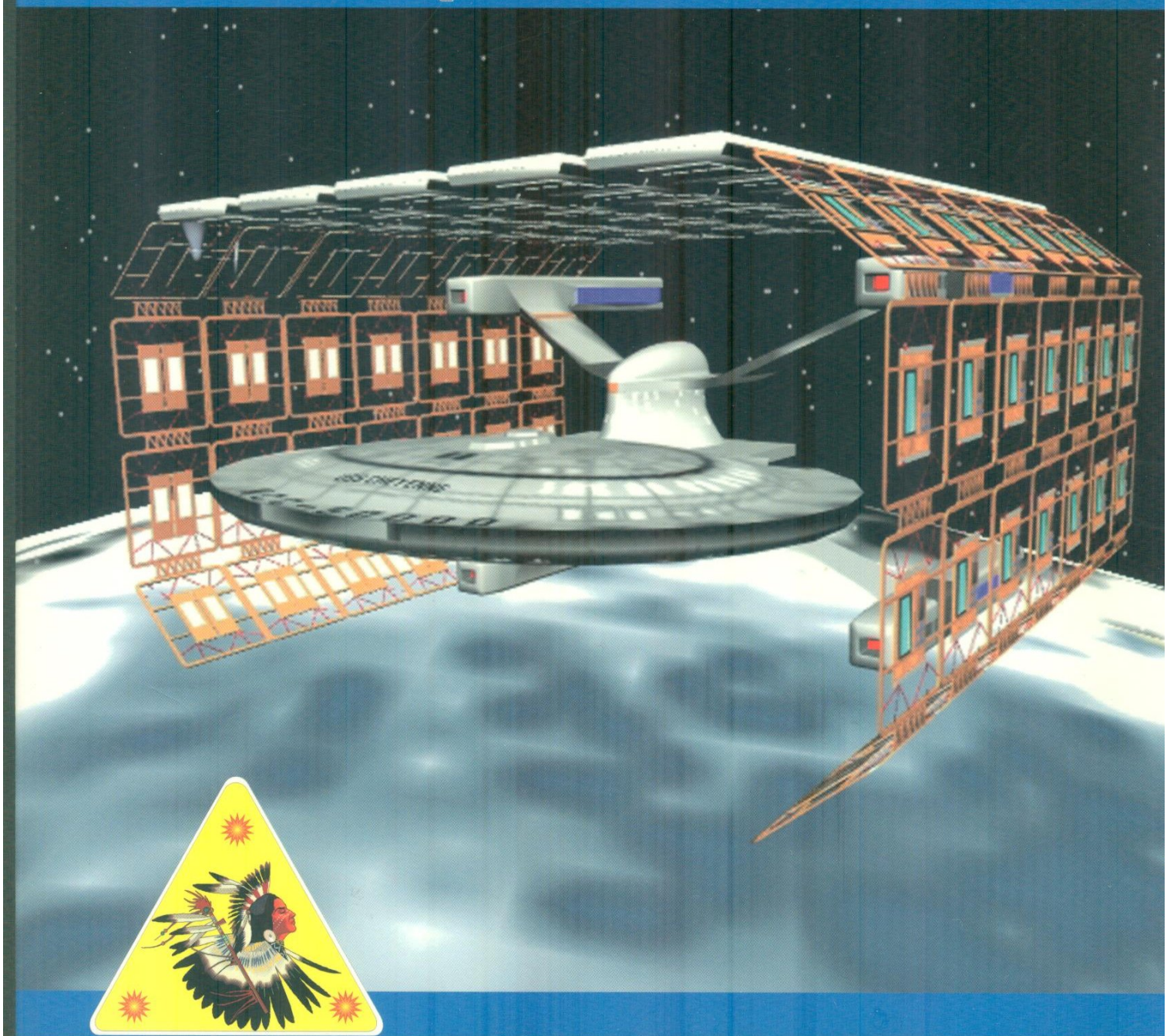
U.S.S. CHEYENNE

$15.95

Operations Manual



Starfleet Technical Institute

Written and Illustrated by
Don W. Shanks

U.S.S. CHEYENNE

LCARS

U.S.S. CHEYENNE

CLASS EXPLORATION CRUISER

STARFLEET INSTITUTE PRESS TECHNICAL MANUAL

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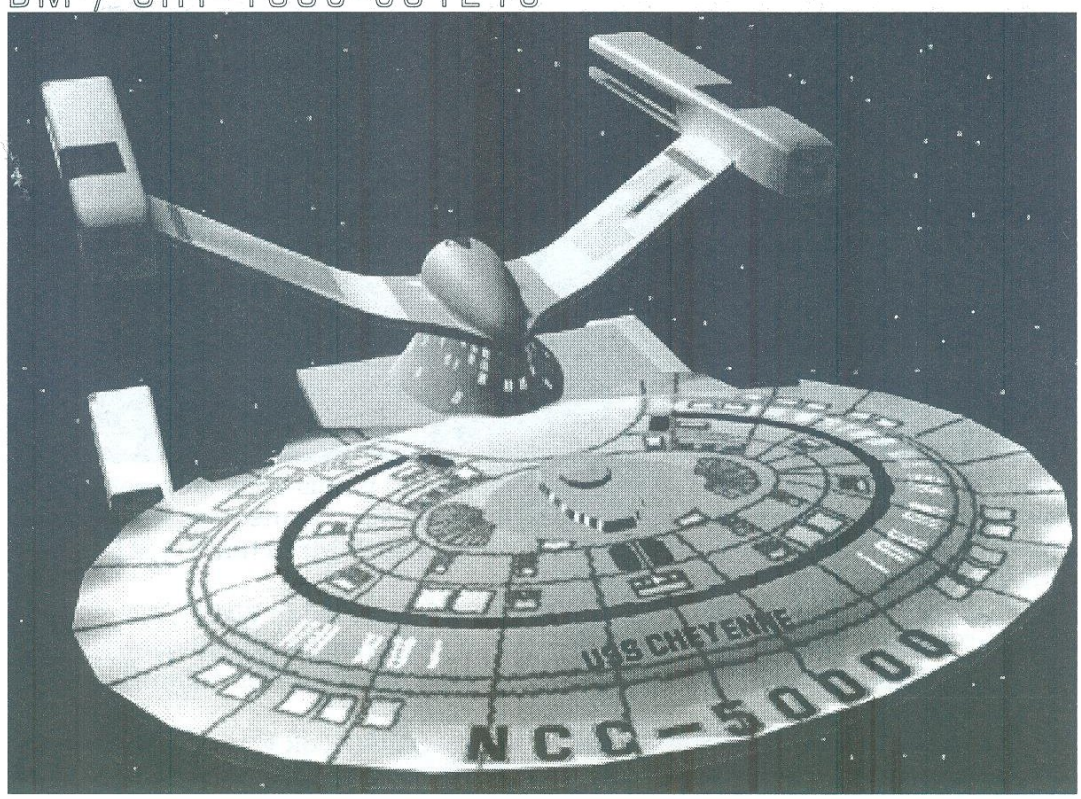
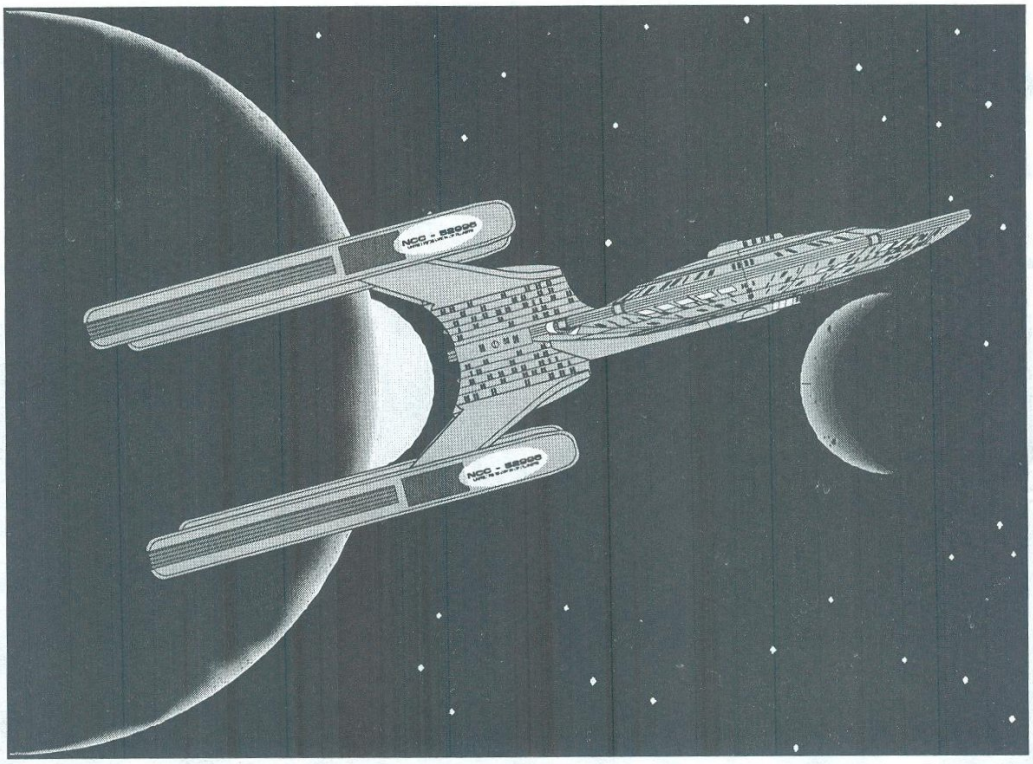


WRITTEN AND ILLUSTRATED BY DON W. SHANKS

ADDITIONAL ILLUSTRATIONS BY ROBERT Q. GARZA, ERIC KRISTIANSEN
COMPUTER GENERATED 3D ARTWORK BY KEN SCHMITT

LCARS

U.S.S. CHEYENNE



The 3D computer generated ship models displayed in this book are freely available in the public domain in several object formats. For comments to Ken Schmitt (about his work or to the author of this book for which Mr. Schmitt will pass on) via the Internet:

KENWSHMT @ ONRAMP.NET (World Wide Web)

Other "Star Trek" related ship designs, some of which are based upon the Jackill's Star Fleet Reference Manual series, are also available from Ken Schmitt.

The Space Drydock computer model included in this book was originally built by Loren Sharp. For the image created for this book, Ken Schmitt modified the computer model to fit the Cheyenne ship design.

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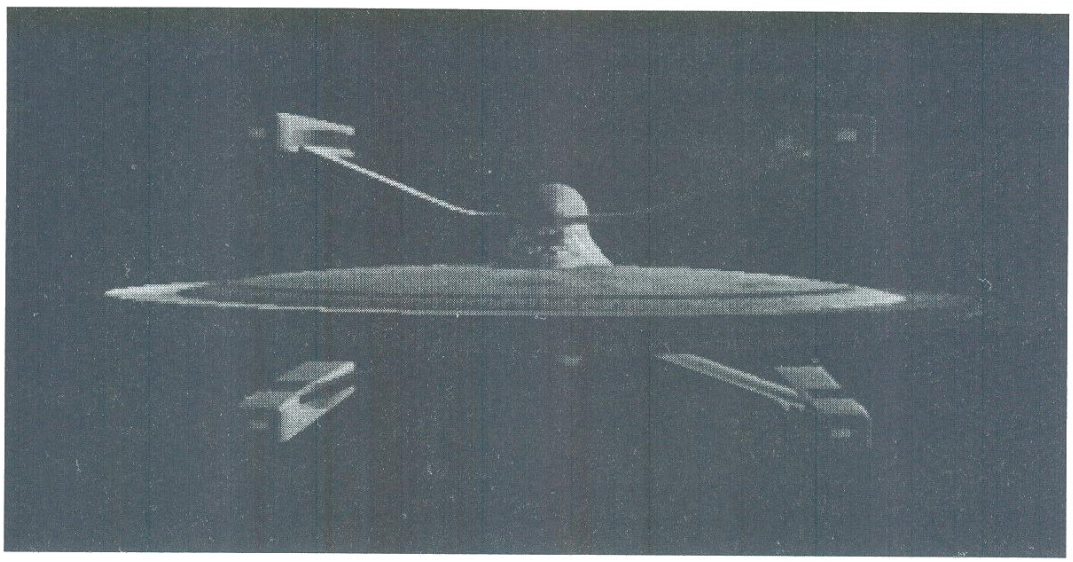


INTRODUCTION

I have had the pleasure of knowing Don for over a decade, from gaming, modeling and now a joint interest in computer drawings. He has always had a strong love of all facets of Science, both fictional and real. I have always had a great deal of respect for Don's criticism of my work — some of his ideas I have even listened to.

I have watched the book you are about to read develop from a rough idea to a rough book and after long hours of work (and a lot of head bashing for new and creative ideas) into a very impressive book. Don has tried to cover areas, that other ship familiarization books have not touched on and even more. Some of my favorite parts of the book are the atrium, stellar cartography and his introduction of the rendered images of the Cheyenne.

I hope you will enjoy this book as much as I have enjoyed watching it develop into a final product.

Read and Enjoy
Eric Kristiansen
Jackill

1
HISTORY AND DEVELOPEMENT

This Technical Manual of the operations and systems of the *Cheyenne* class Exploration Cruiser is to help aid new crew members in familiarizing themselves with their new ship.

The *Cheyenne* class has been operational for almost twenty years now. Several have been destroyed in the Border Wars with the Cardassian Union (Empire). With the Federation still growing ever larger, the fleet must be enlarged as well to maintain balanced coverage in all quadrants. Old, proven ship designs like the *Excelsior* continued to be built long after they should have been replaced. Such a example of the requirement for more ship hulls is the rebuilding of most of the fleet that was lost at Wolf 359. The *Ahwahnne* is a good example of the *Cheyenne* class. She was destroyed at Wolf 359, but was deemed salvageable by the Starfleet Corps of Engineers who surveyed the wrecked fleet following the battle.

Mission Objectives

The highly successful, four-engine *Constellation II* Heavy Cruiser design proved itself in trials and in typical ship operations in the early 24th century. It was the first ship design to have four warp drive engines lead to the *Excelsior* class variants with three and four engines nacelles. The larger, more powerful *Ambassador* class was a follow-on to the *Excelsior*. By the year 2334, Starfleet Command decided to take a quantum leap in ship design technology. The forerunners of the *Nebula* and *Galaxy* class starships were the smaller *New Orleans* and the *Cheyenne* class starships.

While the *New Orleans* was designed to be a frigate first and exploration vessel second, the reverse was true for the *Cheyenne* . From the start, the plan was to fullfill the long-endurance missions most common to those ships known as Exploration Cruisers (EC).

The Federation border disputes between the Cardassian Union and the Talarians became heated at times. There were also the nagging problems of Tholian raids into Federation territory. Although the border between the UFP and the Klingon empire was stable since the alliance agreement, regenade Klingon ships would occasionally cross over for an attack or two. Also, Fed-

eration Intelligence began receiving rumors about a new unknown race — the Ferengi. All future Starfleet vessels had to take care of Federation policy while at the same time allowing crew members to bring along family members for the long missions.

This is the history behind the designs of the*New Orleans* and the *Cheyenne* designs. Designers joked that the *New Orleans* would be the hammer to anything the *Cheyenne* turned up.

The *Cheyenne* class Developement Project was formally issued on September 4, 2336 . Mission parameters were established as follows:

1. To provide a long-range platform with high warp speed and moderate self-defense capability using new phaser weapon track technology envisioned for the *Nebula* class.

2. To provide autonomous capability for execution of Federation policy in the far out reaches of the Federation.

3. To incorporate sufficient scientific research facilities for full strategic reconnaissance.

Propulsion

The *Cheyenne* class Developement Project designers wanted to provide the ship with four engine nacelles as a means to survive being stranded hundreds of light years from the nearest friendly base.

•The new units had to have a sustainable cruise velocity of Warp Factor 9.75, and have the ability to maintain speeds of up to Warp 9.992 for a minimum period of ten hours.

•The Federation fifth-phase dilithium matter/antimatter reactor is the primary power generation device in the ship design.

•Sustainable field output must exceed 1500 Cochranes with a peak transitional surge reserve exceeding 3000% of normal output.

•In the event of losing all power from the warp core, the Impulse Drive system must provide flank speeds in excess of .86c from the fusion reactors only.

•Multiport reaction control systems (RCS) must provide for basic and close quarters maneuverability.

Mission / Tactical

•Provide the ability to operate independent of starbase refurbishment for extended periods. Independent patrol mode of one Standard Year at nominal Warp 6 velocity.

•The vessel must be able to execute tactical and strategic analyses including long-range charting and mapping, full biological and ecological studies, and provide full physical science analyses.

•Support facilities for a standard complement of of auxiliary spacecraft include at least two independent means of ingress/egress to the main shuttle bay.

•Provide facilities to modify weapon systems to a high degree including variable frequency phasers, multi-mode photon torpedoes, variable geometry defensive shields.

• Incorporate the latest stealth, and wide range electronic counter measure system upgrades over the course of the ship's service life.

Environment & Crew

• Tri-redundant environmental control systems must conform to Starfleet Regulatory Agency (SFRA) standard 102.16 for Class M environment with no less than 5% habitable space of variable environmental control.

• The vessel must support a crew of 300, plus 200 non-crew personnel for mission-specific embarkation.

• All habitable volumes must be protected to SFRA standard 346.7 (a) levels for electromagnetic (EM) and nuclear radation. Subspace flux differential should be maintained within .02 millicochranes.

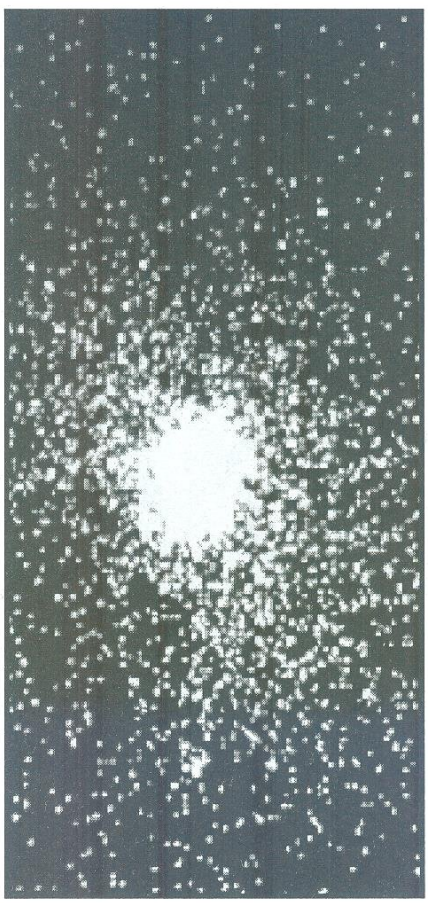
Developing an Answer

Computer design work and simulations began in 2336 at the Salazzaar shipyards above Andor. Three years later, actual construction on the prototype vessel began. Another three years passed before the spacedock doors open to revealed the *U.S.S. Cheyenne*, NCC - 50000

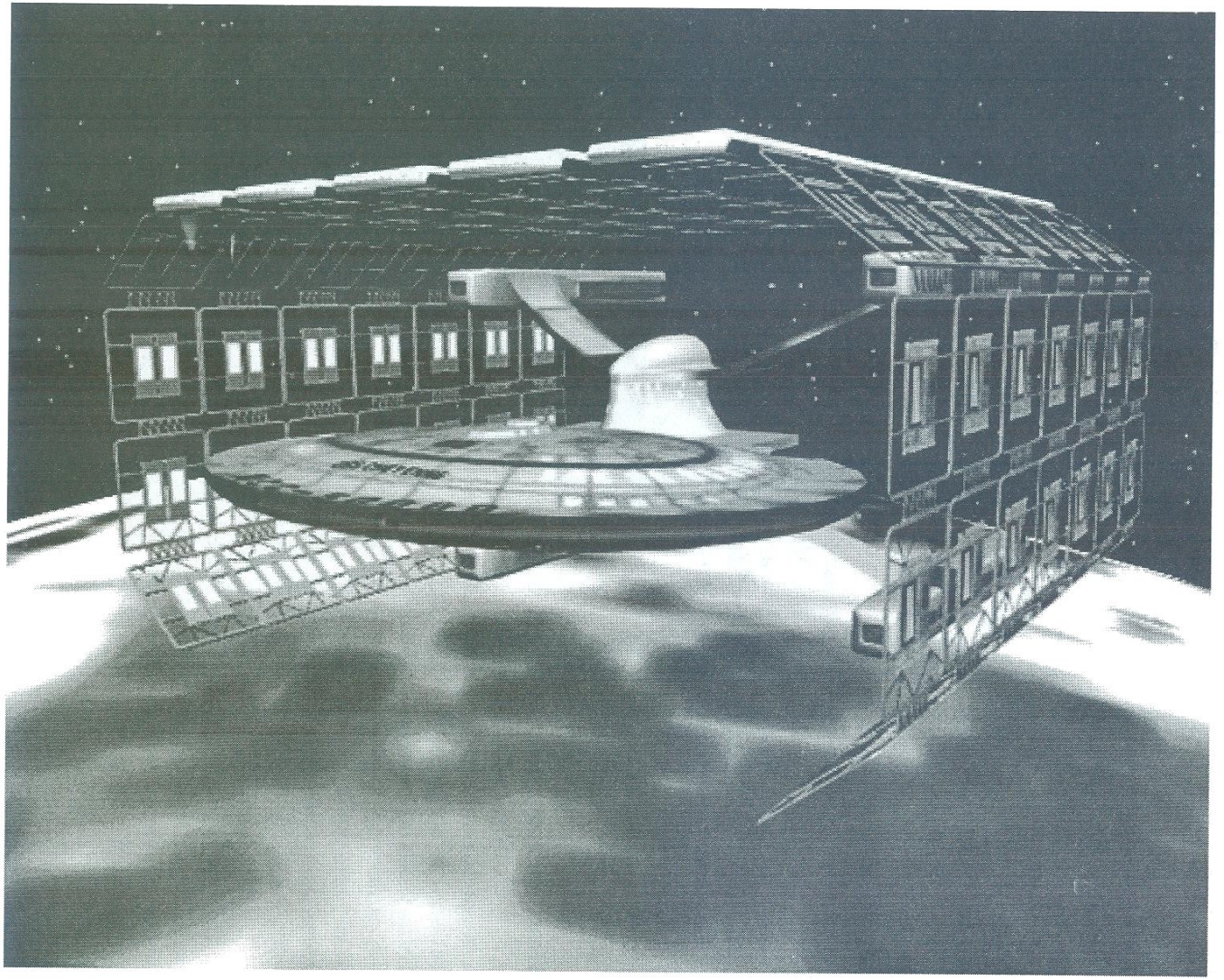
The new starship looked very much like a larger, more streamlined version of the *Constellation II* class, but it was much more powerful than the latter which was undergunned in action with Cardassian *Gal-tass* class heavy cruisers.

Changing Threat - A New Mission

After Wolf 359 and the ever present threat of the Borg, all surviving members of the *Cheyenne* class entered a Service Life Extention Program (SLEP). Beginning by mid- 2367, four *Cheyenne* were called back to the nearest Starbase for upgrades and major rebuild of certain structure items, such as the warp pylon struts. While the Borg threat lessened as of 2370, a new menace from the Gamma Quadrant-the Dominion, will probably replace the Borg as the number one threat to Federation security. Members of their military willingly use kamikaze type tactics, and ram enemy (our) vessels in combat (refer to the loss of the *U.S.S. Odyssey* in 2370).



U.S.S. CHEYENNE



2
DESIGN AND CONSTRUCTION

With the new threat from the Dominion, an agreement has been reached with the Romulan Empire to use a cloaking device on a new Federation starship design, if Romulans are onboard to control the actual use of the equipment. This new provision to the **Treaty of Algeron** applies only to the new *Defiant* class escort ships. Attempts made to extend the agreement to re-equip some of the *Cheyennes* going through their Service Life Extention Program (SLEP) with Romulan cloaking technology (along with the Romulan systems crew onboard) failed. Improvements in the ship's computer software relating to Electronic Counter Measures (ECM) are a secondary improvement for the class.

Crew accommodations are standard for Federation ship design. Several cabins on Deck 12 have been enlarged to accommodate large families onboard. Other races complain that the Federation provides spacious and comfortable staterooms for its crew members, but research shows that the design philosophy improves crew morale and thus, job performance.

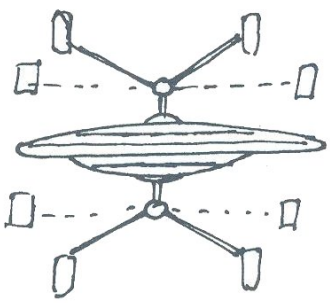
General Physical Arrangement

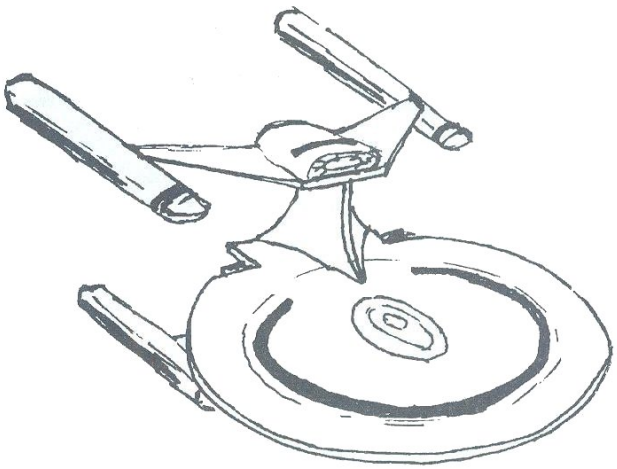
In the early 24th century, modern Federation starship designs entered a new phase of stylized functionality. Visually, the ships seem to be sculpted into form rather than built. Both the *Cheyenne* class cruiser and the *New Orleans* class frigate are the first of the new Starfleet breed of starships to fit this stylized functionality concept.

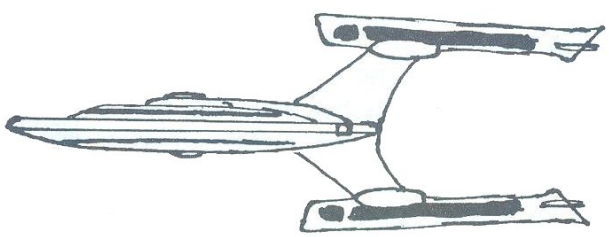
Specifically in regards to the *Cheyenne*, the oval main hull and the shortened length of the stardrive hull can atest to this fact. The two main "necks" of the stardrive section that branch out into the warp drive support pylons are more sweeping in appearance while at the same time, the structural support system was improved by the introduction of the Structural Integrity Field (SIF) generators. Blisters at the apex of both top and bottom necks contain both the Long-Range Sensors (LRS) that are important in carrying out one of the ship's main mission goals, and fuel.

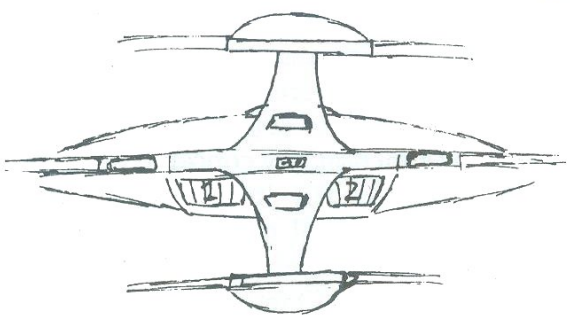
The main hull was a oval shaped saucer design. Starship designers have been moving towards this shape as be-

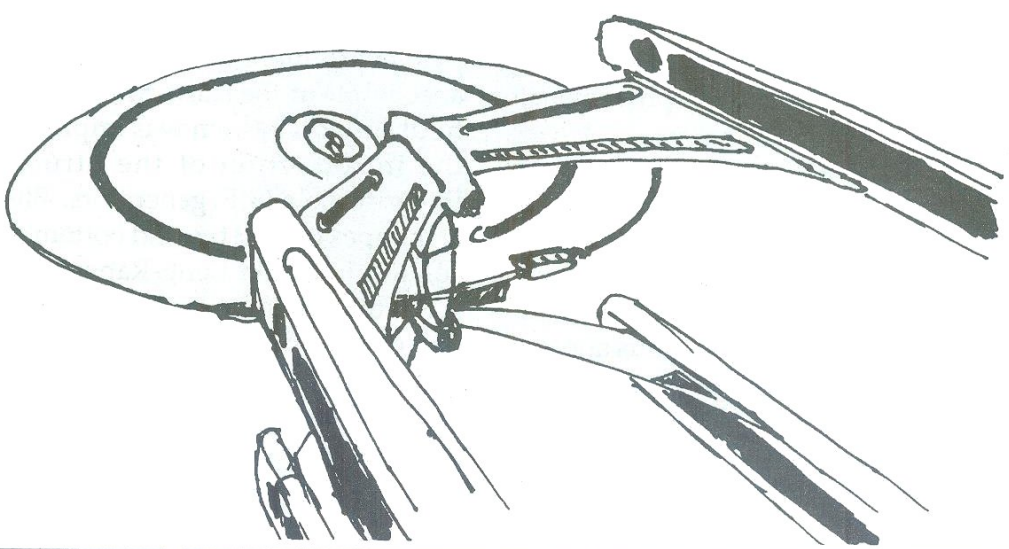
Early Concept Drawings

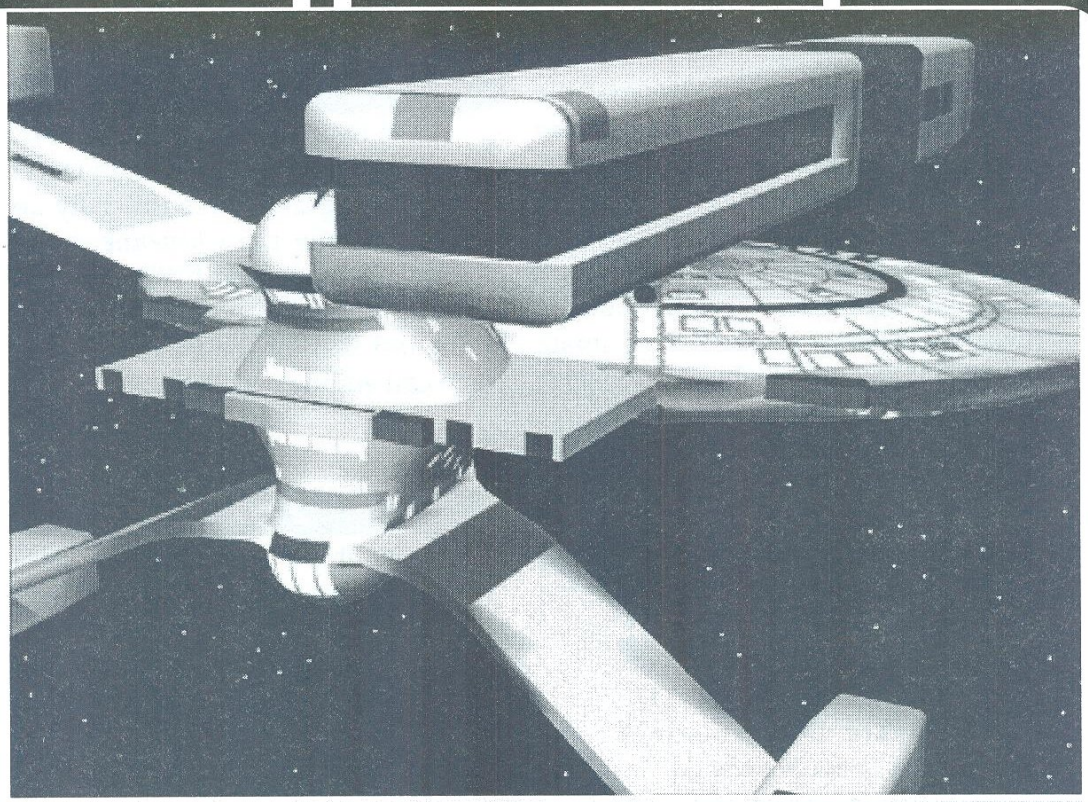


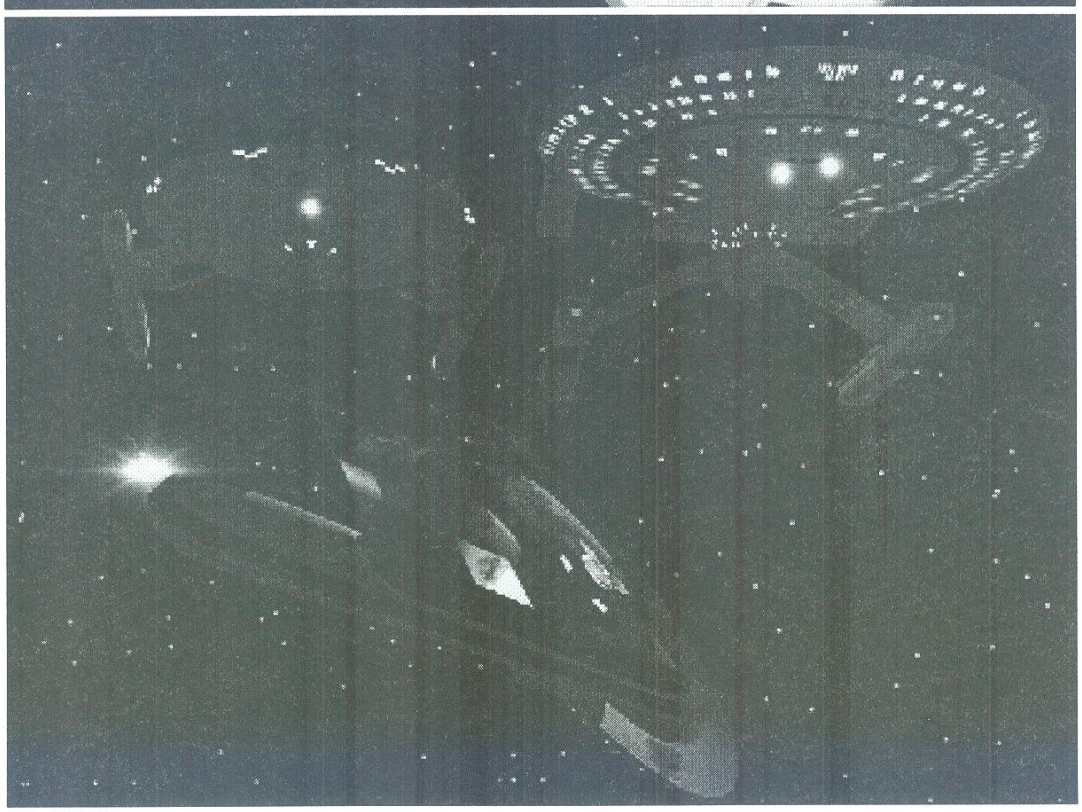












Wolf 359

Both the *U.S.S. CHEYENNE* and the *U.S.S. SIMMS* (NCC-1479), arrive in the Wolf 359 solar system to survey the wreckage such as the *U.S.S. LANGLEY* (NCC-19158) after the disastrous battle with the Borg on SD 44001.4.

ing less stressful on the ship as a whole when transiting from sublight to warp speeds due to the warp-field stress dynamics geometry of such operations. One benefit to this design is the light torsal stress imposed at sublight speeds about all three axes. This dynamic is further improved by the use of small, Inertial Dampening Field (IDF) generators located in the cross beam support box for the warp pylon attachment points.

Keeping with the current design philosophy of having independant Bridge Modules that can be replaced at refit times or when a new Captain takes command of the ship, the *Cheyenne* was the testbed design for the Mark One *Nebula / Galaxy* Bridge Modules. The *New Orleans* also benefitted from this technological development.

The ventral side of the saucer hull has the main shuttlecraft hanger bay with two hanger doors to either side of the ventral pylon.

Construction Chronology

Starfleet was completing convoy escort duties aiding the Klingon evacuation of (old) Qo'noS to (new) Qo'noS - which is now referred to as the Klingon Homeworld. When the tensions on the Cardassian and Talarian borders began to erupt, new escort ship designs were needed to go along with the projected *Ambassador* class then under developement.

2336

On September 4, 2336, both the *Cheyenne* and *New Orleans* class Developement Programs were officially approved. While the *Cheyenne* would maintain an improved FWF - 4 engine design, the *New Orleans* program would be the test bed for the FUWA - 1 class warp coil engine nacelles.

2337

The ship's spine for NX-50000, *U.S.S. Cheyenne*, was welded together in a special ceremony in the Salazzaar ship yard docking bay four. In attendance were members of the Cheyenne Indian Nation of North America to oversee the beginning of the third Federation starship to bear it's name.

2338

Increased tensions out on both the Cardassian and Talarian borders motivated the Federation Council and Starfleet to field their new starships to the region. A change in the construction contract was made to increase the production rates of the follow-on vessels in the *Cheyenne* class upon successful completion of the prototype vessel. Instead of the original 14 ship contract, the total purchase for this class was pushed up to 28 ships.

2339

The four Warp-Drive nacelles were attached to the Star Drive section. By the end of the year, low speed warp speed trials were taking place. Main hull was only 47% completed.

Construction began in bays six and three on two other *Cheyenne* class starships (the *Navajo* and *Comanche*)

2340

Weapon systems, Long-Range sensors, and other vital hull systems were installed including other final touches to the fitting out of the *Cheyenne*. Hull integrity was complete. All SIF/IDF systems and computer cores came on line. Warp and Impulse drives were certified as flight capable as were all sensors and communication systems.

2341

January 9, 2341 was the offical launching of the *U.S.S. Cheyenne*. After conducting acceptance trials, Starfleet officially commissioned the *U.S.S. Cheyenne* on April 8, 2341. While conducting ship trials,a software problem was detected that caused the SIF to cut out at low warp speed maneuvers. It was quickly corrected.

Navajo and *Comanche* were at 63% and 46% completed stages respectively. Hulls for the *Arapaho, Kiowa, Seminole* were laid down.

Ships of the Class

The purchase order of 29 ships of the *Cheyenne* class was further modified for an additional 12 ships as the Border Wars heated up. These additional ships were named after famous Indian tribe leaders up to the modern era and their NCC numbers are mixed in with the original batch numbers. Since construction of this ship was contracted out to several shipyards across the Federation, there are no sequential hull numbers unless the ships were built at the same ship yard.

Debate rages in the Federation Apportions Committee for the next round of starship purchases by Starfleet. Since there might be a possible conflict in the future with the Gamma Quadrant Dominion, should more proven designs be built; or abandon in favor of newer technology designs like the *Intrepid* class.

If there are to be more *Cheyennes* to be built, the following is pre-approved names from the last SFRA name choice committee: *Hiawatha, Nez Percés, Modocs, Blackfeet, Shoshones, Washakie* (which means "the Rattler).

1. U.S.S. CHEYENNE, NCC - 50000:

Launched January 3, 2341, Commissioned April 8, 2341—

First ship of the new Exploration Cruiser class to replace the *Constellation II* class. On patrol along the UFP - Romulan Neutral Zone.

2. U.S.S. NAVAJO, NCC - 50001:

Launched February 7, 2342, Commissioned June 4, 2342—

Assigned to Beta Quadrant exploration zone.

3. U.S.S. COMANCHE, NCC - 50003:

Launched May 31, 2342, Commissioned September 19, 2342—

Assigned to Alpha Quadrant exploration zone.

4. U.S.S. ARAPAHO, NCC - 50011:

Launched September 22, 2342, Commissioned November 27, 2341—

Undergoing SLEP at Starbase 214. Will be reassigned to Gamma Quadrant exploration zone on completation of upgrade program.

5. U.S.S. KIOWA, NCC - 50012:

Launched December 10, 2342, Commissioned March 31, 2343—

Assigned to Alpha Quadrant exploration zone.

6. U.S.S. SEMINOLE, NCC - 50036:

Launched January 6, 2343, Commissioned May 1, 2343—

Assigned to Beta Quadrant exploration zone.

7. U.S.S. CROW, NCC - 50101:

Launched March 2, 2343, Commissioned June 18, 2343—

Assigned to Alpha Quadrant exploration zone.

8. U.S.S. POCAHONTAS, NCC - 50200:

Launched February 26, 2343, Commissioned July 8, 2343—

Assigned to Alpha Quadrant exploration zone.

9. U.S.S. CRAZY HORSE, NCC - 50446:

Launched April 12, 2343, Commissioned August 5, 2343. Destroyed September 13, 2356—

Served with the 43rd Fleet in action against the Cardassians during the Border Wars. Ship was ambushed and destroyed but managed to inflict enough casualities on the enemy to delay the invasion of Que IV and allow Starfleet reserve vessels to arrive on the scene to protect the colony there.

The previous ship to bear the name *Crazy Horse* was an *Excelsior* class ship that was in mothballs at Qualar Two. It was brought out of retirement and given it's younger cousin's NCC number by the politicians in the Council. Not realizing what a headache this will cause in the future to keep track of the actions of both of these vessels!

10. U.S.S. BLACK HAWK, NCC - 50495:

Launched July 22, 2343, Commissioned October 18, 2343—

Assigned to Alpha Quadrant exploration zone.

11. U.S.S. NATHAN LITTLEJOHN, NCC - 50533:

Launched September 4, 2343, Commissioned December 19, 2343—

Named after the Captain of the *U.S.S. Essex* in the Earth-Romulan War. He fought with distinction in the Third Battle of Gamma Hydra. Assigned to Alpha Quadrant exploration zone.

12. U.S.S. APACHE, NCC - 51821:

Launched January 26, 2344, Commissioned April 2, 2344—

Assigned to Alpha Quadrant exploration zone. Was at Starbase Salem One when the Tholians paid the base a second visit later in early 2354. The *Apache* lived up to the ferocity of it's name in the course of protecting the base.

13. U.S.S. SHAWNEE, NCC - 51822:

Launched March 1, 2344, Commissioned May 11, 2344—

Undergoing SLEP at Starbase 176. Assigned to Alpha Quadrant exploration zone.

14. U.S.S. CHICKASAW, NCC - 52555:

Launched May 28, 2344, Commissioned July 20, 2344—

Assigned to Alpha Quadrant exploration zone.

15. U.S.S. MOHAWK, NCC - 52696:

Launched June 30, 2344, Commissioned August 27, 2344—

Assigned to Beta Quadrant exploration zone.

16. U.S.S. IROQUOIS, NCC - 52707:

Launched August 3, 2344, Commissioned October 21, 2344—

Overdue at Deep Space Three, and now declared Missing in Action near the Dark Nebula region (2371).

17. U.S.S. SIOUX, NCC - 52882:

Launched October 9, 2344, Commissioned December 7, 2344—

Assigned to Alpha Quadrant exploration zone. Was damaged in an encounter with the Breen at Atatex III(2372). Undergoing early SLEP at Starbase 74.

18. U.S.S. CAYUSE, NCC - 52996:

Launched November 10, 2344, Commissioned January 25, 2345—

Assigned to Alpha Quadrant exploration zone.

19. U.S.S. CHOCTAW, NCC - 53201:

Launched February 2, 2345, Commissioned April 15, 2345. Destroyed September 23, 2358.—

Lost in action during the Border Wars.

20. U.S.S. TARHE, NCC - 53236:

Launched March 29, 2345, Commissioned May 25, 2345—

Assigned to Alpha Quadrant exploration zone.

21. U.S.S. DELAWARE, NCC - 53941:

Launched August 16, 2345, Commissioned November 5, 2345—

Assigned to UFP - Romulan Neutral Zone.

22. U.S.S. TONKAWA, NCC - 54083:

Launched October 19, 2345, Commissioned December 4, 2345—

Assigned to Alpha Quadrant exploration zone.

23. U.S.S. MESCALERO, NCC - 54239:

Launched December 16, 2345, Commissioned March 3, 2346—

Assigned to Alpha Quadrant exploration zone.

24. U.S.S. PAWNEE, NCC - 55366:

Launched March 1, 2346, Commissioned May 29, 2346—

Assigned to Alpha Quadrant exploration zone.

25. U.S.S. COCHISE, NCC - 56520:

Launched May 11, 2346, Commissioned July 27, 2346—

Assigned to Beta Quadrant exploration zone.

26. U.S.S. GERONIMO, NCC - 56972:

Launched July 22, 2346, Commissioned September 24, 2346—

Assigned to Alpha Quadrant exploration zone.

27. U.S.S. DAKOTA, NCC - 58104:

Launched August 12, 2346, Commissioned November 4, 2346—

Assigned to Beta Quadrant exploration zone.

28. U.S.S. SENECA, NCC - 59269:

Launched October 3, 2346, Commissioned December 5, 2346—

Assigned to Alpha Quadrant exploration zone.

29. U.S.S. TOMAHAWK, NCC - 60013:

Launched December 6, 2346, Commissioned March 14, 2347—

Assigned to Alpha Quadrant exploration zone.

30. U.S.S. WOUNDED KNEE, NCC - 60014:

Launched February 20, 2347, Commissioned May 21, 2347—

Assigned to Alpha Quadrant exploration zone.

31. U.S.S. CHEROKEE, NCC - 62292:

Launched May 11, 2347, Commissioned August 27, 2347—

Assigned to Alpha Quadrant exploration zone.

32. U.S.S. ZUNI, NCC - 64457:

Launched August 1, 2347, Commissioned November 4, 2347—

Assigned to Alpha Quadrant exploration zone.

