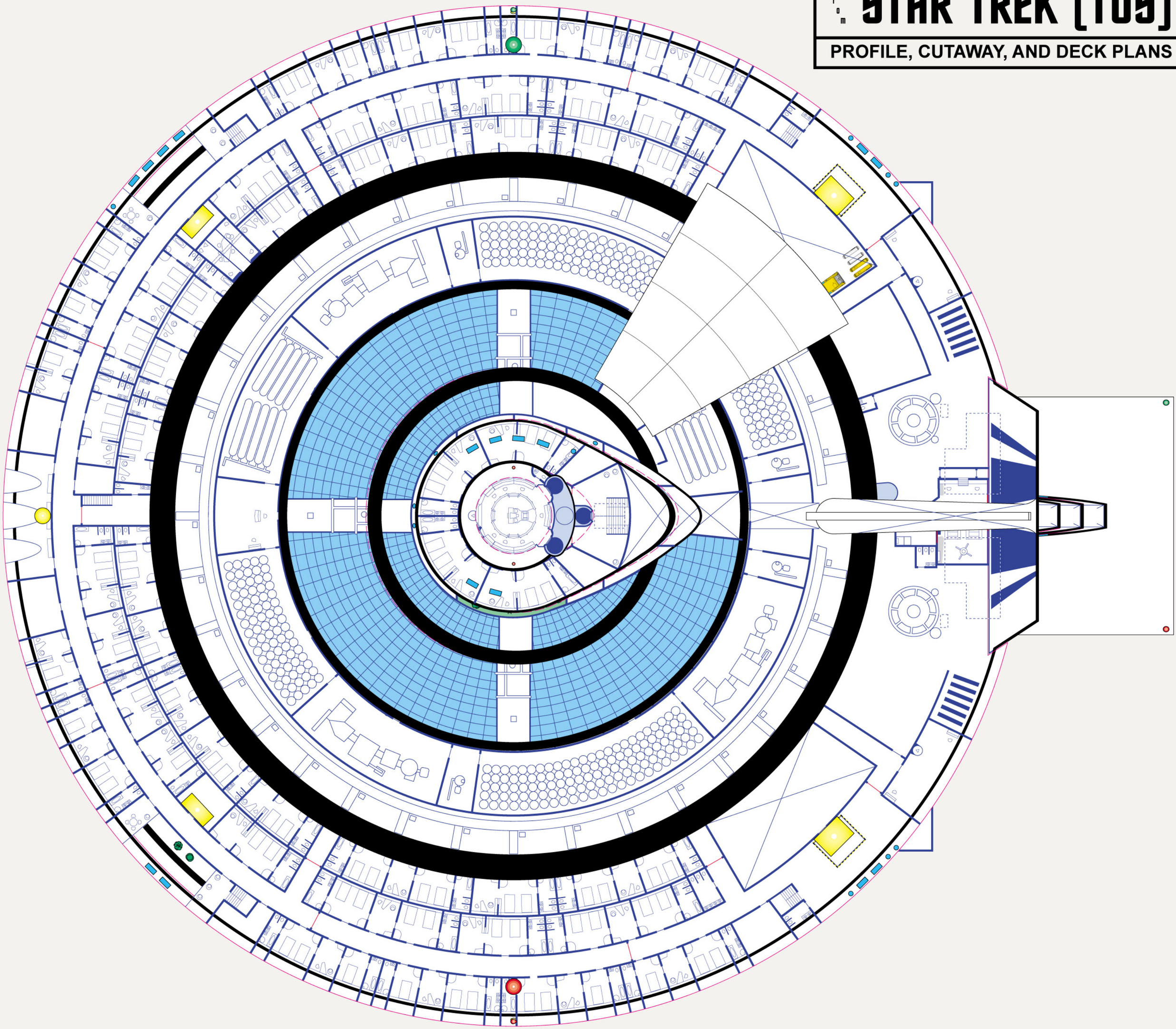
PTOLEMY TRANSPORT / TUG

from STAR TREK (TOS)

PROFILE, CUTAWAY, AND DECK PLANS



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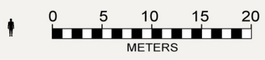
STAR TREK - PTOLEMY-CLASS TRANSPORT / TUG

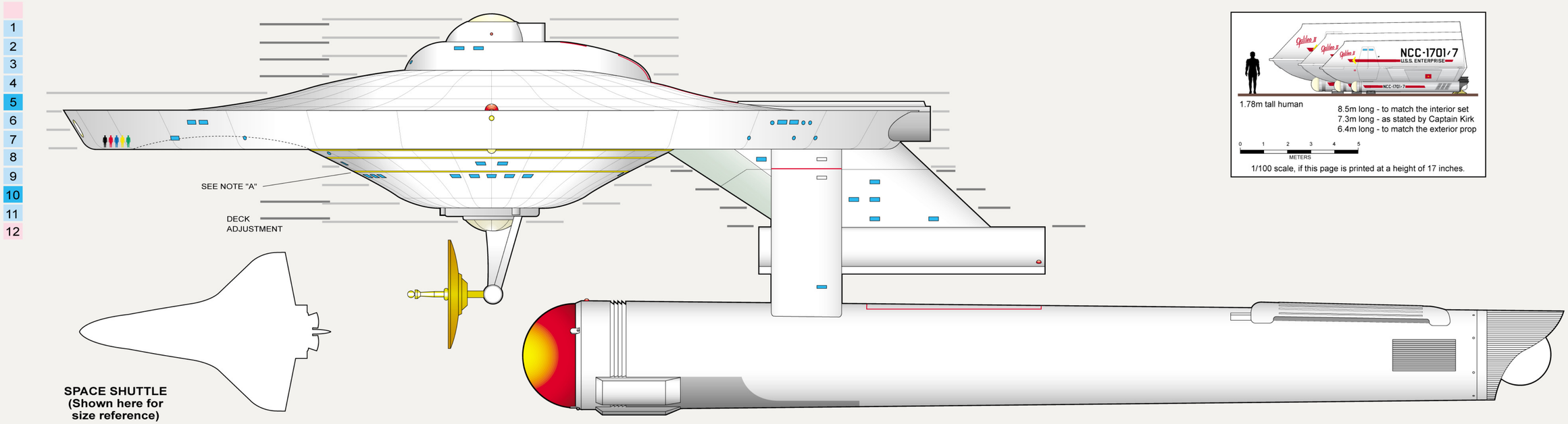
LAYOUT: PORT PROFILE PAGE 1 of 19

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BACKGROUND HISTORY

This project is an extrapolation of the U.S.S. ENTERPRISE drawings developed in the year 2020. Those drawings were governed by 3 criteria:
(1) The 11-foot-2.08-inch (3.4-meter) studio model,
(2) The Writer's Guide, and
(3) The 79 episodes plus the original pilot.
There are no such criteria to guide these drawings, but the basic design philosophy is to complete the ships Franz Joseph (FJ) developed for his Technical Manual in the same style as his Heavy Cruiser blueprints. The goal is to try and fit all the components inside the hull. But what are "all the components"? What are the roles of "Tugs" and "Transports" in the STAR TREK universe?

Historically, a "Transport" was a type of ship used especially for taking soldiers or military supplies from one place to another.

A "Tugboat" or "Tug" was a type of vessel that maneuvered other vessels by pushing them with direct contact or pulling them with a tow line. The vessels being moved are restricted (for one reason or another) in their ability to maneuver on their own. Tugboats are powerful for their size and strongly built.

In Starfleet, a "Transport" ship has a limited role, similar in function to a shuttle (but much larger) designed to carry people or supplies. The Federation separates "Transport" ships into two categories: commercial and non-commercial.

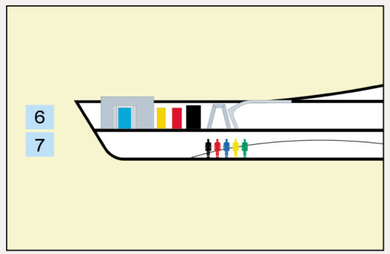
A "Tug" (or towing vessel) is a starship specialized for towing other starships or similarly large objects with tractor beams.

The Transport / Tug is basically a cargo ship, and as such, it does not deviate from established routes. With a properly configured cargo container, these ships have a longer duration (time-wise) than many other classes. However, they are not heavily armed. Should these ships ever be attacked, they have only two Phaser Banks. The ships have an energy surplus which can be directed to deflectors and shields. It is this energy surplus which led to the Surya-class and Avenger-class designs.

This layout retains the lines as established by Franz Joseph. It could be argued that the Hangar Bay doors are not visible in the FJ drawings because their outlines follow the Deflector Grid lines. This FJ design appeared in the movies on various displays on the Bridge of the U.S.S. ENTERPRISE.

CONSTRUCTION NOTES

As with my Heavy Cruiser plans, I started at the edge of the primary hull (see image below), where the height of 2 decks, the thickness of 1 floor, and the thickness of 2 hulls have to fit in this part of the saucer.



In CHARLIE X we saw how thick the walls are and also what is in the walls. The DESILU plans show walls that are 1 foot (0.3 meters) thick and sometimes even thicker. I decided to make all walls, decks, and hulls 1 foot thick, never thinner. In a few places, the walls are even thicker.

This leaves a ceiling height of 8 feet (2.44 meters) for each level.

The one set piece (reminiscent of a ship's rib - often seen in the Briefing Room) does not quite fit. However, all the other details (doors, openings, etc) do fit (see image at left). I consider the trapezoidal openings to be Isolation Doors ... in case of hull breaches, damage control, intruder alerts, etc.

In the profile drawing (at the top of this page) the light grey horizontal lines show the initial deck locations. They represent a constant 8 foot ceiling throughout the entire ship.

I built them upwards and downwards from my starting point, Deck 6 and 7. However, this makes the Bridge too high, and Deck 11 too low. The dark grey horizontal lines show the adjusted deck locations. The resultant space between Dorsal Deck 8 and Dorsal Deck 9 becomes the "Separation Plane". On Constitution-Class ships this space is where I placed the Rear Landing Leg. The two triangular patterns on the underside of the Primary Hull are the Front Landing Legs, but on this class of ship, they were removed and egress hatches were installed.

The "Separation Plane" is a relic from the Constitution, Saladin, and Hermes classes of ships. It does not make sense to have disconnection equipment located on Dorsal Deck 8 and Dorsal Deck 9 of this class of ship. That equipment was removed. However, there is disconnection equipment located in each engine pylon.

GENERAL NOTES

Are the wide steps in Engineering considered to be "stairs"? Are the steps on the Bridge considered to be "stairs"?
Perhaps stairs do not appear in any episodes, but that does not mean they do not exist in Starfleet ships. Therefore:
1. After engine nacelle disconnection and an emergency landing, stairs on Decks 4, 3, and 2 lead up to the hatch, thus allowing the crew to leave the ship quickly.
2. Each of the 2 Recreation Rooms on Deck 7 have balconies on Deck 6. Those balconies have stairs that lead down to their respective Recreation Rooms.
3. The two Cargo Operations areas on Deck 7 have wide stairs as well as cargo lifts.
4. Stairs connect the two levels of the Deflector Equipment at the front of the hull.

Aside from these stairs, the rectangular ladders (within rectangular alcoves) and the triangular ladders (within circular alcoves) supplement the turbo-elevator system. If that system fails, or in some other emergency, ladders alone would not be very efficient; it is easier to carry something up stairs than up a ladder.

There are external features that do not need to be marked: hatches for the Phasers, hatches for the Photon Torpedo Launchers, and the Primary Hull / Warp Engine disconnection line, to name a few.
These drawings attempt to make sense of the markings that ARE visible on the studio model of the ENTERPRISE, all of which is then extrapolated onto the Transport / Tug.

More notes relevant to each deck appear on the following pages.

Contradictions and errors exist within the episodes. I am sure 100% continuity is not possible.

I hope these pages provide you with some pleasure, information, and ideas for contemplation / consideration.

If I missed something, please let me know.

Jim Botaitis
jbot@rogers.com
July 2020

STAR TREK - PTOLEMY-CLASS TRANSPORT / TUG

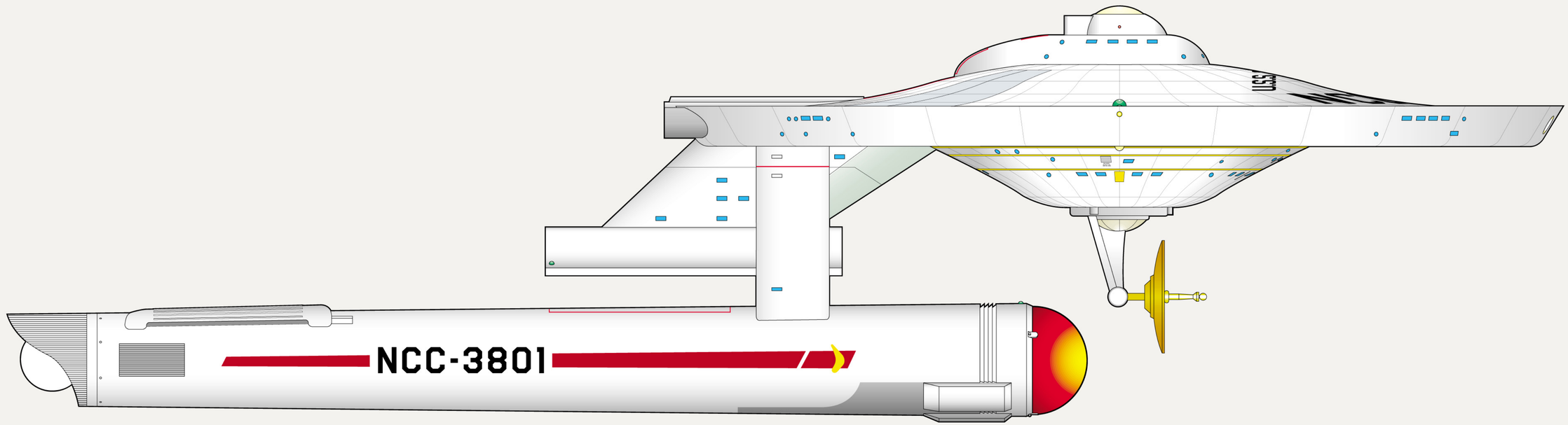
LAYOUT: STARBOARD PROFILE

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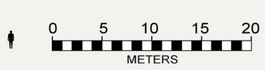
STAR TREK - PTOLEMY-CLASS TRANSPORT / TUG

LAYOUT: TOP

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STAR TREK - PTOLEMY-CLASS TRANSPORT / TUG

