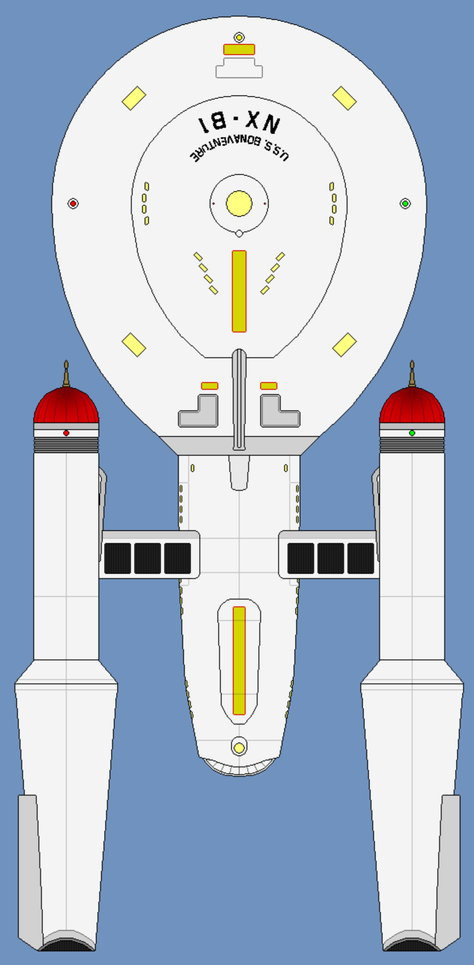
#294

STAR FLEET
STARSHIP RECOGNITION MANUAL

REPORT:
BONAVENTURE TESTBED



ORASIL & REVANCHERM

Forward

My contribution to this project would not have been possible without those who came before me. Mainly, CaptShade, whose original drawings laid the foundation for my work by providing me the figurative and literal tools for my own creative output. Nichodo, who was a big help in creating aft and ventral views of various components. RevancheRM, whose ideas and drive helped me get a little more creative and better at something I really enjoy. And, most definitely, Neale "Vance" Davidson, whose enormous volume of work got me interested in doing this in the first place, and for inspiring us all.

– Adrasil

First, as always, thanks to Adrasil. Since partnering with him, I've taken some great artwork and added some context to it. He's really allowed me to scratch my writing itch, to the point it sometimes bleeds, but still feels Oh-So-Good. Next up, of course, is Timo Saloniemi, who's work I've been following for around two decades and I greatly respect. The artwork in these "Starship Recognition Manuals" are 97% based upon the ones he describes textually in his grand opus, the "Hobbyist's Guide to the UFP Starfleet and Its History," and 3% derived from what he has inspired in us.

– RevancheRM

Additional reports may be found at: starshiptracker.com/deltadynamics

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Credits

ADRASIL: All imagery (unless otherwise credited)
www.DeviantArt.com/Adrasil
REVANCHERM: All writing (unless otherwise credited)
www.DeviantArt.com/RevancheRM
NEALE 'VANCE' DAVIDSON/JAYNZ: Project & cover concepts
www.DeviantArt.com/TFVanguard
Jaynz.Trekships.org
TIMO SALONIEMI: Author of "Hobbyist's Guide to the UFP Starfleet", the inspiration for these SRMs. A direct link to his Google Drive may be found on most deviations in RevancheRM's gallery.
VIPERAVIATOR: Source of adapted cover starburst
www.DeviantArt.com/ViperAviator

BONAVENTURE TESTBED:
– Original inspiration from: Star Trek: The Animated Series

– Incorporated parts from: CaptShade

Note from the writing editor

These ships do not always exactly match the specifications Timo provides in his technical section for each class, as I've adapted them in ways that allowed them to fit a bit better with the guidance provided by the starship construction rules in Steven Long's "Spacedock". I've also changed some dates around when I found them in conflict with other information Timo has provided. These two books greatly inform my own alpha-canon and I urge you to look up both online, as offered free by their respective authors. (Links to both are provided on the Delta Dynamics site.)

Memory Terra/Memory Alpha Cataloging Data: UFP ITP/TE 725938146029 64

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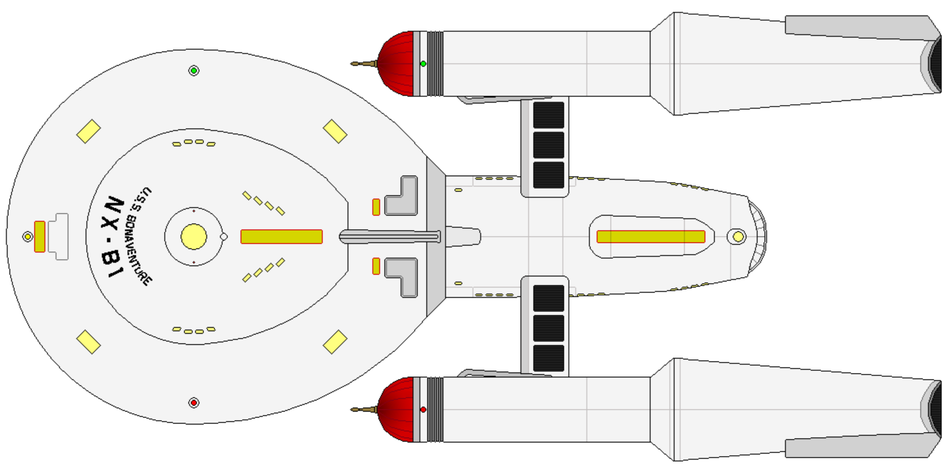
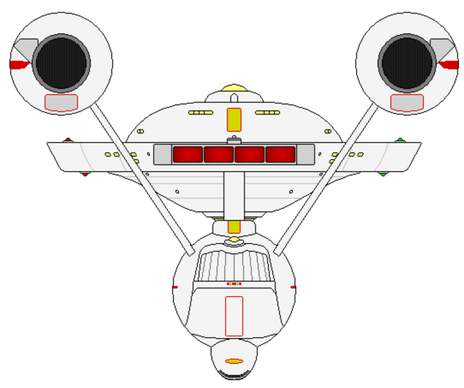
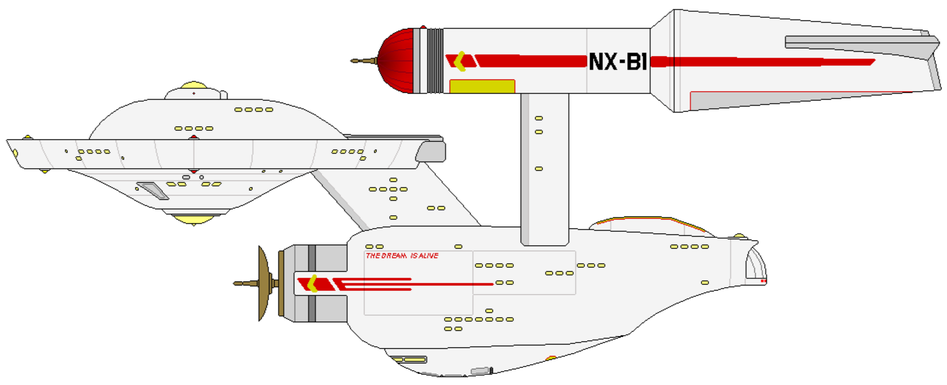
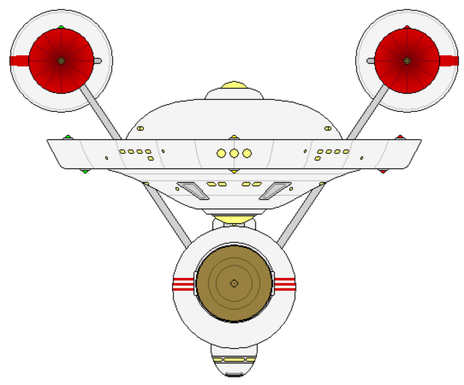
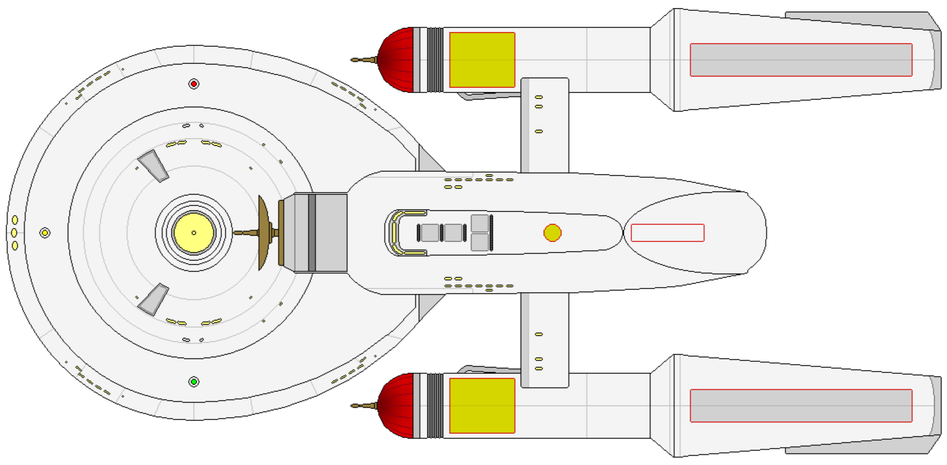
BONAVENTURE TESTBED











CATEGORY:	DILITHIUM POWER TESTBED		
OPERATIONAL:	2230 – 2231		
CONSTRUCTED:	1		
DIMENESIONS:		TACTICAL:	
LENGTH:	137.2 M	– 1-LAYER CONFORMAL FORCEFIELD	
BEAM:	82.0 M	– NAVIGATIONAL DEFLECTOR	
HEIGHT:	54.9 M	– AUXILIARY DEFLECTOR ARRAY	
MASS:	334,200 MT		
PERFORMANCE:			
CRUISE:	WARP 3.0 (OCU)		
MAX:	WARP 5.2 (OCU)		
ENDURANCE:	1 YEAR		
COMPLEMENT:		AUXILIARIES:	
CREW:	81	– 2X SHUTTLEPODS	
PASSENGERS:	8		

BONAVENTURE TESTBED
AUTHORIZED CONSTRUCTION

THE FOLLOWING SHIPS OF THE ABOVE CLASS WERE AUTHORIZED AS PART OF THE FEDERATION STAR FLEET BY FEDERATION COUNCIL APPROPRIATION.

