STRATEGIC design

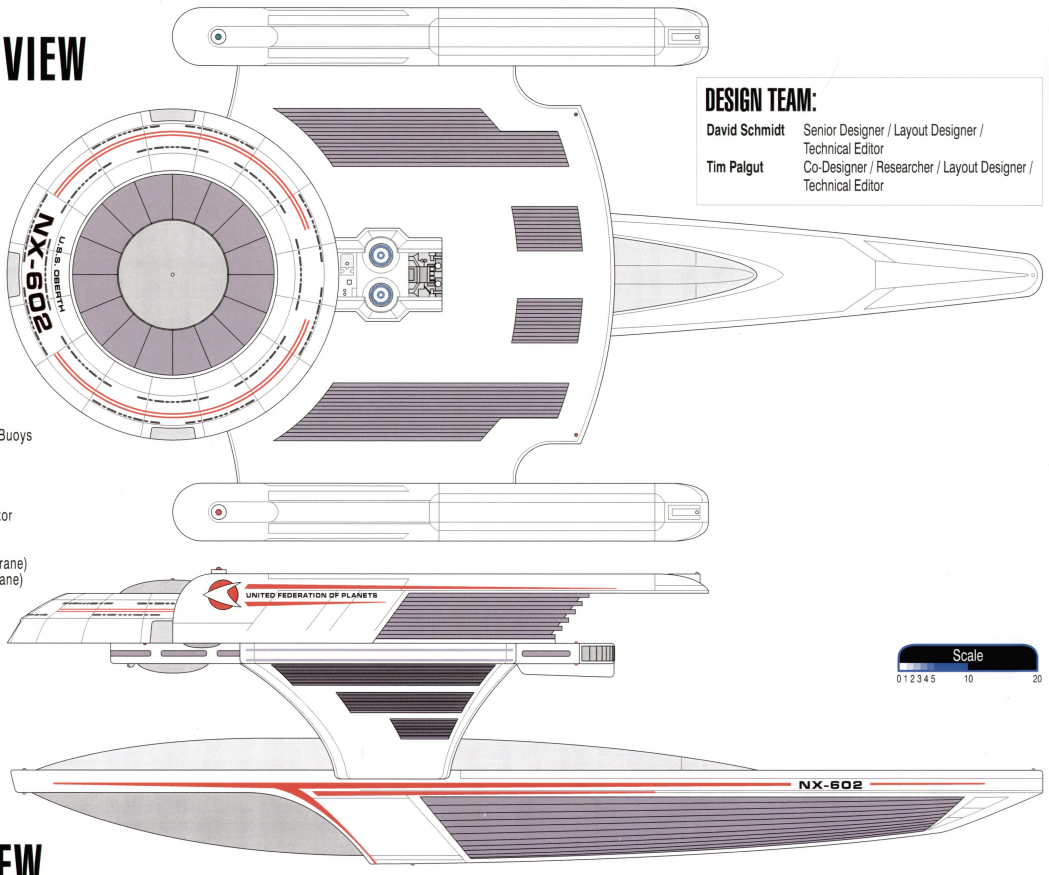
Innovative Concepts Into Tomorrow's Technology - Today

OBERTH

PROTOTYPE NX-602

EXTERNAL VIEWS SHEET 1/7
SPECIFICATIONS

DORSAL VIEW



DESIGN TEAM:

David Schmidt	Senior Designer / Layout Designer / Technical Editor
Tim Palgut	Co-Designer / Researcher / Layout Designer / Technical Editor

Scale
0 1 2 3 4 5 10 20

SPECIFICATIONS

Particulars
Vessel Class	Oberth
Identification	NX-602
Type	Research Cruiser

Spaceframe
Overall Length	150 meters
Overall Beam	77.5 meters
Overall Draft	42.5 meters
Decks	11
Displacement	2.55 X 10^5 tons

Crew & Auxillary Systems
Complement	8 Officers 63 Enlisted
Transporters	2 6-personnel 2 Cargo

Information Systems
Computer Core 1 Multitronic Processor

Warp Systems
Power	Matter / Antimatter Reactor (2.5 X 10^8 terawatt)
Cruising speed	wf 5.0
Flank speed	wf 6.0 (Sustainable for 12 hours)
Burst speed	wf 6.4 (Sustainable for 1 hour)

Impulse Systems
Power	2 deuterium fusion reactor (5.2 X 10^{10} megawatt)
Vector nozzle	2 Aft
Cruising speed	0.25 c
Flank speed	0.90 c

Tactical Systems
Phaser	2 - Type VIII turret
Torpedo Tube	1 Aft -Type 5f (buoy capable)
Magazine	Aft 80 Mark VI Photon Torpedoes 36 Type 5k Communication Relay Buoys
Grid	4 Deflector Shield Generator (rated 1.15 X 10^3 mw - standby / 2.69 X 10^3 mw - alert / 4.73 X 10^5 mw - 0.0017 Sec.) 4 Structural Integrity Field Generator (rated 2.23 X 10^3 mw)
Deflector	2 - Forward (0.9 X 10^2 megawatt - 90 millicochrane)
Tractor beam	1 Aft (8 megawatt - 225 millicochrane)