33. U.S.S. WILLIAM BEARCLAW, NCC - 65811:

Launched October 31, 2347, Commissioned January 6, 2348—

Named after Captain William Bearclaw who settled a disput between two Klingon battle squadrons during the evacuation from Qo'nos.

34. U.S.S. MOHICAN, NCC - 66679:

Launched January 31, 2348, Commissioned March 26, 2348—

Assigned to Alpha Quadrant exploration zone.

35. U.S.S. RED CLOUD, NCC - 67703:

Launched March 27, 2348, Commissioned June 4, 2348—

Assigned to Alpha Quadrant exploration zone.

36. U.S.S. QUANAH PARKER, NCC - 71811:

Launched April 4, 2348, Commissioned July 22, 2348—

The *Quanah Parker* recently completed its SLEP program at Starbase 74. Assigned to Alpha Quadrant exploration zone.

37. U.S.S. AHAWAHNNE, NCC - 73620:

Launched June 14, 2348, Commissioned August 28, 2348—

Almost destroyed by the Borg at Wolf 359, the *Ahawahnne* has been place through the SLEP program and is now operational with the fleet once again. Assigned to Alpha Quadrant exploration zone.

38. U.S.S. TRUE BEAR, NCC - 73753:

Launched July 25, 2348, Commissioned September 5, 2348—

Assigned to Beta Quadrant exploration zone.

39. U.S.S. LAKOTA, NCC - 73897:

Launched November 9, 2348, Commissioned January 8, 2349—

Assigned to Beta Quadrant exploration zone.

40. U.S.S. CHINOOK, NCC - 73922:

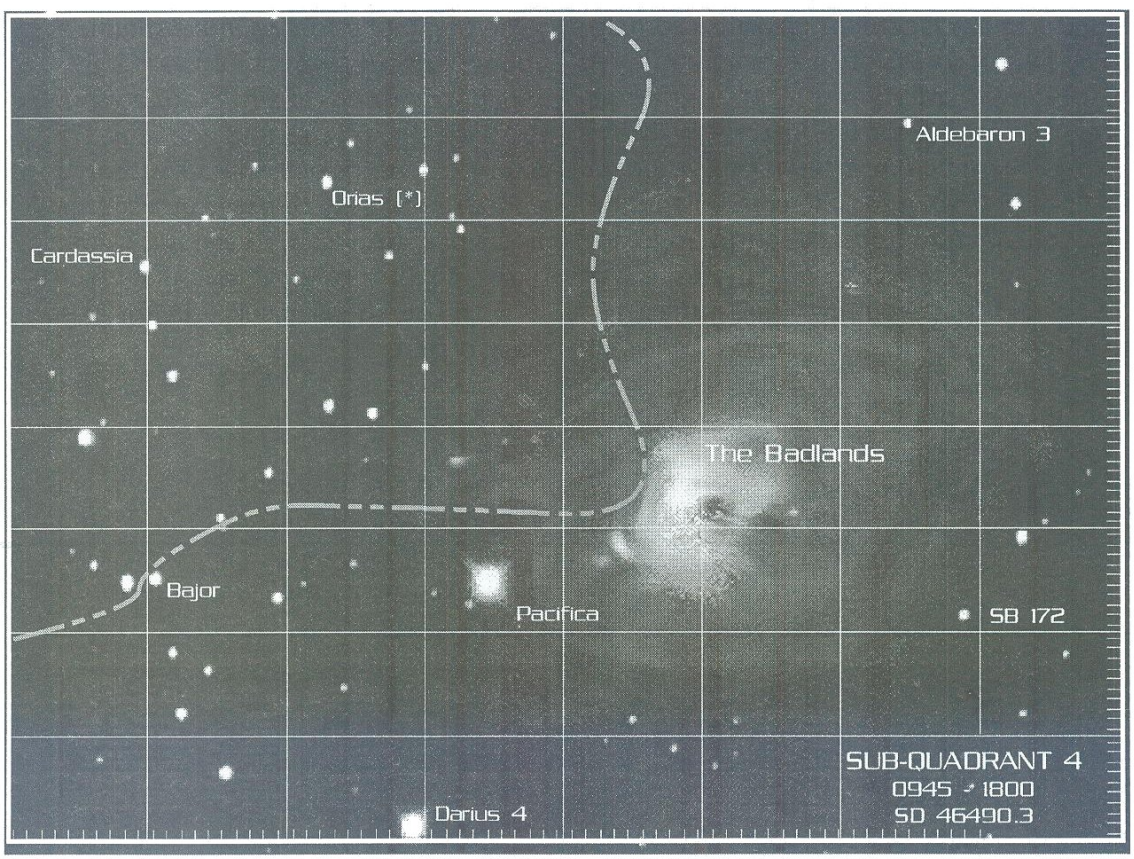
Launched December 27, 2348, Commissioned March 14, 2349—

Assigned to Gamma Quadrant exploration zone.

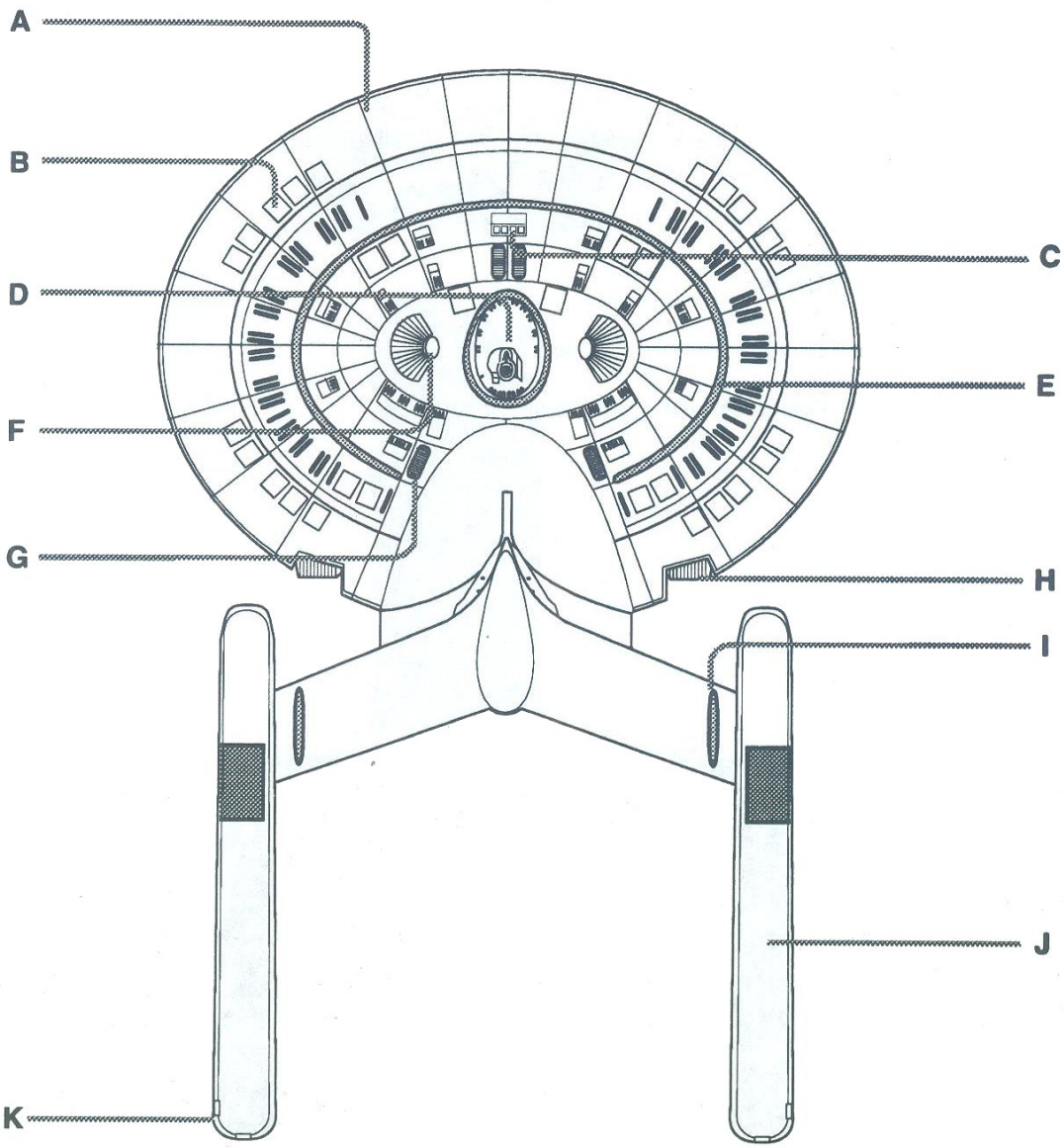
41. U.S.S. WHITE WOLF, NCC - 74004:

Launched January 26, 2349, Commissioned May 31, 2349—

Assigned to Alpha Quadrant exploration zone.

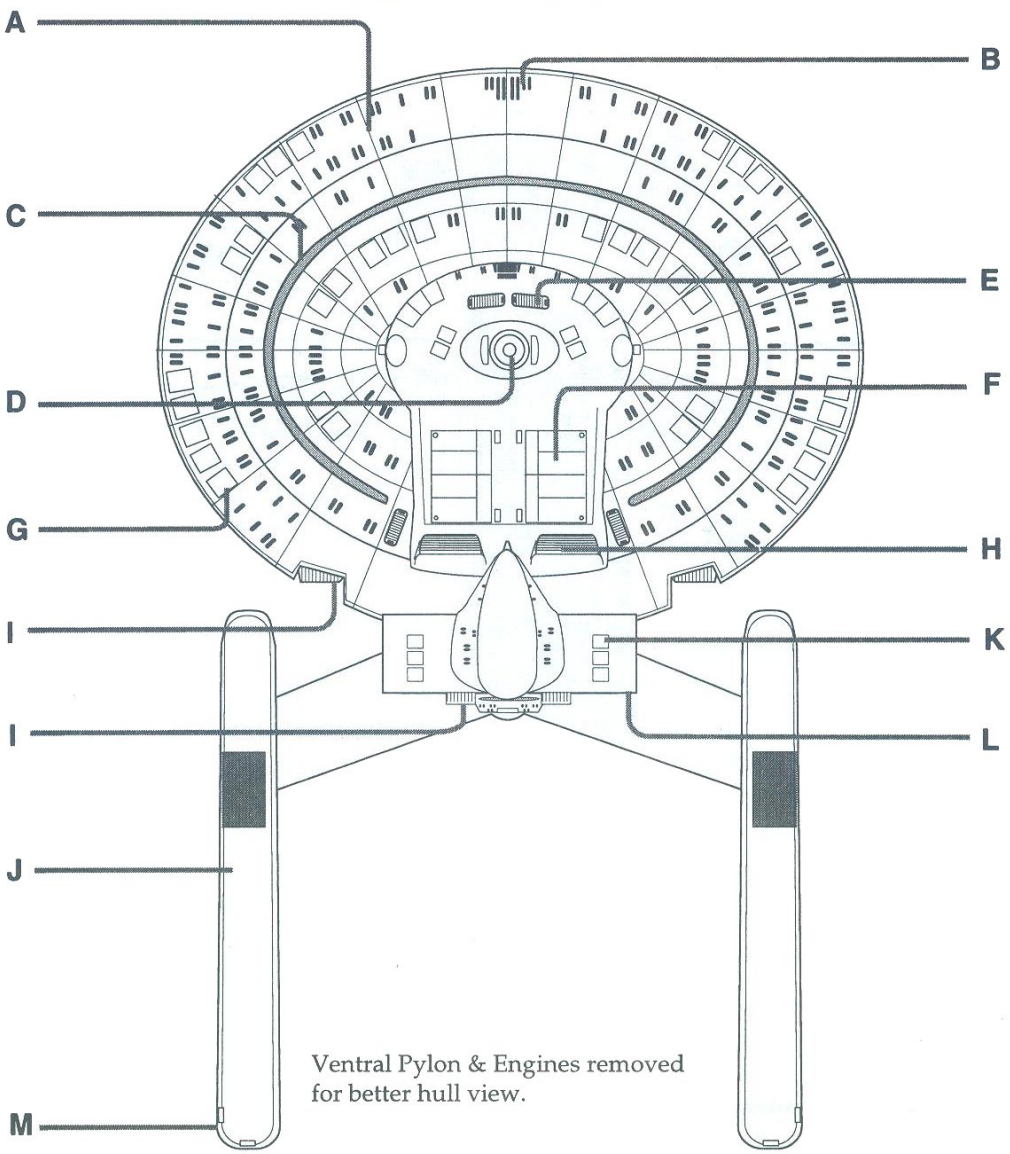


TOP VIEW



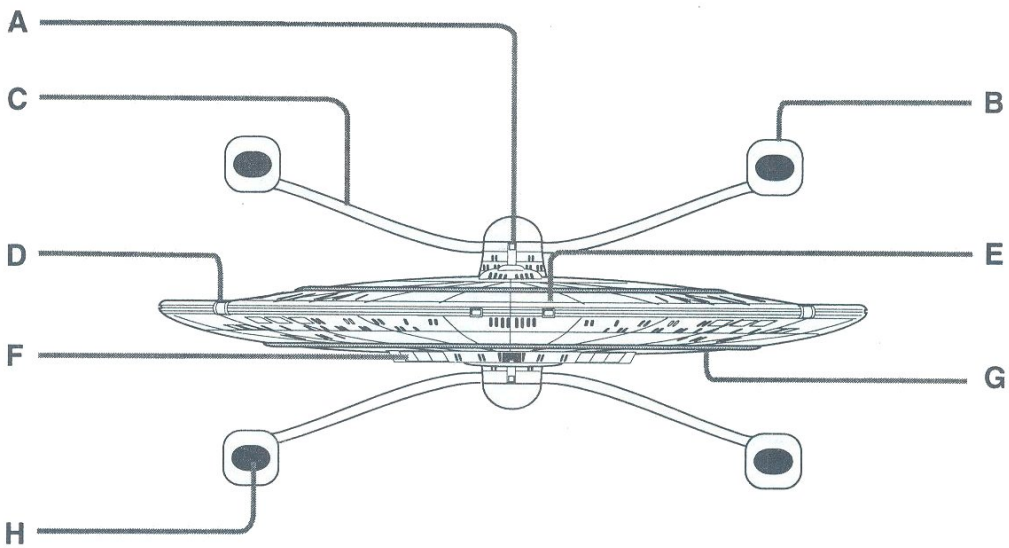
A. DEFLECTOR GRID
B. LIFEBOAT HATCH COVER
C. NAVIGATIONAL DEFLECTOR
D. MAIN BRIDGE
E. PHASER RING
F. COMPUTER CORE HATCH COVER
B. TRANSPORTER EMITTER ARRAY
H. IMPULSE ENGINE P / S
I. PHASER EMITTER
J. WARP DRIVE NACELLES (4)
K. AFT RCS THRUSTERS

BOTTOM VIEW



A. DEFLECTOR GRID
B. SHIP'S LOUNGE
C. PHASER RING
D. SHIP'S YACHT
E. TRANSPORTER EMITTER ARRAY
F. SHUTTLEBAY BLOW AWAY PANELS
G. MAIN HULL LIFEBOAT HATCH COVER
H. SHUTTLE BAY DOORS P / S
I. IMPULSE ENGINES, MAIN & STARDRIVE HULLS P / S
J. WARP DRIVE NACELLE (4)
K. STARDRIVE LIFEBOAT HATCH COVERS (VENTRAL SIDE ONLY) P / S
L. STARDRIVE HULL
M. AFT RCS THRUSTERS

BOW VIEW

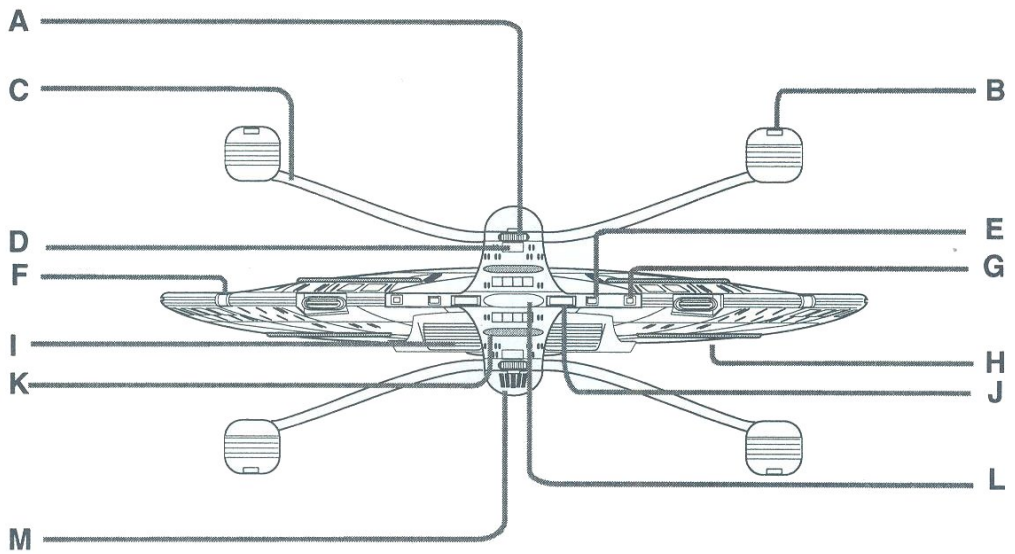


Meters

0 50 100

A. STARDRIVE HULL NAVIGATIONAL DEFLECTORS
B. WARP DRIVE NACELLE (4)
C. WARP DRIVE PYLON (4)
D. RCS THRUSTER
E. PHOTON TORPEDO LAUNCHER P / S
F. LIFEBOAT HATCH COVERS
G. LOWER PHASER RING
H. BUSSARD COLLECTOR

STERN VIEW

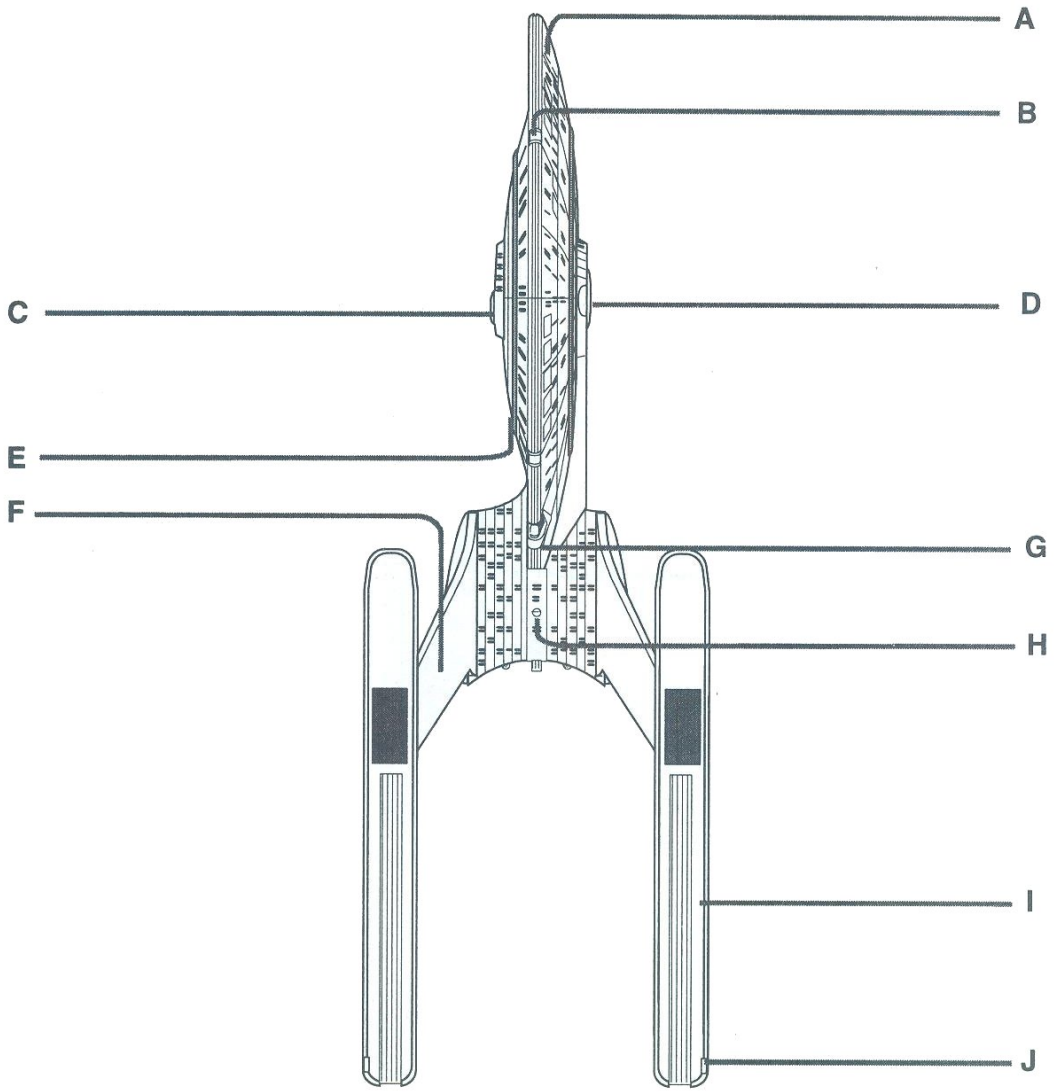


Meters

0 50 100

A. TRANSPORTER EMITTER ARRAY
B. AFT RCS THRUSTERS
C. WARP DRIVE NACELLE & PYLON (4)
D. LARGE LIFEBOAT HATCH COVER
E. AFT PHOTON TORPEDO LAUNCHER P / S
F. RCS THRUSTER P / S
G. STARDIVE RCS THRUSTER P / S
H. LOWER MAIN HULL PHASER RING
I. SHUTTLEBAY P / S
J. STARDRIVE IMPULSE ENGINES P / S
K. AFT PHASER EMITTER
L. M/ARA HULL COVER
M. BOTANY GARDENS

SIDE VIEW

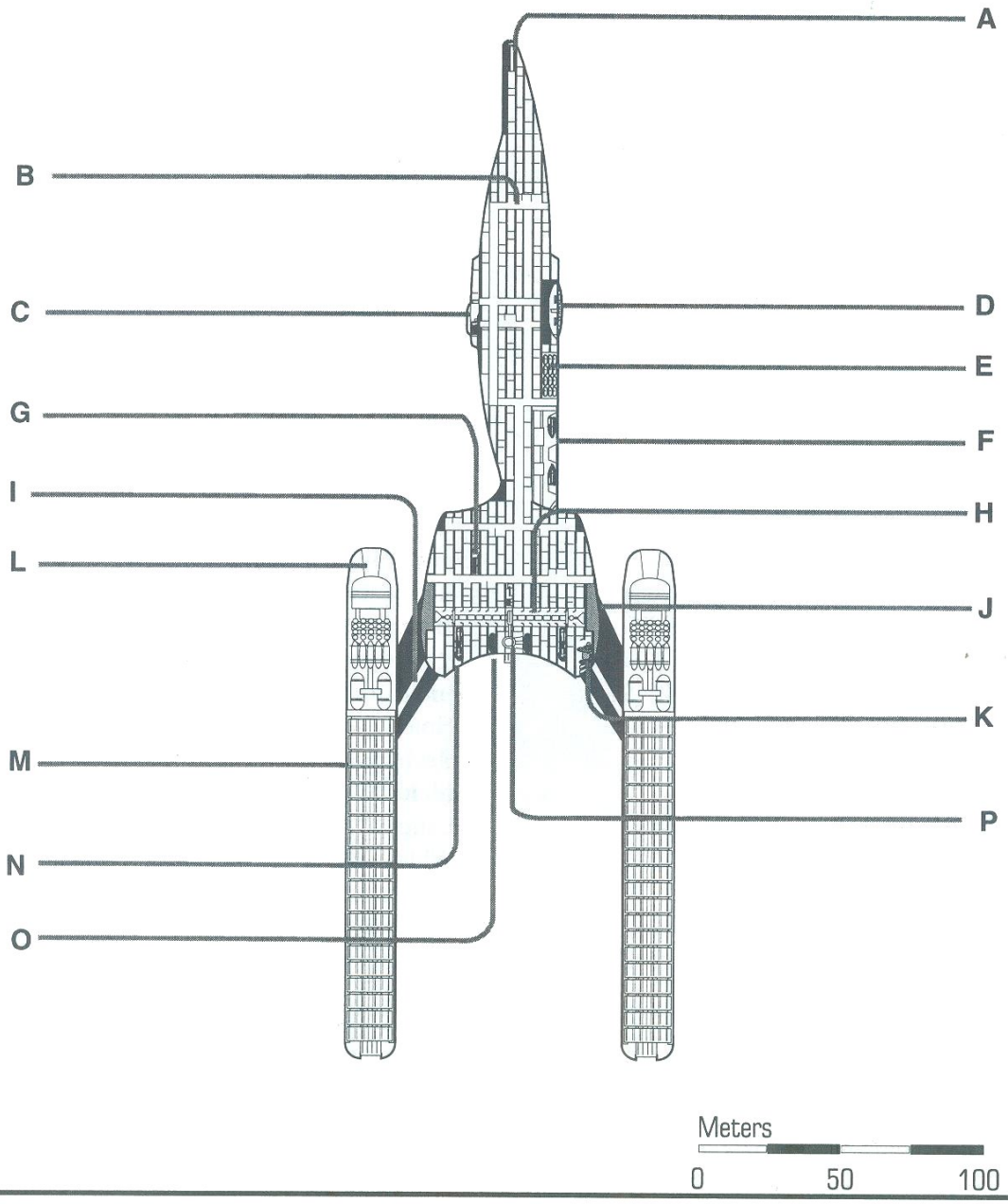


Meters

0 50 100

A. LIFEBOAT HATCH COVERS
B. RCS THRUSTER
C. BRIDGE
D. CAPTAIN's YACHT
E. PHASER RING
F. WARP DRIVE PYLON (4)
G. IMPULSE DRIVE P / S
H. DOCKING HATCH P / S
I. WARP DRIVE NACELLE (4)
J. AFT RCS THRUSTERS

CROSS SECTION VIEW

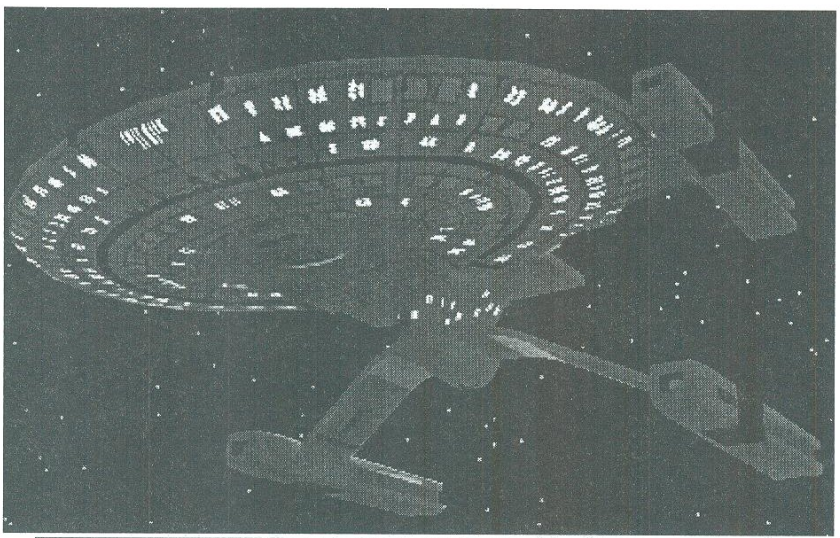


A. PHOTON TORPEDO LAUNCHER
B. TURBOLIFT SHAFTS
C. MAIN BRIDGE
D. CAPTAIN's YACHT
E. MAIN CARGO BAY
F. SHUTTLEBAY
G. BATTLE BRIDGE
H. POWER TRANSFER CONDUIT (PTC)
I. JEFFERIES TUBE
J. LOWER DEUTERIUM FUEL TANK
K. BOTANY GARDENS
L. BUSSARD COLLECTOR
M. WARP DRIVE COILS
N. LARGE LIFEBOAT
O. MATTER/ANTIMATTER STORAGE CONTAINERS
P. M/ARA

Ship Specifics

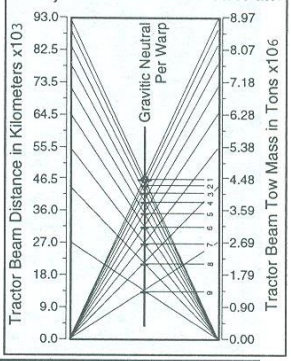
Model Number: I
Date Entering Service: 2341
Vessel Dimensions (Meters):
Length: 357.56
Beam: 233.5
Height: 114.01
Vessel Displacement(Metric Tons):
Empty Load: 1,000,000
Standard: 1,200,000
Full Load: 1,500,000
Performance (Impulse):
Impulse Units: 2 P/S Main Hull, 2 P/S Stardrive Hull.
Max Cruise: C
Performance (Warp):
Warp Units: (4) FWF-4
Engine Output: 1500 Cochranes
Max. Safe Cruise: Warp 6.75
Emergency Speed: Warp 9.992
Vne (Never Exceed Speed): 9.9993
Duration (Years):
Standard: 5 Years
Maximum: 20 Years
Standard Ship Complement:
Crew: 300
Passengers: 200
Troops: 0
Emergency Max. Capacity: 1000
Medical Department:
Doctors: 6
Nurses: 22
Laboratories: 22
Brig Capacity: 12
Tractor Beams: 1
Tow Capacity: 5.72×10^6 mt
Max Range (Kilometers): 1.26×10^5
Transporters:
Std. 6 person: 9
12 - person: 0
Emergency 22 - person: 8
Cargo: 4

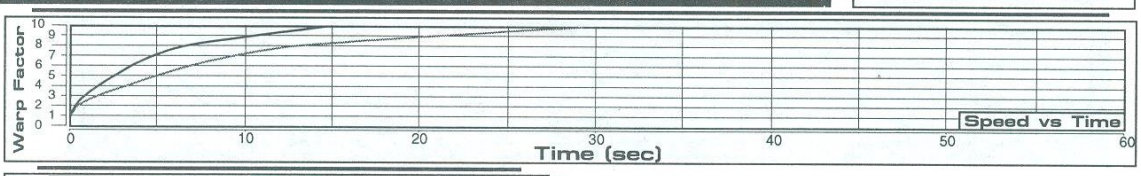
Cargo Specifications:
Standard Cargo Units: 520
Cargo Capacity: 26,000 mt
Shuttlecraft:
Docking Ports: 2
Shuttlecraft Bays: 2
Shuttlecraft Complement:
Work Bees: 0
Travel Pods: 8
Aquatic Shuttle: Optional
Light Shuttles: 4
Medium Shuttles: 4
Large Shuttles: 4
Small Lifeboats: 80
Large Lifeboats: 2
Sensor Information:
Rating Type: 6
Computers:
Rating Type: (3) Daystrom Duotronic 12
Shield Rating:
Holdoff Power: 4.78×10^{11} W
Recharge Rate: 40 Nanoseconds
Shield Dimensions (Meters):
Length: 715.12
Width: 467.1
Height: 228.02
Weapons Inventory:
I. Phasers -
Type: FH - 15, Type X
Total Number: 8
Range (Kilometers): 300,000
Output: 5.1 Mw
II. Photon Torpedoes -
Type: FP - 10
Total Number (Launchers): 4
(2 Fwd, 2 Aft)
Total Inventory (Shells): 90 - 100
Range (Kilometers): 3,500,000
Rate of Fire (Each): 10

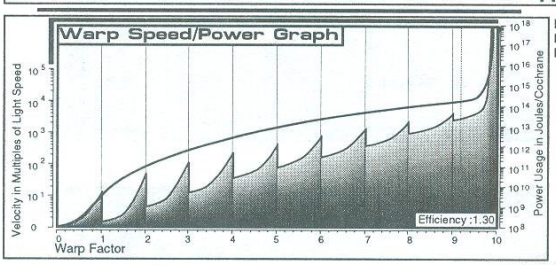


Tractor Beam Specifications

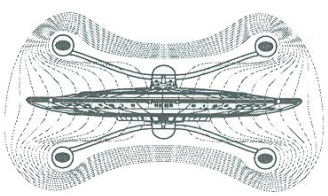
Primary Tractor Beam Load Calculator



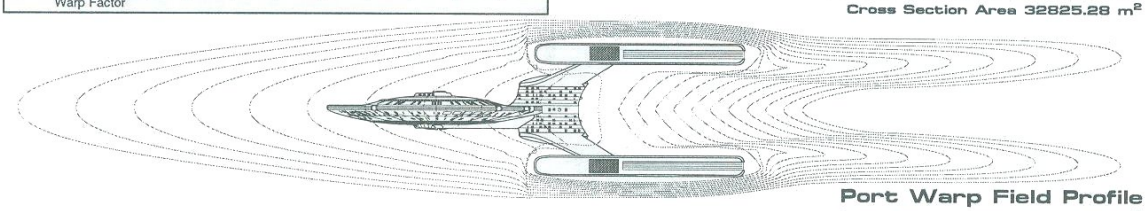




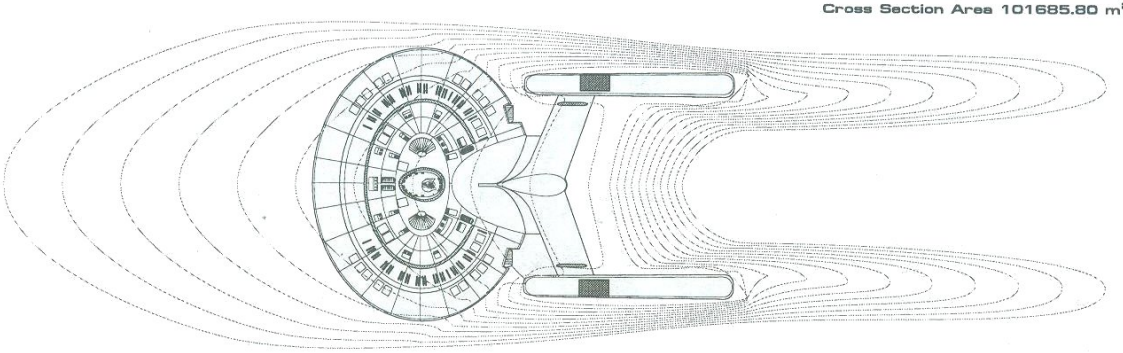
Field Length 943.52m
Field Width 279.42m
Field Height 153.53m



Front Warp Field Profile
Cross Section Area 32825.28 m²



Port Warp Field Profile
Cross Section Area 101685.80 m²



Top Warp Field Profile
Cross Section Area 181791.49 m²

Information Charts & Graphs by Eric Kristiansen, 1995. 3D Artwork by Ken Schmitt, 1995.

U.S.S. SEMINOLE

STARFLEET REGISTRY NCC-50036

CHEYENNE CLASS EXPLORATION CRUISER
ANTARE, ANTARES SHIPYARDS•YOYODYNE DIV.

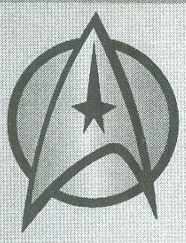
COMMISSIONED STARDATE: 17242.6

STARFLEET COMMAND

Chief of Staff: Adm. George A. Lucus
Fleet Operations: Adm. Richard Fisher
Exploration Div.: V.Adm. Kevin Goodgion
Fleet Administration: V.Adm. Darrion Little
Tactical Command: V.Adm. Gaylon Taff
Mission Operations: V.Adm. Rush Limbaugh

Fleet Yard Operations: Capt. Seth Neill
Advance Technology Div: Capt. Jason Bradley
Planetary Imaging: Capt. W. Marshal
Orbital Ops: Capt. Michael Bolda
Starfleet Academy Det.: Capt. Gary Bradley
Research Div.: Capt. Chris Hatfield

"Ghost Riders In The Sky!"



U.S.S. NATHAN LITTLEJOHN

STARFLEET REGISTRY NCC-50533

CHEYENNE CLASS EXPLORATION CRUISER
TAU CETI, LANCING ASSEMBLY YARDS
YOYODYNE DIV.

COMMISSIONED STARDATE: 17262.9

STARFLEET COMMAND

Chief of Staff: Adm. George A. Lucus
Fleet Operations: Adm. Richard Fisher
Exploration Div.: V.Adm. Kevin Goodgion
Fleet Administration: V.Adm. Darrion Little
Tactical Command: V.Adm. Gaylon Taff
Mission Operations: V.Adm. Rush Limbaugh

Fleet Yard Operations: Capt. T.J. Drake
Advance Technology Div: Capt. Janet Nix
Planetary Imaging: Capt. Charles Hensley
Orbital Ops: Capt. Jim Mills
Starfleet Academy Det.: Capt. Sid Deavours
Research Div.: Capt. David Cuthbert

"... My God! It's Full of Stars!"

3
COMMAND SYSTEMS

The *Cheyenne* has two major command centers. The standard Main Bridge and Battle Bridge (or once referred to as the Auxiliary Control Room). While both bridges can function in combat, it is in the Battle Bridge that more tactical information is displayed to aid the Captain in battle tactics and in intelligence gathering. Normally, only a call to Battle Stations will find the Captain transferring command to the Battle Bridge.

Main Bridge

According to normal operating procedures, command of the ship is controlled from the Main Bridge under the command of the Captain, First Officer, or the OD (Officer of the Deck). Located on Deck 6 of the Main Hull, the Bridge Module (BM) has become the standard *Nebula / Galaxy* class module that is interchangeable with other ships of the fleet. The internal arrangement of the modern *Cheyenne* Bridge Module is not all that different from its much larger cousins. The original BM had a much different, more traditional internal layout commonly found on the *Excelsiors* or even on the *Constitution* (refit) class.

Location and Layout

The modern BM command area is located towards the aft section of the bridge in front of the Tactical Station and usually flanked by seating for the First Officer and another crew member, or a guest to the bridge. Forward of this command area is the control stations with the OPS (Operations) and Flight Control (CONN). These stations have the SFRA standard reclining couches with swing-out control consoles.

Behind the Tactical station are the Mission Control Panels. These operate as Science stations, Mission Operations, and Environmental and Engineering readout panels.

At the far forward end of the bridge chamber is the holographic matrix main viewer. Behind that is the Viewer equipment bay that houses the ODN (Optical Data Network) subprocessors, electrical trunks and other utilities for the bridge. Similar bays are located to both port and starboard in the BM.

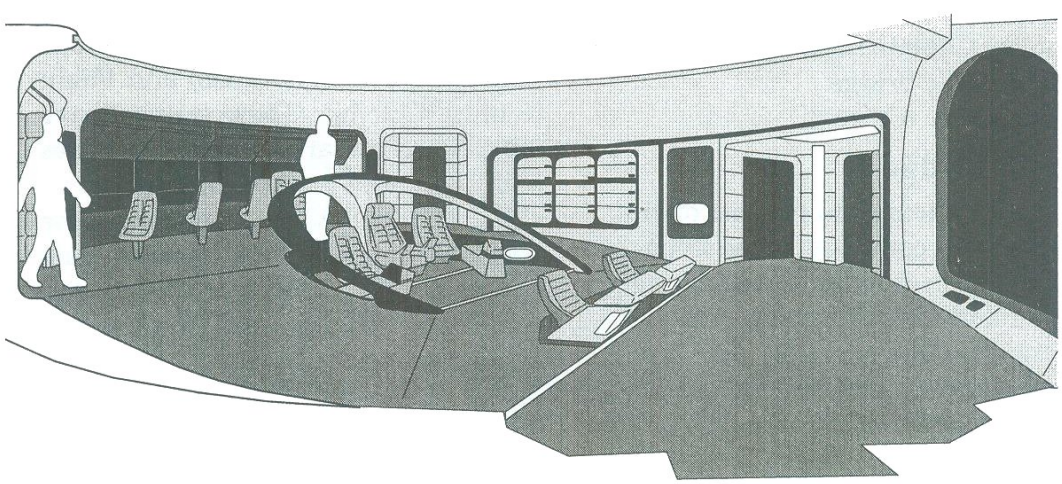
Workstations

The *Cheyenne* makes use of the current Federation software-defined, touch sensitive workstations for all consoles throughout the ship. The operator is able to define the optimal workstation interface for the individual job use. This panel layout / function is keyed to the individual crew member for that shift once his/her access code has been entered. As a rule, however, there is a standardized panel design for each major operating station. This allows a new crew member to take over a control panel function if the original operator is unable to function at that control station.

Captain's Ready Room and Other Facilities

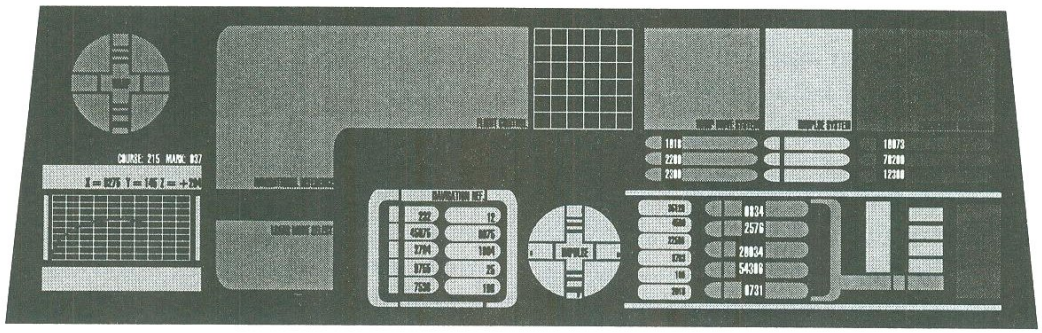
Portside and forward is the hatchway going into the Captain's Ready Room. Equipped with a small head, this room serves primarily as the ship's office, but it can also serve as a small, private conference room. It is also equipped with a replicator and a couch that can serve as a single bed so that the Captain can "live on the bridge" if there is a crisis situation so that he never has to leave the bridge (the head also has a small closet for fresh uniforms).

Directly aft of the Mission Control Panels and their respective equipment bays is Conference Room Number One.



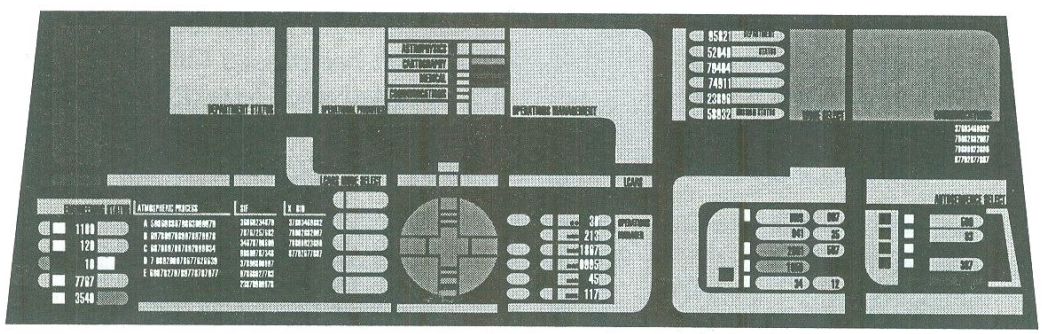
The following workstation panel layouts are typical for the normal functioning of the *Cheyenne* class vessel. For more detail information on actual panel functions, please refer to the STAR TREK: THE NEXT GENERATION TECHNICAL MANUAL by Rick Sternbach and Michael Okuda.

FLIGHT CONTROL PANEL (CONN)



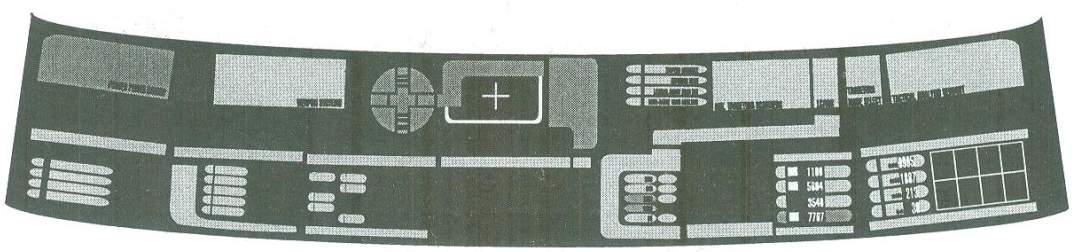
This is the panel that controls ship's movement through space. As with all Starfleet vessels, most of the control functions are heavily automated allowing the operator to concentrate on the job of piloting the ship.

OPERATIONS CONTROL PANEL (OPS)



This is the panel that controls ship's resources or hardware. The OPS operator must coordinate activities so that mission objectives do not come into conflict.

TACTICAL CONTROL PANEL (TAC)



This is the panel that controls ship's communications, security, and weaponry.

Control Panels (MCP) level, through the access doorway that also provides the bridge crew with their own head and replicator, then back down another ramp in a short hallway to the conference room. The MCP level in the rear is only one third of a meter off the main deck level and as such is considered to be a part of the bridge deck level.

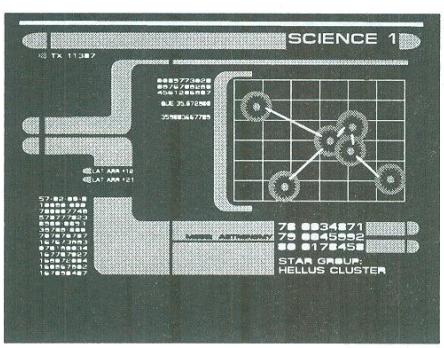
The conference room hallway is equipped with storage containers for emergency situtations like food and water if the replicators go off line. Emergency dedicated life-support (48 hours worth for 18 bridge personnel) is also provided at this location.