USS BONAVENTURE NX-81

GENERAL INFORMATION

The second famous Bonaventure was a commissioned Star Fleet ship for less than nine months before she was lost, but she was critical in the development of the Constitution class heavy cruiser –and the modern Star Fleet.

Known even here by the full label of "USS Bonaventure Dilithium Power Testbed", it is often misunderstood that she was not testing the viability of dilithium as an annihilation moderator. It was fully comprehended that nothing excelled at reducing the fuel load of antimatter than the perfect conversion that occurred within a warp reactor moderated by dilithium. Nor was it a test of conducting high-reliability dilithium focusing (of that matter/antimatter stream). The capacity was not there yet: the duotronic computer wasn't even in the test phase yet, just past the well-supported peer review stage of a paper by the impossibly young Richard Daystrom. No, the computer necessary to safely regulate the dilithium was not installed onboard the Bonaventure and containment was very much a concern of the mixed Star Fleet/contracted R&D engineering staff (and her commanding officer, no doubt).

No, what the "dilithium" in "dilithium testbed" referred to was that this was the first heavy cruiser of the third-generation of warp-capable space vessels to utilize dilithium; "testbed" instead referred not to the testing of the red coral crystals but the study of multi-lobed warp fields to surpass the Ishakawa-Dell warp 6 barrier and ultimately break through the Tyme Warp 7 barrier. While the Bonaventure was never going to hit up against those barriers in 2231, the intention was to study the effects of ships utilizing two hulls and two nacelles to achieve the higher speeds without the prohibitive energy requirements previous test platforms had failed against.

The ship had less than heroic lines. She was not intended to be a heroic ship of the line. Instead, she was intended to test the capacity for a future heavy cruiser production class to travel at high warp speeds and at a great distance. Strange looking, seemingly idiosyncratic protuberances bulged from her hulls and her dimensions were...off. At her commissioning ceremony in January 2031, many of the select observers remarked upon the impression they were watching a "baby starship" being honored, due to her rounded features. She was a scale model of what progressive heavy cruiser designs suggested was the proper path to research.

She never had the crew of a ship-of-the-line. Aside from a few medical staff, she was instead heavy on the operations and engineering specialists, with more than a few warp physicists thrown in. Not all of them were Star Fleet either, as she was an experimental craft. The primary hull housed the test mount for impulse engine candidates, while the secondary hull provided the engineering spaces for the advanced power systems. The nacelle pylons, over her operational life, varied from small and out-flung to long and overhead, through each of the pre-commissioning nacelle placement test phases. All other mission spaces that would be considered secondary on any other ship were omitted or stunted (such as the medical bay) and quarters for the crew were spread throughout the ship's two hulls. The ship was equipped with a very small shuttlebay, however, so that hull inspections could be conducted while downrange.

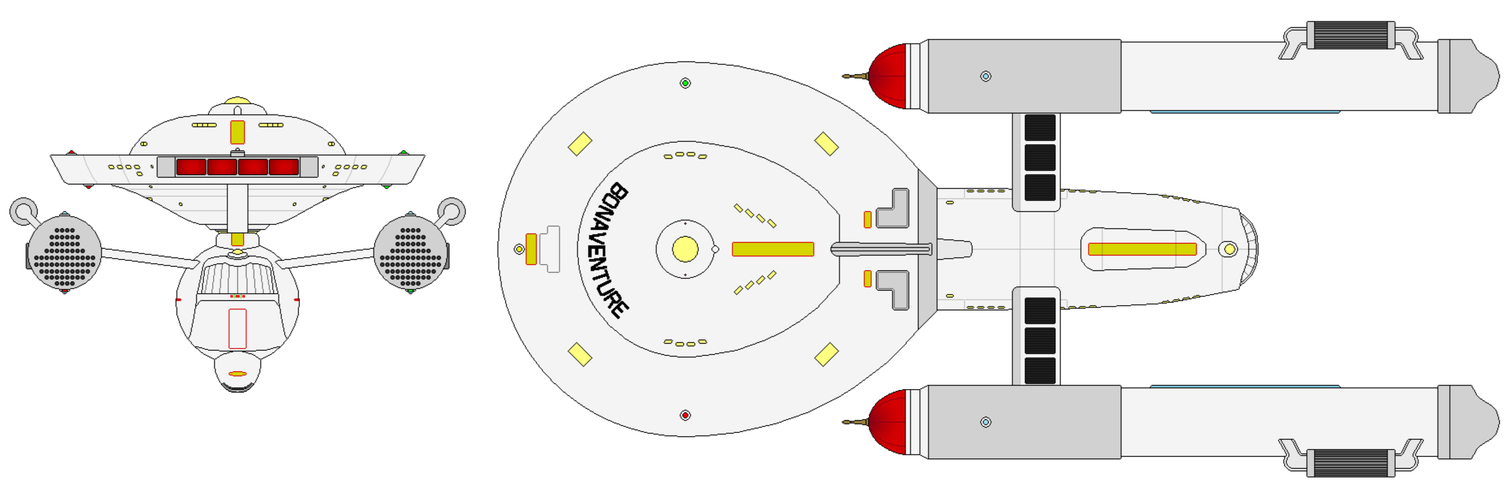
The final configuration, with the PB-14-102 off-axis field-controlled nacelles, was 137.2 meters in length, 82 meters wide, 54.9 meters high, and massed 334,200 metric tons. In her first flight in this final configuration test, she achieved her warp 3 cruise speed in a very respectable 11.9 seconds, and maintained warp 5.2 for sixteen hours. Over the next three, prolonged, performance evaluation cruises, she would test her range, speed variables, and maneuverability in multiple ways, but none slated to stress the dilithium-focused warp reactor. Therefore, it was a complete surprise when, in September of 2231, she simply vanished. No indications of distress were received nor found, and no evidence existed of any fault within the containment resulting in complete craft disintegration. Three years of searches and investigation were concluded without satisfaction; all 89 souls were declared dead. It was only 38 years later that USS Enterprise (NCC-1701, Constitution class) observed USS Bonaventure, wholly undamaged, alongside hundreds of other spacecraft trapped within an interspatial and temporal anomaly. No contact with the vessel could be made, and no rescue attempt was possible before the rift into the anomaly departed.

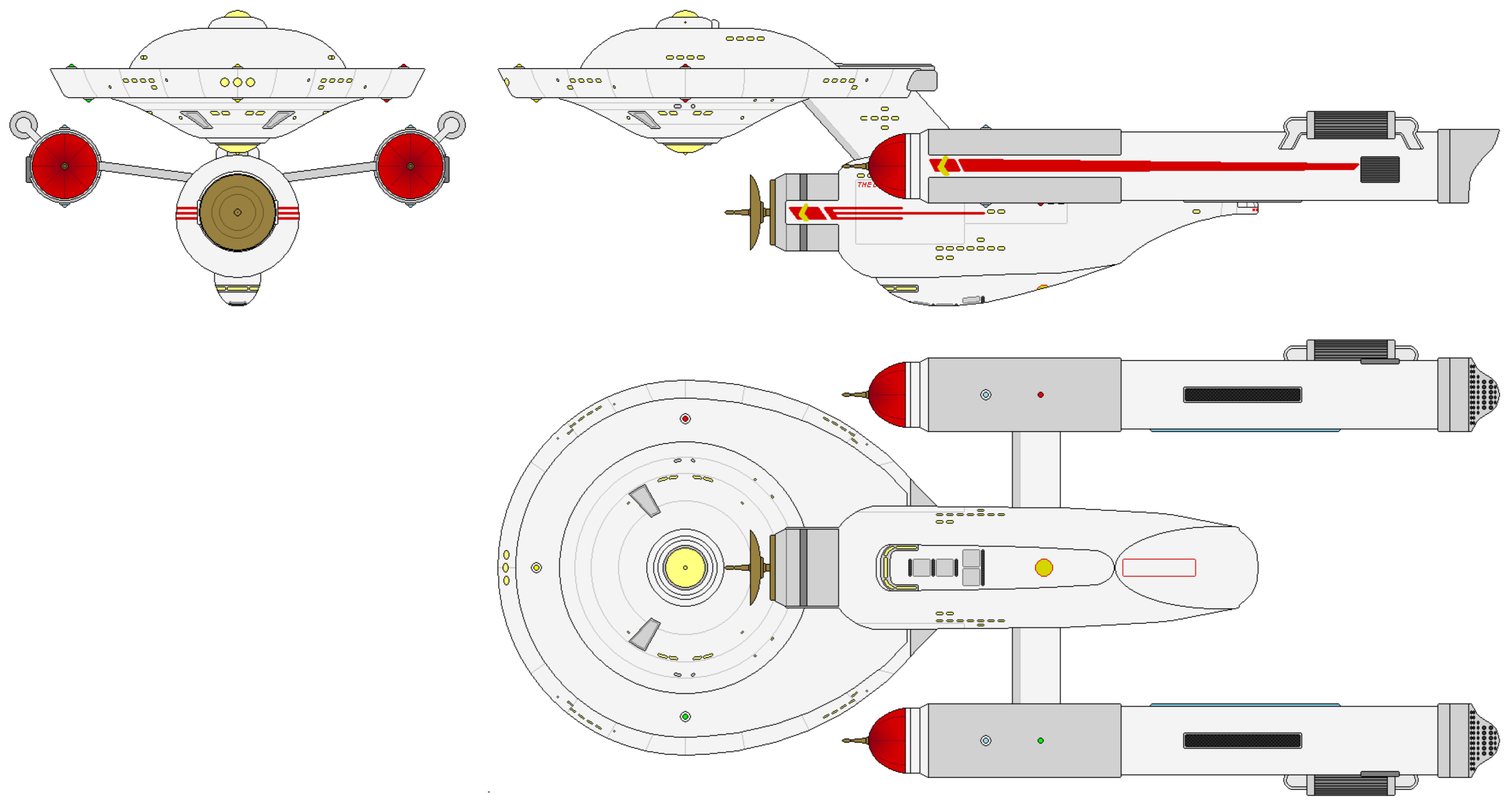
BONAVENTURE TESTBED
GENERAL INFORMATION (CONTINUED)

Despite her loss, cruiser and power testings continued—at full pace with the production of the Mark I duotronic computer—and quickly led to the conversion of older vessels, such as Baton Rouge, Syracuse, and Hermes classes, to the new powerplant type. And, shortly thereafter, the Great Leap Forward revealed the favored child, the Constitution class heavy cruiser.

