

Radar and Stealth
In general, the development of stealth technology in 2199 has outpaced that of radar technology, continuing the historical trend. In the case of military aircraft, the result is that fighters are capable in theory of making radar contact, acquiring a target, and launching a radar-guided air-to-air missile at ranges in excess of 200 kilometers. In practice, however, all military-class aircraft have sufficient stealth and ECM technology that engagement at these ranges is simply not effective. Radar also requires line-of-sight to function, so terrain and other obstructions can effectively hide potential targets.

Modern military aircraft have both powerful radar systems and sophisticated stealth and electronic counter-measures capabilities that will affect the determination of encounter distance. These capabilities are represented by two special vehicle ratings.

Sensor: This rating represents an aircraft's onboard sensor systems, including radar and sonar. It determines how easily enemy aircraft can be detected at significant distances.

Stealth: This represents an aircraft's anti-detection technologies, from faceted flight surfaces to sophisticated electronic systems. The higher an aircraft's Stealth, the more difficult it will be to detect. An aircraft's stealth capabilities, however, are largely dependent on its velocity and altitude. Generally speaking, the higher and faster an aircraft flies, the easier it will be to detect. As a result, an aircraft's Stealth should always be adjusted for its current speed modifier (see page 115). For example, if the aircraft is flying at high speed, its Stealth is decreased by 3. In addition, an aircraft's Stealth is decreased by 1 for every range band of altitude above short maintained by the pilot.

Most dogfights between two aircraft will begin at extreme range. Both pilots should make a task roll against Electronics, each receiving a target number modifier equal to the difference between their aircraft's Sensor rating and the opposing aircraft's Stealth.

If both pilot's fail, the range band is decreased to long and the pilots make new Electronics rolls with a +2 bonus. Continue these range-band reductions and sensor attempts, with a cumulative +2 bonus, until at least one of the pilots is successful.

If one pilot succeeds and the other fails, the loser will have to continue attempting the skill roll at the beginning of each round until he makes radar contact, or until the successful pilot attempts a target acquisition maneuver. At that point, the targeted pilot will be well aware of the other aircraft's presence. The range band at which the successful pilot makes radar contact, however, is the encounter distance for the vehicle action sequence. Obviously, this assumes the vehicles are moving toward one another—if they are not, no engagement will occur.

SONAR AND SUBMARINE WARFARE
As with aircraft, a submersible's Sensor and Stealth will determine how easy it is for the craft to detect other vessels and how easy it is to be detected. While military onboard sonar systems are capable of detecting a submerged vessel at distances in excess of 50 kilometers, again, developments in

stealth technology, especially MHD propulsion, have resulted in much lower engagement distances. Active sonar, or "pinging," is extremely effective at significant distances, but it makes any submersible that uses it very easy to detect. As with radar, active sonar also requires line-of-sight to function effectively. Passive sonar—listening for the noise generated by water displacement or power plants—is only effective as long as there is a nearby vessel that is actually making detectable noise. By eliminating screw noise and cavitation, MHD propulsion systems have made it much more difficult to detect submerged vessels with passive sonar.

The Sensor or Stealth ratings of submersibles is similar to those of aircraft, with a few differences based on their unique characteristics.

Sensor: A sub has both Active and Passive Sonar ratings. Active Sonar is twice the value of Passive Sonar, but whenever it is used, its value is subtracted from the submersible's Stealth for the purposes of the opposing vessel's next attempt to detect it.

Stealth: A submersible's Stealth represents how difficult it is for the sonar systems of enemy vessels to detect. However, speed causes even more problems for a stealthy submersible than it does for an aircraft. The noise caused by water displacement alone will render a submersible's sonar useless and will also make it very easy to detect. A sub's Stealth and Passive Sonar are always adjusted for its speed modifier. For example, a sub moving at maximum speed would receive a -5 penalty to Stealth and Passive Sonar.