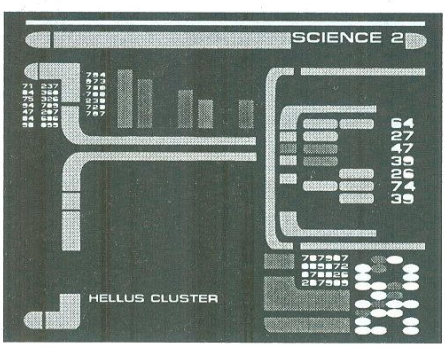
Directly to port of the main viewer is Turbolift 2. Along the same line, Turbolift 1 accesses the MCP level at the rear of the bridge. Starboard of the main viewer is the Emergency Turbolift to the Battle Bridge. It is provided with an independent power supply in case of total power failure that would prevent the other turbolifts from operating.

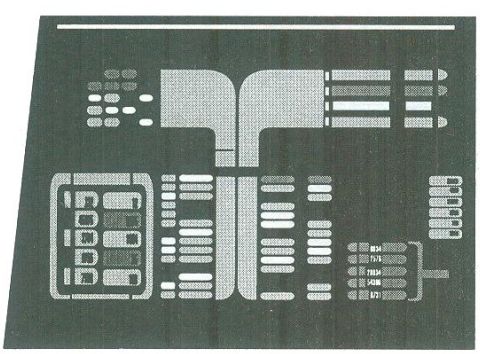
Main Bridge Operations

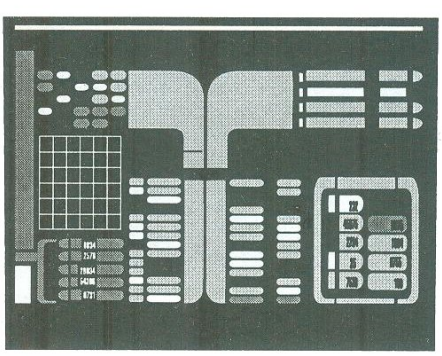
The Captain or First Officer commands the ship from the Main Bridge under normal operating conditions. When neither officer is present, the task falls on the appointed OD (Officer of the Deck). The command officers might be present on the bridge, but let the OD continued with his/her duties as a learning experience or to simply to evaulate the job performance of the OD and other bridge personnel. The OD has command of the ship even when the Captain is in his ready room. Any line officer that has passed OD watch tests may be called upon to take charge of the

SCIENCE STATIONS 1 & 2 CONTROL PANELS

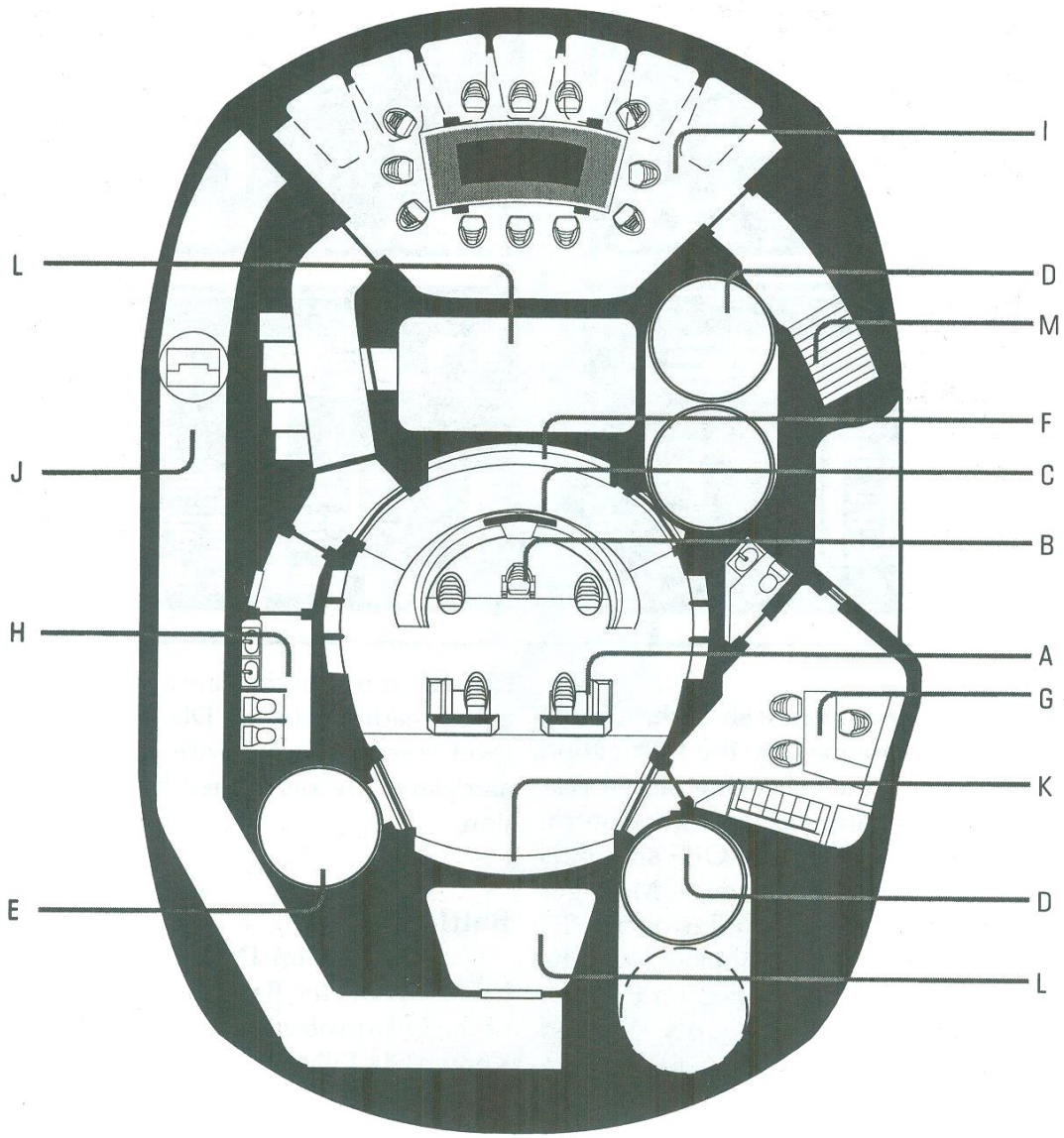




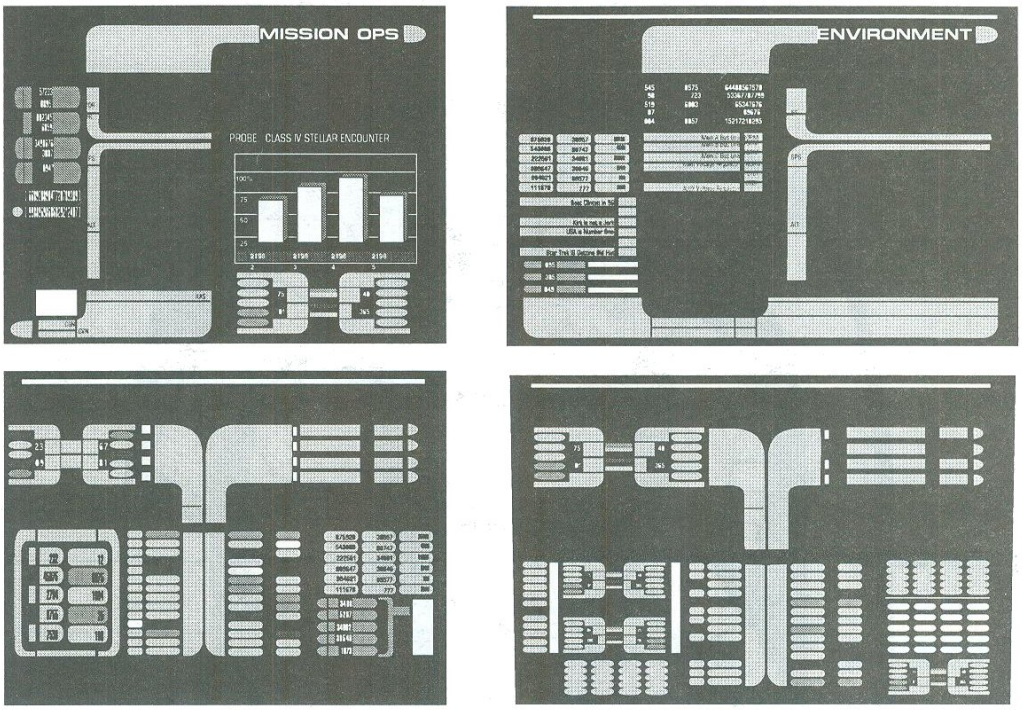




MAIN BRIDGE MODULE (MK 1)



A. COMM / OPS Station
B. CAPTAIN's Chair
C. TACTICAL STATION
D. TURBOLIFTS
E. EMERGENCY TURBOLIFT TO BATTLE BRIDGE
F. MCPS
G. CAPTAIN's READY ROOM
H. HEAD
I. CONFERENCE ROOM ONE
J. JEFFERIES TUBE
K. VIEWSCREEN
L. EQUIPMENT BAYS
M. STAIRS DOWN TO DECK BELOW



watch.

During the first shift, the CONN position is manned by the Navigation Officer. On the following shifts, that position is controlled by Flight Control Officers. Similarly, the OPS station is manned by the Operations Manager Officer on the first shift followed by OPS watch officers on the other shifts. The Tactical station is manned on the first watch by the Chief of Security followed by other, qualified security personnel.

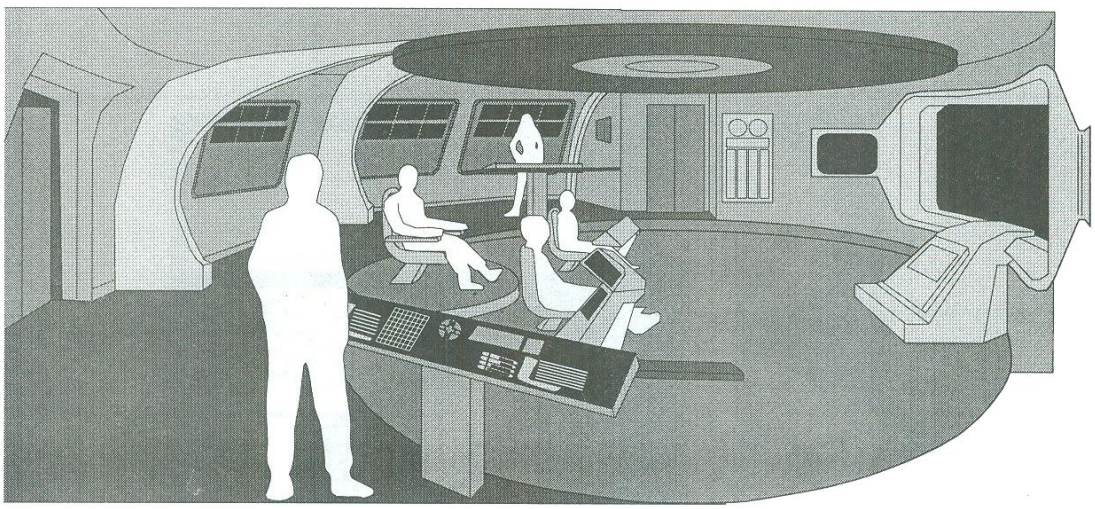
When the mission calls for it, the MCP stations are manned. One station might be configured to be a Resource Allocation station that assist OPS in critical management of ship resources. The Engineering station is normally manned only during alert situations to provide the bridge with critical ship status information.

When the ship is at alert status, all positions are to be manned and fully functional. Each officer or specialist supervises their own respective systems to make sure that they are at the appropriate readiness level. Diagnostics of a level commensurate with the current alert level are performed by each station.

Battle Bridge

Located on Deck 6 of the Star Drive section, the Battle Bridge is in one of the best-protected areas of the ship. Known as a BBM (for Battle Bridge), the layout is of traditional design with standardized BBMs with updated workstations. Such things as a Captain's Ready Room have been added to the BBM.

CONN and OPS are situated at the Main Bridge Console (once referred to as the Helm Console). Tactical has a smaller workstation behind the Captain's chair. Automated readout panels are provided around the circumference of the BBM and perform the same functions as the Main Bridge workstations.



U.S.S. CHEYENNE

STARFLEET REGISTRY NCC-50000

CHEYENNE CLASS EXPLORATION CRUISER
ANDOR, SALAZZAAR SHIPYARDS•YOYODYNE DIV.

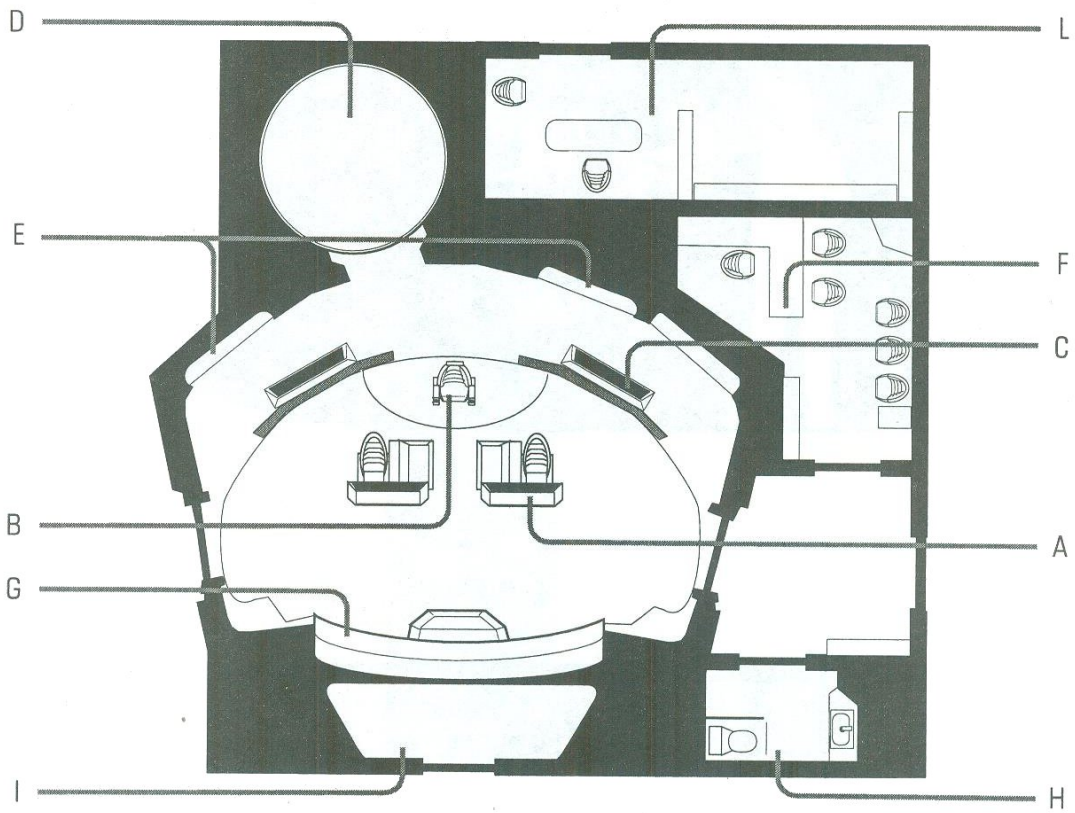
COMMISSIONED STARDATE: 17018.3

STARFLEET COMMAND

Chief of Staff:	Adm. Gene Coon
Fleet Operations:	Adm. Richard James
Exploration Div.:	Adm. Marvin Rush
Fleet Administration:	V.Adm. Debbie McGinnis
Tactical Command:	V.Adm. Adele Simmons
Mission Operations:	V.Adm. Douglas Trimble
Fleet Yard Operations:	Capt. Dick Brownfield
Advance Technology Div:	Capt. Scott Campbell
Planetary Imaging:	Capt. D.W. Shanks
Orbital Ops:	Capt. Eric Kristiansen
Starfleet Academy Det.:	Capt. Margie O'Neill
Research Div.:	Capt. Tony Tully

"First Star to the Right, and Step on it!"

BATTLE BRIDGE MODULE (MK 1)



A. CONN / OPS Station
B. CAPTAIN's Chair
C. TACTICAL STATION
D. TURBOLIFT TO BRIDGE
E. MCPs
F. CAPTAIN's READY ROOM
G. VIEWSCREEN
H. HEAD
I. EQUIPMENT BAYS
J. ENGINEERING SMALL TOOL EQUIPMENT BAY & OFFICE

Battle Bridge Operations

Staffing the BBM is different than staffing on the Main Bridge. While in normal cruise mode, the BBM is under the command of a Tactical Systems Officer (TSO) or another designated watch officer (like the Gunnery Officer or Torpedo Officer). They stand their watches alone.

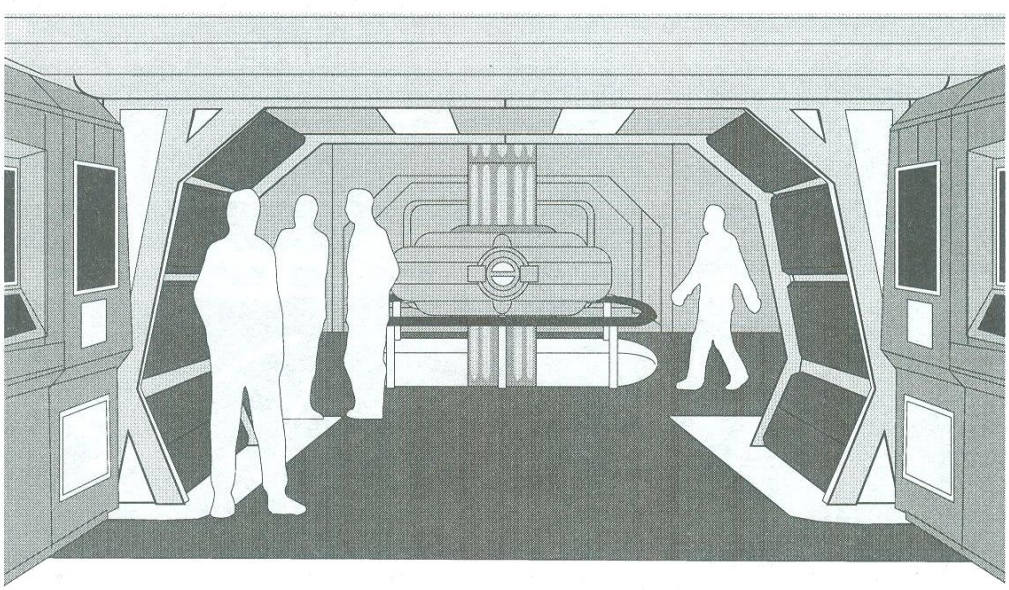
When the ship goes to alert status, CONN is staffed by a Flight Officer and his counterpart at OPS. Their mission is to perform system diagnostics, simulations, and administrative work while control remains with the Main Bridge.

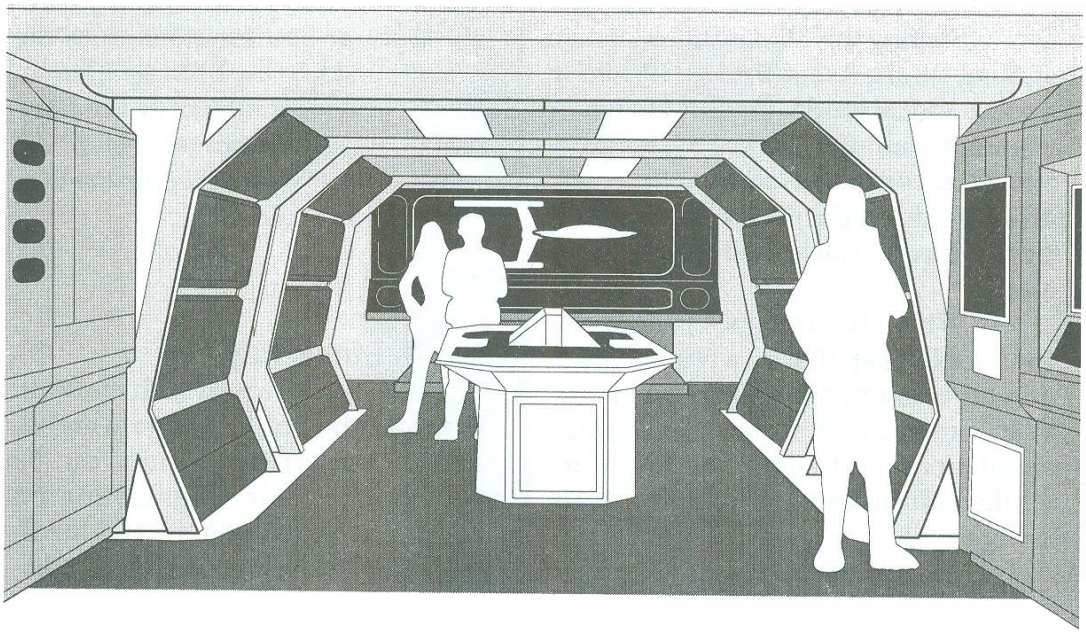
All stations are manned when the ship moves to a Red Alert status. Depending on the situation, the workstations may or may not be manned by the main bridge personnel. Weapons control may or may not be transferred to the BBM at this point.

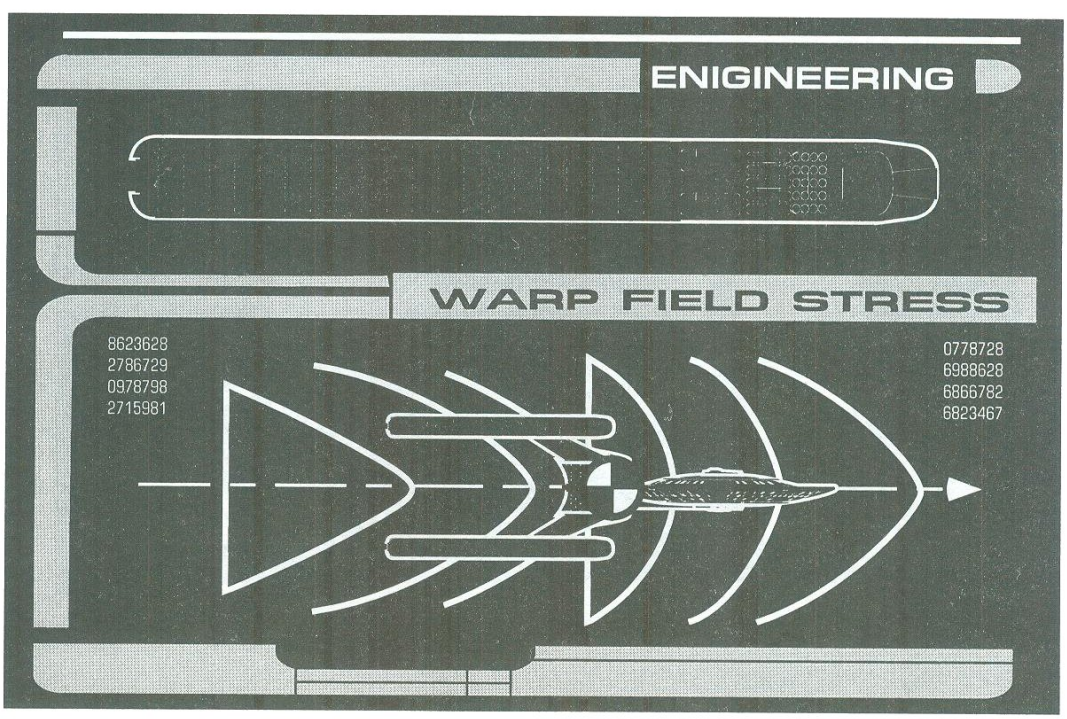
Only at Battlestations does the Captain transfer to the BBM with his senior staff and they take over the positions manned by the caretaker staff. All command functions for the ship are then be transferred to the BBM.

Main Engineering

If for some reason both the Main Bridge and the Battle Bridge were inoperative, basic flight control can be transferred to Main Engineering on Deck 10. By redefining several auxiliary panels, Main Engineering can display all propulsion, communications, sensor and flight control functions. Also, if no command staff member reports in, the Chief Engineer will then assume command. Weapons control is






ENIGINEERING
WARP FIELD STRESS
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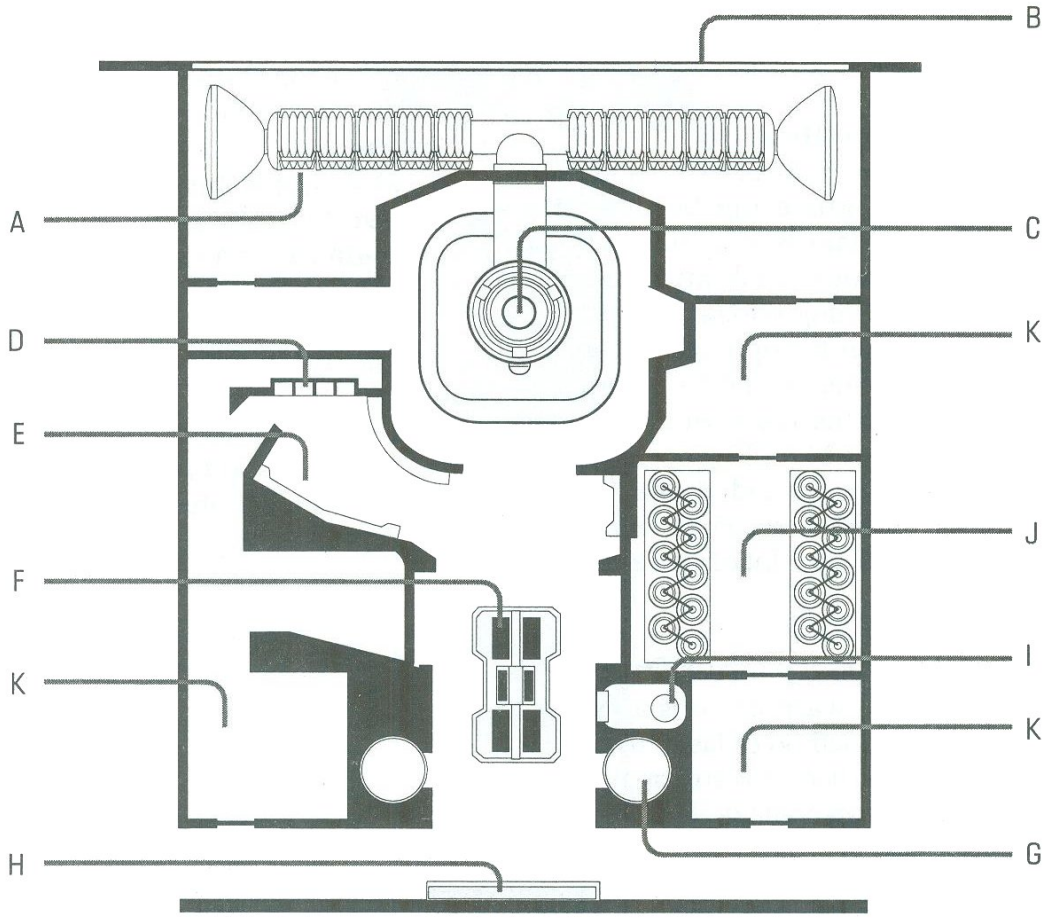
2786729
0978798
2715981
0778728
6988628
6866782
6823467

MAIN ENGINEERING



A. M/ARA (Matter / Antimatter Reactor Assembly)
B. M/ARA HULL BLOW-OUT COVER
C. ENGINE CORE
D. ISOLINEAR OPTICAL DATA BANK
E. ENGINEER's OBSERVATION OFFICE
F. MASTER SYSTEMS DISPLAY
G. TURBOLIFTS (P / S)
H. MASTER SITUATION MONITOR
I. JEFFERIES TUBE ACCESS
J. SHIP's BATTERIES
K. EQUIPMENT BAYS

transferred to the torpedo bay control room. Any shuttle operations are handled from Primary Flight (PriFly) Control room.

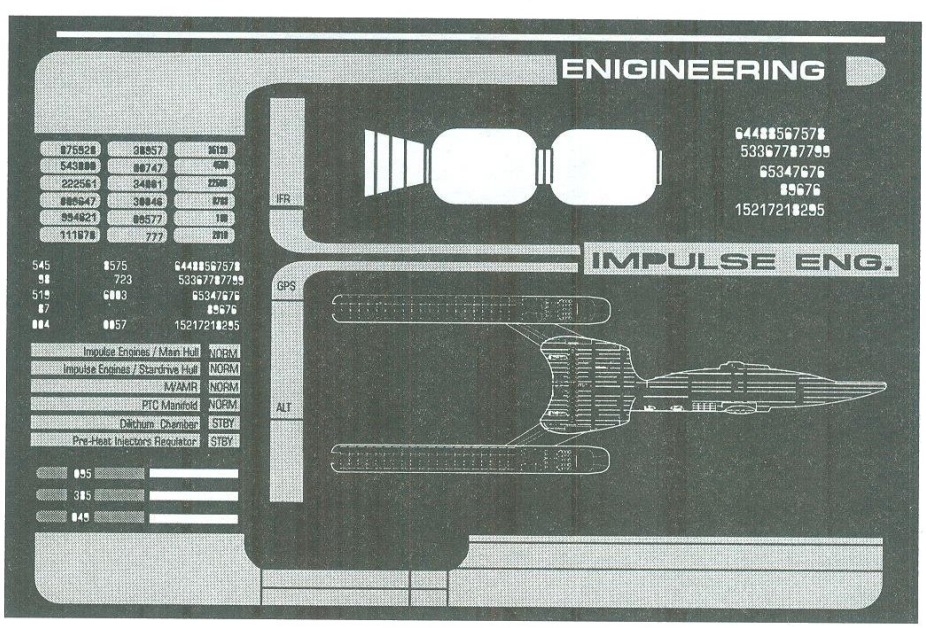
Impulse Engineering

In the event of hull separation, Impulse Engineering becomes the backup to Main Bridge. Operational scenarios would look much like the Main Engineering outlined above. And depending on the options available at the time, either the port or starboard Impulse Engine room would assume the mantle of Main Engineering. Located on decks 10 and 11, the impulse engines and their accompaning fusion reactors, take up a lot of space.

How Does Warp Drive Function?

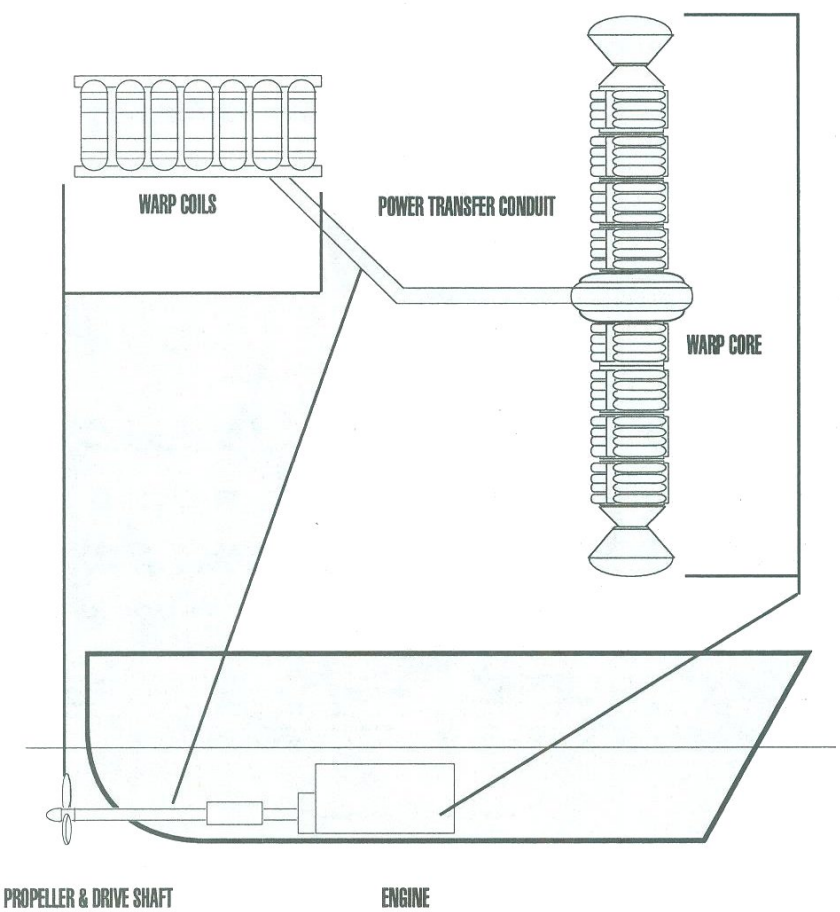
While warp drive is a known, and proven method of faster than light travel for Starfleet, it is still treated as if it was some sort of magic idol. The components of the drive are pretty basic once you get over the quantum mechanics of the application. Think of the warp drive as if it were an engine powering an ocean liner in the seas of Earth. Or maybe an old fashion airplane from Earth's history.

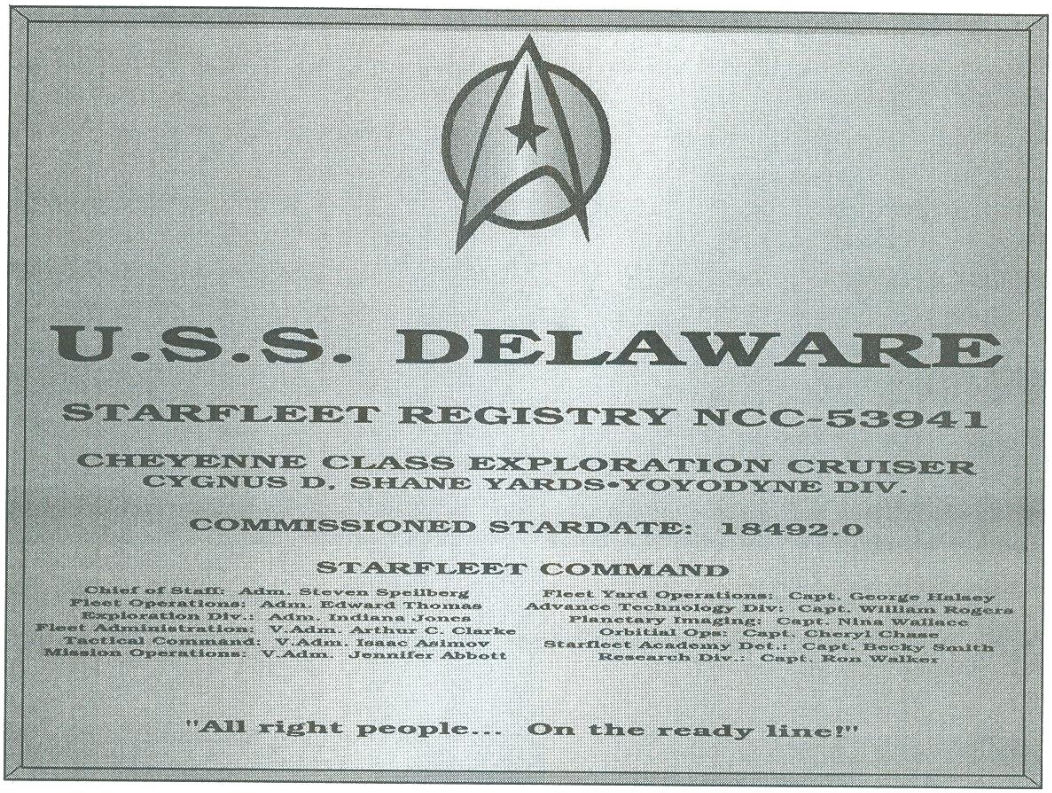
Most people think that the Warp Nacelles are the real engines. And while many engineers can slip up and call them as such, the real "engine" is in reality, the Warp Core. With the Warp Core as the engine, then the PTC (Power Transfer Conduits) are the engine shafts. And the ship's nacelles are really nothing more than the "propellers" to drive the vessel through outer space.



Mike Bolda Collection, 1992

The Aegis /*Ticonderoga* class cruiser *U.S.S. Phippine Sea*, rendezvous in the Mediterranean Sea with the British submarine, *H.M.S. Sovereign*.





U.S.S. DELAWARE

STARFLEET REGISTRY NCC-53941

CHEYENNE CLASS EXPLORATION CRUISER
CYGNUS D. SHANE YARDS•YOYODYNE DIV.

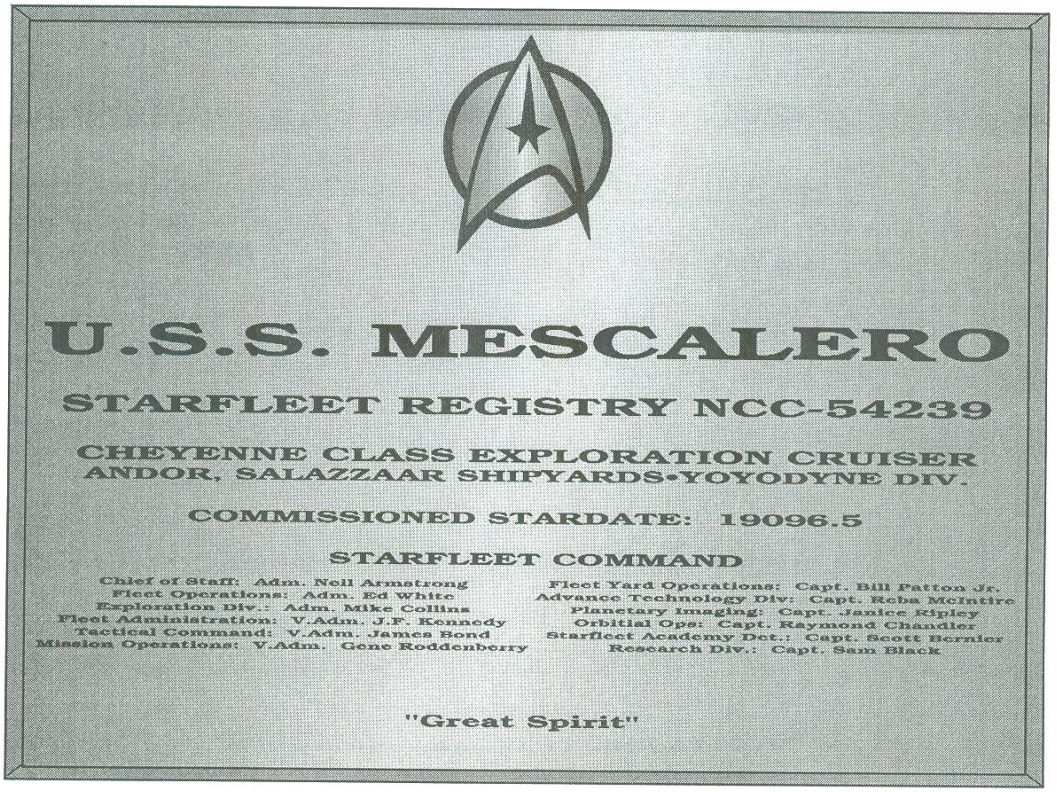
COMMISSIONED STARDATE: 18492.0

STARFLEET COMMAND

Chief of Staff: Adm. Steven Spellberg
Fleet Operations: Adm. Edward Thomas
Exploration Div.: Adm. Indiana Jones
Fleet Administration: V.Adm. Arthur C. Clarke
Tactical Command: V.Adm. Isaac Asimov
Mission Operations: V.Adm. Jennifer Abbott

Fleet Yard Operations: Capt. George Halsey
Advance Technology Div: Capt. William Rogers
Planetary Imaging: Capt. Nina Wallace
Orbitial Ops: Capt. Cheryl Chase
Starfleet Academy Det.: Capt. Becky Smith
Research Div.: Capt. Ron Walker

"All right people... On the ready line!"



U.S.S. MESCALERO

STARFLEET REGISTRY NCC-54239

CHEYENNE CLASS EXPLORATION CRUISER
ANDOR, SALAZZAAR SHIPYARDS•YOYODYNE DIV.

COMMISSIONED STARDATE: 19096.5

STARFLEET COMMAND

Chief of Staff: Adm. Neil Armstrong
Fleet Operations: Adm. Ed White
Exploration Div.: Adm. Mike Collins
Fleet Administration: V.Adm. J.F. Kennedy
Tactical Command: V.Adm. James Bond
Mission Operations: V.Adm. Gene Roddenberry

Fleet Yard Operations: Capt. Bill Patton Jr.
Advance Technology Div: Capt. Reba McIntire
Planetary Imaging: Capt. Janice Ripley
Orbitial Ops: Capt. Raymond Chandler
Starfleet Academy Det.: Capt. Scott Bernier
Research Div.: Capt. Sam Black

"Great Spirit"

4
COMPUTER SYSTEMS

This is the brain of the whole ship. Nothing on starships works without functional computer cores. This makes them THE most important systems onboard.

The basic computer core system design comes from of the *Constellation II* design. The newly standardized LCARS (Library Computer Access and Retrieval System) interface was installed in the ship's basic system operating software. Keyed for both voice and keypad input at most terminals, all have audio output in high background noise environments. LCARS is a intuitive artifical intelligence-based architecture system that is, as a basic rule, very simple to operate.

Computer Cores

On the *Cheyenne* , there are two redundant computer cores in the main hull with a third "mini-core" in the star drive section. In size and structure, they match the improved *Excelsior* class cores and occupy the same position as the cores in a *Galaxy* class starship within the main hull (A Port and a Starboard Core going through decks 7 through 14). Located to either side, and below the Battle Bridge Module, the cores are in the best protected part of the star drive hull.

Either of the cores is capable of supporting all ship's functions if the need ever rises. The "mini-core" is in the star drive section and can take over the ship functions when there is a hull separation. It can run all critical ship programs in case of total failure, but secondary systems (including replicators and waste recovery units) must be shut down completely in order to handle the load. Best of all, the "mini-core" only takes up three decks.

Computer Core Memory and Processing Capability

Processing speeds in the computer cores are accomplished by miniature subspace field generators giving an output of 3300 millicochranes when the system was first introduced to an impressive 3600 millicochranes after the SLEP program upgrades. Due to doppler losses in the efficient transmission rate across micron junction links

(MJLs) which bridge the subspace boundary layer, a 2% drop in transmission lost rate resulted. After the SLEP, this figure was reduced to a .85% loss rate.

Total memory capacity of all three computer cores equals 120 million Kiloquads.

Subprocessors

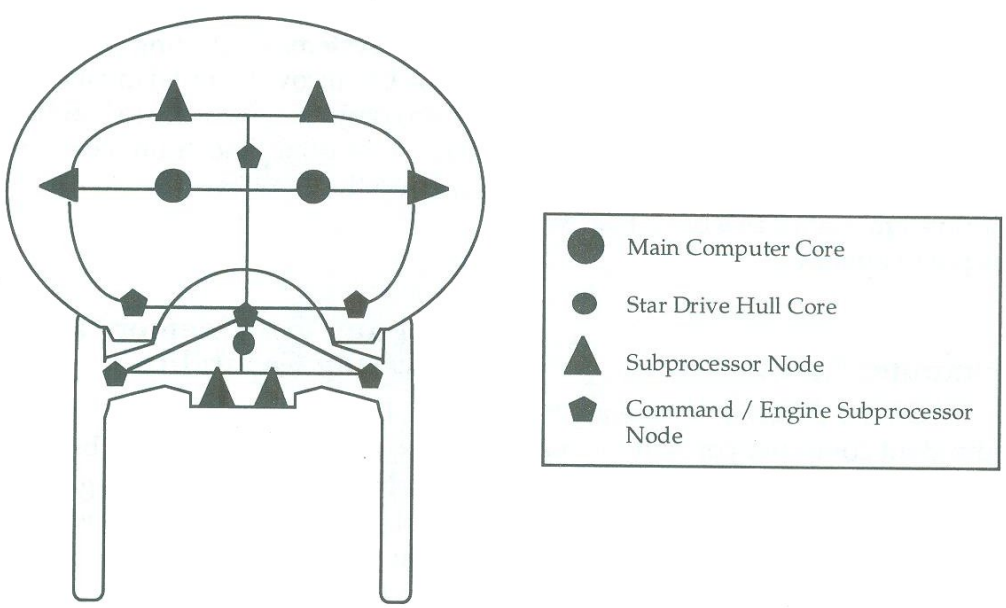
There are only 130 quadritronic optical subprocessors used in the *Cheyenne* class design as opposed to say, the 380 quadritronic optical subprocessors installed on a *Galaxy* class starship. One obvious fact is the smaller size of the *Cheyenne* in comparison to the battleship.

Datalinks

The cores, subprocessors, and the I/O devices aboard the *Cheyenne* are all linked via the ODN (Optical Data Network). This network of fiber optic cable runs throughout the ship from the aft RCS thruster packages to the inspection gangway hatch controllers. Most ODN trunks run through the Jeffries Tubes or corridor panels for easy access. Those that link critical or secure systems are usually run through protected conduits.