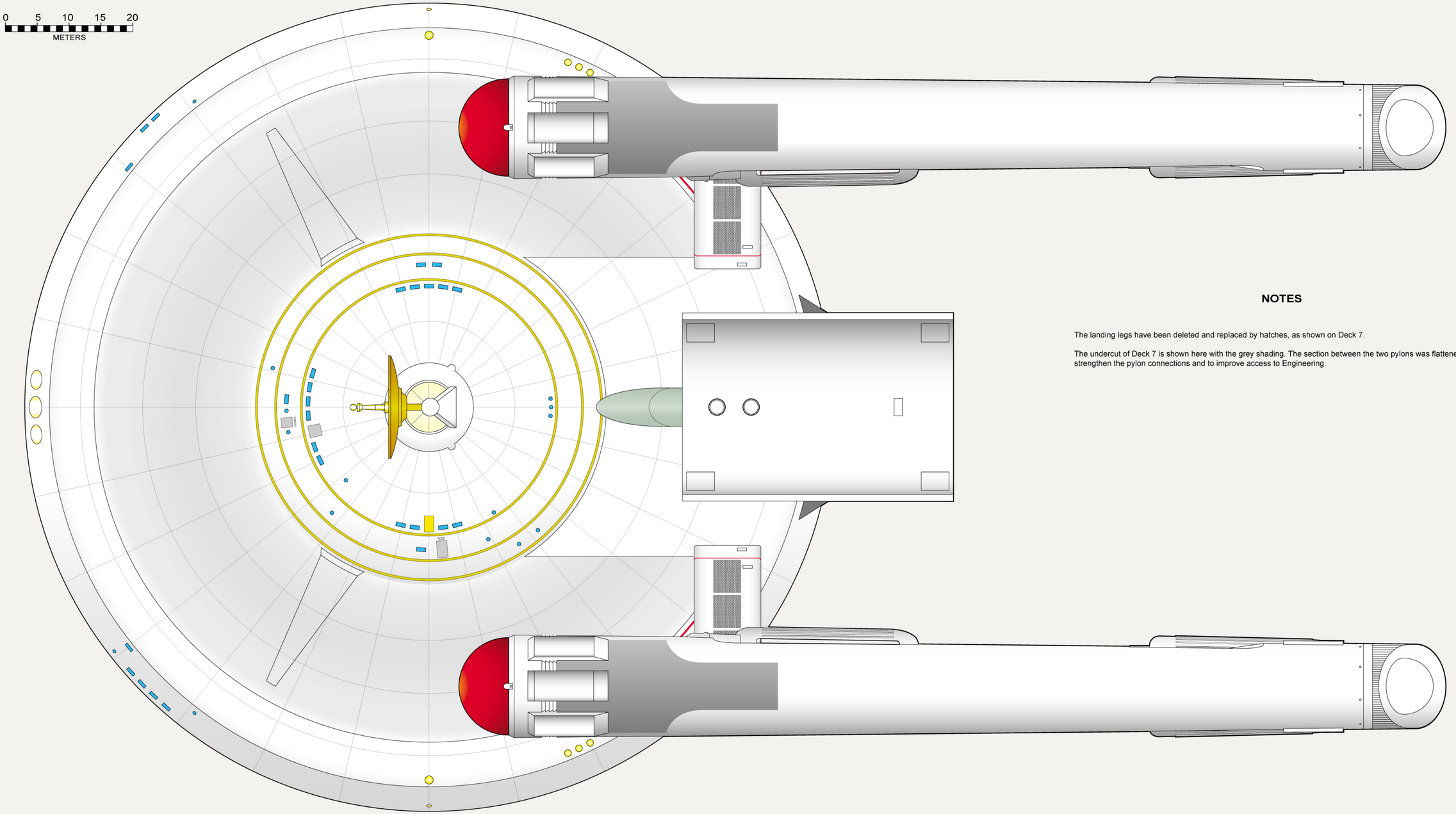
LAYOUT: BOTTOM PAGE 4 of 19

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0 5 10 15 20
METERS



NOTES

The landing legs have been deleted and replaced by hatches, as shown on Deck 7.

The undercut of Deck 7 is shown here with the grey shading. The section between the two pylons was flattened to strengthen the pylon connections and to improve access to Engineering.

STAR TREK - PTOLEMY-CLASS TRANSPORT / TUG

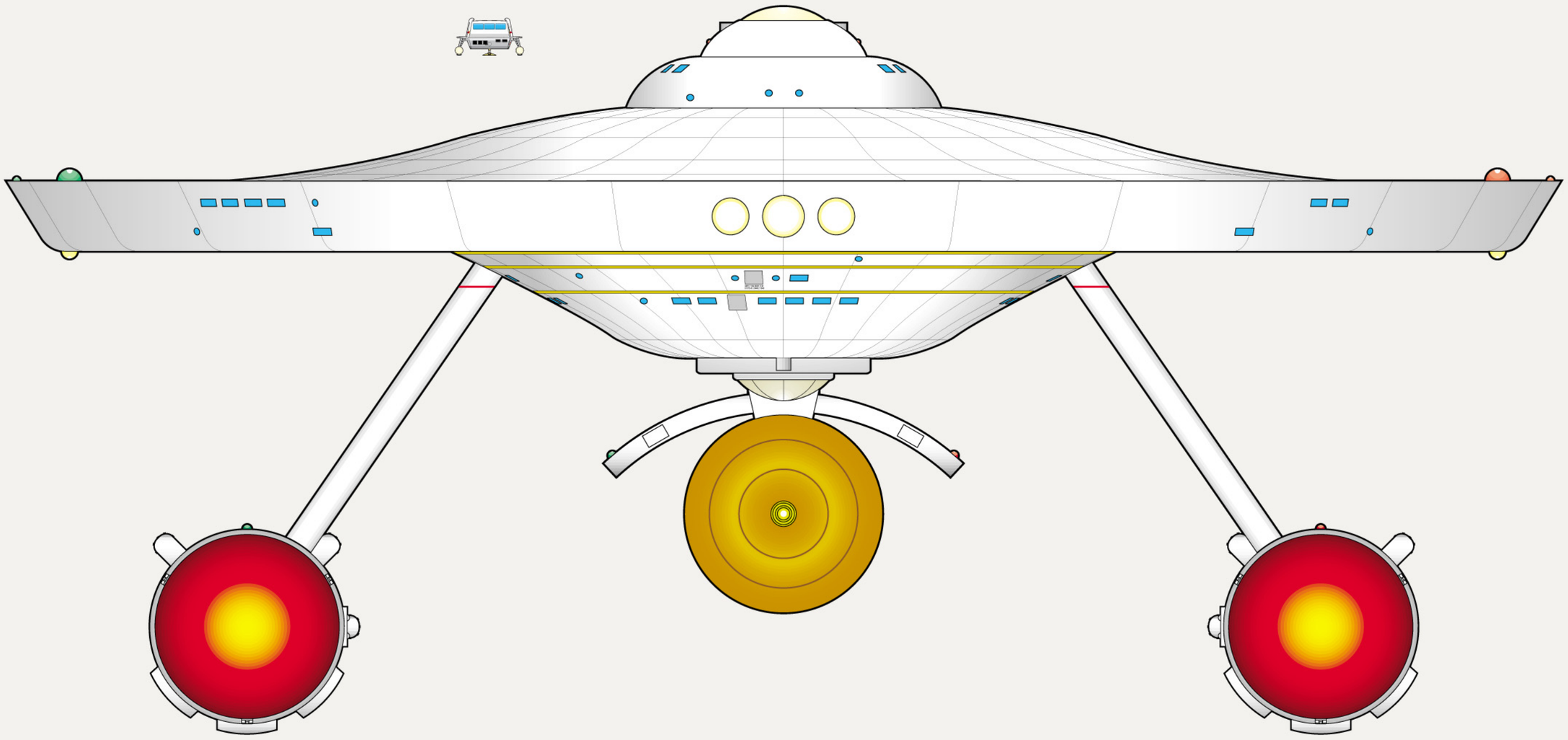
LAYOUT: FRONT and REAR **PAGE 5 of 19**

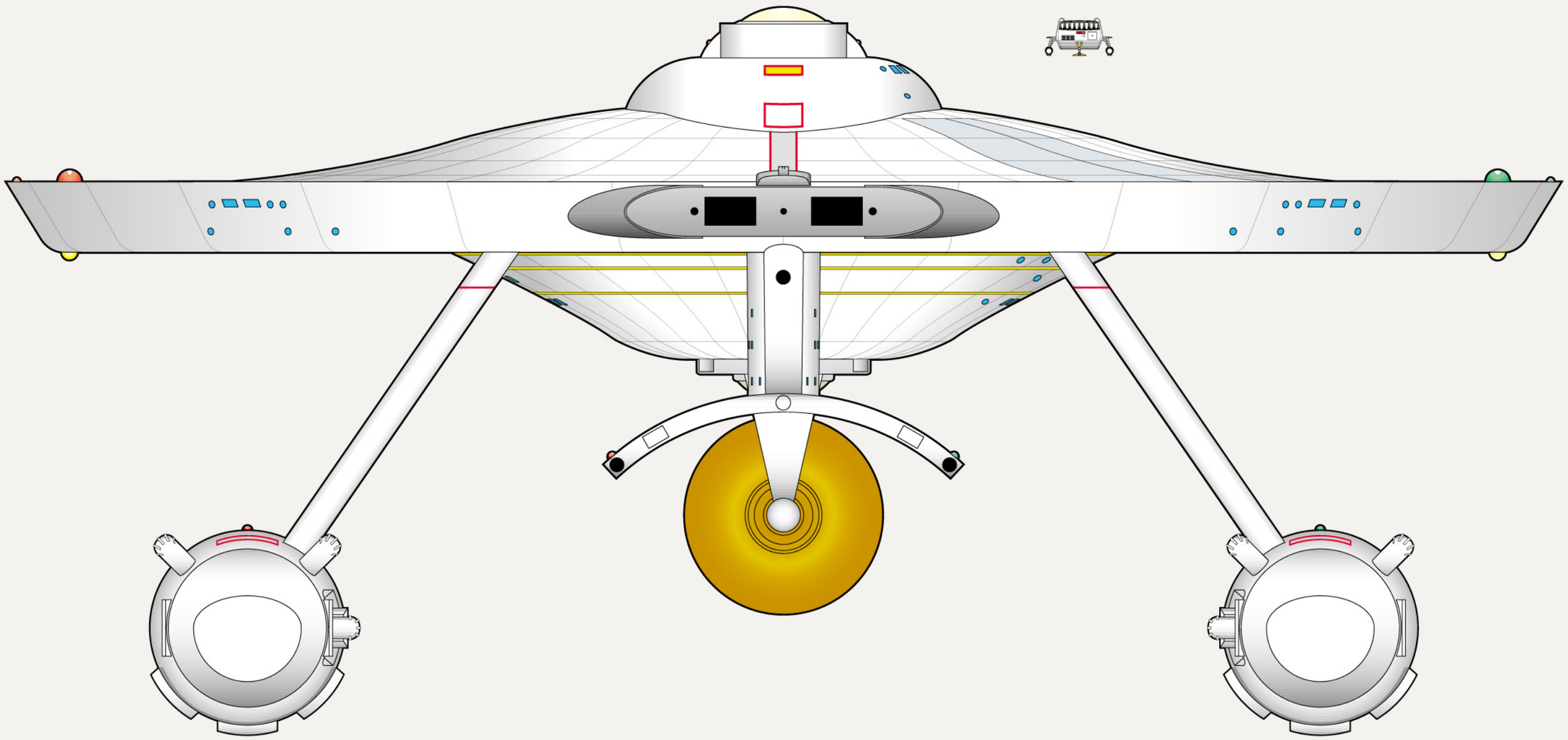
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0 5 10 15 20
METERS





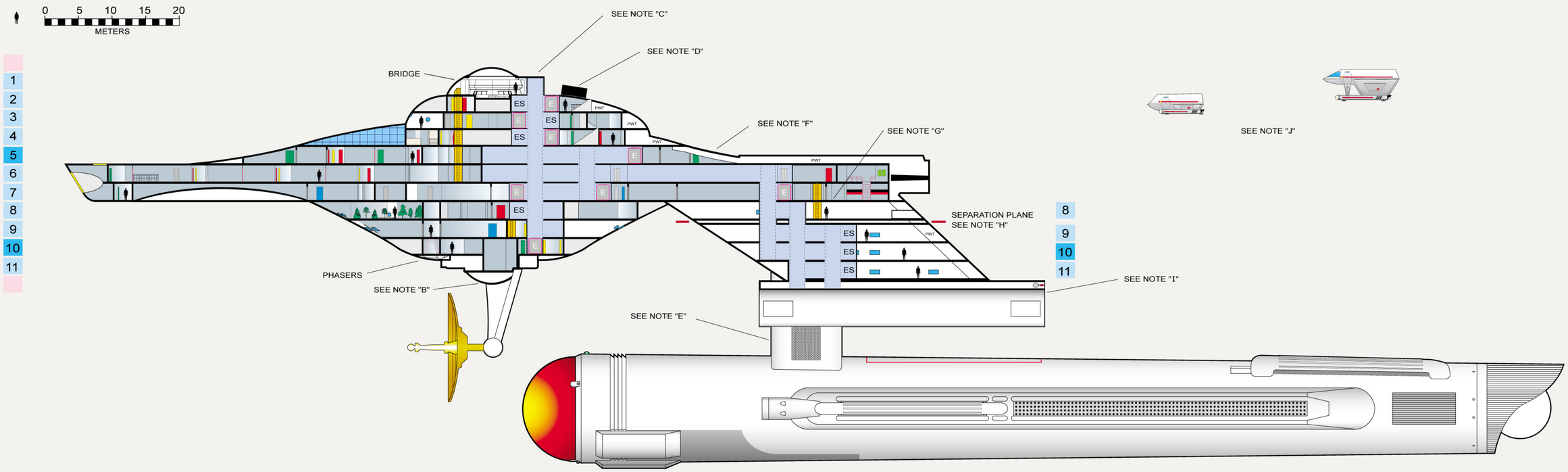
STAR TREK - PTOLEMY-CLASS TRANSPORT / TUG

LAYOUT: PORT CUTAWAY — PAGE 6 of 19

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NOTES

A SEE PAGE 1

These 3 pale gold-coloured recessed rings were part of the Tractor Beam system. See Page 17 for more information.

B

The Tractor Beam Emitter has been relocated to the rear face of the Docking Collar.

C

The height of the bump behind the Bridge has been increased to allow a turbo-elevator to fit. See Page 8 for more information.

D

This is the "Emergency Crew Escape" hatch, to be used after the Primary Hull has detached from the Warp Engine and made an emergency landing.

E

The details of this pylon and engine are shown on Page 7.

F

Phasers at this location (not visible in this cutaway view) cover the rearward dorsal quadrant. See Page 12 for more information.

G

The undercut on the Primary Hull affects Deck 7. However, the hull between the two pylons was flattened. Therefore the floor in Warp Engineering is flat. This is shown on Deck 7 and discussed on Page 12.
It is also shown and discussed on Page 4.

