STARCLUSTER 2

STARSHIP

CREW

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BY CLASH BOWLEY

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STARSHIP CREWS

Starship crews are made up of people: humanoids, uplifted animals, robots, aliens, and androids. The purpose of any crew is to bring the starship, and its passengers and cargo, from Point A to Point B as safely, quickly, and efficiently as possible. There are other duties which may take precedence at various times, particularly for military vessels, but this purpose is held in common by all crew, and may be treated as a universal. Each crewmember is a component in a team, and needs to learn to apportion duties and responsibilities with his team members. Crews work together, not separately. Many people think of the pilot as the natural leader of a crew, but being a hot-shot pilot does not make one fit for command. The captain or owner of a vessel should ideally chose the person best qualified by experience, skill, and temperament to lead, and that can be a comm tech just as easily as a pilot.

Each crewmember has duties and responsibilities, which are being performed all the time. Just because in a game every minute is not played out does not mean that these duties are not performed, rather that they are performed in the background. The day-to-day activities of the crew are vital to the starship, and if not performed, or performed improperly, result in the gradual deterioration of the ship.

CREW SHIFTS

There are three standard shift schemes used by crew. Each scheme has advantages and disadvantages, and these are weighed carefully by the person in charge of crew rotation.

SINGLE SHIFT

In a Single Shift scheme, the crew are more or less always on duty. Duty breaks for eating, sleeping, and other necessities are covered by extra crewmembers who take over assignments as needed or, on a short term basis, by other crewmembers already engaged at some other duty. For example, in a Single Shift scheme there may be seven crewmembers for five positions, with the extra crewmembers taking over for those away from their stations. Short breaks like visits to the WC or trips to the galley for snacks and drinks can be covered by those already on duty on an emergency basis. The benefits of a Single Shift crew scheme are that it needs by far the fewest crewmembers. Drawbacks include burning a crew out with not enough rest, lowering morale and impairing function to some extent, and the need for every crewmember to be adept at several tasks.

MAINDAY-ALTERDAY

In a Mainday-Alterday scheme, the crew are divided into a Mainday crew and an Alterday crew, each of which works 12 hour duty cycles - i.e. 12 hours on, 12 hours off, typically noon-midnight for Mainday and midnight-noon for Alterday. On many ships, the Alterday crew is a skeleton watch, there to monitor things and summon the mainday crew if needed. Other ships use a more evenly balanced crew split which is fully functional on either watch. The benefit of such a split is that the crews are adequately though not completely rested and refreshed, and the drawback is that the crew is not a single entity, being split, and thus the two crew do not establish a close relationship.

FIRST-SECOND-THIRD WATCH

By splitting the crew into three units instead of two, many ships, particularly military and paramilitary, attempt to remedy the drawbacks of the Mainday-Alterday scheme by splitting the crews into three watches: First, Second, and Third. Like a Mainday-Alterday scheme, there are various levels of completeness to the crews, some being nothing more than skeleton watches with members from other crews filling in emergencies.The benefit to a three-part crew split are that the crews are on duty only eight hours a day and off for sixteen, thus allowing them to overlap with each other for communal and leisure activities and allowing complete rest and relaxation. The drawback is the size of the crew needed for such a scheme, by far the largest of the three schemes.
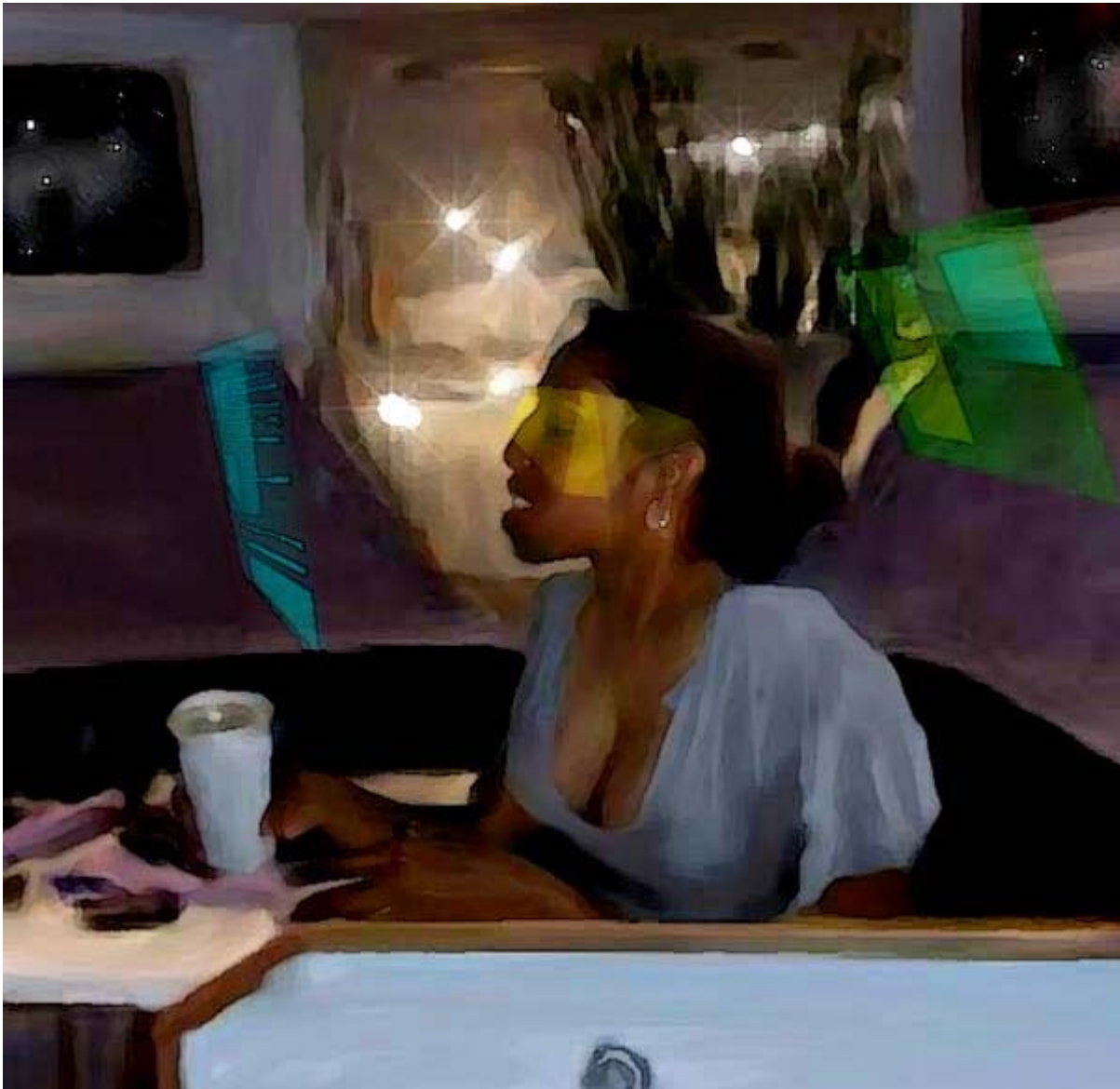
STANDARD CREW ASSIGNMENTS