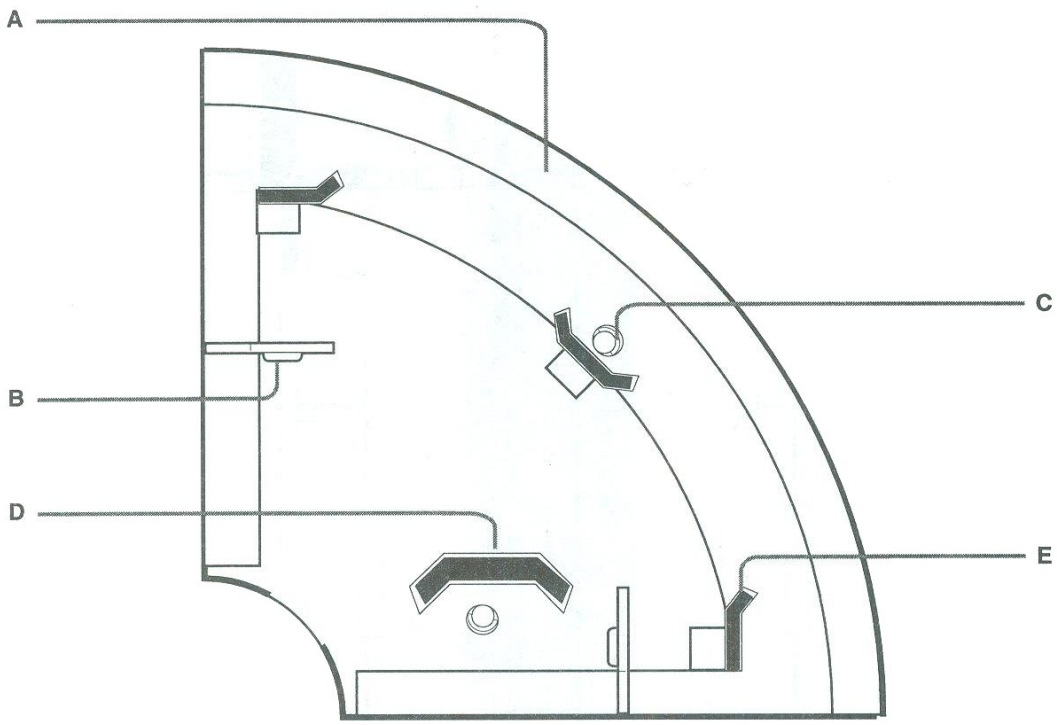
Redundancy to the ODN links is provided by a dedicated network of short-range radio frequency (RF) links, providing emergency data communications with the Main Bridge, Battle Bridge, Main and Impulse Engineering. A separate set of short-range RF links are dedicated to data transfer with hand-held devices like PADDs or Tricorders.

Datalinks that are external to the ship are set up by the Communications Department.



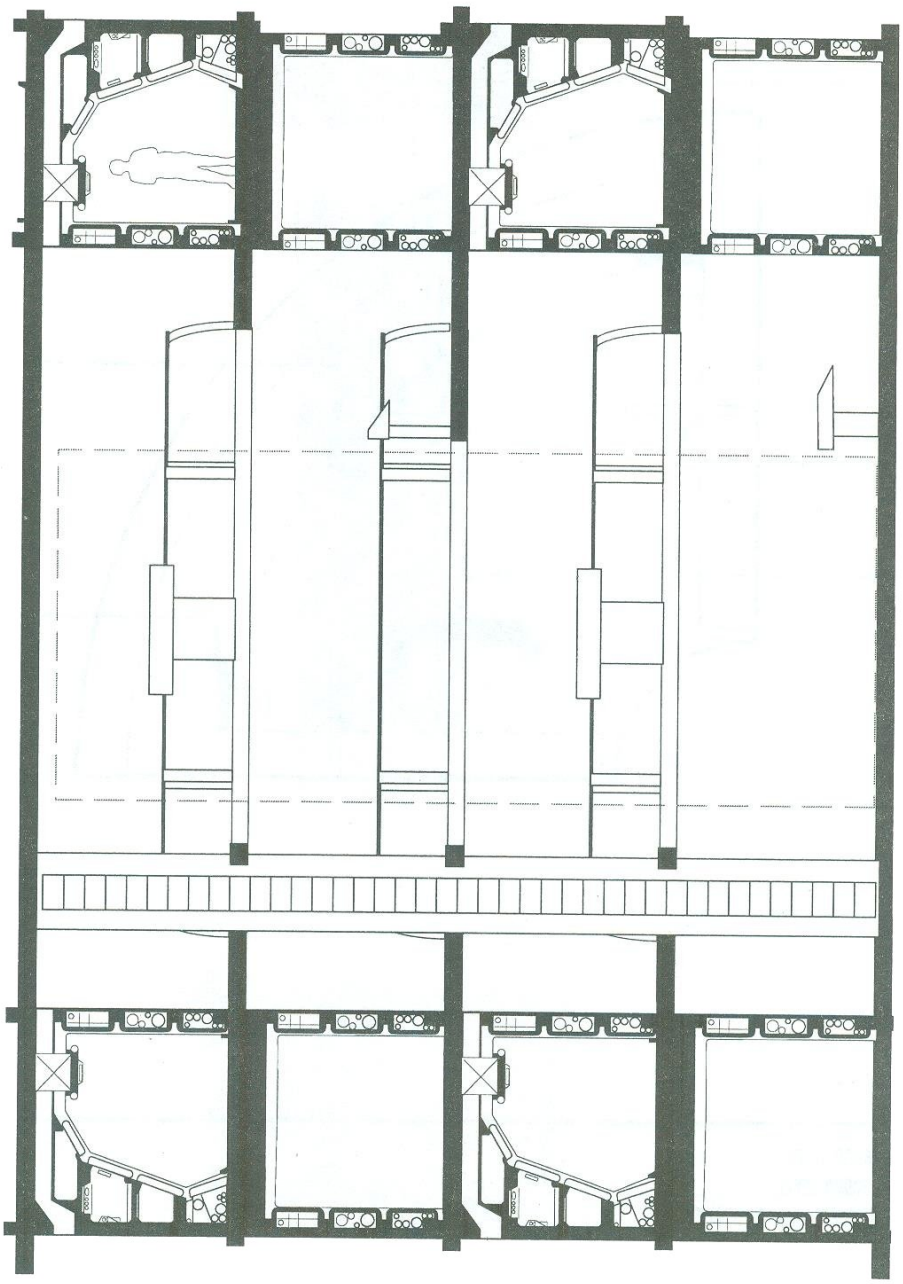
A simplified schematic showing the locations of the computer cores and subprocessor networks.

COMPUTER CORE MONITORING ROOM



A. FTL NANOPROCESSOR UNITS
B. LADDER UP TO SECOND LEVEL
C. UPPER LEVEL SYSTEM OPERATOR STATION
D. LOWER LEVEL SYSTEM OPERATOR STATION
E. SECONDARY MONITOR STATIONS

STARDRIVE HULL'S COMPUTER CORE CROSS-SECTION



Dashed Grey line is outline of CPU and associated memory modules

5
PROPULSION SYSTEMS

The propulsion systems of the *Cheyenne* are for the most part standard, off the shelf hardware.

Warp Propulsion System (WPS)

The Warp Propulsion System (WPS) for the *Cheyenne* is the standard FWF - 4 warp drive coil and core technology. This ship design is the first to use them in a four-engine configuration. One of the reasons why the development period of this class was shorter than others, is the use of proven technology in a new way.

Matter / Antimatter Reaction Assembly (M/ARA)

In the late 20th century on Terra, the published research of Miguel Alcubierre* shifted the conception of Faster-Than-Light flight from the totally impossible to the maybe possible. Of course, it would be up to Zefram Cochrane to build upon Alcubierre and other's research to make FTL travel practical.

The heart of matter / antimatter reactions is the M/ARA (Matter/Antimatter Reactor Assembly). Performance increases is the result of better designed reactor assemblies that allow a better antimatter "flow" to the DCAF (Dilithium Crystal Articulation Frame). Access to the DCAF is on the Main Engineering level deck 10.

Power Transfer Conduits (PTC)

The PTC's (Power Transfer Conduits) run vertically up and down the neck of the *Cheyenne* from the M/ARA. From the main conduit, EPS taps run off to each of the four warp drive nacelles. If an emergency in which the warp core must be jettisioned should occur, the PTCs are equipped with explosive shear-plane joints located exactly above and below the warp core which is then

* Class. Quantam Grav II (1994) L73 - L77. Printed in the UK. Letter to the Editor entitled: "The warpdrive: hyper-fast travel within general relativity" by Miguel Alcubierre. Dept. of Physics and Astronomy, University of Wales, College of Cardiff, UK.

ejected through the stern cover plates of the star drive hull section.

Warp Field Nacelles

The nacelles of the *Cheyenne* class are standard FWF - 4 warp drive coils enclosed in an improved housing. The new guidelines set by SFRA on ship design in the mid-2330s blends function with aesthetics. With crews now able to bring along their families, such consideration as actual hull exteriors will play a major role in maintaining enlistment of crews.

The field coils of the *Cheyennes* are square in cross-section shape when compared to the new oval shape utilized by 85% of the fleet. The Power-Stage Magnatomic Flux Chiller (PSMFC) is now a 'wrap-around' feature on the new nacelle.

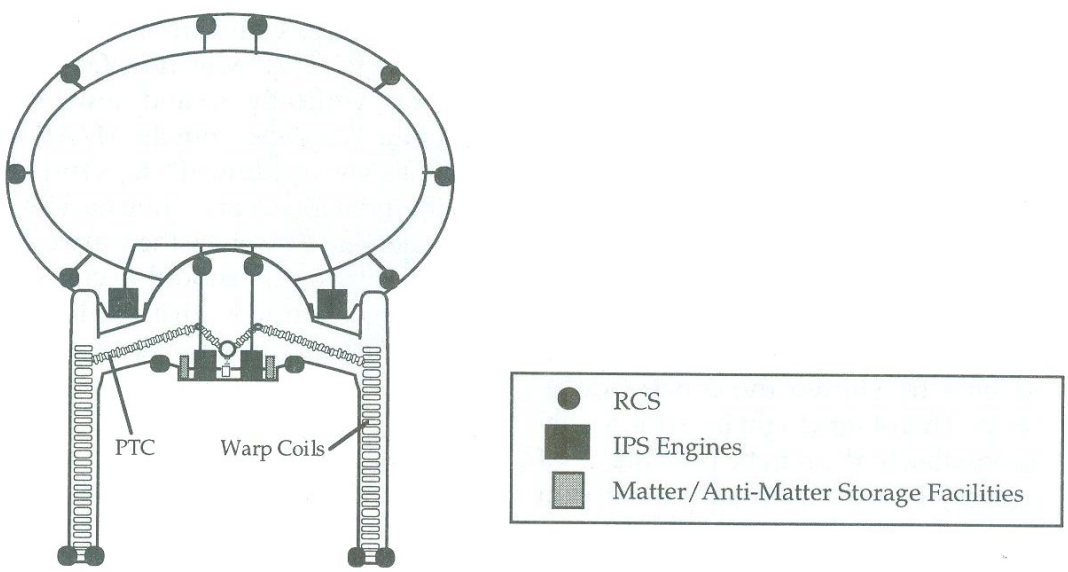
The Space-Energy / Matter Sink (SE/MS) and the Magnatomic Flux Construction - First Stage (MFC 1S) are combined into the Bussard Ram housing at the leading edge of the nacelle.

Impulse Propulsion

As is standard with other ships of the fleet, primary sublight propulsion and auxiliary power generation is provided by the Impulse Propulsion System (IPS). Efficiency is the name of the game for long-range exploratory missions for the Federation. The *New Orleans* is fitted with a more brute force IPS system. The *Cheyenne* was fitted with the old standby FIF - 2 when first built. Undergoing SLEP, the entire class will be upgraded to *New Orleans* standards.

IPS Engine Configuration

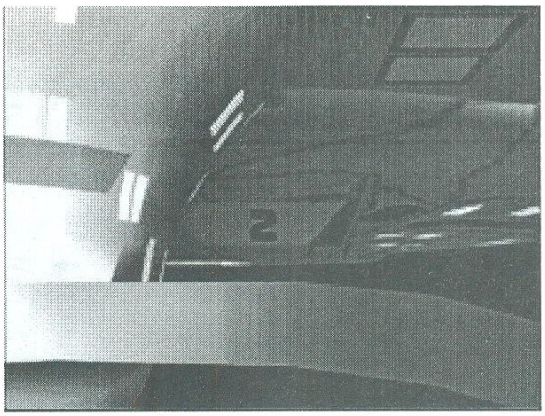
The IPS engine layout and configuration are as follows. The two Main Impulse Units (MIU) are mounted along the rim facing aft, and clearing the star drive docking section to port and star-



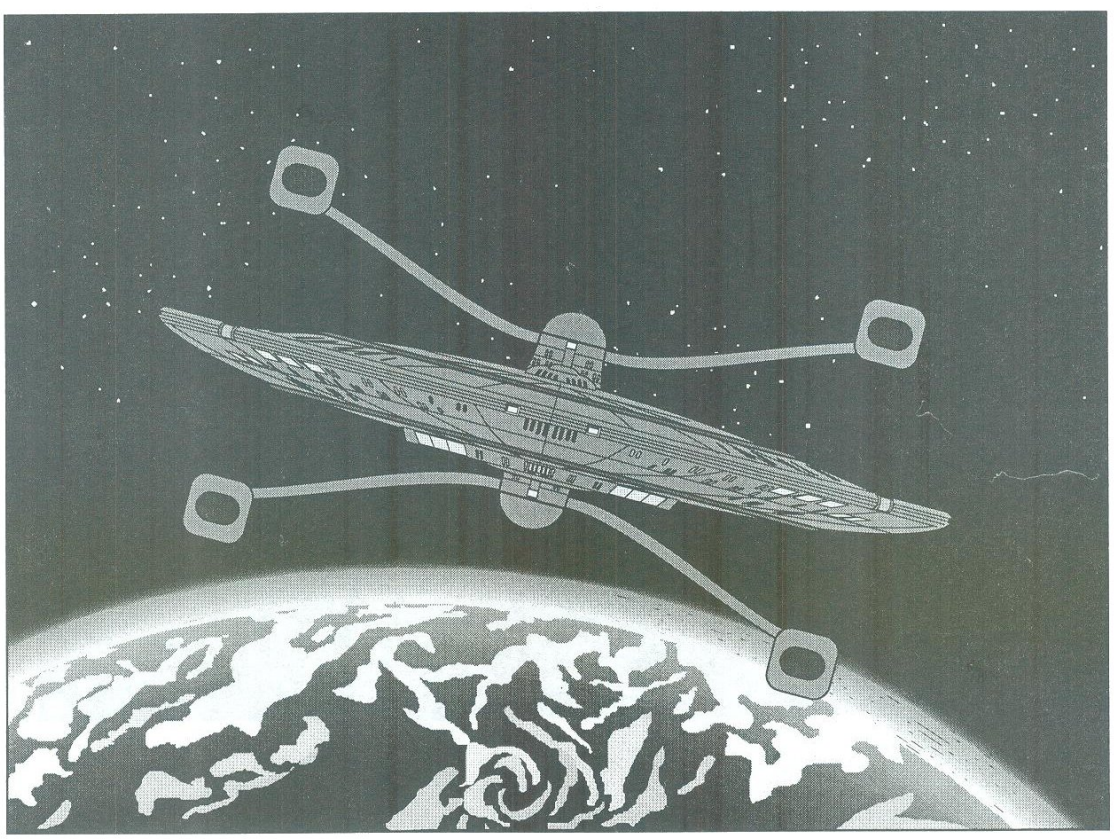
Simplified diagram of the Propulsion Units and their power conduits.

board. The remaining two Auxiliary Impulse Units (AIU) are mounted behind the "cobra's" neck connect point where the two warp drive pylon necks met to form the docking pad for the ship. The MIUs are canted slightly outward from the ship's centerline to protect launching / recovery operations to the shuttlebays on the ventral side of the main hull.

These engines are of the three-stage design pellet-deuterium impulse reaction chambers (IRCs), going through an accelerator / generator (A/Gs), and ending with the vectored exhaust directors (VEDs).



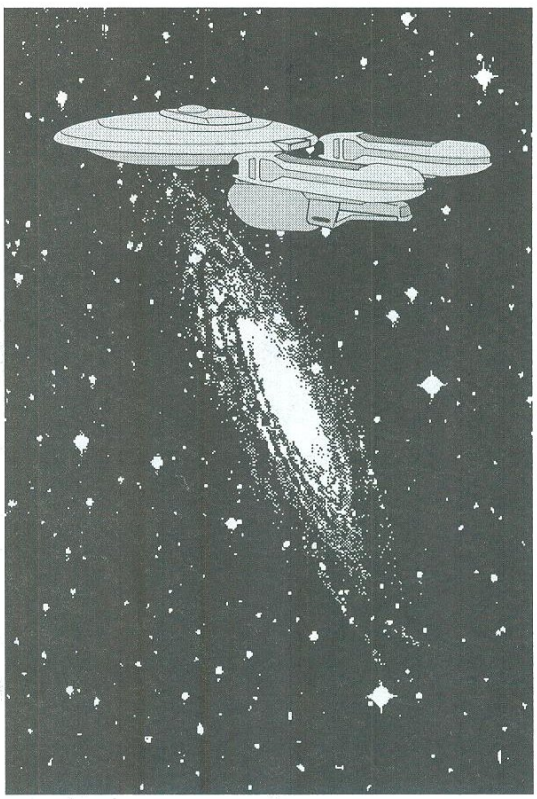
Shuttlecraft approaches to Shuttlebays One or Two pass over the lower warp pylon.

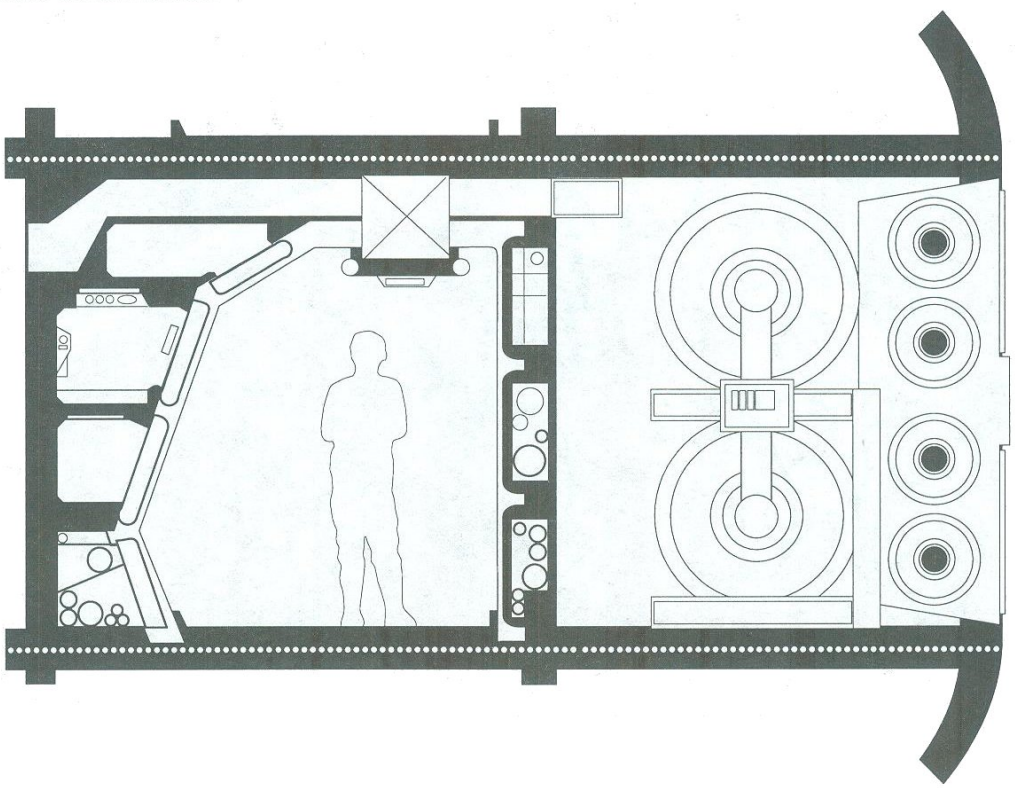


Low Velocity Maneuvering (RCS Thrusters)

There are twelve main and twelve auxiliary reaction control systems for low-velocity attitude and translational control. Designed for sub-light operations like station-keeping, drift-mode three-axis, and space dock maneuvering, the RCS is operated via the MCPC (Main Computer Propulsion Controller).

The RCS thrusters are composed of a gas-fusion reaction chamber, with an MHD (Magnetohydrodynamic energy trap, and upper and lower vectored-thrust exhaust nozzles. Deuterium for each fusion chamber is stored in twin immediate-use fuel tanks and tied to a manifold system that is hooked up to the two large Deuterium tanks at the top (and bottom) of the main pylons. Fuel is pumped to each RCS unit via three pumps with proper regulators and distribution nodes.





6
WEAPONS

The weapon mix on the *Cheyenne* class Exploration Cruisers consists of the current Type X standard phasers and photon torpedoes that have been in use by the Federation for almost a century. Improvements in power transfer, targetting systems, and final impact destructive ability are the only changing factors for weapon designers.

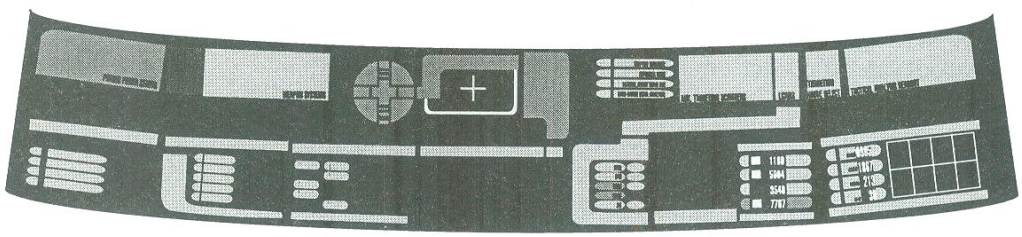
Phasers

The 8 (FH - 15), Type X phaser arrays is now included on the *Nebula / Galaxy* class starships. Both use the collimating phaser bank emitter. The main emitters are mounted on the dorsal / ventral surfaces of the saucer hull while smaller collimating emitters are mounted on each warp pylon, horizontal to the ship's centerline. The individual emitter elements are capable of firing a phased energy beam of 5.1 Megawatts.

The most notable feature of the FH-15, Type Xs is the slightly raised strip that contains 200 emitter segments. Taken in cross section, each emitter would look like a thick **Y** capped by the trapezoidal structure of the emitter crystal and the phaser-transparent anti-erosion hull coating.

What makes the FH - 15s so successful is the targeting and variable beam control software. Beam intensity, width, and frequency can be randomly set as well as the targeting point on an

TACTICAL CONTROL PANEL (TAC)



enemy ship. Beams can be fired in a steady constant stream, or a series of pulses with each pulse programmed to have a different characteristic.

Thanks to the targeting software, the phaser system is "self-aware." It can analyze attack information and damage assessment from the fire control computer. If the enemy manages to modify its shields, etc. to ward off the phaser attack, the fire control computer then informs the Tactical station about the changed characteristics of the target. The system waits for the Tactical Officer to make the necessary changes. While the software could handle this function by itself, the technology is still new enough to warrant oversight.

During the SLEP program, software upgrades to *Galaxy* class standards for the FH - 10s were implemented.

Photon Torpedoes

As per standard Starfleet philosophy; photon torpedo launchers were mounted to counter threats at warp speed. Two FP - 10 torpedo launchers are mounted on Deck 10 and separated by the crew lounge at the forward rim of the main saucer shaped hull. Two other FP - 10s, though smaller in torpedo casing storage capacity, are mounted on the same deck level facing aft in the star drive section.

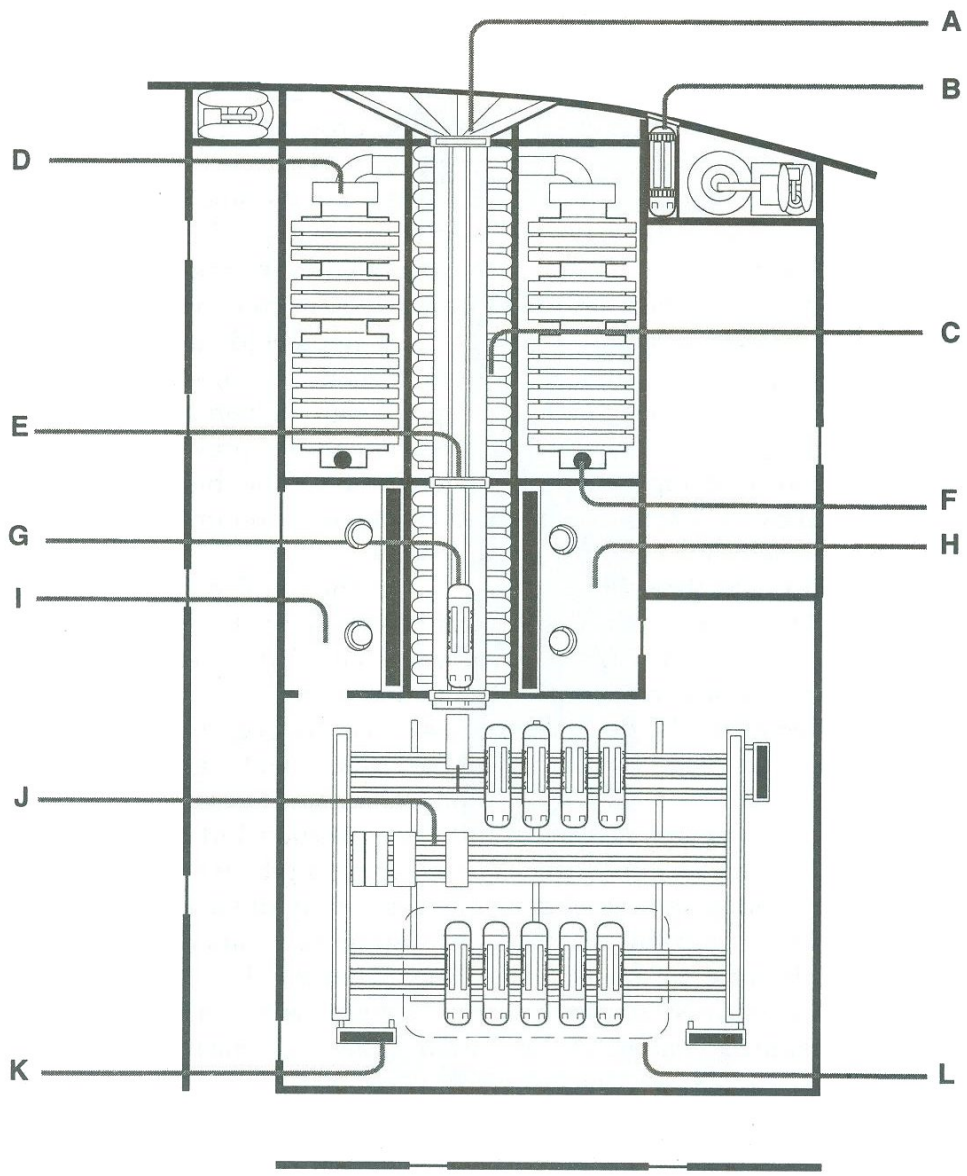
All Federation torpedo launchers use the standard Mark IV casing with its superior guidance and target accuracy / acquisition.

The torpedo launcher is just a set of accelerator coils to hurl the torpedo clear of the ship for the micro-warp engines to engage, and continue on to the target. The FP-10s differ little from one ship to another. The launcher also has a Photon Stabilization and Programming room as well as a Situation Monitoring room.

Located on another deck is the armory which houses the empty Mark IV casings. The casings receive the charges before being transferred to the loading station of the ship.

Each class of ship's loading station is different. On the *Cheyenne,* a unique rapid loading system was developed for the forward torpedo launchers. The torpedo casings are stored on the deck above and lowered onto one of four support arms that are able to hold five ready photon torpedoes. Once a support arm is fully loaded, it is referred to as a "ready magazine." The ready magazine is moved via conveyor belt like arrangement to the "Standby" position in front of the launcher. The support arm behind the first one is then loaded with another set of five torpedoes. The two remaining empty support arms, or "empty magazines" are lowered to the deck and await the next cycling of the loading system. The *Cheyenne* can in effect, launch 20 photon torpedoes in 20 seconds from the main torpedo rooms, and 30 torpedoes if five torpedos are pre-loaded in each main launcher.

STARBOARD TORPEDO ROOM



A. Exit Port
B. Recorder Bouy
C. Accelerator Coils
D. Launch Tube Magnetic Generators
E. Pressure Hatch
F. Photon Exhaust Manifold
G. Mark IV Torpedo
H. Situation Monitoring Room
I. Photon Torpedo Stabilization & Programming Room
J. Empty Torpedo support arm cycling back to Loading Station.
K. Loading Station Control Desk (Port / Starboard)
L. Access Well to Upper Torpedo Room Storage and Checkout.

Deflector Shields

Since Federation starships do not rely on hull armor for protection, the Deflector Shields are the only protection for the ship. They can be extended or contracted from their normal operating range around the ship (which, on graphic monitors, is shown like a bubble surrounding the ship).

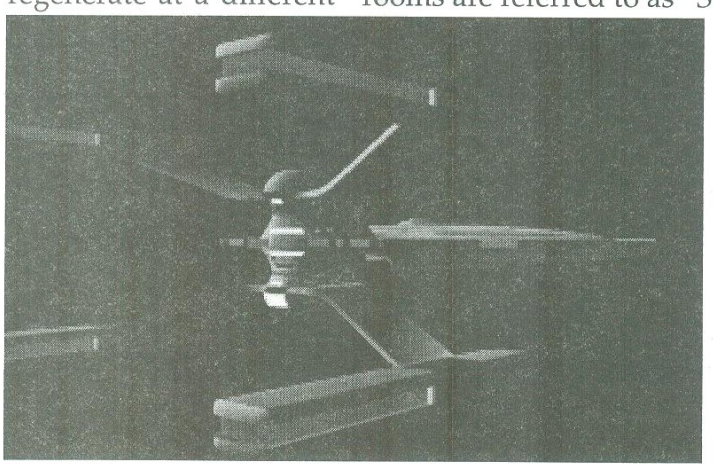
The FSS Mk 3s are more powerful than the Navigational Deflectors of most other starships. Also, the *Cheyenne* benefits from their use onboard the *Excelsiors* for many years. They operate passively, absorbing impacts of energy and projectiles. A *re* active defensive system, this deflector system also provides the ship with three layers of protection. The shields, like the phasers, can be programmed to operate in a random frequency that recycles every 40 nanoseconds. None of the shields operate at the same frequency at the same moment.

Like any other energy screen or shield, the deflector shields must regenerate every few nanoseconds to maintain their intensity. That means that the shields are significantly weakened for a few critical nanoseconds. To prevent an enemy from taking advantage of this flaw in physics, each shield is programmed to regenerate at a different time interval.

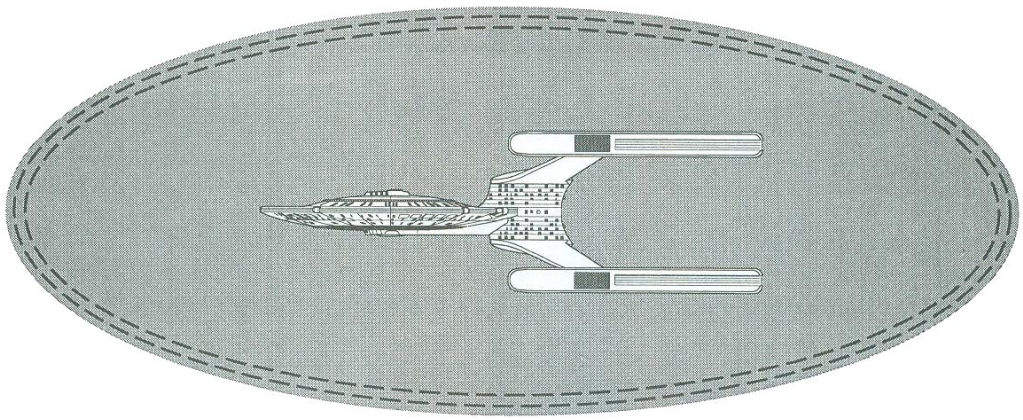
Operating warp fields and weaking shields sometimes depend on ship hull design that can allow a slow moving, projectile to enter the bubble to impact the ship. While intimate knowledge of the shield's regeneration period is required, this downtime can be exploited to insinuate a transporter beam or a slow moving shuttlecraft.

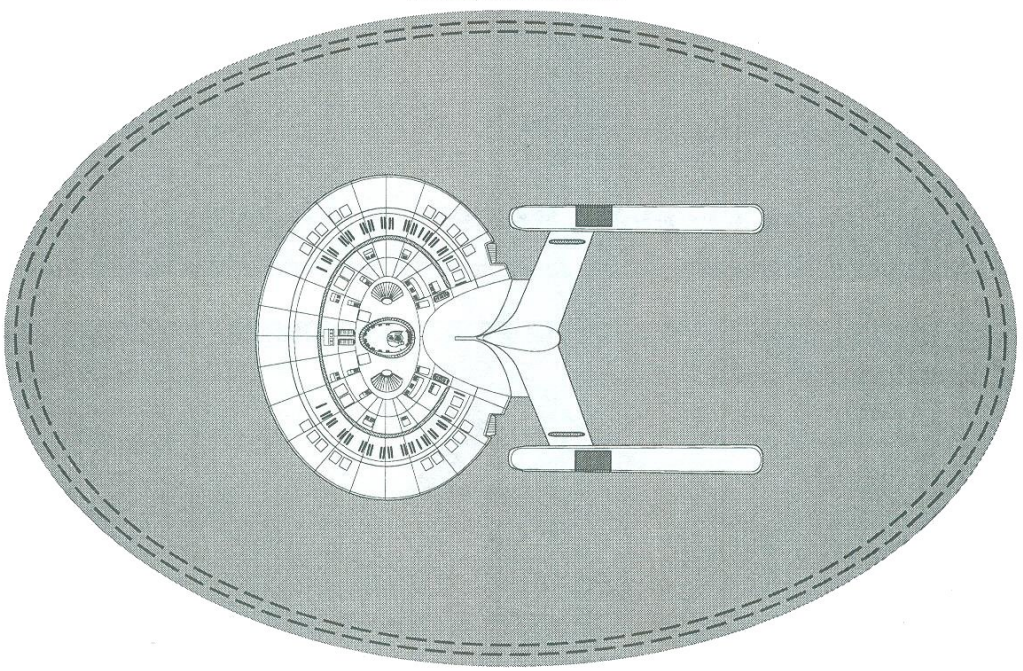
If the shields are under attack from a steady beam, some energy will seep through the regeneration process. This seepage may prevent the complete regeneration of the shield and therefore lead to a corresponding drop in shield intensity.

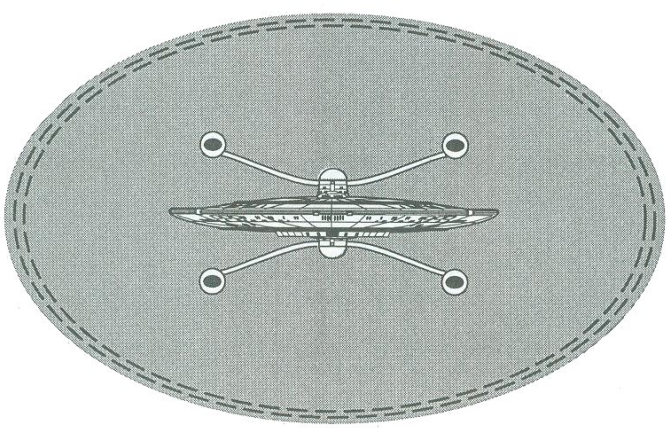
In the SLEP program, software and hardware are being added to take advantage of the new Metaphasic Shielding Technology (MST). The MST, or as crews are beginning to refer to it, as the "Mist Shield," generates a radiation and heat protective shield that feeds off the absorbed EM radiation to increase its strength. It is highly useful in the close study of stellar phenomenan (its original application), but is also invaluable if needed in using a stellar corona to hide the vessel in a combat situation as needed. Such tactics now being used in the Academy simulator rooms are referred to as "Sun Diving."



DEFLECTOR SHIELD DIAGRAM







U.S.S. COCHISE

STARFLEET REGISTRY NCC-56520

CHEYENNE CLASS EXPLORATION CRUISER
CYGNUS D. SHANE YARDS•YOYODYNE DIV.

COMMISSIONED STARDATE: 19627.5

STARFLEET COMMAND

Chief of Staff: Adm. Patrick Stewart
Fleet Operations: Adm. John T. Rourke
Exploration Div.: Adm. Jerry Ahern
Fleet Administration: V.Adm. Arthur C. Clarke
Tactical Command: V.Adm. Isaac Asimov
Mission Operations: V.Adm. Michelle Forbes

Fleet Yard Operations: Capt. Janet Stone
Advance Technology Div: Capt. Roger Burke
Planetary Imaging: Capt. Diana Erwin
Orbitial Ops: Capt. Grace Harrison
Starfleet Academy Det.: Capt. Bob Rodrigues
Research Div.: Capt. Jon Ryan

"That's the plan. You have my word on it."

U.S.S. GERONIMO

STARFLEET REGISTRY NCC-56972

CHEYENNE CLASS EXPLORATION CRUISER
ANDOR, SALAZZAAR SHIPYARDS•YOYODYNE DIV.

COMMISSIONED STARDATE: 19924.2

STARFLEET COMMAND

Chief of Staff: Adm. Neil Armstrong
Fleet Operations: Adm. Ed White
Exploration Div.: Adm. Mike Collins
Fleet Administration: V.Adm. J.F. Kennedy
Tactical Command: V.Adm. James Bond
Mission Operations: V.Adm. Gene Roddenberry

Fleet Yard Operations: Capt. Bill Patton Jr.
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Orbitial Ops: Capt. Raymond Chandler
Starfleet Academy Det.: Capt. Scott Bernier
Research Div.: Capt. Sam Black

"It's not the long drop that gets you -
but the sudden impact at the bottom."

7
UTILITIES AND AUXILIARY SYSTEMS

Utilities

The *Cheyenne* internal structure contains a complex web of conduits and Jeffries' Tubes that carry the myriad utilities distribution systems of the vessel. Everything from water and organic food stock, to energetic plasma and gravitons must be distributed from their origination points to any of hundreds of end-use outlets, usually via several redundant networks.

Major Utilities Network (MUN)

On the *Cheyenne* , the MUNs are very similar to other vessels in the fleet. Some of their functions are described below.

Power: Two major networks (each with several redundant systems) handle power distribution. Most major systems relay on EPS for power. This energetic plasma produced by the WPS, IPS, or auxiliary fusion generators is carried by a series of waveguides or conduits to the several systems aboard which take their energy directly from the EPS.

Smaller subsystems and individual specialized equipment usually operate off electricity. This is provided by power converters which transfer EPS energy to an SFRA standard voltage and current. The electricity is then distributed via redundant wiring networks to the systems that require it.

Optical Data Network (ODN): There are four redundant ODN trunks connecting the computer cores in the primary hull and with each other and the mini-core in the star drive section. Any of the four is capable of handling the data load which is equally distributed. Key systems are interconnected by two separate ODN trunks which are independent of the core trunks and of each other.

Two secure communications ODN trunks run independently of all other systems and of each other. While most ODN trunks are laid out for easy access by maintenance workers, the secure comm ODN is usually routed through neutronium conduits with crypto-lock access panels to prevent tampering.

Atmosphere: Several safeguards and redundancies are built into this vital system. Three major independent ducting

networks distribute atmosphere from the three atmospheric processors. Any one network can handle the entire habitable volume of the ship, but two are usually on line while the third receives preventative maintenance on a rotating schedule. This tri-redundant system is based on long human spaceflight experience.

Two separate, smaller processors and duct works provide atmospheric gases to the areas of the ship that are converted to class H, K, and L atmospheres. Class N or N(2) enviroments are handled by a small redundant system that infuses gases in the proper liquid medium and distributes them through two independent piping networks.

Water: Potable water is distributed through a system of two unconnected gravity-independent pipe/pump (P/P) systems. This water is stowed in baffled, collapsible tanks placed between the members of the hull around the rim of the saucer hull. Running parallel to the P/P systems are the return wastewater conduits which carry liquid waste to he processors.

Waste Disposal: Solid wastes are transported to recovery systems through a series of linear induction conduits. There is a small, redundant backup to this system. Should both systems go down, crew members must hand-carry wastes to the processors (food waste is usually returned to organic food stock via replicators).

Transporter Energy: A series of durable, high-energy conduits connect transporters to their associated pattern buffers and emitters. This is a complex, highly interconnected system with redundant conduits available for shunting transporter energies at a moment's notice.

Replicator and Food Service Energy: This system interconnects raw material storage areas, replicator headends and terminals throughout the ship. The food replicator conduit system is a bi-redundant system which runs independently from the replicator conduit system. Emergency food supplies are located in various storage and emergency locker areas around the ship should the system fail or need to be powered down.

SIF / IDF Power: The *Cheyenne* has six redundant Structural Integrity Field (SIF) systems, three in the saucer hull and three in the star drive section.

Any one system can handle the needs of the entire ship in an emergency, although normally the load is evenly distributed. The Inertial Dampening Field (IDF) system is similary configured in pair with the SIF generators. Without these two systems, the slightest warp acceleration would tear the ship apart, so this system is highly safeguarded and provided with redundant systems.

Waveguides conduits feed the SIF / IDF energies to their respective conductive elements throughout the spaceframe, hull and deck plates, and the bulkheads. While all the systems normally run independently, waveguide junctions allow energy from one system to be distributed throughout any of the other systems in nanoseconds.

Gravity: The ship's artifical gravity is the result of graviton fields produced by hundreds of small generators distributed throughout the deckplates.

These generators are interconnected, however, by a network of forcefield conduits to distribute excess inertial potential and stabilize gravity. Should a generator fail, there is usually enough excess inertial potential to compensate that area of the ship. If more than two or three generators goes down at once, a reduction in overall artifical gravity may be experience in various areas of the ship. Fortunately, the artificial generators originally developed the Vulcans for their early space program nearly a thousand years ago, are still efficient and highly reli-

able.

Cryogenic Fluids: There are a number of insulated piping systems that transfer cryogenic fluids for scientific and engineering purposes. Cryogenic transfer of atmospheric components is accomplished through two redundant systems which connect the storage tanks with the atmospheric processors. Although most of the gases are recovered and reused by the processors, small amounts of new gases, especially oxygen, must be added continually.

Deuterium: The fuel for systems like the WPS, IPS, and auxiliary fusion generators is stored in the form of slush deuterium in conformal tanks throughout the ship. The two main tanks are located at the top and bottom of the Engine Core. These tanks are connected to the end-use devices by two independent insulated conduit networks.

Reserve Utilities Network (RUN)

The RUN is a limited, low capacity utilities network which can supply atmosphere, power, data, and water for a short period of time. The RUN can usually operate for up to 48 hours and when activated, all non-critical uses for these materials are terminated (i.e. - water is used only for drinking, data information for critical processor systems only, etc.). Turbolifts may operate on RUN power only with command authorization.

Protected Utilities Network (PUN)

This is the last-ditch emergency backup network for the ship. It too provides all the items detail under the RUN, but it is not available in all areas of the ship. The PUN only supplies critical systems and emergency shelter areas.

Independent Emergency Systems (IES)

Both the Main and Battle Bridges, the Medical (Sick) Bay and certain other critical areas have independent power, atmosphere, data systems which can operate without any utility network systems. These systems can be engaged at any time, although they are usually used only after failure of the PUN. The only exception to this policy is the Medical Bay.

Its IES is engaged immediately when the ship goes to Red Alert status. This frees the ship's systems from supporting the Medical Bay Complex and prevents interruption of Sickbay systems if shipwide resources are temporarily interrupted or reallocated. For this reason, the Medical Bay IES can operate longer than the other IES systems onboard. For the *Cheyenne* class Exploration Cruiser, this equals almost 90 hours whereas other IES can power their respective systems for only 24 hours.

Additional Utilities Systems

Jeffries Tubes: These maintenance accessways aboard any spacecraft are not accessable to most of the ship's occupants. Limiting access to these areas is good security procedure. Only authorized personnel may enter the Jeffries Tubes.

Corridor Access Panels: Access to non-secured utilities is also availiable through corridor access panels. These are located behind removable wall panels in all corridors. They are electromagnetically sealed under most cruise conditions, requiring a special engineering access tool to open them. Under alert conditions, the locks are disabled and any crew member can access the panel by pulling it up and out from the wall. If the ship has taken any battle damage, this is a quick means to getting the re-

pair work underway instead of having to wait on a Engineering Damage Control team to arrive.

Emergency Lockers: Water and emergency food rations are stored in specially marked emergency lockers under the Corridor Access Panels at every major corridor intersection. The lockers also contain environmental suits and medical supplies. Usually, the emergency provisions are enough for crew members to stabilize casualties and / or to get to an emergency shelter, lifeboat, or shuttlebay. A small locker of this type is also located in every stateroom.

Auxiliary Power

Main power for the *Cheyenne* is usually produced by the WPS or IPS. However, there is the system of backup fusion generators located around the ship in case the first two systems go off line, or when both WPS/IPS have to use all of their power for propulsion. The generators are smaller copies of the IPS reaction chambers, and are located in strategic sections of the hull to minimize the possibility of battle damage.