H

The "Separation Plane" is a relic from the Constitution, Saladin, and Hermes classes of ships. It is not needed on this class of ship. However, there is a "Separation Plane" in each engine pylon.

I

The Docking Collar contains 2 of the 3 Tractor Beam Controllers and the Tractor Beam Emitter. It also contains Docking Clamps, Turbo-elevator connection points, Magnetic Locks, and a Piping / Wiring Trunk connection point. See Page 18 for more information.

J

The Shuttlecraft used here measure 28 feet (8.5 meters) in length, as suggested by the size of the interior set. The studio prop was 21 feet (6.4 meters) which was about 3/4 of the intended size. In one episode of STAR TREK, Captain Kirk mentioned the Shuttlecraft is 24 feet (7.3 meters) long.

Special thanks to Dana E. Lubich for permission to display the Cargo Shuttle design which Dana developed 30 years ago.

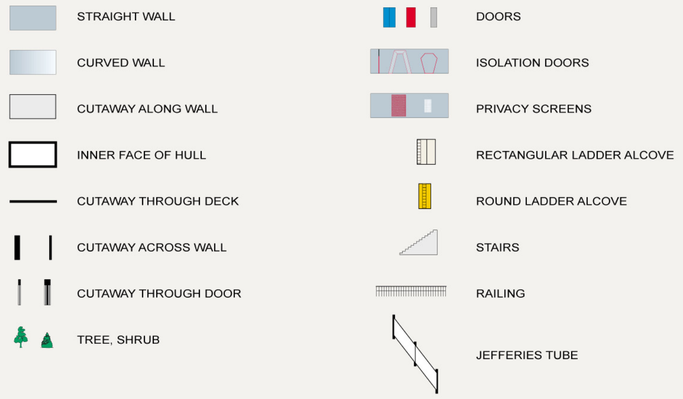
K SEE PAGE 7

The Matter-Antimatter Reaction Chamber is heavily shielded and recessed within the Warp Engine nacelle.

L SEE PAGE 7

Antimatter is created / stored in the engine nacelles. In an emergency, the red-outlined panels swing open and the antimatter is ejected up and to the rear.

CUTAWAY SYMBOLS



STAR TREK - PTOLEMY-CLASS TRANSPORT / TUG

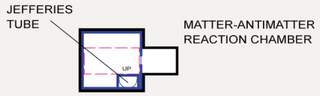
LAYOUT: STARBOARD ENGINE PAGE 7 of 19

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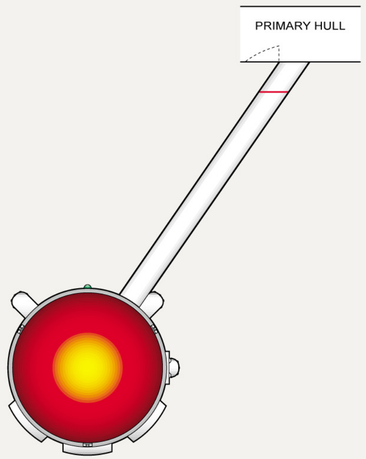
DRAWN BY: Jim Botaitis

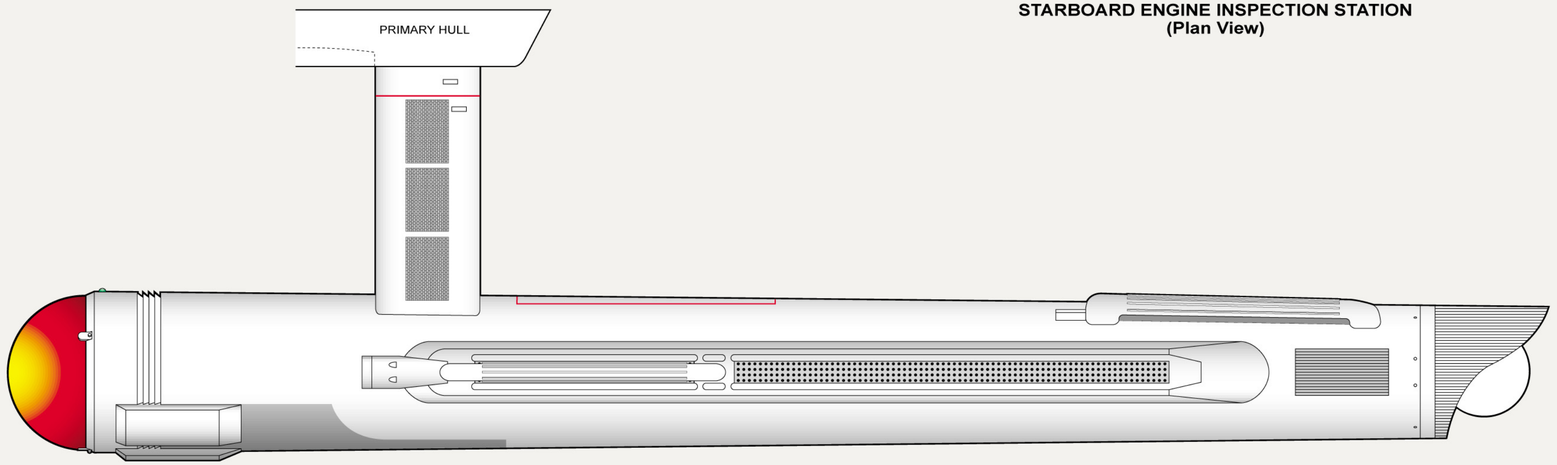
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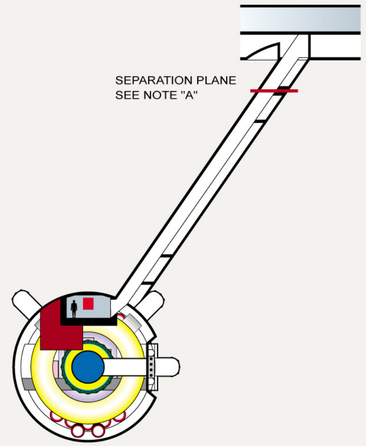




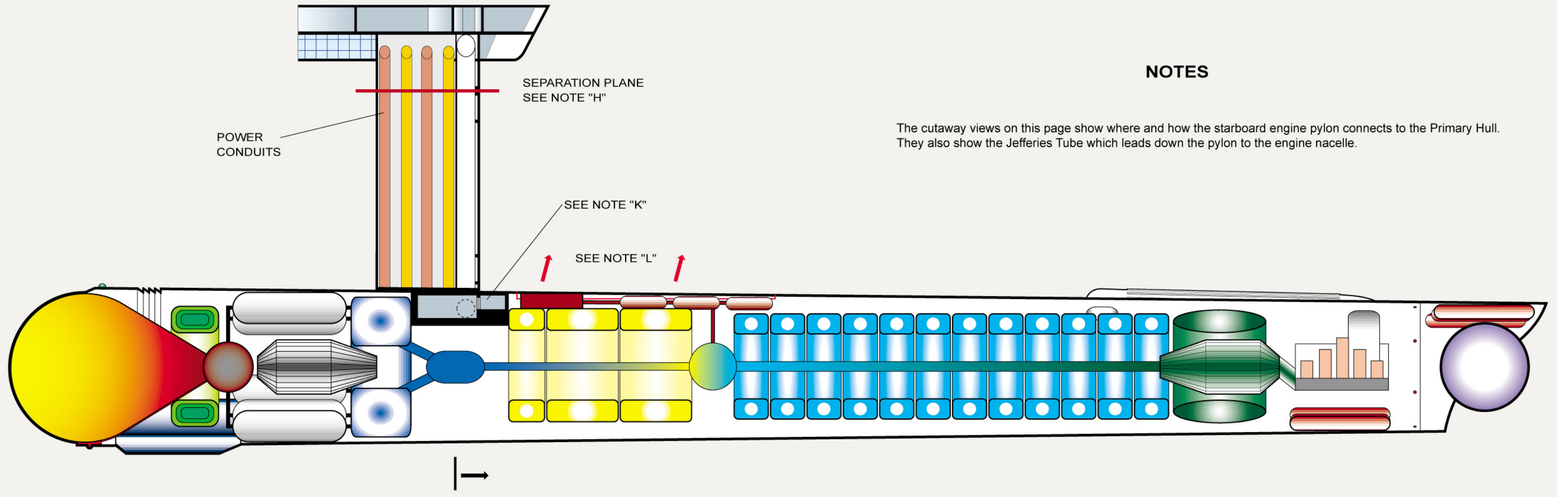
STARBOARD ENGINE INSPECTION STATION (Plan View)







STARBOARD ENGINE INSPECTION STATION (Cross-section, Looking Aft)



STARBOARD ENGINE INSPECTION STATION (Cross-section, Looking Aft)

NOTES

The cutaway views on this page show where and how the starboard engine pylon connects to the Primary Hull. They also show the Jefferies Tube which leads down the pylon to the engine nacelle.

STAR TREK - PTOLEMY-CLASS TRANSPORT / TUG

LAYOUT: DECK 1 (BRIDGE)

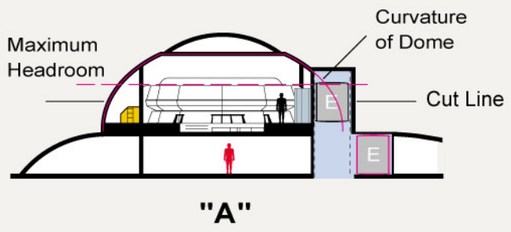
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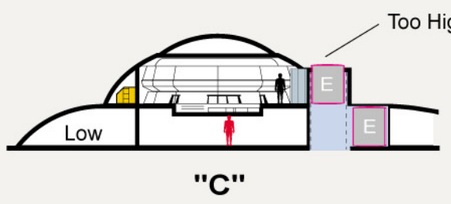


ORIGINAL BRIDGE

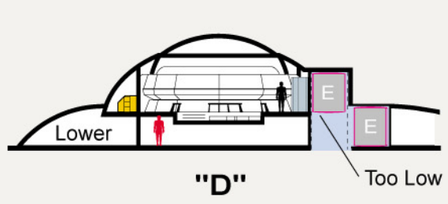


"A"

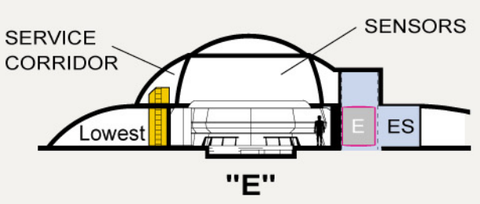
REVISED BRIDGE (3 possibilities)



"C"



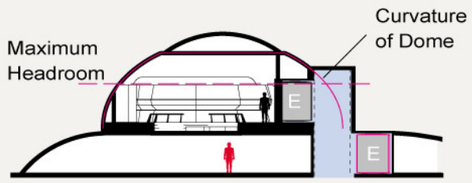
"D"

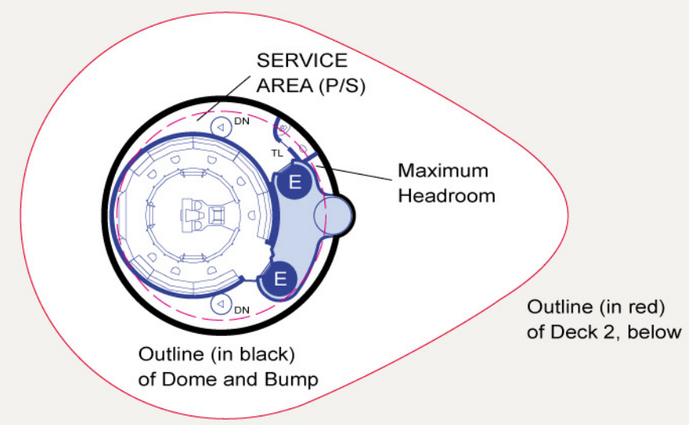


"E"

NOTES

ORIGINAL BRIDGE
The Bridge of the U.S.S. ENTERPRISE was intended to be under the dome on the studio model, as per the special effect in the first scene of THE CAGE. The original dome was taller. The bump aft of the dome

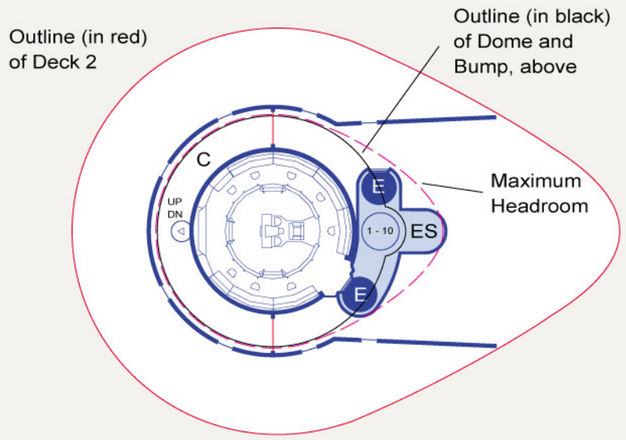




DECK 1: ORIGINAL BRIDGE ("B")

ORIGINAL BRIDGE (continued)
was also taller. A turbo-elevator car easily fits inside the bump even if the recessed floor of the Bridge is above the ceiling of Deck 2 (see "A"). However, the curvature of the dome does not allow a lateral turbo-elevator tube to fit behind the Bridge; the car has to remain inside the bump. Therefore, the Bridge has to be rotated 36° counter-clockwise.

A forward-facing Bridge CAN fit (see "B") but it has to be shifted toward the front. It is the only way a turbo-elevator car can fit under the curvature of the dome. This shift allows a lateral turbo-elevator tube and even a spare turbo-elevator car to fit behind the Bridge.



DECK 1: REVISED BRIDGE ("E")

REVISED BRIDGE (Low)
When the shape of the Bridge on the model was modified, material was removed from the bottom of the dome and the bump. The lower curvature of the dome's ceiling means the Bridge cannot be shifted forward. Placing it back in the middle means there is no space for a lateral turbo-elevator tube behind the Bridge, so the Bridge has to be rotated 36° to ensure the turbo-elevator car remains inside the bump. However, the material that was removed reduced the height of the bump too much. A turbo-elevator car no longer fit even if the recessed floor of the Bridge is dropped below the ceiling of Deck 2 (see "C").

REVISED BRIDGE (Lower)
If the main floor of the Bridge is also dropped below the ceiling of Deck 2, the turbo-elevator car does finally fit inside the bump. But, this makes the ceiling for most of Deck 2 too low. The Bridge is still rotated 36° but now the turbo-elevator car waiting inside the bump (to serve the Bridge) is too low, obstructing the shaft and preventing service to Deck 2 (see "D").

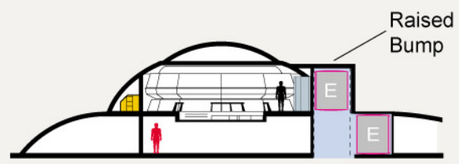
REVISED BRIDGE (Lowest)
If the Bridge is lowered all the way to Deck 2 a lateral turbo-elevator tube and even a spare turbo-elevator car fits (see "E"). But what of the dome? It could contain sensors and a service corridor . . . and now the Bridge is not as vulnerable, so all this might be a good thing.