PREVIOUS TEST CONFIGURATIONS

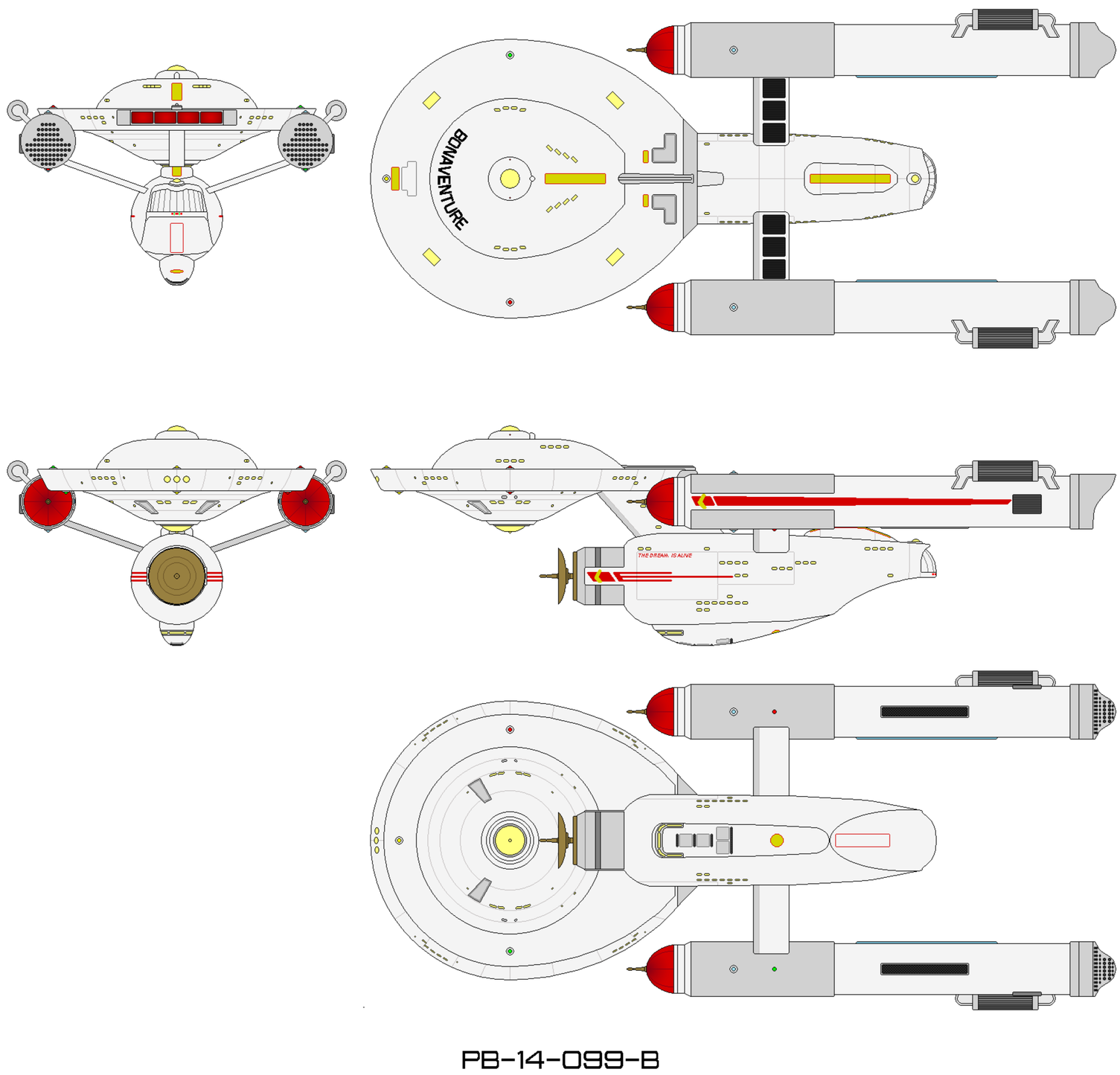
Prior to the test configuration USS Bonaventure had when she disappeared in 2231 (designated as PB-14-102-E), the testbed was subjected to four tests of nacelle placements varying in both pylon length and location relative to the two hulls. The intent of the tests was to ascertain the viability of multi-lobed warp bubbles in penetrating the Ishakawa-Dell and Tyme barriers (warp 6 and 7, respectively), by creating differering asymmetric flight envelopes. All five configurations are depicted below and on the following pages, for comparison purposes.





PB-14-099-A

BONAVENTURE TESTBED
GENERAL INFORMATION (CONTINUED)



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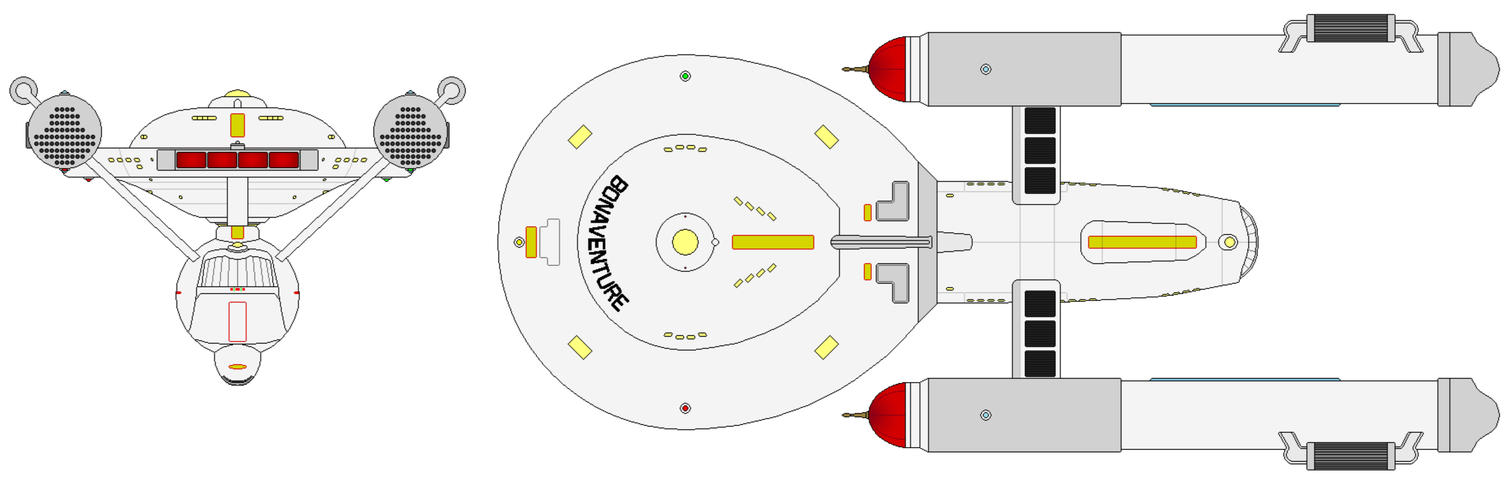