In case of total power failure, key areas of the ship are equipped with large banks of batteries (power cells) for reserve power capacity. These cells are kept fully charged via EPS taps while in normal cruise conditions. When the ship goes on alert, the power cells are isolated from the ship's other power sources. Without use, their charge will remain at nearly 100% for a week, after which, gradual power degradation will occur in the charge, so that by week number 6, power reserves would be at 50 percent. Under heavy use, the power cells will last for about 72 hours depending on the circumstances.

Reaction Control System (RCS)

Low-velocity maneuvering and course corrections can be accomplished through the use of the RCS which consists of 10 engine emplacements, each of which houses a primary and back-up thruster engine. The units are standard gas-fusion/ magnetohydrodynamic trap devices equipped with mooring/docking tractor beams.

Navigational Deflectors

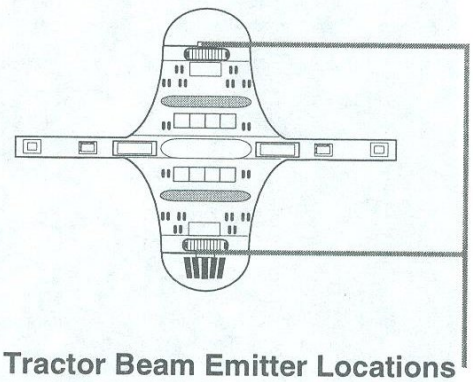
The *Cheyenne* Navigational Deflectors uses the fixed focus type as opposed to the more familiar varible-focus "dish" as seen on the *Excelsior* and the *Ambassador* class starships. Located on the underside of the saucer hull, three units are powered up at the same time to sweep a greater amount of "space" than the dish models.

Long-Range Sensors (LRS)

Long-Range Sensors (LRS) must be able to "see through" the distortions created by EM radiation subspace interference created by the use of the Navigational Deflector or else the ship is flying blind. With the conventional "dish" deflector design, the sensors are mounted directly behind it on its axis. But, since the *Cheyenne* uses the fixed focus model navigational deflector, the long-range sensors are mounted with the Lateral Sensor Array pallets along the rim of the main hull. And as such, the LRS is calibrated to be out of phase with the deflectors so that they are looking between the deflector beams. All Federation navigational deflectors recycle in picoseconds, and the sensors thus cycle inbetween. To an observer, it all appears to be simultaneous and steady.

Tractor Beams

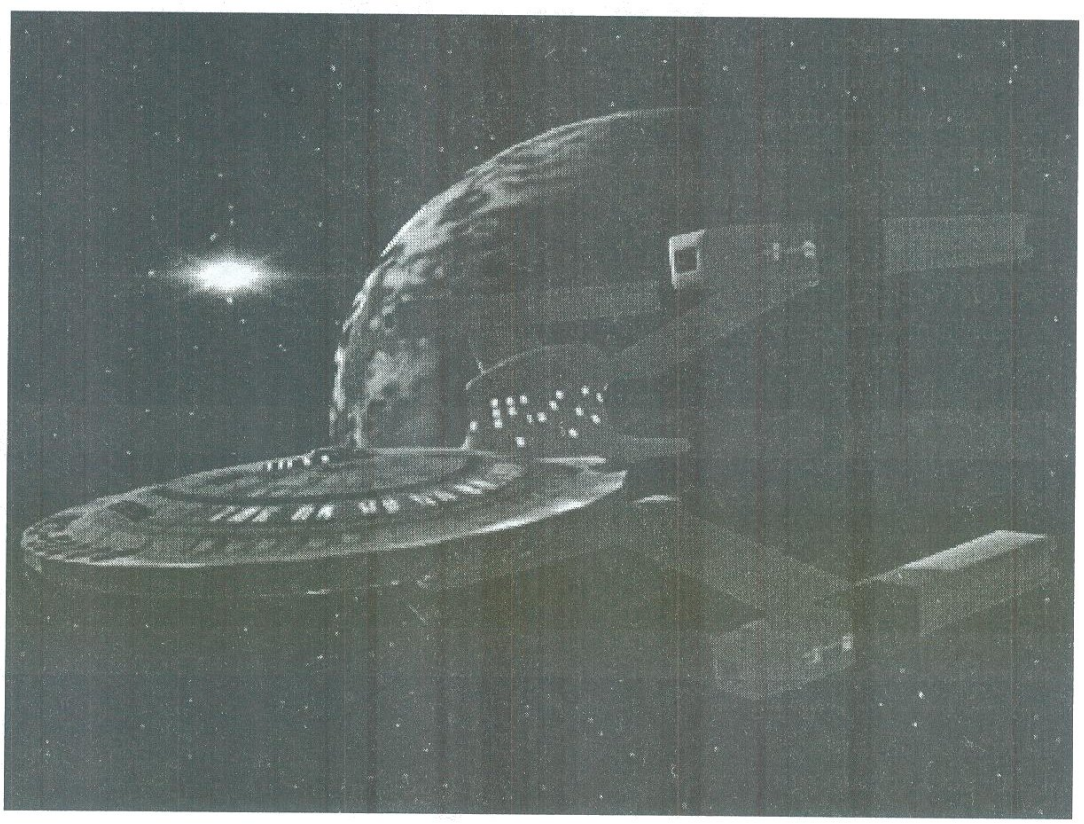
Tractor beam technology has changed very little over the past century and a half of its use in many intelligent species ship designs. The tractor beam emitter is the same unit as that used on the *Miranda* class frigates.



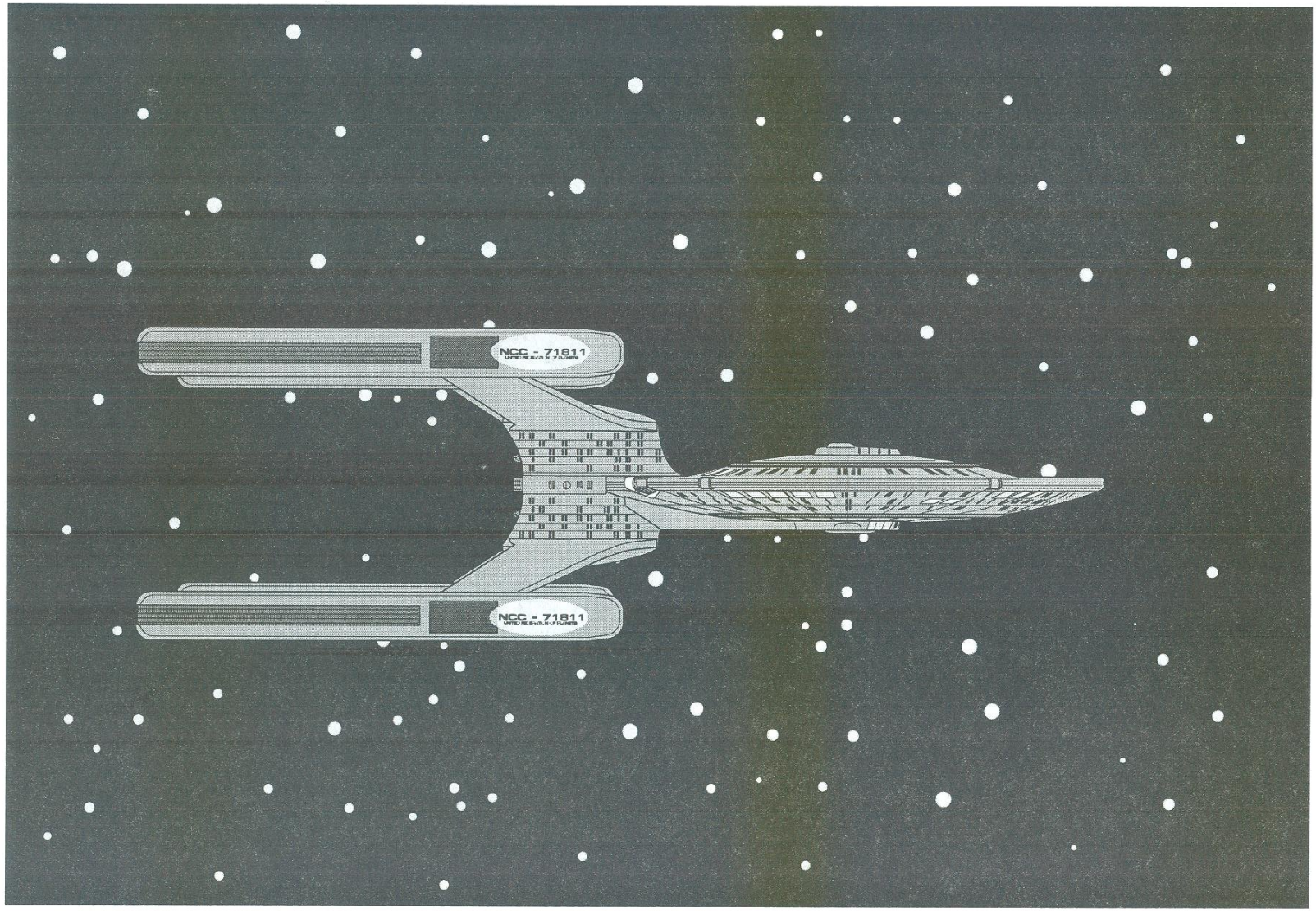
Aft Tractor Beam Emitter Locations

Replicator Systems

The new Replicators entering the fleet in the 2320s were of course added to the *Cheyenne* design. Their greater memory capacity to store patterns and lower single-bit error rates have made them really popular with the Starfleet crews over the older models.



U.S.S. CHEYENNE



8
COMMUNICATION SYSTEMS

Communications onboard the *Cheyenne* have two general categories: internal or intraship. There is also an external system that allows contact with other ships, starbases, etc. To handle the tasks, the Comm Department is divided into two groups. Those groups are the Internal Systems and External Systems Offices.

Internal Communications

All internal ship communication is automated with a Communication Center which monitors the automated functions, as well as runs diagnostics, performs periodic maintenance, and sets up and operates special communications gear as required. Another function for the Comm Center is the encryption and decryption of secure transmissions (both internal and external). The Comm Center is well protected in the primary hull near the Medical Bay and between the two computer cores.

Intraship Communications

There are three ways to place a call onboard ship. First, the ship-wide intercom can be accessed by addressing a message verbally. This is one of the most common methods used, but not always the most effective. Background noise, or system operations may prevent a nearby intercom pick-up panel from getting the verbal message. The second method is use of the personal communicators Starfleet personnel wear. The third method to initiate an intercom call is via the keyboard on any of the ship's many comm panels.

To initiate a voice or data call, state the destination of the call by naming the individual, department, or function name when making the call. Repeat the same information for the point of origin. Examples: "Engineering, Bridge.", "Photon Torpedo Bay Two to Weapons Controller Wallace.", "Lieutenant Jenkins to Commander Westmore", "Computer, download tricorder to Science Lab Three processor." If no modifiers are used, remember that the default is destination - origination.

The Public Address System uses the same hardware as mentioned above. Messages can be broadcast over the ship's loudspeakers in one or several areas of the ship. Also, a message with accompanying video can be broadcast on any number of viewscreens. When making an All-Hands broadcast throughout the ship such communications must be authorized by the command staff, the OD (Officer of the Deck), or the Communications Officer. The computer can implement all-hands addresses under certain conditions, most notably when sounding an alert status or notifying the crew of some other emergency.

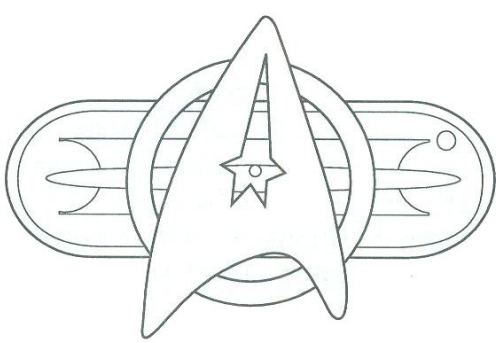
Personal Communicators

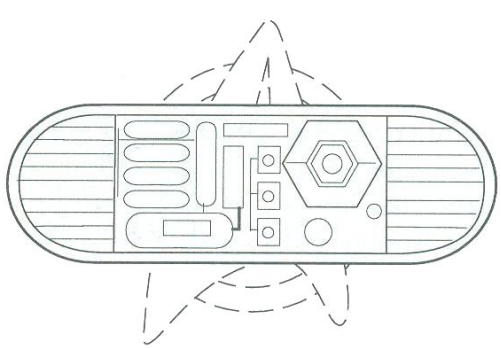
All Starfleet personnel are required to wear their comm badges when on duty.

All new arrivals are issued with a new comm badge when reporting on board. If personnel are transferring from another ship or station, they may or may not have their original badges with them. In any event, the comm badges are keyed to information specific to the ship served on. Some badges are restricted from certain parts of the ship and the door sensors will note unauthorized attempts to enter such areas. Voice print and / or keyboard code entry may be required for access to secure areas.

Any call made from a comm

STARFLEET COMM BADGE IN USE FROM 2300 - 2347.





badge that has not been entered for recognition will be treated as an external communication.

Each comm badge gives off its own unique low-level ID signal when queried by a properly encoded computer pulse. Through this signal, individual crew members can be located anywhere onboard ship. Each comm badge is encoded to respond only to its owner and cannot be used by anyone else without the proper override.

External Communications

One of the most sensitive areas of ship operations is external communications. A broadcast signal could easily give away a ship's position and endanger the ship and crew. Then again — outside communications with home base, other ships, etc. is sometimes essential as well. And when not in a combat situation, personal communications (especially "letters" from home) are important.

Standard Federation subspace and Radio Frequency (RF) communications are used for normal communications.

Voice Communications

The first type of communication is voice calls. In this category are voice-only, voice-and-visual, and voice-and-data communications. Voice calls are most often handed by the Communications Officer in the Comm Center who routes the voice-call to the proper destination. Some high-priority messages are sent directly to the Bridge.

Any non-secured incoming call is usually routed directly to the addressee. If the addressee is not availiable, the message is shunted to that person's message buffer for recall at a later time. This is still referred to as "Voice-Mail."

Outgoing calls have their own procedure. Operating under normal cruise conditions, the Signal Officer (in other words, the OD in the Comm Center) can approve the transmission of any outgoing call. In tactically sensitive situations, the Signal Officer must have approval of the Bridge OD before transmitting. Under silent-running conditions, only the Captain may initiate an outgoing call.

Sensitive information can be "squirted" to Starfleet Command. Messages are compressed so that they can be transmitted with a much shorter transmission time, thus lessening the risk of the ship being detected or revealing its position. At the destination, the message is decompressed and played back normally.

Data Communications

Large amounts of information must be sent back to base or received from base and are handled as data-calls by the datalink specialists in the communications department. The difference between voice and data calls is the volume of information. Data files are normally very large and sent from computer to computer with little crew intervention. Examples of datafiles would be library files, software upgrades, news or entertainment broadcasts.

An incoming call is identified by a DT prefix in the hailing code. The computer automatically routes the call to the datalink specialist on duty. If the

transmission is a real-time datalink between computers, the specialist establishes the link along with the computer operators in Engineering. If it is just a batch download, the specialist can place the message in the comm data buffer where the Engineering Department (for example) can retrieve it at its convenience. With a batch upload, Engineering sends the data package to the Communications data buffer where the specialist can then retrieve and transmit the data.

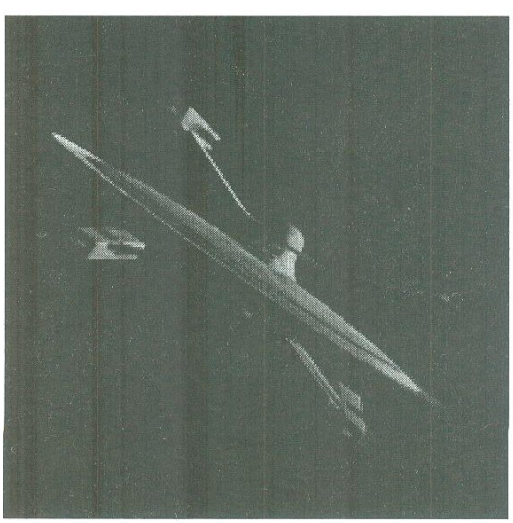
Secure Communications - External

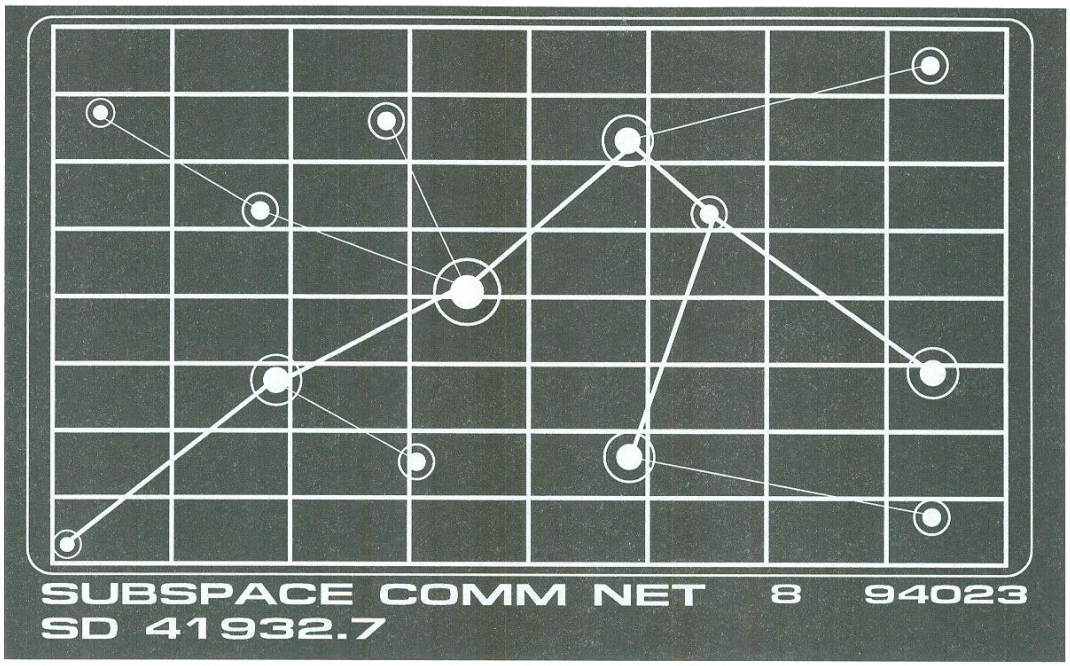
All external communications are routinely encrypted with one of several Starfleet codes that are periodically changed to avoid compromise. However, for classified or highly-sensitive information, another level of security is needed.

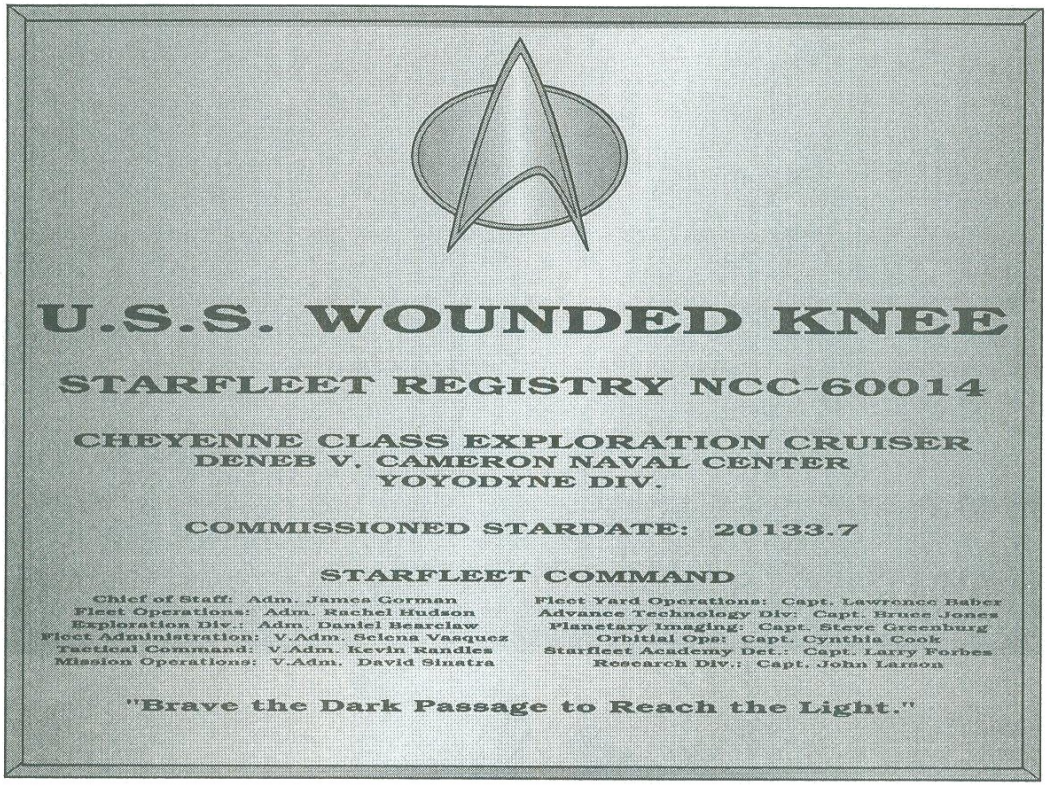
If such transmissions are going over RF or subspsace, the computer secures the transmission in two ways. First, it will "frequency hop", changing frequencies over 500 times a second during transmission in a pseudo-random pattern called a hop set. The frequency hopping algorithm is chosen at random from a select group of code keys that is changed at least every other month. The hop set key is sent to the receiving unit in the hailing package prior to message start so that sender and receiver will frequency hop in sync.

The message is also encrypted using one of several encryption algorithms (which are changed with the hop set keys). The algorithm for a call is chosen at random by the computer from the preselected list and the variable that completes the algorithm is chosen at random from the first 1000 prime numbers. No one knows which algorithm or crypto variable will be used ahead of time. The algorithm and crypto variable are transmitted with the hop set key in the hailing package. The receiving unit must have the same selection of hop sets and crypto variables loaded before receiving the hailing package or the computer will not initiate the message. This assures that the receiver is authorized to decode the transmission.

If the exact position of the receiving party is known, communications can be further protected by omnidirectional transmission. A tight-focus tachyon beam can be used for subspace transmission. If light-speed transmission will do, it can be made via the old standby, the digitized laser. Laser transmissions go back to the mid-21st century. The laser uses a frequency modulation pattern similar to RF frequency hop. In either case, the transmission is protected because an enemy would have to be in the direct line-of-sight to intercept the transmission (as well as having the correct hop set key, etc.).




SUBSPACE COMM NET 8 94023
SD 41932.7



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STARFLEET REGISTRY NCC-60014

CHEYENNE CLASS EXPLORATION CRUISER
DENEB V, CAMERON NAVAL CENTER
YOYODYNE DIV.

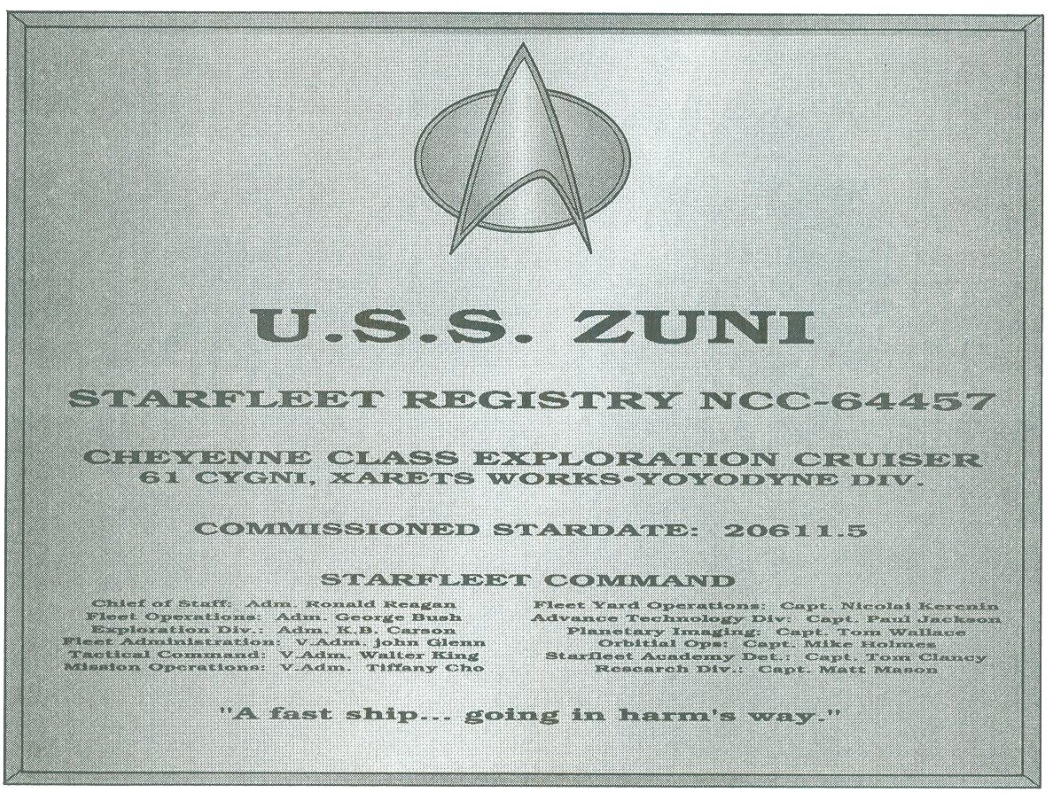
COMMISSIONED STARDATE: 20133.7

STARFLEET COMMAND

Chief of Staff: Adm. James Gorman
Fleet Operations: Adm. Rachel Hudson
Exploration Div.: Adm. Daniel Bearclaw
Fleet Administration: V.Adm. Selena Vasquez
Tactical Command: V.Adm. Kevin Randles
Mission Operations: V.Adm. David Sinatra

Fleet Yard Operations: Capt. Lawrence Baber
Advance Technology Div: Capt. Bruce Jones
Planetary Imaging: Capt. Steve Greenburg
Orbitial Ops: Capt. Cynthia Cook
Starfleet Academy Det.: Capt. Larry Forbes
Research Div.: Capt. John Larson

"Brave the Dark Passage to Reach the Light."



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STARFLEET REGISTRY NCC-64457

CHEYENNE CLASS EXPLORATION CRUISER
61 CYGNI, XARETS WORKS-YOYODYNE DIV.

COMMISSIONED STARDATE: 20611.5

STARFLEET COMMAND

Chief of Staff: Adm. Ronald Reagan
Fleet Operations: Adm. George Bush
Exploration Div.: Adm. K.B. Carson
Fleet Administration: V.Adm. john Glenn
Tactical Command: V.Adm. Walter King
Mission Operations: V.Adm. Tiffany Cho

Fleet Yard Operations: Capt. Nicolai Kercain
Advance Technology Div: Capt. Paul Jackson
Planetary Imaging: Capt. Tom Wallace
Orbitial Ops: Capt. Mike Holmes
Starfleet Academy Det.: Capt. Tom Clancy
Research Div.: Capt. Matt Mason

"A fast ship... going in harm's way."

9
TRANSPORTER SYSTEMS

Personal Transporters

Personnel transport to and from the ship is accomplished by eight personnel transporters located throughout the craft. Transporters 1 through 4 are paired off, plus number 5 share a pattern buffer and are located on deck 8. Transporters 6, 7, 8, and 9 are in the Star Drive section on decks 3, 8, 10, 16.

Standard operational range for these transporters are 43,000 km (45,000 km after SLEP).

Cargo Transporters

Mass cargo transport is accomplished through the use of four Cargo Transporters on Deck 15. In emergencies, these transporters can be used by living beings, but at reduced numbers transported (the difference being from molecular transport - cargo, to quantum - level transport for living beings).

Escape Transporters

There are five escape transporters (four in the main hull and one in the star drvie section). They are designed as high-capacity transport at low-power consumption models. Their range is only 20,000 km.

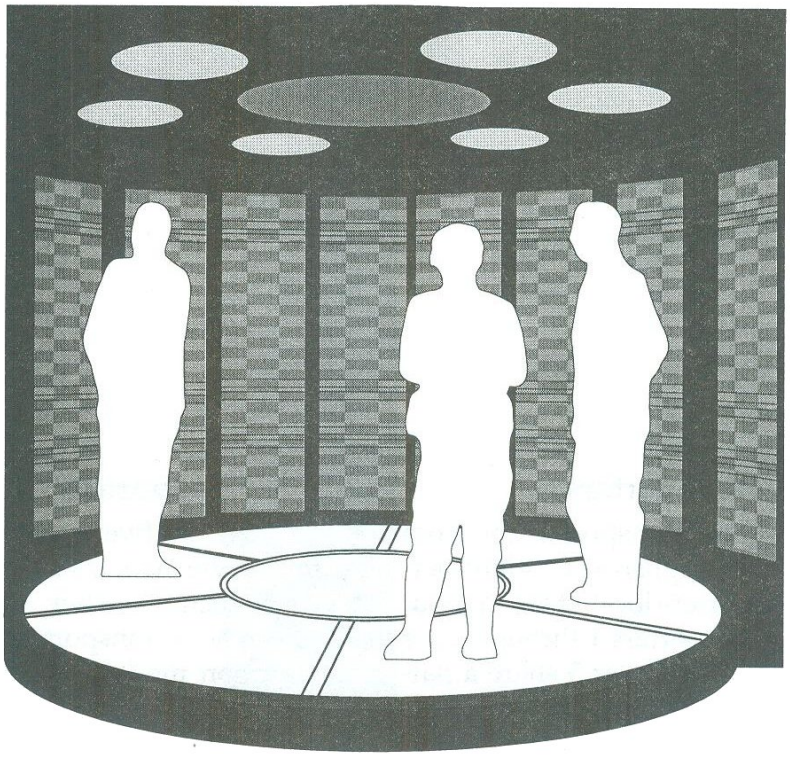
Pattern Buffers

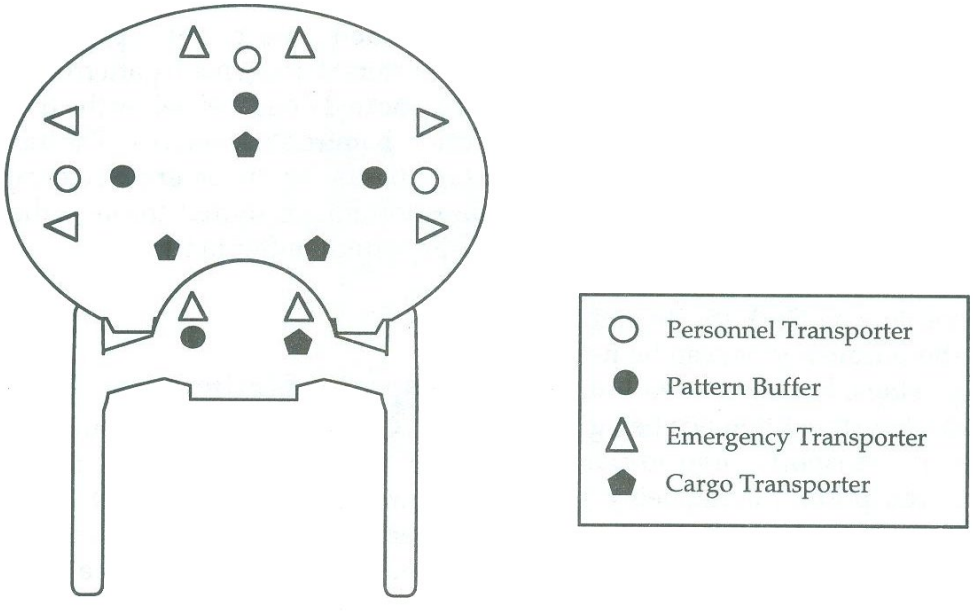
Each pair of personnel tranporters shares a main pattern buffer tank, located one level below the transporter chambers themselves. The transport buffers for the emergency escape transporters are routed through these main pattern buffer tanks.

Transporter Emitters

On the exterior of the hull are 10 transporter emitters, providing the ship with omindirectional transport capability, even if 40% of the emitters are inoperative. These emitters are the newer, slimmer model being introduced into the fleet that helps increase the inten-

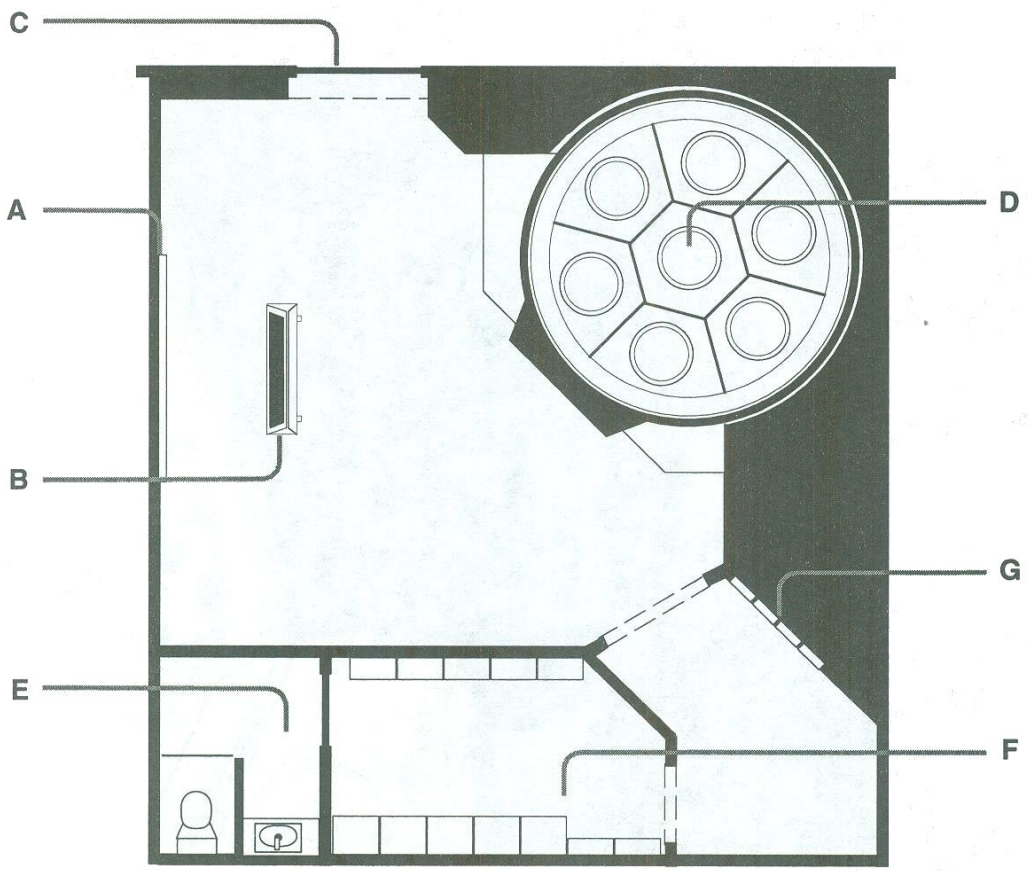
sity of the annular confinement beam, and the molecular imaging and targeting systems.





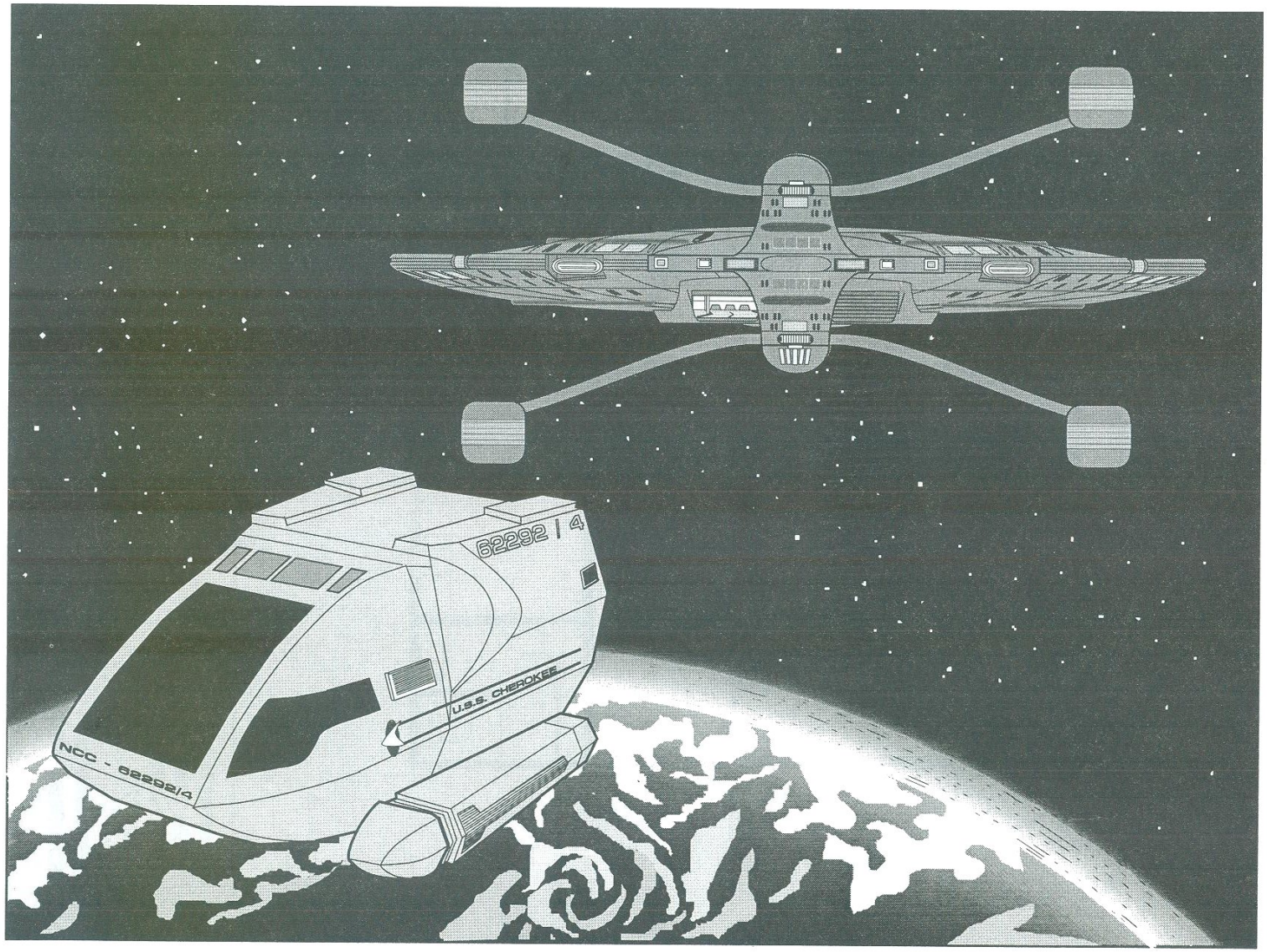
A simplified schematic showing the locations of the transporters and pattern buffers.

TYPICAL TRANSPORTER ROOM LAYOUT



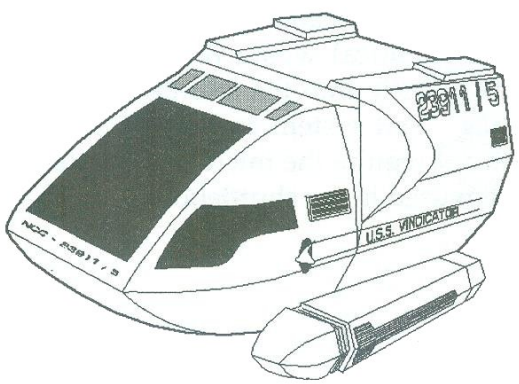
A. MAIN TRANSPORTER SYSTEMS MONITOR
B. OPERATOR's CONSOLE
C. EXIT TO SHIP's CORRIDOR
D. TRANSPORTER PAD
E. HEAD
F. EQUIPMENT STORAGE BAY
G. TRANSPORTER ISOLINEAR CHIP RACK

U.S.S. CHEYENNE



10
AUXILIARY SPACECRAFT SYSTEMS

Standard shuttlepods and shuttlecraft are embarked on the *Cheyenne* class Exploration Cruiser. The newly developed Type 6 and 7 Personnel shuttlecraft, and the Type 15 shuttlepods are stored in two separate, but interconnected shuttle bays on the ventral side of the main saucer hull on deck 15. With the introduction of the new Runabout class, exterior docking cradles are being developed to allow one or two such vehicles to be carried by the *Cheyenne* .



Shuttlebays

Shuttle Ops has the responsibility of maintaining and operating ship's complement of auxiliary spacecraft. Each shuttlebay houses the launch and recovery equipment as well as the maintenance repair facilities. Basic fabrication shops and enough hanger deck space are provided to allow several shuttles to be overhauled at once.

Launch and recovery operations are overseen from the Shuttlebay Master Control Booth (known as PriFly to all shuttle crews). Each bay has a Flight Deck Officer (FDO) who coordinates activities through PriFly who has the authority to grant or deny launch or recovery clearance under normal cruise operations. On any alert status, clearance must defer to OPS on the Bridge.

Lifeboats

The *Cheyenne* is equipped with two types of lifeboats. The first type is the very rugged and proven R-class four-person libeboats, of which there are

80 carried. These "boxes" have been installed on all Federation starships since the mid 2270s. They are located behind blowout panels on the outer hull. The only refinements in the design have been in the software operating parameters.

Introduced in 2319, the *Azhanti* - class lifeboats can handle thirty people when evacuating the spaceship. For smaller spaceships, the *Azhanti* can also function as a regular short-range shuttlecraft. Designed as a retrofit option for the *Miranda* class starships, the *Azhanti* class lifeboats are stored in the shuttlebays off to the side (one above the other) and accessible from their respective decks.

On the *Cheyenne*, the *Azhanti* - class lifeboats are spread all over the ship for quick and easy access. Placement is arranged to allow for the complete evacuation of the ship in two minutes by lifeboats alone.

Shuttlecraft

Four Type 6 and Four Type 7-20 shuttlecraft are carried in each shuttlebay. Each shuttlebay can accommodate eight shuttlepods. Typical number of shuttlepods carried is four per bay.

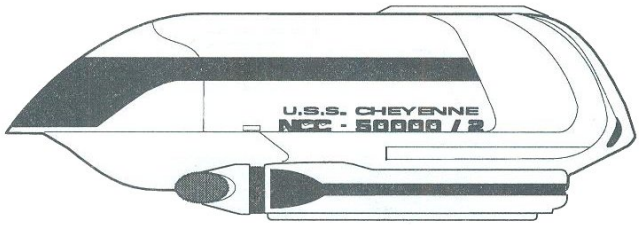
Shuttlecraft Waste Management

The age old question of "how do you go to the bathroom" still keeps popping up even in the 24th century, especially when travelling in a Shuttlepod or some other shuttlecraft. The simple response would be, "you do it in the airlock." And that is the case for the Type 7 series of shuttles and the *Azanti* class lifeboats. The toilet seat pops out of the side wall of the airlock to take care of both liquid and solid waste products. A sonic cleaner is provided in the seat that does away with the need for toilet paper. Another sonic cleaner, this one functioning like a sink, is provided above the toilet seat. It folds away when not in use.

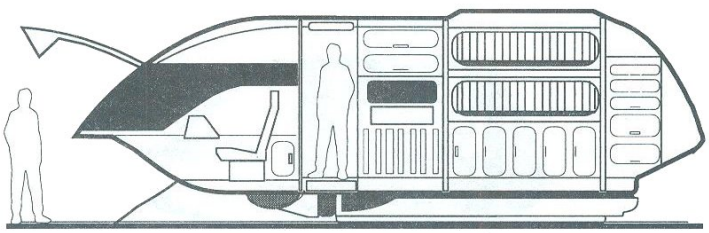
With the Type 6 shuttle and the Type 15 series of shuttlepods, vehicles that do not have airlocks, a different procedure has to be used when the call of nature is heard.

In the shuttlepod, the seat itself is the toilet. It has a seat cushion that you lift up and there is a micro-chemical waste recycler bowl to handle both liquid and solid waste matter. It also is equipped with a micro-transporter that beams the material into the receiving unit of the shuttlepod's waste management system. A privacy force field screen is activated around the person who needs to use the facilities.

The Type 6 shuttlecraft has the same type of privacy force field screen. It is set up near the rear cargo ramp of the shuttle where a pedestal forms part of the rear bulkhead of the vehicle. The micro-chemical waste recycler unit feeds directly into the shuttle's waste management system and therefore; it does not require the micro-transporter system used in the shuttlepods.