In at least one episode, a character left the Bridge and a moment later a turbo-elevator car was available for another character to leave. Spare turbo-elevator cars must be stored somewhere close, very close.

The Bridge shown in "E" is used only in the U.S.S. ENTERPRISE Heavy Cruiser plans.

ALTERNATE BRIDGE CONFIGURATIONS
A simpler, more practical solution is to raise the bump slightly (see "F"). This is a good start. Extending the bump to the port side, or to both sides, is even better. Now a lateral turbo-elevator tube fits behind the Bridge.

The "Auxiliary Door" is optional, added here to satisfy what we see in the Animated Series. Think of it as being hidden behind the display panel to port of the main viewing screen.



MODIFIED BUMP ("F")

Such changes allow for smoother turbo-elevator operations, turbo-elevator storage spaces closer to the Bridge, and other (better, more logical) Bridge configurations. To the right are three such designs.
One of these is used in each of my starship blueprint sets.

v1.
A storage space for spare turbo-elevators exists to starboard. The bump is much bigger but is symmetrical.

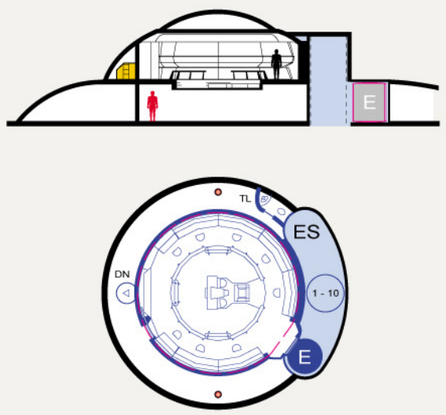
v2.
This second design minimizes the change to the size and shape of the bump but it is now asymmetrical.

v3.
The turbo-elevator storage space has been replaced by a second access

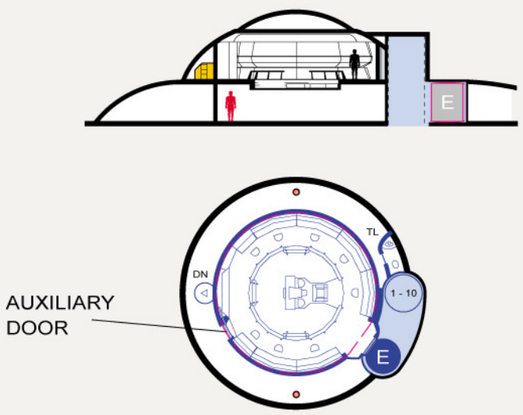
v3. (continued)
point for the Bridge. The stations have been re-arranged around the Bridge, but overall, one station has to be deleted.

In all these Bridge designs, access to the Service Corridor is via removable panels, or the auxiliary door, or the ladder.

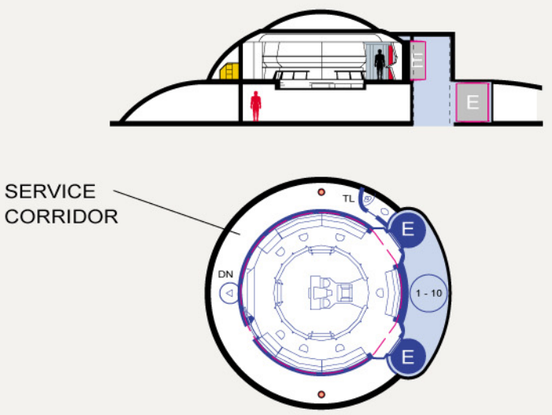
In all these alternate versions, the Bridge faces forward ... as it was always meant to be (in my humble opinion).



DECK 1: BRIDGE (v1)



DECK 1: BRIDGE (v2)



DECK 1: BRIDGE (v3)

STAR TREK - PTOLEMY-CLASS TRANSPORT / TUG

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DRAWN BY: Jim Botaitis

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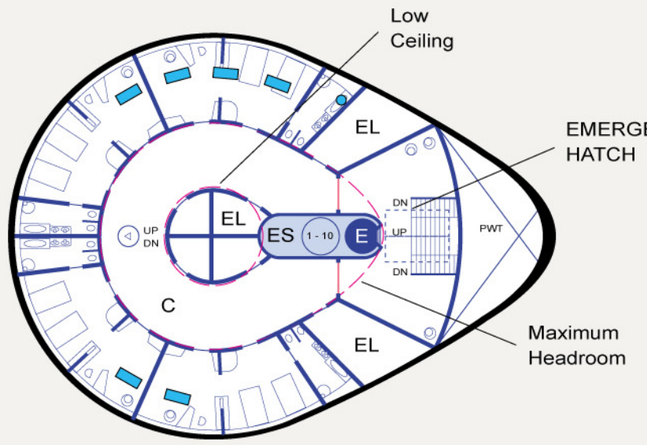
NOTES

DECK 2
Even after adjusting the spacing of the top 4 decks, the recess in the center of the Bridge still affects the ceiling of Deck 2. The ceiling in the center of Deck 2 is so low that it can only be used for storage. That area is labeled EL (Environmental Lockers) and contains full spacesuits, partial suits, air-testing kits, etc ... useful if exiting via the hatch.

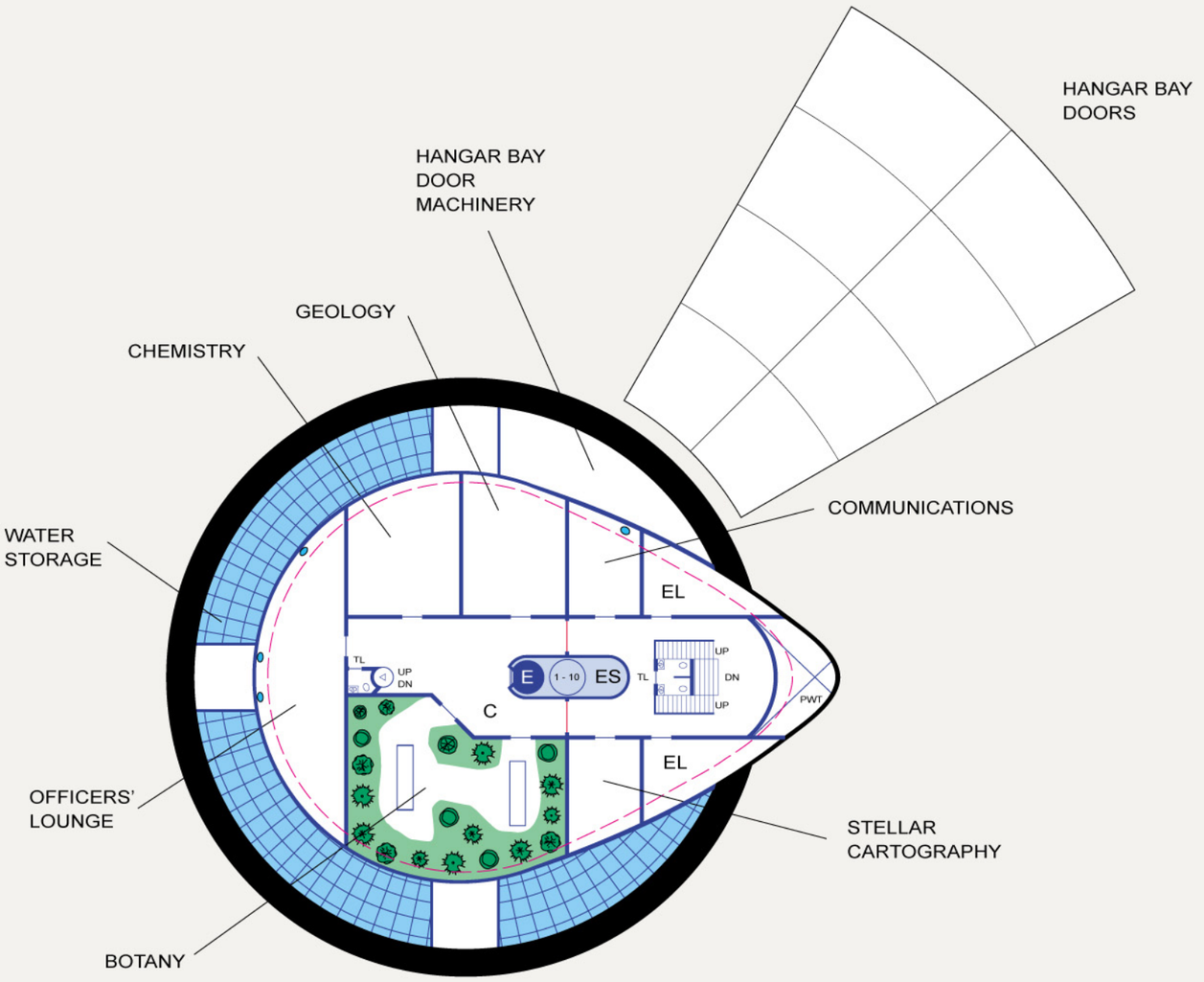
In at least one episode, a character left the Bridge and a second later a turbo-elevator was available for another character to leave the Bridge. Spare turbo-elevators must be stored somewhere nearby, so one such storage spot is on Deck 2.

The V.I.P. Quarters are set aside for dignitaries, special guests, etc. at the captain's discretion.

Stairs allow many people to exit the ship quickly. I can't imagine people trying to exit a ship (especially in an emergency situation) by using ladders. We never saw stairs but that does not mean stairs do not exist. The location of the hatch for these stairs coincides with an external marking on the studio model of the U.S.S ENTERPRISE.



DECK 2: V.I.P. QUARTERS



DECK 3: SCIENCES / LOUNGE

DECK 3
Stairs for the emergency exit on Deck 2 start on Deck 4 and continue up from there past this level. On either side are storage spaces (labeled EL) and contains full spacesuits, partial suits, air-testing kits, etc ... useful if exiting via the hatch on Deck 2.

An Officers' Lounge occupies the forward part of this deck.

Some Science Labs will exist regardless of the exact role or class of the ship. They could be reconfigured depending on the mission requirements.

Water storage at the rear (as is typical on Constitution-class ships) has been replaced with machinery for the Hangar Bay Doors. The doors are flush with the hull. To open, they move up and then slide to either side. The doors are wider than the actual space set aside for the Hangar Bay.

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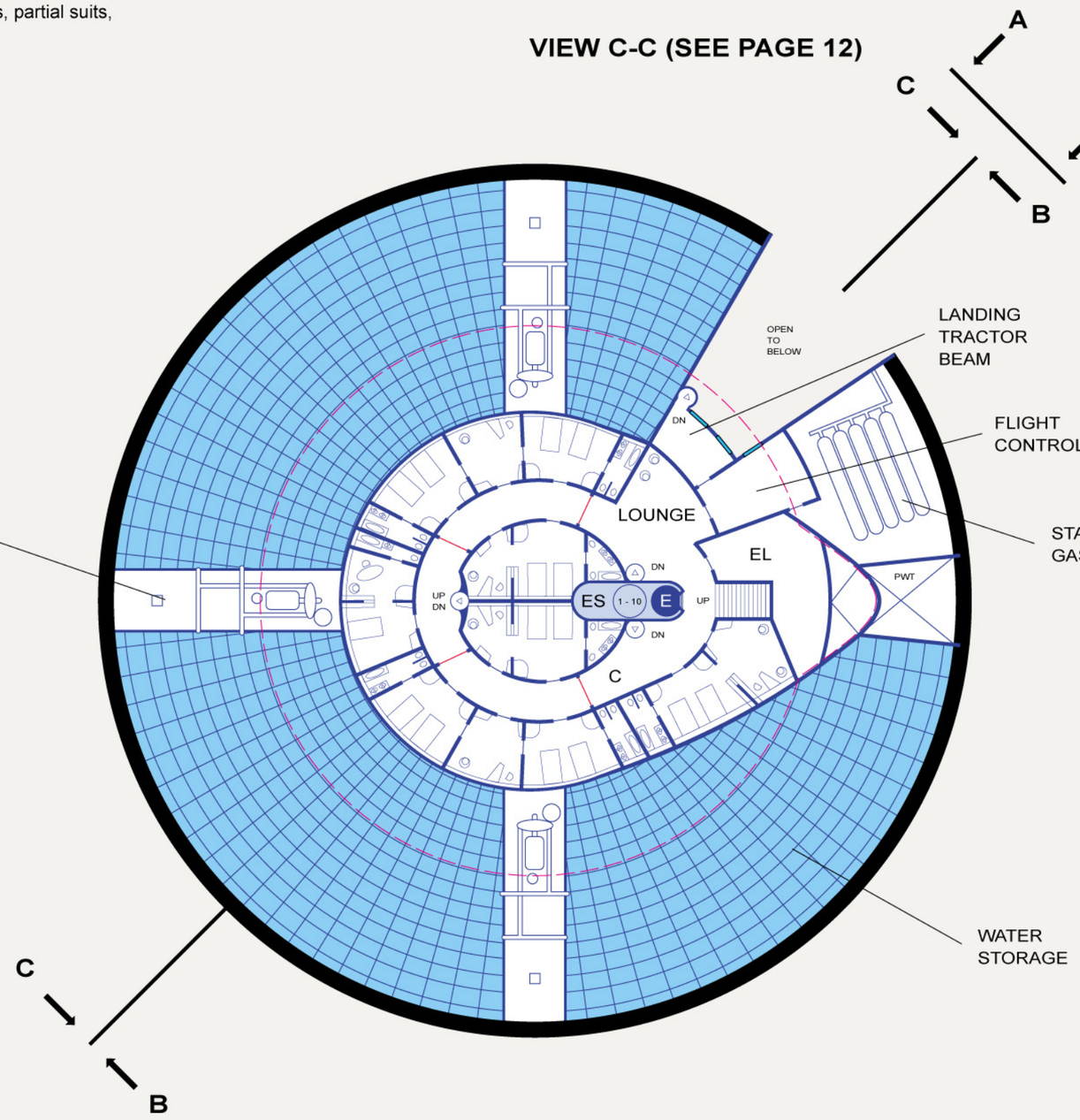
NOTES

DECK 4
The Hangar Bay extends from Deck 4 down to Deck 6.

Flight Control and the Landing Tractor Beam are located at the front of the Hangar Bay. A Ladder leads down to the Hangar Deck / Flight Deck.

The Standard Gases located here store air while the Hangar Bay doors are open to vacuum.

Stairs for mass exodus via the hatch on Deck 2 start on this deck. On each side is a storage space (EL). These could contain full spacesuits, partial suits, air-testing kits, etc ... useful if exiting via the top hatch.