The following crew profession descriptions are designed to give the character the skills most often used by crew at that position, but that should not be held to limit a character's skill advancement. If a character wishes to take another skill, or the GM decides another skill is more appropriate, the GM and player should feel free to discuss the matter and decide between them what skill was learned. For example, if a character specifically trains for a weapon skill rather than a job-related skill, then that skill should be given to the player unless there are very strong reasons not to.

BRIDGE CREW

PILOT

The pilot steers the ship from her position at a Pilot Station or Console. In space, this is accomplished with attitude jets which can rotate (turn) or translate (move) the ship around on any axis. Attitude jets use compressed air as reaction mass, and are not intended for long distance movement. They are used for translation only during docking, where very slow and precise movement is needed. In atmosphere, ships either use A-Grav, which is clumsy, or lift surfaces, which can maneuver the vessel like a huge aircraft.

The thrust on almost all vessels is fixed - that is it always 'pushes' in the same direction relative to the ship. By rotating the vessel, the thrust 'pushes' the ship in a different direction. This always happens at midpoint on a trip, where the vessel changes from building up speed by constant acceleration in one direction to braking by constant acceleration in the opposite direction. This is known as "Turn-over". Tech level 7 vessels, and those wishing to stretch their fuel, sometimes 'drift' after thrusting by turning the drive off. The drifting is movement at a constant speed, like an asteroid. By precisely timing bursts of thrust, a ship can go a very long way on minute amounts of fuel.

For most of any journey, Pilots are not really needed. They are vital only in combat, at turnover, and at docking and landing. Many pilots have a secondary skill which they pursue during off hours, including command. The skills of maneuvering large ships and small craft are somewhat different, though closely related. The skill used for smaller vessels - 100 tons and smaller - is small craft, while that used for ships is pilot. When piloting a vessel of the wrong type, the effective skill of either type of pilot is halved, rounding up. The Pilot is also responsible for any in-line weapons.

Pilot Profession

PREREQUISITE:	Small craft or pilot+1 or higher, or Military College
PAY SCALE:	100J1
WAIVER ROLL:	20%
PROFESSIONAL METASKILL:	Focus+1

Table 1: Pilot Skill Table (Roll 1d6 or choose)

1	2	3	4	5	6
smcrft/pilot	program+1	COOR+1	electronics+1	smcraft/pilot+1	COOR+1
orient 3D+1	astronomy+1	alertness+1	orient 3D+1	dash+1	alertness+1

NAVIGATOR

A navigator's main, most important duty is during Jump, when they pull the ship back into the real universe at a different time and place from their starting position. They also plot the course for the ship. As this is not a full time position, most Navigators double at some other crew position

NAVIGATOR PROFESSION

PREREQUISITE: PSI1 OR HIGHER AND ASTRONOMY+1 OR PSIONICS COLLEGE
PAY SCALE: 150J1
WAIVER ROLL: 10%
PROFESSIONAL METASKILL: FOCUS+1

Table 2: Navigator Skill Table (Roll 1d6 or choose)

1	2	3	4	5	6
transfer+1	astronomy+1	program+1	transfer+1	course+1	astronomy+1
electronics+1	program+1	electronics+1	course+1	transfer+1	course+1

COMMUNICATIONS

The ship's communications operator, called 'Comm', is at the heart of crew activities, a nexus. Comm crew require very little in the way of technical skills, primarily programming, but as Comm is the link between crewmembers as well as between the ship and the outside, Comm Ops are usually good at handling people and at other interpersonal skills. A high coordination and charisma is a definite plus as well. Comm handles all message traffic, and maintains facilities for all personal as well as official communications.