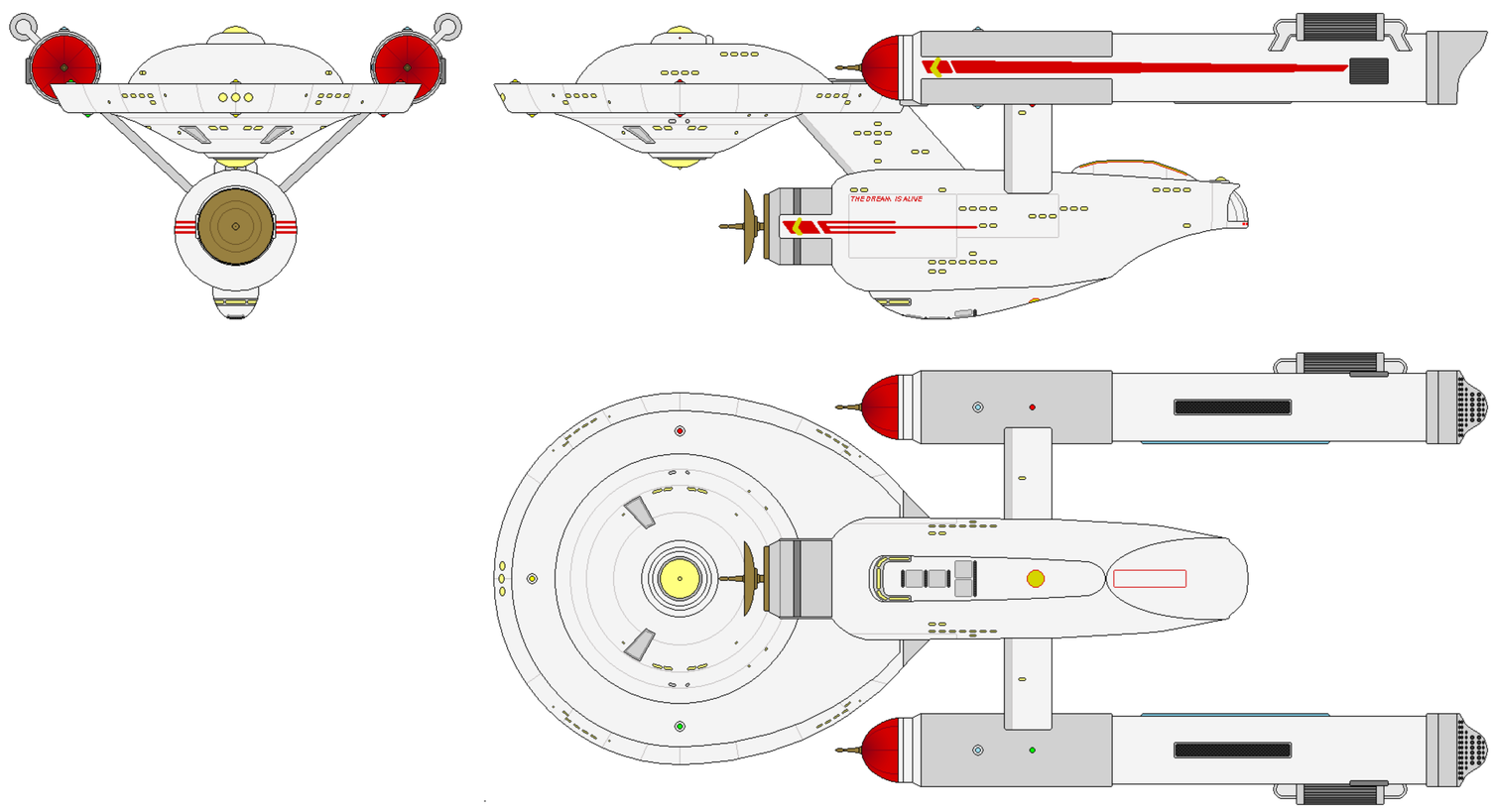

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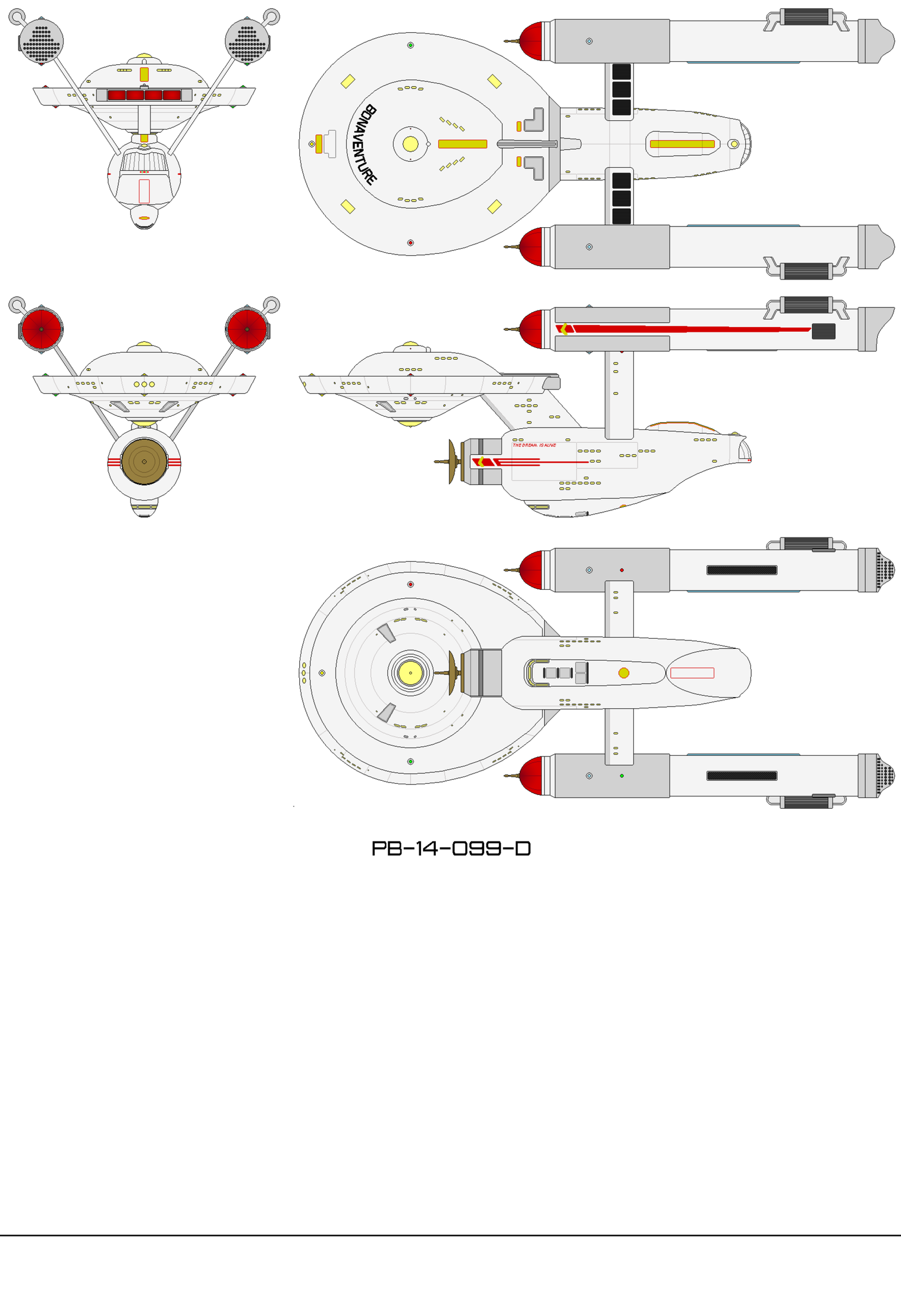