DECK 4: JUNIOR OFFICERS' QUARTERS

All the Crew's Quarters in the Primary Hull are laid out in rings. The rings are labeled from the center outwards, starting with A, then B, then C, and so on.

Junior Officers' quarters are on Deck 4. The ship's complement is such that they don't have to share quarters with anyone else.

The ship could help with rescue missions, diplomatic missions, or help evacuate / transport colonists if such a need should ever arise.

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0 5 10 15 20
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NOTES

DECK 5
The layout of this deck is very similar to the FJ design for the Constitution-class ship. I adjusted the turbo-elevator shafts so that they are now exactly 120° apart. There is also one turbo-elevator storage space.

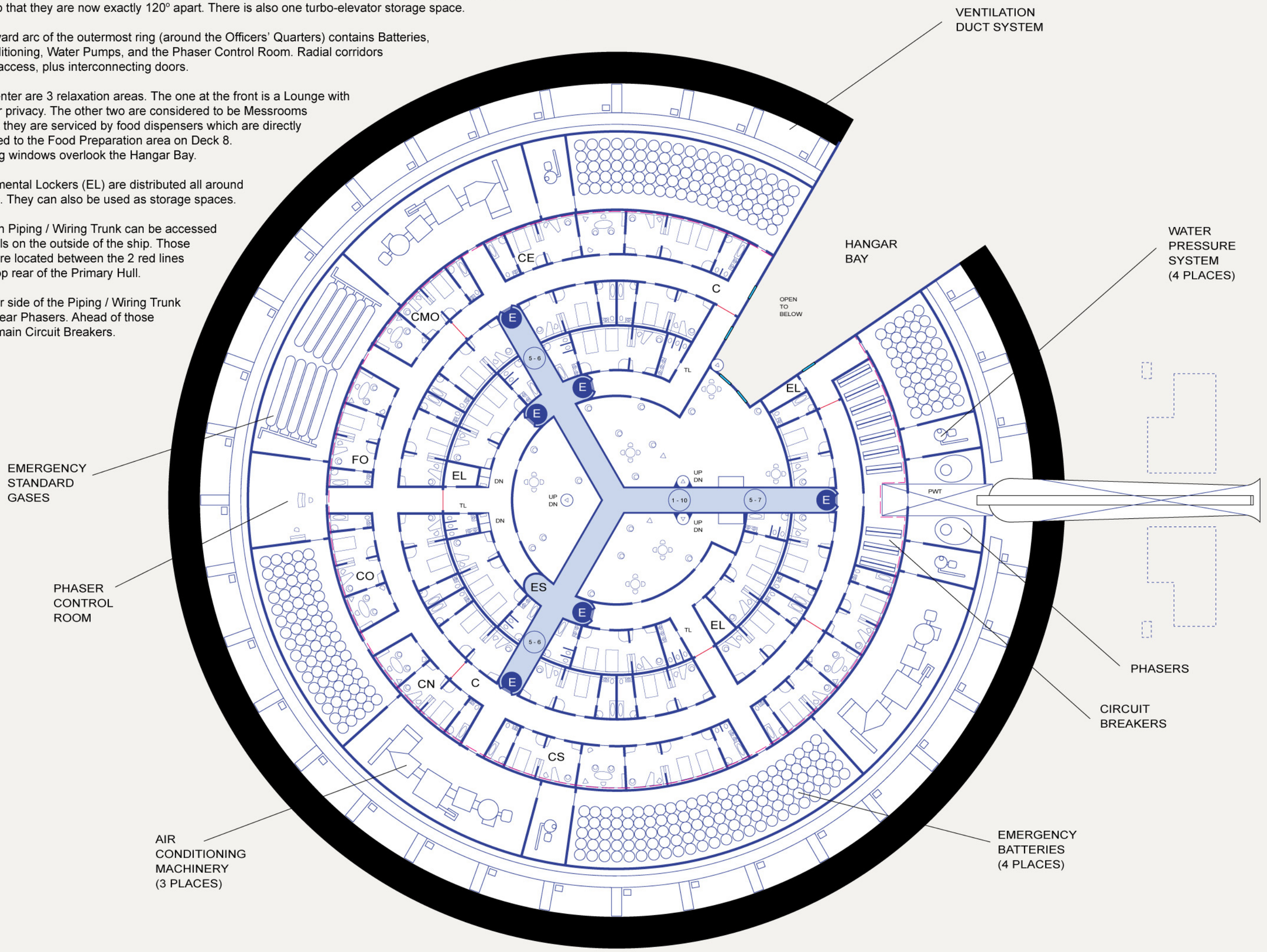
The forward arc of the outermost ring (around the Officers' Quarters) contains Batteries, Air Conditioning, Water Pumps, and the Phaser Control Room. Radial corridors provide access, plus interconnecting doors.

In the center are 3 relaxation areas. The one at the front is a Lounge with doors for privacy. The other two are considered to be Messrooms because they are serviced by food dispensers which are directly connected to the Food Preparation area on Deck 8.
Aft-facing windows overlook the Hangar Bay.

Environmental Lockers (EL) are distributed all around the deck. They can also be used as storage spaces.

The main Piping / Wiring Trunk can be accessed via panels on the outside of the ship. Those panels are located between the 2 red lines on the top rear of the Primary Hull.

On either side of the Piping / Wiring Trunk are the rear Phasers. Ahead of those are the main Circuit Breakers.



DECK 5: SENIOR OFFICERS' QUARTERS

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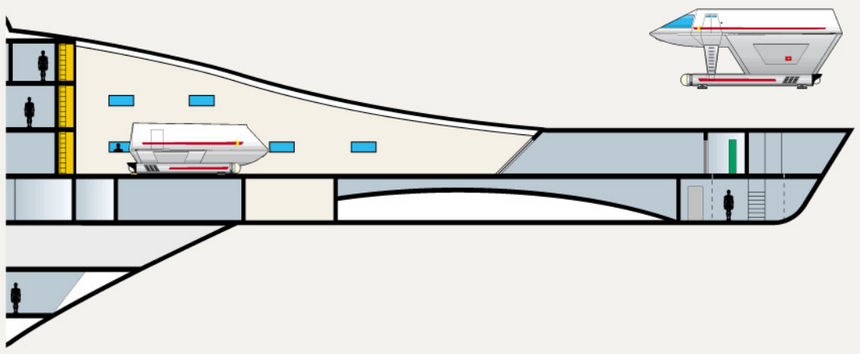
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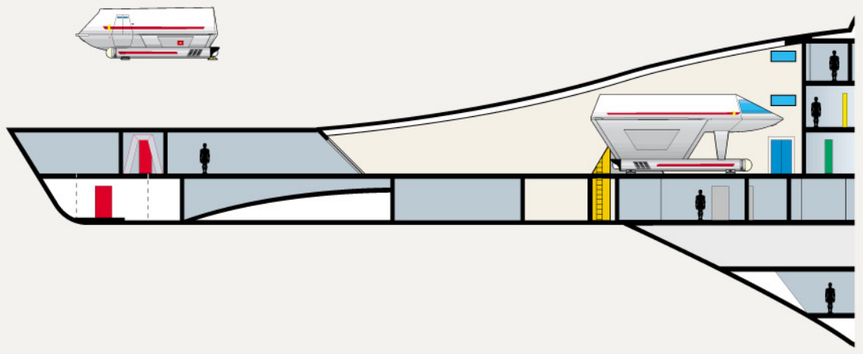
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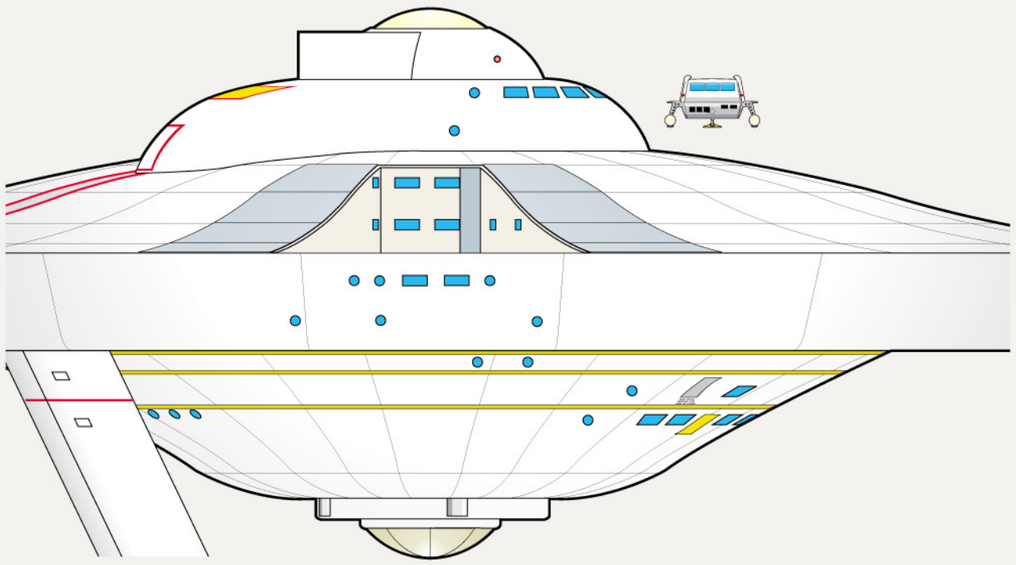
B-B



C-C



A-A



The Main Sensor Dish and its mounting have been deleted for clarity.

NOTES

Shuttlecraft maintenance occurs on the Flight Deck. Fuel and parts are stored on Deck 7, below and can be accessed via a ladder and a hatch in the deck.

There is no elevator platform for the shuttlecraft; the markings on the Flight Deck are for targeting / landing.

CARGO OPERATIONS

Cargo Operations is closely linked to Hangar Bay activities. Supplies can be unloaded in the Hangar Bay, taken to the Cargo Lift, then distributed to the Cargo Holds around the rim of Deck 7.
Cargo can also arrive via the Cargo Transporter on Deck 7.

NOTES

DECK 6
The layout of this deck is similar to the FJ design for the Constitution-class ship. I like the tri-radial symmetry. As on Deck 5, the turbo-elevator shafts are separated by 120°. I also added 4 more turbo-elevator storage spaces. This network is not as extensive as the FJ design; walking a few hundred feet or meters should not be an issue. Also, this network does not need to reach outward as much because it does not then drop down to Deck 7.

Over half of this deck is devoted to Crew Quarters. Most of the remaining space is filled by a Hangar Bay.

The windows around the edge of the Primary Hull governed the location of the two Recreation Rooms / Lounges. They have balconies (on Deck 6) which overlook the main level (on Deck 7). Stairs lead down from the balconies to each Lounge.
There are also stairs at the bow, behind the Deflector Equipment.

A Cargo Lift is located at the two aft window locations. Ahead of the starboard Cargo Lift / Cargo Hold is the Hangar Bay. Stairs are also located beside each Cargo Lift.

Fuel and parts are stored below the Hangar Bay for Shuttlecraft maintenance. They can be accessed via a ladder within the alcove. There is also a hatch in the deck for access.

In the center are 3 relaxation areas. The one at the front is a Lounge. The other two are Messrooms because they are serviced by food dispensers which are directly connected to the Food Preparation area on Deck 8.

Aft of the starboard Messroom is a Foyer leading to the Hangar Bay. To port of the Foyer is the main turbo-elevator shaft which continues to the rear. Machine shops are to port. Environmental Engineering and turbo-elevator maintenance are to starboard. The Engineering Computers are to port and starboard of Main Engineering.

Environmental Lockers (EL) or storage spaces are distributed all around the deck, mostly concentrated near the 4 large rectangular escape hatches in the ceiling (shown here in yellow).

DECK 7
The windows around the edge of the Primary Hull governed the location of the two Recreation Rooms / Lounges. They have balconies (on Deck 6) which overlook the main level (on Deck 7). Stairs lead up from each Lounge to the balconies.
There are also stairs at the bow, behind the Deflector Equipment.

Cargo Transporters and Cargo Lifts are located at the two aft window locations. Stairs are also located beside each Cargo Lift.

The grey area represents the concave cutout on the underside of the Primary Hull. This area could be used to store water, or fuel, or air, or more general cargo. I leave the area grey (for the most part) so as to clearly set it apart from the rest of the deck. The undercut was flattened in a rectangular area between the 2 pylons.

The center of this Deck contains the ship's Main Computers. The ring around the Computers contains Sickbay. Sickbay includes various labs, offices, and a post-surgery recovery area. Aft of the Main Computers is the machinery for the Food Conveyors. Aft of that machinery, to port, is a storage area for Medical Supplies, and to starboard, are fuel and parts for Shuttlecraft maintenance.

The ring around Sickbay contains the Armory, Briefing Room, Chapel, Brig, The Chief Engineer's Office, the Dilithium Energizer Station, a few other offices, and airlocks where the 2 Main Landing Legs used to be. Those were replaced with hatches for extra-vehicular activities. The ring also contains four Transporters (for 6 people) as well as two Emergency Transporters (for 22 people).

At the rear is Main Engineering. On either side are power conduits leading to the engine pylons, then down to the nacelles. Jefferies Tubes also lead down the pylons to the engines.

The port ladder ahead of Main Engineering leads up to the Emergency Manual Monitor. The starboard ladder provides access to the disconnection equipment on Decks 8 and 9.