Most submerged warfare on Poseidon is waged between one-pilot fighter subs that are extremely stealthy yet capable of remarkable speed and maneuverability. Typically, a patrolling fighter sub will move very slowly, or not at all, listening for other vessels with passive sonar. When an enemy vessel is detected, the fighter sub will creep within range, "paint" the target with active sonar, and launch high-velocity, guided torpedoes. If the burst of active sonar has not revealed its position, the fighter sub will then slowly retreat, relying on its stealth to protect it from any counter-attack. If it has been identified, the sub can use its tremendous speed and maneuverability to turn and escape as quickly as possible.

To determine the encounter distance for a dogfight between two submersibles, use the same basic procedure as that used for aerial dogfights.

EXAMPLE

Commander Preston of the GEO Naval Command is piloting a fighter sub on patrol near a deep-sea research base. He's been getting intermittent contact on passive sonar at extreme range for several minutes. He doesn't know it yet, but the contact is an Incorporate fighter sub piloted by a non-player character. The moderator decides to go to action rounds. Preston has Electronics 8 and the Incorporate pilot has Electronics 6. Both subs have Passive Sonar 5 and Stealth 10. Neither sub is moving. Preston's target number to detect the Incorporate sub is 3, and the Incorporate pilot's target number is 1.

Preston wins initiative and acts first. The player rolls against Preston's target number of 3 and succeeds. The game moderator tells the player he has a positive contact on an unknown submerged vessel at extreme range. The Incorporate pilot rolls against his target number of 1 and fails. The following round, since he has detected the Incorporate sub, Preston can begin maneuvering for position, attempt to acquire the target, or turn and run. The Incorporate pilot will have to attempt to detect Preston's sub again.

GUIDED WEAPONS

The **Blue Planet v2** *Player's Guide* provides basic rules for guided weapons (PG 163). This section clarifies and expands upon those rules.

TARGET ACQUISITION

In the world of **Blue Planet**, there are a variety of powerful, computer-targeted guided weapon systems for both vehicles and infantry. However, before a guided weapon can be fired, the targeting computer (PG 163) must acquire or lock-on to the targeted vehicle. When a targeting computer is locked on to the targeted vehicle, it signals the pilot or soldier, traditionally with an audible tone. This signal is why pilots sometimes announce target acquisition by saying they've "got tone" on the enemy.

However, getting tone on an enemy vehicle first requires the pilot or soldier to spend an action lining up the target with the computer's sights. The attacker makes a success roll against Gunnery skill for integral vehicle weapons, or Heavy Weapons skill for man-portable and mounted weapons. The Sensor rating of the attacking vehicle or man-portable launcher is a target number bonus. The target vehicle's ECM is a target number penalty to the roll. The roll is also adjusted for the attacking vehicle's speed modifier and the attacker's action points. Remember that the target must be within range of the weapon system for it to be acquired.

EXAMPLE

On the following round, Preston attempts to acquire the enemy fighter sub. Preston has Gunnery 4, while his fighter sub has Active Sonar 10 and the Incorporate sub has ECM 5. Preston's target number to acquire the enemy sub is 9 [(4 + 10) – 5 = 9]. The player rolls and succeeds. Preston's targeting computer identifies the vessel as a GenDiver fighter sub, locks on, and instantly plots a firing solution.

Once an attacking vehicle has locked its targeting computer onto an enemy vehicle, the pilot may fire the weapon system in his next action. These attacks will often be launched at significant ranges, so the game moderator will need to determine how many action rounds it will take the weapon to impact its target. At close and short range, the weapon impacts on the same initiative count it is launched, just like a conventional weapon. At medium range, the weapon impacts at the end of the round it was launched. At long range, the weapon impacts at the end of the round the round *after* it was launched. At extreme range, the weapon impacts at the end of the round *two rounds after* it was launched.

EXAMPLE

The two fighter subs are at extreme range. If Preston fires at this range on round one, the torpedo will not reach the target until the end of round three.

