The History of the Moraes Class Survey Ship:

By 10 FY, The Planetary Resource Treaty was signed. This document laid the foundation for the Survey Corp and put all further exploration of space in the hands of the United Planet Federation. The main focus of the Corp is the following:

1. All star systems and planet within UPF boundaries shall be surveyed for resources and map. They will map all preexisting interstellar routes and open new ones as the need arises.

2. Any exploration beyond the boundaries shall be conducted by the Survey Corp. They shall handle all first contact with alien races.

3. In times of war, they will be assigned to the UPF Military Command as scouts.

10-40FY: The Grand Survey to approximately 30 years to complete. During these early years, modified assault scouts were equipped with multispectrum telescopes and radar mapping equipment to allow them to chart each planet, and moon in the UPF. Ground base telescopes were also used to map Xagyg Dust Nebula, Lesser Morrass and White Light Neubla. As well as Asteroids belts. (Original SF Map) They also conducted a survey of nearby stars for future exploration.

40FY The Interstellar Exploration Committee (IEC) is formally created as a part of the UPF government. It came about a part of a hearing on the Survey Corps budget and goals. It is the governmental agency which has oversight of the Survey Corp.

45FY The IEC asks for and receives money for a purpose built exploration ship. The Contract is awarded to the Pan-Galactic Corporation.

47FY Construction on the Eleanor Moraes is begun.

51FY The Eleanor Moraes begins space trails.

52FY The Survey Corp accepts the Eleanor Moraes. Begins survey operations.

57FY Discovers Snowball.

60FY: The Survey Corp Academy is established. The name was also changed to Interstellar Survey Corp (ISC).

66FY Commission established on the space worthiest and the cost of the Survey Ship fleet takes place. Order PGC to retrofit all Moraes Class Ships and repair design error in the vessel.

72FY 25th Anniversary of the Liberation of Snowball System and the Mhemne were granted full membership.

74FY The first Gregor Dentin Class Survey Ship begins space trails.

76FY The Survey Corp accepts the Gregor Dentin. Begins survey operations.

88FY Eleanor Moraes is retried and becomes a museum ship at the UPF History Museum on Gran Quivera.

108FY The search for a new scout vessel begins...

The Contract: Cash Cow

The contract for the Moraes Class Survey Ship was for a starship, that allowed a crew of between 10-20 well trained individuals to explore planets within a 50 light year range of the present borders of the UPF and return. It must be able to survey, land and conduct scientific mission on a planet as well as in space.

The initial contract also gave an order number of six vessel to be built and the

company building it must support the vessel throughout it service life.

There was no surprise when Pan-Galactic Corporation (PGC) won the bidding. They had the largest lobby in the UPF Assembly at the time. What did surprise most people was the lack of supervision by the IEC during the design and construction phase.

Most historians seem to believe PGC's hold on the Assembly was the root cause for this. Some even claim large amounts of personal loans were given to many of the Assembly members during this period by one specific bank as a sign PGC was heavy influencing the Committee to turn a blind eye on the entire process.

Others have suggested, the success of the Assault Scout and other designs gave the Committee unquestioning faith in any design produced by PGC. More claim pressure by the Assembly had something to do with it as well.

PGC spent the next two years designing the vessel. What they came up with shocked most experts at the time. Most believed they would come up with a single ship that used shuttles for planetary survey mission. What was presented was a modular system consisting of the primary starships, a lander module and a transport supply ship. It was hailed as a Marvel of Technology.

The scout ship had it's own Void drive which assures the Survey Corp that if the Transport vessel was damaged the crew would return safety to the UPF. There was also an escape capsule built in as well.

The lander module was a fully instrumented research station, which could send data back to Survey Corp Bases via an orbiting satellite equipped with a subspace radio system. It's robotic probes could continue the mission after the ship moved on.

The Transport ship allows the Moraes Class and unprecedented range and allowed the survey several planets at a time without resupply.

Several experts pointed out that the dual ship system was going to make PGC a hell of a lot of money. They pointed out the servicing for the engines would cost a pretty penny and the modules alone would keep PGC solvent during the life span of the ships. They also claimed it was too complex for just your average Joe Spacer to work on.

It was also decided to name these vessels after famous aviators and space Captains. Eleanor Moraes was the first to chart the route between White Light and Timeon.

The transport ships were numbered 1-6. However, engineers unofficial began giving them names. The Eleanor Moraes transport ship was named Edgar. The inside joke was that the two of the ships formed a married couple. The Edward Frasier Transport Ship was named Edith. Name selection these ships were not based on real life people, but on the first letter of the Survey Ship.

Space Trails: "Boys, It's not an Assaults Scout."

The test began on the first ship, the Eleanor Moraes, in mid-47. Pilots of the Survey Corp up until this point were used to modify Assault Scouts, the Eleanor Moraes was a big change for them.

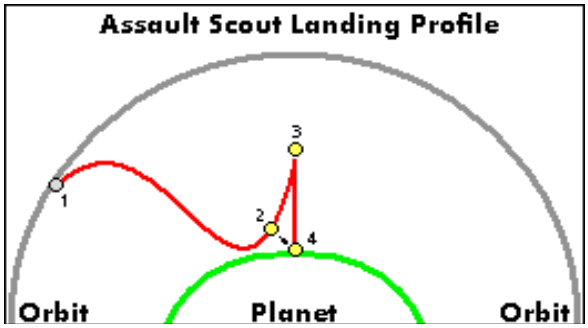
This became apparent during atmospheric reentry testing phase when the test crew saw two major flaws in the design.

The first and most important was, the ship couldn't land without the Survey Lander Module attached to the Survey Ship. At the same time, the pilots complained it had the characteristic of flying brick and could not perform slow speed maneuvers.

It's bullet shape and atmosphere drag prevented it from happening.

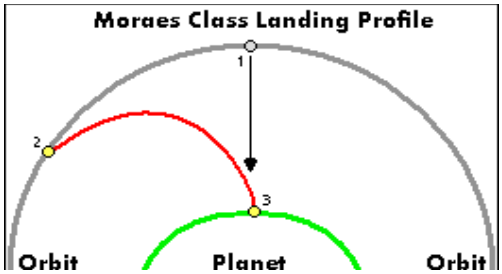
The second flaw was discovered when they attempted to enter the atmosphere with a lander attach. PGC claimed the Eleanor Moraes could enter like an assault scout and land just like one. The added weight of the lander and it fixed landing gear acting like airfoils. They threw the center of balance off, caused stability problems.

To land an assault scout, the pilot normally would locate a landing spot, pull a stall maneuver and land the ship on its tail. The Morale could do this without tearing the lander's legs off. Even at slower speeds, it was difficult for the pilots to get the ship to stand on its tail before the completion of the stall.



1: Assault leaves orbit.
2: Flies along until it spots a landing zone.
3: Pulls a stall maneuver.
4: Lands tail first.

The ship worked fine when, it enters the atmosphere on a ballistic reentry which placed the lender first, essentially flying the ship backwards. Once this was found to be an acceptable method to land the ship, the other two flaws were overlooked.



1: Locates landing spot from Orbit.
2: Makes one orbit, then reenters the atmosphere.
3: Lands on planet with the assistance of Lander Modules Rockets.

No one disputes the pressure the Survey Corp was under at this point. The cost of the Moraes has been just over 4.6 Million Credits, 974,100 for each lander and another 7.7 Million Credits for the Supply Ship, maintenance on the Transport Ship was reaching a million credits per ship. This excluded consumables which were used during each mission. So the Survey Corp accepted the Eleanor Moraes in early 52 without addressing this issue and others that would later cause a major retrofit 15 years into its service life.

The rest of the ships were to be delivered in every two years. Edward Frasier was delivered before the ink was dry on the certification papers.

The Early years: "They say bad things happen in threes."

The Eleanor Moraes is said to have started it when a mutiny occurred in 57FY. This was overshadowed by the events that took place following the incident and the Destruction of the Sathar base on Snowball and the liberation of Mhemne.

Second Incident took place 60FY when the Edward Frasier was landing on a planet. One of the landing struts gave way under the weight of the ship. Had the pilot not had his handle on the throttle, the ship would have been lost. They managed to disengage the lander and return to orbit. It was later to be determined, a micrometeorite has struck the strut and caused it to fail.

Two years later, the third involved the replacement of a solid fuel rocket used on the escape pod, on board the Beeba Harcoo. As per PGC guidelines the rockets were replaced once every five years, a technician was replacing one of them

when he accidently triggers the rocket causing a fire and extensive damage to the ship which knocked the ship out of action for two years. The accident report blamed the Technician for not following instructions.

Three years later, Isaac Günter suffered a similar incident when the escape pod, separated from the ship without warning prior to landing. Through skill and luck the crew managed to rendezvous with the transport ship. The main section and a lander were lost, as it burned up in the atmosphere. The crew found it necessary to fit the escape capsule to the Transport ship as a way to control the vessel. Through their gallant effort, they returned to UPF.

The IEC had had enough and a commission was put into place to discuss the issue plaguing the Morale Class Survey Fleet.

The Commission: "You know you have a problem when a Dralasites won't work on them."

The IEC Commission of 64FY first went to the crews for the ships for their input on the ship's performance.

They came up with several major issues, The first dealt with the Survey Lander Module. Crews reported, tilt as being an issue.