STAR TREK - PTOLEMY-CLASS TRANSPORT / TUG

LAYOUT: DECK 6 **PAGE 13 of 19**

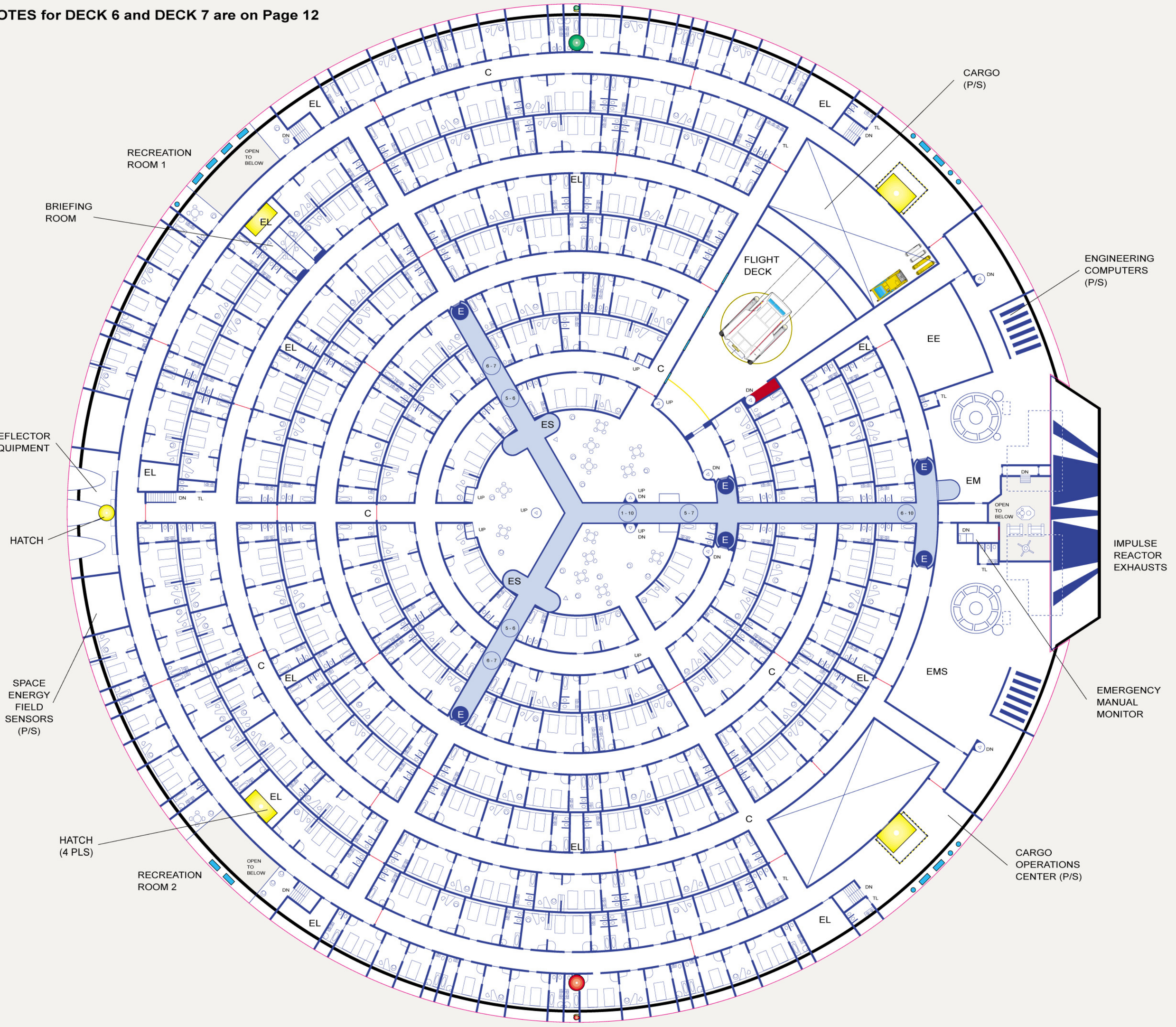
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0 5 10 15 20
METERS

NOTES for DECK 6 and DECK 7 are on Page 12



DECK 6: CREW'S QUARTERS / ENGINEERING

STAR TREK - PTOLEMY-CLASS TRANSPORT / TUG

LAYOUT: DECK 7

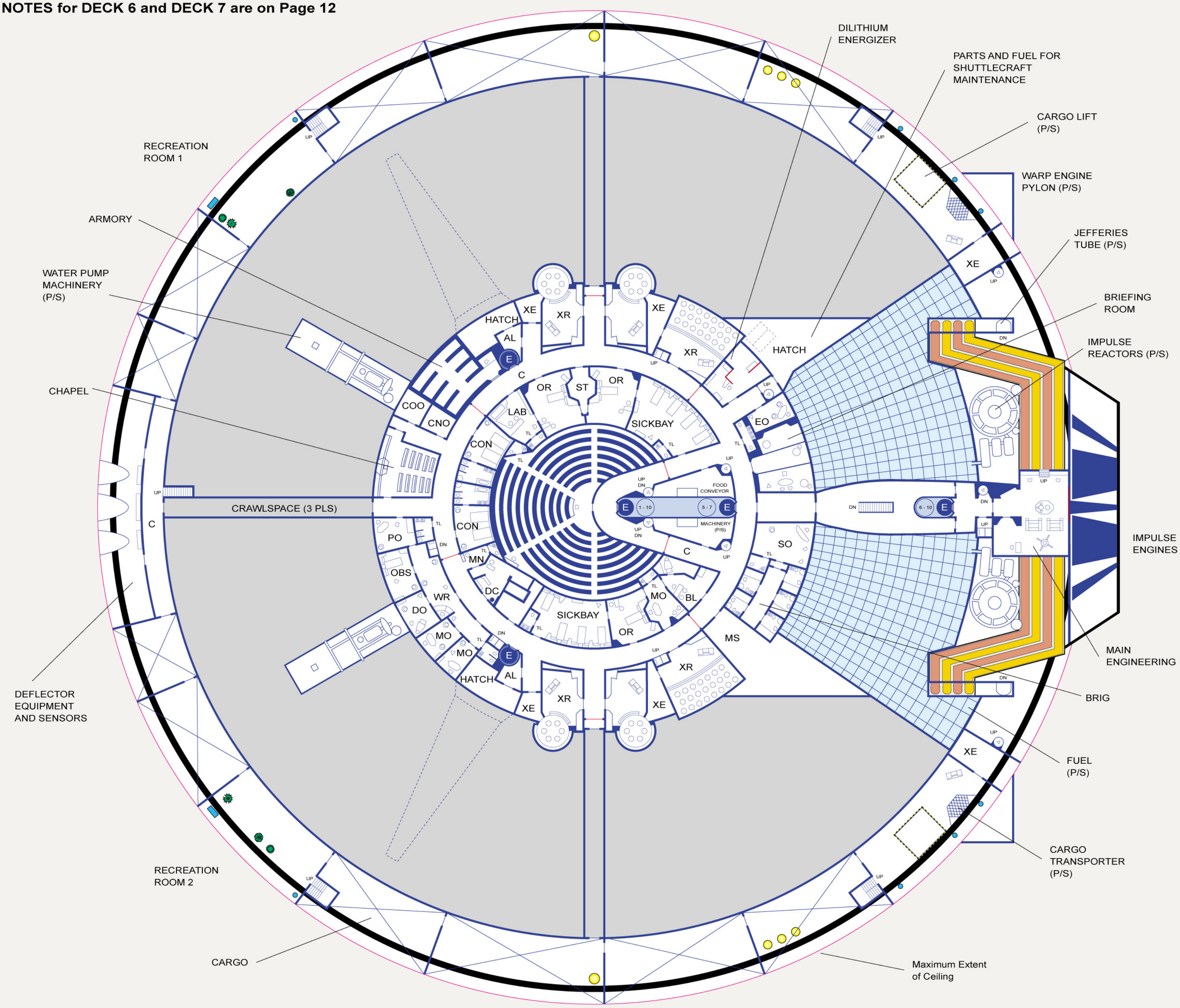
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NOTES for DECK 6 and DECK 7 are on Page 12



DECK 7: SICKBAY / ENGINEERING

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NOTES

DECK 8
Most of this deck is unchanged from the configuration of the Constitution-class ship. Laundry, Food Preparation, Main Recreation and Entertainment areas are here.

The Auxiliary Control is surrounded by the ship's Main Computers which continue here from the center of Deck 7.

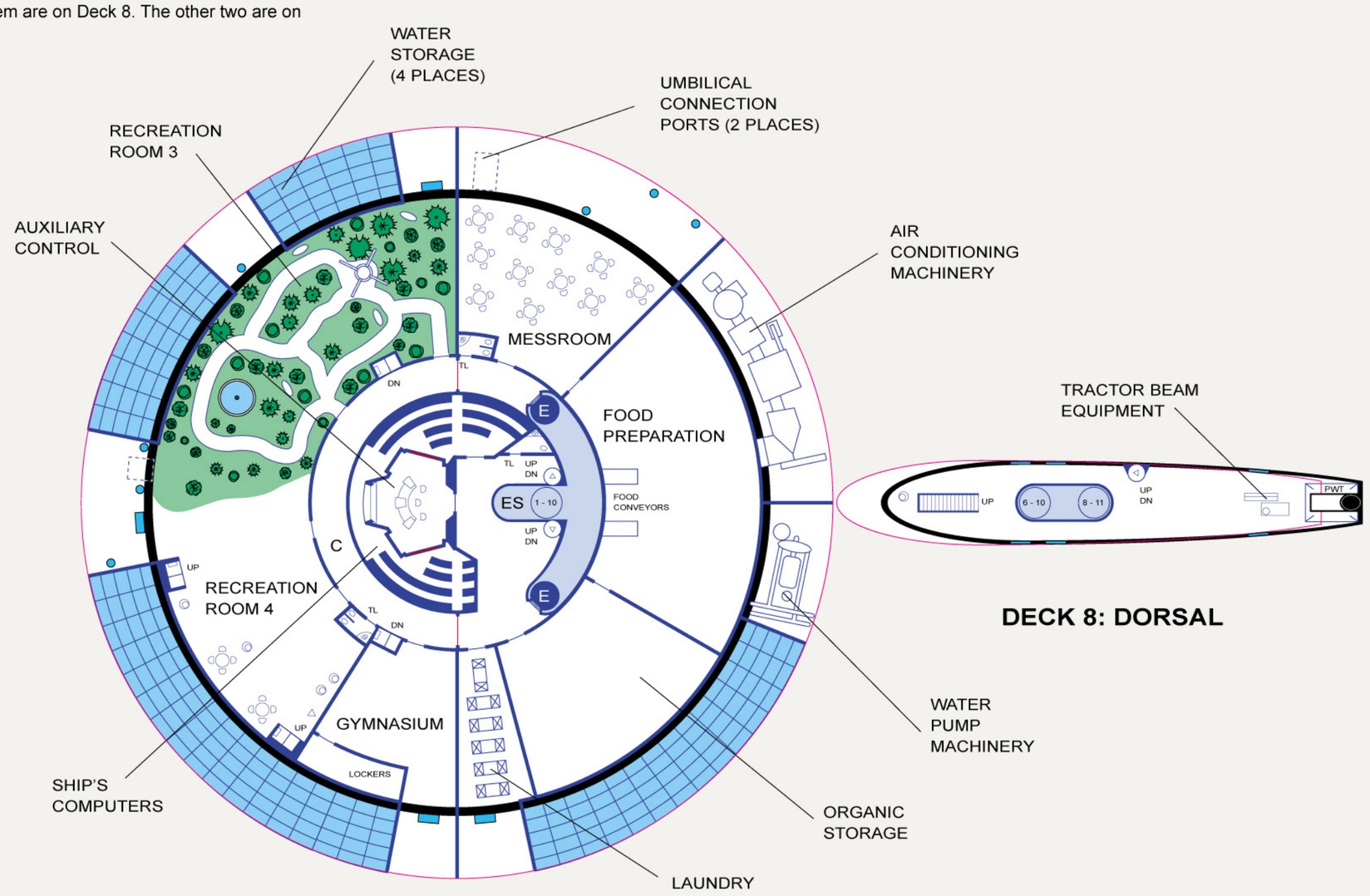
The Water Storage found here is an extension of the Water Storage on Deck 7.

The Food Preparation area has two "conveyors" which distribute food upwards into the Messrooms located on Deck 6 and Deck 5.

There are four hatches or ports on the studio model. Two of them are on Deck 8. The other two are on Deck 9. Images of these hatches are below, right.

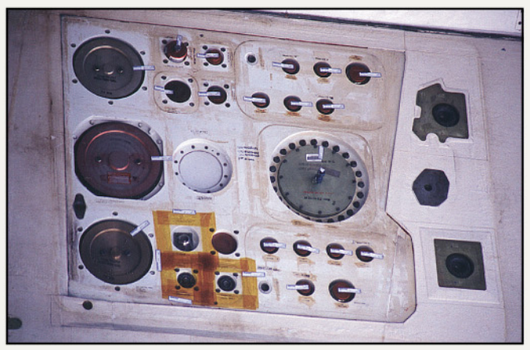
DECK 8 (continued)
Their distribution on the studio model is asymmetric, as are the windows around them. The hull is at such an extreme angle that even the longest hatch results in an opening only 4 feet (1.2 meters) tall. A crew member in a spacesuit can not fit through any of these hatches. Instead, these 2 hatches probably have a function similar to the Umbilical Connection Panels as on the Space Shuttle (see images below, left).

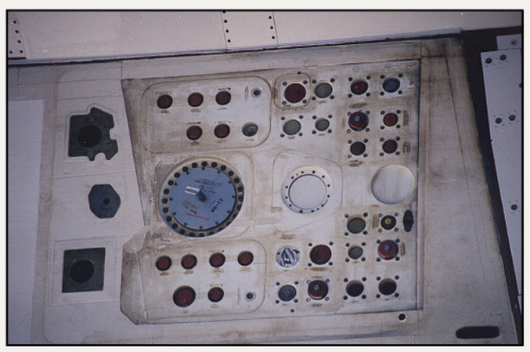
DECK 8 DORSAL
One of the three Tractor Beam Controllers is located here. The other 2 are in the trailing edge of the Docking Collar.

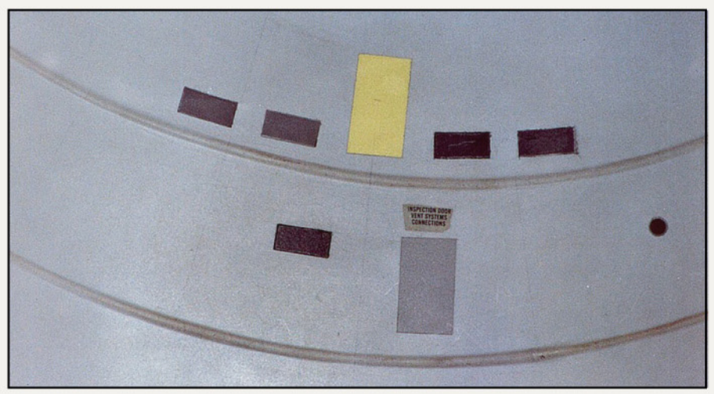


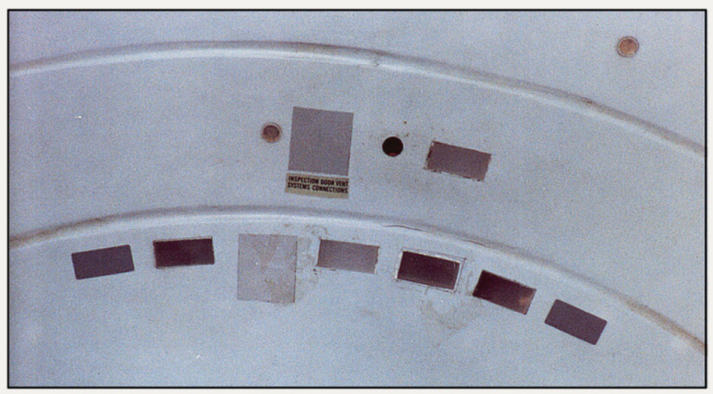
DECK 8: DORSAL

DECK 8: ENTERTAINMENT / RECREATION FACILITIES









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NOTES

SEPARATION PLANE
The rear Landing Leg was located here, between Deck 8 Dorsal and Deck 9 Dorsal. Since the disconnection equipment was removed, the Landing Legs were also removed. However, there is disconnection equipment located in each engine pylon.