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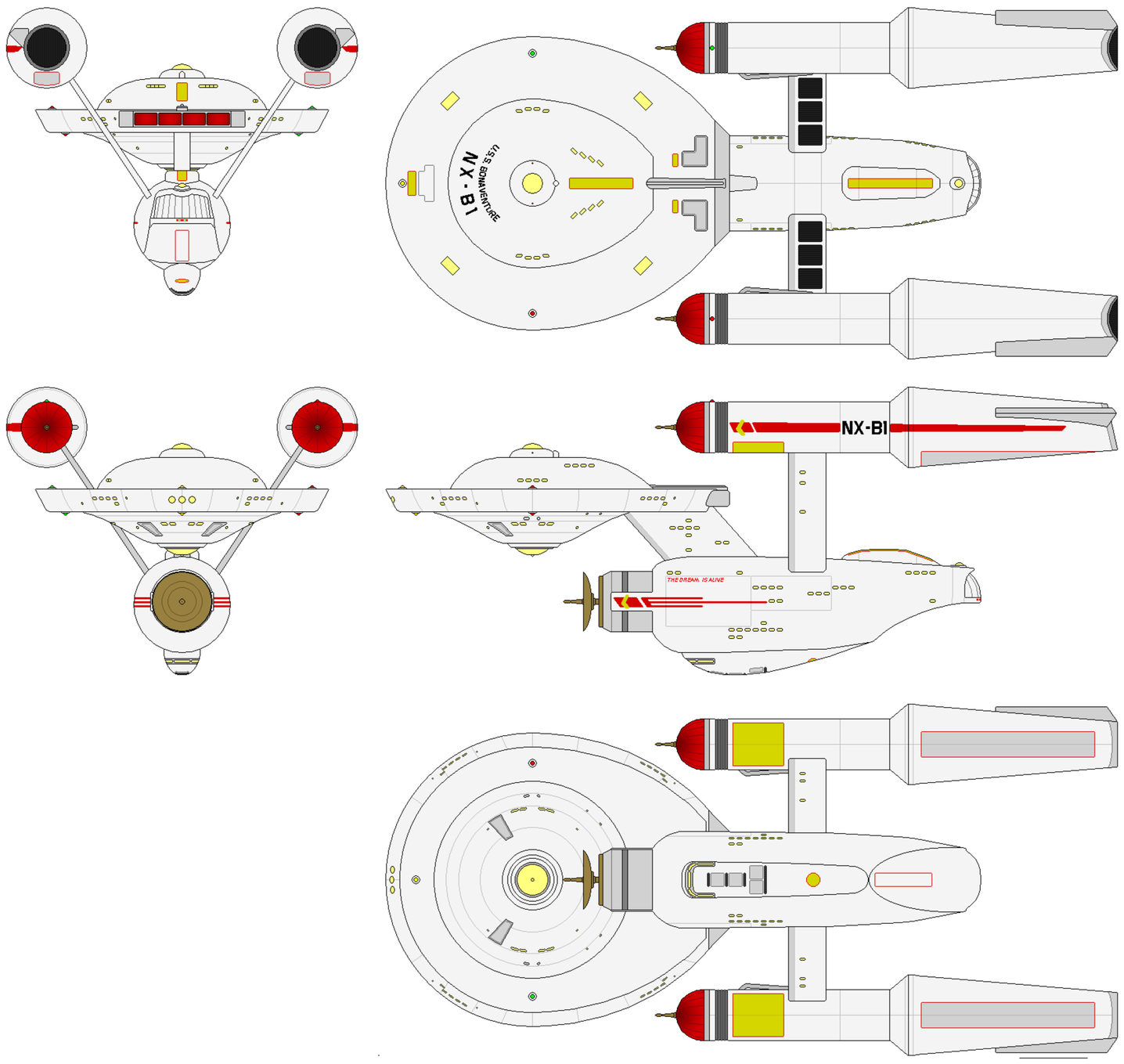
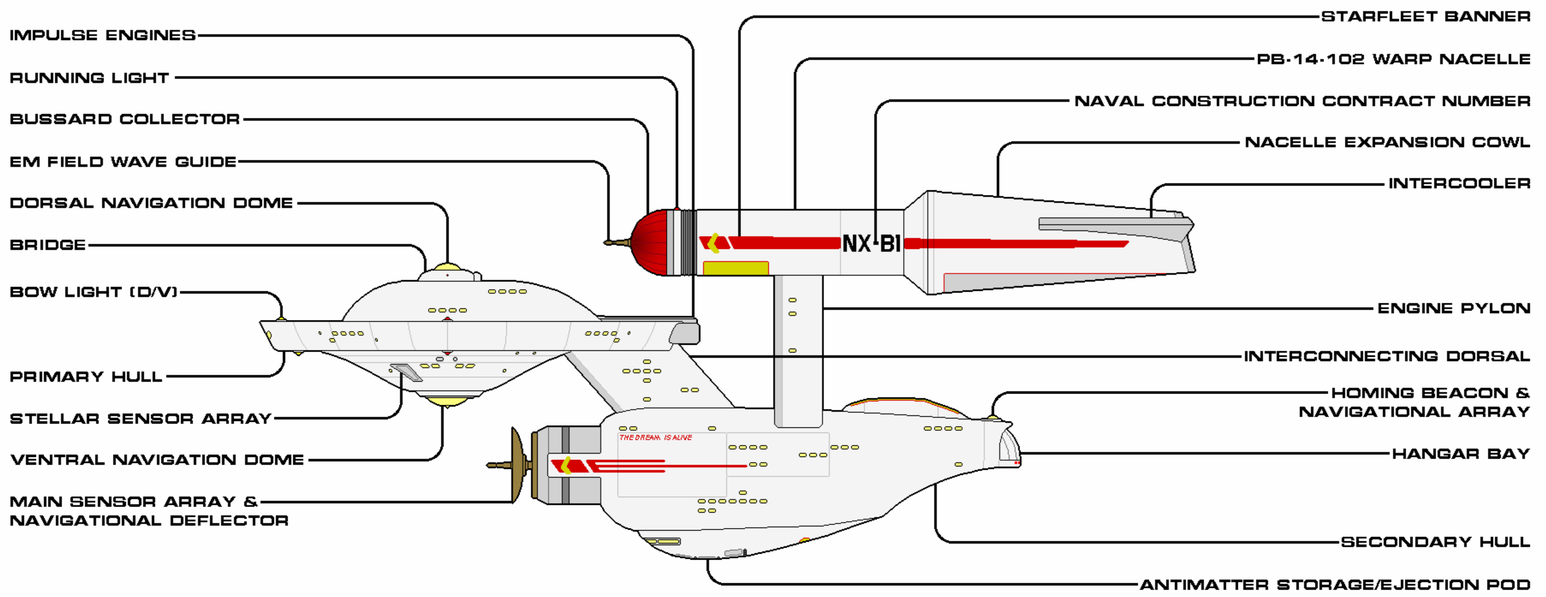
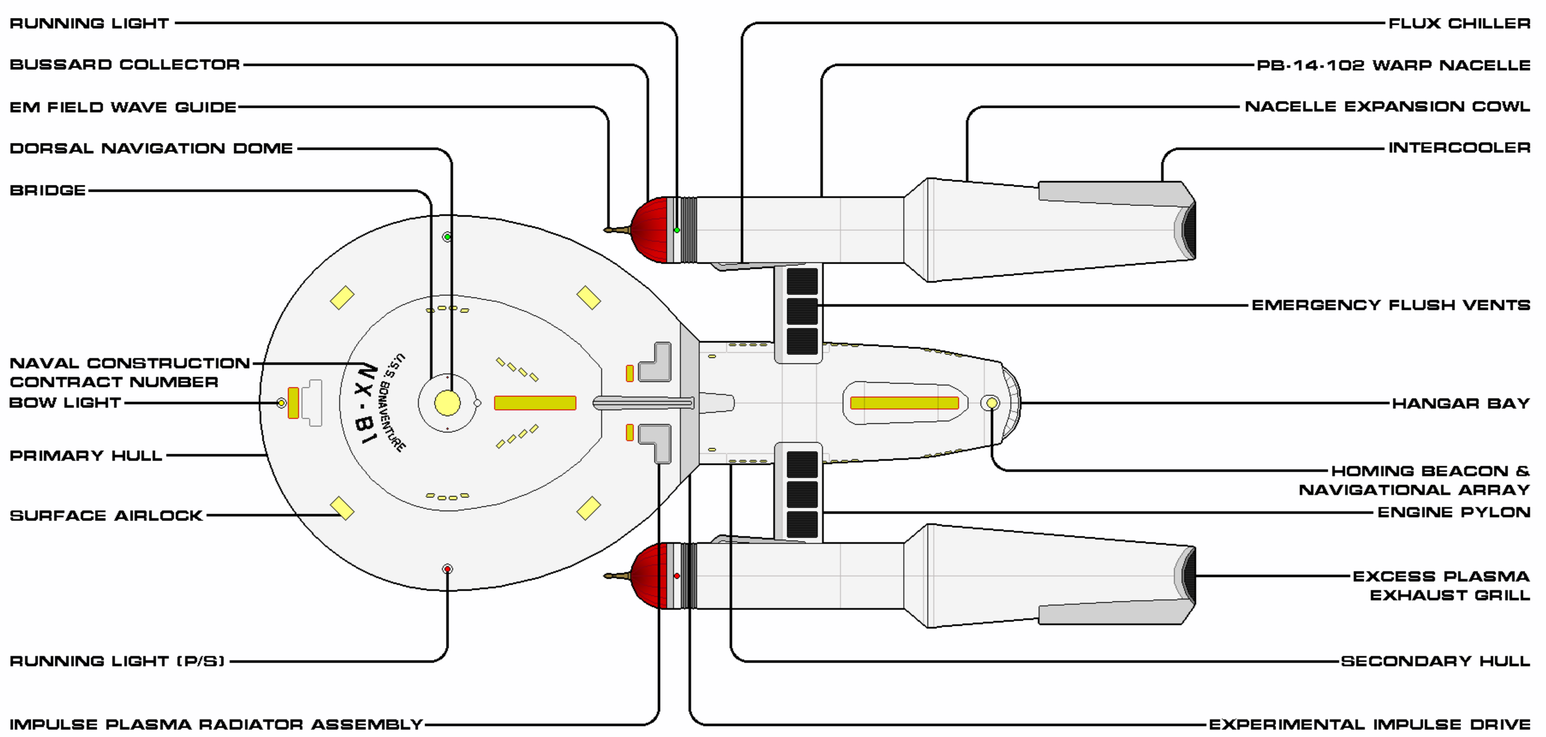