COMM OP PROFESSION

PREREQUISITES: CHARISMA 8 OR HIGHER, PROGRAMMING+1 OR COMPUTER COLLEGE
PAY SCALE: 60J2
WAIVER ROLL: 35%
PROFESSIONAL METASKILL: RELATE+1

Table 3: Comm Op Skill Table (Roll 1d6 or choose)

1	2	3	4	5	6
program+1	CHAR+1	psychology+1	program+1	alertness+1	psychology+1
intimidate+1	intimidate+1	taste+1	CHAR+1	taste+1	intimidate+1
negotiate+1	evaluate+1	streetwise+1	evaluate+1	streetwise+1	linguist+1

COMPUTER

Computer Techs are specialists in networking and programming, adept at reconfiguring stations, establishing alternate traffic routes, and maintaining connections between stations. The computer station, called 'Comp', is an expensive, highly capable interface into the ship's computer network. Comp can reconfigure any station on the fly to function as any other station equal or below it in cost. Comp can also redirect or copy output from one station to another, for use in monitoring vital systems.

Comp can access any data on the ship, and the Comp Tech can create and destroy programs such as viruses, dataphages, trojan horses, and the like with a programming check. The effectiveness of the program can be increased by voluntarily taking penalties on the check, as the penalty chosen is also applied to the programming check used to defeat it. Such offensive programs can be carried from ship to ship encoded into regular Comm traffic. Canned safeguards exist, but can be defeated by any Comp Tech taking a penalty of at least -10. Military safeguards require a penalty of at least -30 to be penetrated.

COMP TECH PROFESSION

PREREQUISITES: **PROGRAMMING+4**
PAY SCALE: **250 J1**
WAIVER ROLL **10%**
PROFESSIONAL METASKILL: **ANALYZE**

Table 4: Comp Tech Skill Table (Roll 1d6 or choose)

1	2	3	4	5	6
program+1	crypto+1	alertness+1	program+1	cybernet+1	crypto+1
electronics+1	research+1	electronics+1	writing+1	research+1	writing+1

SCAN

Scan Techs operate the ship's sensory equipment. Ship sensors work with the electromagnetic spectrum, and are thus limited to light speed. Ships never know where an object is space is, only where it was. To compensate, the Standard and Military Scan Packages use a data projection program which takes known data from the sensors and extrapolates the most probable present and future locations of these objects. This is displayed in a three dimensional format called an "Extrapolation Cone' which looks like a curved or straight horn-shaped probability cloud, the pointed end at the last known position, and with the most likely probabilities being more brightly colored.

The faster a vessel is moving, the longer and narrower the Extrapolation Cone, as a fast moving vessel is much more resistant to vector change than a slow moving vessel. The Extrapolation Cone takes into its calculations such data as the mass of the object, its velocity, its acceleration, and any known data such as demonstrated capabilities of the objects engines and previous maneuvering. The job of the Scan Tech is to highlight the course the tech believes is most likely and feed it to the Pilot, Gunners, and Observer. This requires a judgement call, and experienced Scan techs sometimes rely on their knowledge of the situation to override the probabilities given automatically in the Extrapolation Cone.

In combat, Scan Techs 'paint' the target with concentrated beams of EM radiation from scan lasers. This causes the target to become more visible to Scan, and consequently the Pilot, Gunners, and Shield techs, as well as to automated guidance computers in missiles. Scan Techs require knowledge of astronomy and electronics to perform their duties.

Scan Tech Profession

PREREQUISITES: **ASTRONOMY+1, ELECTRONICS+1**
PAY SCALE: **200 J1**
WAIVER ROLL: **10%**
PROFESSIONAL METASKILL: **OBSERVE+1**

Table 5: Scan Tech Skill Table (Roll 1d6 or choose)

1	2	3	4	5	6
program+1	astromomy+1	electronics+1	astronomy+1	alertness+1	electronics+1
evaluate+1	physics+1	tactics+1	evaluate+1	tactics+1	evaluate+1

SHIELDS

Shield Techs operate the ship's defensive equipment, including either Reflective Plasma Shields or Sandcasters to deflect and hinder beam weapons, and anti-missile Lasers or Mass Drivers to destroy missiles. Because the Plasma Shields are reflective to EM radiation from either side, a ship with all of it's shields held tightly near the ship is protected from beam weapons, but effectively blind, and cannot acquire Scan Data or detect missiles until they are far too close. Spreading the shields out further from the hull, known as 'relaxing' shields, thins them out, allowing some EM radiation (including light) through. This allows missiles to be detected and destroyed by the anti-missile systems, but is ineffective against beam weapons.