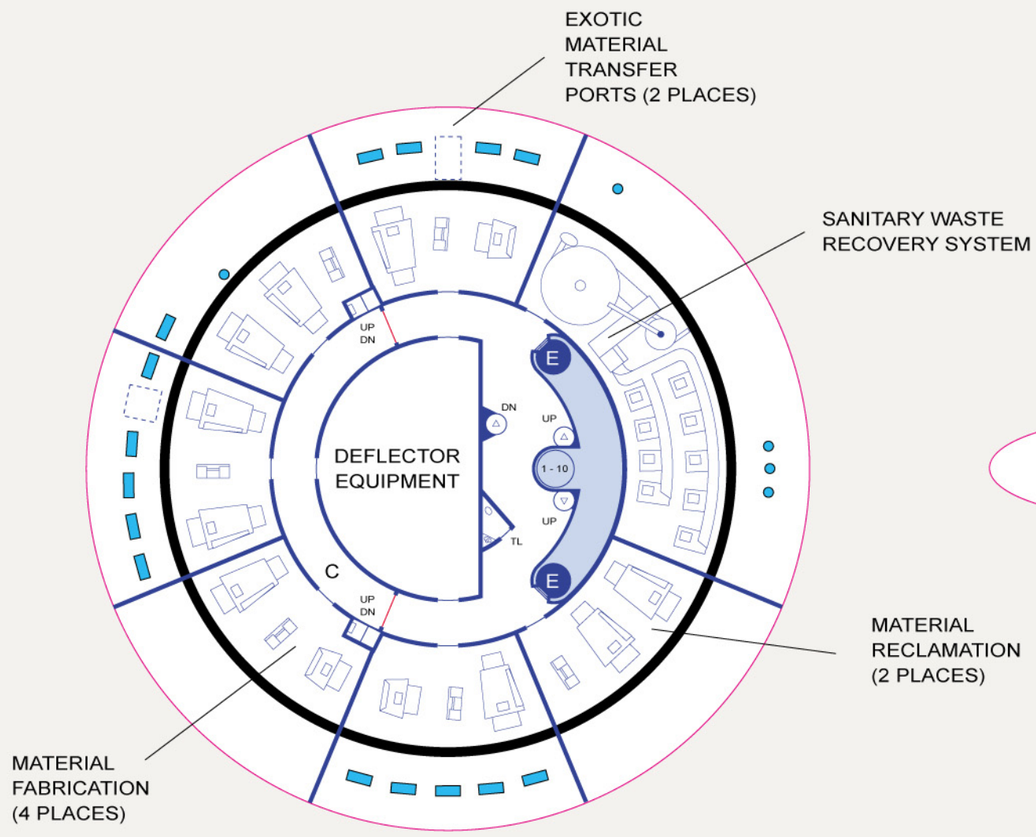
DECK 9
Most of this deck is unchanged from the original configuration of the Constitution-class ship. Material Reclamation and Fabrication is probably not a 100% efficient process. Therefore, these 2 hatches could allow for transfer of rare elements required in various manufacturing processes.

Deflector Equipment is located in the center of the deck.

DECK 9 DORSAL
Most of this deck is devoted to turbo-elevators, with a storage spot, in anticipation of heavy traffic that might result from whatever cargo is being carried and whatever mission is assigned.



SEPARATION PLANE



DECK 9: FABRICATION FACILITIES

DECK 9: DORSAL

ACCOMMODATIONS

DECK 4 -	Ring A -	4
	Ring B -	9
DECK 5 -	Ring A -	8
	Ring B -	8
	Ring C -	10
DECK 6 -	Ring A -	8
	Ring B -	12
	Ring C -	20
	Ring D -	28
	Ring E -	32
	Ring F -	38
	Ring G -	38
	Ring H -	32
TOTAL:		247

SHIP'S COMPLEMENT

OFFICERS	22
ENLISTED	198
TOTAL	220

SHIP DATA

LENGTH:	222 m
WIDTH:	127 m
HEIGHT:	60 m
TRANSPORTERS	
6-person:	4
22-person:	2
cargo:	2
SHUTTLECRAFT:	2
PHASERS	
banks of 2:	4
TORPEDO TUBES:	0

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NOTES

DECK 10
TMoST mentions Photon Torpedoes but not their location. Photon Torpedoes were shown in various episodes of STAR TREK to emanate from the underside of the Primary Hull, approximately the same place as the Phasers. Since TMoST states Phaser Banks are on Deck 11, the logical spot for Photon Torpedoes and their launch system is on Deck 10.

However, this class of ship does not carry Photon Torpedoes; they were replaced with more Cargo Holds.

The Deflector Equipment located in the center of the deck work with the Deflector Equipment and the Space Energy Field Sensors located in the bow of Deck 6 and Deck 7 and with the Main Sensor Dish.

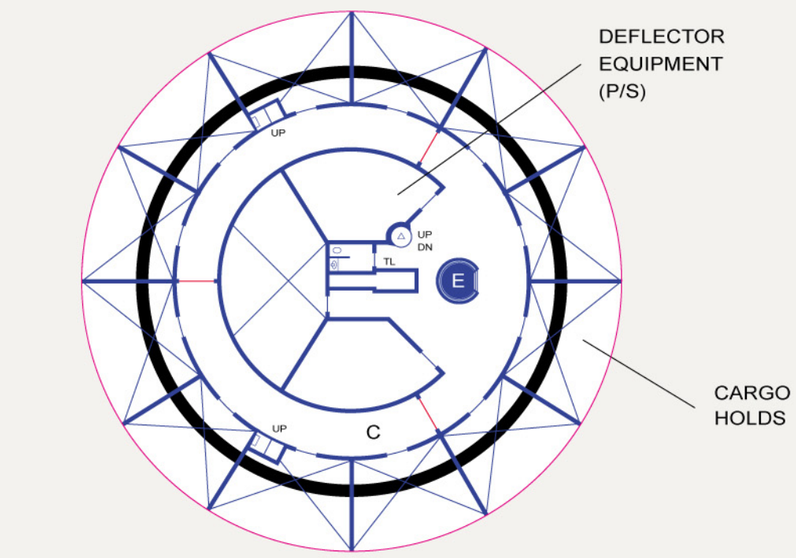
DECK 10 DORSAL
Most of this deck is devoted to turbo-elevators, with a storage spot, in anticipation of heavy traffic that might result from whatever cargo is being carried and whatever mission is assigned.

DECK 11
Phasers are located on this deck.

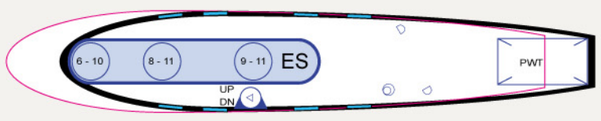
The Tractor Beam Controllers were located around the perimeter but were relocated. Their housings remain, but they are empty. One of them is at the rear of Dorsal Deck 8.The other two are in the rear face of the docking Collar. The Tractor Beam Emitter is also in the rear face of the Docking Collar. The 3 Tractor Beam Controllers direct the Emitter so that the beam can locate and lock onto the object being towed.

The 3 pale gold-coloured recessed rings on the underside of the Primary Hull absorb and re-direct any back-scatter created by the Tractor Beam. Even though the Tractor Beam system has been moved, these rings remain, but they are deactivated.

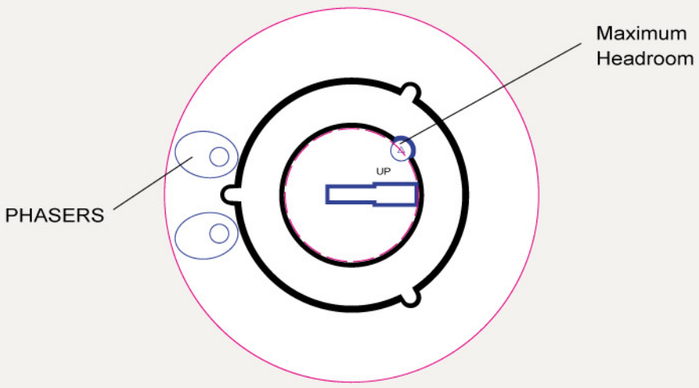
DECK 11 DORSAL
Most of this deck is devoted to turbo-elevators, with a storage spot, in anticipation of heavy traffic that might result from whatever cargo is being carried and whatever mission is assigned.



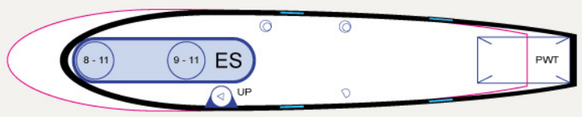
DECK 10: DEFLECTOR EQUIPMENT / CARGO



DECK 10: DORSAL



DECK 11: PHASERS / TRACTOR BEAM



DECK 11: DORSAL

STAR TREK - PTOLEMY-CLASS TRANSPORT / TUG

LAYOUT: DECK 12 and DOCKING COLLAR

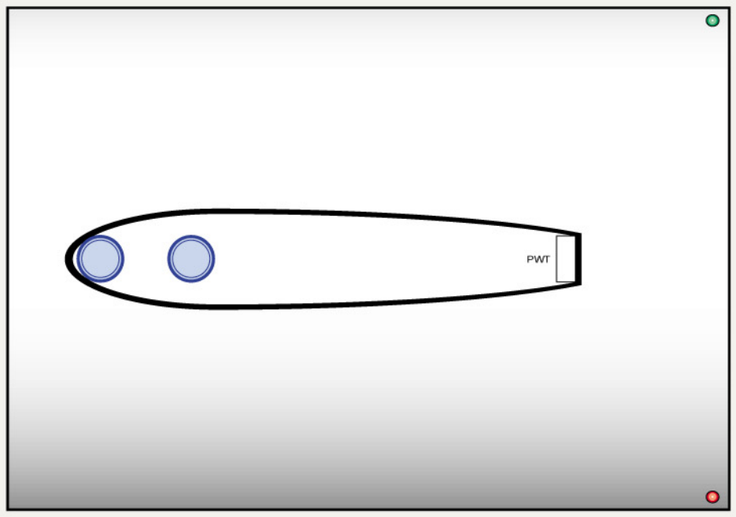
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METERS

DECK 12: SENSORS



DOCKING COLLAR

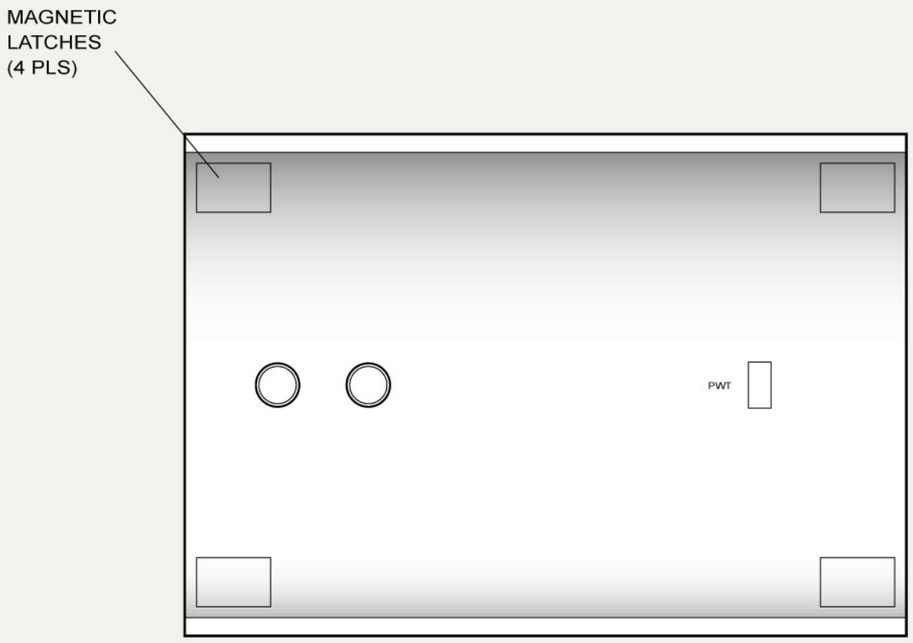
NOTES

DECK 12
The Lower Sensor Dome is located here.
The Main Sensor Dish is mounted on the bottom of the Lower Sensor Dome.

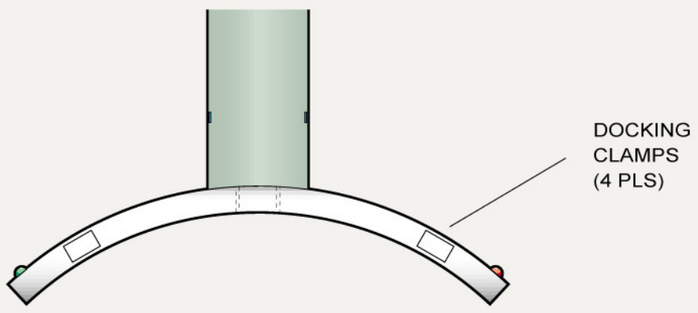
DOCKING COLLAR
This system is almost entirely automated, but there are a few access points for maintenance.
The 3 Tractor Beam Controllers at the rear of the Docking Collar work in conjunction with the Tractor Beam Emitter mounted on the Main Sensor Dish.

Once maneuvered into position, the Magnetic Latches secure the cargo container. If the cargo container has Docking Clamps, then they can interact with the Docking clamps mounted on the collar to provide a more secure physical connection.

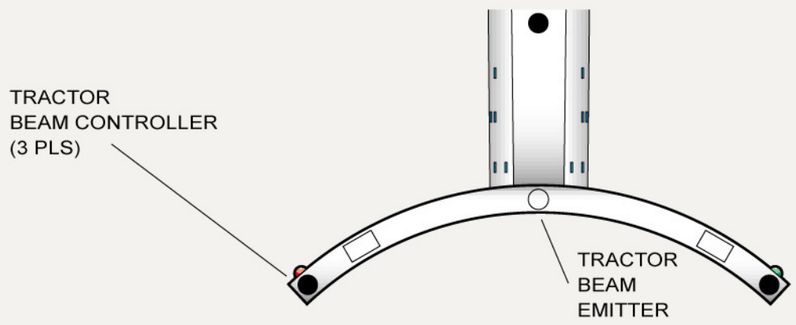
When the docking procedure is finally completed, the Piping / Wiring Trunk establishes a connection to provide power (if needed) to the cargo container from the Towing vessel.



DOCKING COLLAR
(Underside, Looking Up)



DOCKING COLLAR
(Front, Looking Aft)



DOCKING COLLAR
(Rear, Looking Forward)

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GENERAL NOTES

When Matt Jefferies designed the U.S.S. ENTERPRISE, he wanted a smooth hull. He reasoned that if anything needed to be accessed, it would be done so from inside the ship. But if red rectangles and yellow circles exist on the hull, they must be there for emergency situations, quick identification, or some aspect of ship's operations.