The weight of the ship and the module caused the ship to lean as it settled on the planet surface. Several crews reported dealing with 10-15 degree tilts were not uncommon. Pilots reported having the same issues as the test crews. The lack of landing gear was a major concern. Cramped working conditions and needless rooms hampered the ship.

One crew showed the Commission, how they had turned the Theater into a storage room because of the workload, only permitted eight personal to be off duty at one time. Another crew, had torn out the Survey Expedition Administration Office and put in a laundry because they had gotten tired of smelling like womrats. They then explained, the ship's library had become the ship's office since the main computer had much of the same information in the date core.

Engineers complaints were mainly about the access required to get at areas of the ship. These cramped areas of the Lab and the Engineering Decks made it difficult to perform maintenance and repairs. Scientists worried about contamination as samples had to be carried up to the Lab Deck.

They brought in outside experts to review the design and give their opinion on the overall design.

The first thing they discussed was the complexity of the Modular design. Under the present configuration, there were four lander modules stack on top of each other. This part of the design was for ease of use. All a survey ship had to do was back up and attach itself to the module and it was plugged into the rest of the ship. Had, at any time, one of these connections had failed, the Survey Ship would have lost control of the Transport Ship. They also pointed out the Transport ship was an expensive redundant system in itself due to the fact, it was a separate ship.

The Survey Landing modules were a waste of material. They had pointed out by adding landing gear to the Survey Ship, the need for the module was no longer necessary. That newer technology could build a smaller research station and leave behind at a fraction of the cost.

The escape capsule system employed by the Survey Ship was a joke. Even if they could get off a distress call, 4 days was not enough time for a rescue team to arrive under normal circumstances. Nor were there any provision made in the capsule to land, period. Planetary landing

was out of the question, even if a suitable planet was in the area to await rescue. And finally, the rockets we too weak to launch the capsule into space, if the need had arisen.

They then explored the incidents which brought the commission into being.

The landing struts were fixed to the outer hull and unable to retract placing them in greater danger of accidental damage. They were also some concern caused by the heat of reentry and the influence it had on them. These weaken struts might be the cause of the tilt the crews were experiencing, but no modules were ever recovered for the commission to inspect.

Even thou, the first accident seemed to deal with procedural errors made by the Technician, there was significant similarities between that and what happened to the Isaac Günter to suggest the rocket used might be flawed. At the time of the Isaac Günter accident, the rockets were ending their lifespan.

The cost of the entire system and consumables was explored as well.

The Survey Lander Modules were .95 Million Credits each time one was used. Two DA-800 Airships were left behind on the planet to rot in most cases, crews reportedly rarely using one or both, considering it was quicker to use the aircars.

Maintenance costs of both ships and the landers were close to 1 Million credits.

Consumables for the labs, food and fuel costs ran around 1 Million credits per trips.

All total, the system was running just under 6 million credits per year for just one ship. The Survey Corp had six. Add in crew, Maintenance and Administrative costs, their program was running close to 24 million credits a year.

They then called in Pan-Galactic who basically explained or deigned everything away. Calling the Moraes Class ships one of the safety designs it had ever built and the charges of creating a 'cash cow' were just sour grapes on part of the Assembly.

Most historians who look at the transcripts of the hearing agree the PGC representative nonchalant manner in which, he answered their questions had turned sour grapes into vinegar.

Retrofit: The Repercussions

The Commission issued their report in early 65FY sighting major design flaw with the Morale Class Survey Ships. On the surface, it appeared to be the IEC making an attempt to gain funding for a new vessel to replace them. However, it was a skillfully play ploy to show the Assembly what they were dealing with.

The same PGC representative and their lobbyists made the rounds in Assembly attempting to quell the furor over the report and gain support if, a new class of vessel was to gain funding. Many of the Assembly members, were not pleased with the responses given by the PGC and this turn the storm in a tempest. By mid 65, they were calling for a hearing before the full Assembly. Later in that same year, the PGC representative had been replaced and the lobbyists had created a comprises which fulfilled the IEC and Assembly.

PGC would pay for the retrofits at a greatly reduced cost and adhere to the recommendation made by the IEC.

What shocked the Historians at this point was the modest list of demands presented to PGC by the IEC. It was almost certain, the Assembly had instructed the IEC to reduce their changes or suffer funding cuts.

The following list what PGC was to change:

The landers were to be reduced in size and equipped with auto leveling and retractable landing gear.

Escape Capsules were to be redesigned. They were to provide them with better life support and the ability to land on a planet safely.

Interiors were to be redesigned and made ergonomically friendly to both crews and maintenance teams. Systems were to be upgraded.

In the end, it appears the IEC lost and their attempted at persuading the Assembly to react in their favor lost.

Over the next five years, the ships were retrofitted at a cost of just over 2.2 Million Credits per ship.

Moraes B's: "Those Damn Mhemne."

In the 72FY, the Mhemne were granted full membership in the UPF. It was also the 25th Anniversary of the Liberation of the system. To commemorate this event, the ceremony was to be held at Clarion and the Eleanor Moraes was to attend. Medals and accolades for the crews of the Moraes and the Osprey were to be handed out as well.

The Mhemne ambassador shocked everyone in attendance when during the medal presentation he award Captain Greogor Dentin with his very own ship. On the holographic projector appeared behind him, the image of a Moraes Class Survey Ship. At first everyone thought this was a joke, until they began noticing the distinctive control tower at Clarion's Starport in the background.

The Mhemne had put landing gear on Moraes Class Survey Ship.

Representatives from the IEC and ISC were given a tour. It was the ship the Commission had hoped for back in 64FY. The Mhemne wishing to impress the UPF with their ship building skills had redesigned the Moraes to improve their chances at getting lucrative contracts within the UPF. It worked.

The ISC's fleet was now in its twenty first year and the Assembly saw a need to replace them, plus the costs of the system was getting out of hand. The landers and its satellites were seen as a security risk, which could be used by the Sathar as insights into the technology used by the UPF. The UPF also saw this as a way to cement their relationship with the Mhemne.

The PGC was not pleased with this arrangement. They fought hard to have the deal squashed, but the Assembly had enough of the PGC Lobby and passed the bill unanimously.

In 76FY, the first ship of this new class Gregor Dentin, was commissioned that year and over the next ten years, the Dentin Class replaced the Moraes Survey ships.

The Museum: The Grand Old Lady.

On the 10th day of the 10th month of Federation Year 88, after serving the Interstellar Survey Corp for 37 years, the Eleanor Morale landed at Gran Quivera for the first time outside the Interstellar Survey Corp Headquarters. Her atomic engines had been stripped out months ago and decontamination. She would not rise again to explore the stars, she once touched. This was the honor bestowed on her for faithful service and partaking in the Liberations of the Mhemne.

The rest of the ships of this class and all their transport vessels were scraped and she is the last of her class. PGC never produced another ship of this class after the M'tal Bax'z was built to replace the Isaac Günter.

The Dentin Class has gone on to become the ship of choice for exploration for both the government and civilian market. To date, fifteen has been built, six are in the

service of the ISC, the other nine are in private hands.

Ship List:

Name	C	D	Fate
Eleanor Moraes	51	84	Museum Ship
Edward Frasier	53	78	Scraped
Beeba Harcoo	55	76	Scraped
Isaac Günter	57	63	Lost
Tomas Anderson	59	74	Lost
La'ta Nor'ka	61	80	Scraped
M'tal Bax'z	65	82	Scraped

C: year Commissioned
D: year Decommissioned.

The Eleanor Moraes Report:

Captain Marlboro treated the mission as a training exercise because of the number of different new personnel from different agencies and corporations.

Indications from his personal logs and from his actions indicate by surviving crewmembers showed, he had grown distant and allow Lieutenant Terry to assume the duties of Captain placing undue strain and stress on the young Lieutenant. His style of leadership saw this as perfectly fine considering. He was preparing himself for retired after this mission was complete. To him, it was all about the training.

This again was made clear, when he chose to use the Airship to investigate the mysterious transmission. Air cars would have been faster and taken less men. Instead, he opted for the deployment of the airship.

Lieutenant Terry had been transferred from the Star Law Ranger due to injuries suffer during a raid on a pirate stronghold. This was common practice by the UPF at the time. This allowed wounded personnel to heal while performing tasks for the understaffed Survey Corp. Which at the time was considered safe duty for such members of the Military and Rangers.

Medical had cleared him for duty and showed no concerned about his mental state. What is believed to have happen, was Terry had hid his Post Traumatic Stress Disorder from his therapist, in order to return to duty quicker. Normally, such rotations lasted a few months. But due to a clerical error, his paperwork had been misplaced extending his tour of duty for two years. Realizing that his career in the Rangers was now completely derailed, he sought vengeance against the Survey Corp or he wished to be killed.

This evidence and witness testimony clearly proved the mutiny was not caused by the Sathar or their agents.

In conclusion:

Marlboro should have been riding a desk and not in a position of command.

Terry may not have had a mental breakdown, if closer attention had been paid to his Mental state after the raid.

A need for the skilled cohesive force of dedicated personal was needed to man Survey Ships.

The result of this was the Assembly allocating funds for the Interstellar Survey Corp Academy in 60FY. The First Class graduated in 64FY.

Historical Facts and Fiction:

Historians tend to gloss over the backroom dealings by PGC in the Early Days of the UPF. In all likelihood, PGC bribed many members of the Assembly and IEC to get the Moraes through. There were other designs on the drawing board at the time, far less complicated and less expensive.