The Shield Tech thus is continually moving the ship's Shields in and out, relaxing and tightening them in an active defense. On larger ships, the larger surface area requires a more flexible defense, with several Shield Techs working together to protect the ship from attacks coming from different sectors. Out of combat, the plasma shields are relaxed to the farthest point, becoming effectively invisible, and the Shield Tech operates the anti-missile system to destroy space debris and small asteroids. The tiny anti-missile weapons can be used collectively as a main offensive weapon if needed, the Shield Tech serving as Gunner, at the price of opening the ship up to missiles.

Shield Tech Profession

PREREQUISITES: **PROGRAMMING+1, SHIP'S GUNS+1 OR MILITARY COLLEGE**
PAY SCALE: **100J2**
WAIVER ROLL: **20%**
PROFESSIONAL METASKILL: **PROTECT+1**

Table 6: Shield Tech Skill Table (Roll 1d6 or choose)

1	2	3	4	5	6
program+1	alertness+1	electronics+1	evaluate+1	alertness+1	evaluate+1
ship's guns+1	tactics+1	psychology+1	ship's guns+1	tactics+1	psychology+1

ENGINEERING CREW

ENGINEER

The Engineer's primary duty is to the ship's drive engines, adjusting the ship's Matter-AntiMatter ratio, repairing and maintaining the drives, and repairing and maintaining the fuel containment systems. These systems include the main drive (G-Drive, Fusion Drive, etc.,) attitude jets, A-Grav, M/AM containment, fuel scoop and separation, and Jump Drives. In addition, the Engineer is responsible for the ship's maintenance in all other areas. Usually this is delegated to a Maintenance Tech, but ultimately it is the Engineer's responsibility. The engineer generally uses teleoperated repair units (TRUs) under remote control from her Engineering Station to keep things moving smoothly, but may need to access things in person in an emergency.

In combat, the Engineer repairs battle damage while the ship is fighting, using TRUs where they are most needed. If there are no Maintenance Techs available, they are also responsible for Damage Control and fire fighting. A heavily damaged ship may need more extensive repairs than an Engineer and her TRUs can accomplish. In this case, the ship must get to a repair yard where the ship is left in the care of the Engineering Crew until it is fully functional again. An Engineer needs primarily skill with Drives, though Physics can be used instead at half effectiveness rounded up. Skill with mechanical and electronic devices is a definite plus, and is needed on ships with no Maintenance Techs.

SHIP'S ENGINEER PROFESSION

PREREQUISITES: ENGINEERING COLLEGE
PAY SCALE: 60J2
WAIVER ROLL: 05%
PROFESSIONAL METASKILL: REPAIR

Table 7: Engineer Skill Table (Roll 1d6 or choose)

1	2	3	4	5	6
drices+1	mechanics+1	drives+1	electronics+1	program+1	drives+1
construct+1	physics+1	cybernet+1	physics+1	construct+1	electronics+1

MAINTENANCE

A Maintenance Tech is responsible for the repair and upkeep of all of the non-drive systems aboard the ship. The Maintenance Station controls Teleoperated Maintenance Units (TMUs) through his Maintenance Station. TMUs clean the ship, maintain the air vents and water supply, monitor the hydroponics, and generally keep the ship clean and tidy. All the myriad of devices used on the ship, from Trivoxes to Personal Laundries are kept up by the Maintenance Tech and his TMUs. In combat, the Maintenance tech and his TMUs are in charge of Damage Control, preventing fires from spreading, patching leaks, etcetera to minimize the damage caused by a hit. A Maintenance Tech requires skill with electronics and mechanics.

MAINTENANCE TECH PROFESSION

PREREQUISITES: ENGINEERING COLLEGE OR TECH SCHOOL, IQ 110 OR HIGHER
PAY SCALE: 50J2
WAIVER ROLL: 25%
PROFESSIONAL METASKILL: REPAIR

Table 8: Maintenance Tech Skill table (Roll 1d6 or choose)

1	2	3	4	5	6
electronics+1	mechanics+1	cybernet+1	electronics+1	mechanics+1	cybernet+1
program+1	COOR+1	program+1	electronics+1	COOR+1	electronics+1

CYBERNETICS

Cyber Techs are commonly found on largely robotic vessels. They tend to and repair the robot crew. They are handy with tools of all types, and can also double as Maintenance Techs if needed. Cyber Techs need the cybernetics, mechanics, and electronics skills.

CYBER TECH PROFESSION

PREREQUISITES: CYBERNETICS+1, MECHANICS+1, ELECTRONICS+1 OR COMPUTER COLLEGE
PAY SCALE: 150J1
WAIVER ROLL: 15%
PROFESSIONAL METASKILL: REPAIR

Table 9: Cyber Tech Skill table (Roll 1d6 or choose)

1	2	3	4	5	6
cybernet+1	mechanics+1	electronics+1	cybernet+1	electronics+1	mechanics+1
research+1	linguist+1	crypto+1	construct+1	research+1	crypto+1

OPTIONAL CREW ASSIGNMENTS

GUNNER

A Gunner uses her Gun Station to remotely control weapons in turrets, pods, and missiles. The Gunner remotely pilots GG missiles and torpedoes and weapons pods, and can turn and aim turret weapons remotely. Out of combat, Gunners are expected to help out wherever they are needed, often working with Engineering and Maintenance due to their skill at remote control. Generally, only part of a ship's weapons are manned at all times, the other gunners coming in from other shifts in emergencies. A Gunner needs skill at ship's guns, but other shipboard skills are enthusiastically welcome.