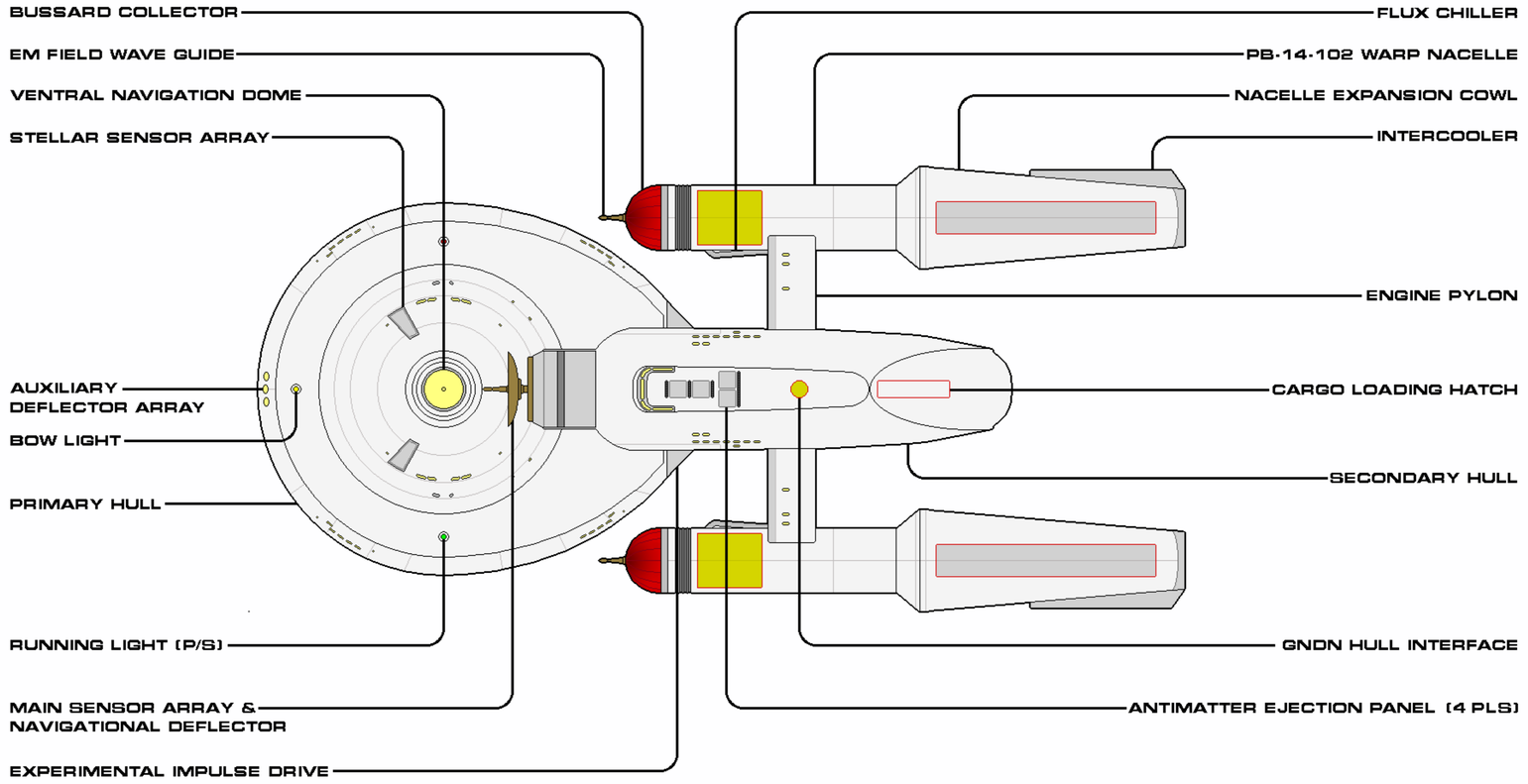


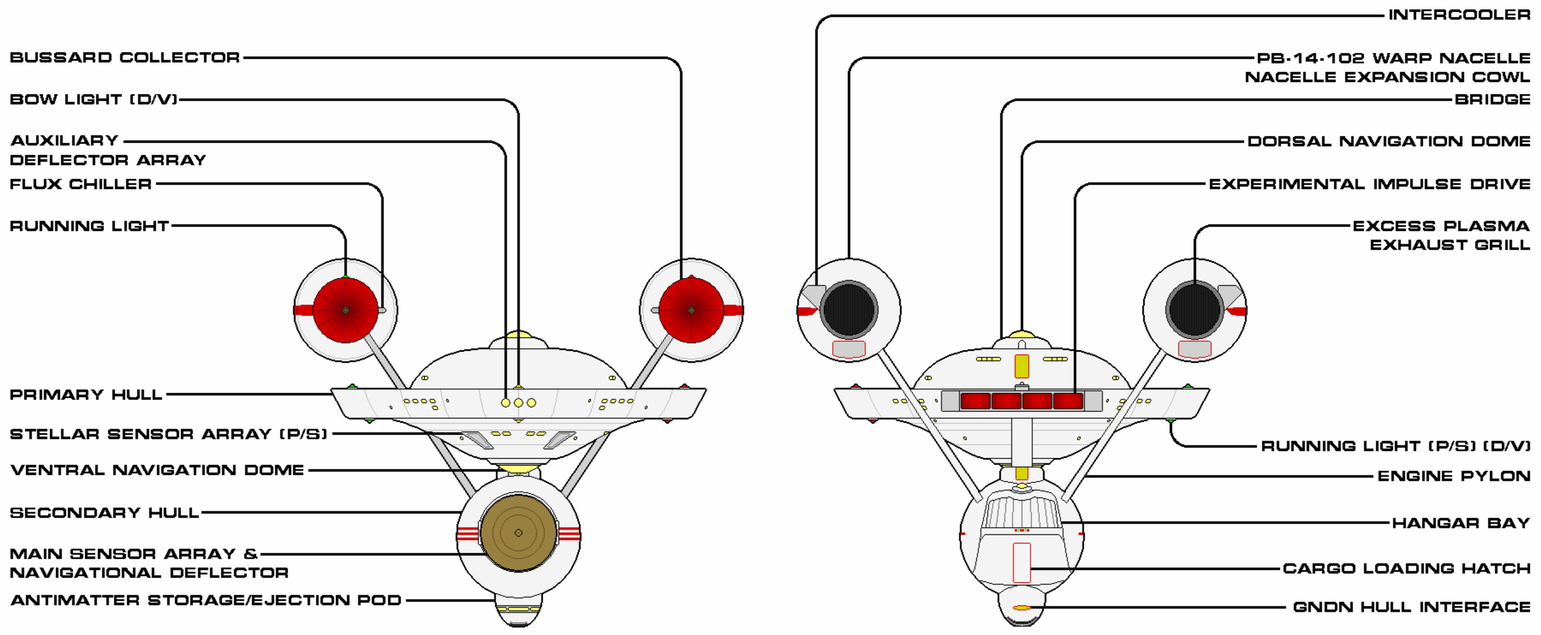
SHEET 1 OF 2

CLASS BONAVENTURE	**CATEGORY** DILITHIUM TESTBED
VARIANT PB-14-102E	**CONSTRUCTED** 2230
LENGTH 137.2 M	**BEAM** 82.0M
HEIGHT 54.9 M	**MASS** 334,200 MT
OPERATIONAL 1	**RELEASE DATE** 1910.26
Authorized for release by Star Fleet Bureau of Starship Construction	

DELTA DYNAMICS

AUTHENTICATED STARDATE 1911.01





SHEET 2 OF 2

CLASS BONAVENTURE	**CATEGORY** DILITHIUM TESTBED
VARIANT PB-14-102E	**CONSTRUCTED** 2230
LENGTH 137.2 M	**BEAM** 82.0M
HEIGHT 54.9 M	**MASS** 334,200 MT
OPERATIONAL 1	**RELEASE DATE** 1910.26
Authorized for release by Star Fleet Bureau of Starship Construction	

Class Timeline

2229
In an emergency meeting, the Chiokis Corporation announces Project Starship would be delayed by at least five more years, moving the projected delivery date to 2239 or later. They offer (along with fellow Andorian shipyard, Salazar Fleet Builders) to build a stop-gap run of 12 light cruisers (of a new design) to help fill the defense requirements.

USS Whorfin (NCC-1024, Whorfin subclass) survives a Kshatriyan ambush with light casualties.

Star Fleet begins constructing USS Bonaventure (NX-B1), the dilithium power testbed.

There is an escalation of threats from Klingon long-range raiders.

A minor raid by three Klingon Raptor corvettes easily cripples USS Hercules (NCC-454), a Titan carrier, conducting maneuvers near Donatu, with more than 130 lives lost. The ship will be mothballed.

2230
The Chiokis Corporation has promised this year for the delivery of the first manned full-scale testbed for the starship drive system.

Design work is completed on a new heavy survey cruiser design; construction on USS Richard Evelyn Byrd (NCC-1381) begins.

Star Fleet informs Salazar Fleet Builder to cease construction of the final 2 (of six) Amchitka light cruisers. The Andorians protest.

The Bonaventure dilithium power testbed begins flight tests with the first of four planned configurations.

Star Fleet announces an order for forty ships of a variant of the Amchitka light cruiser from Terran and Martian yards. Mass protests erupt on Andor, as a result.

2231
Two Hermes class scouts are lost to light Klingon ships while on long-range solo missions, in two separate incidents.

Star Fleet decides to never deploy the Hermes scouts outside protective fleets, and instead use them solely as sensor platforms in conjunction with destroyers and cruisers.

USS Bonaventure (NX-B1) is commissioned.

Star Fleet Division announces that it lacks the capacity to produce all the Amchitka variant light cruisers for which it was contracted. Salazaar Fleet Builders obtains two of the required 40 keels, easing tensions on Andor.

In celebration of the early design success, Star Fleet hold another, more public, commissioning ceremony for USS Bonaventure.

USS Bonaventure departs on the last (of three) long performance evaluation cruises. Contact with the ship is lost just outside Deltan space.

Subsequent searches for USS Bonaventure by cruiser USS Savannah reveal no debris or ion trails, nor the antimatter residue characteristic of the vented plasma of the experimental ship. All 89 persons aboard are declared missing.

2232
Star Fleet unleashes its designing and engineering teams on the production of a new wave of spaceships, powered by m/am reactors with natural dilithium reaction controls.

2234
Upon commissioning, the USS Byrd (first of her class) begins preparations for her mission towards the galactic core, with six targets of interest and a quarter of a century to visit them.

The crew of USS Bonaventure (NX-B1) are declared lost.

USS Byrd departs on her galactic mission.

2269
As it nears formal completion, the Memory Alpha complex is heavily disrupted, and all personnel killed, during an assault by the Zetarians.

Altair rejoins the UFP.

Star Fleet hunts down and forces the surrender of the Orion murderers of four of the crew of the Honor subclass transport USS Huron (NCC-F1913).

USS Enterprise (NCC-1701, Constitution class) accidentally enters an interspatial anomaly in the Delta Triangle region and locates the derelict USS Bonaventure (NX-B1) among hundreds of other lost spacecraft of varying origin. Enterprise is unable to contact nor rescue the test vessel.

As an extra feature, Delta Dynamics presents the following historically relevant articles:

DILITHIUM AND THE BIRTH OF THE MODERN STAR FLEET

The young Star Fleet was struggling. Outwardly, it was a rapidly growing, enthusiastic, and successful merging of the founding states' space-going assets, visibly developing and shaping the academic, martial, and economic avenues for the United Federation of Planets' interests in exploration, defense, trade, and technology. However, a critical decision made fifty years previously was impacting the ability of Star Fleet to defend the Federation as it added new members and settled virgin worlds with enthusiastic colonists.

This challenge, an existential concern, was kept tightly internal (with the exception of the President and the Security Council), because it was a problem of Star Fleet's own making. In 2169, the United Earth's reluctance to continue with dilithium-regulated reactors heavily influenced the design of Star Fleet's second-generation starships. Dilithium had proved critical to the achievement of warp 5 for the pre-Federation Earth, but at great cost: the reactors were fragile and often resulted in the loss of the entire vessel when stresses—combat or natural—resulted in the focus of the dilithium being disrupted. Additionally, the dilithium crystals were beyond rare, with no natural depository found; they tended to work their way into the trading sectors of larger states haphazardly and in a nearly perfectly refined state, as if removed from previous vessels from outside the geopolitical knowledge of the Federation. For the newly-completed starships entrusted with such reactors, the workup cycles were extremely prolonged, as focusing the crystals was so very critical to achieving the high warp speeds capable by the expensive reactors. This was a considerable setback for getting combat-capable ships out into the warzones being contested with the Romulan Empire and that learning experience influenced the defensive doctrines of the nascent UFP Star Fleet.

Instead, the reduction of nearly a full warp factor was the sacrifice for safe and dependable starship development for over a generation. But, in the 2220s, the costs of that decision were becoming apparent. The adoption of the more complex and larger peristaltic forcefield antimatter feed constrictors—in lieu of dilithium regulation—also meant that more space was needed to carry fuel, since antimatter (antideuterium) was now required at a 1:1 ratio with matter (deuterium). This larger space, along with the reduced warp capability, meant that Star Fleet was simply unable to project its defensive might as far as the Federation required it. Strategists recognized that warp 4 was far too incapable of defending the further afield member worlds and colonies and so, quietly, defense doctrines built to respond to a potential massive invasion were predicated upon the abandonment of those distant territories and the encircled—albeit last-ditch—defense of the core planets.

However, within a few years of the adoption of this fatalistic strategy, hope emerged. While new technologies were always being hyped and promised as leaps forward, three such promises seemed to stand out from all the others: continuing development of phased particle beams and the merging with coherent electromagnetic technology promised a weapon system flexible enough to challenge Klingon superiority in this field; a published mathematical study on the relationship between subatomic structure and data processing—by a ten-year old human boy, oddly enough—indicated fantastic advances in computing technology, with the ability to quickly and consistently maintain dilithium focusing, was on the horizon; and a source of unrefined dilithium was discovered, proving the crystal did occur naturally and only needed refineries to be established. The overlapping of these three scientific developments shone like a beacon on those same Star Fleet strategists, who collectively corralled the leadership into the immediate development of a starship—preferably of the cruiser type—that would incorporate all three of these potential discoveries into a platform of speed, strength, flexibility, and independence.