For all its design faults and expenses, the Morale Class was the workhorse of the ISC. Its safety record was remarkable for a ship of this complexity. Isaac Günter and the Tomas Anderson were the only

two losses during its lifetime. The accidental firing of the escape capsule on the Isaac Günter was the only accident due to a design error. Tomas Anderson is missing and presumed lost.

The Commission of 64FY resulted in a lawsuit in the death of technicians on board the Beeba Harcoo. The Case was settled out of court. The Law firm who started the proceedings, collected the money because, by the time it was settled, PGC had stalled the suit and payout for a decade. The only surviving family member died during the stalling.

The Commission of 64FY bowed to pressures placed on them by the Assemble. Nor was the Assembly willing to spend the money to upgrade the fleet. They had already shelled out a large amount to create the Academy. Certainly, brides were exchanged here, however the IEC fought to the bitter end to ensure their personal had the best equipment. They realized by then, the single ship exploration ship was the way to go.

The Mutiny on the Eleanor Moraes resulted in the formation of the ISC Academy. They saw the need for training personnel. Up until this point, the Survey Corp had drawn crews from every department and agency within the UPF Government.

Mhemne stole the technical data for the during the victory party from both the Osprey and the Moraes. This allowed them to create a ship based off UPF technology. They wish to prove to the UPF, they were a vital asset to them. The fear among the Mhemne was the Sathar would attempt to retake their system. They believe having a strong ally, they could prevent this from happening. They need not worry, the UPF was quite interested in the wealth of Sathar data in their system.

The reason funding for the Dentin Class passed the Assembly are: One, it was in the spirit of the occasion. two, it was also payback for allowing the UPF full access to the Sathar Technology under their control. Three, many of the Assembly members believed PGC had had more than enough time to correct the situation and didn't. Finally, the ISC purchase did give a boost to the Mhemne economy and it is now listed as a Class I Construction Facility.

The Moraes Class Survey Ship was supposedly designed after an ancient spacecraft. PGC once boasted, "It followed in the footsteps of those ancient explorers." This only a rumor, since no pictures or diagrams of the ship has ever been found even remotely looking like the Moraes in historical archives.

It is a common legend that Gregor Dentin retired a wealthy man after selling the Mhemne ship to the IEC. This is not entirely true. Dentin gave the ship to the ISC for evaluation, his hope was with ships like these, the UPF could take the fight to the Sathar's homeworld. Upon retirement, Dentin discovered he was receiving a retirement check from both the Clarion Marines and ISC.

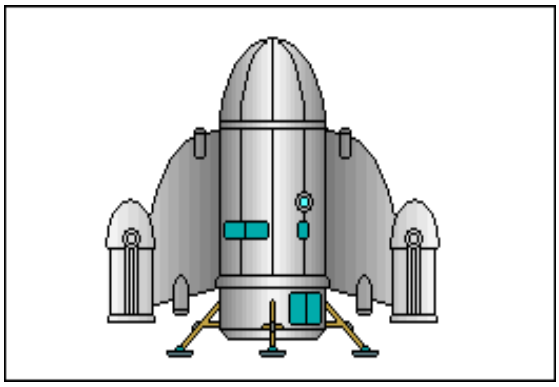
If you ever visit the Museum and look just below the Air Car Hanger doors you will notice a series of scratches, dents and ding in the hull plating. These are caused by inexperienced scouts who attempt to bypass the safety protocols on the Air Cars before they left the hanger. This usually results in smacking the Air Car into the side and in worst case scenarios send them crashing to the ground.

Towards the end of their service, fears that Sathar may gain information about the UPF technology, if the Supply Ship was captured along with a Moraes Class vessel. This curtailed many long range missions into the area known to have Sathar bases. This is what the intelligence service of the UPF believes happened to the Tomas Anderson, but only the Void knows what really happened to the ship?

The Future: Is there hope...

At present, the Alpha Class Scout by NexGen seems to be the way the ISC is going. They have bought four of them. However, sources close to the project are hoping the UPF and NexGen will consider upgrading the Dentin Class takes it into the next Century...

Stats: Eleanor Moraes



ADF	MR	Hull	DCR	HP
4	4	4	32	20

Description: Survey Ship

Length:	36 Meters (Deck Height 4.5 Meters)
Diameter:	20.6 Meters (without wings)
Engines:	2 Atomic, Size A
Weapons:	2 Laser Cannons
Defense:	None
Crew:	12
Tonnage:	664.4 Metric tons
Fuel:	None
Cost:	4.65 Million Credits.

Description: Survey Lander Module

Length:	10 Meters
Diameter:	20.6 Meters(without landing gear. With is 27.2meters.)
Engines:	4 Chemical Rockets, Size A
Weapons:	None
Defense:	None
Crew:	None
Cargo:	40 Tons Bulk
Tonnage:	159.2 Metric Tons (loaded 160 Metric tons)
Fuel:	1 trip
Cost:	974,100 Credits

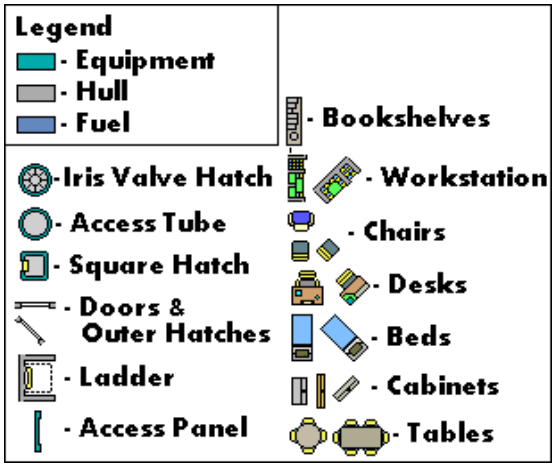
Description: Combined

Length:	46 Meters
Diameter:	20.6
Tonnage:	844.4
Cost:	5.97

Designers Notes:

The plans are rotated 45° degrees. This was in order for me to draw them. The Decks are 20 meters instead of 24. I wanted to show how cramped the interior of these ships were. Minor changes to the furnishing in each room were made as well. I added real world concepts to the design.

The following is standard on all ships presented in this Module.



General Notes about the Ship:

In case of emergency, the Access Tube can be closed off by a hatch in the floor and ceiling. This can be done either manually or from the bridge. In case of a hull breach, room doors act as temporary airlocks preventing atmosphere from escaping from the entire ship.

All pressurized and normal hatches (including bay doors) are locked and alarmed by a level 3 security system. They are monitored by a Level 3 surveillance system which can be monitored from the bridge. The Surveillance also monitors all passages, rooms and key equipment areas (such as the Engineering deck and key equipment throughout the ship.) Hatches and doors can be locked or unlocked from a panel outside the room or from the Bridge.

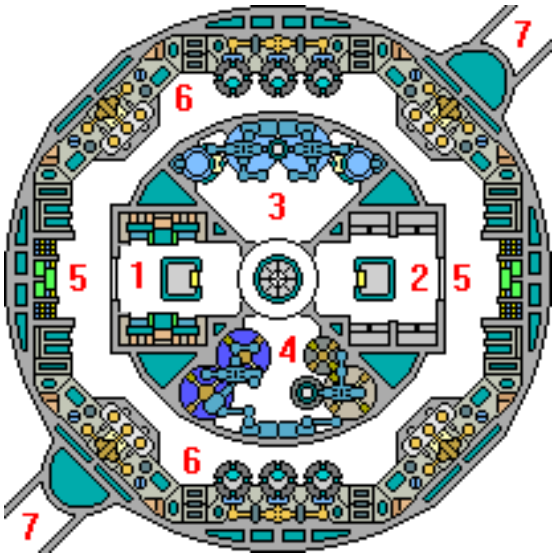
Lighting and power on each deck is controlled by a panel built into the trunk. If these are shut off, then the deck is totally dark and all systems on that deck are shut down. The only time this happens is when a major power system on that deck is shut down for repairs or in an emergency. Individual room can be shut down as well from this panel so systems in that room can be worked on. Lighting is controlled by a switch in each room.

The top three Decks of the ship is an Emergency Escape Capsule. All is computers, communication, life support and power systems are adequate for 4 days for the entire crew. The bridge can be locked down and its systems can be separated from the ship, effectively isolating it from the rest of the ship. Further, this section has 4 small chemical rockets which can launch the bridge 1000 meters into the air before it comes crashing down 50 meters from the ship. If this happens there is no way for the ship to take off again.

Deck plans: Eleanor Moraes

The decks will be presented from the Lowest to the Highest (Stern to Bow).

Engineering Deck



Description: This deck is crammed full of electromechanical equipment. Pipes and electric conduits litter the ceiling. Narrow gaps between high voltage equipment is common. Around the outer hull are electromechanical equipment which channels power throughout the ship. This area is seen as a hazard and is off limits unless repairs must be made.

1 Engineering, Computer Room: To the top and bottom of this room are the computers used to operate the engineering section. Uploading or programming takes place at the two workstations at 5 and 5a. A square hatch in the floor leads to the one of the lander port side cargo bays. When there is no lander attach this hatch auto-locks and cannot be opened (Bypass Security Level 6). The hatch opens towards the door, blocking access to the rest of the deck, through the door at the end of the room.