Matt Jefferies understood that incredible energies would be required to propel a ship faster than light. If this is accomplished with antimatter, why store it in the habitable section of the ship? He and Gene Roddenberry both loved airplanes; they understood and agreed on the importance of isolating dangerous components, yet still making them accessible if required. Yes, Dilithium Crystals are stored in or near Engineering and help modify / channel the energy, but why does the antimatter need to be stored in or near Engineering?

The idea of a Bussard Ramjet was developed in 1960. This label was applied to the U.S.S. ENTERPRISE engines retroactively, after the series ended. A Bussard Ramjet compresses matter for fusion. The grey area on the engine nacelle could indicate where that matter is stored. But on the U.S.S. ENTERPRISE the matter is then mixed with antimatter. Therefore, the red rectangle on the engine nacelle could indicate where the antimatter is stored.

The red rectangle on the engine nacelle could be an access hatch, or an "Emergency Jettison" hatch. Dialogue in various episodes of STAR TREK corroborates the idea of disengaging, discarding, or jettisoning the warp engine nacelles. Dialogue also mentions ejecting the antimatter pod.

The idea of a "Warp Core" came along much later, when the ENTERPRISE was refit for the movies. Will Decker told Kirk, "This is an almost totally new ENTERPRISE." The idea of "ejecting a Warp Core" was introduced in STAR TREK THE NEXT GENERATION. These drawings make no attempt to "retcon" such concepts.

The huge pipes / conduits (visible through the grille behind Engineering) was a set built with forced perspective to suggest immense size and power. The angle on the conduits suggests they continue up the pylons of the U.S.S. ENTERPRISE.

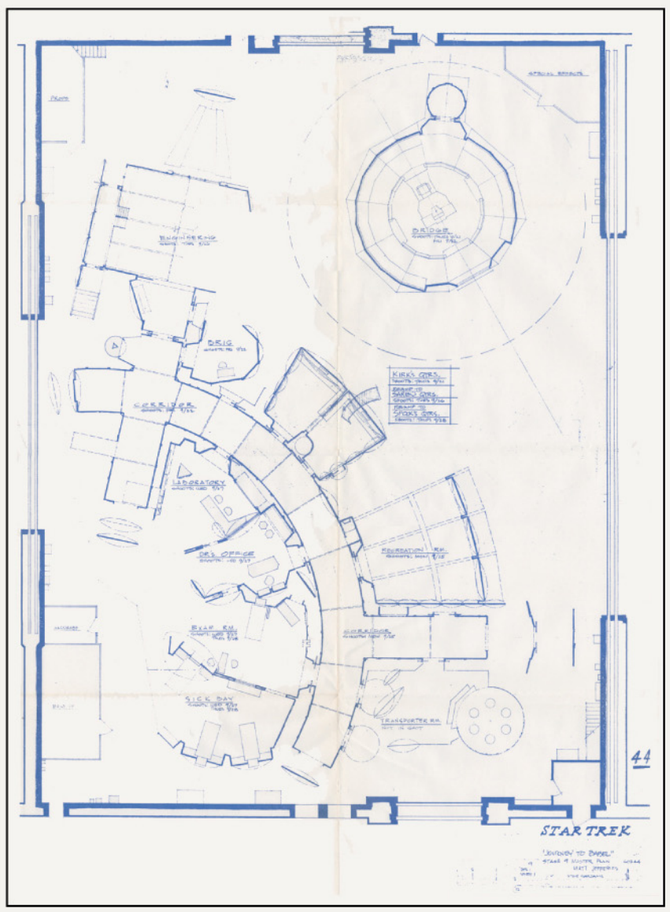
Regarding the antimatter:
CASE 1. Collect matter in the engine nacelle, send the matter to Engineering, mix it (in the habitable section of the ship) with antimatter (stored in the habitable section of the ship!), pass the energy through the Dilithium Crystals, then send the energy up to the engine nacelles to create the warp field.
CASE 2. Collect matter in the engine nacelles, mix it (in the engine nacelles) with antimatter (stored in the engine nacelles), send the energy to Engineering, pass the energy through the Dilithium Crystals, then send the energy up to the engine nacelles to create the warp field.

In both cases, energy is being transmitted. There is no need to move the fuel too (as in Case 1).
Case 1 is unnecessarily complicated.
Case 2 is simpler, and as a bonus, the antimatter is kept away from the habitable section of the ship.

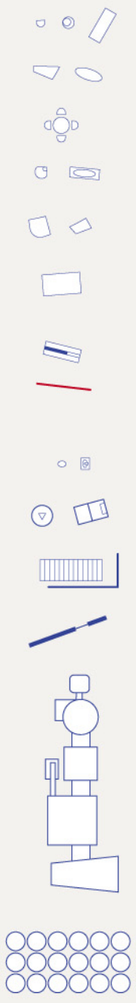
ABBREVIATIONS

AL	-	AIRLOCK
BL	-	BIO LAB
C	-	CORRIDOR
CE	-	CHIEF ENGINEER
CMO	-	CHIEF MEDICAL OFFICER
CN	-	CHIEF NURSE
CNO	-	CHIEF NAVIGATOR'S OFFICE
CO	-	COMMANDING OFFICER
COO	-	COMMUNICATIONS OFFICER'S OFFICE
CON	-	CONVALESCENT WARD
CS	-	CHIEF OF SECURITY
DC	-	DECOMPRESSION CHAMBER
DN	-	DOWN
DO	-	DENTIST'S OFFICE
E	-	TURBO-ELEVATOR CAR
EE	-	ENVIRONMENTAL ENGINEERING
EL	-	ENVIRONMENTAL SUIT LOCKER
EM	-	TURBO-ELEVATOR MAINTENANCE
EMS	-	ENGINEERING MACHINE SHOPS
EO	-	CHIEF ENGINEER'S OFFICE
ES	-	ELEVATOR STANDBY / STORAGE
FO	-	FIRST OFFICER
IC	-	INSPECTION CORRIDOR
LAB	-	LABORATORY
LL	-	LANDING LEG
LLM	-	LANDING LEG MACHINERY
MN	-	DUTY NURSE
MO	-	DOCTOR'S OFFICE
MS	-	MEDICAL SUPPLIES
OBS	-	OBSTETRICS
OR	-	OPERATING ROOM
P	-	PORT (LEFT)
PLS	-	PLACES
PO	-	PSYCHIATRIST'S OFFICE
PWT	-	PIPING / WIRING TRUNK
S	-	STARBOARD (RIGHT)
SO	-	SECURITY OFFICE
SCO	-	SECURITY CHIEF'S OFFICE
ST	-	STORAGE
TL	-	TOILET
WR	-	WAITING ROOM
XE	-	TRANSPORTER EQUIPMENT
XR	-	TRANSPORTER ROOM

THE DESILU STAGE AT THE SAME SCALE



PLAN SYMBOLS



CHAIRS

TABLES

DINING TABLE

SHOWER, TUB

DRESSERS

BED

ROOM PARTITIONS
- White circular grille
- Red hexagonal grille

TOILET, SINK

LADDERS

STAIRS, RAILING

WALL and DOOR

AIR CONDITIONING EQUIPMENT

BATTERIES



MEDICAL DIAGNOSTIC BED

CONTROL CONSOLES

ISOLATION DOOR

CIRCUIT BREAKERS

COMPUTERS

WATER PRESSURE SYSTEM

LAUNDRY UNIT

WATER PUMP MACHINERY

HULL THICKNESS AT FLOOR LEVEL
(Varies depending on hull curvature)



TREES

FOUNTAIN

SANITARY WASTE RECOVERY SYSTEM

MATERIAL FABRICATION / RECLAMATION MACHINERY

STANDARD GASES

CURVATURE OF INNER FACE OF HULL
(Used to show the undercut on Deck 7)

STAR TREK - MK. IV CONTAINER - "STARLINER"

LAYOUT: VARIOUS VIEWS and SUMMARY **PAGE BONUS**

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DRAWN BY: Jim Botaitis

If printed 17 inches tall (from black-outlined edge to black-outlined edge) the scale of these drawings is 1/350.

0 5 10 15 20
METERS

NOTES

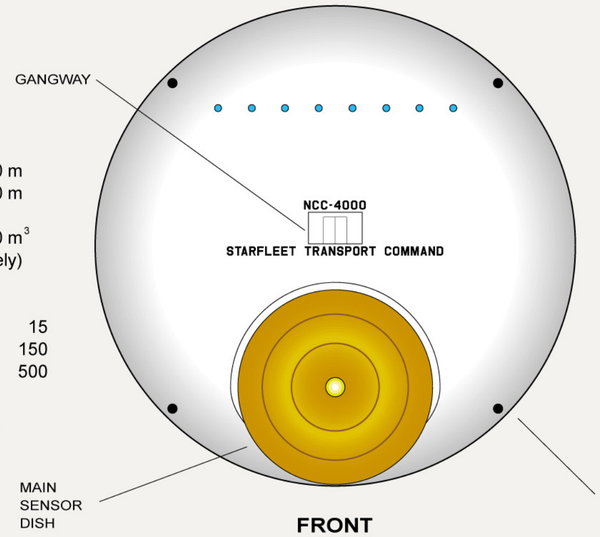
Transport containers are difficult to summarize on a single page. There are simply too many variations. The length and diameter is standardized. Everything else can be reconfigured.

All the transport containers have equipment for clamps and latches, two turbo-elevator attachment points, and a piping / wiring trunk attachment point ... all of which are compatible with the docking collar on the PTOLEMY-Class ship.
All transport containers also have a Reaction Control System.

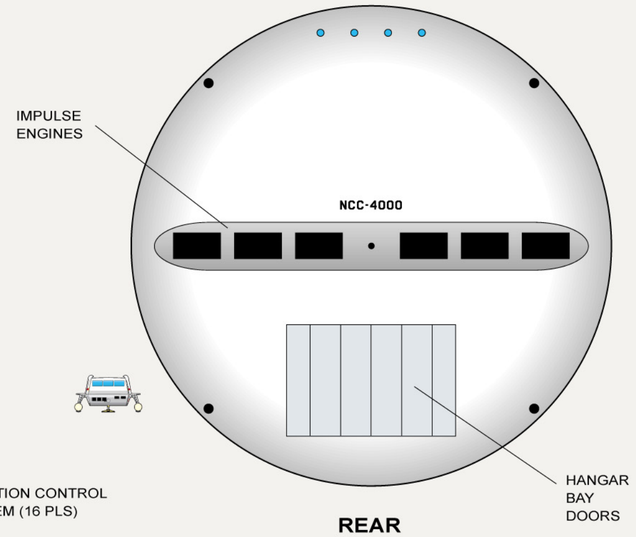
SPECIFICATIONS

Mk. I	-	LIQUIDS	DIAMETER	-	40 m
Mk. II	-	DRY BULK	LENGTH	-	200 m
Mk. III	-	REFRIGERATED			
Mk. IV	-	PERSONNEL *	VOLUME	-	250,000 m^3 (approximately)
Mk. V	-	PRODUCTS			
Mk. VI	-	HOSPITAL SHIP			
Mk. VII	-	TROOP TRANSPORT			
Mk. VIII	-	COLONIZATION SHIP	* OFFICERS	-	15
Mk. IX	-	MINING FACILITY	CREW	-	150
Mk. X	-	REPAIR FACILITY	PASSENGERS	-	500

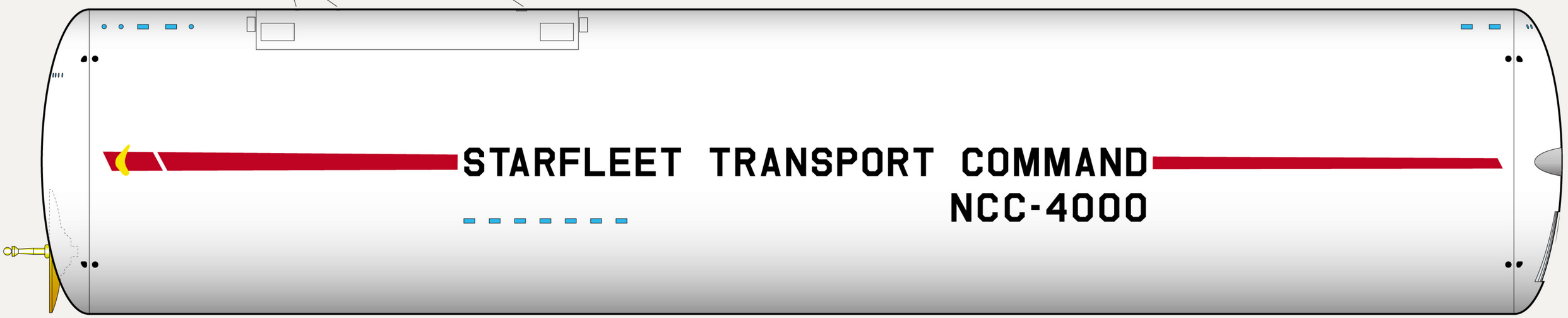
TONNAGE - Varies, depending on the cargo and the container type



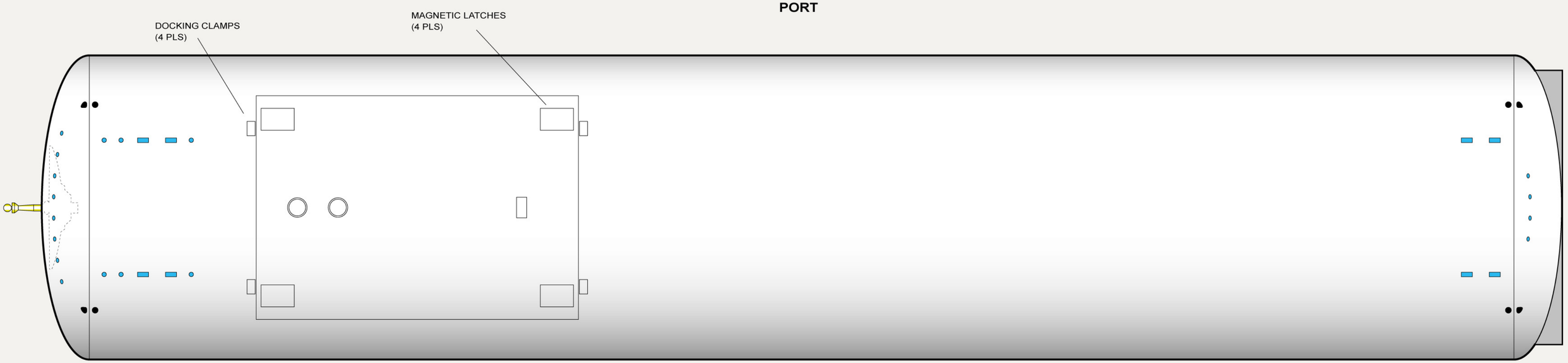
FRONT



REAR



PORT



TOP