Ship's Gunner Profession

PREREQUISITES:	SHIP'S GUNS+1 OR MILITARY COLLEGE
PAY SCALE:	75J1
WAIVER ROLL:	20%
PROFESSIONAL METASKILL:	FOCUS+1

Table 10: Gunner Skill Table (Roll 1d6 or choose)

1	2	3	4	5	6
ship's guns+1	electronics+1	mechanics+1	ship's guns+1	COOR+1	small craft+1
program+1	physics+1	gun+1	beam+1	gyrojet+1	cybernet+1

OBSERVER

Observers are specialists at detection and quantification. Working from their station, using the specialized narrow-focus equipment in their Observatories, Observers work with the data from scan, fine tuning it with their powerful detection equipment, as well as generating their own data. Observers are required for mapping and mass quantification, as well as detecting Jump Points and establishing the proper course and speed through them. In combat, Observers act as adjuncts to Scan, fine tuning the Scan output for better resolution and increased chances to hit, as well as Shields, detecting and monitoring enemy ships and missiles to decrease the chances for shield penetration. Observers need the astronomy skill, and electronics is a definite plus.

Observer Profession

PREREQUISITES:	ASTRONOMY+1
PAY SCALE:	60J3
WAIVER ROLL:	10%
PROFESSIONAL METASKILL:	OBSERVE+1

Table 11: Observer Skill Table (Roll d6)

1	2	3	4	5	6
astronomy+1	electronics+1	program+1	astronomy+1	alertness+1	electronics+1
alert+1	cybernet+1	evaluate+1	cybernet+1	physics+1	evaluate+1

SECURITY

Security monitors shipboard activities to detect possible intruders or malfunctions, and operates shipboard automatic defense systems. Most ships do not have Security, or delegate some harried crewmember to Security as a secondary role. Naval vessels use Marines as security. Shipboard security systems include such things as locks, corridor cameras, and occasionally defensive devices like teleoperated weapons including gasses and drug clouds. Security personnel need a small degree of programming skill to operate these devices.

Ship Security Profession

PREREQUISITES: **STRENGTH 8 OR HIGHER, ENDURANCE 8 OR HIGHER, PROGRAMMING+1**
PAY SCALE: **40J1**
WAIVER ROLL: **50%**
PROFESSIONAL METASKILL: **REACT+1**

Table 12: Ship Security Skill Table (Roll 1d6 or choose)

1	2	3	4	5	6
intimidat+1	alertness+1	intimidat+1	dash+1	alert+1	program+1
gun+1	melee+1	beam+1	melee+1	gun+1	beam+1

STEWARD

Stewards are found only on passenger vessels. They are sometimes crewmembers who have other, less time consuming positions as well. Stewards take care of the passengers, assisting them where needed, and waiting on them at mealtimes. Stewards need a high charisma and social skills such as endear to get along properly with the passengers.

Steward Profession

PREREQUISITES: **CHARISMA 9 OR HIGHER, ENDURANCE 9 OR HIGHER**
PAY SCALE: **75J1**
WAIVER ROLL: **25%**
PROFESSIONAL METASKILL: **CONVERSE+1**

Table 13: Steward Skill Table (Roll 1d6 or choose)

1	2	3	4	5	6
alertness+1	psychology+1	intimidate+1	alertness+1	linguist+1	psychology+1
taste+1	END+1	CHA+1	taste+1	negotiate	stash+1

SUPERCARGO

The Supercargo is in charge of the business side of a commercial vessel. The Supercargo buys and sells cargo or arranges for transportation fees, and deals with finding passengers, She also manages purchases made for passenger consumption. Supercargos need the business skill, and skills like negotiation, sell, streetwise, or intimidate are very welcome.

Supercargo Profession

PREREQUISITE: BUSINESS+1 OR BUSINESS SCHOOL
PAY SCALE: 100J2
WAIVER ROLL: 15%
PROFESSIONAL METASKILL: SELL+1

Table 14: Supercargo Skill Table (Roll 1d6 or choose)

1	2	3	4	5	6
business+1	negotiate+1	psychology+1	business+1	psychology+1	negotiate+1
evaluation+1	taste+1	research+1	evaluation+1	law+1	taste+1

MATTRAN

MatTran Techs run the MatTran (Matter Transport) cells of a starship. MatTran is most commonly used for transport of items rather than people because of the slight loss encountered in each transaction. MatTran is mostly found on military vessels, and large ones at that. The MatTran tech needs the transfer skill and, of course, PSI to power it.

MatTran Tech Profession

PREREQUISITES: PSI 1 OR MORE, TRANSFER+1
PAY SCALE: 150J1
WAIVER ROLL: 01%
PROFESSIONAL METASKILL:

Table 15: MatTran Tech Skill Table (roll 1d6 or choose)

1	2	3	4	5	6
transfer+1	progam+1	interrogate+1	biology	transfer+1	interrogate+1
diagnosis+1	biology+1	drug+1	biology+1	diagnosis+1	drug+1

LEISURE TIME

Time spent not on duty or in sleep is leisure time. During this time, the crewmembers can do whatever they wish. They while away the hours like most people do, with various activities. Play behavior of some sort is a psychological necessity for people. A crew without an outlet for these behaviors quickly poisons itself, becoming bitter, resentful, angry, and surly. The Lounge (or Gameroom) and the Galley are the centers of this play behavior.