2 Storage Room: This room contains 4 lockers where commonly used spare parts are kept (Top and bottom). A square hatch in the floor leads to the one of the lander starboard side cargo bays. When there is no lander attach this hatch auto-locks and cannot be opened (Bypass Security Level 6). The hatch opens towards the door, blocking access to the rest of the deck, through the door at the end of the room.

3 Atmospheric Scrubbers: This room is a part of the life support system. It contains filters for cleaning the ship's air. They filter need replaced every 30 Ship Day or (600 hours). This can be done by the ship's crew.

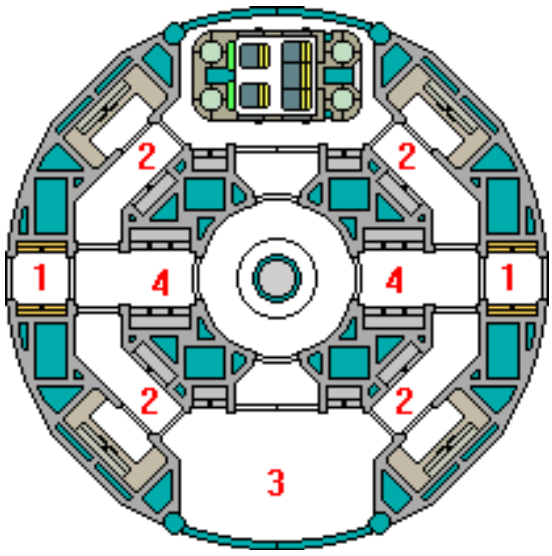
4 Water Filtration Unit: This room is a part of the life support system. It contains filters for cleaning the ship's water supply. They filter need replaced and the sewage tank drained every 30 Ship Day or (600 hours). This can be done by the ship's crew.

5 Engineering Work Station: These stations monitor and control the engines, power output, Life Support System and allow programs to be uploaded to the Engineering Computer. They also relay this information to the Engineering station on the Bridge.

6 Parabatteries: There are 6 of these batteries on this deck. In case of emergency, they provide the ship with 30 hours of emergency power.

7 Wing Root: This only shows the location of the wings.

Entry Deck:



Description: This deck contains storage rooms and two Air Car hangers. It also has two airlocks for entering the ships.

1 Airlocks: The airlocks allow access to the interior of the ship. The cabinet in the room houses tools and safety equipment used during spacewalks. There are 2 airlocks on this deck (Port and Starboard).

2 Store Rooms: These room is storage for the expedition, food, equipment and sample collected during the mission. There are 4 of them on this deck.

3 Air Car Bays: These bays, store the ship's 2 aircars. A double door is on the center corridor. This allows the crew to open the doors on the aircar and board the vehicle. On the same side as the double doors are two equipment lockers to store the tie down equipment. Port and starboard doors are single doors.

Because these bays sit 16.5 meters off the ground, these aircars are equipped with an auto navigations function which allow the cars to safely exit the bays. They can also be used on any planet with an atmosphere. They will not work in a vacuum or on planets with trace / thin atmospheres

The chart below shows the modifiers if players wish to fly the aircar in an unsafe manner.

Conditions	Unskilled	Routine
Cautious	-15	+15
Hasty	-30	-10
Hazardous	-45	-20

Pilot Skill:

Unskilled: Pilot has never flow an aircar.

Routine: Pilot is skilled in flying an Aircar.

Conditions:

Cautious: Pilot uses Auto Navigation.

Hasty: Pilot doesn't use Auto-nav.

Hazardous: Combat, storms, overload:

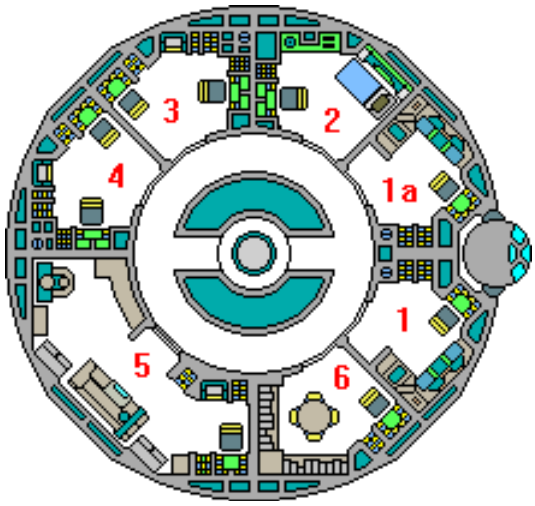
Anything that may affect the stability of the Aircar.

IF players fail their skill roll, then the following will happen:

Cautious:	strikes the side of the ship does 1d10 damage to the car.
Hasty:	Strikes the side of the ship or hits the ground after takeoff. Does 1d10+5 to the aircar.
Hazardous:	Aircar crashes to the ground. Vehicle receives 2d10 damage and must be repair. Character receives 3d10 damage.

4 Spacesuit Lockers: There are 3 lockers to either side of the corridor. Each contains 1 spacesuit for a total of 6 per room.

Lab Deck:



Description: This is the deck where all the work is done on board ship during a planetary/system survey. The center of the deck is dominated by half circle equipment trunk. They house heating unit, ventilation duct, water lines, power cables and other eletromechanic equipment that allows the ship to operate. It also forms a short corridor that runs port to starboard.

1, 1a Telescope: The telescope is shared between the Astrophysics and Chartogroghy/Planetary Sciences Lab.

The telescope is a multispectrum type used for mapping planet, asteroid and solar systems. Other uses include; meteorological studies, astronomy and gas analysis. It can also run an astronavigation program.

Since the telescope is shared between two mission specialists, it is often difficult for one of them to do their job. An exception to this rule is astronavigation. It always has priority over system mapping and Planetary Sciences.

1 Astrophysics Lab: This room is dedicated to mapping a solar system and Astronavigation. To map a solar system or use the Astronavigation program, the ship must be put into a slow rotation along it's center axis. This is because of the telescope's location on the ship and the starboard wing.

Mapping Solar system: 30%, +10% for each skill level. It takes a skill Astronomist (20 hours - skill level) anywhere between 14 to 20 hours to map a solar system.

1a Cartogroghy/Planetary Sciences Lab: This room is committed to the mapping of planetary bodies, asteroids, and meteorological studies. It can also analyst a planet's atmosphere for major components.

Mapping Planet: 30% + 10% for each skill level. It takes a skill Cartographer (20 hours - skill level) anywhere between 14 to 20 hours to map a planet.

Predicting weather: 30%, +10% for each skill Level. This provides information on weather for seven days. It also can tell this person what the climate is like.

2 First Aid Station: This is simply a first aid station for the ship. It contains one life

support beds and several supply lockers and cabinet mounted in the walls. A small workstation is provided to allow the MED Tech to monitor patients. A single workstation allows a medic to scan an individual lying on the MED Bed. It cannot diagnose diseases or illness. This room should be considered an aid for a medic in treatment. (+ 30% to medical skills)

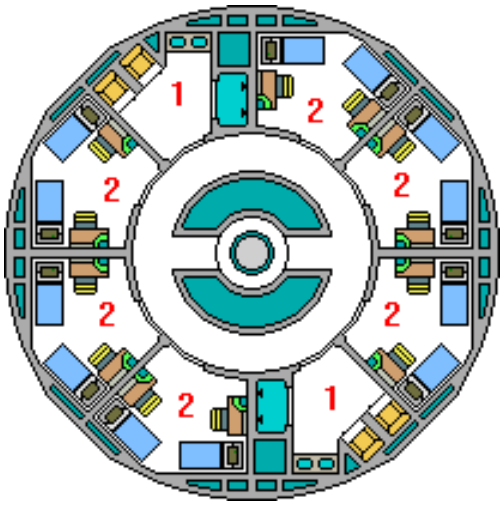
3 Geological/Chemistry Lab: The lab is for general analysis of minerals, unknown materials and chemicals. This room should be considered an aid for a scientist. (+ 30% to Analysis Sample skills)

4 Botany/Biology Lab: The lab is for general analysis of microscopic organisms, plants and animals. This room should be considered an aid for a scientist. (+ 30% of Analysis Sample skills)

5 Workshop: This room is capable of making minor repairs to the ship's systems and equipment normally carried on board the vessel. As soon as you walk into the room, you will see a large machine known as a Rapid Production Machine (think 3D printer). The machines use cartridges to create electronics, small tools, equipment cases and parts need to repair the ship. The 2 cabinets to either side contain the cartridges. It may take more than 1 cartridge to build a repair part. A General, Mechanic's and Electronic Toolkits are stored here as well.

6 Survey Office: This is the Captain's office as well as briefing room. Expedition reports are written here as well.

Crew Deck:



Description: This deck houses the crew's quarters.

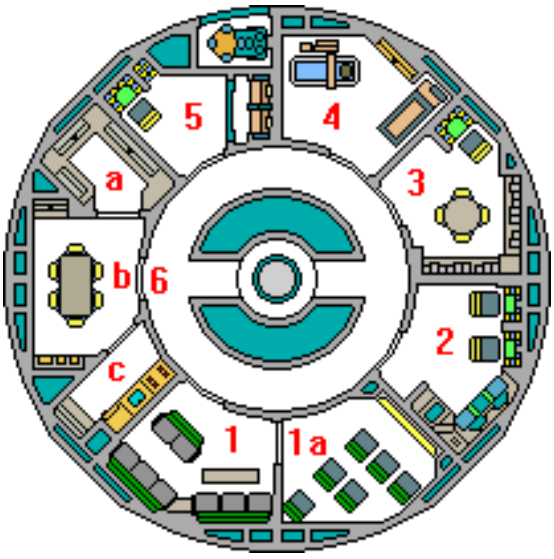
1 Latrine: This room has 2 showers, 2 toilets, and 2 sinks. Their purpose is to maintain the crew's hygiene. There are two of these rooms on this deck.