SIDE



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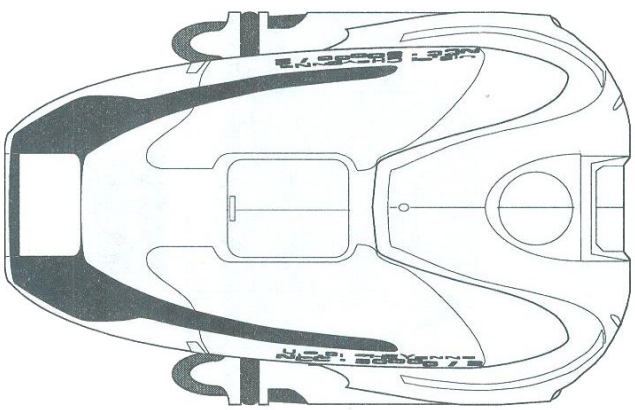

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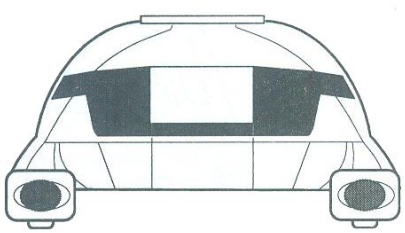

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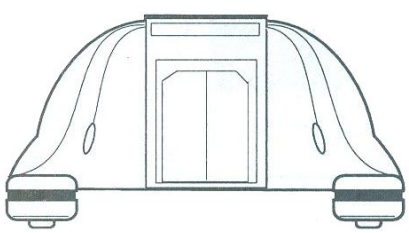
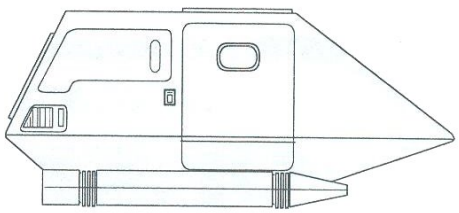


STERN

TYPE 7 - 20 SHUTTLE

Type: Medium short-range warp shuttle. **Accommodation:** 2 Flight Crew. 6 Passengers.
Power Plant: Two 1,250 millicochrane warp engines, 12 DeFL 3234 microcochrane RCS thrusters.
Dimensions (meters): Length: 8.41, Beam: 5.31, Height: 2.84
Tonnage (metric): 4.2
Performance: Standard Warp: 1.75 for 48 hours. Max Warp: 2.0 for 36 hours.
Armament: None.



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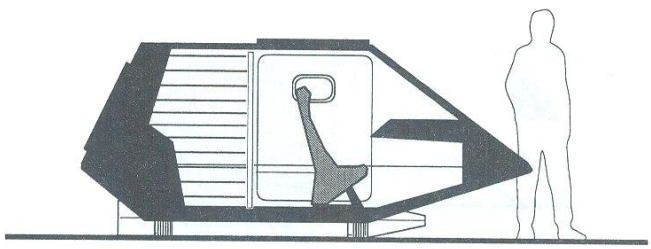

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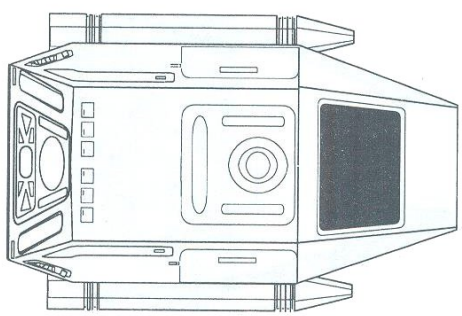

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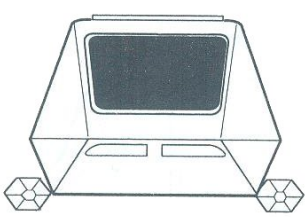

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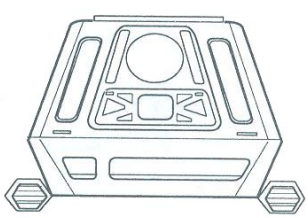
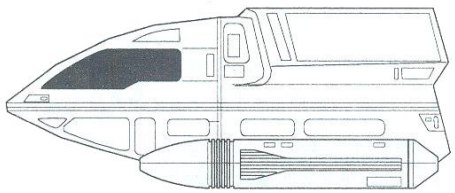


STERN

SHUTTLEPOD TYPE 15

Type: Light short-range sublight shuttle. **Accommodation:** 2 Flight Crew.
Power Plant: Two 500 millicochrane impulse drive engines, 8 DeFL 657 hot gas RCS thrusters. Three sarium krellide storage battery cells.
Dimensions (meters): Length: 3.6, Beam: 2.4, Height: 1.6
Tonnage (metric): .97
Performance: Maximum delta-v = 13,200 m/sec.
Armament: Two Type IV phaser emitters when fitted.



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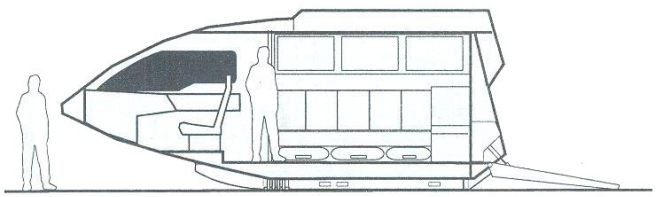

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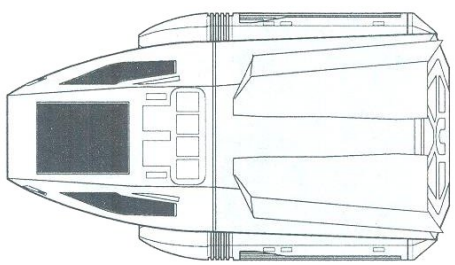

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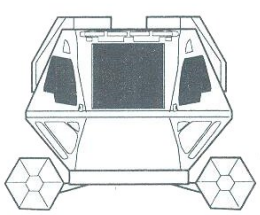

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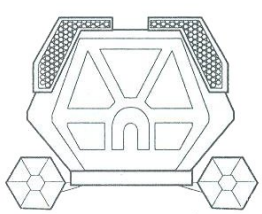
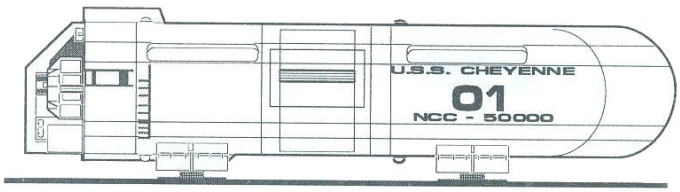


BOW STERN

TYPE 6-1 PERSONNEL SHUTTLE

Type: Light short-range warp shuttle.
Accommodation: 2 Flight Crew. Six passengers in the standard model. Two in the diplomatic model.
Power Plant: Two 1,250 millicochrane warp engines standard (Two 2,100 millicochrane warp engines on uprated versions), 12 DeFL 3234 microfusion RCS thrusters.
Dimensions (meters): Length: 7.0, Beam: 4.0, Height: 2.8
Tonnage (metric): 3.39
Performance: Warp 1.2 for 48 hours standard. Warp 2 for 36 hours maximum.
Armament: None on the standard model. Two Type IV phaser emitters for use with Special Operations missions.



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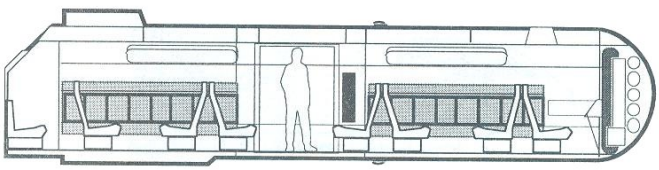

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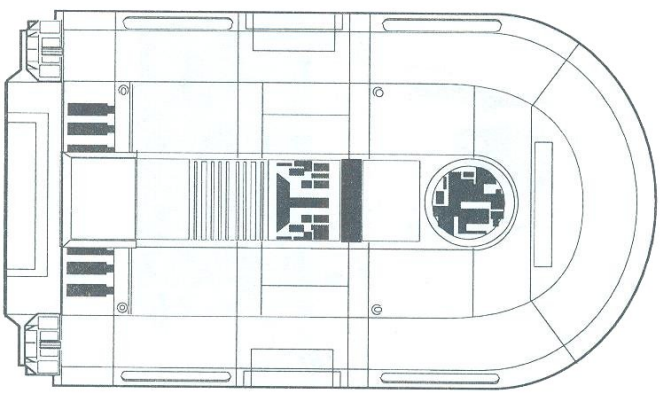

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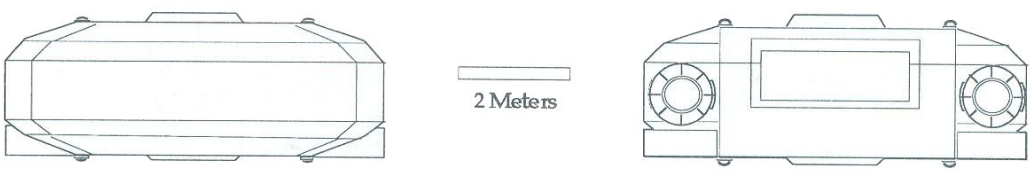
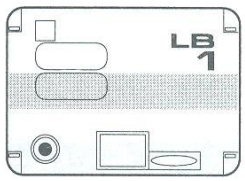


BOW

STERN

AZANTI - CLASS LIFEBOAT

Type: Large Capacity Lifeboat.
Accommodation: 2 Flight Crew. 16 Passengers.
Power Plant: Two 980 millicochrane warp engines, 12 DeFL 3234 microcochrane RCS thrusters.
Dimensions (meters): Length: 11.4, Beam: 6.64, Height (Landing Gear Extended): 3.01
Tonnage (metric): 6.0
Performance: Standard Warp: 1.48 for 48 hours. Max Warp: 2.0 for 20 hours.
Armament: None.



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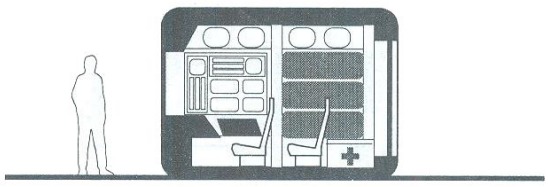

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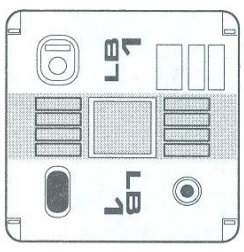

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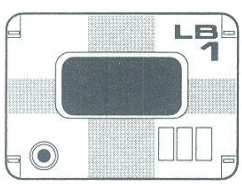

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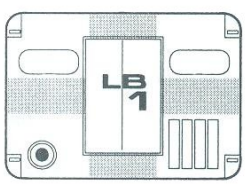
2 Meters

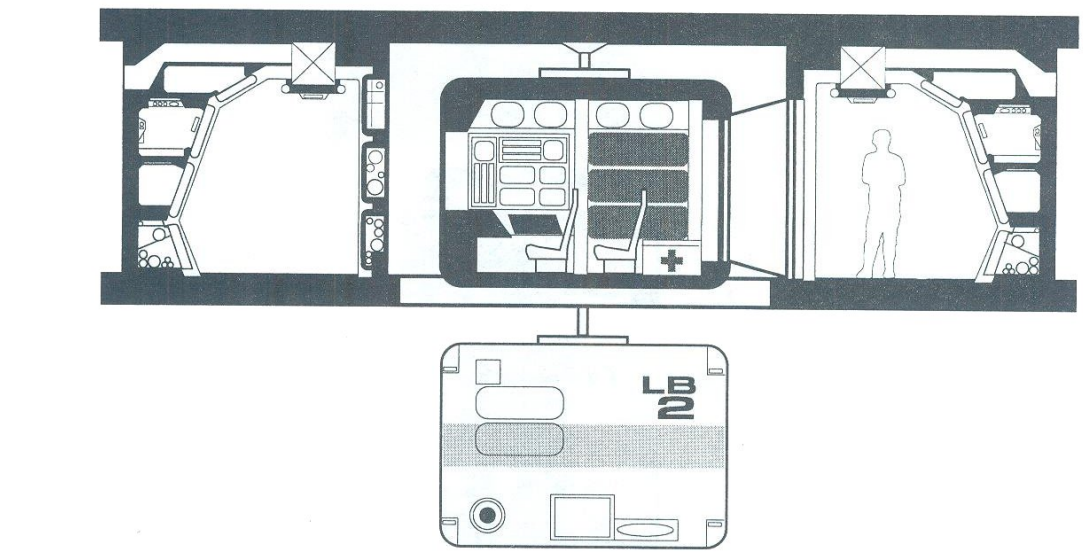


STERN

A CLASS LIFEBOATS

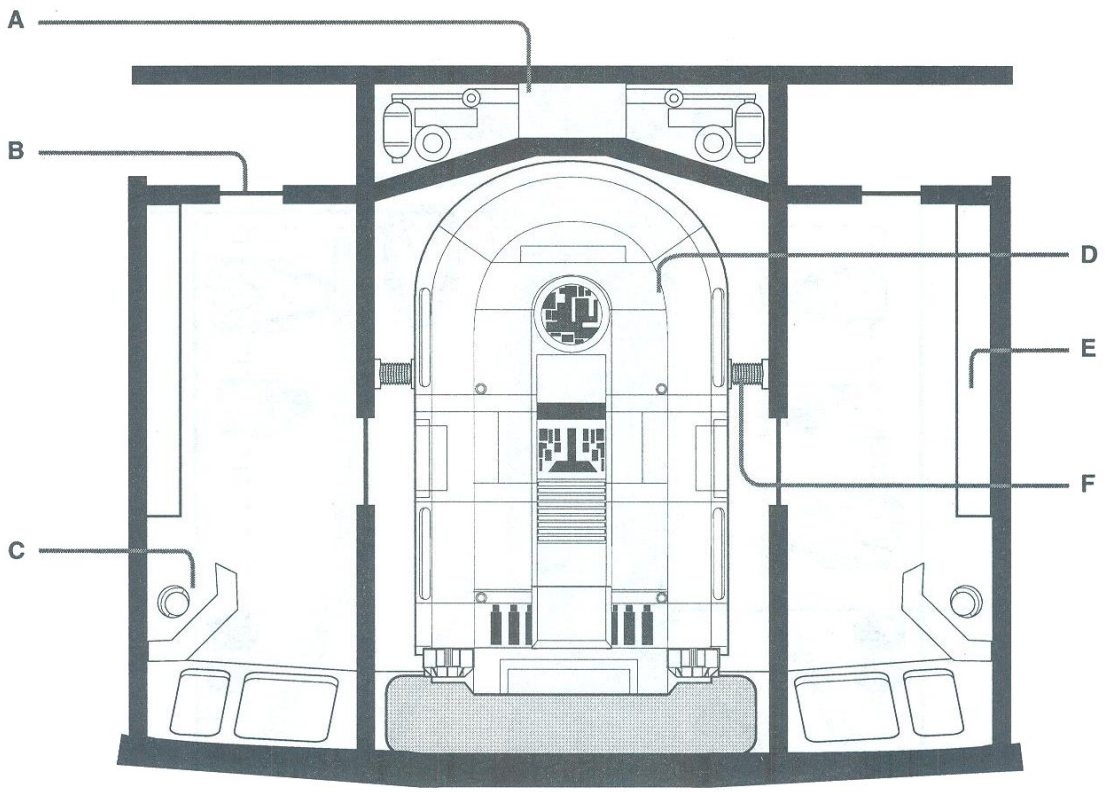
Type: Small Lifeboat.
Accommodation: 4
Power Plant: 24 DeFL 1298 microfusion RCS thrusters.
Dimensions (meters): Length: 3.5, Beam: 3.5, Height: 2.5
Tonnage (metric): 1
Performance: Enough to clear possible Stardrive explosion radius.
Armament: None.

R - CLASS LIFEBOAT EJECTION SEQUENCE



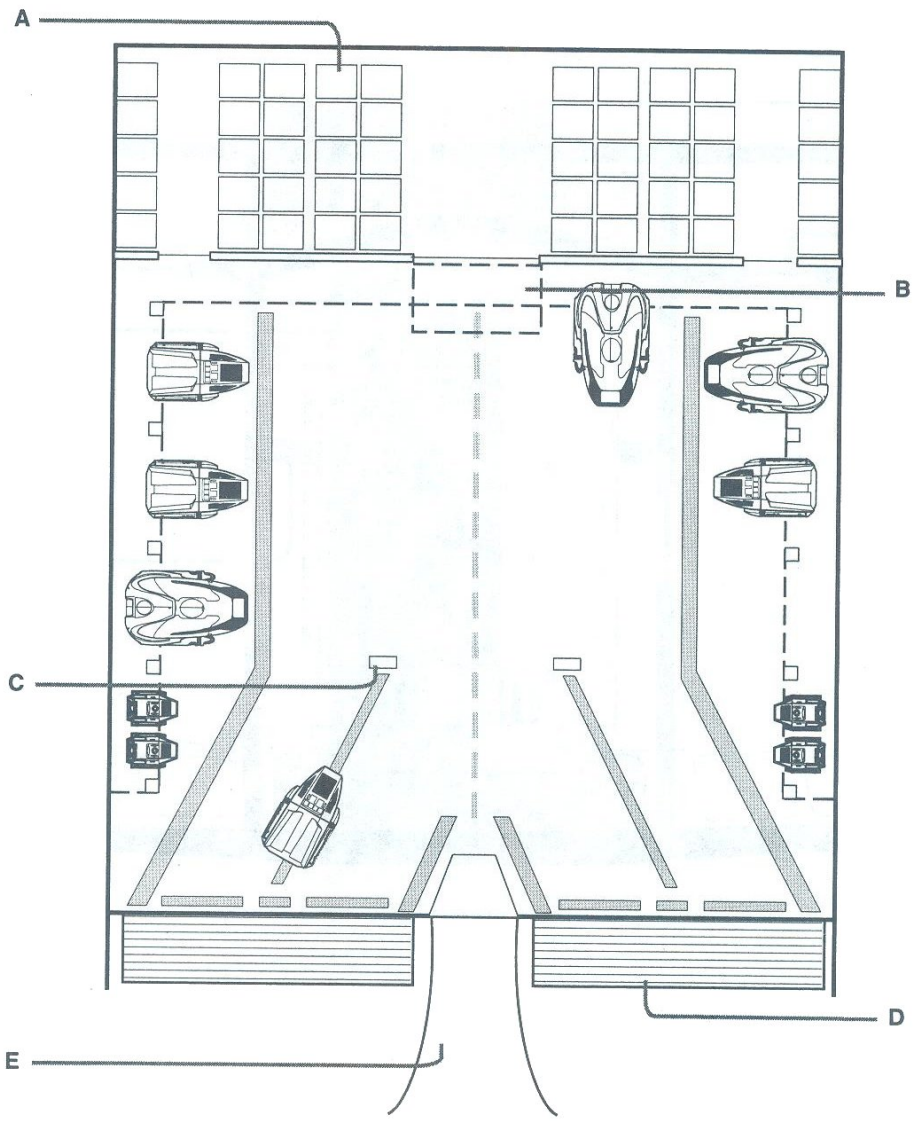
1. Emergency declared, crews enter Lifeboats and secure themselves for launch.
2. Lifeboat Hatch Cover ejected from hull.
3. Ejecting Lifeboat clears hull.
4. Release from cradle, RCS Thrusters can carry the Lifeboat clear of a exploding starship.

LARGE LIFEBOAT DOCK (STANDARD)



A. Lifeboat Bay Service Equipment
B. Corridor Hatch
C. Systems Monitoring Station
D. Lifeboat
E. Equipment Lockers
F. Power & Life Support System Umbilicals

SHUTTLE AND CARGO BAY 1 LAYOUT



A. Cargo Bay One with Standard size cargo containers
B. PryFly (Primary Flight Control) Deck 13
C. Fold-Away Tractor Beam Emitter
D. Hanger Bay Doors
E. Outline of Lower Hull Pylon

11
SCIENCE AND REMOTE SENSING SYSTEMS

The purpose of an Exploration Cruiser is to provide a stable sensor platform from which to make observations. It therefore requires careful thinking and effort to determine the right mix of sensor packages for a ship to carry.

Long-Range Sensors (LRS)

Located amid the Lateral Arrays on the main hull and in housings on top of the star drive section "necks" (forward of the aft firing Photon Torpedo launchers) are the LRS (Long-Range Sensors). Most of these instruments are designed to sense EM, subspace, or gravimetric phenomena, so interference by the navigation deflectors is of prime concern. As stated before, the cycling rates of the navigation deflectors is out of phase with the cycling rates for the LRS thus allowing virtually uninterrupted observation ability.

The majority of the LRS arrays are active-scan composed of subspace and tachyonic scanning devices. Information can be gathered at faster-than-light speeds and must be slowed down for the crew to understand. Unfortunately, low-grade subspace distortions are projected far ahead of the ship (much farther ahead than the navigational deflectors), alerting a potential threat to the approach of the ship if they are scanning for such disturbances. In tactically sensitive situations, there is always a fine-line between information needed and information given away. For this reason no active sensor may be activated without authorization from the OD when the ship is on alert status.

The remainder of the long-range instrument package consists of passive computer-enhanced optical devices (telescopes) and passive EM sensors which are highly sensitive to a variety of EM disturbances. Small, passive gravimetric instruments have also been installed as well as subspace distortion sensors that can pick up any type of low-level distortion produced by long-range subspace scanners. A passive neutrino imaging system is also installed. These latter instruments are located in the leading and trailing edge of the warp nacelle pylons near the phaser emitters.

The LRS can, at maximum

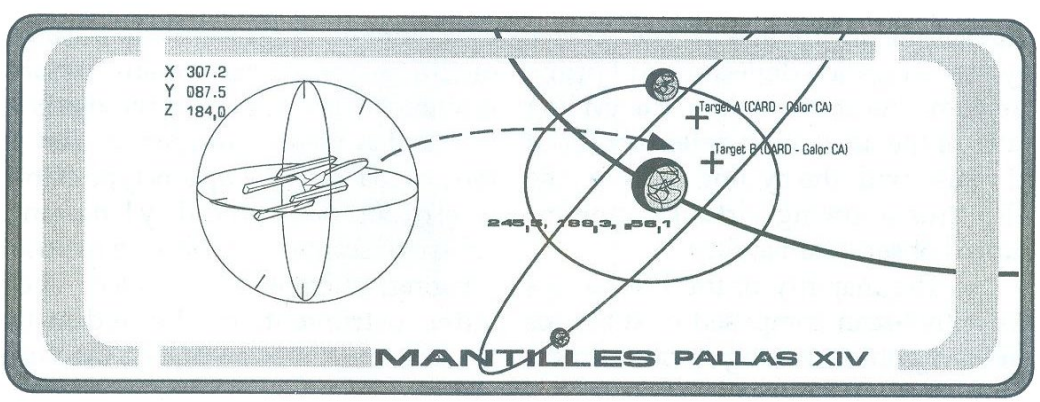
power, scan far ahead of the navigational deflector, but it is more routinely used at lower power to scan just ahead of the deflectors to target the micrometeors and other small debris in space. When used in this capacity, the processed data from the sensors is feed to both CONN positions on the Main Bridge and Battle Bridge. Individual sensors may be tasked separately for scientific study and raw or processed data from any sensor can be fed to any science lab or bridge workstation.

Navigational Sensors

Space is very large indeed and one could get lost easily due to a fraction of a degree in course change even at low warp speeds without navigational sensors. A special segment inside the computer cores is devoted to maintaining a constant track of the ship's position in space. There are three redundant navigational sensor packages on the *Cheyenne* . Data from other sensors in the lateral array, and from the LRS are fed into the navigation computer core memory. The navigational subprocessors prioritize sensory data according to flight mode and tactical situation data. These priorities can be overridden by CONN if other data are preferred.

Most navigational sensors are passive in nature so they may be used at any time without revealing the ship's position to an adversary. Optical sensors look for key stellar pairs to give reference points to the system. Such points are also obtained through passive subspace multibeacon receivers and timebase beacon receivers. Other sensors include Infra-Red and Ultra-Violet, Gamma Ray imagers and Charged Particle Detectors. There are over 200 separate instrument components to the navigational arrays with one- third of these in the forward array alone.

Ship's guidance is also handled by an Inertial Guidance System (IGS) based on seven laser gyroscopes located around the ship and stabilized on the galactic plane. Multi-data pick-ups on the gyroscopes allow the ship to know where it is at all times in relation to its last positional input without any external data. This positional input is made automatically by the navigational



subprocessors before leaving any Starfleet docking facility (this fixed-point input is known as the "initial fix"). It is updated consistently from navigational sensors while underway. Should navigational sensors become defective or their data suspect, the CONN can erase any inputs all the way back to the initial fix to obtain the IGS position readout. The more inputs erased, however, the greater the margin for error, albeit minimal in any case, increases. The IGS is especially helpful inside nebulae or around bright bodies that obscure external reference data.

Lateral Sensor Array

Located around the perimeter of the primary hull is a series of SFRA standard instrument pallets that are collectively known as the lateral sensor array. The pallets can vary widely in instrumentation and may carry anything from subspace field distortion sensors to X-ray telescopes to tachyonic life-form scanners.

One quarter of the pallets are navigational sensor packages, and about 75% of that figure are in use at any one time (navigational sensors have a much more frequent periodic maintenance schedule than most sensor pallets). Fifty percent of the pallets in the lateral array are configured in the standard six-pallet science sensor package. The remainder of the pallet spaces can be configured as necessary for scientific missions. A smaller number of similarly configured pallets are arranged in a ring around the Main Bridge Module superstructure (repeated on the ventral side of the saucer hull) and on strips forward and aft of the shuttlebays. These pallets accommodate sensor readings in the extreme elevations and give sensor capability all the way to the zenith and nadir.

Instrumented Probes

While using LRS or the Lateral arrays might accomplish the mission, there are other times when a probe is called for.

Science Labs

Most of the science labs onboard the *Cheyenne* are located in the Science Complex on Deck 9 which puts it above the Medical Complex. This arrangement allows for the interchange of specimens, information, and personnel move quickly than if the labs are spaced all over the ship wherever room can be found for them as on the older designs of 70 plus years ago. The Science complex contains the Science Officer's office, and all the physical and life science labs (the latter of which would fall under the direction of the Chief Medical Officer).

Life Sciences

The life science labs reside in the central area of the complex, right above the core unit of the Medical Complex. There is a ladderway between the two so that waiting for transport is not necessary. Life science labs include a com-

plete biology suite, a zoology lab, and a botany lab.

The biology lab houses specialized sample containers and analysis instruments for complete microbiology, biochemistry, and biophysics panels. It has a small isolation area to keep and study quarantined samples. This isolation area is closed off from the rest of the ship in every way and has its own self-contained environmental support. Science personnel conduct studies on samples through one-way gloves, force fields, and remote manipulator arms, and even maintainence personnel must physically dismantle the chamber's front wall before gaining access. Samples are placed in the isolation area via transporter only—usually in small stasis boxes that are opened via remote manipulators once inside the chamber.

The botany lab has several small environmental enclosures for housing plant samples from virtually any environment. The enclosures have variable gravity and gas mixes and can even be filled with water for aquatic plant specimens. A standard Class M greenhouse is available for collected samples, for cultivating specimens that will be transferred to the arboretum, or for caring for sick/damaged plants from the arboretum or those belonging to crew members. A hydroponic garden is used to study this cultivation technique on new plant samples. It also produces a variety of fresh produce which is highly prized aboard ship and is usually available to crew members through the ship's store. The lab also has a direct plumbing connection to the ship's water supply for watering compatible flora.

The zoology lab has a small veterinary care unit which can care for crew members' pets as well as fauna aboard for study. The zoological specimen study area is the lab's most unique feature. Four enclosures in the lab are complete holosuites which can be programmed with the environment of any planet the ship may be studying. An animal placed into one of these enclosures will not be aware that it has left its natural enviroment.

This method of study leads to much more accurate data regarding an animal's behavior patterns on its home world. For transport or when the holographic simulation must be suspended (during emergency power situations for example) a projected "neural caliper" beam sedates the animal with no ill effects. The animal can be re-sedated in this manner as many times as necessary.

Of course, under ideal circumstances animal or plant samples are studied on their home world and never taken from their enviroment. The zoology and botany facilities are ideal, however, when the circumstances aren't.

Physical Sciences

The physical science labs occupy much more of the complex than the life science labs do. There is a much wider variety of disciplines represented in the physical sciences, and the study of most of them is done in space, so actually finding a planet to produce study specimens is not necessary (as it is for life sciences).

In the Physics area, there are the astrophysics, subatomic/quantum physics, and subspace physics labs. These disciplines study a wide variety of phenomena that the ship encounters

on a regular basis, and they are staffed around the clock. Other physics labs in the complex include gravimetric, high-energy, and general physics facilities. Most of these labs collect their data through the scientific packages in the sensor arrays all over the ship. The ship's Physicist coordinates all six physics labs and is usually the second-in-command of the Science Department.

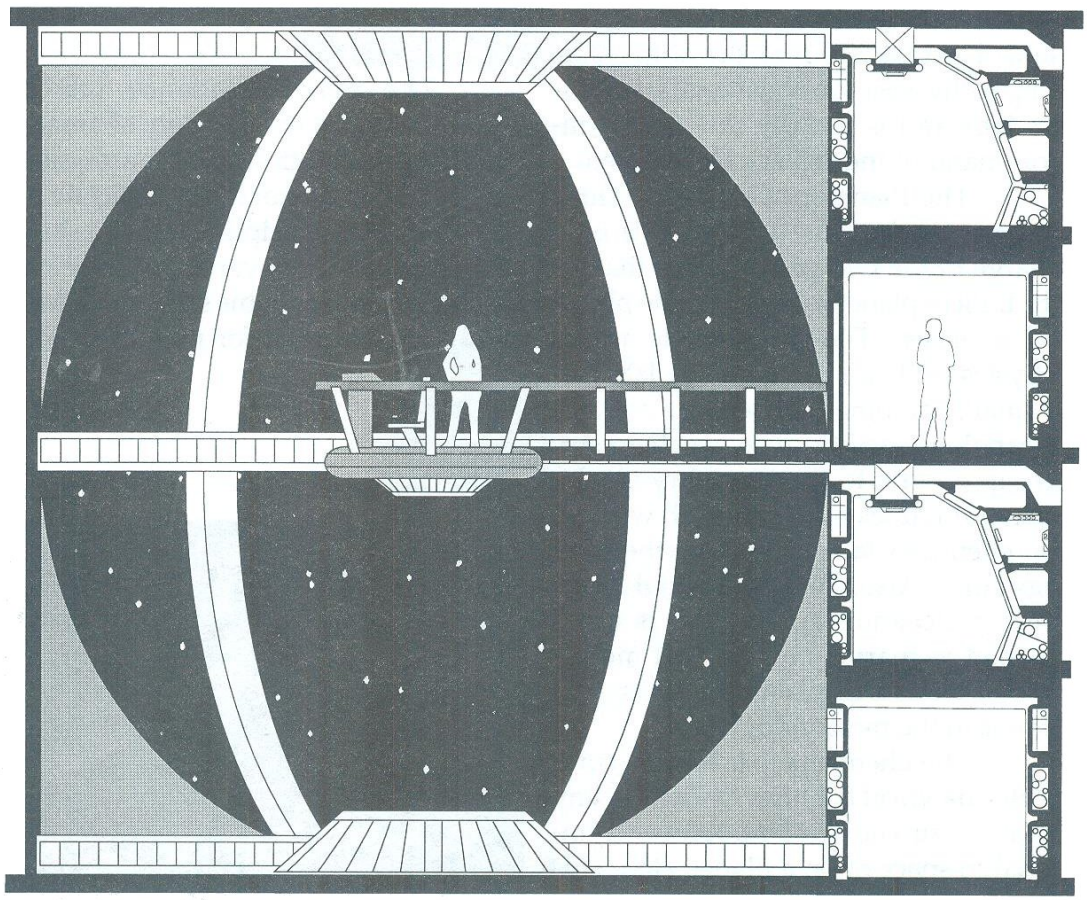
The Planetary Geologist (Third in command of the department) is in charge of the two geology labs that do the bulk of planetary study in the physical sciences. The labs include a geophysics facility, a meteorology lab, and a small, combined archeology and anthropology facility. The geochemistry group reports to the Planetary Geologist, but it does most of its lab work in the chemistry lab next door to the geology suite. Also, this section could support a Oceanographer who is cross trained in marine biology and meteorology, if one is available. This duty station is in the meteorology lab.

The chemistry lab houses complete analytical facilities to identify any known / unknown compound encountered in space or on a planet, etc. This lab also aids the general medical and life science labs in biochemistry studies and drug identification/synthesis. The lab is capable of synthesizing and replicating many known chemical compounds if the correct raw materials can be supplied. This method of synthesizing is used when quantum resolution of the material must be correct (as in certain medicines) because replicators function only on the molecular resolution level.

The cartography office includes *both stellar and planetary groups. Stel*lar cartographers study and chart the placement of stars, stellar phenomenon, and planetary bodies while the planetary cartographers chart the actual surface features of planets, asteroids, etc. Most planetary cartographers are cross-trained in stellar cartography and vice versa; so that one group can assist the other when needed.

The general science lab is equipped with a wide variety of broad-use instrumentation and is assigned studies which do not fall specifically in one of the other disciplines aboard ship. This lab gets quite a variety of projects, and being posted to this section is a real learning experience for most new scientific personnel.

SHIP'S STELLAR CARTOGRAPHY ROOM CROSS-SECTION



12
ENVIRONMENTAL SYSTEMS

Life Support and Environmental Control

Federation technology in this area of spacecraft design has come a long way in the last 50 years. SFRA has excelled at providing crews with living conditions almost identical to their homeworlds. Environmental and life support decks are located primarily on decks 5,10, and 17.

In addition to the primary systems, large quanties of air, water, etc., are stored in specially armored tanks around the superstructure of the ship. As a last resort, there is a three day supply of air and water stored in the center of the primary hull on Deck13.

Other emergency provisions include the designation of emergency shelter areas, personal emergency life support systems distributed throughout the ship, and contingency support modules which provide breathable atmosphere for up to 30 minutes in the case of catastrophic systems failure.

Atmospheric Systems

As with any starship, the atmosphere aboard the *Cheyenne* is carefully monitored and regulated. Two completely redundant primary systems and various secondary back-up systems assure that under normal operating conditions the atmosphere will be comfortable and uninterrupted. Atmosphere processors monitor the air at least 35 times a second to assure that outgoing gases are of the correct mixture, temperature, and pressure to maintain a standard Class M environment. Any variation of more than 1% from nominal values is called to the attention of environmental engineering.

All public spaces on board the *Cheyenne* are maintained at the SFRA standard 102.2 levels for Class M conditions: temperature = 26°C, relative humidity = 45%, atmospheric pressure = 101 Kilopascals, and gas ratio of 78% nitrogen / 21% oxygen / 1% other trace gases. Private spaces can be modified in any of these dimensions. If any major modifications are made in pressure of gas ratio, the door to the compart-

ment locks until the modified levels can be returned to normal (unless emergency override is activated).

Fifteen percent of the living space aboard the *Cheyenne* can be converted to Class H, K, or L environments, and 3% is further convertible to class N or N(2) conditions. These convertible rooms have small airlocks at their entrances, so few modifications are needed for conversion. Crew members requiring such special environmental conditions are allowed to work in their quarters if their job permits. They are also issued personal life support suits so that they may roam freely about the ship.

[Note: after the SLEP program modifications.] Because the bulk of the ship is not naturally hospitable to these life-forms, duty on board the *Cheyenne* can be an isolating experience for them. Therefore, their recreation program is of utmost importance to their satisfaction and well-being. The recreation department regularly sets aside one of the newly installed holodeck suites for use by these lifeforms, bumping even senior officers, so they can take part in a full recreation program aboard ship.

Gravity Generation

Gravity generation on board the *Cheyenne* class Exploration Cruisers is provided by a network of 300 synthetic gravity generators which use controlled streams of gravitons to create a nominal gravity field of 1 G. On every deck, generators in the "floor" create a sense of "down" for the entire ship. The graviton fields from the deck above are shielded by the ceiling of the deck below so that conflicting fields do not provide problems.

Several areas of the ship can be designated as "Variable Gravity Areas" (VGAs). A VGA is defined as any space in which the nominal synthetic gravity can be varied from 0 G to 2 G by an individual in that space (rather than by main environmental control). Shuttle and cargo bays, some sickbays and science spaces, holodecks, and the convertible living spaces are some of the areas on board the ship designated as VGAs.

Waste Management
Water and Sewage Recycling

Almost 100% of the waste water and sewage generated by the crew can be recovered and reused either as water or as organic raw material for the food replicator systems. This is accomplished through the rigorous processing and sterilization of the waste products. Through a number of steps, the liquid waste is separated into water and sludge. The water is then sterilized and sent back to potable water storage. The sludge is further processed and sterilized and sent to raw food stock storage. The small amount of unrecoverable inorganic waste remaining is stored for matter replication recycling.

To save on energy costs, some waste water is diverted for use after only its primary treatment. This waste water still contains some organic waste and is not potable, but is extremely useful in watering plants in the arboretum and in the botany labs because of the organic content. Crew members can order this "graywater" from environmental engineering for watering personal plants. Although a small savings,

relatively speaking, using this graywater water translates to much less water to process and less botanical nutrient suspension to synthesize for the plants.

Solid Waste Recycling

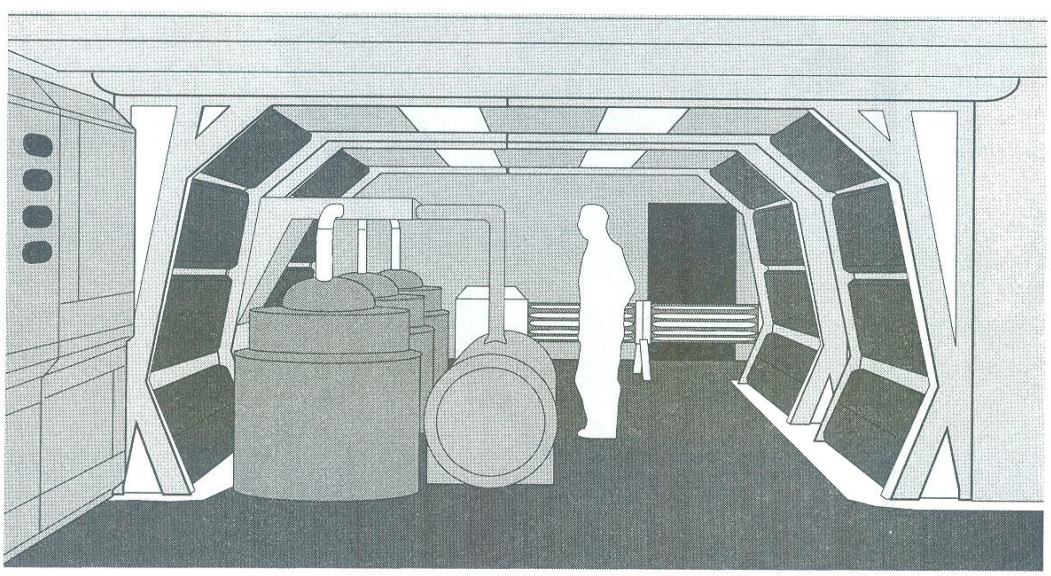
Solid waste is separated into three categories: Mechanically / Chemically Recyclable (MCR) waste material, Matter Replicator Recyclable (MRR) waste material, and hazardous waste. MCR waste is either sterilized and re-used or mechanically or chemically recycled. Recycling is less energy intensive than using replicators. Unfortunately, a relatively low percentage of waste is in MCR form.

Matter Replication Recycling

MRR waste is stored as raw material for matter replicators and thus is eventually recycled by use in matter replication. This storage can consume large amounts of space based on the size of the waste and the amount of replicator use.

Hazardous Waste Recycling

Hazardous waste is a problem on a ship like the *Cheyenne*. Weapons carried on board with their concomitant propulsive and ordnance wastes need to be taken care of. Therefore, hazardous waste is given priority and sent to the replicators which convert the material into inert carbon particles which are then stored as replicator raw material.



SHIP'S BOTANY GARDENS CROSS-SECTION

13
CREW SUPPORT SYSTEMS

The *Cheyenne* ship designers maintained the previous high standards of human resource management, crew support, and ship habitability with this new design.

Medical Systems

Medical care is the most significant support function on any starship. This is especially important on long-range missions far from any Federation outpostwith sophisticated facilities. The ability to care for crew members suffering from a wide range of ailments and injuries aboard ship means less starbase downtime and better crew motivation. In a combat situation, the ability to deal with casualties effectively cannot be over-estimated.

Outside of a hospital ship, the medical systems on the *Cheyenne* are the most sophisticated aboard any vessel of her size class. The Medical Bay Complex incorporates the most advanced equipment and design in the Federation.

Facilities

The Medical Department, under the direction of the Chief Medical Officer (CMO), is principally located in the Sickbay Complex in the center of Deck 10. This makes it one of the best-protected areas of the ship, and one of the most stable during IDF failure. More than just a traditional sickbay, this complex houses a wide range of medical facilities in concentric rings radiating out from the center of the deck to the primary computer cores.

The Medical Complex houses the permanent emergency medical facilities. Equipment for temporary emergency medical facilities is stored in all cargo and shuttlebays. This includes two Operating Room/Intensive Care Units (OR/ICU's). The OR/ICUs can be completely isolated from the rest of the ship, and the atmosphere and gravity are adjustable for all known sentient life-forms.

The Critical Care Unit (CCU)—the place most people think of as "Sickbay"—is also located in the core as is the ship's pharmacy and a small equipment storage area. The entire core, along with select labs and offices in the inner ring, can be sealed off by automatic doors which are pro-

grammed to open only for personnel wearing properly coded combadges.

Staff

On a typical three shift duty roster, the Medical Department is broken down like this:

(1) Staff Physican: The "duty MD", as they are referred to as, is in charge of all patients and patient care during his/her shift. Each staff MD on the ship has at least one sub-specialty as per Starfleet Medical requirements. (Example: one doctor will sub-specialize in Emergency Medicine and Orthopedic/Vascular Surgery. Another will be a OB/GYN and a sub-specialization, knowledge of Neurology and Neurosurgery). There are three doctors on staff beside the CMO as per Starfleet regulations on a ship of this size. The CMO is almost never the duty MD allowing the CMO to be free to tend to the myriad of other duties required in keeping a Medical Department operating.

(2) Duty Nurses: One nurse continually monitors all patients from the duty desk located in CCU while the other assists the duty MD. The Head Nurse is typically the assisting nurse on the first shift. An additional nurse may be posted on each shift to the nursery / neonatal ICU if there are any infants present.

(3) Medical Technicians: Med Techs assist nurses and doctors. They respond to minor medical emergencies and perform other duties as required. One Med Tech staffs the reception desk in the clinic suite at all times.

(1) Laboratory Technician: Lab Techs staff the general medical laboratory and run most of the routine lab work. They assist nurses and / or doctors as needed for more complex lab work.

(1) Engineering Liaison: This is an Engineering officer attached to the Medical Complex to perform all routine maintenance and diagnostics on sickbay equipment.

Since the first shift (or day watch) sees most routine cases and deals with most administrative chores, additional staff is posted during this watch.

Chief Medical Officer: The CMO will typically report for duty during first shift, although the CMO may "check-in" at any time.

Ship's Counselor & Dentist: A new position assigned by Starfleet Medical is Ship's Counselor. The counselor's office hours are during the first watch as well. The counselor is "on-call", and may be seen by appointment in any of the other watches. The same shift schedule applies to the ship's dentist.

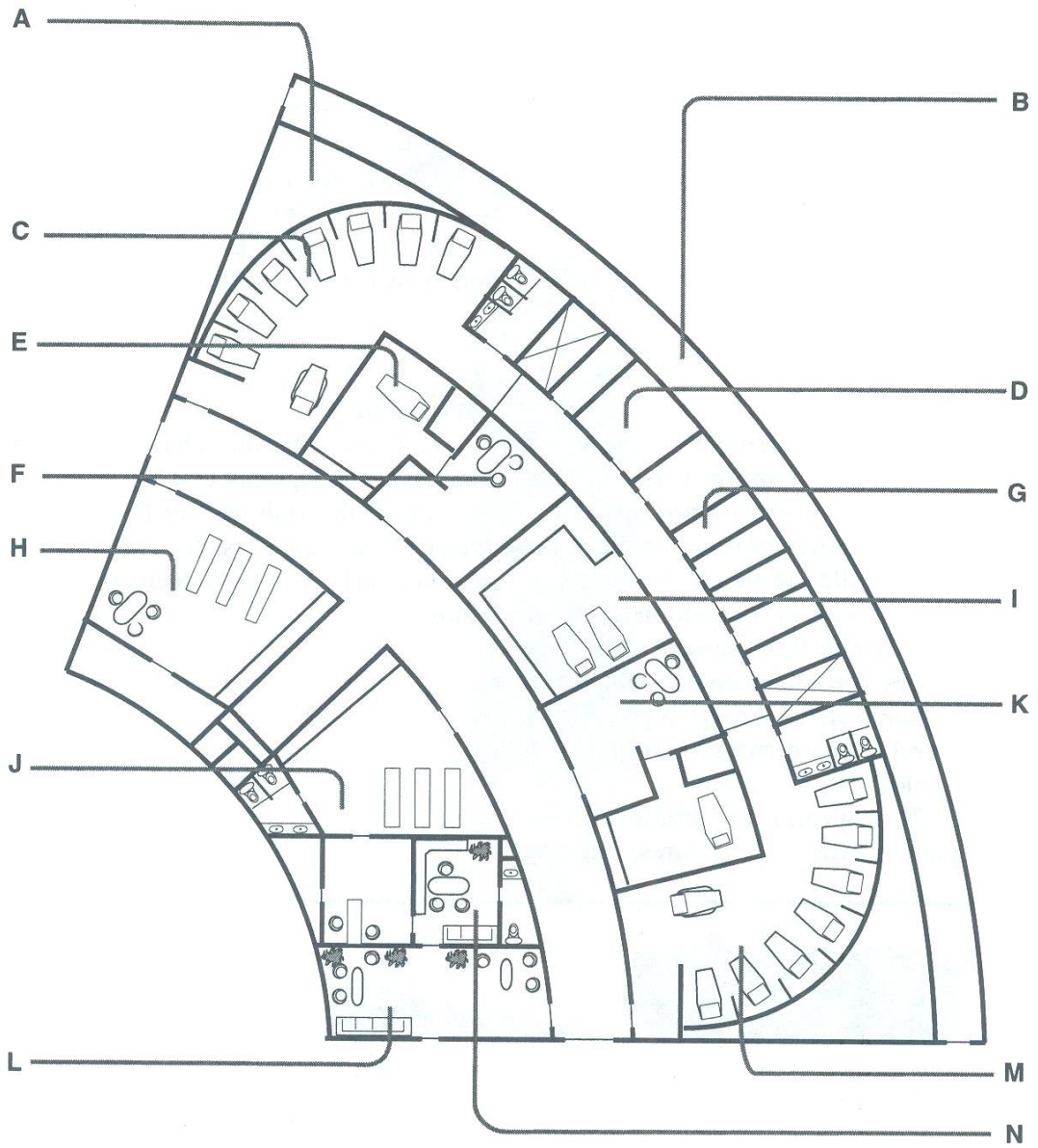
(2) Dental Technicians: This is a subspecialty of the Med Tech. One usually staffs the DDS reception area while the other assist the Ship's Dentist.