EVASIVE MANEUVERS

There will often be enough time between a target vehicle being acquired and the guided weapon reaching its position that the pilot of the targeted vehicle will have a chance to shake-off the target lock of the incoming weapon. A pilot can only attempt evasive maneuvers against one incoming weapon at a time. The vehicle's ECM represents a target number bonus to the success roll, while the Guidance of the incoming weapon represents a target number penalty.

EXAMPLE

Preston launches a torpedo and the pilot of the Incorporate sub attempts evasive maneuvers. The pilot has Piloting 6, his sub has ECM 5, and the torpedo has Guidance 10, so his target number for evasive maneuvers is 1.

There is no attack roll for guided weapons as there is for unguided weapons. Modern electronics and weaponry are well-proven technologies, and short of a catastrophic failure, the weapons will find their targets. Unless the pilot of a target-locked vehicle successfully executes evasive maneuvers, the guided weapon will hit. When the weapon hits, the attacker should roll for damage as described in the *Player's Guide*, page 120.

Note that called shots with guided weapons modify the weapon's Guidance—and therefore the target pilot's evasive maneuvers—rather than the target acquisition roll.

EXAMPLE

Preston programs his torpedo to position itself above the Incorporate sub and strike the top of the cockpit. Preston is willing to take a –3 penalty on this called shot, so the torpedo's damage rating will be increased by 3. This reduces the torpedo's Guidance from 10 to 7, increasing the Incorporate pilot's target number for evasive maneuvers to 4.

MASTER WEAPONS TABLE

Weapon	Manufacturer	Cost	Rigging	Durability	PB	Short	Medium	Long	ROF	Ammo	Damage Rating
Melee Weapons											
Knife	Various	20-100cs	Basic	2							2
Diamond Knife	Various	35cs/cm	Basic	3							3
MacLeod CarbonEdge	MacLeod Enforcement	1,250cs	Basic	3							3
Machete	Various	100cs	Basic	1							3
Diamond Machete	Various	700cs	Basic	2							4
Parsons Enforcer Nightstick	Parsons Industries	70cs	Basic	2							2
Concealable Handguns											
Standard Template	Various	350cs	Standard	0	5	10	25	40	3	12	5
Guardian Model 200	MacLeod Enforcement	400cs	Standard	1	7	14	30	50	3	10	5
Holdout Pistol	Various	75cs	Impossible	0	2	3	6	18	2	2	6
P400A Revolver	Hanover Arms	330cs	Standard	1	4	8	20	35	3	6	5
Rapid	TLI	400cs	Impossible	0	3	5	10	30	3(5)	10	5
Small Caliber Handguns											
Standard Template	Various	450cs	Standard	0	10	20	50	150	3	35	6
Black Viper 10mm	MacLeod Enforcement	600cs	Standard	1	10	20	50	150	3	30	7
Police Marksman	MacLeod Enforcement	500cs	Standard	1	12	25	60	180	3	35	6
P550 10mm Autopistol	Hanover Arms	550cs	Standard	2	10	20	50	150	3	30	6
Large Caliber Handguns											
Standard Template	Various	700cs	Standard	0	8	12	30	100	3	25	7
Commando Elite	MacLeod Enforcement	900cs	Standard	1	10	18	40	125	3	20	8
Marshal Peacemaker	GEO	Unknown	Impossible	2	9	19	45	160	4	24	7
Protector 43	MacLeod Enforcement	800cs	Standard	2	5	10	25	90	3	25	7
Protector 43 Target	MacLeod Enforcement	1,400cs	Basic	2	6	12	30	105	3	25	7
Silva Special 14mm Magnum	MacLeod Enforcement	1,000cs	Standard	1	8	12	30	100	3	30	8
Stun Guns											
Handheld Stun Gun	Various	450cs	Standard	0	3	6	10	15	3	20	Special
Heavy Stun Gun	Various	1,200cs	Standard	0	6	12	18	25	3	200	Special
NIS Doppler	NIS	900cs	Impossible	0	3	5	10	30	3	20	Special
Simsat Pocket Stunner	Hanover Arms	350cs	Impossible	-1	3	5	10	30	3	10	Special