2 Quarters: These are the crew's quarters. They are double occupancy stateroom. Each room contains, two beds, two desks and above and below each bed are storage areas and compartments for personal belongings.

On the desk is a small workstation used to watch vids, games or read messages from home. (Should be treated as a home computer, Level 1.) They are not connected to the ship's network, but can receive and send messages via the ship's communication array.

There are 6 of these rooms on this deck.

Recreation Deck:



Description: This deck allows the crew to relax during the mission.

1 Lounge: This area is provided for the crew as a place to gather and relax.

1a Theater: This room can only be accessed through the Lounge. It has a large flat screen TV mounted on one wall that can play vids brought on board by the Characters, informational vids from the Ship's Library or used as a briefing room by the Captain if he so desires.

2 Computer Room: The computers in this room control most of the systems on the ship as well as store data on the expedition and scientific data necessary for the Mission Specialist to analysis samples. This also houses the network for all workstations on the ship.

The Computers on the bridge cannot be overridden from this location. The Network doesn't allow it to happen as a security measure.

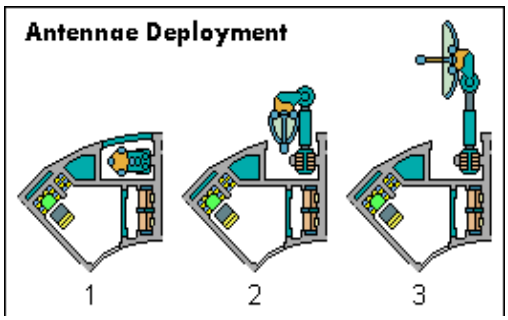
3 Ship's Library: On the shelves in this room, is an assortment of books, videos and Data Cartridges used for training and research by the crew. It also has manuals concern every piece of equipment on the ship. This room is considered an aid to solving problems and doing research.

+5% per player's skill level in the field, he is researching. The player receives +1% for every hour training in a specific field other than weapons skills.

4 Gymnasium: This room maintains the physical wellness of the players. 30 Minutes of exercise per day.

5 Communication Center: This room houses the subspace radio, intercom, and internal security cameras. Only the Captain can authorize transmissions. The workstation on the bridge can lock down the antennae to prevent unauthorized transmission.

There is a workstation in the top left hand corner and to the right below the antennae bay is the subspace radio behind an access panel.



1: Shows the Subspace Radio Antennae in a stowed position and the outer door closed.

2: Shows the antennae being deployed and the outer door is open.

3: Shows the antennae fully deployed.

The process is completely automated and takes 10 minutes. If players wish to override the automated deployment, they can reduce the time by 1 minute per skill level. Altering Function skill is required (-25% to skill roll).

Failures of a skill rolled requires a system reboot and adds 10 minutes.

6 Galley: This room contains everything necessary for preparing and eating a meal.

a Storage: The room is for storage of food goods and holds 30 days of meals.

B Dining room: This room contains a table capable of seating 6 people conformablely. At the top of the room is a cabinet. At the bottom is a beverage dispenser for non-alcoholic beverages.

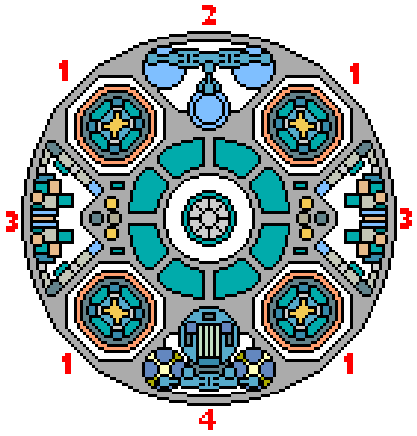
c Kitchen: this room is used to prepare food. It is a full kitchen with a sink, stove and refrigerator. A small table for preparing meals and cabinet space for storage.

Escape Capsule Entrance Deck:

Description: To the players this is an access tube between the Recreation Deck and Bridge. It can be sealed off by two Iris Valve Hatches one located in the roof of the recreation deck and the other in the floor of the Bridge. The Tube is lined with access panels. It can also be used as a temporary airlock if the ship has lost its atmosphere or is separated from the ship.

Mooring clamps and explosive bolts hold this deck in place. The escape capsule is launched from the Captain's station on the Bridge (See description in General Notes.) It is the last resort at his disposal to save the crew. Once the capsule leaves the ship can't be returned to the ship or be reattached.

The Bridge is normally sealed off from the rest of the ship during void travel. Emergencies which the Captain may seal off the bridge are: The ship is being boarded by a hostile force, contamination by an alien organism, or lots of atmosphere.



1 Solid Fuel Rockets: There are 4 rockets on this deck. They provide enough thrust for capsule to move away from the ship in a grave emergency. The power these rockets generate was never intended to launch the capsule or launch it into space.

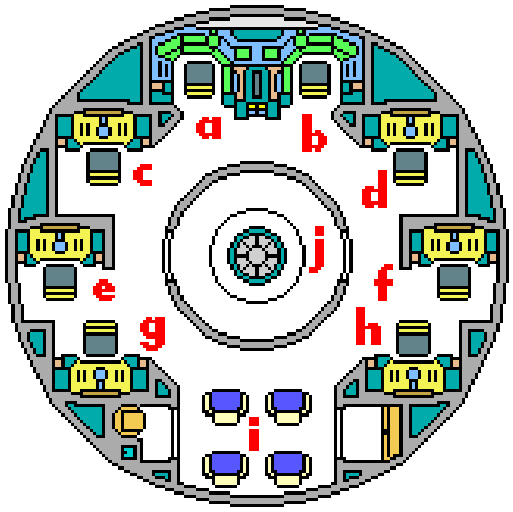
2 Atmospheric Scrubbers: These scrubbers are only intended to clean the Bridge's air supply for 4 days, if it has been sealed off or separated from the ship

3 Electronics' Bay: The electronics in these areas allow the Bridge to control the rest of the ship and feed information to workstations located there.

4 Power Generator: Provides power to the Bridge for 4 days or if, it has been sealed off or separated from the ship.

The Bridge:

Description: The Bridge is the command and control center of the ship. All stations are connected by intercoms.



a Pilot's Station: This station is used to control the ship during flight operations.

b Co-pilot's Station: Same as Pilot's Station.

c Captain's Chair: From this workstation, the Captain monitors all ship's activities. He also controls the surveillance system, is able to lock and unlock hatches and the door, and is the only one able to launch the escape capsule. His station is password protected due to security and privacy concerns.

d Engineering Console: monitors all ship's functions as well as equipment. It controls and monitors the power grid, life support and essential systems.

e Astronavigation: Plots FTL jumps, inner system flight and landing zone.

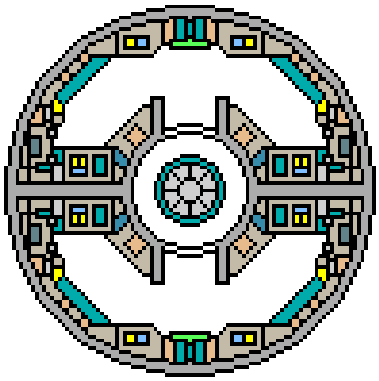
f Communications: This station provides Subspace and ship to ship communications, network connections when docked, and coordinates communication with teams away from the ship.

g, h Weapon Station: Controls the port and starboard laser turrets.

i Passenger Area: This area provides seating for 4 mission specialist who are not involved with flight operations. To the left is a bathroom and to right is a storage closest for emergency supplies.

j Security Area: This area provides an extra level of security for the bridge. Both hatches in this area are using a Level 4 security locks.

Avionics' Bay:



Description: These two bays houses the navigational radar, computers and sensor necessary for flight in space. There is also a distress beacon which will active as soon as the Escape Capsule is fired. It will only broadcast for 4 days, the length of the power generator.

Survey Lander Module

General Notes about the Lander:

The Survey Lander Module has two functions. The first and most important is it was designed to slow the Moraes down just before landing. The atomic engines just don't have the strength to counter the speed incurred by the ballistic reentry. Lucky for PGC, the chemical engines, they were using up to the task.

During the Space Trials, the test pilots realized the hazards of attempting to land as an Assault Scout. Get the ship to stall at the proper altitude and aligning the

ship 'nose up' was a problem due to the fixed landing gear. Another issue was the added weight of the lander caused control issues. It is not impossible to do an assault scout landing, it's just extremely difficult for pilots (-30 to their skill rolls).

The Lander's second task provides the ship with exploration equipment and act as a research station after the ship has left. This was to be done by robots, computerized analysis equipment and by the Level 3 onboard computers. The lander is powered by 4 solar panels, but has an auxiliary power unit. If nothing damages the panels the station is capable of lasting for up to 20 years.

The Lander is capable of carrying 40 tons of Bulk cargo. But in reality it can carry only about twenty. This is due to the fact that the DA-2000 Airships takes up so much room and there are two of them.