EATING

Eating is a necessary activity, but crewmembers try to find ways to make it also enjoyable and fun. Food quality on shipboard has steadily improved over time, with lush hydroponics supplying fresh vegetables, with an assortment of fresh meat while on station, and frozen and artificial meat during transits. Even fresh restaurant meals, sealed away in time-stasis mini-galleys, are available to the crewmember.

Every galley comes equipped with a simple robo-chef, adequate for simple and nutritious meals, but many people prefer cooking on their own. The cultured meat produced in the best galleys is raw but excellent quality, perfect for use in one's own recipes. Some ships organize crew cook-offs on long journeys, with prizes for the best meals. Cruise ships hire excellent chefs, with wondrous meals prepared every day for their passengers and crew.

DRINKING

Drinking is an extremely widespread social habit, and most ships have a bar in their lounge. Drinking while on duty is, of course, not allowed on any ship, but having a few drinks with one's fellow crew is a good way to cement friendships and improve teamwork after hours. Drinking to excess can be a problem, but due to genetic science, predisposition toward alcoholism is mostly eradicated.

A robo-bar is installed in every Lounge bar, able to mix any drink so long as the ship carries the ingredients. Some crew prefer to mix their own drinks, but a far more prevalent hobby is brewing. Many ships have one or more brewers amongst the crew, using excess grain from hydroponics to produce individual and unique beers. Many stations sponsor yearly brew fests, with crew-made beers entered in contests as well as being offered to all comers.

WATCHING

The big Trivox in the Lounge is the center of communal shipboard entertainment. The crew and passengers reserve blocks of time at the Trivox for watching favorite movies together. Of course, personal trivoxes can be used for watching movies by oneself, or if you can't get the time slot you needed at the Lounge. Movies are, of course, fully 3 dimensional. Those with a Jack or Shroud can experience them directly - ultra vivid and multi-sensory, either as an observer or as a participant, the viewers choosing which character they want to experience.

Ships carry the latest releases from system to system, with an ad-hoc chain of distribution bid on by factors at each station for the privileges of commercial release, with royalties being paid back to the original licensee. Thus movies are made to be particularly appealing to the crew of starships, with the purpose of getting the movie picked up and spread everywhere in the cluster. Starship crews thus are powerful in the entertainment centers all out of proportion to their actual numbers.

GAMING

There are many types of gaming available on shipboard, from traditional games like checkers, chess, and backgammon to immersive interactive holo-gaming. There is usually some card or other traditional game or other going on in the Lounge sometime during the flight. These games have proven to be exceedingly popular for ages, and the equipment simple and durable.

There are also Trivox games, either in the big Lounge Trivox, or on crewmembers' own Trivoxes. Those with Jacks or Shrouds can experience total immersion in these games, with full sensory impact. Many with programming skills write their own games, using either stock constructs freely available or creating their own. These occasionally prove to be of commercial potential, but most are freely given away or never released.

Ships with Holo-rooms are the acme of gaming heaven, with full-immersion interactive adventures, not scripted like Trivox games, but fully flexible. Everything your characters do, and for the most part Holo-gaming is a group experience, is tracked and reacted to by the AI, giving the experience absolute realism. Of course, using Jacks or Veils gives an intensely realistic experience, and can be done with companions in the virtual space, but with a Holo room, the other people are there in the flesh, and that gives quite a different level to the realism.

DATING

One of the most difficult things to find on shipboard is privacy. A room all to oneself is a huge luxury, and most crewmembers live embedded in a matrix of roommates. This makes romance on shipboard a thing impossible to keep to oneself. When you go to the Lounge for an intimate candlelit dinner with your boyfriend, you know that your buddies and roommates will be on the bar stools and sitting at nearby tables. Shipboard dating involves shift coordination problems, nosy roommates, intra-species difficulties, and the all important "How do I tell my buddy that I am attracted to her?"

Some crewmembers are married, most are single. Many marriages in the Cluster are not simple pairbonds. Homosexual, intra-species, and multiple partner marriages (polygamy, polyandry, and line marriages) are not uncommon in the Cluster. On some ships you join up by marrying the whole crew, others are chaste and even celibate. To a large extent you can find whatever type of romance you want to find.

EXERCISING

Some ships set aside an exercise room, while others use the Lounge at certain periods for excise. These periods are usually arranged by the crew and for the crew and passengers. They may be aerobics, or fencing, or dance, or boxing, or whatever that crewmember is interested in teaching. In any case, one of the crew offers to teach anyone interested. Some crew charge for the lessons, some ask for favors, and others do so freely. These exercise periods are popular, especially on longer voyages.

Some ships have weight studios with variable gravity. These are very useful for building muscle, and simply walking in a heavy gravity is terrific exercise. Light gravities are used for dance and acrobatics, making certain moves possible that are impossible in one gravity.

GARDENING

Gardening is a favorite activity for many of the crew. There is something very closely tied to the human psyche which craves vegetation and greenery. The ship's hydroponics section is maintained by the crew by volunteer labor. Most crewmembers cheerfully donate time in the hydroponics lab. Not only do better meals result, but they find something satisfying about working with the plants.