PORT VIEW

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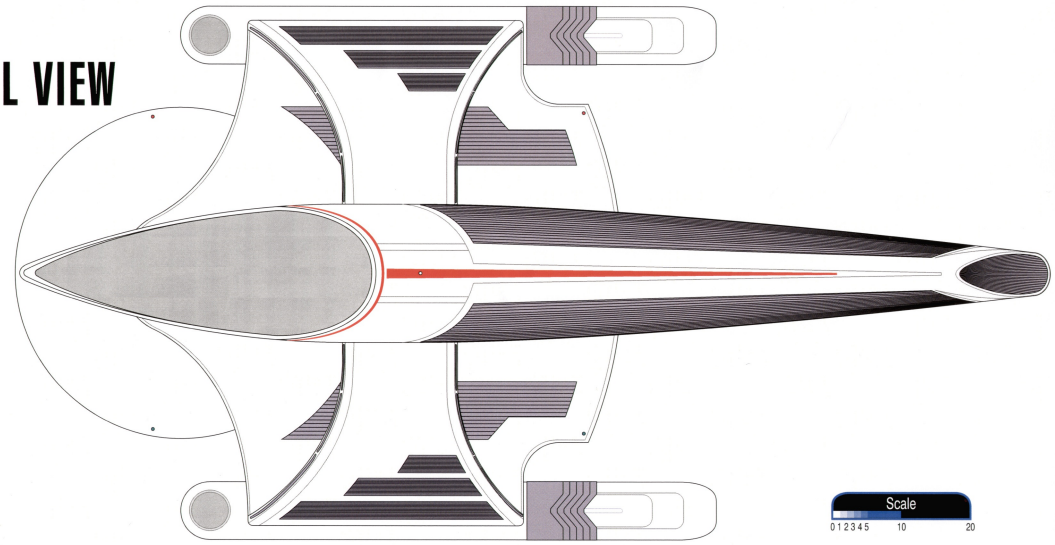
PROTOTYPE NX-602

EXTERNAL VIEWS **SHEET 2/7**
SPECIFICATIONS
DESIGN HISTORY

VENTRAL VIEW



DESIGN HISTORY

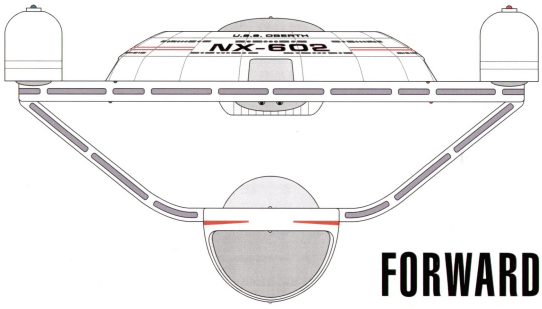
In 2270 - faced with the escalation of the Klingon/Romulan-Federation cold war - the majority of Starfleet's 'Capital Ships'of-the-Line' (Class I Starships based upon the Constitution & Knox Primary Hulls) were called up for patrol/picket duty along the neutral zone and within major sectors of the Federation. This faced Starfleet with a quandary; although its stated 1st mandate was exploration (the 2nd being defense), the stated 2nd mandate was drawing essential starships from the 1st. Accordingly, the Class II Starship was created to supplement in less military missions.

The Class II Starship is based upon an Integral Hull Design - comprised of a hemispheric Main Hull-portion and a plate-like Support Hull-portion.

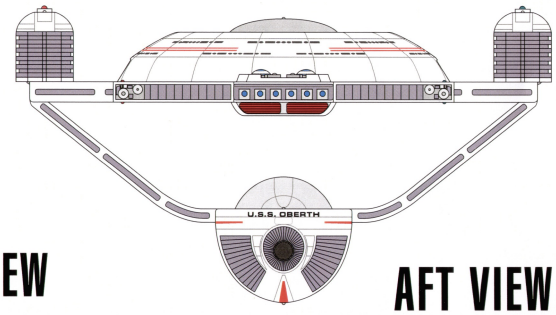
A major innovation in the Class II Starship is the Outrigger Hull-module. Since all Command/Navigation/Power & Propulsion/Personnel features are contained (some have said 'crammed') into the Integral Hull, the Outrigger Hull-module need not house any of these features and so can be entirely mission-specific in design. Thus each Class II version (there are four to date: Research Cruiser, Tug, Corvette, Clipper) is a specialist; designed and dedicated to one defined role and correspondingly inflexible/ill-suited for others.