Another problem with the Lander was its fixed landing gear. Not only did they act as airfoils in atmospheric flight, but they were non-adjustable. Not only did the ship settling cause a tilt in the ship, but it made it difficult for the crews to unload the Airship. The height was the issue. The lander sits 2 meters off the ground. Depending on the settling of the ship, it could be as high as 3 meters.

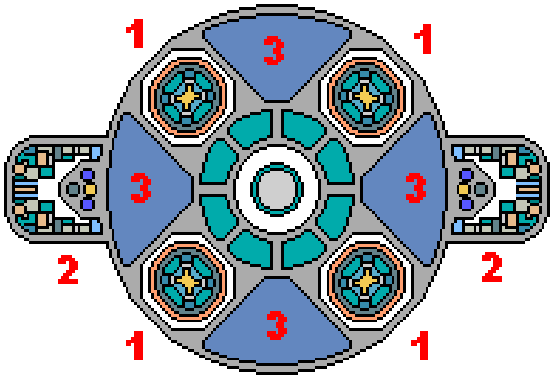
Once the lander has performed its function, it remains on the planet. The Moraes's atomic engines don't have the power to lift off with it attached.

After the Moraes leaves the lander, the onboard computer will deploy the solar panel and radio antennas. This will take place 30 minutes after liftoff. Afterwards, the onboard computer is in control of the robots and other sensors on the Lander Module conducting research according to its programming. It has a Level 3 Security program and is password protected. The password is kept at ISC Headquarters just in case the data needed for retrieval of information after the Lander has stopped working or malfunctions.

Deck plans: Lander Module

The decks will be presented from the Lowest to the Highest.

Engine Deck:

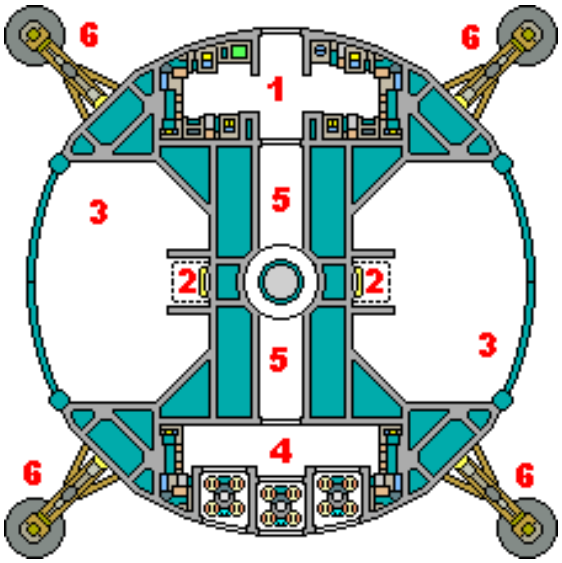


1 Engines: There are 4 chemical engines on this deck. There is access provided to inspect the engines and work on them if necessary, however the deck is only 1.5 meters in height making it difficult to work on. The access tube ends here and doesn't provide access to the Transport Ship. The engines are not powerful enough to lift off from the planet's surface.

2 Umbilical Hookups: There are two of these Umbilicals which connect the lander to another lander and eventually to the Transport Ship. The connection is made at an ISC Base. It is not possible to make a reconnection after the Lander has been disengaged from the Transport ship or another lander. So Captains are very careful how they use them.

3 Fuel Tanks: These 4 tanks carry just enough fuel for a safe landing on a normal gravity world (1 Gs). There is not enough fuel for takeoff, so it must be left behind.

Cargo / Research Station Deck:



1 Computer Room: This room controls the research station, survey robots and Lander Module. It is a Level 3 Computer. It is capable of doing basic analysis of organisms and minerals.

There is also a hatch in this room. It is not an airlock but the room can be sealed in order to act as one. Access to the ground is provided by a ladder built into the hull and for the last 2 meters a ladder extends to the ground. A Level 3 lock is on this hatch.

2 Ladders: These two ladders allow access to the cargo bay from the Engineering Deck to the floor of the bay. It is 6.5 meters from the Engineer deck to the floor.

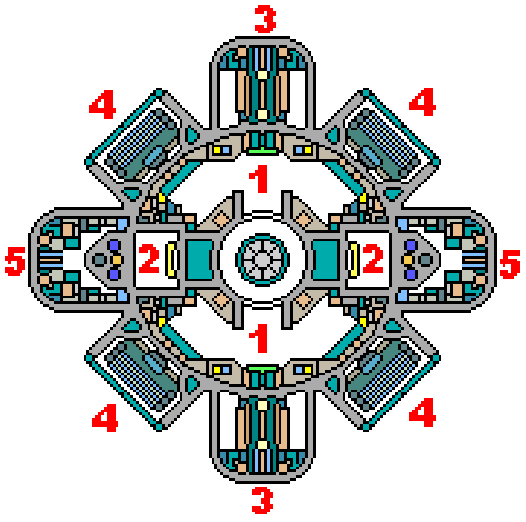
3 Cargo Bay: This is where the 2 Airships are stored. The height of the bay is 5 meters. The doors for the cargo bay are opened from the computer room or from the inside of the Cargo Bay. There is no outside panel for opening the doors. In the figure below, it shows how much room the Airship takes up in the cargo bay. (For further details, see Airship)

4 Robotic Storage: Three robots are stored here. Each robot bay is equipped with an analysis unit for any sample that it may bring back. A hatch at the back of the bay allows for sample retrieval and maintenance.

5 Access Corridor: A central access tube from the Engineering deck allows entrance to this corridor. There are 2 Auxiliary Power Units here in case of emergency to power the lander. They supply enough power to operate the lander for 30 days without solar panels.

6 Fixed Landing Gear: The landing gear is ridged and stick out from the hull for 7.5 meters.

Electronics Bay



1 Electronics Bay: This room houses the electronics for the Lander's radio and solar panels. The room is 1.5 meters tall.

2 Ladder Access: This is the ladder which leads from the Engineering Deck to the Cargo Bay. The ladder provides no access to this deck.

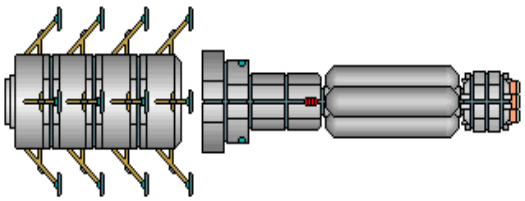
3 Communication Bay: The top one is the radio that transmits data to the satellite. The bottom one is for the survey robots. This radio has a 44 kilometer range.

4 Solar Panels: These are 4 solar panels which provide power to the Lander Module after the Moraes leaves.

5 Umbilical Hookups: There are two of these Umbilicals which connect the lander to another lander and eventually to the Transport Ship or the Moraes. The connection is made at an ISC Base. It is not possible to make a reconnection after the Lander has been disengaged from the Transport ship or another lander.

Deck Plans: Supply Ship

ADF	MR	Hull	DCR	HP
4	4	4	35	25

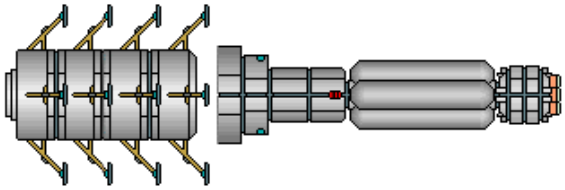


Description: Survey Lander Stack

Length: 40 Meters (4 units Maximum)
Diameter: 20.6 Meters(without landing gear. With is 27.2meters.)
Tonnage: 640 Metric Tons (Fully Loaded)
Cost: .95 Million Credits per Unit

Description: Drive Assembly

Length: 79 Meters
Diameter: 24.1 Meters
Engines: 4 Ion Drives, Size B
Weapons: None
Defense: None
Crew: None
Tonnage: 1366 Metric Tons (Fully Loaded.
Fuel: 620 Metric tons (8 trip)
Cost: 7.7 Million Credits

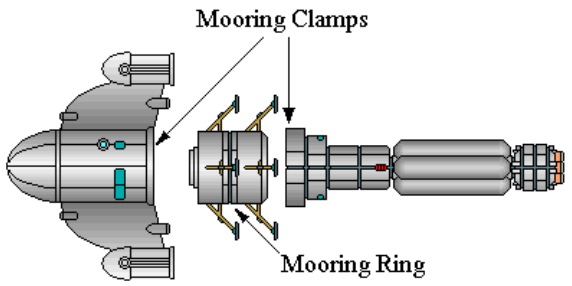


Designer Notes:

I thought long and hard about the design and went with an inline design. It makes sense and provides the easiest way for the Moraes to dock with the ship. The survey modules are stacked on top of each other so, all the Moraes has to do is back into the next survey module. It isn't pretty, but it's logical.

General Notes about the Ship:

The Lander Stack is assembled at the home base and attached to the Drive Assembly prior to the main ship dock. This is done by backing up the Moraes class to the Landing Stack and manually locking the ship to stack by Mooring Clamps on both the ship and the Drive Assembly. The landers are held secure by its own set of Mooring Ring.