(1) Scrub Nurse: The scrub nurse who specializes in assisting surgeries and serves as anesthesiologist. When no surgeries are scheduled, he/she assists in sickbay as needed and coordinates medical staff training programs.

(1) Pharmacist: This is a nursing subspeciality. The pharmacist synthesizes and / or replicates needed medications and maintains inventory control over stored medications. The pharmacist also serves as the Sickbay Complex logistics officer, coordinating all supplies for the unit and seeing that emergency medical shelters (cargo and shuttlebays) have the necessary emergency supplies.

(1) Physical Therapist: This is one of the subspecialties of a Med Tech. When no patients require PT, this Med Tech as-

SHIP MEDICAL CENTER (SICKBAY)



A. Medical Life Support Equipment
B. Jefferies Tube
C. Ward B
D. Alien Environment Ward
E. Dental Surgery Room
F. Dentist Office / Waiting Room
G. Isolation Recovery Cubicals
H. Laboratory B
I. Main Supply Room
J. Laboratory A
K. Pharmacy
L. Outer Receiving Room to CMO's office
M. Ward A
N. CMO's office

sists as needed and coordinates Med Tech training programs.

(1) Laboratory Technician: Additional staff in medical lab to assist with higher 1st-shift workloads.

(2) Medical Technicians: Additional staff in sickbay to assist with higher 1st-shift workloads.

Training

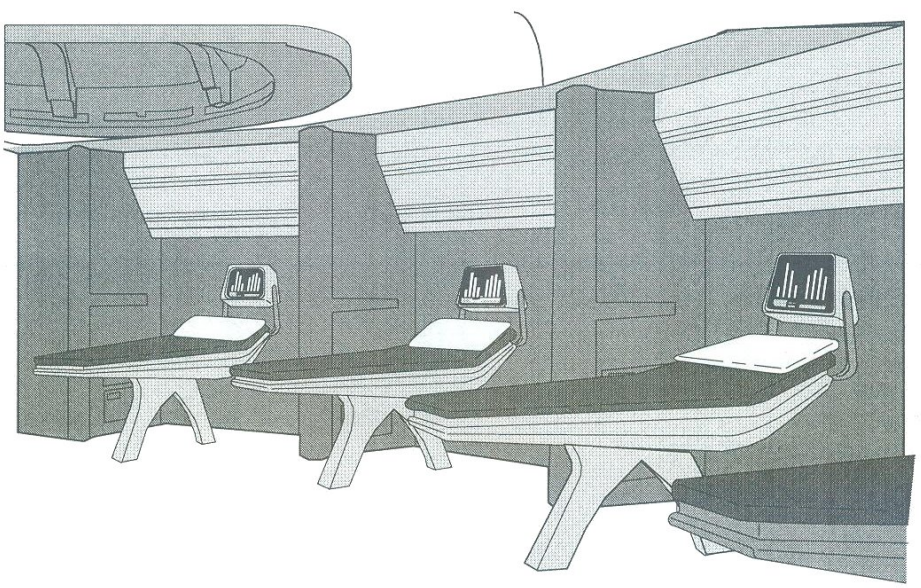
Starfleet personnel — have the knowledge and training to place them among the most highly trained space travelers in the known galaxy. Personnel are constantly drilled in the fundamentals of their jobs as well as educated in the latest developments in their chosen fields. Opportunities for advancement and lateral transfer are fostered through a program of next-level training and cross-training in other fields.

Through the use of professional developments programs, lectures, ongoing focus groups, on-the-job training, and a variety of other methods are offered to the ship's crew. Motivated crew members can earn academy credits and even entire degrees while on a mission.

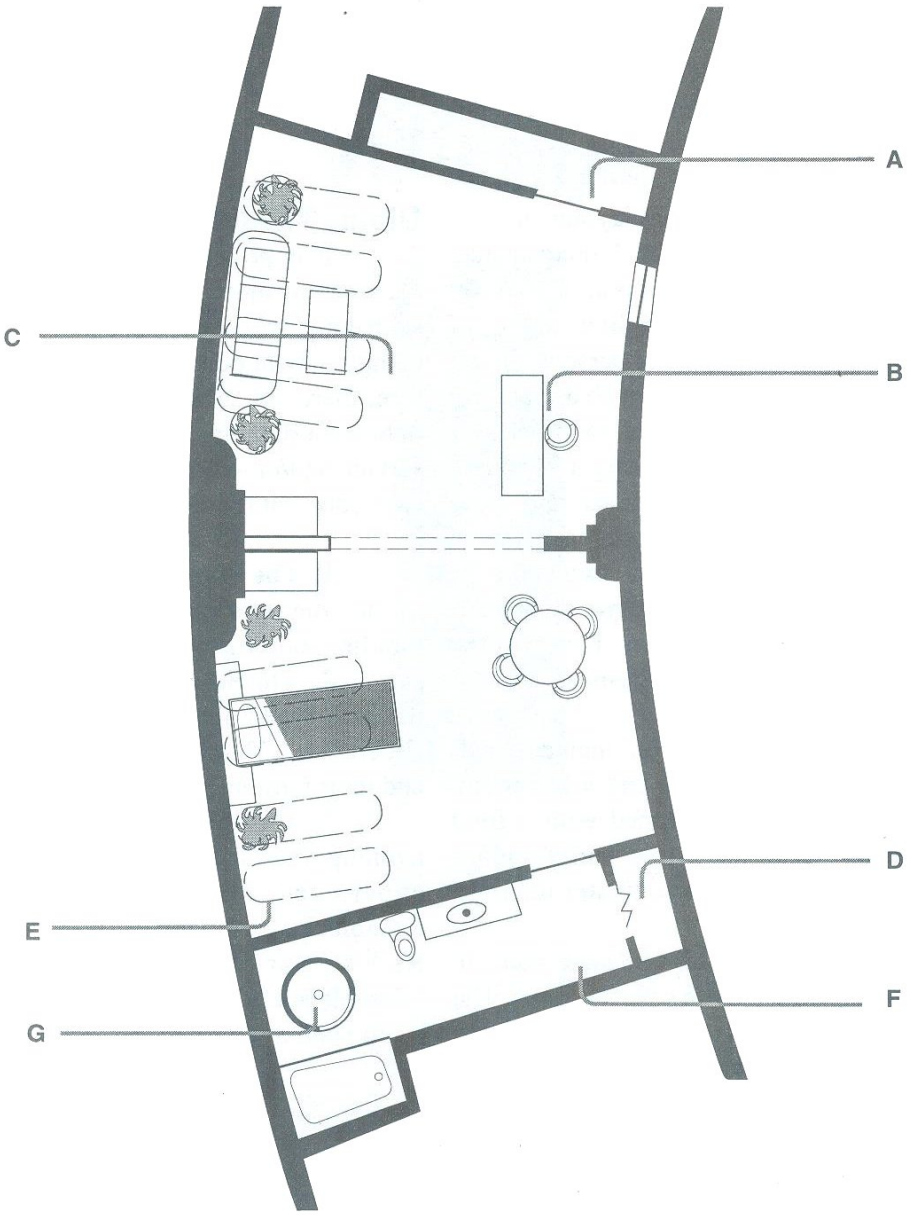
Looking at a Chain of Command flow chart, the Chief Training Officer is also the Ship's Counselor, as a secondary function to his/her primary job.

Habitability

As one of the many human resource management programs that Starfleet has developed, the Habitability Department oversees crew quarters, food replication systems, and most crew recreation programs.



SENIOR OFFICER AND FAMILY QUARTERS



A. Main Closet
B. Computer Desk
C. Living Room
D. Bathroom Closet
E. Window Outline
F. Bathroom
G. Sonic Showers

Crew Quarters Systems

With both the *Cheyenne* and the *New Orleans* class of starships, the crew living quarters modules have been slightly increased in total volume over their predecessors of the past forty years. With improvements in replicator technology and rethinking on interior design layouts, the average junior officer's 80 to 90 square meters of personal living space has reached the 100 square meter living space threshold. Enlisted ratings now can have personal living spaces of 60 square meters with a spare living area with another "dorm" room. Senior officers now have an amazing 120 square meters of personal living space and those crewmembers who have family members with them are entitled to the two bedroom staterooms that have the same amount of living space as senior officers. Family space is limited and filled on the basis of rank and time aboard.

The accommodations include a bedroom, living / work area and a bathroom. Each stateroom is equipped with a food replicator terminal, sonic and standard showers, and a limited computer interface terminal.

The Captain has two staterooms in the tradition of old Earth naval customs. The "in-port" stateroom is located near the forward gangway hatch on deck 10 and is spacious and well appointed with personal amenities. This is the stateroom the Captain uses to host guests while in port, and while underway it is often used as VIP quarters or as a small diplomatic conference area. The "underway" quarters is a standard senior officer stateroom located on Deck 8. The Captain's, First Officer's, and Second Officer's staterooms all have dedicated computer displays which constantly shows the ship's present position, course, speed, and alert status.

As stated before, 15% of the staterooms aboard the *Cheyenne* can be reconfigured to Class H, K, or L environment conditions. An additional 3% can be adapted to Class N or N(2) conditions.

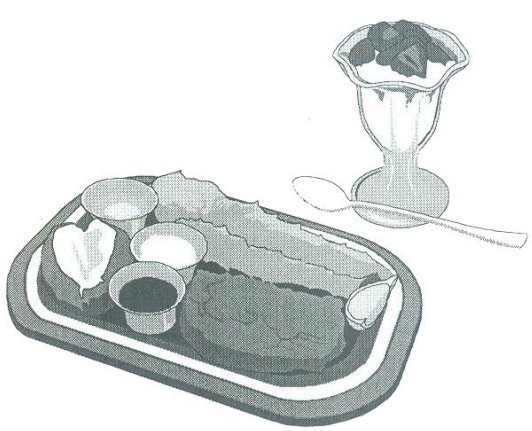
Dining Facilities

It is possible to replicate meals in each cabin, most intelligent creatures, on such long space voyages perfer to share company with others while eating. Therefore, there are several public dining areas onboard a starship. Those wishing for table service and/or a more social dining experience can visit these facilities:

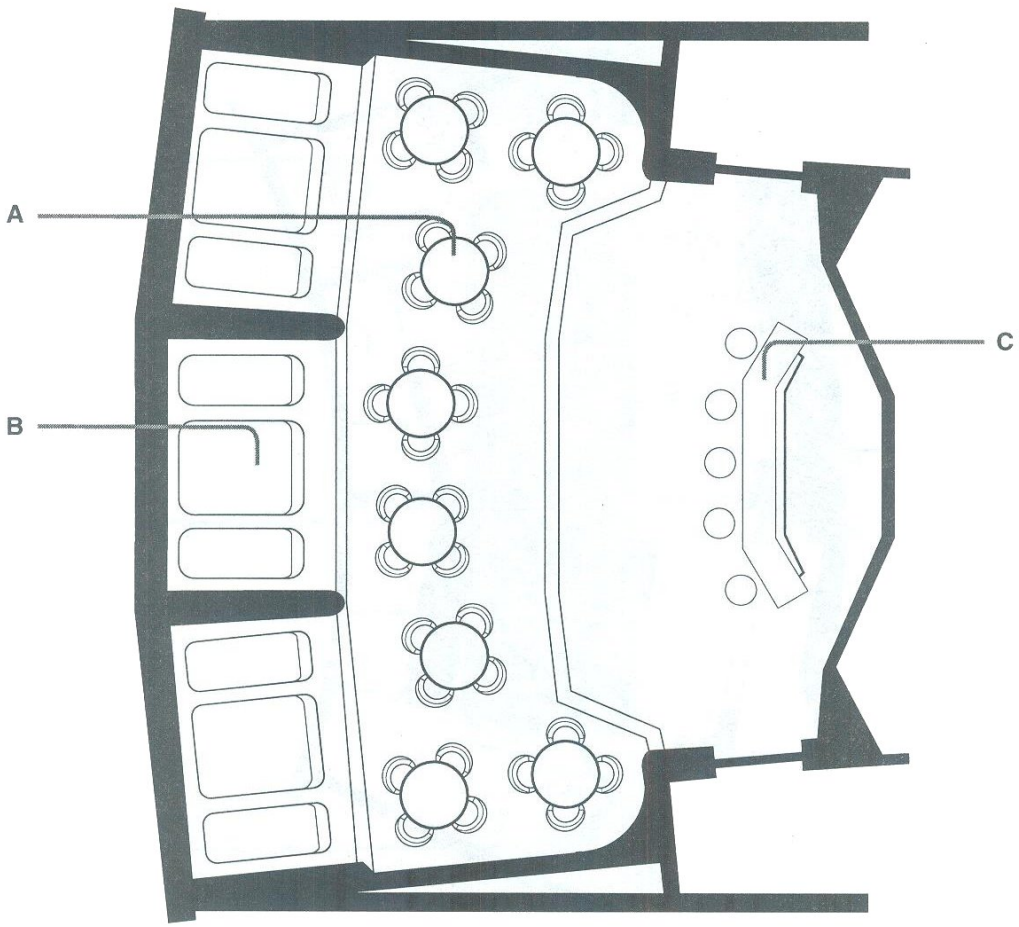
1. The Wardroom: This is a table-service dining room for officers and their families and/or guests.

2. The Silver Arch: A self-service replimat brand name known all across the Federation. This is for enlisted personnel and their families and guests.

3. Casablanca: Each starship has a dining room facility set aside as a dining experience. On the *Cheyenne*, the Casablanca is modeled on the dining in Rick's Bar in the classic movie "Casablanca." It is a intimate table-service room open to all crew and visitors.

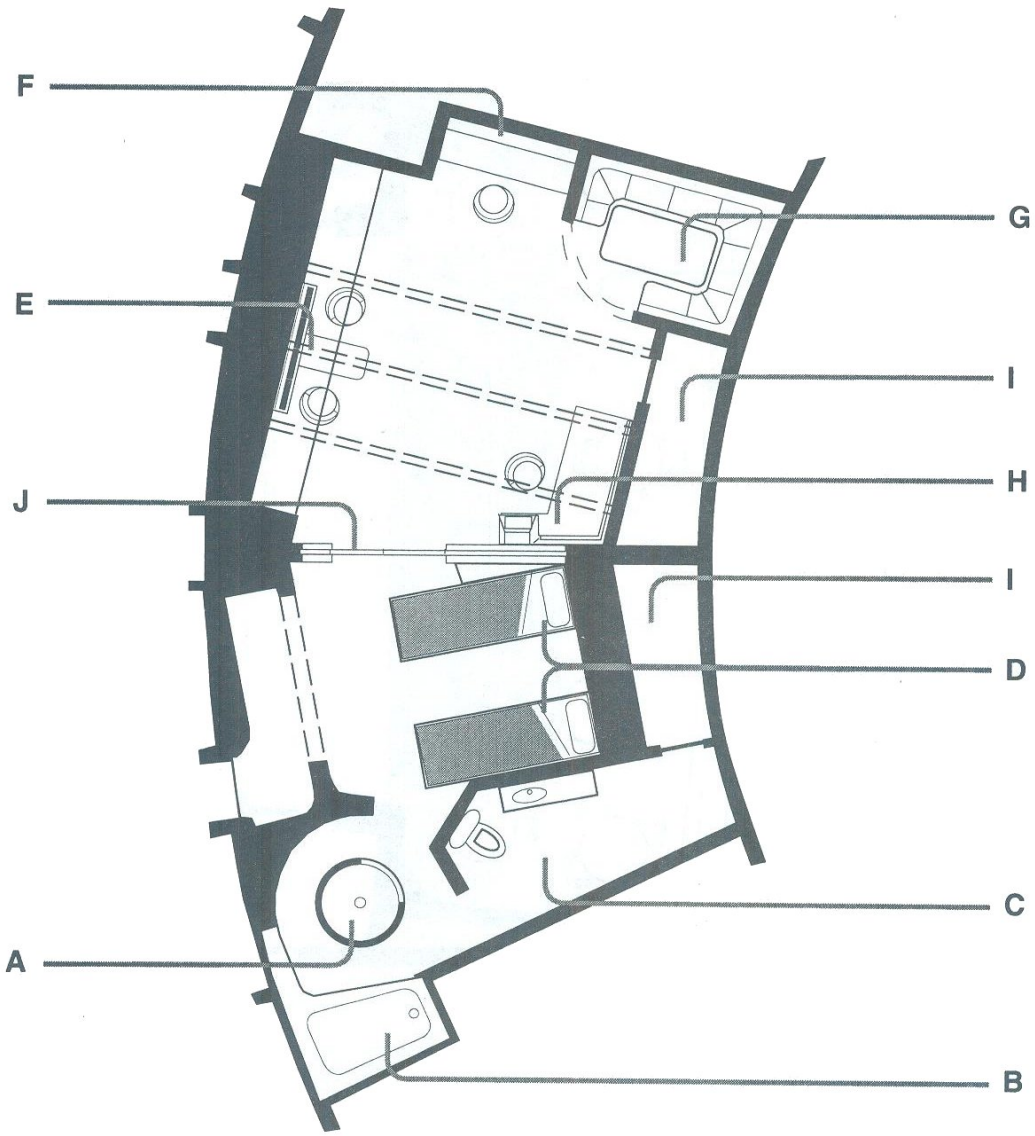


SHIP'S LOUNGE



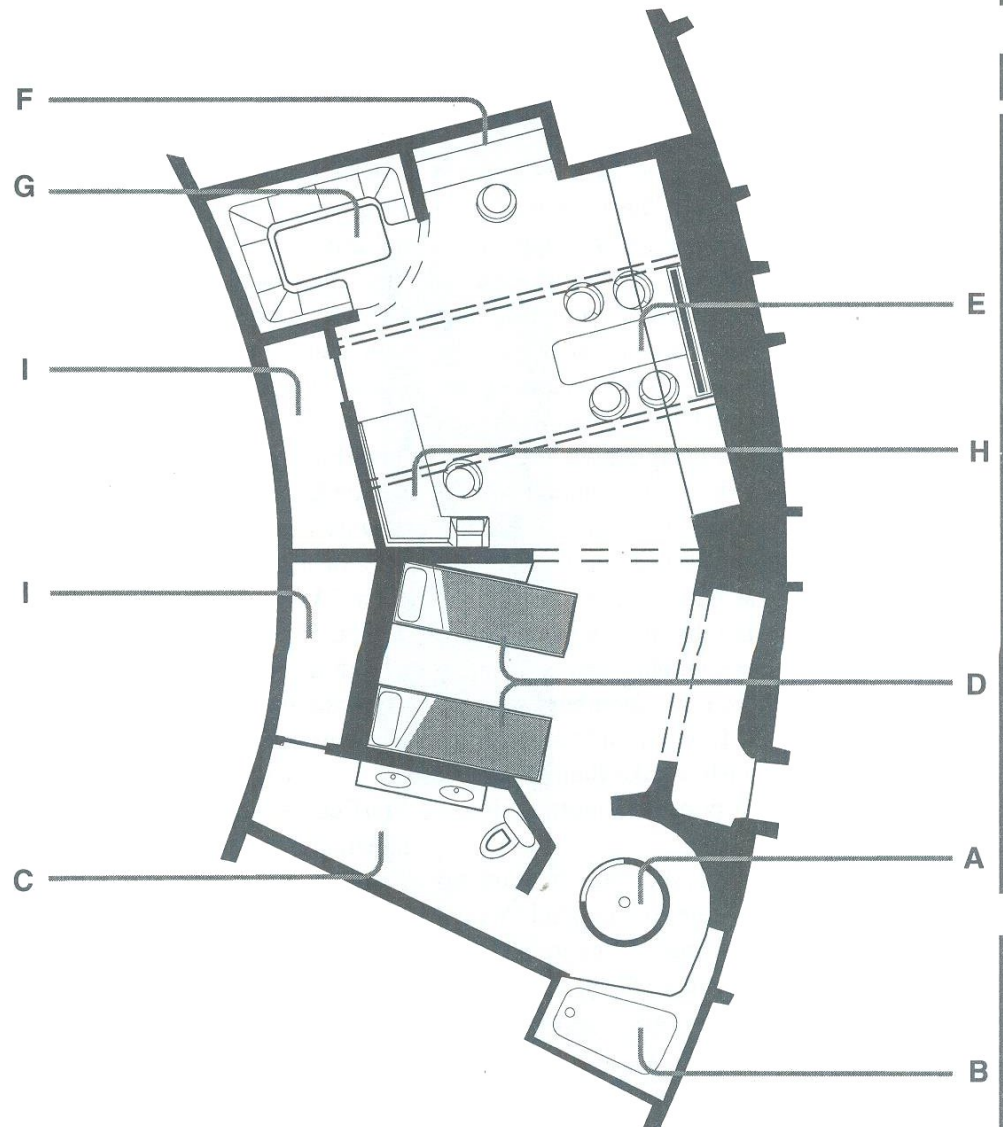
A. TYPICAL TABLE AND SEATING
B. TRANSPARENT ALUMINIUM WINDOW
C. BAR

TYPICAL JUNIOR OFFICER'S QUARTERS



A. SONIC SHOWER
B. BATH TUB
C. HEAD AND SINK
D. BEDS
E. REPLICATOR, TABLE, AND SEATS
F. COMPUTER CONSOLE
G. TABLE HUTCH
H. TABLE WITH COMMUNICATIONS MONITOR
I. WALK-IN CLOSET
J. SLIDING PARTITION

TYPICAL ENLISTED CREW'S QUARTERS



A. SONIC SHOWER
B. BATH TUB
C. HEAD AND SINKS
D. DOUBLE BUNKS
E. REPLICATOR, TABLE, AND SEATS
F. COMPUTER CONSOLE
G. TABLE HUTCH
H. TABLE WITH COMMUNICATIONS MONITOR
I. WALK-IN CLOSET

Crew Recreation Programs

Before the SLEP program for this class, the *Cheyenne*'s did not have any holodecks for the crew. Improved automation in several systems throughout the ship has reduced the actual number of crew members required to safely operate the vessel by thirty-seven personnel. This reduction freed up deck space to allow for the installation of four average size holodecks on Deck 12.

When such budget line requests come up every fiscal year for Starfleet, the bean counters always push the many different training environments the holodecks can simulate to train the ship crews. The flexibility of the holodecks is an added benefit and is utilized by the crew for recreational purposes. Adding holodecks to new ship construction (and back fitting to older designs) is improving the morale of the entire Starfleet. Holodeck number four is specially outfitted to handle crew members who require Class H, K, L, N, or N(2) conditions. Personnel who wish to take their holodeck time together may pool their alotted time to get a longer session.

Any crew member may be bumped from the schedule due to a needed tactical simulation or quick training exercise. The crewmember will receive the next available slot on any holodeck regardless of rank.

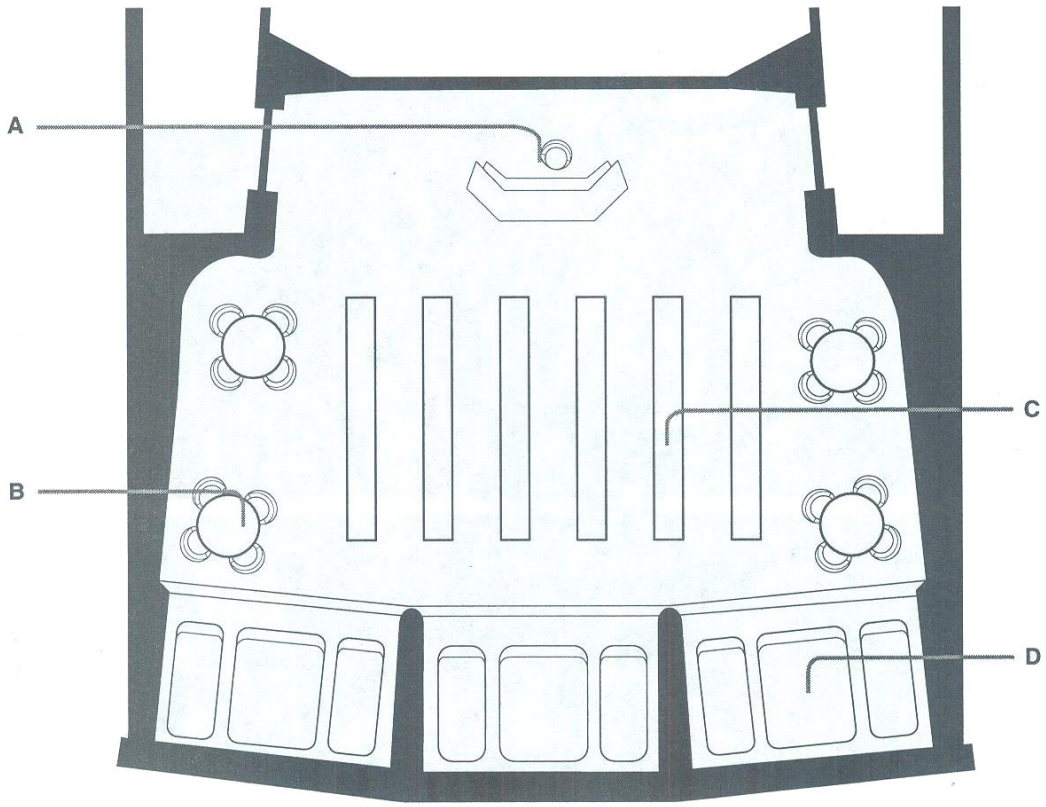
When the ship is at Yellow or Red Alert, holodeck usage is suspended and the power and computational resources rerouted to other areas. On rare occasions, the holodecks can be set up to handle emergency medical situations.

Other recreational programs include the performing arts (acting on stage), physical arts (gymnastics), and any other culturally unique activity is possible on board ship. Crew members who have expertise in a certain field or hobby may volunteer to hold classes for the rest of the crew.

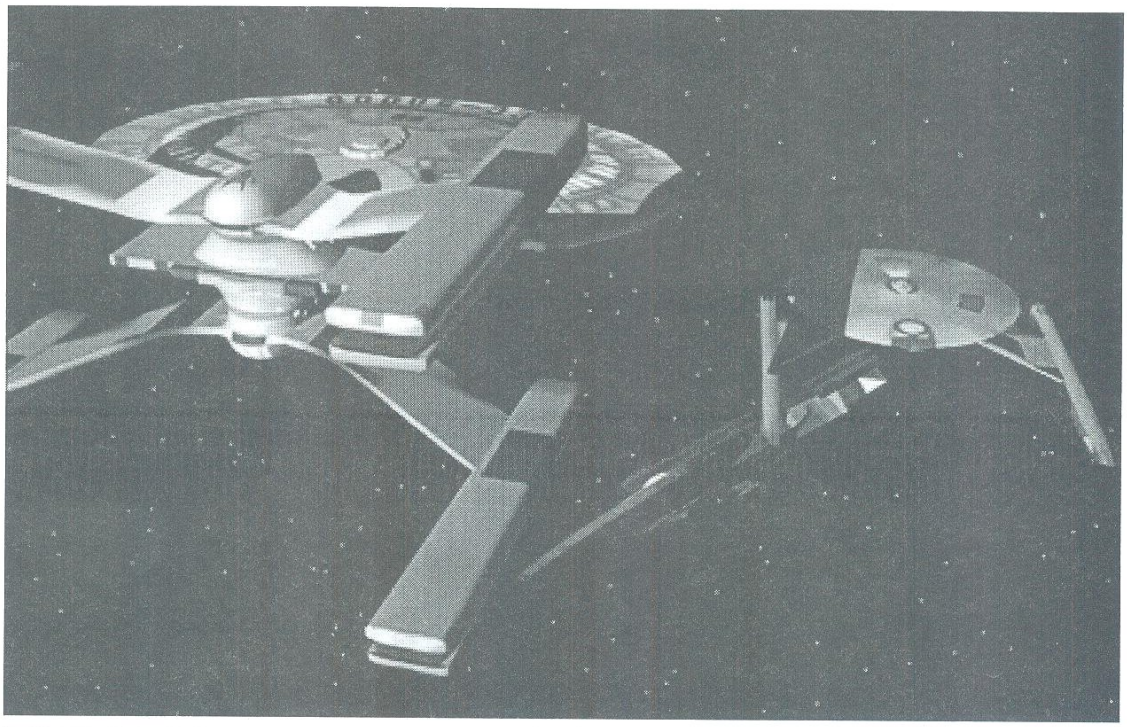
When a stop is going to be made at a starbase or a planet, the Habitability Research Department will send ahead for a list of activities and places to visit while the ship is in orbit. This list will be posted on the crews' Voice-Mail and stored in the ship's computer. Any activities requiring advanced scheduling will be coordinated through the department which can make reservations and purchase tickets via subspace link.

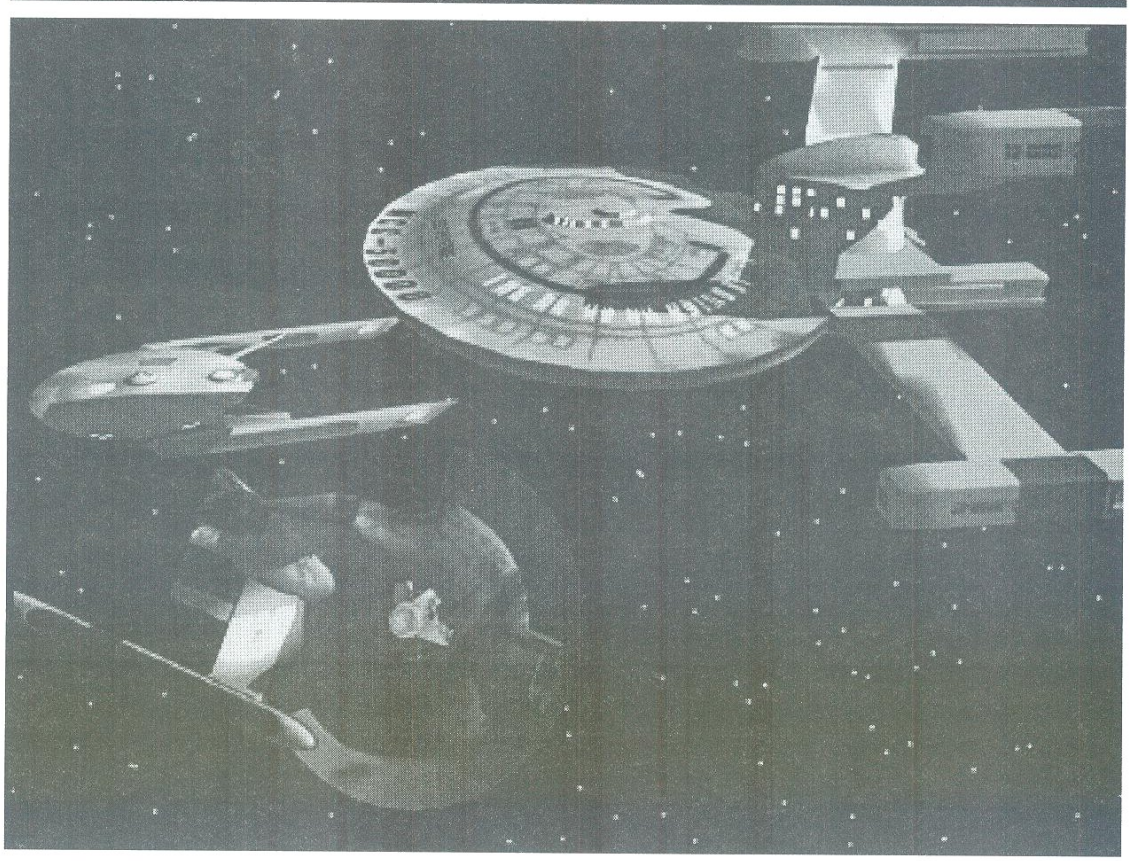
As with this class size of vessel, Starfleet designers have set aside nearly 100 square meters for a Hard Copy Library room for those crew members who love to read the old fashion way. Other works, music, books, video-media information, etc., can be accessed through personal terminals in crew member's quarters.

SHIP'S LIBRARY



A. MAIN LIBRARY COMPUTER CONTROL PANEL
B. TYPICAL TABLE AND SEATING
C. BOOK STACKS
D. TRANSPARENT ALUMINIUM WINDOW





Wolf 359 Recovery Operation

In the two images shown above, the *U.S.S. CHEYENNE* and the *U.S.S. SIMMS*, (NCC-1479, a member of the *SHANKS* class Light Cruiser series), survey the wrecked remains of the *U.S.S. LANGLEY*, NCC-19158 (a *LEAVENWORTH* class frigate) after the disastrous battle with the Borg ship on SD 44001.4.

14
PERSONNEL RESOURCES

It is an old, but wise saying: The most valuable resource is one's people. Without highly trained and motivated crews, the billions of credits spent on Starfleet would be wasted. The job of keeping crews well trained and motivated falls onto the Crew Support Systems (CSS), and the job of keeping them organized and working falls to Personnel Resources (PR).

Staffing and organization of each department is carefully coordinated through PR which in turn maintains crew assignments and all personnel records. Personnel Resources assures that all departments maintain adequate staffing levels and that all personnel are periodically and fairly evaluated. They also administer pay and promotions for all crew members. Last, but not the least, Personnel Resources acts as ombudsman in settling disputes between crew members and their associates or superiors when normal channels are inappropriate.

Each department is headed up by a Department Chief (DC) who is responsible for all operations in that area. The DC may in turn subdivide their department and delegate authority over certain groups or activities. The staffing of departments and their organization is covered under the subsections below.

Command

This department is by far the smallest of those aboard. Its only actual members are the Captain and First Officer, the ship's Navigation Officer, a small contingent of Flight Controllers and the Personnel Resources Division. All other officers in the chain of command are assigned to other departments. The DC of this department is actually the First Officer, since the Captain has more responsibilities and does not have the time to administer the department.

Navigation of a star vessel has been the primary responsibility of a ship's commander for centuries. Even today, the loss of a ship in battle is still not looked upon as harshly as a navigational error. A collision with another ship or object constutes grounds to relieve a Captain of command. Therefore, navigation and helm responsibilities still reside in the Command Department.

The ship's Navigation Officer oversees the complement of Flight Controllers. Any officer with the Captaincy as a career

goal usually begins their career as a Flight Controller. A combination of helmsman and navigator, the Flight Controller (or CONN) is the individual who actually plots the course and implements maneuvers of the ship. Flight Controllers typically serve a year or two in the command department learning the intricacies of stellar navigation and taking courses in the even subtler intricacies of commanding people. They also stand watches as OD to gain command experience. After a tour in Command, the officer is reassigned a low-level command slot in a department suitble to his/her education and experience.

Engineering

The Engineering Department is the largest department on the ship. It is charged with maintaining all the hardware aboard the vessel. From the warp drive to the food replicators, Engineering's job is to keep the ship running at optimal efficiency. Due to the wide range of systems it must maintain several sections and subsections under the direction of its DC, the Chief Engineer.

Warp Propulsion

Responsible for all aspects of the care and maintenance and safe operation of the warp drive from the matter and antimatter containment storage to the warp core, to the engines themselves, the WPS Officer is Engineering's second-in-command.

Impulse Propulsion

This covers everything having to do with the IPS from fuel storage to RCS thrusters operation. The IPS Officer is third-in-command.

Power Distribution

The Power Distribution officer ensures that energetic plasma is siphoned from the warp core and routed to those systems requiring it. They are also responsible for energy conversions and allocations, and for converting it into electricity for the rest of the ship. They are responsible for the maintenance of the waveguides and wiring throughout the ship.

Structural Integrity and Damage Control

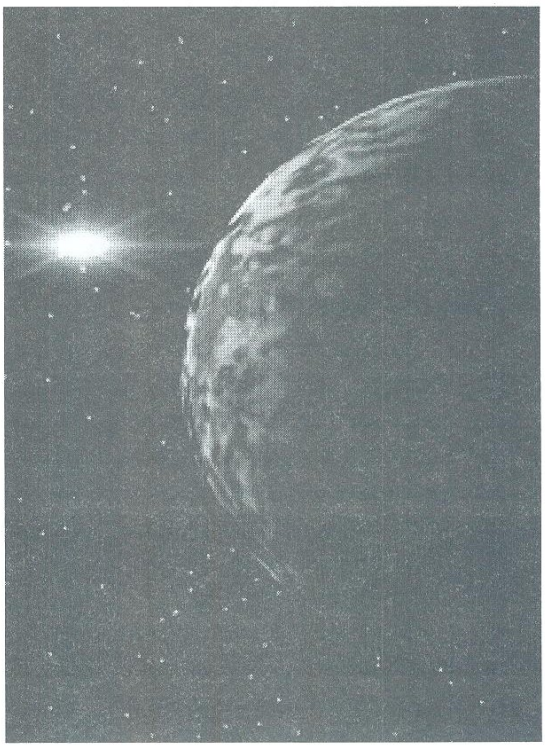
Physical hull integrity, spaceframe maintenance, Structural Integrity and Inertial Dampening Fields are all the responsibility of this section. Damage Control, however, is its most demanding role and drills and training are constantly occurring. More crew members are cross-trained in damage control than in emergency medicine, and this department trains and drills these cross-trained personnel along side the permanent staff.

Environmental Engineering

They are responsible for all Life Support and Environmental systems as well as the maintenance of crews quarters, replicators, plumbing, turbolifts, and just about anything else having to do with crew support.

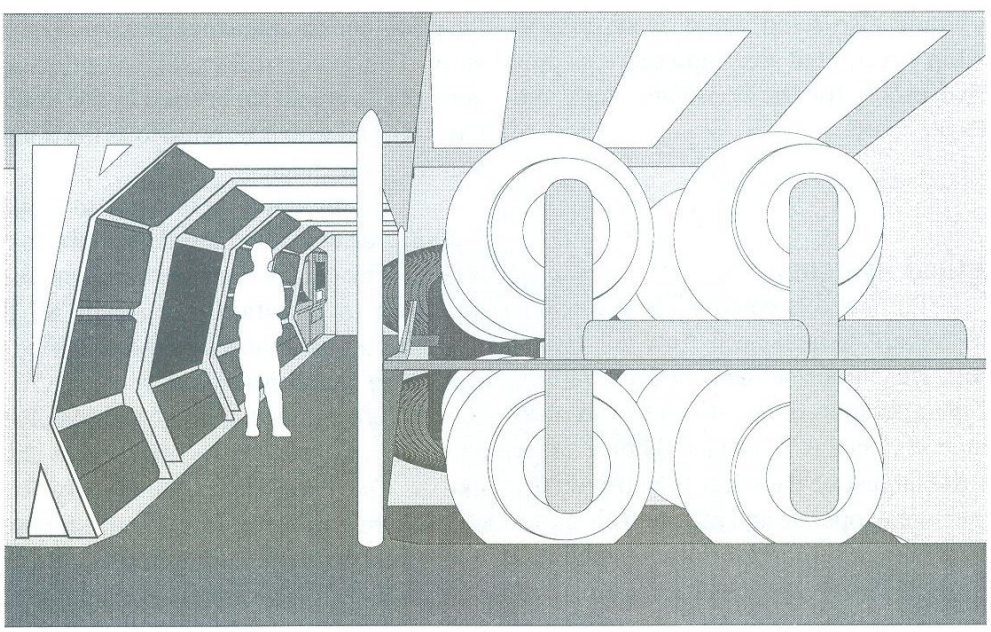
Transporter Systems

This small, but highly specialized group oversees the maintenance and operation of the transporter. Anyone hoping to earn a transporter operator's certificate must spend at least six months in this department.



Auxiliary Engineering

This final group is a catch-all department responsible for all the other myriad jobs that keeps the ship and crew functioning. The Engineering Liaison Officer is assigned to this department. Engineering Liaisons are personnel who report to Engineering, but their actual duties are in another department such as, the Medical department.



Security

The DC of this department is the Security Chief. The department is divided into two sections.

Internal Security

Internal Security (IS) is responsible for the safety and security of all personnel on board, whether Starfleet personnel or not. They process security clearances, investigate possible compromises, perform training, form honor guard details, respond to intruder alerts, perform criminal investigations, and operate the brig.

They also secure classified data, maintain intruder deterrent systems, monitor the comm badge security system and transporter weapons detectors, operate the small arms lockers and armories, construct special barricades or monitors, and control and distribute safe, door, and forcefield combinations and clearances.

Since the *Cheyenne* operates without a Marine Detachment, Personnel Security would also stand guard as sentries in the ship's restricted areas and serve as protective escort for the command staff and VIPs on board.

Tactical Systems

Tactical Systems, or TS, is responsible for all tactical and strategic intelligence, weapons readiness and operation, and the operation of the ship's Combat Information Center (CIC) on the Battle Bridge. It is the largest of the security subsections. TS personnel operate and maintain all ship's weapons including phasers and torpedoes. All tactical sensors, fire control systems, and intelligence gathering and interpretation are also the purview of Tactical Systems.

Communications

This department has the responsibility of operating all ship's communications. Command of this department falls on the Communications Officer who also serves as the DC. Maintenance of the systems is shared with Auxiliary Engineering. The Comm department is divided into internal and external sections similar to the Security Department.

Internal Communications Section maintains and operates the ship's intercom and comm badge system, facilitates the ship's electronic newsletter or bulletin board, maintains the suggestion and messaging system, and produces training and informational disks and holograms.

The External Section handles subspace and RF radios, digitized laser signals and encrypted communications and datalinks.

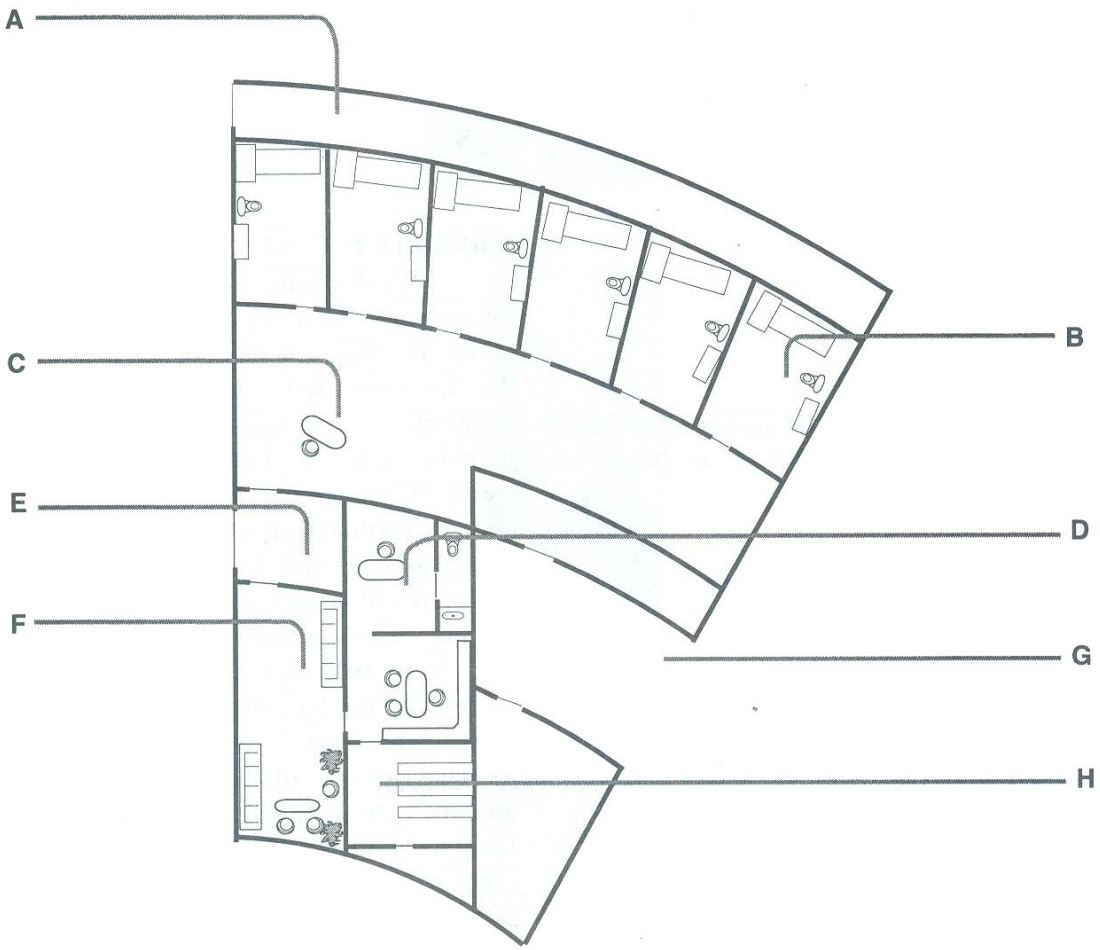
Shuttle Operations

The Shuttle Ops department controls the pilots and maintenance personnel on the ship. Traffic controllers, FDOs, pilots and crew chiefs are all supervised by the Shuttle Ops DC, and who is referred to as the Shuttle Wing Commander.