Many crew keep their own little gardens in their rooms. Lots of hanging plants and blooming flowers can change even the most boring and institutional room into a home. Plants pass from ship to ship when crewmembers join a new crew, and every station has many species to choose from, some decidedly exotic.

CREATING

Some crewmembers are artists, or writers, or architects, or programmers. They pursue these hobbies and avocations like any other activity crewmembers enjoy, with gusto. These creative activities are best pursued solo to minimize distractions, and many practitioners like to find out of the way places to work, for instance the emergency airlock during Alterday.

Amateur theatrics are always welcomed, and many ships organize plays or impromptu ad-lib performances. Joke-telling is popular in the Lounge, and every ship loves crew who can sing or play instruments. Crew who are musically talented can expect to be asked to perform frequently.

SPECIAL CREWS

While most crews are catch as catch can, some crews have special relationships which have to be respected and adhered to in order to become a member.

MILITARY CREWS

Military crews are special in that all members involved are members of some military or para-military organization, with its in-built hieracrchy and rules on fraternization, command, and tracking. Military rank is important in military crews, but tracking can change the lines of command within a crew. Generally Bridge Crew (along with Gunners) is on a Command Track, while Engineering is its own track, and other specialists have their own track. Engineers never command a ship, no matter what their military rank is. Neither do Security.

Military crews can come from the various military organizations - the SaVaHuTa Navy, Diasporan Community Navy, Alien Navies, and the various navies and self-defence forces of individual worlds, both those within larger organizations and independent worlds. Para-Military organizations include Customs, some Courier Services, Police Forces, Mercenary Companies, and Privateers.

FAMILY CREWS

Family Crews are those where everyone aboard is related by blood. In Family Crews, the children are raised on-board the ship - with some off-ship time for higher education - and trained to enter the ship's crew when they mature. In Family crews, one or more of the adult crewmembers is detailed to care for and educate the children. Much use is made of computer learning, with extensive use of VR training. When families get too large for a single ship, many split off into several allied ships. Some Family Crews allow new members in by marriage, but most Family Crews prefer to have no marriages, only allowing children of the family into the crew, and dating during planetfall or station stops.

MARRIED CREWS

Married Crews are those where every crew member is married to every other crew member. Entry into the ship's crew is by marriage into the group. Many times Line Marriages are used, where the Line may extend back for centuries, and each new spouse extends the Line further into the future. Children in a Line marriage are immaterial - or even detrimental because of the dilution of economic clout necessitated by financial settlements to children - as the line extends itself through new marriages, thus non-reproductive marriages such as with same-sex, alien, or celibate members are allowed.

Other marriage types are more traditional, with group, polyandrous, or polygamist slants. Such marriages almost always are sexually oriented. Children in these types of marriages are usually discouraged, although they sometimes are bred back in - world-based social laws have little impact in space.

COMPANY CREWS

Company Crews are those where the crew are one of several on ships owned by a larger company, such as a passenger or cargo Line, a mining company, or an exploration team. Usually these crews have little or no direct connection to the ships, which are owned by the Company, and work for wages. Seniority among these crews is more important than in smaller crews, and transfers are more common. Command is definitely by seniority, as no Company would trust its ships to someone without the requisite experience.

COMMUNAL CREWS

Communal crews are those in which the members of the crew are part owners in the ship, and share in its financial success or failure. Communal crews have a literal vested interest in the success of a ship, and can survive economic downturns better than non-communal crews. Troubles can come when a crewmember leaves the ship in bad times, when there aren't enough resources available to buy out the contract, or when a crewmember is dismissed for cause, but mechanisms for such eventualities are designed into the common contracts most such crews use.

CREW COMMAND AND COMMAND DEVOLVEMENT

Some ships use command members who are not directly part of the crews themselves, in other words where the commander does not hold a crew position or perform a crew function. These are usually on larger ships, though, such as Military or Company ships. In most cases, each Shift has a Captain, with the Mainday or First Shift Captain in over-all command, and the Alterday or Second and Third Shift Captains reporting to him. Usually if the Main Captain dies or is incapacitated, the other Shift Captains are moved up, and a new Shift Captain is voted in or appointed to replace the lowest ranked Shift Captain.

Some ships use other methods of command devolvement, though, in which case Captains may be voted in, or may come from the shift they command. Such cases should be clearly explained to new crew, and especially to new Shift Captains.