From this, Project Starship was given new and promising life.

A (VERY) BRIEF HISTORY OF DILITHIUM USE IN THE FEDERATION

In 2009, the historic inaugural mission of the Grand Tours was begun, when the Lewis and Clark, an Aventeur exploration craft–sublight in propulsion–was launched from Earth in a joint mission of two of the planet's space agencies. The ship was crewed by the (now) famous Commander Shaun Geoffrey Christopher, Dr. Marcus O'Herlihy, Mission Specialist Alice Fontana and 12 scientists of varying specialties. Their mission was to visit and explore the planetary systems of both Jupiter and Saturn, landing and mapping the moons and rings of both, where suitable. It was one of six planned missions to the outer worlds, intending to put Human explorers where only robotic ones had gone before.

However, unrevealed (by mission commander decree) until the mission's return to Earth in 2039, the teams discovered something that changed the heliocentric view of Humanity, at least within the scientific community: at landing sites on the Saturnian moons of Enceladus and Dione existed clear and unmistakable signs of mining operations. And these were not the remains of Khan's Augments, as the equipment and other detritus recovered by Lewis and Clark were clearly not of Earth origin. There were even examples of compounds and traces of elements seen never before, including numerous samples of something later identified (on Earth) as ununennium, with the atomic number 119 and an atomic weight of 87, a previously theoretical element. However, to the crew of the explorer, the samples were simply referred to as "the red coral crystals."

The existence of an alien presence–even if in the past–was not released to the general public. However, select scientists, both individuals and teams of labs, were brought in on the discoveries, in order to best understand what Christopher and his team had retrieved. In 2049, an extremely young (but post-doctoral) Zefram Cochrane had the opportunity to examine one of the red coral crystals at length, whereupon he realized this sample of ununennium was exhibiting attributes of the (extremely) theoretical hypersonic series. After a number of open and then covert experiments, he decided his hypothesis was correct and began researching applications of the element, leading to his now famous invention of the continuum distortion propulsion engine, or warp drive. The historic testing of the drive in 2063, of course, led to first contact by a Vulcan geologic survey expedition.

The Vulcans had been using the coleopteric (aka, ring) warp drive since the 19th century (upon their post-Time of Awakening return to space), achieving warp 7 (on the OCU scale) by the mid-22nd century. However, their drive was built for the speeds necessary to traverse large distances–during a time with far less aggressive space-going species–and were less maneuverable as a result. They, also, had not found a reliable, natural source for dilithium, concluding it was of artificial manufacture, and had restricted the use of the limited procured samples to their few combat cruisers. Their slower vessels, including the explorers, utilized bulkier and slower fusion reactors.

When the Humans and the Tellarites simultaneously met each other in their respective systems in 2073, the alien traders were very open (with reasonably "bartered" exchanges, of course) with their technology, though far less advanced than that of the Vulcans. Plasma derived from fusion power was the preferred energy source for their warp coils and the porcine fleets made up for the slow attributes of their drives with sheer quantities of smaller trade ships flitting about known space.

The territorial Andorians were less open with their technological prowess. Forcefully introducing themselves to Humanity in 2151, they clearly had the ability to stand face-to-face with Vulcan combat cruisers, with their own battle cruisers of similar size. They, too, used only fusion reactors, but were able to increase the efficiency through the use of variable compression nozzle technology, which utilized peristaltic forcefields to increase the energy output of the plasma.

Determined to stand on their own collective feet, Humanity sought to break free of the Vulcans' technological and sociological restrictions by going further out than their present fleet was capable, and to do that they needed velocity. To break the warp 5 barrier, the United Earth Starfleet worked to develop their own non-Vulcan dilithium-focus annihilation core, which was the primary and key component of the Archer Warp Five engine. However, the equipment was complex, prone to mis-alignment with any significant jostling of the vessel, and maintenance-intensive. The UESS Enterprise, the first vessel to go forth outside the radius of Earth's colonies, appreciated the speed, when it was available, but Captain Archer would not be the last to describe it as temperamental.

The original dilithium moderators came from the Saturian samples, but more had to be procured. Using tips gleaned from their Vulcan overseers, United Earth diplomatic agents bought and bartered with the Tellarites (who did not use the crystals themselves, but understood their value) and any other race–most notably Orions–that would make them available. All, however, proclaimed ignorance as to the ultimate source. Dilithium crystals were thus acquired at considerable expense to moderate the Earth fleet, both within the Enterprise/Columbia class, and in the classes that followed shortly thereafter.

Yet, Starfleet was soon to realize another cost associated with the dilithium-focused annihilation core. Despite the range and speed the engine allowed, the time needed in workups for ships following construction was extremely prolonged. Within a few years, when Earth was embroiled in conflict with the enigmatic Romulans, getting combat-equipped vessels within the warzone was critical. Be that as it may, the admiralty was realizing newly constructed ships were being delayed by months, just in order to enable the Warp 5 drives to get them to the battlespace. Once there, the same ships were being lost at a higher rate than slower vessels and with less damage, and there was more than enough evidence that failure of the antimatter containment within the chamber was the cause. The fleet soldiered on, finally persevered, and then took stock: dilithium was too difficult to keep focused in a way that made it more viable than typical fusion-derived plasma or the Andorian method of using complex forcefields to enable greater plasma pressure.

In 2169, following the full consolidation of the founding fleets into the UFP's Star Fleet, the collaborative leadership team decided to shut down the dilithium reactors. Newer classes, such as the Almeida cruisers, were given a grace period–to expire in 2188–while other ships, such as the Columbias, were used as testbeds for the Andorian fusion-driven peristaltic warp drives, until war-era ships too were stood down in 2192. Star Fleet struggled with patrol ranges and response times, while desperately reviewing any and all research areas for answers to regain the advantages that came with warp 5 capabilities. The self-protective Andorians had opened themselves to the greater altruistic philosophy of the Federation and were providing greater insight into their forcefield advancements. Propulsion experts throughout the Federation began exploring the use of antimatter fed into total conversion warp reactors, by the same large and complex peristaltic forcefields previously used on Andorian fusion warp reactors. Repeatable warp milestones were being met again, and even broken, with warp 6 a reliable achievement no later than 2194, at conversion rates that moved steadily down to 10:1, then 5:1, and finally 1:1, after 2207. Antimatter was now the standard "fuel" for the entire fleet and rapidly being adopted by the larger shipping lines, as well.

Then, in 2222, the discovery of dilithium as a natural resource was made, and the first source proved to be extremely convenient: the Federation colony world of Deneva. The Federation realized now how the unrefined element presented as; all that had to be done was to set up infrastructure for mining, refining, and surveys for discovering additional sources. While the lode on Deneva was relatively substantial, when compared to dilithium's presence within Federation territory prior to the discovery, it was well understood that one source was not enough. A complete revolution of spaceflight was about to occur and it would not be limited to the UFP.

THE WARP NACELLES OF THE BONAVENTURE TEST PROGRAM

The immediate jumpstart of the dilithium-focused annihilation core testing came about for three reasons: 1) dilithium was proven to be a naturally occurring element and the Federation had a source, 2) a new type of computer (duotronic) capable of the precise calculations to ensure safe & consistent dilithium focusing was on the near-horizon, 3) Star Fleet was keenly aware of its inability to ward off a massive invasion. As to the third reason, the key to solving this was the ability to project firepower far beyond the core worlds and the sooner a viable cruiser could slip the ways in meaningful numbers, the better.

That was the main reason for the Bonaventure's design. Never intended to become a production class itself, the intent of the test was to resolve not the ability to annihilate dilithium focusing for all of Star Fleet, as the faith in duotronics was solid. It was to skip straight to the expensive spaceframes of a dilithium-powered fleet and get the cruisers going. By focusing on the interactions of warp fields and hull geometries needed by a long-ranging cruiser design, the sooner those cruisers would be out there proclaiming the Federation's endurance. The smaller ships-of-the-line and auxiliaries would follow, of that there was no concern.

So, the intent was to get the data necessary to develop a potent design for as heavy a cruiser as possible and do it right the first time. The testbed ship-again, not intended for production-would therefore be unconventional in its dimensions, as it would be testing the influences of the hulls, the pylons, and the nacelle shapes themselves on the potential warp fields the available nacelles would provide. The best candidate nacelle for the test program would be the adaptable PB-14, most often utilized by the Venture and Caracal light cruisers. A number of advances had been made in both warp coil production methods and their layouts within a nacelle; as the PB-14s were largely made available with the older classes retiring, this gave the machining labs plenty of candidates with which to work.

The nacelle that was used to establish the ultimate pylon configuration to best test the concept of multi-lobed warp bubbles around a general heavy cruiser design was designated as PB-14-099, a minimally modified mainline PB-14. Sensors were added directly to the nacelle to determine both baseline field results and deviations from the differing pylon lengths and placements. At least 8 such nacelles were altered to the same specifications, different only in the weld locations for the external connections to the pylons.

The PB-14-100 never actually entered the workshop's doors, remaining conjectural. Based on the initial flight tests of the Bonaventure in her baseline configuration, it was realized that the interspersed nature of the -100's coils would be slower to achieve the multiple warp field lobes and was dropped.

The PB-14-101 was seen as promising, with two examples completed and ready for mounting. The warp fields in the labs were strong and, most importantly, stable. Every step of the way of design and production development indicated this warp nacelle would move the test ship steadily through each of the warp factors with nary a shudder, providing a moderately safe, moderately performing warp experience. But they would never be mounted.

The ultimate nacelle to be tested, the PB-14-102 was seen as a high-risk nacelle, but it provided something the -101 could not: an in-flight capacity to adapt the emulations of the possible heavy cruiser design permutations, as well as the heavier field loads and stress patterns such a ship might be expected to encounter. This came about because of the addition of an oversized off-axis field controller. Because of the importance of developing a production heavy cruiser sooner than later, it was decided to recognize the pylon lengths had been fully explored and instead focus on nailing down these multiple mission factors. This is the nacelle pair with which the ill-fated Bonaventure is most associated.