Maintenance personnel in shuttle Ops include dedicated shuttle technicians as well as pilot-technicians who are both fully qualified to maintain and repair all the shuttles on board, and are also qualified as workpod / shuttlepod pilots.

If future refit plans go through, Runabouts might one day be attached to ships like the *Cheyenne* class. Technically, Runabouts are fully commissioned starships with their own NCC hull numbers. But for organization charts, their crew and maintenance personnel would be included in this department.

SHIP'S BRIG



A. JEFFERIES CORRIDOR
B. 2 - PERSON CELL
C. SECURITY MONITORING DESK
D. BRIG SECURITY OFFICER'S MAIN OFFICE
E. SECURITY LOCKOUT
F. LOUNGE FOR SECURITY PERSONNEL WHILE ON DUTY
G. PART OF THE SCIENCE LABS
H. ARMORY

Science

The ship's Science Officer coordinates the several labs onboard ship. They must be able to juggle the demands of planetary meteorology, archeology / anthropology, geology, cartography, etc. Life Sciences are the joint responsibility of the Science Officer and the CMO.

Medical

Refer back to Chapter 13 on Medical systems for a breakdown of this department.

OPS

Coordinating the resources of any ship is no easy task and that job falls to the Operations Department or OPS for short.

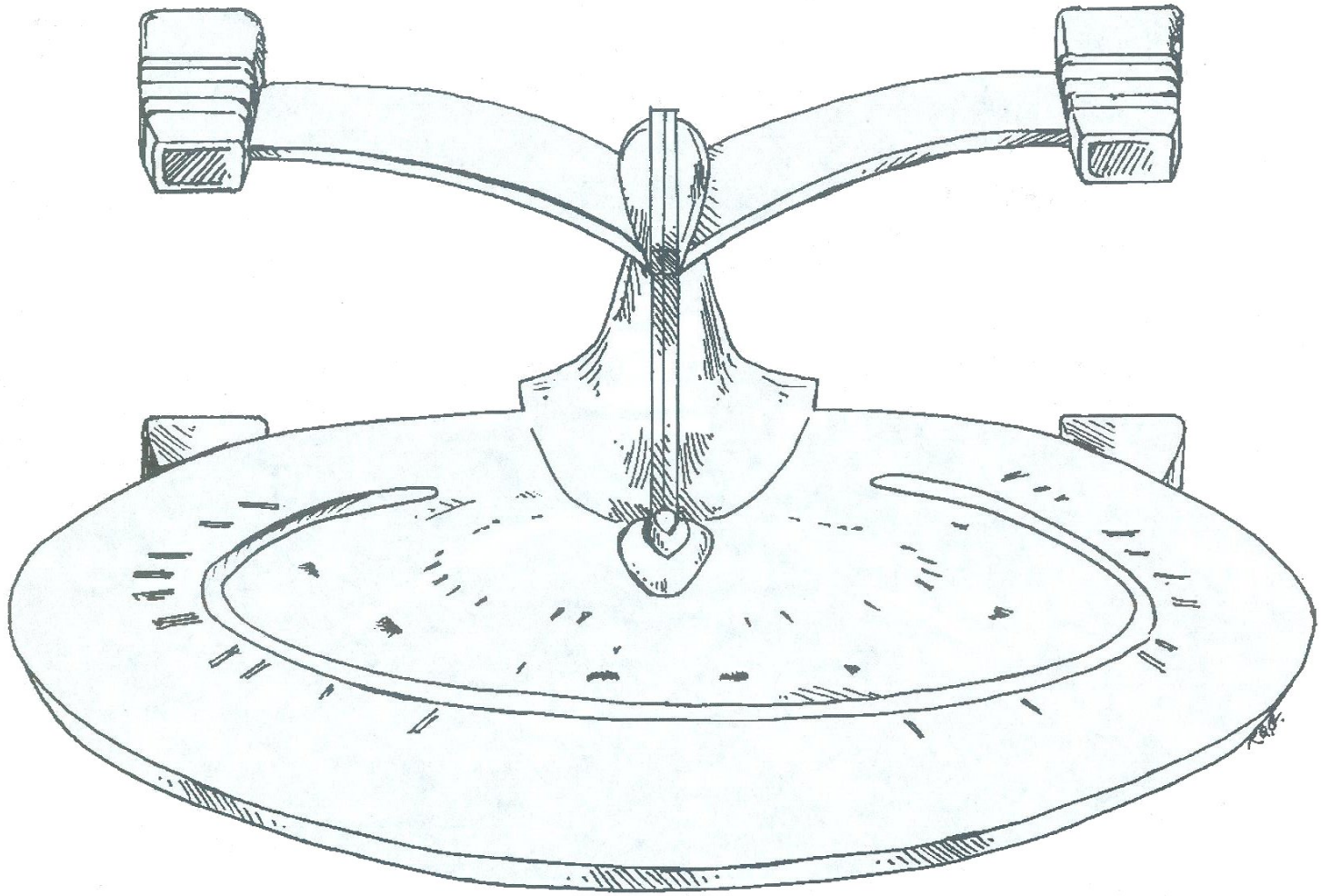
Typically, OPS personnel are generalists who have served in a variety of jobs in their Starfleet careers with the goal of knowing each position well enough to oversee the operation and resource allocation of several departments simultaneously. The Operations Manager is the DC of this department is the Second Officer of the ship, and is responsible for allocating resources such as computer and sensor time, power,water, etc., to the various departments on ship.

While the Captain may have detailed knowledge of the ship's navigation and readiness state at all times, the OPS manager is the one person on the ship who knows the most about what is going on in every department at any given time. OPS also has the responsibility for operation and maintenance of the ship's computer system. They maintain and operate both main cores as well as servicing subprocessors and terminals along with Auxiliary Engineering.

Auxiliary Services

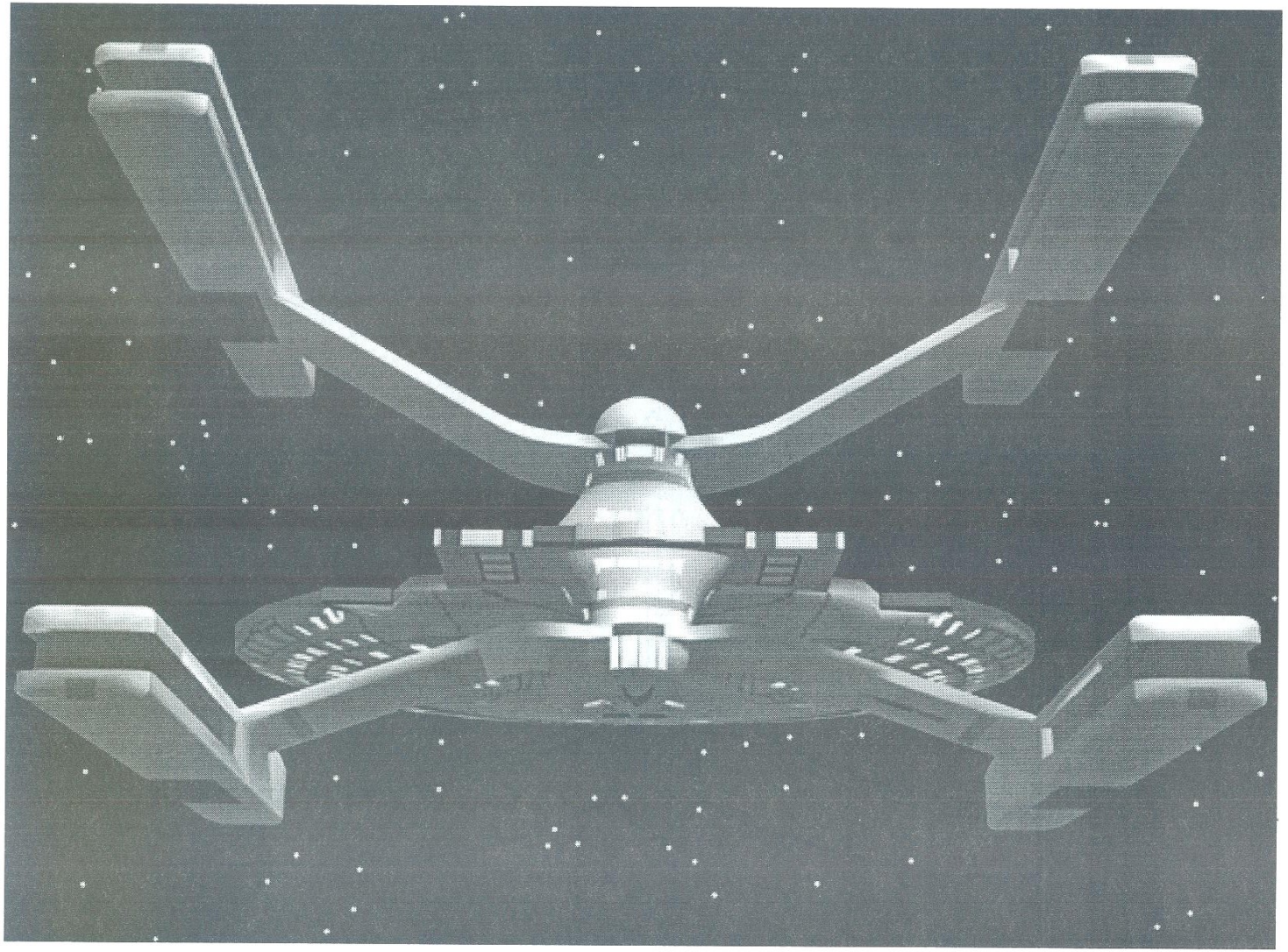
This is the most diverse department on any ship. Auxiliary Services is a catch-all for anything else that doesn't come under the responsibility of one of the other departments. This includes the Ship's Habitability section to Ship's Continuing Education Program.

Auxiliary Services personnel run the lounge and the other dining areas, the laundry, barber shop, the ship's stores, the school and libraries, the gymnasium, the holodecks, etc. Most everything that keeps the crew happy and productive is handled by this department. It is the only department authorized to hire civilians on a regular basis and attempts to employ as many onboard family members (spouses and older children) as possible. This is often a crucial factor in family satisfaction during a cruise; therefore, it can greatly affect the motivation and performance of crew members.



by R. Q. Garza, 1995

U.S.S. CHEYENNE



15
FLIGHT OPERATIONS

Mission Types --

The following protocols were established for the ship to function efficiently on a daily basis and to provide the "big picture" of ship operations.

1. Preliminary Survey

With this assignment, the ship surveying a planet, star system, or general area of space. Usually such missions involved charting, compositional analysis, and cultural analysis if the subject is an inhabited planet or system. If these initial studies warrant further research, a marker can be dropped and a science vessel may be called to that location.

EXAMPLE: U.S.S. ZUNI, NCC - 64457, under the command of Capt. Dayton completed the first survey of the Daylix Nebula in Alpha Quadrant in 2343.

2. First Contact

In the outback reaches that the *Cheyenne* class ships will patrol, they occasionally conduct First Contact missions.

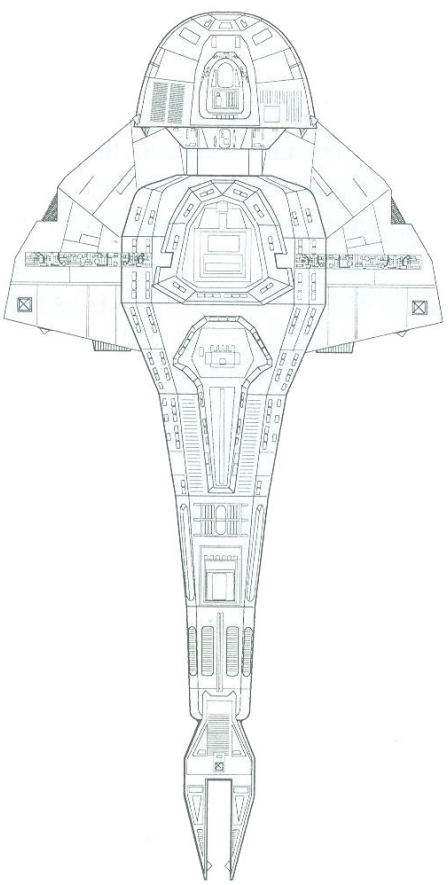
EXAMPLE: U.S.S. QUANAH PARKER, NCC - 71811, made the startling discovery of intelligent, tool-using lifeforms on the fourth moon of Delta Pravious Eight. The remarkable aspect of this discovery is the fact that the moon of this gas giant is 70% vacuum. It is theorized that the vacuum lifeforms are able to communicate at a psionic level and get their nourishment from both the soil of the moon and the high radiation output of the gas giant.

3. Defensive Patrol

In a sector where open hostilities have not been declared, but where a defensive presence is required, the *Cheyenne* may be assigned as defensive patrol. And to be ready to respond authoritatively if hostilities break out.

EXAMPLE: U.S.S. CHOCTAW, NCC - 53201, was ambushed and destroyed by the Cardassians while patrolling the newly established neutral zone between the Cardassian Empire and the Federation on September 23, 2358.

This incident renewed the Border Wars which would go on for another decade.



4. Combat Operations Patrol

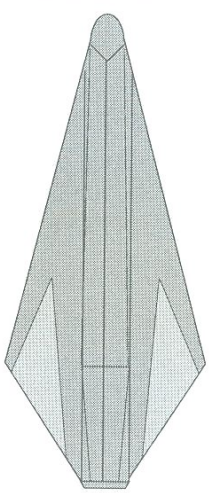
Combat Operation Patrols are patrols carried out during open hostilities when the use of force has been authorized. A ship is assigned a sector of space to patrol, having full authority to challenge and engage any hostile craft entering or approaching the zone.

EXAMPLE: U.S.S. CHEROKEE, NCC - 62292, and U.S.S. SIOUX, NCC-52882 responded to the Tholian attack on Station Salem One that left the other seven Starfleet vessels damaged and unable to pursue their attackers.

A stern chase ensued for several days until the twelve Tholian "Spinner" class heavy cruisers turned around to attack the two Federation starships.

Cherokee and *Sioux* responded with a well planned photon torpedo spread as the enemy ships began their turn around maneuver. Spreading some Anti-Matter in the combat area to confuse the Tholian ships further, the two Starfleet vessels operated like 20th century fightercraft to take out the remaining five ships (one ship acting as the attacker and the other as wingman).

Three Tholian ships manage to escape the Battle of Iomega Two. The four survivors self-destructed.



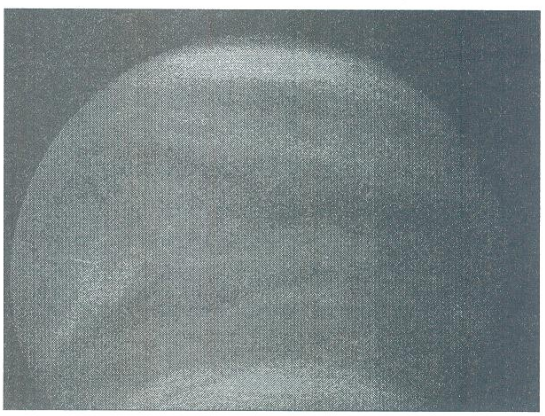
5. Special Operations

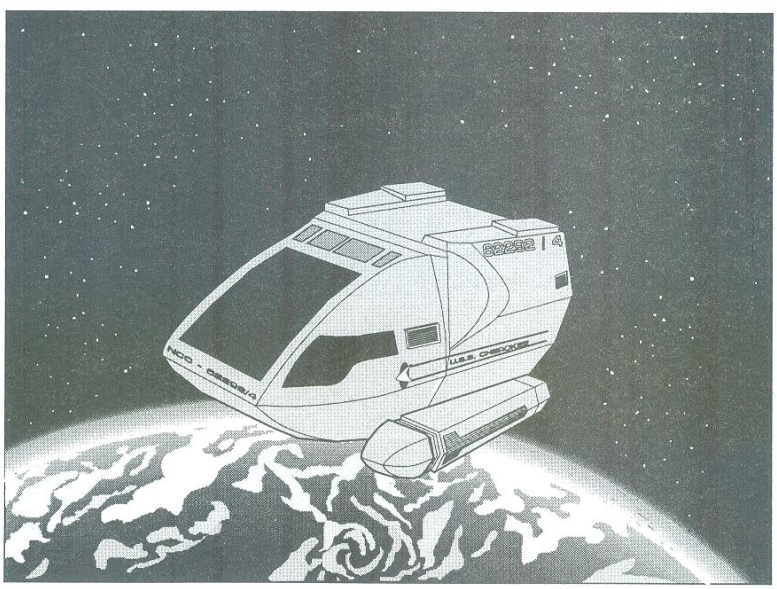
Missions involving intelligence gathering or covert activities. On a special Ops mission, the *Cheyenne* may be sent to covertly gather signal intelligence in a border area, or to support an intelligence vessel with defensive cover, or to insert or extract a special ops team on a planet.

6. Emergency, Search and Rescue (SAR)

The *Cheyenne* does not have the facilities to evacuate a colony on a large scale like the *Ambassador* or *Galaxy* class starships, but any assistance is better than none, as they say.

EXAMPLE: U.S.S. CAYUSE, NCC - 52996, joined in the evacuation of the Lyran III in 2356 with other Federation vessels during the latest Tholian raid. Lyran III has suffered several visits from the Tholians since 2333.





Operating Modes --

The *Cheyenne* conducts its operations under an established set of protocols based on the operating mode or readiness level of the ship. Although she has similar operating modes to the rest of the fleet, her defensive role usually requires a higher readiness level for any given alert status.

Cruise Mode

Cruise Mode is the normal operating condition for any spacecraft. In Cruise Mode, only one of the three eight-hour shifts is on duty (if the ship is on a 3 shift schedule) at any one time. The First (Day) watch is the most populated one on the ship. The Second (or Mid) watch is the second most populated watch leaving the Third (Graveyard) watch the least manned watch on the schedule and required only to keep those items needed for 24 hour operation or to maintain combat readiness.

Operational rules to follow in this mode are as follows:

•**Propulsion / Power:** One major power system (WPS, IPS, or standby fusion generators) must be available at all times, one on standby.

•**Weapon Systems:** One phaser emitter and one forward (and aft) torpedo tube must be maintained in a state of readiness. At least one deflector shield must be operating at no less than 20% output, with 100% capability.

•**Auxiliary Craft:** One shuttle and one shuttlepod must be on ready-alert status (five-minute launch readiness) at all times. A second shuttle can be on 30-minute alert status. The Shuttlebays are in constant operational readiness under cruise conditions.

•**Sensors:** One sensor suite of long-range navigational and passive tactical sensors must be operational at all times. At least one suite of tactical active sensors must be on standby.

•**C^3:** (Command, Control, and Communications). On the Main Bridge, the OD has the deck and conn. The Battle Bridge monitors navigation, readiness and alert status and processes incoming intelligence. The Signal Officer may approve out going transmissions.

Alert Monitor Display:

The sample monitor display is of the standard format used by Starfleet for over two generations. The top screen is clear when the ship is in normal cruise mode and the message "Vehicle Status" is not displayed. The time index is indicated in large bold text for quick reference. The smaller monitor window displays minor system readouts that need attention.

When "Yellow Alert" is sounded, the top monitor screen is filled with the word "Alert" and "Condition: Yellow." Vehicle Status is not printed out in such times.

With "Red Alert", Vehicle Status is one of several words. Such as "Intruder Alert", "Battlestations", "Going Quiet", and "Silent Running."

Yellow Alert

Yellow Alert indicates that a situation has arisen requiring a increased state of readiness. Immediately upon sounding Yellow Alert, the next shift due to come on is alerted to report to their alert duty stations (i.e. - if the mid-watch is on duty, the grave-yard shift will go to alert stations). Operational rules for Yellow Alert are as follows:

•**Propulsion / Power:** While power may be drawn from only one system, all three major systems must be available for immediate use.

•**Weapon Systems:** All phasers must be operational. Forward and aft torpedo tubes are loaded. One shield must be operating at 100% capacity with the other shields on ready standby.

•**Auxiliary Craft:** One shuttle in each bay be on ready-alert. Shuttlebay becomes operational by securing repair work and storing away loose equipment.

•**Sensors:** All passive sensors must be operational. All tactical active sensors are on ready standby. Active sensors are used with OD's/Captain's authorization only as they can reveal the ship's position.

•**C^3:** OD on the Main Bridge will usually retain deck and conn, as the Captain may be called to the Main or Battle Bridge. Battle Bridge is now fully staffed and commences tactical analysis, continues to monitor navigation, readiness and alert status and processes incoming intelligence. The OD must authorize any outgoing transmissions.

Red Alert

Red Alert indicates that an emergency situation is present. Immediately upon sounding Red Alert, all hands report to their alert duty stations. Key personnel report to their primary work areas while cross-trained personnel previously off duty report to their secondary duty stations. Since this off shift group was probably sleeping, 15 minutes is the expected reporting in time for these people. Operational rules for Red Alert status:

•**Propulsion / Power:** All systems at full readiness with WPS and IPS running with at least 75% power output.

•**Weapon Systems:** All weapons must be ready. The torpedo load remains the same as under Yellow Alert with the weapons now receiving target data every millisecond. Any remaining tubes may be loaded at this time. Deflector shields must be running at 100%.

•**Auxiliary Craft:** Same as under Yellow Alert.

•**Sensors:** Same as under Yellow Alert.

•**C^3:** The Captain will usually take the conn. The Battle Bridge is fully staffed and continues tactical analysis. Fire Control is on full standby. Targeting, etc., will be performed and firing solutions calculated for every hostile / unidentified contact.

Battlestations

Battlestations is really a subset of Red Alert. Not every Red Alert is automatically a call to battlestations, but a call to battlestations IS automatically a Red Alert. Battlestations is called when defensive action is imminent. The same protocols are observed with the following additions:

•**Weapon Systems:** Torpedo tube doors are opened. Phasers are energized.

•**C^3:** The Captain will take the conn and transfer command to the Battle Bridge. The Main Bridge will be staffed with a backup crew in case hull seperation becomes necessary.

Going Quiet

This operating mode known as "Going Quiet" can be initiated at any time under any alert status. Its protocols run parallel to, not instead of, those listed above. A normal operation under one of the above alert operating modes would only be prevented if it would violate Going Quiet.

The most amazing thing about space is how huge it actually is — and how little is actually in it. In the vast reaches between the relatively few things in space, it is very difficult to locate a ship unless it is making some kind of "noise" like subspace distortion, radio signals, or active sensor sweeps. When this mode is ordered, all active sensors or outgoing communications are shut down to avoid giving away the ship's position.

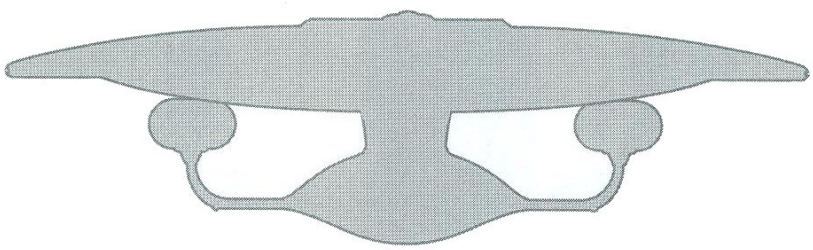
Silent Running

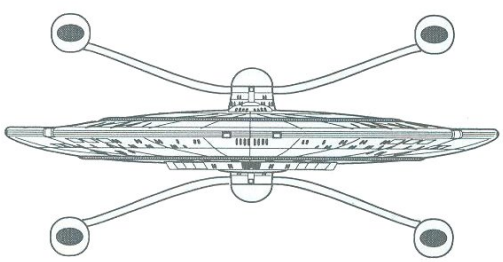
When the order is given to "Rig for Silent Running" it means that the tactical situation demands that the ship's position not be given away. Any system that gives off "noise" — including engines, navigational deflectors, and shields — are immediately shut down. This is a very dangerous operation for the ship because it is, for all intents and purposes, adrift and vulnerable.

"All Stop" is ordered before the silent running order is instigated. This at least assures that the ship does not continue to travel unprotected on its previous heading. Stopping the ship can create a lot of "noise" as well. All systems are maintained at standby for immediate restart at a moment's notice.

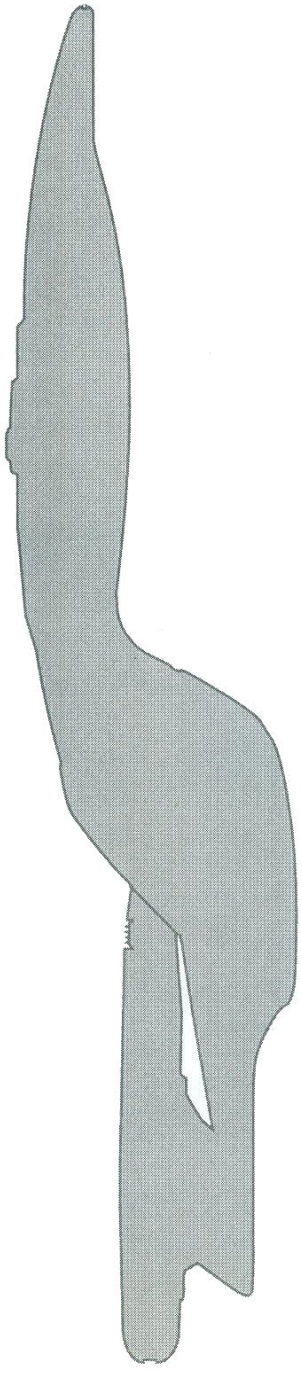
APPENDIX A

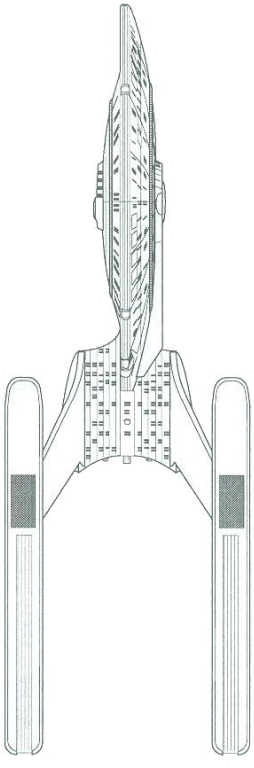
SIZE COMPARISON BETWEEN U.S.S. CHEYENNE AND A GALAXY CLASS STARSHIP.



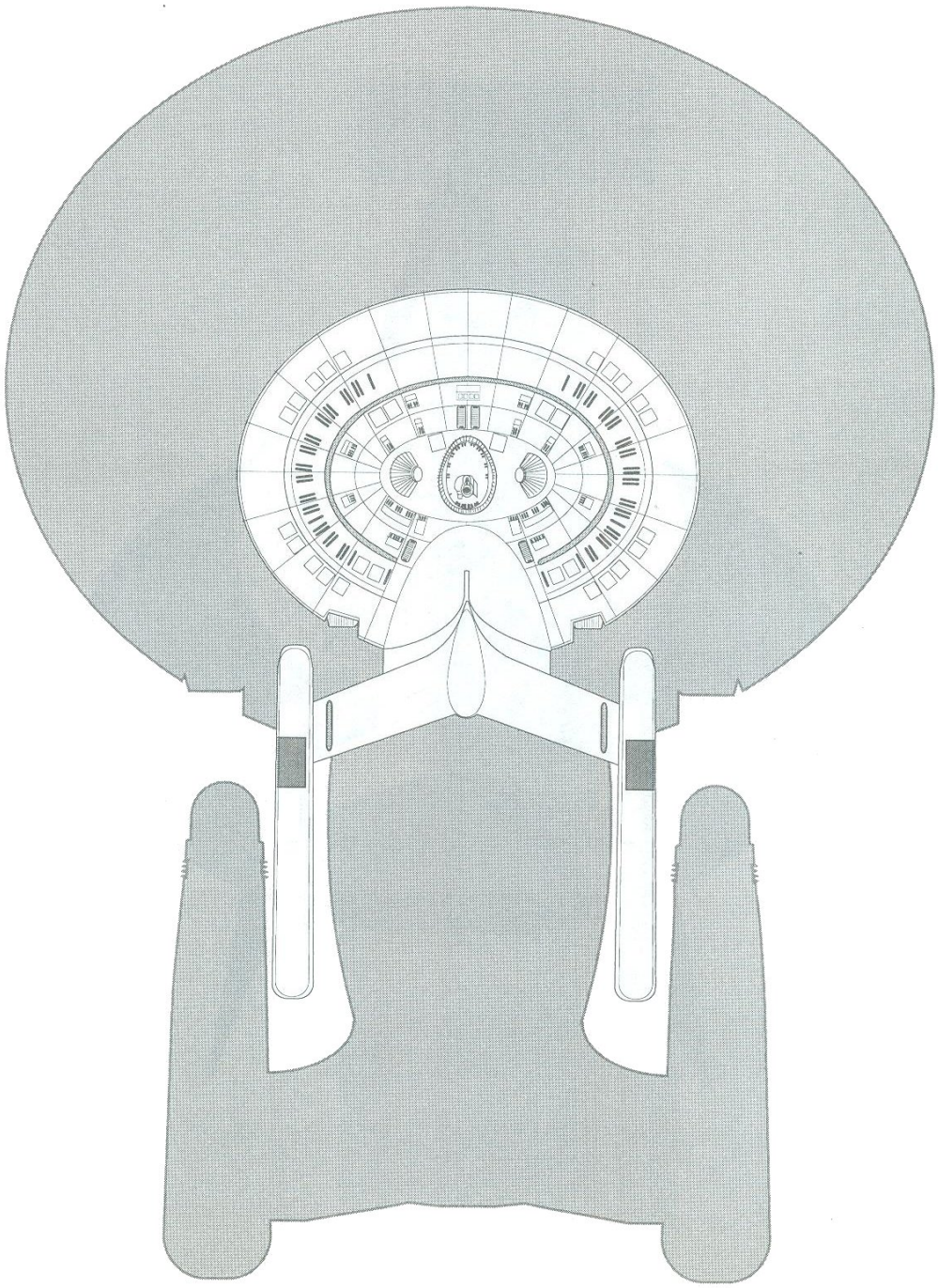


BOW VIEW

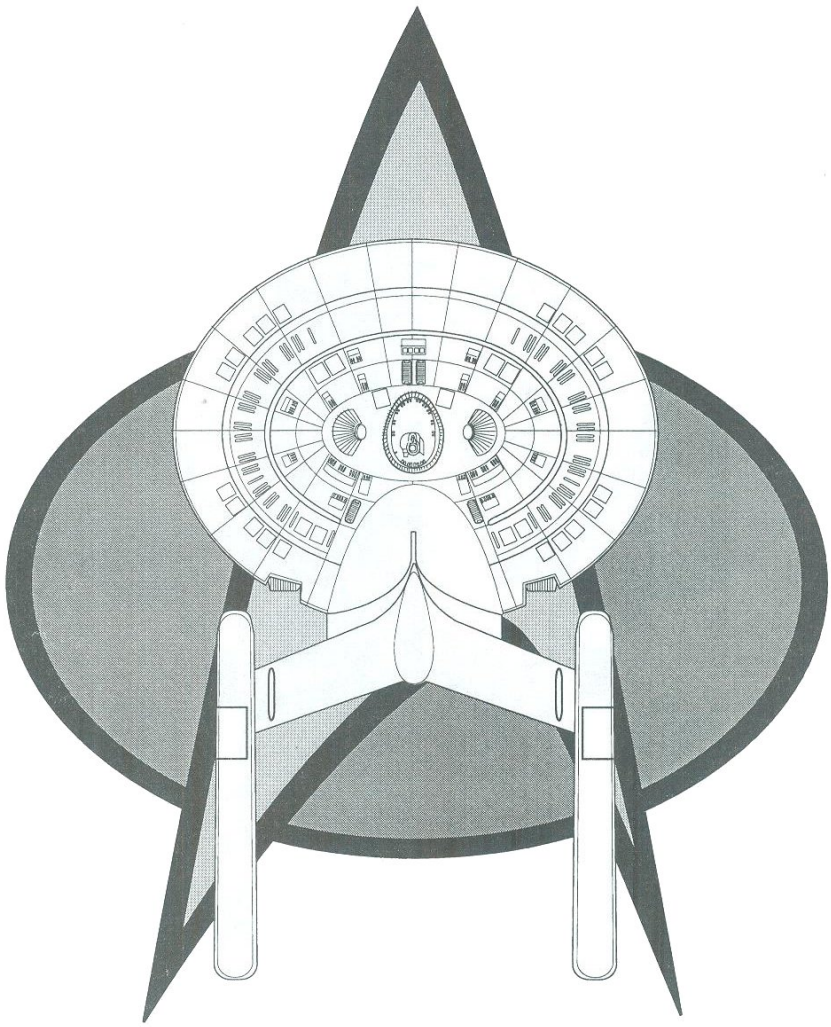




SIDE VIEW



TOP VIEW



APPENDIX B
GLOSSARY OF ACRONYMS AND TERMS

A/G: Accelerator / Generator. Part of the IPS.
abaft: To the rear of. Example—the main engines are abaft of the saucer hull.
aft: Toward the stern of the ship.
AIE: Auxiliary Impulse Engine. An engine on the hull.
Algeron, Treaty of: The peace treaty between the United Federation of Planets and the Romulan Empire. Algeron was the site of renegotiations of the famous Earth Romulan Peace Treaty. It dealt mainly with trade and improved technology issues between the two powers.
amidships: the middle of a ship, halfway between the bow and the stern.
ASDB: Means Advanced Starship Design Bureau.
beam: The width of the ship at its widest point.
bow: The front end of a ship.
Bridge, Battle (BBM): The control center from which the ship's sensors and weapons are operated if command is switched from the Main Bridge to the Battle Bridge. The vessel can be navigated from this location.
Bridge, Main: The navigational control center. The bridge is also a replaceable module if desired when the ship pulls into space dock for refit.
bulkheads: Walls that divide decks into compartments.
C^3: Command, Control, Communications.
Capt.: Captain.
CCU: Critical Care Unit. The portion of the Medical Bay Complex that most people picture in their minds when they think of "sickbay."
Cmdr.: Commander.
centerline: An imaginary plane dividing a vessel in two equal halves longitudinally.
civ.: Abbreviation for civilian personnel
CMO: Chief Medical Officer.
CPO: Chief Petty Officer
crypto: Relating to the encryption or decryption of data/messages.
DC: Department Chief.
DCA: Driver Coil Assembly. Part of the IPS.
DDS: Medical degree of a dentist.
dock: Attaching a vessel to another vessel, or station at a docking port where crew and cargo can be directly transferred on and off the ship (also see "moor").
door: An opening in a deck or bulkhead with a door that is not airtight (see "hatch").
dorsal: The upper surface of "back" of the ship.
draft: The height of the ship from its top-most to bottom-most points.
DT: Data Transmission. A prefix used in message communication.
EC: Exploration Cruiser.
EM: Electromagnetic (a type of radiation).
Enl: Enlisted personnel.
Ens: Ensign.
EPS: Electroplasma system. The main power distribution system on most starships.
FDO: Flight Deck Officer.
forward: Toward the bow of the ship.
FTL: Faster Than Light
hardpoints: Specially reinforced exterior sections of a ship used for connecting umbilicals, gangways, exterior equipment, etc.
hatch: An opening in a deck or bulkhead with

a closeable door that is airtight (see door).

HC: Heavy Cruiser

head: The naval term for Lavatory.

helm: The operator's console from which the ship is steered (usually the Flight Controller's console on the Main Bridge).

hold: Synonym for cargo bay. An area where cargo is normally stored.

HRD: Habitability Research Department. The ship department that plans for crew activities at planet and starbase stops.

I/O: Input / Output.

ID: Identification.

IDF: Inertial Dampening Field. The energy field which counteracts the effects of acceleration on a starship.

IES: Independent Emergency Systems. Emergency back-ups of critical resources used in key areas of a vessel.

IGS: Inertial Guidance System. The system which allows a ship to plot its position without external reference points.

IPS: Impulse Propulsion System.

IRC: Impulse Reaction Chamber. Part of the IPS.

Jeffries Tube: Crawlspaces between decks that house piping, wiring and waveguide conduits.

keel: (see "spaceframe")

ladderway: Vertical accessway between decks containing steps or rungs.

Lavatory: The head, the "facilities", the toilet.

LCARS: Library Computer Access and Retrieval System. The primary user interface of the ship's computer.

Lt jg: Lieutenant, Junior Grade.

Lt: Lieutenant.

Lt Cmdr: Lieutenant Commander.

M/ARA: Matter / Anti-Matter Reaction Assembly. The heart of the WPS.

MCR: Mechanically / Chemically Recyclable. A category of waste.

MD: Medical degree of a doctor.

MFC-1S: Magnatomic Flux Construction -- First Stage.

MIE: Main Impulse Engine. Impulse engines on the primary hull.

MJL: Micron Junction Link. Computer core components which allow data from the FTL processors to be transferred into the rest of the system.

moor: To keep a ship in position with the umbilicals (see dock).

MRR: Matter Replicator Recyclable. A category of waste.

MTB: Main Torpedo Bay.

MUN: Major Utilities Networks.

NCC: Navigational Contract Code and also Naval Construction Contract number (the hull number of the ship).

OB/GYN: Medical degree of obstetrician/gynecologist.

OD: Officer of the Deck. The officer responsible for executing primary mission objectives during a particular watch.

ODN: Optical Data Network.

OR/ICU: Operating Room / Intensive Care Unit.

PADD: Personal Access Display Device.

port: The left side of the ship when facing the bow.

PSMFC: Power-Stage Magnatomic Flux Chiller.

PriFly: Primary Flight Control. The center for shuttle operations.

PT: Physical Therapy / Physical Therapist / Physical Training.

PTC: Power Transfer Conduit. The prime component of the EPS.

PUN: Protected Utilities Network.

RCS: Reaction Control System. The system of low-power thrusters that steers the ship at sublight speeds.

RF: Radio Frequency.

RN: Medical degree of a nurse.

RUN: Reserve Utilities Networks.

RVT: Real-time Voice Transmission. A prefix used in message communications.

SC: Ship's Counselor. Can also mean "Strike Cruiser" in Starfleet ship classification system.

SDAC: Starfleet Design Advisory Committee.

SE/MS: Space - Energy / Matter Sink.

SFRA: Starfleet Regulatory Agency.

SIF: Structural Integrity Field. The energy field that supplements the physical support of a vessel's spaceframe.

spaceframe: The primary structural members of the ship. The assembly of the first major spaceframe members of a ship is referred to as the "keel laying".

starboard: The right side of teh ship when facing the bow.

stern: The rear part of the ship.

Tractor Beam Emitter: The device that can send out an energy field to secure another vessel, object, etc. for towing by the ship operating the Tractor Beam.

UV: Ultra-Violet.

VGA: Variable Gravity Area. A compartment where the synthetic gravity can be altered by the occupant.

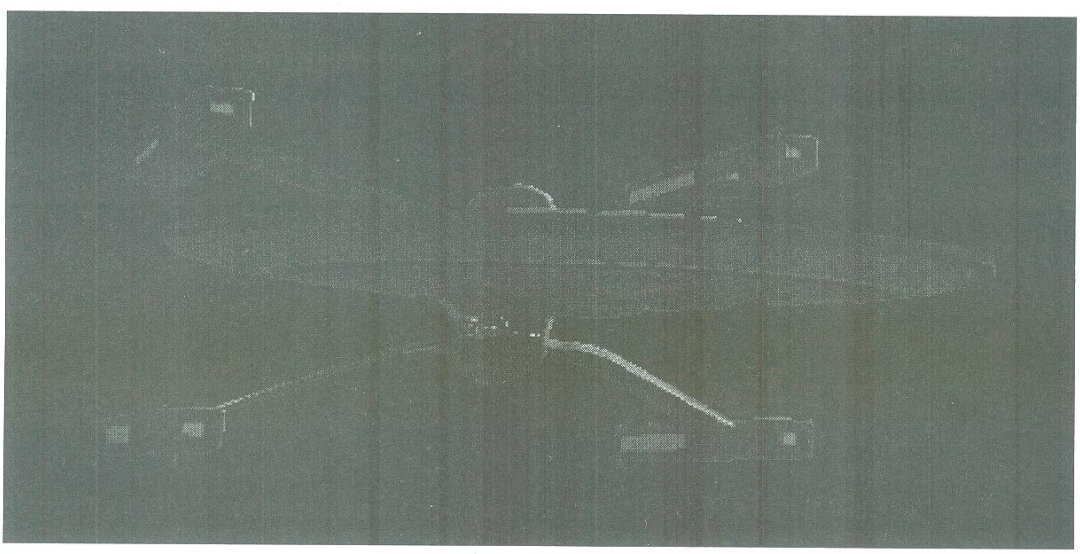
VED: Vectored Exhaust Director.

ventral: the lower surface or "undersides" of the ship.

VR: Virtual Reality. A system of sensory inputs that provide a convincing simulation of reality.

WO1 (2): Warrant Officer 1 or 2.

WPS: Warp Propulsion System.



ACKNOWLEDGEMENTS

And thus concludes this book about a fictional starship that, as a model briefly seen in the wreckage of Starfleet vessels in the Battle at Wolf 359 ("Best of Both Worlds, Part 2"). This project began after two events. The first was seeing samples of other Starfleet chapters Technical manuals of their "own" starships. The second event was pure luck that Eric Kristiansen showed me a Skybox trading card that had the ship miniature of the *Cheyenne* mounted on a pole for the special effects shot for the above mentioned TV episode. Additional information as to the actual name of the class was provided in the write up by Larry Nemecek in his book: Star Trek - The Next Generation Companion (1st and 2nd editions, page 139).

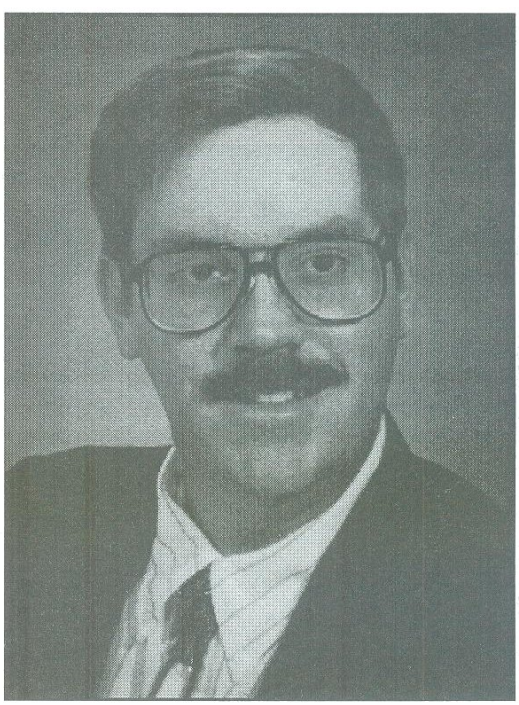
There are many, many people to thank who help in the making of this Technical Manual now in your hands. I want to thank my long suffering parents for putting up with my idealism in regards to the Star Trek Universe. And the money "thrown away" on the subject. I love them very much.

Next comes the folks at Apple Computers and the wonderful little machine they invented known as Macintosh, specifically my little old Macintosh LC III. The different software companies that I have used to create this book. Canvas 3.5 from Deneba for the drawings. Microsoft Word 5.1 for the text. And Aldus PageMaker 5.0 for the final page layouts of the book. This book takes up about 40 megabytes of memory.

To my good friend Eric Kristiansen who kept me at it, and other projects; when I began to want to just throw it all away and to say "the hell with it." Eric paved the way by showing that if he could do it, so can I (just look at all the products coming out of Jackill's). As much as the label Star Trek belongs to Paramount, it would not have that profitable property but for fans such as Eric and myself to name but two people on the planet Earth to fill the void.

To my proof readers: Eric Kristiansen (again), Seth Neill, Mary Ruth Thurmond, my thanks are also extended. New found friend Ken Schmitt who did the computer 3D models of the *Cheyenne* (for another project, but gave his permission to use them in this book) who wishes that he had more time to create even more images. Roy Firestone who edits the Star Trek Technology fan club magazine; Galactic Engineers Condordance (G.E.C.) Logbook, has published almost everything I have ever sent him dealing with Star Trek, Babylon 5, and Battlestar Galactica. Then there are my old college buddies Alton Teague, Tony Tully; and Desert Shield/Storm pen pal - Mike Bolda. Thanks guys. And to everyone else I need to owe thanks too, but space is limited, thank you as well.

Don Wayland Shanks



U.S.S. CHEYENNE

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