LIST OF WEAPON DAMAGE FACTORS (DF) BY TECH LEVEL

Weapon	DF
TL7 Pulse Laser. (Weak beam weapon)	1
TL 7 KEW mines (Unguided Kinetic Energy Weapon.) -20% to hit	2
TL 7 Reaction Cannon (Small Rifled cannon which fires unguided shells.) -20% to hit	1
TL 7 Reaction Cannon (Medium Rifled cannon which fires unguided shells.) -20% to hit	3
TL 7 Reaction Cannon (Large Rifled cannon which fires unguided shells.) -20% to hit	5
TL 7 Mass Driver (Accelerates small payloads magnetically to extremely high speed.)	1
TL 7 X-Ray Laser (Nuclear missile which explodes and lases resulting X-Rays.)	10
TL 7 WG-Nuke Missiles* (Nuclear missiles tele-guided by weapons console.)	2
TL 7 CG-Nuke Missiles* (Nuclear missiles guided by onboard computer.) -20 to hit	2
TL 8 Beam laser (Powerful beam weapon)	10
TL 8 GG-Nuke Missiles* (Nuclear missiles tele-guided by gun station.)	2
TL 8 Pacc (Particle accelerator.)	40
TL 9 Mag Gun (advanced Mass Driver)	2
TL 9 Cogar (Gamma Ray Laser)	30
TL 9 Laselet (Small form factor laser. Specially tuned and constructed.)	5
TL 9 CG- M/AM Missile* (Computer guided Matter/Anti-Matter missiles.) -20 to hit	20
TL 9 GG-M/AM Missile* Gun station-guided Matter/Anti-Matter missiles.)	20
TL 9 M/AM Torpedo (Large Gunner/computer guided Matter/Anti-Matter missile.)	40

You can use the following table for hit locations to help in describing damage. Roll or choose result for best dramatic effect.

Table 16: Shipboard Systems and Subsystems

%D ROLL SYSTEM	%D ROLL SUB-SYSTEM	NAME OF SYSTEM OR SUBSYSTEM
01-21		**Drive System**
	01-80	Main Drive Subsystem
	81-00	Auxiliary Drive Subsystem
22-42		**Life Support System**
	01-45	HVAC Subsystem
	46-53	Waste Recycling Subsystem
	54-60	Hydroponics Subsystem
	61-00	Food & Water Subsystem
43-48		**Scan System**
	01-50	Sensor Array Subsystem
	51-55	GRADAR Subsystem
	56-70	Spectral Analysis Subsystem
	71-00	Data Integration and Projection Subsystem
49-60		**Shield/Deflector System**
	01-45	Antimissile Subsystem
	46-90	Anti-Energy Weapon Subsystem
	91-00	Drone Lure Subsystem
61-70		**Control System**
	01-20	Attitude Jet Subsystem
	21-75	Lift Subsystem
	76-00	Landing Subsystem
71-73		**Cloak and Dagger Systems**
	01-25	EM Counterscan Subsystem
	26-50	Active GRADAR Subsystem
	51-75	Configured Transponder Subsystem
	76-00	Reflective Plasma Shaping Subsystem
74-79		**Communications System**

Table 16: Shipboard Systems and Subsystems

%D ROLL SYSTEM	%D ROLL SUB-SYSTEM	NAME OF SYSTEM OR SUBSYSTEM
	01-45	In Ship Comm Subsystem
	46-85	Radio Subsystem
	86-00	MASER Subsystem
80-95		**Structural System**
	01-95	Hull Armor
	96-98	Docking Subsystem
	98-00	Emergency Airlock Subsystem
96-00		**Weapons System**
	01-50	Laser Subsystem
	51-60	COGAR Subsystem
	61-85	Missile/Torpedo Subsystem
	86-90	Particle Beam Subsystem
	91-92	KEW Subsystem
	93-00	Reaction Cannon Subsystem

Some crew positions are part time, and a crewmember can "Double Up" on a secondary position, for instance a Steward could be a Gunner in combat situations, or a Pilot could be an Engineer.

The following table shows which crew positions can be "doubled" with which other position. Cross-refernce the two positions. A result of "C" means the positions are compatible. A result of "I" means that the positions are incompatible. A result of "O" means the positions are optimal, as the skill sets reinforce each other.

Table 17: Crew Position Compatibilities

	PILOT	NAVIGTOR	COMM	COMP	SCAN	SHIELD	ENGINEER	MAINTENANCE	GUNNER	OBSERVER	SECURITY	STEWARD	SUPERCARGO	MATTRAN	CYBER TECH
Pilot	X	I	C	C	I	C	C	C	I	I	C	C	C	C	C
Navigator	I	X	C	C	C	C	C	C	C	C	C	C	C	O	C
Comm Op	C	C	X	O	C	C	C	C	C	C	O	C	C	C	C
Comp Tech	C	C	O	X	C	C	C	C	C	C	O	C	C	C	C
Scan Tech	I	C	C	C	X	C	C	C	C	O	C	C	C	C	C
Shield Tech	C	C	C	C	C	X	C	C	O	C	C	C	C	C	C
Ship's Engineer	C	C	C	C	C	C	X	O	C	C	C	C	C	C	C
Maintenance Tech	C	C	C	C	C	C	O	X	C	C	C	C	C	C	C
Ship's Gunner	I	C	C	C	C	O	C	C	X	C	C	C	C	C	C
Observer	I	C	C	C	O	C	C	C	C	X	C	C	C	C	C
Ship Security	C	C	O	O	C	C	C	C	C	C	X	C	C	C	C
Steward	C	C	C	C	C	C	C	C	C	C	C	X	C	C	C
Supercargo	C	C	C	C	C	C	C	C	C	C	C	C	X	C	C
MatTran Tech	C	O	C	C	C	C	C	C	C	C	C	C	C	X	C
Cyber Tech	C	C	C	C	C	C	C	C	C	C	C	C	C	C	X