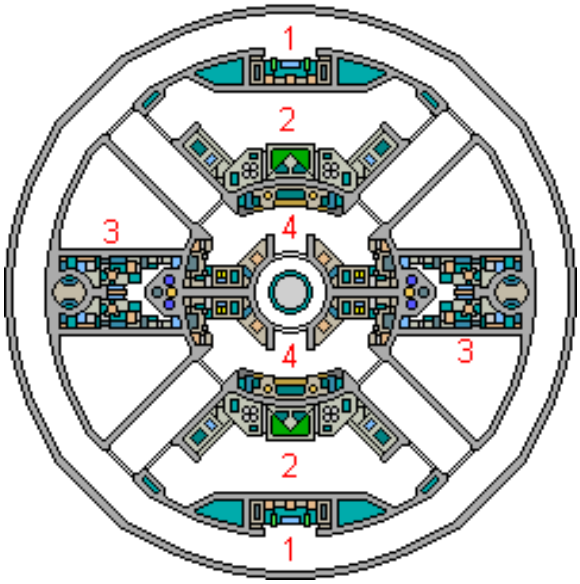
There is no direct connecting between the Moraes and the Drive Assembly. A space walk is required to enter the Drive Assembly. This is usually done when the ship is in orbit around a planet just prior to departure. The Drive Assembly does not have an atmospheric generator and considered a vacuum.

Deck plans: Drive Assembly

The decks will be presented from the Highest to the Lowest (Bow to Stern).

Mooring Clamps:

The dock ring (Mooring Clamps not shown) allows access inspection ports for the mooring pins, power and computer couplers. They must be checked for proper alignment and that all clamps are secure before switching, power over to, and taking control of the Drive Assemble. (Engineer Skill minus 2d10 minutes).



1 Mooring Clamps, Controls: This control panel is used to insure the Lander Stack is secure to the ship. (Clamps not shown.) Prior to departure from a star system, the clamps are checked by the engineer using the walkway around the outer edge of the deck. This is to insure all clamps are locked and not under stress.

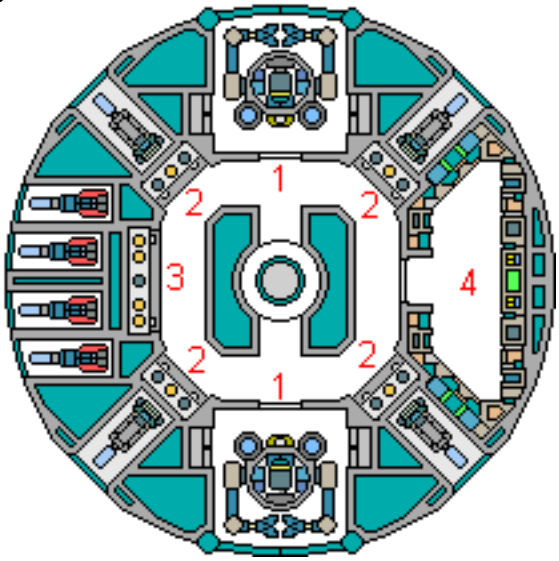
2 Electromachanic Control Room: This room contains the electromachanic equipment necessary for this deck to operate.

3 Mooring System: This simple system allows the Lander to dock with the Drive Assembly as well as the Moraes. All the pilot has to do is to align it with the corresponding mooring pins and back the ship in. The ports in this compartment are used to connect the Lander's and the Moraes' systems with the Drive Assembly. Access to the compartment, requires the removal of an access hatch on the hull.

4 Computer Space: These two areas proved computer interface with the Drive Assembly

Ultity Deck:

The Ultity Deck contains: workpods, satellites, probes and the ship's computer. Items necessary for exploration and general maintenance



1 Workpod Bays: The ship is equipped with two workpods. They are used to transfer supplies, to inspect the Lander Stack and docking clamps.

2 Satellite Bays: The ship is equipped with four multipurpose satellites used by

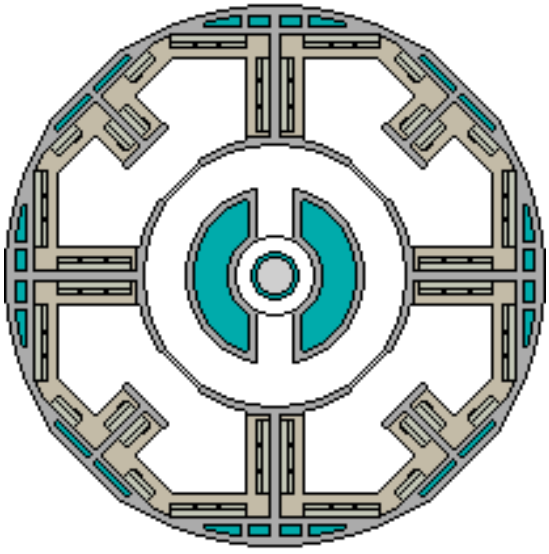
the crew to map, maintain communications with the surface and with the Drive Assembly, weather reports, etc. These can be launched from the Moraes threw the umbilical connection or from the control panels at the end of each bay.

3 Atmospheric Probes: These probes are only able to determine the atmosphere of the planet. These can be launched from the Moraes threw the umbilical connection or from the Computer Room on this deck.

4 Computer Room: This is the main computer for the entire Drive Assembly.

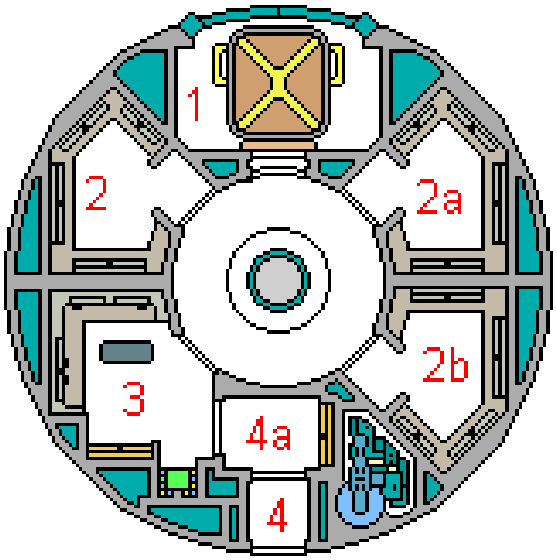
Storage, Deck:

This Deck contains the consumables used by the crew, as well as spare parts need for a six month deployment. The Deck is divided into four large rooms. The walls are lined with storage cabinets. The floor space is sometimes used for storage of item that will not fit on the shelves or in the cabinets. The floor has rings mounted in the floor for tying down large objects.



Entry Deck:

This deck allows access to the Drive Assemble and provides the crew with a cargo module to transfer stores to the ship.



1 Cargo Module Bay: This bay contains one cargo module which allows stores to be stacked inside, then moved to the Moraes Class in large quantities. The module can be moved either by the Workpods or by men equipped with Space Maneuver Packs.

2 Small Storage Room: This room is used to store specimens collect while on the surface.

2a Small Storage Room: This room is used to store extra equipment that may be lost or damaged while on the planet surface.

2b Small Storage Room: Contains an assortment of items used to running of the ship and its equipment.

3 Spacesuit Lockers: Spare spacesuits keep in this room and are used to replace damaged suits.

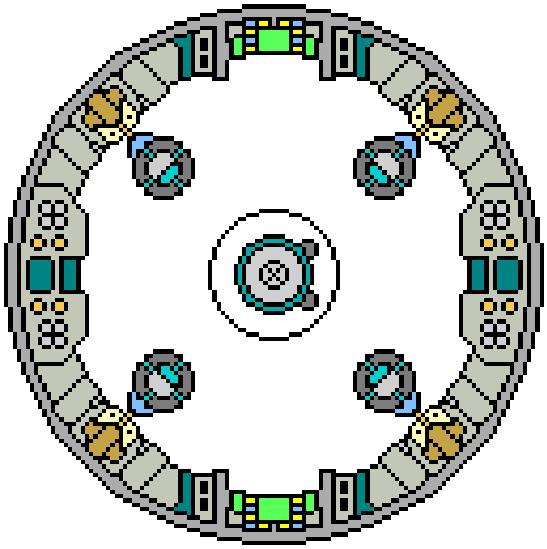
4 Entry Hatch: This allows one person to enter the ship one at a time.

4a Entry Space: This area allows people to access a set of tool from a cabinet in

the room. These tools are used only in space and are designed for use in space only.

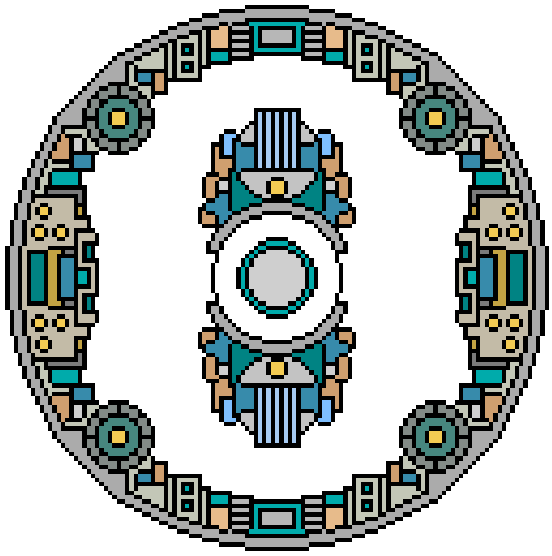
Reactor Monitor Station:

This entire deck is used to monitor the atomic reactor. The monitor stations are located at the top and bottom of the room. At the 45s, are the Parabatteries. The batteries give the ship 20 hours of emergency power. The rest of the room is filled with equipment that channels the rest of the ship.
The central access shaft is blocked by a hatch (treat as a Level 5 lock) at this point to protect the rest of the Drive Assembly from radiation. The only time this hatch is opened is when repairs are being to the Reactor. As a safety protocol, the hatch is closed after people enter the last three decks.
It is recommended, that radiation suits are worn pass this deck, thou it is not required if there are no leaks in this area. Only the reactor deck requires radiation suits as a safety procedure.