The Outrigger Hull-module of the Oberth-class Research Cruiser has a greater volume than the Integral Hull, and is divided into 4 distinct sections. The forward section is an enormous 3-level bay enclosing the largest sensor array yet mounted on a self-propelled platform - the BX8997v. The mid section contains the transceiver/processing modules for the array. A single forward-firing photon torpedo launcher and magazine are located below this. The aft section encloses a Communications Relay Buoy Magazine, Photon Torpedo Magazine (for tactical retreat defence), and an oversized launcher for both. The fourth section is located above these three, and is comprised of two large deuterium tanks to supplement the Integral Hull's tanks -and thus extend the range of the Research Cruiser.

The first spaceframe components of the class' lead ship were gamma-welded at the Utopia Planitia Fleet Yards in 2273. On 21 February 2275, U.S.S. Oberth (NX-602) was launched from the San Francisco Orbital Yards. She immediately began shakedown trials in the home sectors, being formally commissioned on 11 October 2275.



FORWARD VIEW



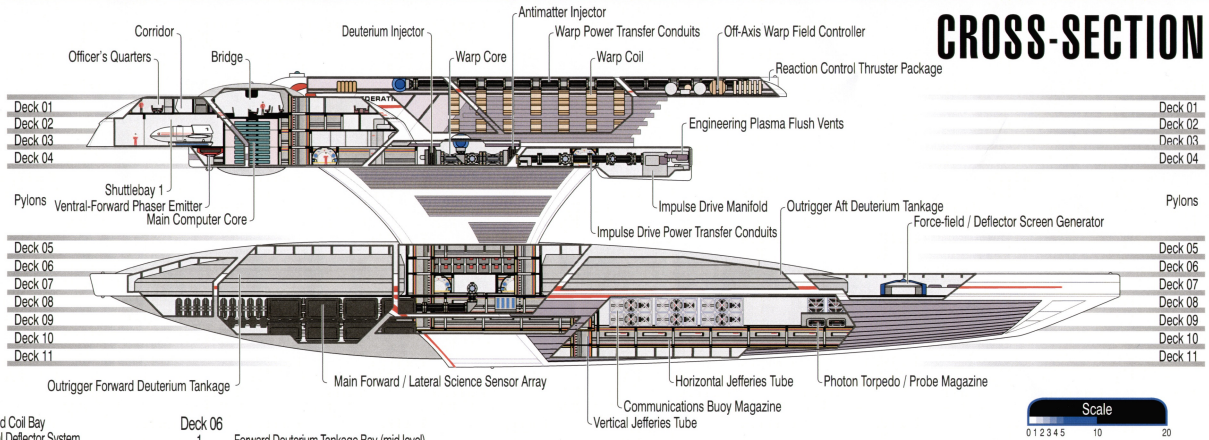
AFT VIEW

OBERTH

PROTOTYPE NX-802

CROSS-SECTION SHEET 3/7
DECK DIRECTORY
INTERNAL SYSTEMS

CROSS-SECTION



DECK DIRECTORY

Deck 01

1	Bridge
1	Conference Room
11	Officer's Quarters
1	Mess Hall & Lounge

Deck 02

7	Enlisted Quarters (21, 3-tier bunks)
1	Shuttlebay (upper bay)
2	Cargo Landing Bay (upper bay)
1	Laundry Bay
1	Gymnasium
1	Computer Core (upper level)

Deck 03

1	Shuttlebay (main level)
2	Cargo Landing Bay (main level)
22	Escape Pod Access
4	Cargo Bay
2	Cargo Transporter Room
2	General Cargo Hold
1	Computer Core (mid level)
1	Cryogenic Tankage Compartment

Port / Starboard Nacelle

1	Bussard Ionizing Beam Emitter Bay
1	Bussard Magnetic Field Generator Collector Bay
1	Continuous Cycle Fractionator & Deuterium Chiller Bay
1	Warp Coil & Plasma Injector Bay
1	Off-Axis Field Coil Bay
1	Navigational Deflector System

Deck 04

1	Ventral-Forward Phaser System Compartment
1	Computer Core (main level)
1	Food Stasis & Water Tankage Compartment
1	Organic / Inorganic Synthesizer Raw Stock Tankage
1	Deuterium Processor Compartment
1	Sickbay & Life Sciences Lab
1	Engineering Diagnostics Workshop
2	Transporter Room
1	Transporter Buffer Compartment
1	Main Engineering
1	Structural Integrity Field Generator / Subspace Transceiver Bay
1	Structural Integrity Field Generator / Radio Transceiver Bay
2	Deflector Screen Generator / Transporter Transceiver Compartment
1	Synthesizer Compartment
1	Life Support / Waste Recycling Bay
1	Impulse Engineering Compartment
1	Impulse Manifold Bay
2	Deuterium Tankage Compartment
6	Engineering Plasma Flush Vent

Deck 05

1	Forward Deuterium Tankage Bay (upper level)
2	Vertical Jefferies Tube
1	Horizontal Jefferies Tube
1	Outrigger Aft Deuterium Tankage Bay (upper level)

Deck 06

1	Forward Deuterium Tankage Bay (mid level)
2	Vertical Jefferies Tube
1	Outrigger Aft Deuterium Tankage Bay (mid level)
1	Battery Compartment

Port / Starboard Pylon

1	Conformal Diagonal Jefferies Tube
1	ODN / EPS / Fluid Distribution Trunk
1	Main Sensor Power Feed Conduit
1	Outrigger Personnel Trolley
1	Plasma Flush Vent

Deck 07

1	Forward Deuterium Tankage Bay (main level)
2	Vertical Jefferies Tube
4	Horizontal Jefferies Tube
1	Main Sensor Power Feed Conduit Compartment
1	Outrigger Aft Deuterium Tankage Bay (main level)
1	Deflector Screen Generator / Structural Integrity Field Generator / Aft Sensor Compartment
1	Tractor Beam Emitter

Deck 08

1	Science / Cartography Sensor Array Bay (upper level)
2	Vertical Jefferies Tube
1	Horizontal Jefferies Tube
4	Science Lab
1	Site-to-Site Transporter Target Pad
1	Communications Buoy Magazine Compartment (upper level)
1	Buoy / Torpedo / Probe Workshop (upper level)
1	Aft Photon Torpedo / Probe magazine Compartment (upper level)
1	Battery / Launch Tube Compartment (upper Level)

Deck 09

1	Science / Cartography Sensor Array Bay (mid level)
2	Science Sensor Processing Compartment
2	Vertical Jefferies Tube
1	Horizontal Jefferies Tube
1	Communications Buoy Magazine Compartment (main level)
1	Buoy / Torpedo / Probe Workshop (main level)
1	Aft Photon Torpedo / Probe Magazine Compartment (main level)
1	Battery / Launch Tube Compartment (main Level)

Deck 10

1	Science / Cartography Sensor Array Bay (main level)
2	Vertical Jefferies Tube
1	Horizontal Jefferies Tube
8	Battery Compartment
1	Life Support Bay
1	Aft Sensor Compartment

Deck 11

1	Science / Cartography Sensor Array Bay (sub level)
1	Vertical Jefferies Tube
1	Battery Compartment

INTERNAL SYSTEMS

Section 1.0 Spacecraft Structure

The spaceframe of the Oberth-class starship js tritanium/duranium macrofilament truss frames, averaging 0.5 m^2 in cross section. These are placed at the tops of Decks 2,4,6,8 and 10 for all three axis of the ship. Smaller trusses are spaced between quarters, at hall junctions, and at the turbolift shafts, measuring 0.2 m2 in cross section. This physical framework is reinforced by the Structural Integrity Field (SIF), using a network of Class 2 ceramic-polymer wave guides to distribute energy to Class 1 ceramic-polymer elements. The exterior hull substrate is poly bonded to 4 cm by 0.5 cm bands with 2 cm studs every meter that are gamma welded to the main frame.

Section 1.1 Spacecraft Hull Structure

The first hull layer is 5 cm thick and is composed of a poly microfoam with interwoven tritanium filaments (nominally 1.5 meters in width by 2.5 meters in length). The second layer is four sheets of 0.4 cm thick tritanium, each going 90 degrees to the layer above it, for torsion strength, a fifth sheet of Aledium foil is 0.4 cm thick also and used for radiation protection. The third layer is a honeycombed duranium alloy with a micro-ceramic polymer boded to each side used for thermal insulation and SIF conductivity. The fourth and outer layer is composed of a 2.0 cm ablative ceramic fabric with interwoven tritanium filaments. This is attached to a polycobhrams sheet by a chemical bonding process. This layer 3.0 meters wide by 3.0 meters in length and is attached with standard duranium fasteners to the first three layers after they are bonded together. This layer is replaced as needed, with no more than 8 years between oldest and newest sheets.

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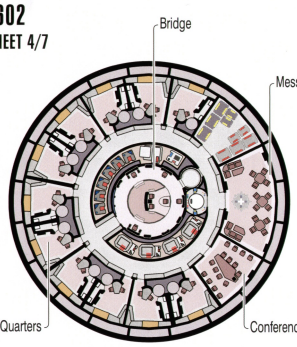
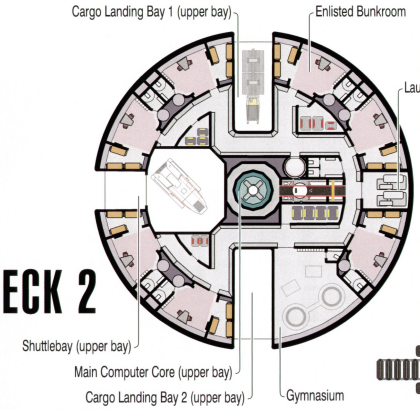
INTERNAL VIEWS SHEET 4/7

SYMBOL CHART

DECK 1



DECK 2



Scale
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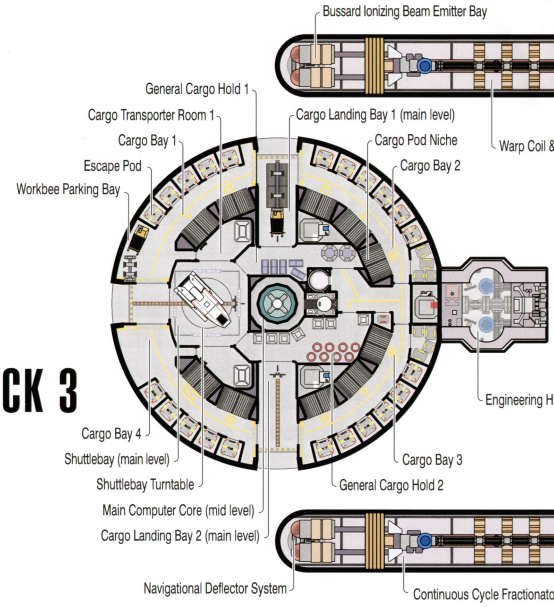
DECK 3



Cross-Section Through Shuttlebay
Aft Aspect

SYMBOL CHART

AUXILLARY ENGINEERING - INFORMATION SYSTEMS

Computer Core

Main Forward Science Sensor Array

Main Forward Science Sensor Processor

AUXILLIARY ENGINEERING - COMPARTMENTS

Bridge

Sickbay Complex
- Intensive Care (2)
- Surgery (1)
- Nurse Station

Diagnostics & Repair Workshop / Lab / Damage Control:
- Work Table
- Operators' Station

Science Lab
- Research Area
- Operators' Stations

Officer's Quarters:
- Sleeping Area
- Closet
- Head & Sonic Shower

Enlisted Quarters:
- Sleeping Area (3, 3-tiered bunks)
- Dining Area
- Head & Sonic Shower
- Lockers

Briefing Room

Mess / Lounge
- 3 Tables (12 Personnel)
- 2 Food Delivery Slots

6-Personnel Transporter Room
- Stage
- Shielded Operator's Station
- EVA Suit Lockers
- Head

Site-to-Site Transporter Pad

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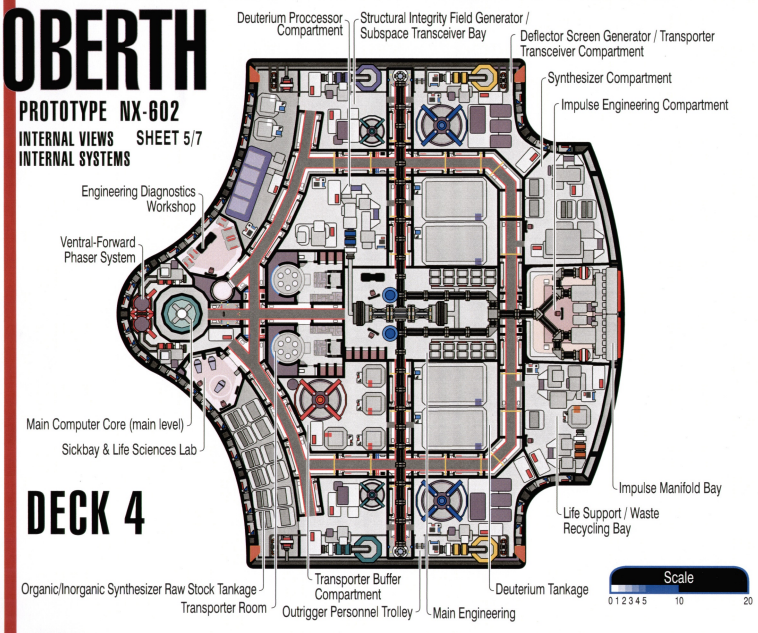
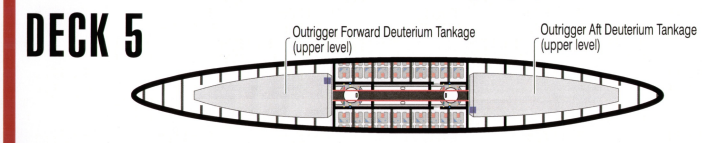
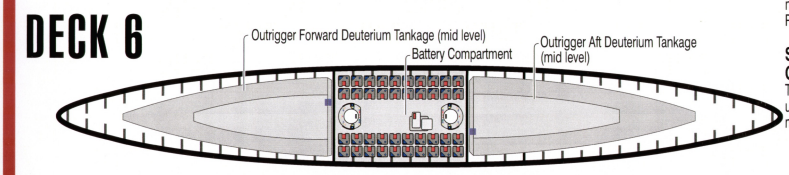
PROTOTYPE NX-802

INTERNAL VIEWS SHEET 5/7

INTERNAL SYSTEMS







INTERNAL SYSTEMS

Section 1.2 Structural Integrity Field

The physical integrity of the spaceframe is augmented by the SIF. The SIF is created by two field generators on Deck 4 (within the Integral Hull) and one field generator on Deck 7. Each consists of a pair of 2 megawatt graviton polarity sources. These feed a pair of 100 millicochrane subspace field distortion amplifiers. Any two units are capable of supporting the entire SIF grid at 100% for 40 hours before gaussing causes a critical shut down. The SIF system creates a subspace distortion field that is guided along all trusses and hull plates, reinforcing these by a factor of 100,000% of their usual tensile strength.

Section 1.3 Inertial Damping Field & Synthetic Gravity Generators

The Inertial Damping Field (IDF) operates in parallel with the ship's artificial gravity generators, maintaining a series of variable-symmetry force fields that absorb external inertial forces. The force fields are maintained according to SFRA-standard 352.12, averaging 75 millicochranes with field differential of 5.26 nanocochranes/meter. Flux generation for IDF and gravity are provided by generators within the crawl space under each deck, in a hexagonal grid with nodes spaced 0.3 meters apart.

Section 1.4 Security & Containment Force Field Generators

There are secondary force-field generators mounted within the vessel, filling a variety of roles. Main Engineering and Impulse Engineering each have a pair responsible for maintaining containment for the Warp Core and Fusion Reactors - with standby units for emergency containment in the event of coolant leakage and other hazards endemic to Antimatter/Fusion reactions. Others scattered throughout the ship are non-dedicated, and using waveguides and sophisticated forming software can be routed to perform various tasks - including corridor security barriers, brig security barriers, and bulkhead life-support barriers (in the event of localized hull breaches), these units have a set of four 1 megawatt polarity sources feeding a pair of 50 millicochrane field generators.

Section 1.51 Ordnance: Phasers

Two Type VIII Phaser Turrets are located on the underside of the Primary Hull - on Deck 4.

Section 1.52 Ordnance: Photon Torpedoes

An oversized aft-firing launcher is capable of firing both photon torpedoes and the larger communications relay buoys, as well as doubling as a minelayer during wartime (the positioning of same being integral with the Research Cruiser's mandate).

Section 1.53 Ordnance: Force-field / Deflector Screen Generators

Two generators are located on Deck 4, and one more on Deck 7. These units have a set of four 4 megawatt polarity sources feeding a pair of 200 millicochrane field generators.

Section 2.0 Computer Systems

The Main Computer Core (MCC) is located on Decks 2 through 4 in the Primary hull. Although there are access catwalks every 2.5 m, the entire 7 m core is one integral unit. The MCC consists of 140 dedicated modules of 144 duotronic chips, which, under LCARS control provide dynamic access at a rate of 4,800 kiloquads/sec. The total storage capacity for each module is 16,000 to 64,000 kiloquads, depending on software configuration and data compression rates. The MCC is joined to the Optical Data Network (ODN) by triple redundant Micron Junction Links (MJL) on each module. The final layer to the computer systems is a dedicated short range Radio Frequency (RF) system that all cores and SPNs use to communicate with the control panels, access points, and PADDs.

Section 2.1 Information Gathering Systems

Information gathering systems are divided into sensors (passive energy/field detecting/analyzing) and scanners (active energy/field emitting-reflection dectecting/analyzing systems). Each of these is further subdivided into long-range (faster-than-light) and short-range (lightspeed). Omni-directional navigation packages are generally mounted at the vessel's dorsal and ventral Z-axis poles. Directional packages (including tactical scanners) are mounted along the vessel's forward x-axis.

The BX8997v Science Sensor Array is located in the Outrigger forward/ventral area - within a streamlined radiation-transparent fairing - along with an integral Deflector Emitter and Generator. The Array represents a benchmark in terms of power and resolution aboard starships. The steamlining allows for cartographic missions within nebulas - as well as high-atmospheric planetary cartographic mapping. The power demands of the BX8997v require plasma conduits feeding directly from the ship's warp core.

Section 3.01 Crew Facilities - Quarters

Crew quarters are modular. Enlisted and Petty Officer quarters consist of 2 compartments, a sleeping area (3, 3-tiered bunks) plus a dining/relaxation area (containing table and chairs, lockers and head). Officer quarters consist of a single compartment, with a sleeping area (single bunk) adjoining the dining/office/relaxation area (containing desk and chairs, computer system, closet and head).

Section 3.02 Crew Facilities - Recreation

A Gymnasium exists for Starfleet personnel enjoyment and exercise.

Section 3.03 Crew Facilities - Dining

Dining facilities consist of a Mess Hall/Lounge. Food and Beverages are prepared by protein/carbohydrate synthesizers on Deck 4, and delivered to terminals via a miniature turbolift network. Terminals are also located in the Transporter Rooms and Conference Room.

Section 3.05 Crew Facilities - Laundry

Laundry facilities are on Deck 2. Laundry drop-off terminals are located on Deck 2.

Section 3.1 Science Facilities

The Oberth-class starships are outfitted with 4 Type 1 Science Labs on Deck 8 - similar to those on the Constitution-class starships. Each consists

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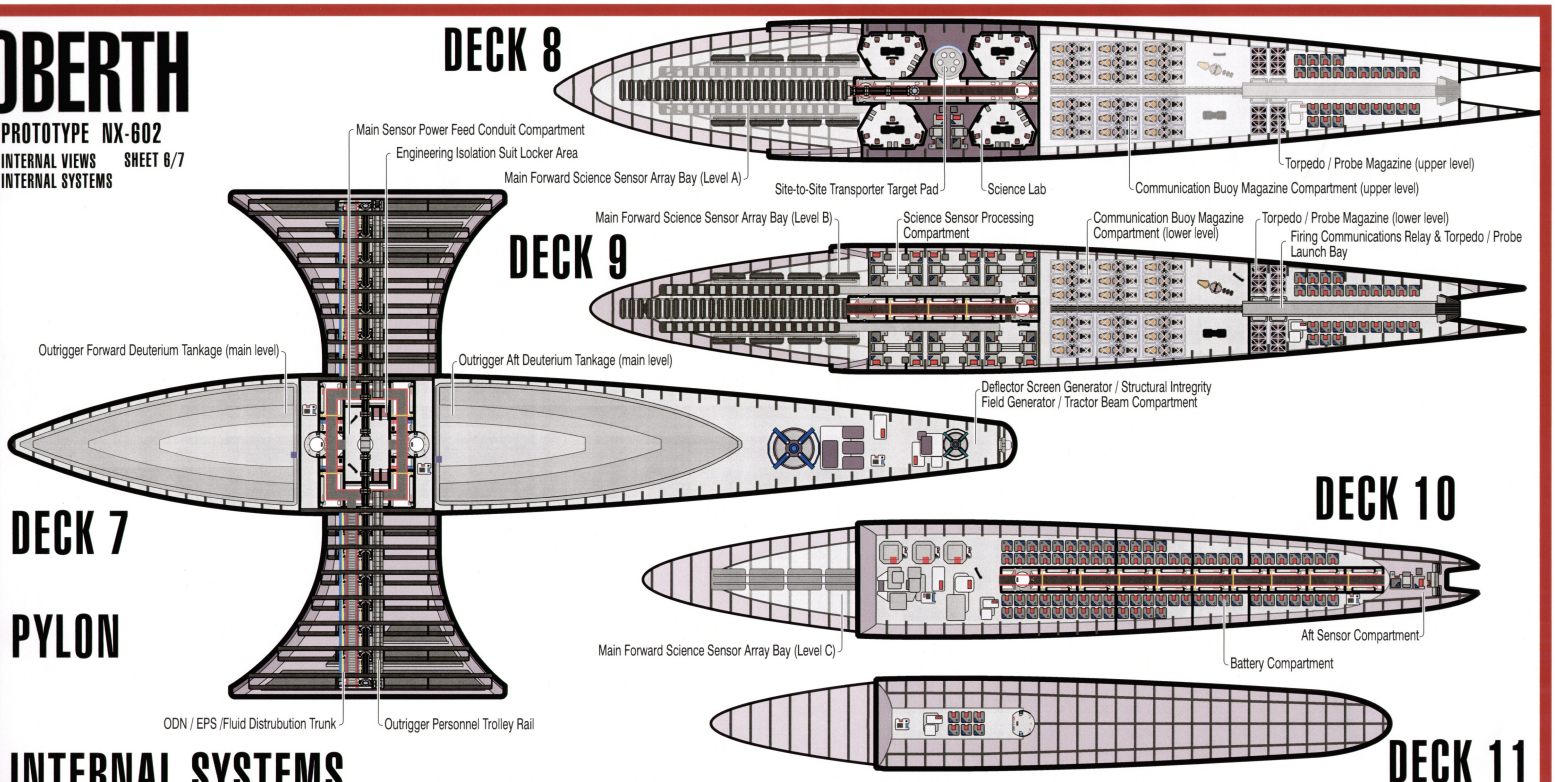
INTERNAL VIEWS SHEET 6/7

INTERNAL SYSTEMS



INTERNAL SYSTEMS

of a quarantine field, tandem operator's stations/LCARS terminals, and instrument/specimen storage locker. As well there is a Diagnostics & Repair Engineering Workshop/Lab and a Sickbay/Life Sciences Lab on Deck 4.

Section 3.2 Life Support

Main life support and atmosphere conditioning systems (Air refresh/recycle, temperature/humidity/ionization control), plus controls for gravitational and inertial damping generators are located on Deck 4.

Section 3.3 Internal Personnel Transit

Due to the minimal cross-section utilized in the pylons connecting the Integral Hull and the Outrigger Hull-module, standard turbolifts cannot be used for personnel transit between these two sections. Two separate systems exist. The primary system utilizes the ship's two transporter rooms. In order to avoid subject risk from inter-ship transport, a dedicated Site-to-Site Transporter Target Pad is installed on Deck 8. This target pad is connected to the ship's Transporter Buffers by hardwired conduits, eliminating any danger of signal degradation due to interference.

The secondary system utilizes a one-man sled on magnatomic rails (similar to that used for photon torpedo/probe loading) known as an outrigger personnel trolley. One trolley trunk runs through the port and starboard pylons. These can be stopped by the rider at any point, facilitating engineering inspections.

Section 4.0 Shuttle Facilities

Deck 3 is dedicated to a Shuttlebay, and two Cargo Landing Bays (suitable for workbees and a cargo train consist of 4 pods), and two Parking Bays for embarked craft. All are connected to the 4 Cargo Bays via spacedoors. The three landing bays extend up into Deck 2.

Section 5.0 Cargo Facilities

Deck 3 has four curving Cargo Bays (with bulkhead-mounted niches for standardized cargo pod quads), as well as two General Cargo Holds and two Cargo Transporter Rooms.

Scale

0 1 2 3 4 5 10 20

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SYMBOL CHART **SHEET 7/7**

SYMBOL CHART

LIFE SUPPORT & FLUID/GAS TANKAGE


Food Synthesizer


Food Synthesizer Raw Material Storage Tank (Organic)


Inorganic Synthesizer

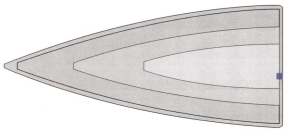

Synthesizer Raw Material Storage Tank (Inorganic)


Organic Stasis Containment


Organic Waste Recycler


Atmospheric Recycler


Laundry Processor


Cryogenic Tank
Slurried Deuterium
(4000 Cubic Meters)


Cryogenic Tank
Slurried Deuterium
(500 Cubic Meters)

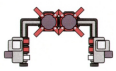

Cryogenic Tank
Oxygen / Nitrogen / Trace Gases
(20 Cubic Meters)


Water Tank
(20 Cubic Meters)


Organic Waste Slurry Tank
(20 Cubic Meters)

DEFENSE SYSTEMS

Phaser Emitter Turrets


Phaser Firing Chambers

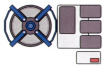
Photon Torpedo Casing


Photon Torpedo Magazine


Photon Torpedo Launch Tube

Communications Relay Buoy


Communications Relay Buoy Magazine


Force-field / Deflector Screen Generator

Destruct Charge

AUXILLARY ENGINEERING - GRAVITONIC SYSTEMS


Structural Integrity Field Generator


Tractor Beam
- Emitter
- Aiming Gimbal

COMMUNICATIONS & TRANSPORTER SYSTEMS


Subspace Radio Transceiver


EM Radio Transceiver


Transporter Transceiver


Transporter Buffer


Transporter Pad (6-personnel)


Transporter Pad (Cargo)

MAIN ENGINEERING - ELECTRO-PLASMA SYSTEMS


EPS Relay

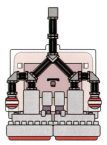

EPS Distribution Node


Cold Fusion Battery Bank

MAIN ENGINEERING - REACTION CONTROL THRUSTER


Fusion Generator
(6.1 X 1010 Mw)

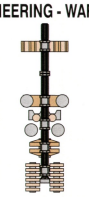
MAIN ENGINEERING - IMPULSE DRIVE SYSTEMS


Warp Plasma Conduit

Auxillary Fusion Generators
(6.1 X 1010 Mw)

Impulse Exhaust Manifold

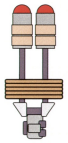
MAIN ENGINEERING - WARP DRIVE SYSTEMS


Warp Field Coil

Warp Plasma Conduit

Off-Axis Field Generator

MAIN ENGINEERING - BUSSARD COLLECTION SYSTEMS

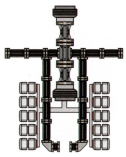

Continuous Cycle Fractionator

Ionizing Beam Emitters

Magnetic Field Coils

Magnetic Field Generator / Collector
Continuous Cycle Fractionator

MAIN ENGINEERING - WARP CORE SYSTEMS




Deuterium Injector


Warp Plasma Conduit

Warp Core
Cross-sections

Antimatter Injector

Antimatter
Containment Pod

Anti-radiation Suit
Locker

Deuterium Processor

AUXILLIARY ENGINEERING

Horizontal Jefferies
Tube

Vertical/Horizontal
Jefferies Tube

Vertical Jefferies Tube

Diagonal Jefferies
Tube

Vertical Turboshaft

Horizontal Turboshaft

Turbolift Station

Hull-to-Hull Explosive
Bolt Connection

Damage-Control
Containers

Emergency Supply
Containers

Misc. Shipwide ODN
Distribution Areas

EMBARKED CRAFT

Work Bee

Type 5 Shuttle

ESCAPE SYSTEMS

Escape Pod