MASTER WEAPONS TABLE

Longarms											
Assault Rifle	Various	1,300cs	Standard	2	15	75	150	500	3 (5)	100	8 (11)
Assault Shotgun	Various	1,000cs	Standard	2	5	15	40	80	3 (5)	30	8 (11)
HA-MP9 Submachine Gun	Hanover Arms	900cs	Standard	2	15	30	60	180	3 (5)	100	6 (9)
HA-F118 Battle Rifle	Hanover Arms	2,500cs	Standard	2	20	40	80	240	3 (5)	80	7 (10)
HA-G11 Assault Rifle	Hanover Arms	1,600cs	Standard	2	20	80	180	200	3 (5)	100	8 (11)
HA-S8 Close-Support Shotgun	Hanover Arms	2,000cs	Standard	2	8	16	40	80	3 (5)	40	8 (11)
Hunting Rifle	Various	500-1,300cs	Standard	1	10	100	200	600	3	20	9
Kriegmann Shotgun	Kriegmann Firearms	3,500cs	Standard	2	5	15	30	60	3	20	8
Light Rifle	Various	450cs	Standard	1	12	30	75	260	3	30	6
Long Rifle	Various	300cs	Standard	1	23	56	140	490	1	1	8
Ranch Carbine	Various	1,300cs	Standard	1	18	45	110	380	3	100	7
Roomsweeper Riot Shotgun	MacLeod Enforcement	500cs	Standard	1	5	10	30	60	3	20	8
Shotgun	Various	300cs	Standard	1	5	10	30	55	3	30	7
Sniper Rifle	Various	1,500cs	Standard	1	15	100	250	750	3	30	9
Spear Gun	Various	100-300cs	Basic	0	2	5	10	15	1	1-5	5
Submachine Gun	Various	800cs	Standard	1	10	20	50	150	3 (5)	100	6 (9)
White Rifle	Various	3,200cs	Standard	1	25	65	165	575	3	10	10
Saser Weapons											
Saser Carbine	Various	2,100cs	Standard	1	7	17	40	140	3 (5)	40	8 (11)
Saser Pistol	Various	850cs	Standard	0	5	10	25	90	3	20	7
Heavy Saser	Various	20,000cs	Impossible	1	15	30	75	260	3	50	11
Heavy Weapons											
Assault Cannon	Various	4,000cs	Standard	1	20	75	150	300	3 (8)	1,500	13
Autocannon	Various	15,000cs	Standard	2	100	500	1,500	3,000	(5)	2,000	18
Grenade Launcher	Various	1,500cs	Standard	1	10	50	100	500	3	3	Grenades
HA-MA505 Infantry Support Cannon	Hanover Arms	12,500cs	Standard	1	50	200	500	1,500	3	20	13
Heavy Machinegun	Various	10,000cs	Standard	1	25	100	300	700	3 (5)	500	17
Light Machinegun	Various	6,000cs	Standard	1	20	100	250	500	3 (8)	500	12
Torpedo Cannon	Various	2,700-3,000cs	Standard	1	10	30	60	120	1	12, 4	12

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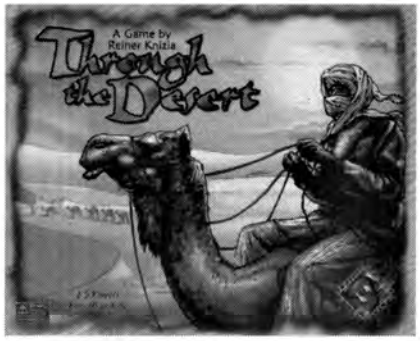

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