GLOSSARY

Array: Generally, a combination of identical sensors, weapons, or other equipment operating in conjunction.

Barge: one of several differing types of vessels, including 1) a low-warp bulk carrier designed to transport unpackaged bulk cargo; 2) an orbital-to-atmosphere combat lander, usually heavily armored and lightly armed, to transport large troop formations into defended surface areas.

C/P/S: Centerline/Port/Starboard (see P/S).

Class: a production run of vessels all to identical (or nearly identical) standards. Ex: the Constitution class

Corvette: Small warp-capable ship dedicated to local patrol, law enforcement and community service missions. Sometimes landing-capable, not dependent on starbase facilities for support.

Cruiser: A medium multi-purpose starship. The largest exploration vessels until the early 24th century, when relegated to other duties with the introduction of large Explorer starships.

Deep space: The region near or beyond the recognized borders of the Federation, often uncharted in any considerable detail.

Destroyer: A medium offense starship intended for destroying enemy capital ships and installations, as well as conducting fleet escorts.

ECS: Earth Cargo Ship, a prefix for vessels flagged under the governing authority of the Earth Cargo Service.

ELRS: Extreme Long Range Sensor

Flight: A modification to a class of ship intended to be incorporated by most or all members of that class.

Flitter: an extremely low-altitude planetary personnel and freight vehicle, utilizing anti-grav hover equipment. Larger vehicles might resemble wheel-less trucks, with the smallest analogues to one- or two-person motorcyles.

Frigate: Until the late 22nd century, a dedicated medium defense and escort starship, larger than corvette but smaller than destroyer, often capable of trans-atmospheric operations. In the 23rd century and into the early 24th century, often used to designate defense and escort starships ranging from small patrol and escort ships typically lacking torpedo armament to versatile multipurpose ships similar to light cruisers.

FTL: abbreviation for Faster Than Light.

GW: GigaWatt

Hopper: a small vehicle designed for atmospheric flight. While some may have limited aerospace capabilities, they are generally utilized for intra- and intercity transport of personnel.

ISA: International Space Agency. Formed by the NUN in 2018 in an effort to coordinate international space exploration missions. Succeeded by both the UESPA and UESN in 2067 and 2069, respectively.

Ishakawa-Dell Barrier: The exponential growth in the power required by early warp nacelles as FTL speeds approached warp factor 6 (on the OCU scale).

Laser: Typically, a secondary weapon on early space vessels. Current shielding technology has largely negated the threat poised by the coherent electromagnetic beam.

M: Meters

M/AM: Matter/Antimatter

MT: Metric Tons

Navigation Light: Yellow in color, these lights are generally located on or near major points of superstructure of a space vessel. They often provide low-emission positioning signals for specific locations on and within the vessel for the purposes of proximity maneuvering by another vessel and relative destination positions for transporters. Not to be confused with red or green running lights.

NCC: Letter prefix in UFP Starfleet vessel registries, anecdotally said to come from the term Naval Construction Contract. Current usage has letter N signifying UFP registry, and CC signifying active Star Fleet forces.

Nearspace: The region of the Federation considered to be internal, fully charted, and uncontested.

NUN: New United Nations. Formed in 2011, first dissolved in 2053 (during the Third World War), re-formed in 2065 (two years following First Contact), then finally dissolved in 2079. Authorized the formation of the ISA (2018), UESPA (2067), UEDP and UESN (both 2069). Succeeded by the UEDP.

GLOSSARY (CONTINUED)

OCU: Original Cochrane Units, representing the original warp scale, where the warp factor cubed was the velocity in c, the speed of light.

Operational Standard: the description and designation for a previous testbed or prototype vessel that has been made operational, though not necessarily to the standards of the official class. Ex: USS Constellation (operational standard)

P/S: Port/Starboard; left & right side, respectively, in naval parlance.

Particle Cannon: A primary or secondary weapon on some early space vessels, though generally replaced by phaser technology. The weapon accelerated charged or neutral matter (or antimatter) particles to relativistic speeds. Also commonly known as phase cannons.

Phase Cannon: (see Particle Cannon)

Phaser: A directed-energy/particle weapon in common use aboard Star Fleet vessels, as well as other UFP and foreign fleets. Based upon rapid nadion effect, it generates a wide-band particle beam utilizing both electromagnetic and subspace components.

Plasma Cannon: A projectile weapon in common use aboard early space vessels. A sublight weapon, the cannon generates, contains, and directs the release of ionized matter.The weapon is often complemented by particle and/or laser weapon systems.

Prototype: a vessel constructed (or modified) to perform tests and trials of a potential new class (or subclass) of ship.

Running Light: Red (port/left) and green (starboard/right) lights traditionally denoting the observed side of a water vessel under low light conditions. Utilized for similar purposes by space vessels of the UFP,though generally for rapid orientation by the pilots/helms of other vessels maneuvering in close proximity. Not to be confused with yellow navigation lights.

SCE: (see Star Fleet Corps of Engineers)

Scout: A small to medium, fast research and/or reconnaissance space vessel, equipped with extensive sensor and research equipment. Though protected by defensive energy weapons, most substitute probe launchers for torpedoes.

Series: a succession of vessels all deriving from one standard, comprised of the original class, subclasses, flights, and types. Ex: the Constitution series

Shuttle: An auxiliary craft carried by larger vessels for orbit-to-ground transportation or detached operations. Also used for starbase liaison duties.

Shuttlepod: Very small auxiliary craft used for ship-to-ship or orbit-to-ground transportation, free-space maintenance, and repair work, and detached operations of a very limited nature. Usually not equipped with a warp drive.

Star Fleet: The primary exploration and defense organization of the UFP.Formed in 2161 to protect the integrity of the Federation and the safety of its members and to expand the knowledge of the member cultures.

Star Fleet Corps of Engineers: the special construction, maintenance, repair, and public engineering management agency (an echelon of Star Fleet Engineering) for both Star Fleet and the Federation. The SCE is often tasked with building and maintaining facilities both standard and exotic, as well as providing rapid response to engineering problems that occur far from Federation resources.

Starfleet: Short-hand name for the United Earth Starfleet (UESF), the primary exploration and defense organization of United Earth 2033-2161. Not to be confused with the UFP Star Fleet. Renamed Earth Fleet upon the formation of the United Federation of Planets.

STL: abbreviation for Slower Than Light.

Subclass: A significant variant of a given class of ship, usually newbuilds, though sometimes including important modifications to existing ships, that are not intended to replace the existing ships of the original class. Often named for the first ship to reach that final intended production standard.

Tender: An auxiliary vessel specifically designed for deep space replenishment and support of starships and other vessels. While often equipped with a tractor device, the inability to efficiently tow another vessel in warp distinguishes the tender from a tug.

Testbed: a vessel constructed (or modified) as a platform to test new technologies, with the vessel not necessarily transitioning to an operational status.

TNG: Terrance-Neltorr Graduated scale where upon each full warp factor is achieved when a certain number of cochranes were met in output, resulting in more efficient engine plateaus. In this scale, Warp 10 is unattainable.

Torpedo: The general designation for warp-capable guided projectile weapons, in contrast to sublight-only guided missiles.

GLOSSARY (CONTINUED)

Transport: A Starship or other vessel dedicated to transporting passengers or cargo. They range in size from small two- or three-crew ships to huge starships and freighters.

Transwarp Drive: The common name for drive systems capable of higher speeds and efficiences than the warp drive currently in use throughout the Federation. Promising venues of research include deep subspace immersion, new power regulation methods, dimensional rift techniques, and time manipulation. No practical drives of these types are yet available at this time.

Tug: 1) A warp-powered ship specifically designed to extend her warp field around objects that can thereafter be towed at warp speeds. Primarily used for the carriage of transport pods and towing of disabled starships or other equipment lacking appropriate motive capabilities.
2) A craft designed to propel ships or equipment lacking motive power about a limited area of operation, such as a space dock or construction site. May also refer to such a vessel intended to assist ships maneuvering within and in the vicinity of docking facilities.

TW: TerraWatt

Tyme Barrier: The exponential growth in the power required by early warp nacelles as FTL speeds approached warp factor 7 (on the OCU scale).

Type: a variant to a class, subclass, or flight that is extremely limited in numbers and not intended to supplant the origin category. Oftentimes used to explore potential variations for future upgrades. Ex: the Bonhomme Richard subclass (Type 2)

UEDP: United Earth Defense Pact. Formed by the NUN in 2069 to put the "Earth's ascendancy and safety ahead of national goals". Tasked with the combined command and control of the planet's various armed forces, it became the de facto world government upon the NUN's second dissolution in 2079, until superseded by the United Earth government in 2130.

UES: United Earth Ship. Ship prefix for the names of vessels of the UESN.

UESF: (see Starfleet)

UESN: United Earth Stellar Navy. Predecessor to the UESF. Formed under the authority of the United Earth Defense Pact in 2069.

UESPA: United Earth Space Probe Agency. Formed by the NUN in 2067, relieving the ISA of the coordination and development of human presence in interstellar space. Re-purposed as the exploration arm of the NUN in 2069.

UESS: United Earth Space Ship. Ship prefix for the names of vessels of the United Earth Starfleet.

UFP: United Federation of Planets. Formed in 2161 by a coalition of United Earth, the Andorian Empire, Tellar, Alpha Centauri, and the Confederacy of Vulcan, following the Romulan War.

UFP SF: (see Star Fleet)

USS: UFP Star Fleet Starship. Ship prefix for the names of Star Fleet vessels, emblazed on ship hulls (along with the ship's registry number). Commonly abbreviated as "United Starship" in verbal communication, although the expressions "United Spaceship" and "Federation Starship" are also frequently used.

Work Pod: The general name for manned, sub-impulse craft used for construction, maintenance, repair, and other service tasks in space. A variety of external tools and modules are attached to the work pods to facilitate a multitude of tasks.

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