Electromachanic Bay:

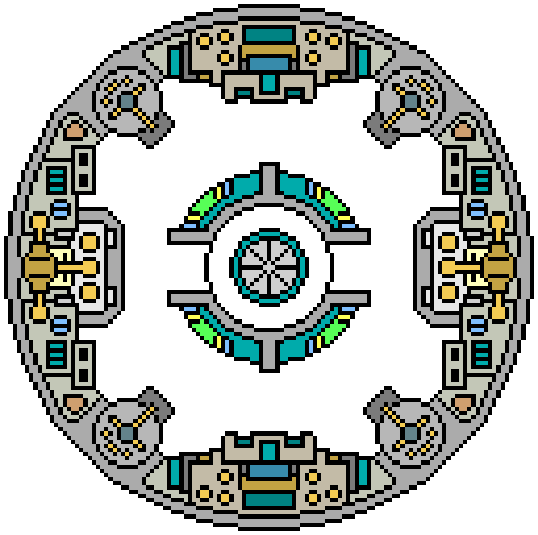
This deck houses the equipment that disturbs the power and controls output of the reactor. No radiation suits are required at this level unless the reactor is being worked on by technicians. Monitoring the Reactor takes place on the Monitor Station one deck above.



Reactor Distrubution Deck:

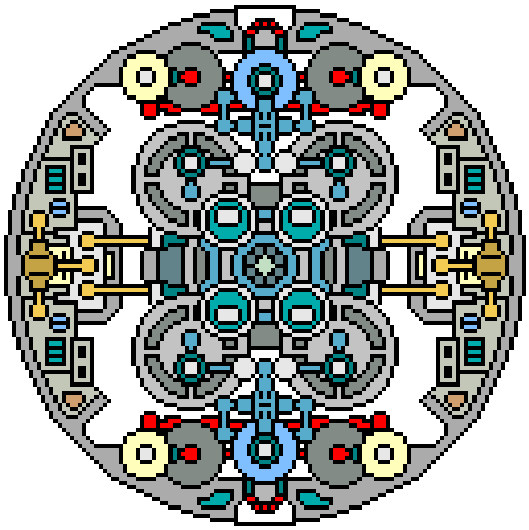
This deck contains the electromechanical equipment that controls and transfer the power from the atomic reactor to the rest of the systems on-board the ship. There is an iris value lock on this deck that blocks access to the reactor decks below (treat as a Level 5 lock). This allows the reactor to be serviced back at the base or do emergency repairs in the field.

In the center surrounding the iris hatch are four workstations used to control, set and aid in the repair of the reactor.



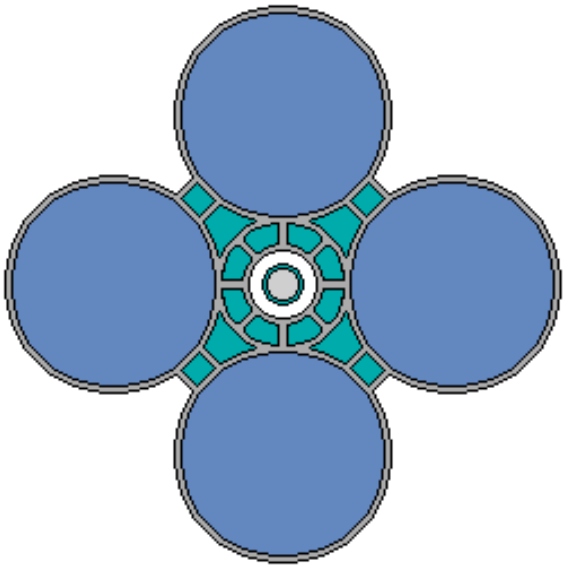
Atomic Reactor:

This is the reactor that power the ship's Drive Assemble and Ion engines. Radiation suits are required at this level. To work on the reactor, the reactor must be shut off prior to working on any part of the reactor.



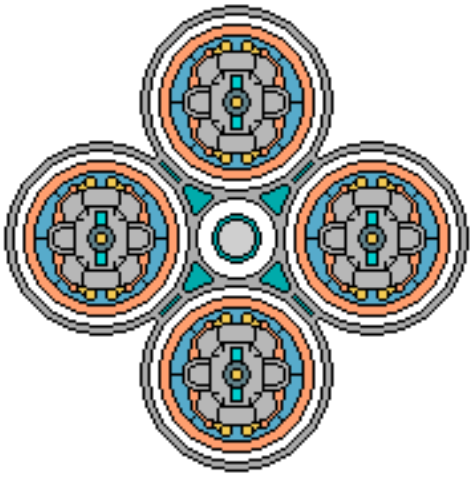
Fuel Tanks:

Four fuel tanks supply the Ion engines with propellant for eight jumps. One for each engine. There is an access tunnel that starts at the stern and runs to about the middle of the tanks. It is used to perform maintenance on the tanks and is open to the vacuum of space.



Engines:

Four Class B Ion Drives propel the ship at One MR. Any faster and the Lander Stack becomes unstable and may tear itself apart. There is an access tunnel that starts at the stern and runs to about the middle of the tanks. It is used to perform maintenance on the tanks and is open to the vacuum of space.



Appendix 1: Long Range Missions

If the ship isn't damaged or only in need of minor repairs, turn around is normally two weeks.

Missions can last up to five months, depending on distance travelled, length of stay on a planet doing research and any other adventures the crew may have.

The Home base is a standard mobile drydock, which is moved from on location to another depending on what region the UPF wishes to explore next. This gives ISC flexibility and rapidly respond in case of emergency or a need to explore an area rapidly.

Refitting for the Next Mission:

This section deals with the resupplying of the Moraes Class for long range survey missions. It begins from the time it

returns to home base and the ship is ready to depart on its next mission.

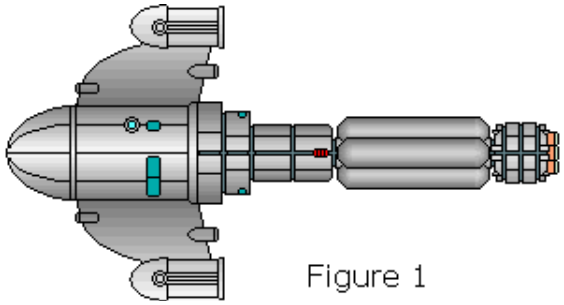


Figure 1

1. The ship returns to base with drive assembly after a successful mission. All damage, malfunctioning equipment and services are made. Engines are overhauled.

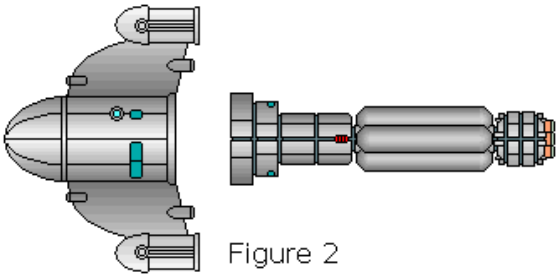


Figure 2

2. Moraes Class vessel is separated from the Drive Assembly. It will either be restocked (2a) or emptied (2b) of stores and fuel depending on the next mission. At this time, crews are normal given time off (up to a month) for rest and relaxation.

2a: The stores are inventoried and replaced. Expire items are removed and all short coming are made up. Satellites and Atmospheric probes are then replaced. The Hydrogen fuel tanks are refilled. The Drive Assembly is 'parked' in a safe orbit near the home base.

2b: If there is no long range mission planned in the foreseeable future the Drive Assembly is 'parked' in a safe orbit near the home base.

2c: The Moraes Class Vessel is free to conduct short range missions or go on patrol.

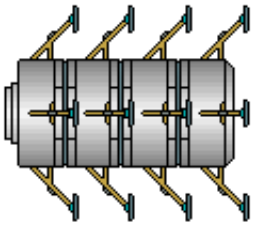


Figure 3

3: Depending on the Mission Schedule, the Survey Lander Stack is either constructed upon return or awaiting the ship's. The Survey Lander Module is built off site and shipped to the Space Dock. Compiling the stack usually takes 1 week. This includes testing the umbilicals between the lander, Mooring Rings and exchanging the airship for cargo.

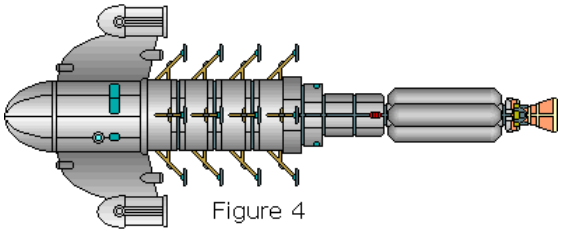


Figure 4

4: Final assembly of all units takes about a week. Checking umbilical system, inventorying stores and final briefing all take place during this time.

Final Notes: Long Range Missions are the bread and butter of the ISC and the Moraes Class ships. They consider short range missions a waste resources. As already discussed (see General Notes on the Survey Lander Module), they see using a Lander Module to revisit a planet as wasteful. Modified Assault Scouts used by the ISC are much less expensive.

Appendix 2: