STAR TREK
THE NEXT GENERATION

U.S.S. ENTERPRISE™ NCC-1701-D

BLUEPRINTS

RICK STERNBACH

GALAXY CLASS STARSHIP
DEVELOPMENT PROJECT
UTOPIA PLANITIA STARFLEET YARDS, MARS

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THE NEXT GENERATION®

U.S.S. ENTERPRISE NCC-1701-D
BLUEPRINTS

BY

RICK STERNBACH

with

TODD GUENTHER
JEANNE L. ROGERS
DAN GAUTHIER

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FOREWORD BY ROBERT H. JUSTMAN

SEASON ONE SUPERVISING PRODUCER
STAR TREK: THE NEXT GENERATION

It was mid-December 1986 when I walked from my temporary office into Gene Roddenberry's temporary next-door office upstairs on the second floor of what was then called "L" Building at Paramount Studios. As usual, I didn't knock before entering; we always just breezed in and out whenever the need arose for either a serious consultation or some monkey business. Monkey business was more fun but we knew we had to face up to the enormous task looming before us: we actually had to go ahead and make a new STAR TREK. That we eventually did so was more than a testament to unbridled optimism and foolhardiness than to the few remaining vestiges of common sense we still possessed.

By that sunny Thursday afternoon, we still hadn't come up with a title for the new show; we just called it "the new show." The title was sure to come, as were the show's format, cast, and design elements. After all, wasn't getting there half the fun? Maybe. Then again, maybe not. (Some months later, after perusing my two-page list of suggested names, Gene selected STAR TREK: THE NEXT GENERATION. The title seemed apt enough but it certainly wasn't a big surprise. What bothered me was, if it took that long to select a series title, what would we — what *could* we do to actually get the new television series up and running?)

But, in the meantime, there were more pressing matters, like who would write the script for the series opener and would it be a one-hour—or a ninety-minute—or a two-hour film? The studio television execs never seemed to be definite about its length. That was unsettling, but what was even more unsettling was whether Gene would buckle down to do the work, or else hire someone to come up with the goods. I finally talked him into assigning the task to Dorothy C. Fontana so that hurdle was hurdled. However, she wrote it as a "90" because that was what our overseers wanted (they said/we thought). Later, after Dorothy completed the script and Gene (as was his wont) rewrote it and we were closing in on shooting the series opener, at the last minute we were informed by the top brass that "Well, no, we really don't want a '90'; we *need* a two-hour." But, that's a whole 'nother story. (However, I can assure you that Gene was awesome when he was enraged. Shortly after the "two-hour" pronouncement, I gleefully sat in his office one day while he savaged several hapless Paramount Television junior executives who had been sent to take the lumps that upper management really deserved.)

Next came the question of what our new *Starship Enterprise* would look like. We all agreed that it had to be named *Enterprise*. That was the easy part. But, what would it actually look like? Would it look like (in other words, actually *be*) the craft used in the last STAR TREK movie and therefore enable us to save mucho moola or would it be something new, albeit totally familiar? That's easy for me to say now, but way back then in 1986, it was a difficult decision to make. Decisions always are when a choice between art and money is involved.

And, what about the props? Gene was adamant that the new phasers, communicators, and other sundry devices be new, twenty-third—or was it twenty-fourth—century tools. Whatever they were, they had to be designed, and we had no one to do the necessaries. Wah Chang, the talented designer of the original STAR TREK series tricorders and communicators had retired from the show biz wars and was living happily incommunicado way up north in Carmel Valley and he wouldn't come back, no matter what the inducements. (He was a lot smarter than us.)

A phone call from Gene interrupted my flow of complaints. His end of the conversation might have sounded cryptic to anyone else, but I knew Gene well. By listening carefully, I was able to deduce that it was his wife, Majel, calling about her seven o'clock tee-off down at La Costa the next morning in a golf tournament. After all, who else would he call "dear?" While Gene happily assented to leave work as soon as possible and negotiated for a better (not so early in the morning) tee-off time, I glanced around for a place to sit. My session with him was going to take awhile now that I knew he wouldn't be in on Friday. His couch was covered with what appeared to be useless (and unanswered) correspondence. I picked up some large artists' portfolios to make room for some sitting space. Gene was still talking. Idly, I leafed through one of the portfolios. What I saw caused me to catch my breath: drawing after drawing of spaceships, extraterrestrials, space weapons and hardware—you name it. The designs were more than compelling; they were *totally* compelling. I looked for the name of the artist. Andrew Probert? Never heard of him.

I picked up the other portfolio. Rick Sternbach? Again, another blank. But both of the offerings fairly exuded talent. And, we needed — make that *really* needed — design talent. Gene finally hung up; his golf date was now set for nine A.M., a much more civilized time.

"Bob," he said, "I've got an important out-of-town meeting with my financial advisors tomorrow. I'll have to leave now in order to tee — I mean, to make the meeting on time." I fixed him with a baleful glare, which he pretended not to notice. He smiled, all innocence, as he made me a co-conspirator, "So cover for me, will you? I'll be back, raring to go on Monday." I was hot to trot about these two talented artists so I ignored the obvious and instead queried him about the portfolios, "Who are these sketch artists? Do you know them? When did you get all of this?"

"Beats me," he responded. "All this stuff was already sitting here waiting for me when we moved in. I've been so busy, I haven't gotten around to looking at them yet." A thought struck him, "Why don't you take a look?"

"Okay," I replied, casually. But I had already made up my mind. These guys, whoever they were, had the right stuff. They could help us design a new *Enterprise*, a new set of hand props, and a whole totally new (yet totally familiar) look for the series.

By December 29, 1986, I had sent out a memo to the studio requesting office space for a veritable slew of new staff members. Requirements for the month of January 1987 included a producer/writer (yet to be hired), his secretary (yet to be hired), an art director (yet to be hired), a set designer (yet to be hired), and two designer/illustrators (hired): Rick Sternbach and Andy Probert. Other staff members (yet to be hired) would come on board during the succeeding months.

Aside from Rick and Andy, only one other person ever applied. That one other person wrote to me from his home in Honolulu. I gathered from his letter that he wanted to work with us and was willing to swim over if necessary. So I hired graphic artist/wizard Michael Okuda and flew him over for a two-week engagement "to help out." Somehow those two weeks stretched out into ten years. He never went back to Hawaii. And he got married, to boot. And his wife, Denise, worked on the show, too.

So, from the very beginning, Rick Sternbach was involved in the making of STAR TREK: THE NEXT GENERATION. He and Andy Probert and Michael Okuda more than fulfilled my highest hopes. And, after that first season, Rick continued to provide his talent and creativity to the six succeeding years of STAR TREK: THE NEXT GENERATION as well as STAR TREK: DEEP SPACE NINE and STAR TREK VOYAGER.

And now, once more, Rick Sternbach, the author and designer of this incredibly detailed and infinitely complicated (IDIC) blueprint layout of the *Starship Enterprise*, continues to fulfill the promise contained within the portfolio he submitted that I happened to stumble across ten years ago.

Lord, how the time flies when you're having fun.

AUTHOR'S INTRODUCTION

The *Enterprise* is dead. Long live the *Enterprise*.

While it is with perhaps some sadness that we present this collection of drawings—blueprints of a starship that will never again jaunt at warp speed from star to star—we can at least take comfort in the idea that the *Galaxy*-class *U.S.S. Enterprise* lives on in the imaginations of the myriad viewers of STAR TREK: THE NEXT GENERATION. There is much bound up in that imagined tritanium hull still to be explored, a ship to transport us on journeys not yet taken, commanded by crews yet to receive their commissions, on adventures to be cleverly wedged between the time of her launching in 2363 and her premature demise in 2372.

The *U.S.S. Enterprise* depicted within these blueprints takes her place in history as a mighty flagship of Starfleet Command and the very pinnacle of technological achievement of the United Federation of Planets. This status has been claimed by five other proud starships, each bearing the name *Enterprise*, each forever engraved with the registry number NCC-1701. The long history of vessels called *Enterprise*, both naval and interstellar, is a major component of a larger, logically thought out and deeply detailed fictional universe, given life almost thirty years ago. Devotees of STAR TREK have taken to drawing Starfleet's finest vessels, modifying them, inventing new types. Many of these people have offered us a look at their sketches, their very personal views of *their* ships. (Clearly, future spacecraft engineers are already hard at work!)

The accessibility of this universe has led so many to develop a keen interest in the mechanics of fictional spaceflight that this is not the first time a starship has been cleanly sliced into visible layers, nor will it be the last. It should be noted, however, that this particular set of blueprints benefits from information gleaned directly from the archives of the STAR TREK: THE NEXT GENERATION production offices.

It is this author's intent to show one possible internal arrangement of the *Enterprise*. The word *possible* is of utmost importance, because it leaves a great deal to the reader's imagination. The *Enterprise* is, and always will be, a starship of the imagination. It will always mean something different to each person who walks its corridors and opens its doors. The blueprints offer a look at most of the interesting parts of the ship, but not in as minute detail as one might think. Not all of the rooms or bits of hardware, for instance, are labeled. Rather, the reader is free to designate many of these as he or she sees fit, working within the same rules of the STAR TREK world as we did when we worked on the television production. If the readers disagree with any elements presented herein, they are encouraged to make structural improvements, invent new procedures, initiate discussions on-line, and generally keep the most famous interstellar spaceship alive and well.

Within this booklet, we offer a little visit outside the STAR TREK scenario, as it were, with some of the minds behind the starship, as they speak to us about the history of the design of the "D ship," the construction and filming of the miniature, and comments about the desire to make technical drawings.

Acknowledgments

As with the production of STAR TREK in its many forms, this project was the result of the efforts of many teams of people. My thanks to Gene Roddenberry, Robert Justman, Eddie Milkis, Dorothy Fontana, and David Gerrold, with whom we began the journey; to Rick Berman, Michael Piller, and Jeri Taylor, with whom we continue the journey aboard STAR TREK VOYAGER; and the many STAR TREK: THE NEXT GENERATION writers and producers whose imaginative stories have made the numerous living quarters, laboratories, lounges, and maintenance bays forever a part of the *Enterprise*. The author acknowledges the

disciplined and inventive design sense brought to the deck drawings and room layouts by Todd Guenther. A heartfelt thank you goes to Jeanne L. Rogers, who has transmuted the penciled structural elements of the ship into sharp reality with her lines of ink. To Dan Gauthier, a fellow space enthusiast, a round of applause for his toils rendering the exterior of the starship in computer form. I had, from the beginning of this work, always intended to acknowledge Edwin Lee Zamora's own pioneering efforts to flesh out the volume of the ship, followed soon thereafter by Christopher Cushman and Gary E. Richardson with their perspective cutaway poster. While the current blueprint avatar of the *Enterprise* bears a fleeting resemblance to these previous works—form, function, established episode set design, and technical material actually governed how everything looked—it must be said that these works provided both welcome inspiration and an appreciation of the overwhelming size of the starship.

Tracing that inspirational path backward is like finding the first trickling sources of a long, winding river. I salute the late Joseph Schnaubelt, better known as Franz Joseph, who produced the first *General Booklet of Plans* of the original *U.S.S. Enterprise* NCC-1701 in 1973. Wide rectangular sheets showed every deck, every scrap of furniture, all of the wonderful invented spaces of the great machine. Twenty-two years later, I still have my copy.

When Mike Okuda and I completed the *Star Trek: The Next Generation Technical Manual*, we cited the many talents responsible for the design of the *Enterprise*. The names of these colleagues bear repeating, as it is their diligent work upon which the blueprint team drew to crystallize the plans of the ship: production designers Herman Zimmerman and Richard James, who both helmed the art department crew, which included Jim Bayliss, Charlie Daboub, Wendy Drapanas, John Dwyer, Les Gobrugge, Joseph Hodges, Dan Jennings, Paul McKenzie, Richard "Spuds" McKenzie, Jim Magdaleno, Masako Matsuda, Jim Mees, Andy Neskoromny, Greg Papalia, Tony Sears, Elaine Sokoloff, Gary Speckman, Cari Thomas, and Sandy Veneziano.

To Doug Drexler, who spends his days in the STAR TREK: DEEP SPACE NINE Art Department, I give a very special tip of the hat for tolerating endless questions in my remedial training on Adobe Illustrator and for freeing up the scanner at odd times. My thanks also to John Goodson, late of the STAR TREK GENERATIONS model shop at Industrial Light and Magic, for assembling the photo references of the refurbished *Enterprise* miniature. Mike Okuda is deserving of another special mention for facilitating certain required graphic elements of this project. Mike, you know what you did. Many thanks. To Kevin Ryan at Pocket Books, my thanks for unflagging support and infinite patience in making this project a reality.

To my wife, Diane, I give my thanks for her boundless love and support, and her time in burnishing down a large fraction of the ship's almost too many rooms and lifeboats onto the inked decks.

—Rick Sternbach

THE ROUND TABLE

In the course of seven seasons of STAR TREK: THE NEXT GENERATION, beginning in 1986, a number of key craftspeople worked to make the *Galaxy*-class *U.S.S. Enterprise* a real place for the television audience, as their counterparts had done for the original NCC-1701 in the 1960s.

One of the first of these people was Andrew Probert. No stranger to the STAR TREK universe, Probert was heavily involved in the 1978 production of STAR TREK: THE MOTION PICTURE while working at Robert Abel and Associates and later with Douglas Trumbull, ultimately charged with the visual effects tasks for that film. Probert, joined by technical illustrator David Kimble, fleshed out the refitted NCC-1701 and numerous other spacecraft and bits of hardware. It was by no sheer coincidence that Andy Probert was one of the first designers hired on to create the new *Enterprise* for STAR TREK: THE NEXT GENERATION.

Robert H. Justman was present at the beginnings of the STAR TREK universe, when the *Enterprise* first traveled the airwaves of 1966, and returned to become supervising producer for the first season of STAR TREK: THE NEXT GENERATION. Science fiction fans will know him from his earlier contributions to *The Outer Limits*, and some may also know that he helped bring the prophetic Walt Disney "Man in Space" series to the screen in the 1950s, working alongside veteran animator Ward Kimball.

Herman Zimmerman helmed the first season of STAR TREK: THE NEXT GENERATION as production designer, a few years later performing the same function on STAR TREK: DEEP SPACE NINE. Herman also took on the production design tasks of STAR TREK V: THE FINAL FRONTIER, STAR TREK VI: THE UNDISCOVERED COUNTRY, STAR TREK GENERATIONS, as well as the feature film *Black Rain*.

Richard James brought his production design talents to STAR TREK: THE NEXT GENERATION for the last six seasons, and has continued to evolve a new look for STAR TREK: VOYAGER. He brings a familiarity with technology from his days at North American Aviation on the Apollo lunar program, as well as art director experience on *Battlestar Galactica* and the feature film *The Beast*.

Dan Curry, as anyone who knows him even slightly well can attest, is a uniquely interesting personnage, not only for his extensive knowledge of the martial arts and bladed weapons, but for his experience supervising construction projects in the Thai countryside. The fact that Dan is also visual effects producer for STAR TREK: VOYAGER, STAR TREK: DEEP SPACE NINE (and before that STAR TREK: THE NEXT GENERATION), as well as a director and designer of countless film and television title sequences, only reinforces our need to hear his views on the *Enterprise*.

Michael Okuda came to STAR TREK: THE NEXT GENERATION in 1987 supposedly for four weeks' work designing control panels, and never left. As scenic art supervisor for STAR TREK:

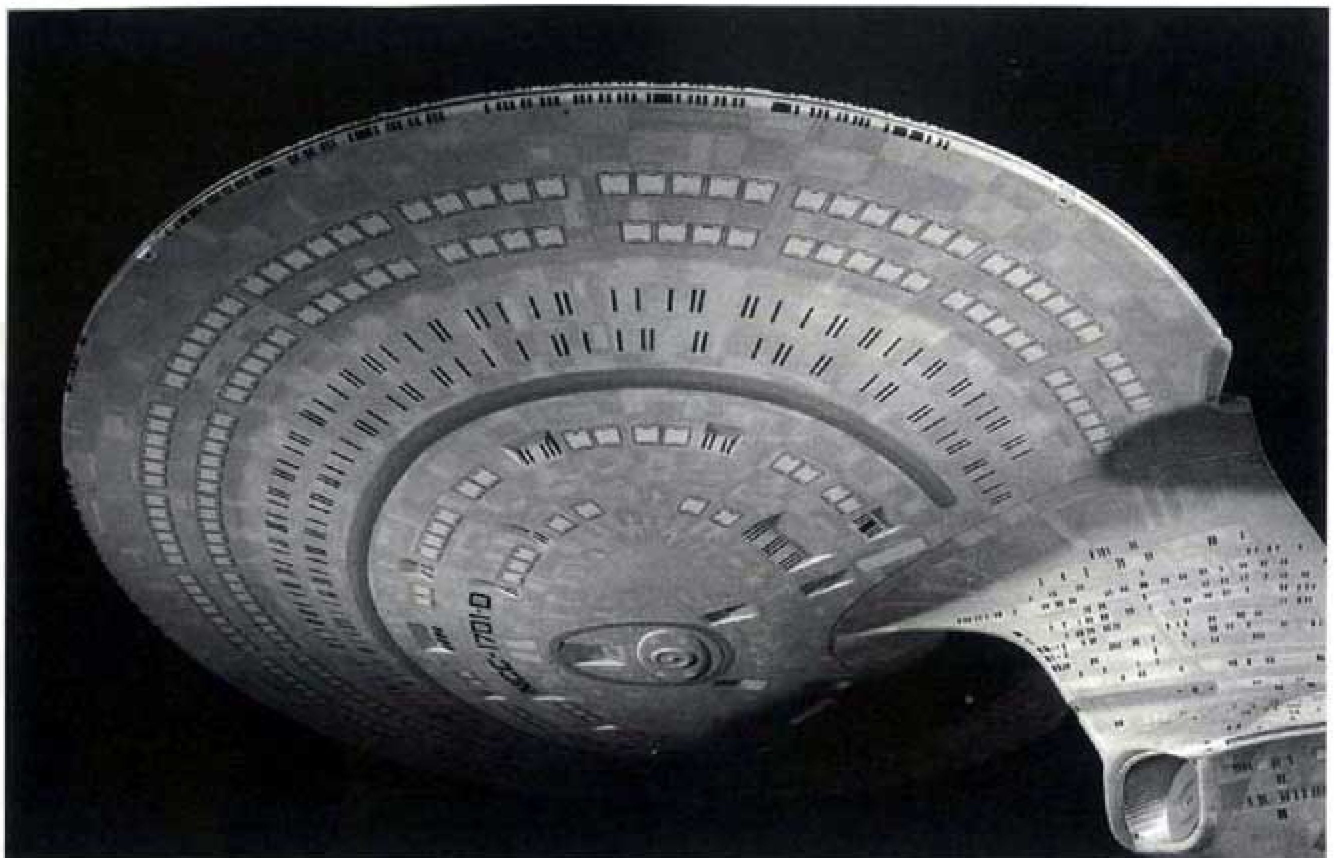

Fig. 1 Exterior hull details for the blueprints were gleaned from photos such as this view of the underside of the six-foot Enterprise miniature, newly refurbished by ILM for Star Trek Generations. Many visible features, including the lifeboats, phaser strips, crew quarters windows, and captain's yacht determined the sizes and locations of the interior spaces.

THE NEXT GENERATION, STAR TREK: DEEP SPACE NINE, and now STAR TREK VOYAGER, Mike has established the most recognizable graphic elements of the current STAR TREK world, creating new styles of static signage and animated computer readouts. Knowledgeable and opinionated about a variety of scientific and technical subjects, he is the co-author of the *Star Trek: The Next Generation Technical Manual*, and lead author on the *Star Trek Chronology* and the *Star Trek Encyclopedia*.

Greg Jein's miniature work is well known to millions of filmgoers in both science fiction and mainstream classics such as *Dark Star*, *Close Encounters of the Third Kind*, and *The Hunt for Red October*. He helped to fashion Probert's drawings into the solid form of the six-foot photographic miniature of the *Enterprise* -D at Industrial Light and Magic, and later was contracted to build the more detailed and eminently more manageable four-footer. For STAR TREK: THE NEXT GENERATION his shop also provided such ships as the Klingon Attack Cruiser, *Enterprise* -C, and the Romulan Warbird.

Todd Guenther is joining this discussion at the behest of your author. He is perhaps best known in the fan press for his crisp, detailed starship drawings in the style of today's *Jane's Fighting Ships*.

In the following pages, these talented people have joined this author in a round table discussion of the *U.S.S. Enterprise*.

Sternbach: What do you think is the appeal of being able to create and study a set of blueprints, particularly of a giant vessel like the *Enterprise*?

Probert: I think that blueprints makes these fantasy items seem more real. People are used to having to build real things such as houses and cars and planes and boats from blueprints, and that produces real items. So when they see blueprints of fantasy items, it gives those fantasy items more validity. In regard to the Franz Joseph plans of the original *Enterprise*, at the time, I found them to be great fun, exploring all the areas and trying to figure out where everything was, looking at certain areas while I was watching the show.

Zimmerman: There's a sense of scale that you don't really have, even if you're standing on the bridge, or in Engineering, that you must imagine if you want a sense of what it would be like to be on a starship of that size. Unfortunately, without the physical nooks and crannies to peer into, or the long corridors to walk, and the turbolifts that really take you from one end to another, your imagination must be your guide. And certainly a really well-documented, exploded view of the ship gives you the opportunity to do that. I was on the *Enterprise* aircraft carrier, which is enormous compared to the office we're sitting in. I couldn't explore every nook and cranny of that ship, even though I probably could gain access. A lot of it would be boring, one similar cubicle after another, but a lot of it would be also be fascinating, because the important nerve centers of the ship—the bridge, the operations center, communications—are really exciting places to be, just as those sets that we have created are the exciting places to be. The rest of the ship, as needed, we'd build sets for, but we really were able to manufacture the drama in the handful of sets that coexisted on a vessel like the *Enterprise*.

Guenther: The visual look of that first Star Trek feature, I fell in love with; I was very impressed by it. Of course, those first blueprints from Franz Joseph, and that first technical manual. Also those first blueprints of the feature *Enterprise* by David Kimble. I recall an interview where Kimble thought some of his colleagues were getting very serious about this stuff, and he said, "Guys, this is fiction." But they had this desire to make the blueprints, to make it as real as they could within the limits of what they knew.

Sternbach: Do you think this may be a desire to explore a new place? Is the exploration of these spaces a driving urge?

Okuda: I think the desire grows out of the charm of the Star Trek universe. Part of the charm is that we have this future world, this imaginary world, that seems to be fun to be in. It would be *fun* to be on the *Enterprise*, boldly going where none have gone before. Another is that if you look at the Star Trek universe closely, you'll see that for the most part it pretty much makes sense. The more you read about it, the more diagrams you see, the time lines, and the character sketches, and the cultural studies—all let the Star Trek enthusiast vicariously put him or herself in that universe. It's partly to document, certainly, what was on the television show, but the purpose of it is to allow the viewers to explore the *Enterprise* in greater detail than you could by just watching the television show.

Sternbach: But people will still be able to relate to the unknown areas.

Okuda: Certainly. We didn't see more than perhaps ten percent of the ship, but from that ten percent, and seeing it every week under different conditions, we got a very good idea of what the remaining ninety percent must be like.

Sternbach: When we superimposed a drawing of the *Enterprise* over a map of the Paramount lot in the *Star Trek: The Next Generation Writer's Technical Guide*, we were truly aware that this was an enormous vessel, since the ship overhung the studio on all four sides. How did we get a sense of scale in the miniature?

Justman: With the *Enterprise*, the idea of human scale was terribly important. Let me read something to you from the script describing the opening title. "Now, from behind camera, the *Enterprise* slowly enters frame. This time, we're shooting slightly down on it. As the huge saucer section passes close by below us, we can see the bridge superstructure outlined in the center. In the windows of the conference room, below and behind the bridge, we can discern movement in the small silhouettes of human figures." That's the point I'm getting to. If you could see it on the screen, it made the scale.

Sternbach: ILM's cel animation did exactly that. The strange thing is, if it isn't pointed out to you, you may not notice it. But once you see it, you'll never miss it again. Andy, how did you go about designing the *Enterprise*-D?

Probert: Before I actually started on the show, I was eager to produce a new version of the *Enterprise*, and went ahead and started doing sketches on my own, just out of my own enthusiasm. Strangely enough, shortly after I did Star Trek: The Motion Picture, back in 1978 and 1979, I actually did a little painting of a ship that would have been the *Enterprise* had I been able to take it fully in the direction I wanted to take it. That painting became the basis for the D *Enterprise*. I was able then to go back to that gee-what-if drawing and flesh it out. But my first assignment on Star Trek: The Next Generation was to design the bridge. So I had some drawings of the *Enterprise* exterior around the office, and one day, while I was working, David Gerrold pointed to one of the drawings and asked, "Is that what the new *Enterprise* is going to look like?" and I said, "Well, I don't know, I really haven't even talked to Gene about it. I've been working on the bridge." And he just plucked it off the wall, ran into Gene's office, and said, "What do you guys think about this?" And they bought it, right then. For Hollywood, it's unbelievably amazing.

Sternbach: Was that ship drawing close to the final look?

Probert: It was about ninety-five percent there. I gave it very short nacelles, short relative to the size of the overall ship. My thinking was that the power capabilities of the ship had gone way up. There were only two changes that Gene actually made. When I did my exterior, I didn't have a bridge bubble up on top, because I felt that in a ship that size, the bridge, being the center of command, should be in the center of the saucer. Gene wanted the bridge on top of the saucer, so that everybody would be able, in their minds, to scale the rest of the ship, and he wanted to pull the engines out longer, to make them a little bit more like the original *Enterprise*.

Sternbach: The bridge had traditionally been located on the exterior of the other starships, right?

Probert: But those were smaller ships, half the size of this *Enterprise*. I just felt that even putting it in the center of the saucer, it would still have the electronic visual capabilities.

Sternbach: It would certainly have been well protected.

Probert: Which was another one of my considerations. Gene and Bob Justman both felt that the ship's defenses could protect it no matter where it was, even as exposed as it was on the top of the ship.

Sternbach: What were some of the design considerations carried over from the 1701-A?

Probert: While I was working on the new show, I was very much aware of the anxiety level of the fans, who thought that we were going to replace their classic STAR TREK with something flashy and new. So to ease their apprehensions, I borrowed heavily from the past *Enterprises* for two reasons: One, Gene always felt that the *Enterprise* was one of the characters of the show, and so he didn't want it changed dramatically. There was to be some visual cue as to its lineage. But additionally, if you look at industry, a truck of today looks very much like a truck of a hundred years ago, because they perform the same functions. So I felt that the starships would be performing the same functions as well. The double engines had always been visible on the starships. Gene stated emphatically that there were no three-engined starships, and no one-engined destroyers—not in his universe. Warp engines worked in tandem or in pairs. The *Enterprise* remained a two-engined ship. It continued to be powered in its sublight capabilities by impulse engines. From STAR TREK: THE MOTION PICTURE, it retained its forward photon torpedoes. However, I added a rear-firing photon torpedo in place of the old hanger deck, and moved the hangers up closer to the main populace of the ship.

Sternbach: What about the exterior details, like the phasers? In classic STAR TREK, the ship's phaser beams didn't seem to come from anywhere in particular.

Probert: In classic STAR TREK the phasers came from the Special Effects department. They had nothing to do with any feature on the outside of the original *Enterprise*. The phasers came out of the photon torpedo tube and vice versa: very confusing. When we did STAR TREK: THE MOTION PICTURE, I felt it was important to give the effects animators as well as the audience an understanding of where the armament was on the *Enterprise*. So, I designed the bubble housings for the phaser banks. When it came time to do STAR TREK: THE NEXT GENERATION, I started thinking about today's navy, particularly the *Enterprise* aircraft carrier, which has a reason for its square island and its four huge radar antennae that don't turn like the old radar antennae do. They're mounted to cover the four quadrants of the space around the carrier. And I got to thinking that having little electronic turrets or phaser bubbles on the feature *Enterprise* was starting to look a little archaic. I thought it would be interesting to encircle vast areas of the ship with one single phaser strip, whereby the computer would be able to determine from a moving target what would be the most optimum angle to fire at that target. So if the *Enterprise* was passing a moving target, the phaser beam would visually walk around the strip as the computer continually updated that angle of fire.

Sternbach: And you eliminated one torpedo launcher from the forward dorsal area.

Probert: I figured that advanced technology would allow a single photon tube to reload faster, plus it didn't make any bulgy things on the side of my dorsal.

Sternbach: You mentioned once that the saucer module was supposed to have been equipped with landing gear. Had we known about footpads, the *Star Trek: The Next Generation Technical Manual* and possibly STAR TREK GENERATIONS might have turned out differently.

Probert: Well, that's not your fault. The *Enterprise* saucer was always designed to separate from the Engineering section. I knew about this when I did STAR TREK: THE MOTION PICTURE. And if you look at the bottom of Kirk's *Enterprise*, you'll notice two triangular items, which are two of the landing feet for the saucer. Regardless of whether it was Matt Jeffries's original intention or not, it's sort of the way that Trekdom or STAR TREK lore has labeled those features. So taking my cue from that for STAR TREK: THE MOTION PICTURE, I placed four landing legs in the bottom of the *Enterprise* and created a very specific separation line on the dorsal. When we did STAR TREK: THE NEXT GENERATION, the producers told me that the *Enterprise* would have a battle section, and that it would separate from the main ship, and so my early drawings reflected a vessel nestled into the saucer, one that would separate out of the saucer as a smaller battleship. As we got further into our discussions, the producers revealed that the saucer would be separating, leaving the engineering hull to be the battle section. Then I had to switch gears and come up with a way that the two ships would join that wouldn't break up the lines that had already been designed and approved.

Sternbach: But in the fracas, the feet got left off.

Probert: At that point in the production, they were in such a hurry to get drawings and plans of the ship from which they could start building that the idea of the saucer—which was frankly longer than the movie *Enterprise*—having landing legs escaped my attention.

Sternbach: Had you given the saucer its feet?

Probert: The producers would have crashed it anyway [chuckle].

Sternbach: Over the years we received numerous calls and letters asking about the true color of the *Enterprise* D. We know the color of the miniature, but does that give us the definitive answer? In classic STAR TREK, sometimes the film made the ship look very blue, even though the miniature itself was a warm gray.

Probert: But what you see on the screen is what you come to know, regardless of what the real color of the ship is. When I did the *Enterprise* D, in my attempt at easing the visual move into a new shape *Enterprise*, looking a lot of footage of classic STAR TREK and all of the *Enterprise* flybys, I specified the color to be very subtle shades of blues and greens.

Okuda: I think the question as to what the color of the *Enter-*

prise is becomes something of a philosophical question. The actual color of the photographic miniature is an interesting combination of light blue and green, and light green and blue. On the other hand, what is the *Enterprise*? Is it the miniature or is it what you see on television? Is the *Enterprise* those sets that we built on Stages 8 and 9? To whatever extent that the *Enterprise* has reality, it's a creature of the imagination, so I would argue that the *Enterprise* is not that photographic miniature, is not those sets, but rather it's a creature that lives on television and in the minds of the viewers. Even though the miniature is blue-green, certainly the model I would build, I would paint in the colors I saw on television, because that to my mind is the real *Enterprise*.

Sternbach: We'll talk about the expanding use of computer-generated imagery (CGI) later, but in designing a starship, do you think that the *Enterprise* D might have emerged with a different look had you started with the computer?

Probert: My initial concepts are still done by hand. I find it a lot easier to sketch with pen and paper on my lap than to move a "bar of soap" around, which is what it's like drawing with a mouse. There still isn't the immediate response of pen and paper. Today, once I find something that feels good, once it feels like the direction I want to take the design, I can then build it in the computer and, almost invariably, when it becomes a 3-D shape, there are some refinements I may want to incorporate that would not occur to me by just drawing it on paper. For a ship as organically shaped as the D *Enterprise*, if I'd have gone into CGI, it probably would have taken me longer to come up with the drawings. The shapes were about as defined as they could have been, working on flat paper, 'guesstimating' what the shapes would look like from six views. ILM took those drawings, and they did an amazing job coming up with what I had in mind. I was very impressed with the work that they had put into the ship. The first thing that they had sent us was a two-foot maquette based on the drawings that we had sent up. The only thing that I had guessed wrong, in defining the shape of the ship from six views, was the shape of the wing as seen from the top and bottom. I felt the most important profile was the side view. Looking at the wing top or bottom produced a different wing shape than seen from the side.

Justman: Once we had all the working drawings for the exterior of the ship, I put it out for bids to a number of optical special effects houses, including ILM, Apogee, and DreamQuest. All of them received copies of the main title sequence and a list of library shots which we would need for various episodes. Of the five we contacted, four were in the Los Angeles area; only ILM was out of town, up in Marin County.

Jein: Once we got the drawings and the approval, after all the bids from all the other companies came in, ILM got the contract. Jeff Mann was the head of the model shop at that time, and I was the lead man on the patterns. So we just interpreted Andy's drawings as best we could.

Sternbach: From your work on the six-foot model, had you developed a natural understanding of it as a starship?

Jein: No, the internal operation of it I'm not that well versed in. Its physical signature, on the other hand, I'm somewhat more well versed in. For filming, what was needed was a mechanical thing, once they figured out where they wanted the mounts and we decided where the bulkheads would go.

Sternbach: Dan, what are your recollections of interacting with the *Enterprise*, once the miniature had been delivered?

Curry: We had the six-footer and we also had the two-footer, and something that must have been intellectually interesting to Andy was the idea of this perfectly smooth ship that was absolutely huge, and if you saw it in person the scale would be readily apparent. But when we photographed the big ship very smooth, we couldn't tell the difference between it and a very small ship very smooth, because photographically, particularly on television and in order to create that sense of scale and hugeness, we needed three-dimensional relief, something to cast shadows. That's why we built the four-footer. And also because the six-footer was really too big to be manageable, particularly when we shot matte passes, where you have to have enough lit card behind the ship to obtain a silhouette.

Sternbach: The illuminated card and the dark ship gave you the sharp contrast you needed to pull the photographic matte.

Curry: Correct. So if you had a big move going around it, it would sometimes take a day to get the matte pass because the ship was so huge. And so the four-footer turned out to be a more manageable size.

Sternbach: As I recall, Greg was able to get a little bit more surface relief, more raised detail into it.

Curry: A *lot* more, and deliberately so. The relief scaled it for television. If it were feature, we probably would have had less relief, because you have a bigger space on the screen in which you can see small details.

Justman: On the six-foot model, another two months would have gotten us the detail I wanted and detail I knew Andy wanted, but I had to be practical. We had to get the model photographed and into the show. Although the use of the blue and green paneling worked well, I also asked for more "weathering," to make the surface more believable, even though we're reasonably sure that there's no weathering in space, no grease stains, no oxidation like you would have on an airplane. When you have a completed model like that and it's painted and it looks pristine, it's not believable *because* it's pristine. It needs a certain patchiness to it, and the more detail you can get into a miniature, the more believable it's going to look.

Sternbach: What impressions did you get from the overall shape?

Curry: I love the shape of the *Enterprise*. It's fluid, it's elegant,


DAVID OWEN

Fig.2 Exterior details of the interconnecting dorsal, shuttlebays, and main impulse engine.

it's got a sleekness to it. The fact that the saucer is not a circle but an ellipse reminds me of Trojan shields. It presented an engineering challenge, for sure, with all of the stresses that the armature inside has to take, but I also think it presented a real opportunity. With the six-footer, most of us like the sculptural proportions a little better than on the four-footer. The four-footer is a bit more of a bulldog; it's stockier, whereas the six-footer really has a sleek elegance about it.

Justman: I felt it was a huge step forward, but it also seemed to be a logical extension of where we had gotten up to that point. It was certainly incredibly sleek, and when I first saw Andy Probert's drawing it took me aback for a while. I found it difficult to come to terms with it because the ellipse and all the curves were attractive, but were at first almost threatening compared to the way the ship used to look.

Sternbach: But even the *Enterprise* in classic STAR TREK was a major departure from what people expected of a spaceship.

Justman: Herb Solow and I deal with that in our upcoming book. We devote a section of the book to the fact that the ship looked like nothing that had been imagined. It certainly didn't look like a rocket ship! The *Galaxy* -class *Enterprise* was truly sleek, and I also knew consciously that with so many curves, it would be a bitch to build a model. ILM didn't complain too much to us, although they did among themselves, of course. But I thought it was a terrific design.

Curry: Because we worked with the physical model so closely for seven years, we became very familiar with its parts, what it is, what it looks like, what it does, and I think that we all had a childlike romance with the ship. I think in those who didn't, there was a coldness about it. I know with the motion control guys, even watching people carry the model, there was a reverence about it that exceeded its value as a model, because it was the *Enterprise*.

Sternbach: The photos from ILM of the wonderfully repainted six-footer for STAR TREK GENERATIONS showed much less relief than the four-footer.

Curry: The new paint job was definitely a factor there. Also you're seeing it on the big screen. I would venture to say that when you see that ship in the TV version of STAR TREK GENERATIONS, you'll see some of the things I mentioned. A number of things made the *Enterprise* photographically tricky. One, the nacelles cast shadows in awkward spots. So we had to be very careful, because sometimes the neck would disappear if you lit it at certain angles. So we had to be careful about what angles we shot at. If the nacelle cast a shadow across the neck, you would have the saucer and the lower hull looking as though they were separate and flying in tandem, but not together. After a couple of seasons, we had a tendency to backlight the ship to help make it look bigger. Another thing was that because of the design of the ship, with the body and the saucer, we could only have a top and bottom mount. There are no side mounts or front mounts or rear mounts. So it's very difficult to make the *Enterprise* do a roll. Fortunately it's a big ship, so it never seemed appropriate to make it bank and turn like a fighter.

Sternbach: We got into more extreme moves in the later seasons, if I recall.

Curry: But it never really did harsh banks and turns—on camera. In the escape from the Dyson Sphere ("Relics"), if you remember that show, the ship turned ninety degrees, but we did it in increments of only about twenty-five degrees. We planned it when we designed the sequence that it looked like it rotated ninety degrees, but you never saw it in a single cut.

Sternbach: Ah, very clever. Was there anything you wanted to see on the ship that we didn't have the chance to see?

Curry: I think that there were so many parts that we would talk about but could never see—the dolphin area, for instance. I always wanted to go in the neck, at the front. I would have seen the Main Shuttlebay. I would have loved to have seen the lifeboats. After spending so much time on the sets, but knowing our sets were only a fraction of the *Enterprise*, I find that I like shows where we saw new pieces of the ship, since it gave the audience a feeling that yes, it's a huge space, and we haven't even begun to explore it. There are mysteries yet to be solved on the *Enterprise*; I think that's part of the romance.

Sternbach: We spoke earlier about the scale of the ship. Given its deep-space mission, wasn't it just a bit opulent?

Justman: A lot of that was due to Gene, who wanted it to be comfortable and attractive, so that for a crewperson going out there it should not become oppressive. Gene and I wanted to have a place that was conducive to as comfortable a life as one was able to have on a space mission of perhaps twenty years duration. I sent a number of memos to Gene around October or November of 1986, approximately six months prior to making the first show, among which was the suggestion that we should have families on board. I said that it was unconscionable to expect people to go out into space for X number of years and leave everything they hold most dear behind them. Just because you're on a space exploration, it doesn't mean that you have to give up your life. If you have loved ones, you have family, you should be able to enjoy and live and make your lives together, even though you're out in space.

Sternbach: Even with the risk of encountering hostile forces.

Justman: Even with that risk. For that we provided for the separation capabilities, so that in case of danger or threat to the ship as a whole, if necessary we would send the saucer section away under its own power. Not warp power, but sufficient power to get it away while the battle section went to the fight.

Sternbach: With the inclusion of families, the decor certainly became less military.

Justman: Eddie Milkis (first season producer) and I went to the stage where the feature sets were standing, and we wanted to see if there wasn't a way to "warm up" how the ship looked, because it seemed really oppressive. We created the battle bridge from the feature bridge and built a new main bridge. As a battle bridge, various shades of battleship gray were okay, but for other places to live and work, the ship had to be something else. We attempted to put color into this new *Enterprise*, and the primary motivation for the set inspection that day was to see how to liven up the interior and make it more user-friendly. We then saw that we had a number of things we had to do, the first thing being to revamp the corridors.

Sternbach: To take out the large "K-beams" along the walls.

Justman: Right, to make them wider and longer. By the time we finished what started as a minor revamp, we had redone everything, and there was no way that the sets could be put back to the look of the features. We did a number on them. Of course, once we had Andy's design of the exterior, it was much sleeker, more streamlined; there was no way we could go back and do anything else. We had to have a new ship.

Sternbach: Even with the more friendly interior, the *Enterprise* did find itself in military situations. Did that affect the interior design?

Justman: Yes. For example, I went to Gene and I said, "What we need next to the bridge is a ready room." He wasn't quite sure he knew what I was talking about, because he had been in the Air Force and I had been in the Navy, and having been on a number of fighting ships in the Navy in World War II, I knew that directly behind the bridge, on every fighting ship that I was ever on, there was a captain's ready room, and that ready room was used during times of alert, when we're at battle stations but nothing is happening, and you just can't stay awake for twenty-four or thirty-six hours and not lose efficiency. The ready room was the place where the captain could sack out and rest, but he was next door to the bridge, so if anything arose where he was needed, he would be right there. In the captain's ready room on the last destroyer that I was on, it was just a bunk, a desk, some storage, and communications, and that was about it; it was a tiny room. On a destroyer escort I was on, the captain's ready room was next door to the ship's radio room, where I worked. We always had to be careful about what we did in the radio shack, because if we were too loud or boisterous, or cooked illicit steaks on a hot plate, the captain would either hear us or smell the food!

Sternbach: Herman, how did you go about reinventing the *Enterprise* interior for STAR TREK: THE NEXT GENERATION?

Zimmerman: We inherited Hal Michaelson's sets from STAR TREK: THE MOTION PICTURE, and a good bit of the ideas that were generated from designing the interiors from that movie came from the mind of Mike Minor. He had worked with me some years before; as a matter of fact, he was my assistant and I got him into the union as an art director. I can see Mike's hand in a lot of it. Having inherited those sets, it was partly an economic necessity to make use of them in as practical a way as we could. Because we were building a larger starship, one of the first things that had to be done was to widen the corridors, to make them a little less claustrophobic. Hal Michaelson had done a brilliant job of making the metallic walls and figuring out a way to make straight lines look like the round floor plan of the saucer. Actually, changing those things was a lot simpler than it had been for him to invent them in the first place.

Sternbach: Now when you came aboard—

Zimmerman: We pretty much turned it all upside down!
You and Andy, of course, were hired before I was. There wasn't anything intentional about that; they just had a hard time finding anyone who wanted to be the art director on the show, because a lot of the qualified people didn't want to take a chance on it. They were afraid that it was going to be a failure and didn't want to be a part of another failed television series.

Sternbach: What was the appeal for you of doing a science fiction show?

Zimmerman: Mike Schoenbrun, who was vice president of television production, wanted me to do it. Mike was my friend here at the studio, and I had always admired Gene Roddenberry's work, like *The Questor Tapes* and, of course, STAR TREK, and I was really honored to be asked to work on the show. I had considerable experience doing Saturday morning live-action science fiction, which was always done on a shoestring, not with the élan we were able to give it working with a major studio like Paramount. Nevertheless, that was good training for me.

Sternbach: Did you roll up your sleeves and get right into designing the sets?

Zimmerman: Oh, absolutely. It was a wonderful challenge, and as the exterior of the ship—and the bridge set, particularly—evolved, so did the rest of the production problems: what the doors should look like, what the windows we'll see on the exterior of the ship should look like from the inside. All of those things pretty much fell into place. As an example, in STAR TREK: THE MOTION PICTURE, they had tried to make one-quarter or three-eighth-inch-thick doors, which seemed like a good idea, but very impractical for a television series, and I think impractical for a starship in the final analysis, so I went to regular one and a half-inch-thick doors. I'm sure that not a single Trekker noticed that. We rounded the tops of the doors as we were able to. Budgetwise, we weren't able to do it all in the first season, if you remember. We were able to start spending money on those "frivolous" things about the end of the first season, when we built Ten-Forward. Ten-Forward was the last of the permanent sets that I supervised.

Sternbach: Was the look of STAR TREK: THE NEXT GENERATION an extension of the STAR TREK: THE MOTION PICTURE style?

Zimmerman: I think there were two things operating here: certainly the necessity of being true to the history of the future that had already been established in STAR TREK: THE MOTION PICTURE and indeed in the original television series. There was also Gene Roddenberry's intense desire to make this a ten-year voyage rather than a five-year voyage, to include families, particularly children, and in more comfort than had been imagined on the Starship *Enterprise* originally. Certainly in all the features, the *Enterprise* had been more like a submarine and less like an ocean liner. Gene wanted softer colors, he wanted carpets on the floors, he wanted space to swing your arms. He didn't want everyone to be jammed into tight little tin cans and gasping for oxygen all the time. It was a much more comfortable, user-friendly ship than we had seen before, and all of that was fairly easy to accomplish.

Sternbach: All the while, stylistically, we had to avoid being compared to a hotel—

Zimmerman: Well, we've been called the Hyatt Regency in space. I think this has been true from the very beginning, but we've always looked upon the *Enterprise* as a character in the drama. The *Enterprise* is the life support for all the crewmembers aboard, and it is so vital that every system be online as needed, and whenever anything goes wrong, that we effect repairs expeditiously. One of the really brilliant things about Hal Michaelson's design of the corridors was the aluminum panels, which could be popped off, and behind which you find just about anything. You could find vital equipment, you could find stores, you could find a lifeboat, whatever the particular episode needed just by saying, "We've never seen this part of the corridor before, and this is what its function is."

Sternbach: It was an interesting breakup of the space, to be sure.

Zimmerman: It certainly was, and we made great use of it and continue to make good use of it as a generic interior for Starfleet-style vessels. You say to yourself that there is no squaredness to doors and windows, they're all rounded, some more than others. Everything is made of metal, of course, but its hard edge has been softened by the lines of the openings and the beam structure that we live inside, that contains us within the skin of the vessel.

Justman: And Gene pushed the envelope in a weird way. He insisted that the curved railing on the bridge be wood. I envisioned it as some sleek, smooth metal that was really "out there." And Gene said he wanted it warmer and softer, and more human. Most viewers may not be aware that it is wood. But even though we didn't feature it, we didn't do inserts on it, the feeling comes through, and it helps the viewer deal with the "suspension of disbelief."

Sternbach: Richard, as Herman inherited Harold Michaelson's feature design of the *Enterprise*, you inherited Herman's designs when he left the show. How did you give it your own sense of place?

James: We could see certain improvements to the existing sets but, at the same time, I thought that it was very important that any changes to be done were not to be glaringly different from what was there, because I felt it would be jarring to the public, the fans. Anything that I suggested that we could do would stay as Federation, stay within the framework, not something that was so different that it would jump out at you. If I'm watching the show ten years from now, I want it still to look good, not laughable, like early attempts at something.

Sternbach: The *Enterprise*, as a ship, was certainly a creature of high technology. What was your take on keeping it from looking like other familiar places, making it look like people actually lived on it?

James: In some areas I would have liked it to have had a little more character or personality, the feeling that people did things personally to the interior. The show was basically devoid of that anyway; not only just in the sets but in all areas, such as the crew not being allowed to wear jewelry. We expanded on the personal items in the quarters, like with Data's paintings and Riker's trombone; personal things did become more prevalent. We kept those pieces that had played in certain episodes, and it was able to give us something familiar to use. One of the nice things about Picard was that he collected antique books. We were able to have that kind of personality, a trait defined by the book. We had photographs of family members; not all of the personality things you could do in putting a set together were available to us early on in STAR TREK: THE NEXT GENERATION. We're doing a lot more of that now on STAR TREK: VOYAGER.

Sternbach: As production designers, do you feel it is important to keep styles separate?

James: As you well know, I really zeroed in on motifs and colors and reinforced them with each human or alien race, because they graphically spell out to the audience that this is Klingon or this is Romulan, and so I've played on those char-

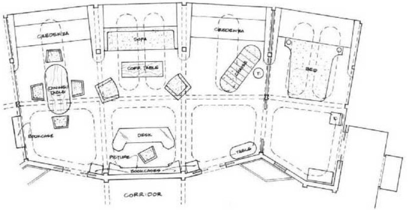

Fig. 3 Blueprint drawings created by Star Trek: The Next Generation *set designers were the starting points for the many room designs on the U.S.S.* Enterprise. *Unique spaces (as in this furniture plan for Captain Picard's quarters) as well as repeatable room shapes were assembled from art department documents.*

acteristics. That is something we maintained all through the series. Any characteristics that were shown with the Klingons, for instance, played throughout the seven seasons. On STAR TREK: VOYAGER, we are now in very unfamiliar territory, so we have to introduce a whole new set of design styles.

Zimmerman: We are inventing cultures that don't exist here. We are extrapolating a Starfleet culture of basically twentieth-century Americans, plus we're inventing Klingons, we're inventing Cardassians, we're inventing Ferengi, the Trill culture, and we may be asked to invent twenty or thirty more. As you have another culture to invent, you find new ways to make them separate and unique. Certainly when we were designing STAR TREK: DEEP SPACE NINE, we found that we could produce a Cardassian like and dislike list, and design to it. By doing that, we were able to develop a look that was unique to the Cardassians, and whenever an actor was in that kind of environment, you would know that he was in a Cardassian piece of architecture. The Starfleet style, of course, would tell you that you were on a Starfleet vessel or on Earth.

Sternbach: Are the hardware areas easier to design?

James: Yes, I would say that they're easier, because there you know what you're going to *do*; you know what the look is because you know what the *intent* is. That's easier to accomplish, and visually you can get it very fast when you're dealing with hardware and not personalities.

Sternbach: Does it help the design process to think of the ship as real?

Zimmerman: I think that what we do rather well here at Paramount—and the actors appreciate it—is that we make a set absolutely complete. We don't just do two walls, unless that's all we really need. We do the floors and we do the ceilings and the windows, and what's behind the windows, and we do the corridors, and what's down the corridors. When we open a door we see another room in there. The imagination of what the rest of the ship looks like, even though we don't get the opportunity to build the entire ship, has to be with us. Whenever there's a question about designing a new set, one of the first things you want to know is what deck is it on, where does it relate with the other sets that we know exist and are familiar with, and how do we get from here to there? We're always conscious of the cutaways of the various ships that we've designed. They're very helpful after the fact. Yes, that's a very good place for the arboretum because of the ambient sunlight, or that's a great place for a Jeffries tube.

James: Well, I don't know if I can separate the real from the imaginary there, because after awhile, the imaginary takes on a certain reality, because it becomes so familiar. It does feel real after awhile. After working with it for so many years, it feels like it's taken on a life-force of its own. After a time, what we built represents more than just a collection of sets.

Sternbach: The first time the Stage 9 corridor was complete and lit, all you could see was *ship*. You couldn't see the stage walls. Very heady stuff. The bridge felt the same way with the starfield hung in place.

Zimmerman: In that sense, it isn't make-believe anymore. It is reality, because you're standing on the bridge of the only *Starship Enterprise* that exists. You are there.

Curry: The *Enterprise* had to become a real place for us, and it did. We always looked at it as if it were real. What would it be doing—that sort of thing. In a sense, it is a real ship, because it is real in our imaginations. And because it is a sculptural object, anybody that works in visual effects has the ability to detach himself from scale. When we were shooting it and lighting it, yes, it was always a model, but then again, it wasn't. I think if we couldn't make it real in our imaginations, it wouldn't look real on the screen. We were always careful about what was where and how it would behave, and would it or wouldn't it do certain moves.

Sternbach: Was the demise of the *Enterprise* a blow that came too soon?

James: To me, yes. It was. I don't think I was alone in feeling that during the whole last couple of months, there was a lot of emotion going around, because of the ending of the series, and when we saw the sets being struck. The show ended when it was stronger than it had ever been. I miss it, and I miss the cast as well. Patrick, Brent, LeVar—they're very much like family. I do miss them, and I was certainly moved by the crash of the *Enterprise*.

Zimmerman: Personally, having been on the team that created that ship, I am very pleased looking back on that experience. I was able to come back and take a fresh look at it from a feature film point of view. Raising the level of detail was the order of the day, and I added some command stations on the left and right. One of the problems encountered by directors over the years was one of having actors standing in front of some fairly bland architecture, and when line producer David Livingston saw the new stations he said to me, "Why didn't we do this years ago?" In truth, it was very sad to destroy it. We spent only about two days filming it in the improved state, looking about the best it ever did, and then we slowly started to dismember the poor thing. Of course, there was another starship waiting to use the space. I do believe that the *Enterprise* will continue in other venues. There may be some amusement park attractions where you will have an *Enterprise* bridge that you can walk through and enjoy in a real way. The D ship will rise again.

Sternbach: What are your feelings about a successor to the *Galaxy* class? Will we see a 1701-E?

Okuda: When Star Trek: The Next Generation started, in every aspect of the show including ship design we ran into quite a bit of fan resistance. It's not automatic that the fans would accept an *Enterprise* E; you can't just take some ship design and slap the word *Enterprise* on it. I think if we approach it with the same integrity with which we approached Star Trek: Deep Space Nine or Star Trek Voyager, or the *Enterprise* D itself, I think we have a very good chance.

Jein: It's like looking at the refitted *Enterprise* getting destroyed in Star Trek III; I don't really think it's a dead, cold issue, because as we know, it keeps going in one form or another. A, B, C, D, or E, it's just a continuity curve; things change, the old guard goes out, the new guard comes in.

Curry: The next step might be a starship that is more fluid, where the shapes are not so separated, where everything is drawn together and tighter, so there's more volume, less surface area. If you were building a real spaceship you might want to do that just out of conservation of materials. You might be able to tuck the nacelles tighter to the body, so that it's more—to use an Aldous Huxley term—'pneumatic.'

Sternbach: Computer generated imagery—CGI—is making new inroads into the visual effects industry. During the early development of "Encounter at Farpoint," we viewed a demonstration film using the feature *Enterprise*. Bob, what influenced the decision not to go with CGI back then?

Justman: Eddie Milkis and I investigated the possibility of generating everything on the computer. We had great reservations about it, because it still didn't have the reality. The surface treatment wasn't totally believable; we could have gotten by, it would have been acceptable, but it wasn't satisfactory.

Sternbach: How has CGI affected the design and filming of hardware and visual effects?

Probert: Typically, as you know, when designing a movie miniature, you have to keep the mounting points in mind. With a CGI ship, those are no longer concerns. The idea of one object's being large enough or strong enough to support another object in the real world doesn't matter in the computer-generated world.

Curry: It will come to be one of the dominant ways to achieve visual effects in the future. But I feel that the days of the miniature are not completely gone. There are some people, at least in our generation of filmmakers, who are more comfortable with miniatures. Just the fact that they're really there, you can light them, and there's a certain reality about them, forces CGI to be very, very careful to be like that. One of the observations I have about CGI is that the people who do it well, do it really well, but a lot of people who work in that field have backgrounds in mathematics and computers, and not necessarily in photography and fine arts. They may not have the relationship with how things really look, which comes from standing out in a field and painting a landscape. One of the best ways of understanding light is by spending time looking at it.

Jein: Photography didn't kill art, like portrait painting or illustration; and similarly, I'm sure there will always be a need for models. Right now there are some things that CGI can't do, but given enough time and money, they will accomplish, say, explosions, and things like that. It's a question Dave Allen and I were talking about. Stop-motion animators are running out of business, too. This has happened very fast, but I'm more into the tactile thing, so I'd rather be playing with goo than punching a keyboard. It's amazing, some of the stuff that came out this past year. My God. If they go the way they've been going, then CGI will become both economical and a mainstay of television production, especially. In feature production they still have a way to go. As far as miniatures are concerned, I'll remain optimistic for the time being.

Curry: For me, the future would be a matter of speed. For us, who have worked with these ships, we can get right up to it and say, "I'd like to see it from right *here*." When you work with CGI, because you start off with wireframes, there's a lot more compromise in the exactness of angles and what's going on with the lighting than there is in a miniature, simply because you can see it *here*. It's not quite the same. But I think CGI will become probably the dominant technique of creating visual effects. I don't know what year that will be, but it certainly looks like it's going to go that way.

Okuda: In terms of the graphics department on STAR TREK: DEEP SPACE NINE and STAR TREK VOYAGER, I'm pleased that we're becoming increasingly computerized in a way that is demonstrably more efficient and demonstrably more cost effective, and that demonstrably gives us as designers more freedom. I'm constantly frustrated with would-be computer pioneers who put things on computers simply to put them on computers. When we started STAR TREK: THE NEXT GENERATION and began creating animated readouts, we used to do those with conventional backlit cel animation, and it used to take days to draw and days to shoot. Now, on the Mac it's much faster, much cheaper, and much better. What more can you ask?

Sternbach: Will we eventually be able to visualize an entire starship inside and out, on some future desktop computer?

Okuda: Certainly, certainly. It's not that far away. The *Star Trek: The Next Generation Interactive Tech Manual* is a small step in that direction. These blueprints are another step in that direction.

BUILDING THE BLUEPRINTS

Even in this era of things computerized, we looked to a number of traditional techniques in the production of the *Enterprise* blueprints. Our research began with set plans and starship drawings spanning the entire run of STAR TREK: THE NEXT GENERATION. As new sets were constructed, plans and elevation drawings were archived in the STAR TREK: THE NEXT GENERATION art department. Exterior photos and drawings of the ship, from its inception in 1987 to its crash in 1994, were assembled for study of any interesting changes. Timely methods of drawing and reproduction had to be decided upon to take advantage of each method's best attributes.

Naval ship blueprints and orthographic views of aircraft have traditionally been drawn in ink for sharpness of line. High-resolution computer graphics can now do the job, but with the computing power available, all forty-two decks could not have been executed in the time allotted. The computer, a Macintosh Quadra 800 running Adobe Illustrator, was given the task of creating the highly repetitious elements, the thousands of cabins, laboratories, consoles, and hardware shapes housed within the ship. Todd Guenther tackled the design work of the saucer module decks, I took on the engineering hull, and Jeanne Rogers inked the pencil drawings. Dan Gauthier reprised his earlier exterior starship work on the *Star Trek: The Next Generation Technical Manual*, then done in ink, but now transferred to the computer for greater detail. In his case, the drawings had a lower density of detail than the decks, so the computer was the right tool for the job.

Once the scale of 0.02 inches equals 1 foot had been calculated for the final artwork, along with a final reduction factor of 66.66% for the printed sheets, the base pencil drawings of each deck were begun. Each deck required that its shape conform to the exterior hull and accommodate details seen on the surface, such as the lifeboats, phaser emitters, and windows. Major structural framing had to be invented, with working and living spaces built to fit within those frames. Turbolift shafts had to be laid out and coordinated between decks. Jeffries tubes were arranged in a similar manner. Detail notes grew exponentially: Where is Captain Picard's quarters? Data's quarters? Sickbay? How do photon torpedoes get from their storage magazines to the launcher? How do we access the phasers? Can we route deuterium down to the antimatter generator? Though many of these issues had been resolved for the writers and producers on STAR TREK: THE NEXT GENERATION, many others were unknowns to be puzzled out. As mentioned earlier, a large fraction of the ship still remains undefined, open for future expansion, to be planned by another generation of viewers.

Inking a drawing involves tracing the pencil artwork onto an overlay of dimensionally stable plastic called Mylar, frosted on one side to accept both the ink and nonreproducing blue pencil lines. Technical pens, using black ink cartridges, come in a variety of line thicknesses. Each feature of the ship, from corridor walls to impulse nozzles, was given a particular line thickness or weight. Outboard hull outlines, for example, were done in a heavy weight, whereas interior walls and hardware components were given decreasing weights. Inking with plastic templates can lead to a number of unique accidents and is not for the artistically faint of heart. Leaks, clogs, smears, and ink flowing under drafting tools can all lead to frustration. Practice, however, can produce stunning results. The decks were drawn in halves to save time, and were photographically mirrored to form a complete unit.

While the pencil decks were being inked, the repetitive shapes were designed in the computer to be made into graphic rubdown transfers, sometimes known as INTs. These rubdowns allow artists to make quick fixes and changes, often faster than erasing inked lines or cutting photostats. Rubdowns were created for all unique rooms and furniture, and specific items of starship equipment.

After some fixing of inevitable glitches with opaque white paint, a fine brush, and a little last-minute inking, photostats were made for the last steps, to mirror-copy the deck halves and paste up those decks onto their full-size border sheets. Finally, callouts for all important features were pasted up onto

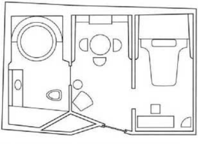

Fig. 4 One-half of a double dormatory-style crew cabin rendered in Adobe Illustrator.

separate overlays for printing.

CONCLUSIONS

What all of these drawings and indeed the whole of *STAR TREK: THE NEXT GENERATION* will ultimately mean, we cannot know for certain. We can hope that they will continue to represent a future full of optimism, of creative energy, of a desire to keep the spirit of exploration alive. If we know anything, it is that the future always begins with a plan, a blueprint. For many of us, devoting our efforts to designing an imaginary starship is the next best thing to working on the real space program, itself an enormous producer and user of spaceship blueprints. In fact, the two have historically contributed to each other's progress. The twenty-fourth century world has made the difference in more than one young person's choice of scientific or technical career here in the closing years of the twentieth century. In return, they have given us new views of the heavens, new engineering breakthroughs, and advances in medical science which we can offer to our audiences, woven into new stories. A real starship may one day grow from these first small steps, and so much the better if the builders decide to name it *Enterprise*.

ABOUT THE AUTHOR AND DRAFTING TEAM

Rick Sternbach is the senior illustrator and technical consultant on STAR TREK VOYAGER and STAR TREK: DEEP SPACE NINE, having crossed over from STAR TREK: THE NEXT GENERATION. He made his way to California from the wilds of upstate Connecticut back in 1978, after creating illustrations for periodicals, book publishers, and organizations such as *Analog, Fantasy & Science Fiction*, Del Rey Books, Pocket Books, NASA, *Science Digest, Astronomy*, and *Sky and Telescope*. His television and feature credits include STAR TREK: THE MOTION PICTURE, *Amazing Stories, Twilight Zone, Enola Gay, The Last Starfighter*, and the PBS series *Cosmos*, for which he served as assistant art director and special optical effects supervisor.

Todd Guenther is an accomplished commercial artist, graphic designer, and musician. He has a strong printing background and has also worked as a patent artist for clients such as Monsanto Chemical.

In the early 1980s Todd created Mastercom Data Center, a business dealing in the design and distribution of blueprints, technical publications, and posters pertaining to futuristic "militaria" and spacecraft. A student of architecture and interior design, Todd also operates a commercial graphic design film, Guenther Associates, with his wife, Carol. They live in the Pioneer Valley town of South Hadley, Massachusetts, with their cat, Dizmo.

Jeanne Rogers is an illustrator who has been living and working in the San Diego area for twenty years. She is an active member of S.T.A.R., the San Diego science fiction organization. As a commercial, scientific, and technical illustrator, the expertise she brings to the *Enterprise* blueprint project was gained by her work in the aerospace defense industry. She finds working on the *Enterprise* more enjoyable and suspects that STAR TREK may serve the cause of world peace at least as well.

Dan Gauthier has provided technical illustrations of current and historical spacecraft to such periodicals as *Aviation Week and Space Technology, Newsweek, Quest*, and *Countdown*. From his studio in Battle Creek, Michigan, Dan has kept close tabs on the ever-changing configuration of the Russian space station *Mir*.

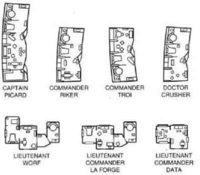

Fig. 5 Finished crew quarters reduced to 16% for final pasteup and reproduction.

GALAXY CLASS STARSHIP
DEVELOPMENT PROJECT
UTOPIA PLANITIA STARFLEET YARDS, MARS

GALAXY CLASS STARSHIP
U.S.S. ENTERPRISE NCC-1701-D

STARSHIP	CLASS	REGISTRY	CURRENT ASSIGNMENT
9823423	45782378	73 283846	87834 3482

EXTERNAL ARRANGEMENT

- VESSEL TYPE: EXPLORER, HYBRID SAUCER MODULE PRIMARY/ENGINEERING SECONDARY
- DISPLAYED DESIGN CONDITION FROM STARDATES 30789.32 TO 47965.45
- DESIGN DOCUMENTATION: RICK STERNBACH
- INTERNAL ARRANGEMENT SYSTEM: TODD GUENTHER
- VEHICLE EXTERNAL CONFIGURATION: ANDREW PROBERT
- VISUAL DISPLAY ENGINEERING: JEANNE L. ROGERS, DANIEL J. GAUTHIER

SCREEN 1

- DORSAL SURFACE PLAN VIEW
- VENTRAL SURFACE PLAN VIEW
- FORE ELEVATION VIEW
- AFT ELEVATION VIEW
- STARBOARD ELEVATION VIEW
- STARBOARD CUTAWAY VIEW
- INTERNAL DECK PLAN VIEW

NOTE: VIEWS INCORPORATE STARFLEET YARD CHANGES FROM STARDATES 40563.61 TO 47312.78, PLUS AUTHORIZED FIELD REPAIRS, REPLACEMENTS, UPGRADES, AND EQUIPMENT ABANDONED IN PLACE.

GALAXY CLASS STARSHIP
DEVELOPMENT PROJECT
UTOPIA PLANITIA STARFLEET YARDS, MARS

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SCALE
METERS 0 10 20 30 40 50 60
FEET 0 10 50 100 150 200

- DORSAL SURFACE PLAN VIEW
- **VENTRAL SURFACE PLAN VIEW**
- FORE ELEVATION VIEW
- AFT ELEVATION VIEW
- STARBOARD ELEVATION VIEW
- STARBOARD CUTAWAY VIEW
- INTERNAL DECK PLAN VIEW

GALAXY CLASS STARSHIP
U.S.S. ENTERPRISE NCC-1701-D

STARSHIP	CLASS	REGISTRY	CURRENT ASSIGNMENT
9823423	45762378	73 293846	87834 3482

11 4077
2422870
95 85951
40274
7676 18834

EXTERNAL ARRANGEMENT

- VESSEL TYPE: EXPLORER, HYBRID SAUCER MODULE PRIMARY/ENGINEERING SECONDARY
- DISPLAYED DESIGN CONDITION FROM STARDATES 30789.32 TO 47965.45
- DESIGN DOCUMENTATION: RICK STERNBACH
- INTERNAL ARRANGEMENT SYSTEM: TODD GUENTHER
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- VISUAL DISPLAY ENGINEERING: JEANNE L. ROGERS, DANIEL J. GAUTHIER

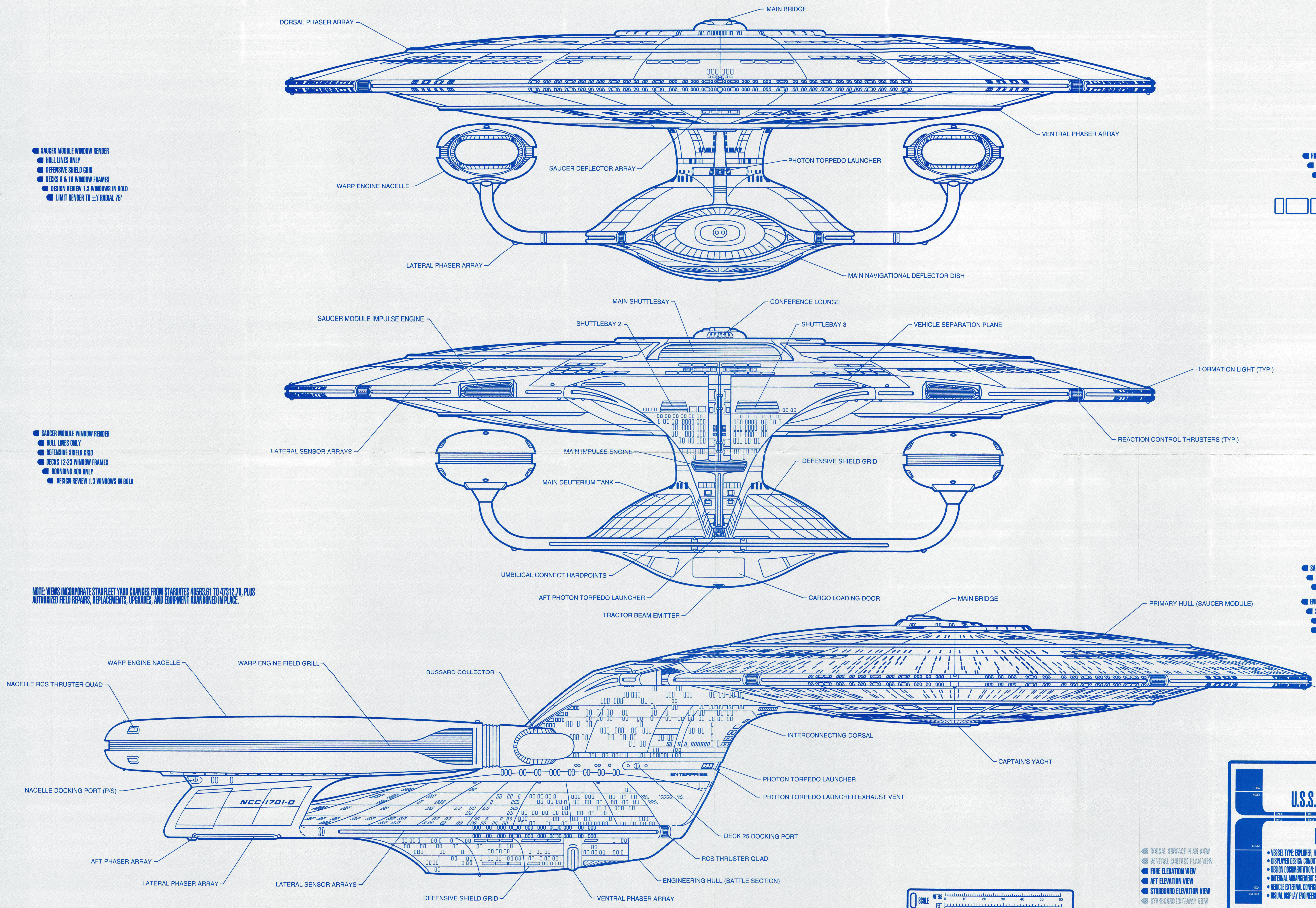
SCREEN 2

GALAXY CLASS STARSHIP
DEVELOPMENT PROJECT
UTOPIA PLANITIA STARFLEET YARDS, MARS

- SAUCER MODULE WINDOW RENDER
  - HULL LINES ONLY
  - DEFENSIVE SHIELD GRID
  - DECKS 9 & 10 WINDOW FRAMES
    - DESIGN REVIEW 1.3 WINDOWS IN BOLD
      - LIMIT RENDER TO ±Y RADIAL 75°

- HULL EDGE WINDOW RENDER
  - DESIGN REVIEW 3.0 REVISION
    - FRAMING CORNER RADII DECREMENT
      - TECHNICAL ORDER 3761-93-652.661

4X ENLARGEMENT



- SAUCER MODULE WINDOW RENDER
  - HULL LINES ONLY
  - DEFENSIVE SHIELD GRID
  - DECKS 12-23 WINDOW FRAMES
    - BOUNDING BOX ONLY
      - DESIGN REVIEW 1.3 WINDOWS IN BOLD

NOTE: VIEWS INCORPORATE STARFLEET YARD CHANGES FROM STARDATES 40563.61 TO 47312.78, PLUS AUTHORIZED FIELD REPAIRS, REPLACEMENTS, UPGRADES, AND EQUIPMENT ABANDONED IN PLACE.

- SAUCER MODULE WINDOW RENDER
  - SURFACE NORMAL+Y>2°/-Y>2°
    - LOCATOR LINES ONLY

- ENGINEERING HULL WINDOW RENDER
  - SURFACE NORMAL+Y>2°/-Y>2°
    - BOUNDING BOX ONLY
    - DESIGN REVIEW 1.3 WINDOWS IN BOLD

SCALE
METERS 0 10 20 30 40 50 60
FEET 0 10 50 100 150 200

- DORSAL SURFACE PLAN VIEW
- VENTRAL SURFACE PLAN VIEW
- FORE ELEVATION VIEW
- AFT ELEVATION VIEW
- STARBOARD ELEVATION VIEW
- STARBOARD CUTAWAY VIEW
- INTERNAL DECK PLAN VIEW

11-4077
2422670

GALAXY CLASS STARSHIP
U.S.S. ENTERPRISE NCC-1701-D

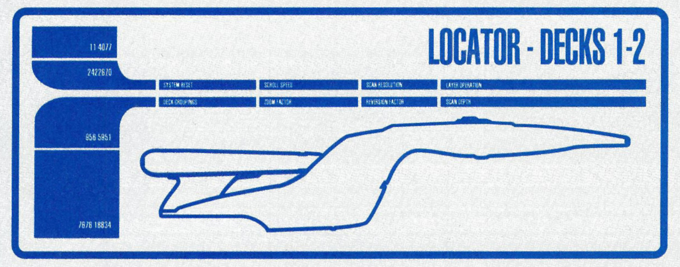
STARSHIP	CLASS	REGISTRY	CURRENT ASSIGNMENT
6823423	45782378	73-293848	87634 3462

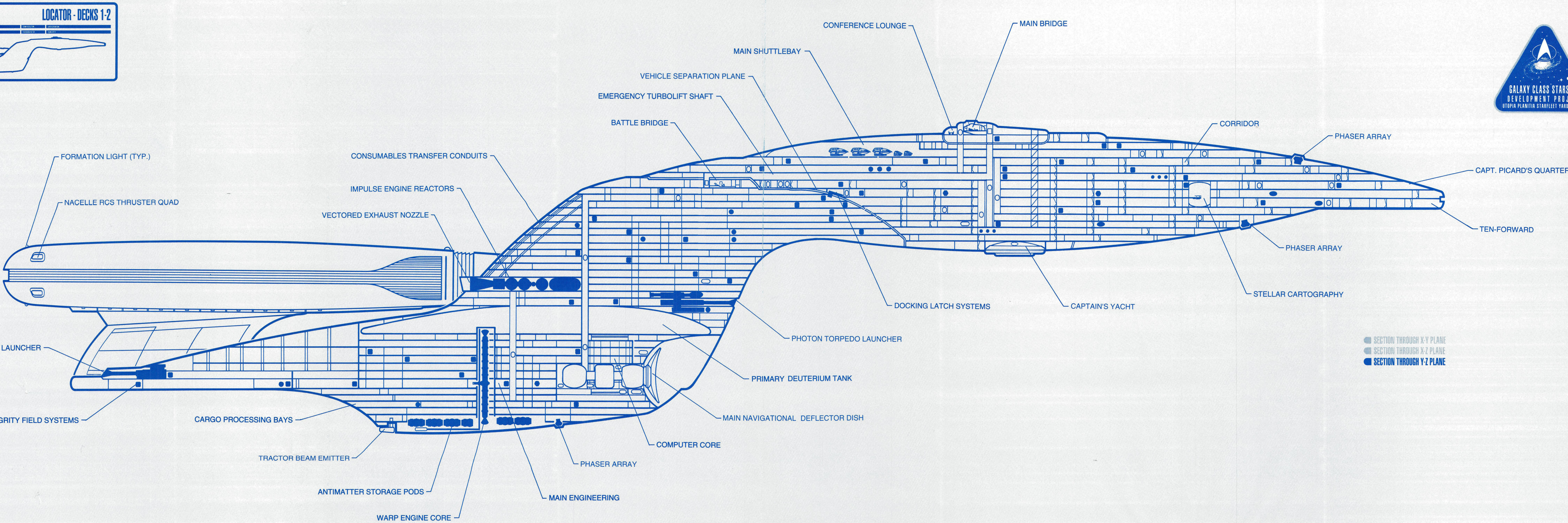
95 65951
40274
7676-18834

EXTERNAL ARRANGEMENT

- VESSEL TYPE: EXPLORER, HYBRID SAUCER MODULE PRIMARY/ENGINEERING SECONDARY
- DISPLAYED DESIGN CONDITION FROM STARDATES 30789.32 TO 47965.45
- DESIGN DOCUMENTATION: RICK STERNBACH
- INTERNAL ARRANGEMENT SYSTEM: TODD GUENTHER
- VEHICLE EXTERNAL CONFIGURATION: ANDREW PROBERT
- VISUAL DISPLAY ENGINEERING: JEANNE L. ROGERS, DANIEL J. GAUTHIER

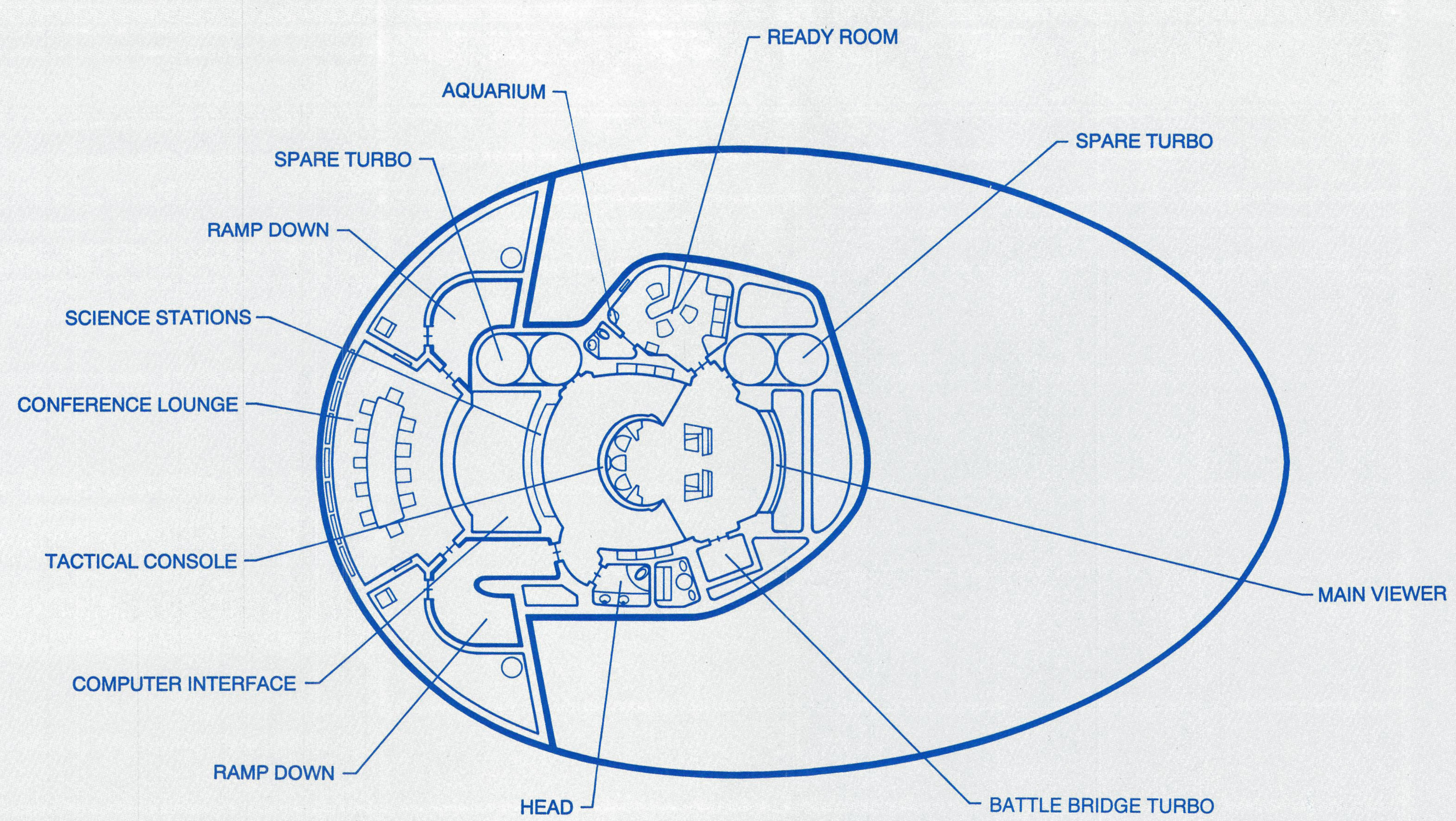
SCREEN 3

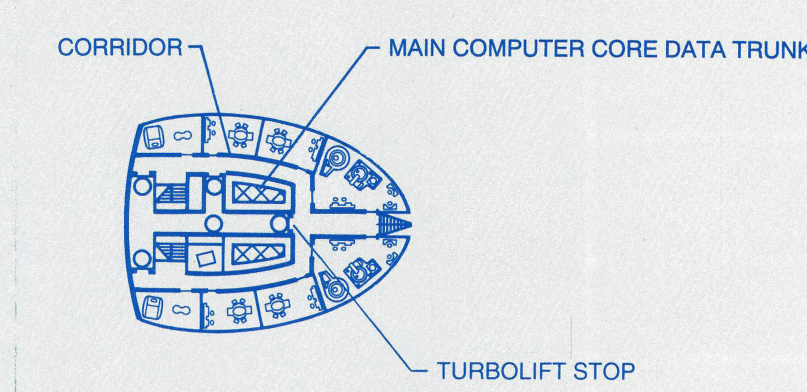


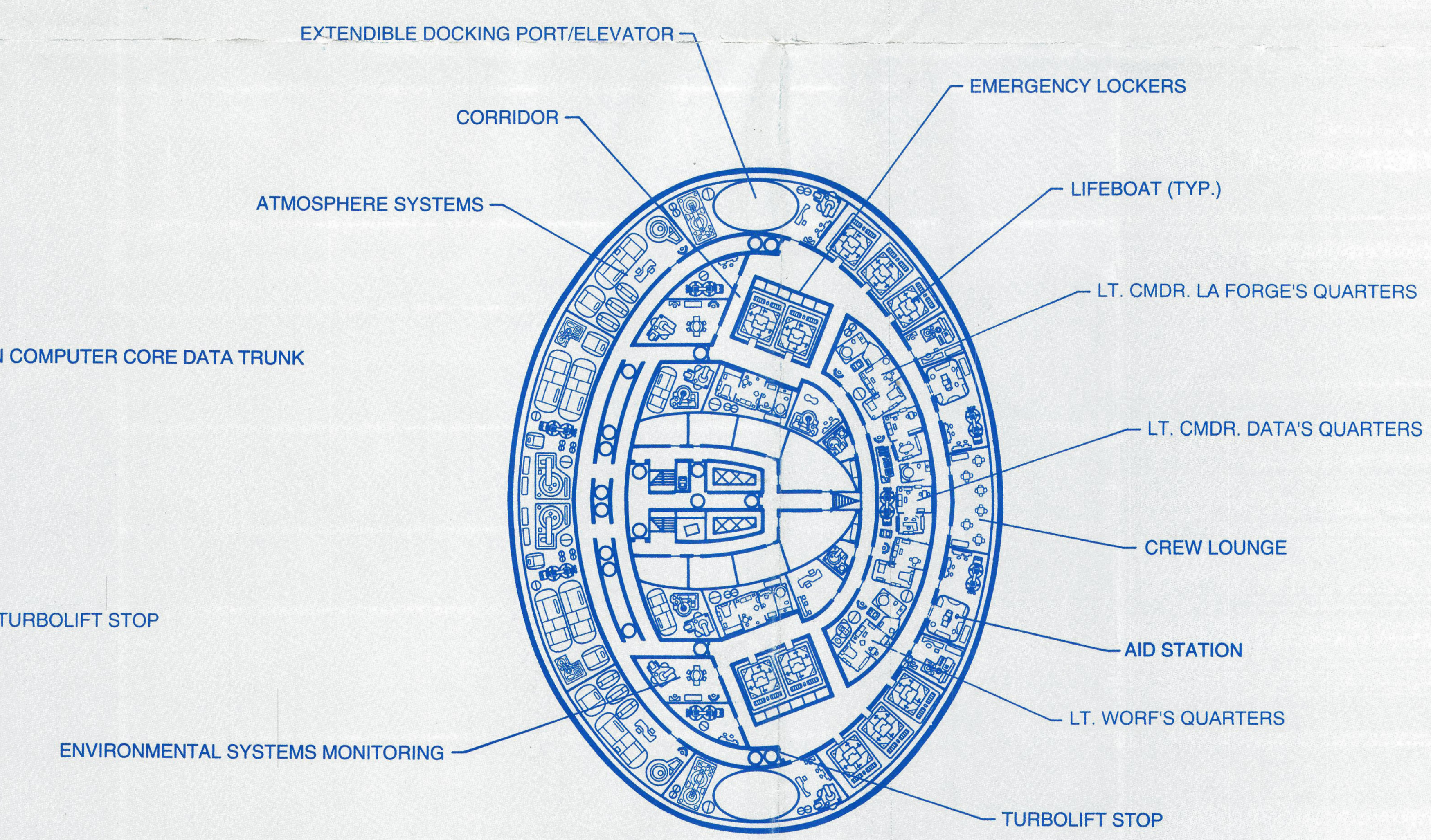


GALAXY CLASS STARSHIP
DEVELOPMENT PROJECT
UTOPIA PLANITIA STARFLEET YARDS, MARS

SECTION THROUGH X-Y PLANE
SECTION THROUGH X-Z PLANE
SECTION THROUGH Y-Z PLANE







SCALE: 3.5X DECK PLAN VIEWS

DECK 1 BRIDGE, READY ROOM, CONFERENCE LOUNGE

DECK 1 LOWER BRIDGE MODULE EJECTION SYSTEMS

DECK 2 OFFICERS' QUARTERS, LOUNGE, ENVIRONMENTAL SYSTEMS

GALAXY CLASS STARSHIP
U.S.S. ENTERPRISE NCC-1701-D

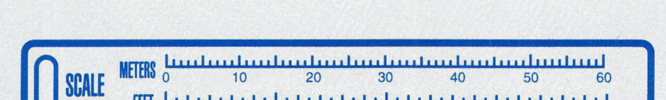
INTERNAL ARRANGEMENT

- DISPLAYED DESIGN CONDITION FROM STARDATES 30780.32 TO 47985.45
- COMPOSITE VIEW OF STRUCTURAL DETAILS FROM DESIGN REVIEWS 0 TO 3.65
- DESIGN DOCUMENTATION: RICK STERNBACH
- INTERNAL ARRANGEMENT SYSTEM: TODD GUENTHER
- VEHICLE EXTERNAL CONFIGURATION: ANDREW PROBERT
- VISUAL DISPLAY ENGINEERING: JEANNE L. ROGERS, DANIEL J. GAUTHIER

SCREEN 4

DORSAL SURFACE PLAN VIEW
VENTRAL SURFACE PLAN VIEW
FORE ELEVATION VIEW
AFT ELEVATION VIEW
STARBOARD ELEVATION VIEW
STARBOARD CUTAWAY VIEW
INTERNAL DECK PLAN VIEW

SECTION THROUGH X-Y PLANE
SECTION THROUGH X-Z PLANE
SECTION THROUGH Y-Z PLANE



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SECTION THROUGH X-Y PLANE
SECTION THROUGH X-Z PLANE
SECTION THROUGH Y-Z PLANE

DORSAL SURFACE PLAN VIEW
VENTRAL SURFACE PLAN VIEW
FORE ELEVATION VIEW
AFT ELEVATION VIEW
STARBOARD ELEVATION VIEW
STARBOARD CUTAWAY VIEW
INTERNAL DECK PLAN VIEW

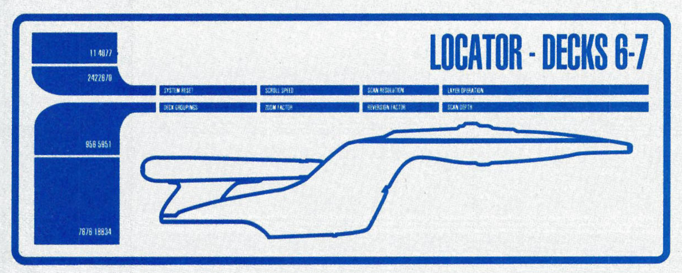
GALAXY CLASS STARSHIP
U.S.S. ENTERPRISE NCC-1701-D

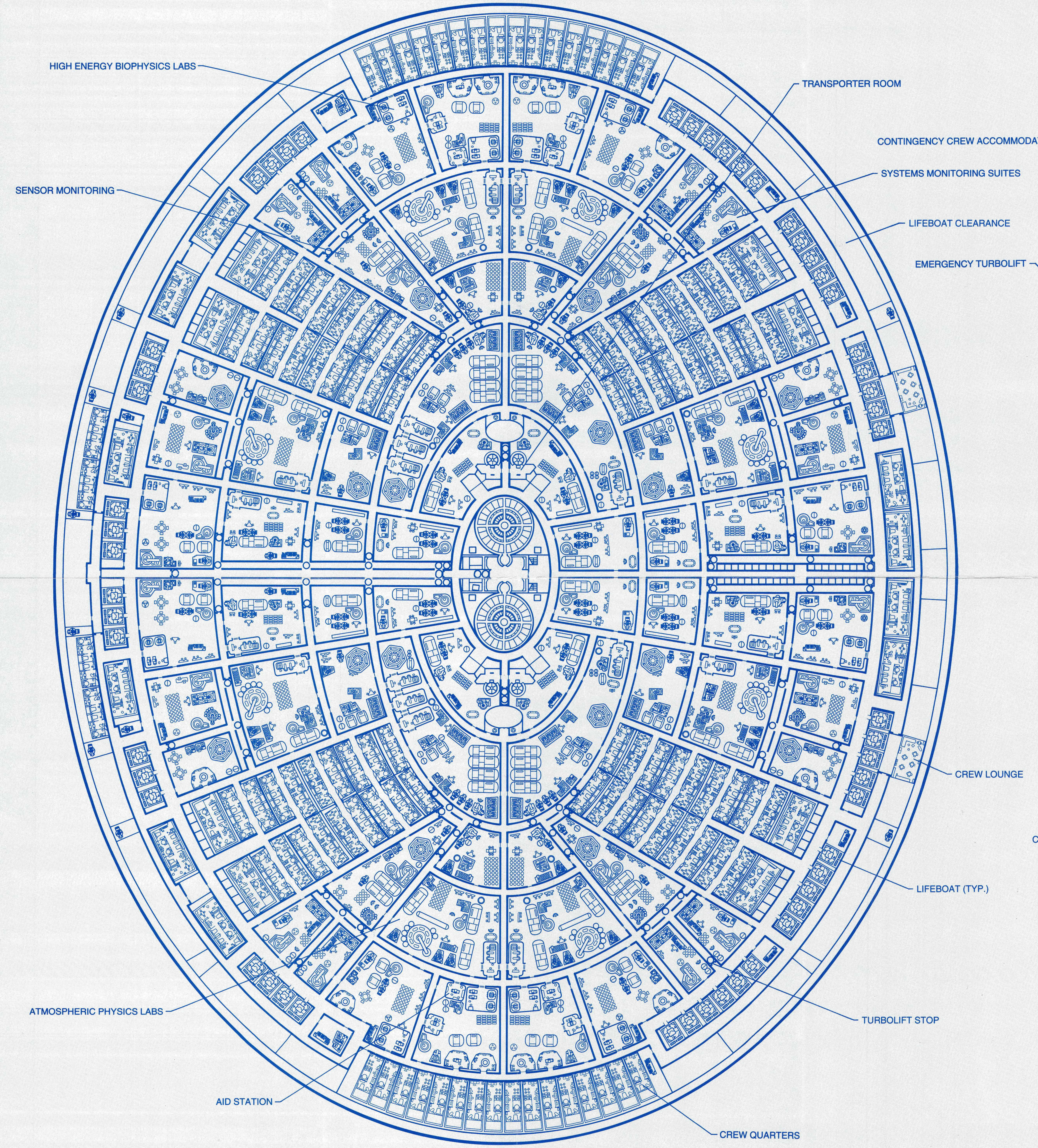
STARSHIP	CLASS	REGISTRY	CURRENT ASSIGNMENT
9823423	45782378	73 293846	87834 3462

INTERNAL ARRANGEMENT

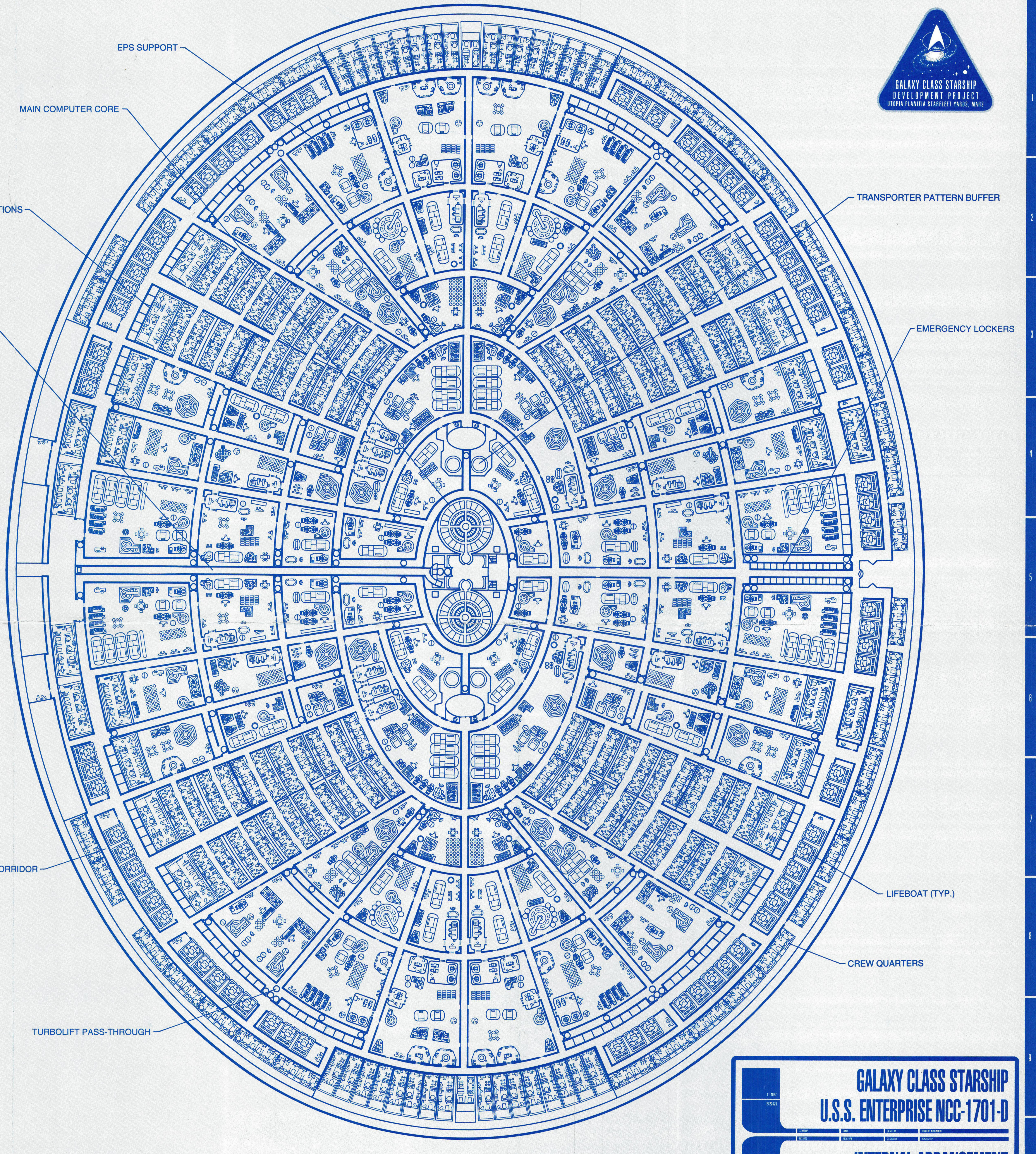
- DISPLAYED DESIGN CONDITION FROM STARDATES 30789.32 TO 47965.45
- COMPOSITE VIEW OF STRUCTURAL DETAILS FROM DESIGN REVIEWS 0 TO 3.65
- DESIGN DOCUMENTATION: RICK STERNBACH
- INTERNAL ARRANGEMENT SYSTEM: TODD GUENTHER
- VEHICLE EXTERNAL CONFIGURATION: ANDREW PROBERT
- VISUAL DISPLAY ENGINEERING: JEANNE L. ROGERS, DANIEL J. GAUTHIER

SCREEN 5





DECK 6 CREW QUARTERS, ENVIRONMENTAL SYSTEMS



DECK 7 CREW QUARTERS, ENVIRONMENTAL SYSTEMS

GALAXY CLASS STARSHIP DEVELOPMENT PROJECT
UTOPIA PLANITIA STARFLEET YARDS, MARS

SCALE METERS 0 10 20 30 40 50 60
FEET 0 10 50 100 150 200

NOTE: VIEWS INCORPORATE STARFLEET YARD CHANGES FROM STARDATES 40563.61 TO 47312.78, PLUS AUTHORIZED FIELD REPAIRS, REPLACEMENTS, UPGRADES, AND EQUIPMENT ABANDONED IN PLACE.

- SECTION THROUGH X-Y PLANE
- SECTION THROUGH X-Z PLANE
- SECTION THROUGH Y-Z PLANE

- DORSAL SURFACE PLAN VIEW
- VENTRAL SURFACE PLAN VIEW
- FORE ELEVATION VIEW
- AFT ELEVATION VIEW
- STARBOARD ELEVATION VIEW
- STARBOARD CUTAWAY VIEW
- INTERNAL DECK PLAN VIEW

GALAXY CLASS STARSHIP
U.S.S. ENTERPRISE NCC-1701-D

STARSHIP	CLASS	REGISTRY	CURRENT ASSIGNMENT
9823423	45782378	73 283848	87834 3482

INTERNAL ARRANGEMENT

- DISPLAYED DESIGN CONDITION FROM STARDATES 30789.32 TO 47965.45
- COMPOSITE VIEW OF STRUCTURAL DETAILS FROM DESIGN REVIEWS 0 TO 3.65
- DESIGN DOCUMENTATION: RICK STERNBACH
- INTERNAL ARRANGEMENT SYSTEM: TODD GUENTHER
- VEHICLE EXTERNAL CONFIGURATION: ANDREW PROBERT
- VISUAL DISPLAY ENGINEERING: JEANNE L. ROGERS, DANIEL J. GAUTHIER

SCREEN 6

LOCATOR - DECKS 8-9
SCALE
METERS
FEET
DORSAL SURFACE PLAN VIEW
VENTRAL SURFACE PLAN VIEW
FORE ELEVATION VIEW
AFT ELEVATION VIEW
STARBOARD ELEVATION VIEW
STARBOARD CUTAWAY VIEW
INTERNAL DECK PLAN VIEW
SECTION THROUGH X-Y PLANE
SECTION THROUGH X-Z PLANE
SECTION THROUGH Y-Z PLANE
TOUCH HERE FOR DECK 9 DORSAL
GALAXY CLASS STARSHIP DEVELOPMENT PROJECT
UTOPIA PLANITIA STARFLEET YARDS, MARS
CORRIDOR
DEUTERIUM SURGE TANKS
IMPULSE HIGH BAY
BATTLE BRIDGE TURBO
BATTLE BRIDGE
READY ROOM
CONFERENCE ROOM
HULL SPINE CONDUITS
PHASER MAINTENANCE
LAB STORAGE
STELLAR CARTOGRAPHY
ENVIRONMENTAL SYSTEMS MONITORING
TURBOLIFT PASS-THROUGH
FUTURE EXPANSION
TURBOLIFT STOP
CMDR. RIKER'S QUARTERS
CMDR. TROI'S QUARTERS
DECK 8 CREW QUARTERS, STELLAR CARTOGRAPHY, BATTLE BRIDGE
HOLODECK HIGH BAY
EPS SUPPORT
IMPULSE ENGINE REACTORS
VECTORED EXHAUST NOZZLE
SPARE FUSION REACTOR
MAIN COMPUTER CORE
CAPT. PICARD'S QUARTERS
DOCKING LATCH SYSTEMS
ATMOSPHERE SYSTEMS LABS
CREW ACCOMMODATIONS
STELLAR CARTOGRAPHY
CREW LOUNGE
CORRIDOR
DECK 9 CREW QUARTERS, STELLAR CARTOGRAPHY, IMPULSE ENGINES
GALAXY CLASS STARSHIP
U.S.S. ENTERPRISE NCC-1701-D
STARSHIP
CLASS
REGISTRY
CURRENT ASSIGNMENT
INTERNAL ARRANGEMENT
• DISPLAYED DESIGN CONDITION FROM STARDATES 30789.32 TO 47965.45
• COMPOSITE VIEW OF STRUCTURAL DETAILS FROM DESIGN REVIEWS 0 TO 3.65
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• INTERNAL ARRANGEMENT SYSTEM: TODD GUENTHER
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• VISUAL DISPLAY ENGINEERING: JEANNE L. ROGERS, DANIEL J. GAUTHIER
SCREEN 7

LOCATOR - DECKS 10-11
SAUCER IMPULSE ENGINES
GAS FLOW ACCELERATOR
DRIVER COIL
EXHAUST DIRECTOR
REACTOR MAINTENANCE
SWAPOUT TRANSFER AISLE
AUXILIARY FUSION GENERATOR
ANTIMATTER STORAGE POD
EPS SUPPORT
CORRIDOR
HOLODECK
HOLODECK HIGH BAY
TACTICAL PLANNING
TEN-FORWARD
STELLAR CARTOGRAPHY
EVACUATION ROUTE
LIFEBOAT (TYP.)
CREW QUARTERS
SENSOR MAINTENANCE
CREW LOUNGE
SENSOR MONITORING SUITE
RCS THRUSTER QUAD (TYP.)
TM & © 1996 PAR. PIC.
DECK 10 TEN-FORWARD, STELLAR CARTOGRAPHY, IMPULSE ENGINES
NOTE: VIEWS INCORPORATE STARFLEET YARD CHANGES FROM STARDATES 40563.61 TO 47312.78, PLUS AUTHORIZED FIELD REPAIRS, REPLACEMENTS, UPGRADES, AND EQUIPMENT ABANDONED IN PLACE.
GYMNASIUM HIGH BAY
MAIN COMPUTER CORE (P/S)
STRUCTURAL LATCHING SYSTEM
PHASER EPS NODE GROUP
PHASER ARRAY
HOLODECK
CORRIDOR
CENTRAL SAUCER TURBO GROUP
AID STATION
CONTINGENCY CREW ACCOMMODATIONS
BANQUET/CONFERENCE
MAIN STAIRWELL
TURBOLIFT STOP
ENGINEERING SUPPORT OFFICES
GALAXY CLASS STARSHIP
DEVELOPMENT PROJECT
UTOPIA PLANITIA STARFLEET YARDS, MARS
DECK 11 HOLODECKS, GYMNASIUMS
GALAXY CLASS STARSHIP
U.S.S. ENTERPRISE NCC-1701-D
INTERNAL ARRANGEMENT
• DISPLAYED DESIGN CONDITION FROM STARDATES 30789.32 TO 47965.45
• COMPOSITE VIEW OF STRUCTURAL DETAILS FROM DESIGN REVIEWS 0 TO 3.65
• DESIGN DOCUMENTATION: RICK STERNBACH
• INTERNAL ARRANGEMENT SYSTEM: TODD GUENTHER
• VEHICLE EXTERNAL CONFIGURATION: ANDREW PROBERT
• VISUAL DISPLAY ENGINEERING: JEANNE L. ROGERS, DANIEL J. GAUTHIER
SCREEN 8
SECTION THROUGH X-Y PLANE
SECTION THROUGH X-Z PLANE
SECTION THROUGH Y-Z PLANE
DORSAL SURFACE PLAN VIEW
VENTRAL SURFACE PLAN VIEW
FORE ELEVATION VIEW
AFT ELEVATION VIEW
STARBOARD ELEVATION VIEW
STARBOARD CUTAWAY VIEW
INTERNAL DECK PLAN VIEW
SCALE

SECTION THROUGH X-Y PLANE
SECTION THROUGH X-Z PLANE
SECTION THROUGH Y-Z PLANE

GALAXY CLASS STARSHIP
U.S.S. ENTERPRISE NCC-1701-D

STARSHIP	CLASS	REGISTRY	CURRENT ASSIGNMENT
9823423	45792378	73 293846	87834 3482

11-4077
2422870
95-85951
40274
7676-18834

INTERNAL ARRANGEMENT

- DISPLAYED DESIGN CONDITION FROM STARDATES 30789.32 TO 47965.45
- COMPOSITE VIEW OF STRUCTURAL DETAILS FROM DESIGN REVIEWS 0 TO 3.65
- DESIGN DOCUMENTATION: RICK STERNBACH
- INTERNAL ARRANGEMENT SYSTEM: TODD GUENTHER
- VEHICLE EXTERNAL CONFIGURATION: ANDREW PROBERT
- VISUAL DISPLAY ENGINEERING: JEANNE L. ROGERS, DANIEL J. GAUTHIER

SCREEN 9

DORSAL SURFACE PLAN VIEW
VENTRAL SURFACE PLAN VIEW
FORE ELEVATION VIEW
AFT ELEVATION VIEW
STARBOARD ELEVATION VIEW
STARBOARD CUTAWAY VIEW
INTERNAL DECK PLAN VIEW

SCALE METERS 0 10 20 30 40 50 60
FEET 0 10 50 100 150 200

NOTE: VIEWS INCORPORATE STARFLEET YARD CHANGES FROM STARDATES 40563.61 TO 47312.78, PLUS AUTHORIZED FIELD REPAIRS, REPLACEMENTS, UPGRADES, AND EQUIPMENT ABANDONED IN PLACE.

GALAXY CLASS STARSHIP
DEVELOPMENT PROJECT
UTOPIA PLANITIA STARFLEET YARDS, MARS

GALAXY CLASS STARSHIP
U.S.S. ENTERPRISE NCC-1701-D

STARSHIP	CLASS	REGISTRY	CURRENT ASSIGNMENT
8823423	45782378	73 293848	87834 3482

11-4077
2422670
95 85951
40274
7676 18834

INTERNAL ARRANGEMENT

- DISPLAYED DESIGN CONDITION FROM STARDATES 30789.32 TO 47965.45
- COMPOSITE VIEW OF STRUCTURAL DETAILS FROM DESIGN REVIEWS 0 TO 3.65
- DESIGN DOCUMENTATION: RICK STERNBACH
- INTERNAL ARRANGEMENT SYSTEM: TODD GUENTHER
- VEHICLE EXTERNAL CONFIGURATION: ANDREW PROBERT
- VISUAL DISPLAY ENGINEERING: JEANNE L. ROGERS, DANIEL J. GAUTHIER

SCREEN 10

- DORSAL SURFACE PLAN VIEW
- VENTRAL SURFACE PLAN VIEW
- FORE ELEVATION VIEW
- AFT ELEVATION VIEW
- STARBOARD ELEVATION VIEW
- STARBOARD CUTAWAY VIEW
- INTERNAL DECK PLAN VIEW

- SECTION THROUGH X-Y PLANE
- SECTION THROUGH X-Z PLANE
- SECTION THROUGH Y-Z PLANE

NOTE: VIEWS INCORPORATE STARFLEET YARD CHANGES FROM STARDATES 40563.61 TO 47312.78, PLUS AUTHORIZED FIELD REPAIRS, REPLACEMENTS, UPGRADES, AND EQUIPMENT ABANDONED IN PLACE.

0 SCALE METERS 0 10 20 30 40 50 60
FEET 0 10 50 100 150 200

NOTE: VIEWS INCORPORATE STARFLEET YARD CHANGES FROM STARDATES 40563.61 TO 47312.78, PLUS AUTHORIZED FIELD REPAIRS, REPLACEMENTS, UPGRADES, AND EQUIPMENT ABANDONED IN PLACE.

SCALE METERS 0 10 20 30 40 50 60
FEET 0 10 50 100 150 200

SECTION THROUGH X-Y PLANE
SECTION THROUGH X-Z PLANE
SECTION THROUGH Y-Z PLANE

DORSAL SURFACE PLAN VIEW
VENTRAL SURFACE PLAN VIEW
FORE ELEVATION VIEW
AFT ELEVATION VIEW
STARBOARD ELEVATION VIEW
STARBOARD CUTAWAY VIEW
INTERNAL DECK PLAN VIEW

11-4077
2422670

GALAXY CLASS STARSHIP
U.S.S. ENTERPRISE NCC-1701-D

STARSHIP	CLASS	REGISTRY	CURRENT ASSIGNMENT
6823423	45762378	73 293846	87634 3482

95-65951

INTERNAL ARRANGEMENT

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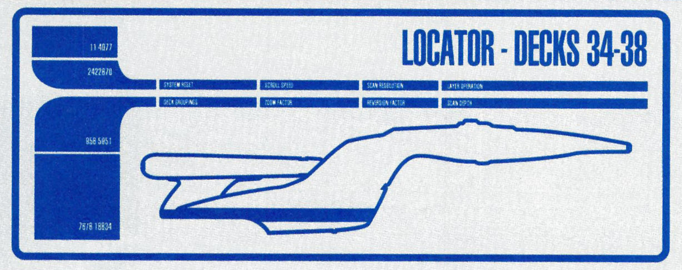
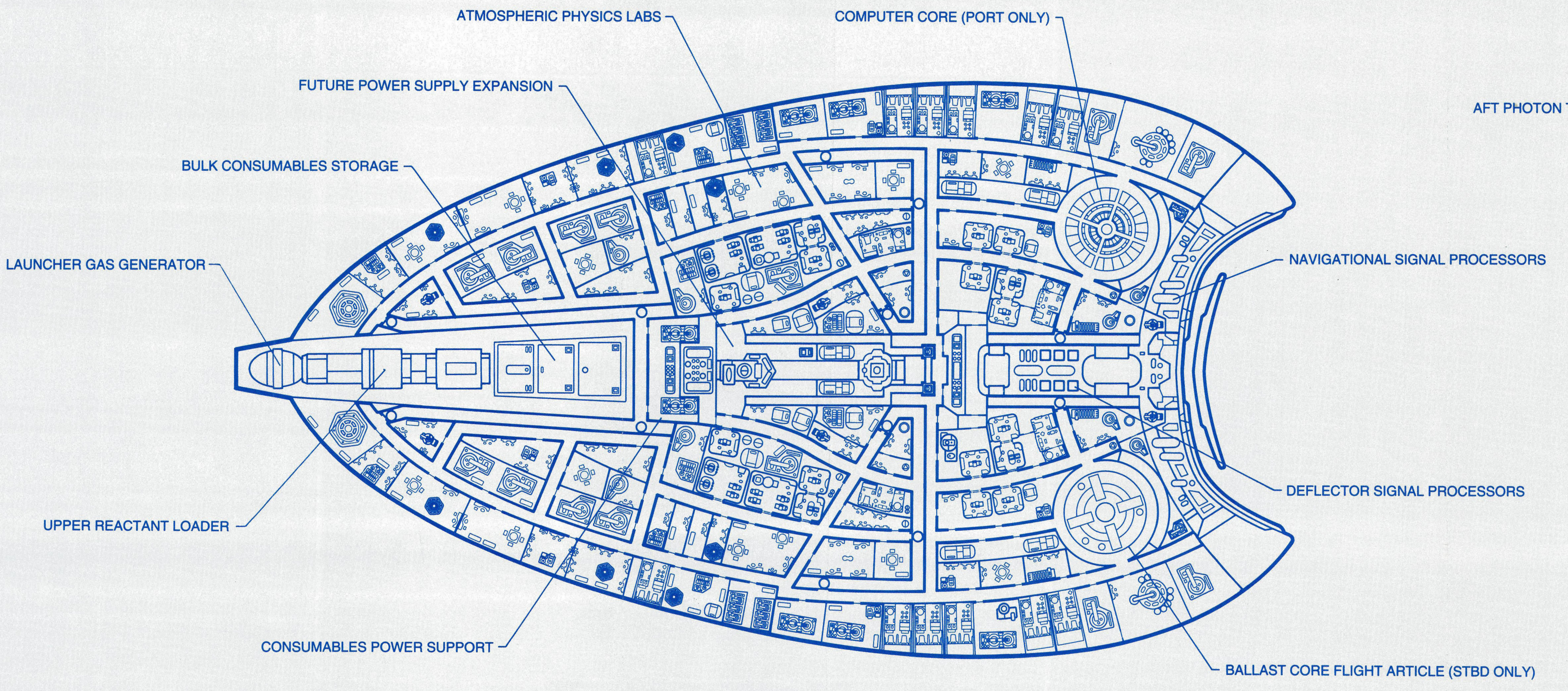
- VISUAL DISPLAY ENGINEERING: JEANNE L. ROGERS, DANIEL J. GAUTHIER

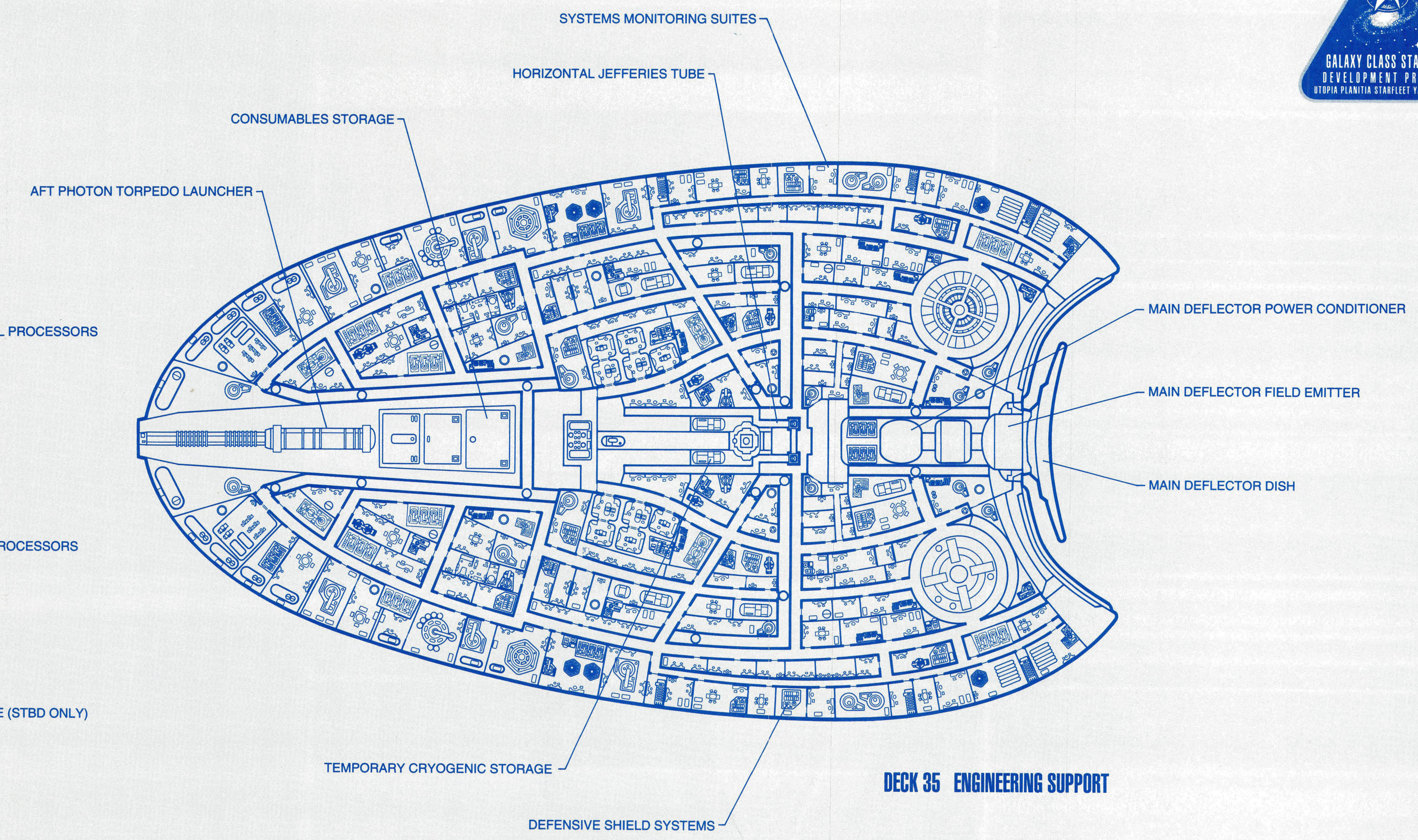
40274
7676-18834

SCREEN 11

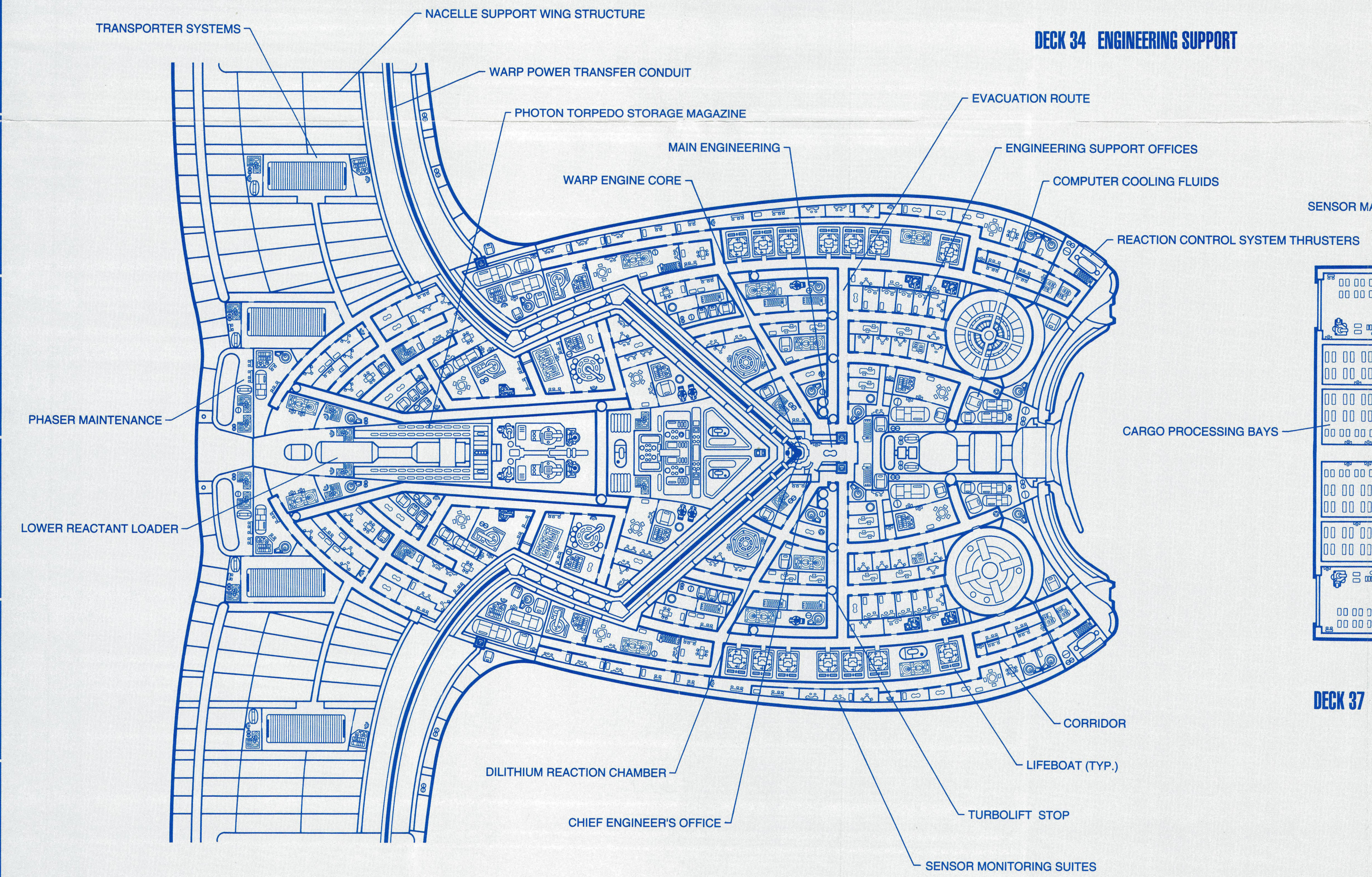




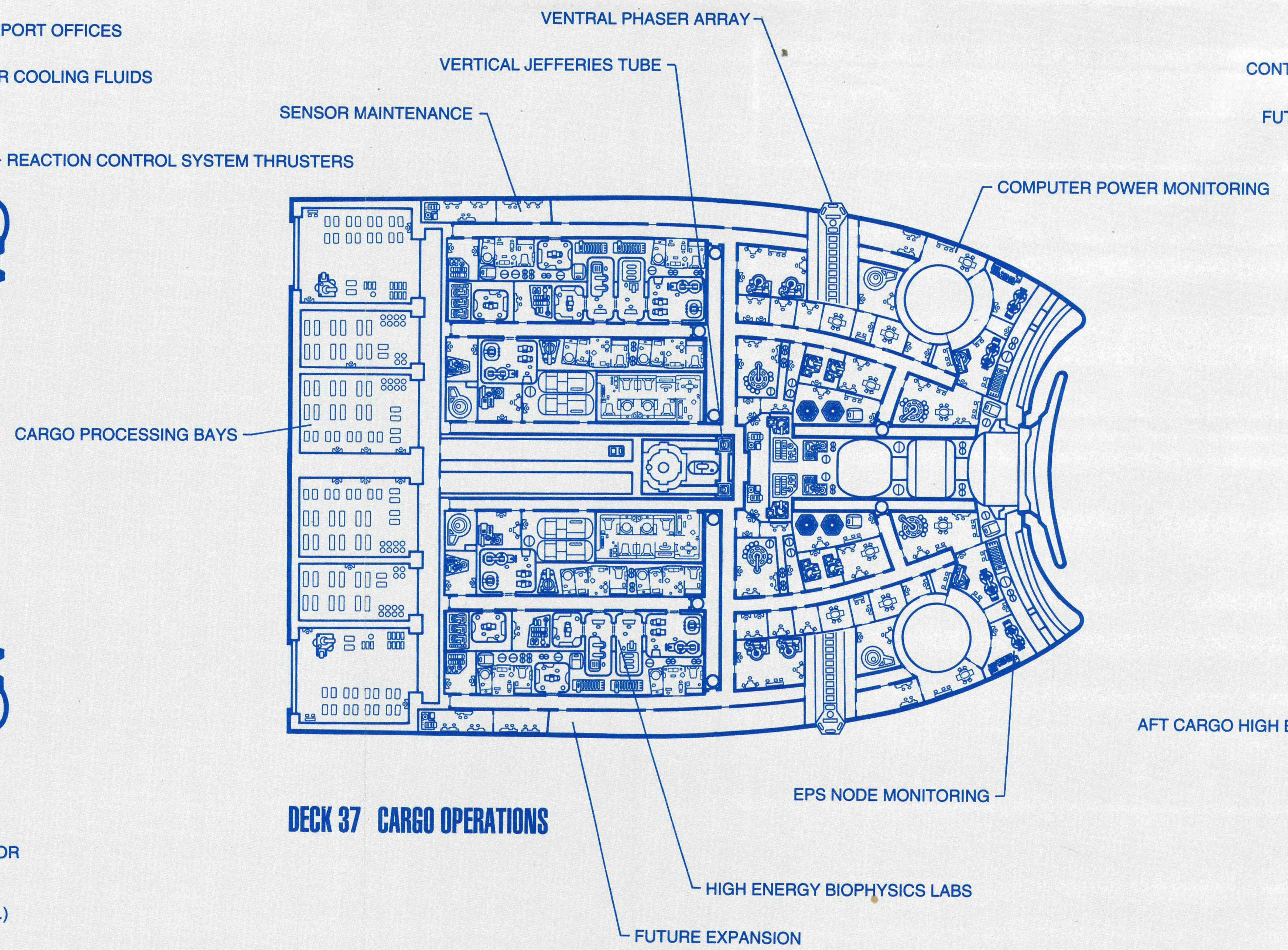
DECK 34 ENGINEERING SUPPORT



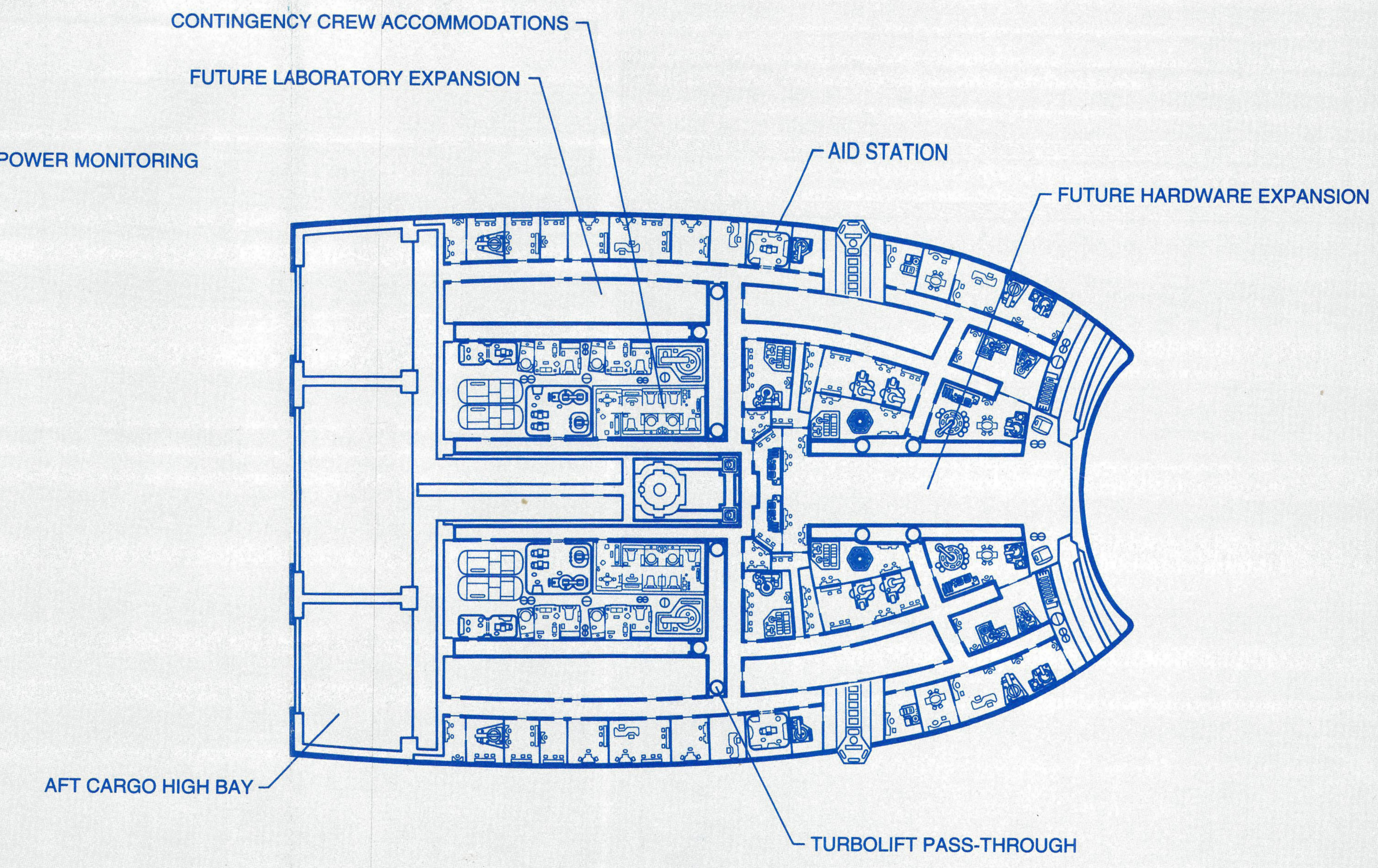
DECK 35 ENGINEERING SUPPORT



DECK 36 MAIN ENGINEERING



DECK 37 CARGO OPERATIONS



DECK 38 CARGO OPERATIONS

GALAXY CLASS STARSHIP
DEVELOPMENT PROJECT
UTOPIA PLANITIA STARFLEET YARDS, MARS

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SCALE METERS 0 10 20 30 40 50 60
FEET 0 10 50 100 150 200

SECTION THROUGH X-Y PLANE
SECTION THROUGH X-Z PLANE
SECTION THROUGH Y-Z PLANE

DORSAL SURFACE PLAN VIEW
VENTRAL SURFACE PLAN VIEW
FORE ELEVATION VIEW
AFT ELEVATION VIEW
STARBOARD ELEVATION VIEW
STARBOARD CUTAWAY VIEW
INTERNAL DECK PLAN VIEW

GALAXY CLASS STARSHIP
U.S.S. ENTERPRISE NCC-1701-D

STARSHIP	CLASS	REGISTRY	CURRENT ASSIGNMENT
6823423	45782378	73 293846	87634 3462

INTERNAL ARRANGEMENT

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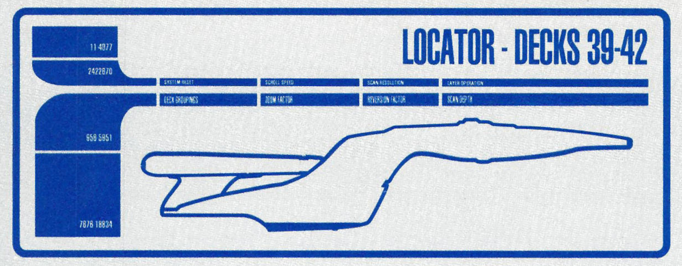
SCREEN 12

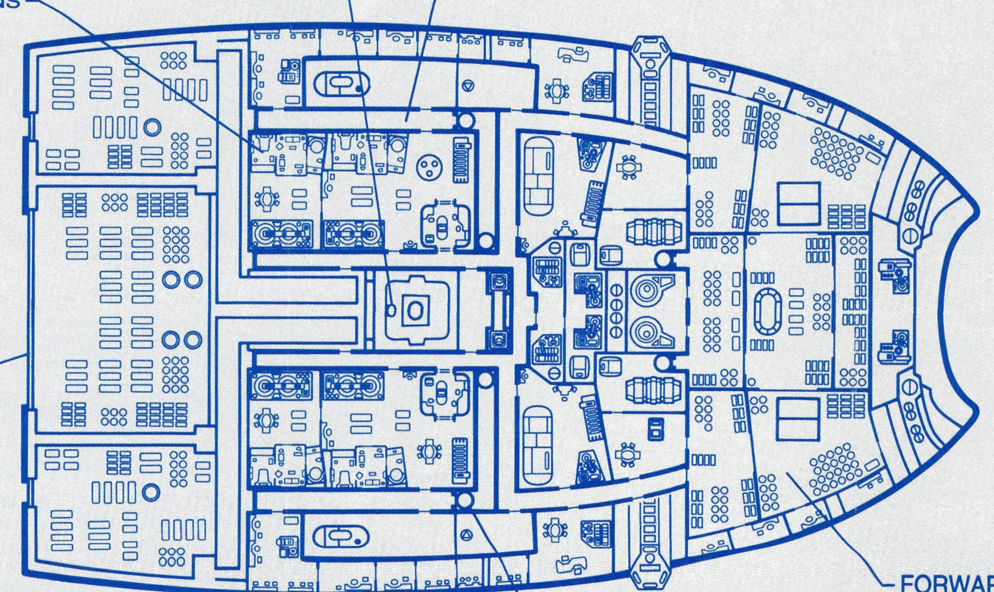
LOCATOR - DECKS 39-42



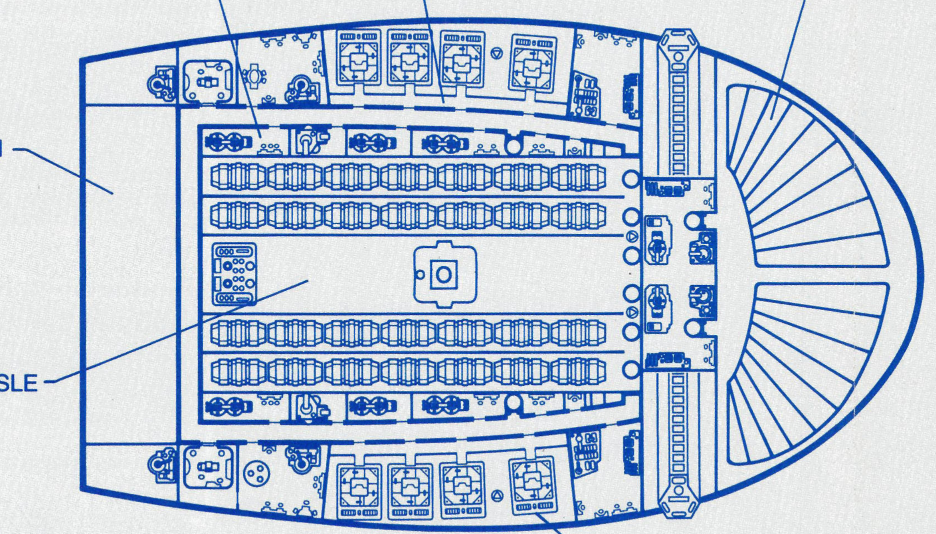
NOTE: VIEWS INCORPORATE STARFLEET YARD CHANGES FROM STARDATES 40563.61 TO 47312.78, PLUS AUTHORIZED FIELD REPAIRS, REPLACEMENTS, UPGRADES, AND EQUIPMENT ABANDONED IN PLACE.

SCALE METERS 0 10 20 30 40 50 60
FEET 0 10 50 100 150 200

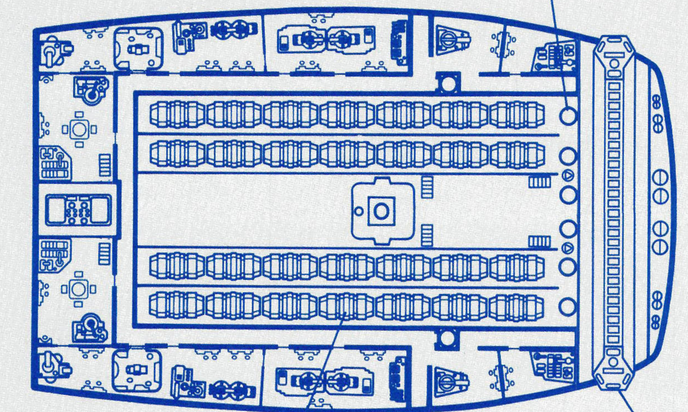
GALAXY CLASS STARSHIP DEVELOPMENT PROJECT
UTOPIA PLANITIA STARFLEET YARDS, MARS



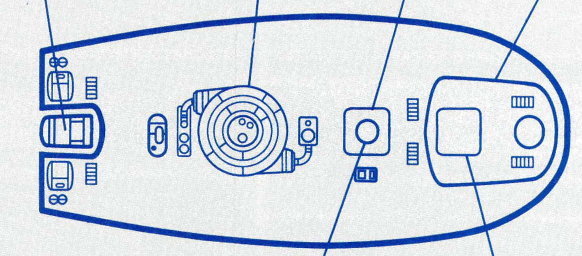
DECK 39 ENGINE CORE OPERATIONS



DECK 40 ANTIMATTER STORAGE



DECK 41 ANTIMATTER STORAGE



DECK 42 ANTIMATTER GENERATOR/LOADING

SYMBOL KEY: ROOM SPACES

CREW ACCOMMODATIONS

- A-TYPE ROOM
- B-TYPE ROOM
- C-TYPE ROOM
- D-TYPE ROOM
- E-TYPE ROOM
- F-TYPE ROOM
- G-TYPE ROOM
- H-TYPE ROOM
- J-TYPE ROOM
- K-TYPE ROOM
- L-TYPE ROOM
- M-TYPE ROOM
- N-TYPE ROOM

SELECTED INTERNAL SPACES

- CYBERNETICS LAB
- MEDICAL SCIENCE LAB
- SCHOOLROOM
- COUNSELOR'S OFFICE
- BARBER SHOP
- TACTICAL ANALYSIS
- CREW LOUNGE
- CREW LOUNGE
- BANQUET/CONFERENCE
- CREW LOUNGE
- CREW LOUNGE

SPECIAL QUARTERS CONFIGURATIONS

- VIP QUARTERS
- DIPLOMATIC LIAISON
- SCIENCE INVESTIGATOR
- CULTURAL/ENGINEERING

SPECIALIZED OPERATIONS AREAS

- PRESSURE REHAB FACILITY
- AID STATION
- RESERVE TRAUMA UNIT
- WEAPON RECHARGING UNIT
- IMPLANT RESEARCH LAB

SPECIALIZED OPERATIONS AREAS

- CYBERNETICS LAB
- POWER SYSTEMS RESEARCH
- BIOPHYSICS LAB
- MEDICAL RESEARCH LAB
- HIGH-ENERGY FLUIDICS LAB
- SENSOR SYSTEMS LAB
- DEFENSE STRATEGY LAB
- SUBSPACE SYSTEMS LAB
- TECHNOLOGY ASSESSMENT

SYMBOL KEY: HARDWARE

POWER GROUP

- ANTIMATTER STORAGE POD
- STANDARD FUSION REACTION CHAMBER
- SUBSPACE DRIVER COIL
- ELECTROPLASMA SYSTEM (EPS) STEP-DOWN NODE
- EPS DUAL DISTRIBUTION NODE
- EPS SINGLE DISTRIBUTION NODE
- EPS SWITCHING NODE
- EPS HIGH-FREQUENCY STEP-UP SUPPLY
- POWER FREQUENCY INVERTER
- SURGE PROTECTOR BLOCK
- REPLICATOR POWER CONDITIONER
- STRUCTURAL INTEGRITY FIELD GENERATOR
- INERTIAL DAMPING FIELD GENERATOR

COMMAND AND CONTROL GROUP

- SMALL MONITORING CONSOLES
- MULTI-OPERATOR CONSOLES
- SYSTEMS MONITORING STATIONS
- SYSTEMS DISPLAY REPEATER
- DEDICATED HARDWARE ACTIVATION
- SYSTEMS CONTROL PROGRAMMING
- ENGINEERING/RESEARCH EXPERIMENTS

FABRICATION SUBSYSTEMS

- REMOTE ALLOY DEPOSITION FURNACE
- SINGLE-USE GEL SOLIDIFICATION UNIT
- ELECTROCERAMIC SOLIDIFICATION UNIT
- ORGANIC SOLIDS REPROCESSING

FLUID HANDLING GROUP

- TYPE V FLUID STORAGE
- TYPE IV FLUID STORAGE
- TYPE III FLUID STORAGE
- TYPE II FLUID STORAGE
- TYPE I FLUID STORAGE
- PRESSURIZATION GAS SPHERES
- MAGNETIC FRACTIONATOR
- CENTRIFUGAL FRACTIONATOR
- TYPE 1 CRYO RECIRCULATOR PUMP
- TYPE 2 CRYO RECIRCULATOR PUMP
- WATER RECYCLING PUMP/FILTER
- FLUID SCRUBBER/SEPARATOR (LARGE)
- FLUID SCRUBBER/SEPARATOR (SMALL)

ATMOSPHERE HANDLING GROUP

- ATMOSPHERE RECIRCULATOR
- ELECTROSTATIC FILTER (LARGE)
- ELECTROSTATIC FILTER (SMALL)

TRANSPORTER SYSTEMS

- PERSONNEL TRANSPORTER
- CARGO TRANSPORTER
- EMERGENCY TRANSPORTER

SPACECRAFT HARDWARE ELEMENTS

- VERTICAL JEFFERIES TUBE
- LADDER
- CARGO PALLETS
- CARGO DRUMS
- PHOTON TORPEDOES
- STORAGE/EMERGENCY LOCKERS
- TYPE 6 PERSONNEL SHUTTLECRAFT
- TYPE 15 SHUTTLEPOD
- 4-METER STANDARD LIFEBOAT
- AUTO-DESTRUCT CHARGE (LARGE)
- AUTO-DESTRUCT CHARGE (SMALL)
- REPLICATOR NODE
- ELECTROHYDRAULIC SYSTEMS

SENSOR GROUP

- INTERNAL SENSOR
- SENSOR DATA PREPROCESSOR
- EXTERNAL COMMUNICATIONS ANTENNA
- INTERNAL COMMUNICATIONS PICKUP

SCALE METERS 0 10 20 30 40 50 60
FEET 0 10 50 100 150 200

SECTION THROUGH X-Y PLANE
SECTION THROUGH X-Z PLANE
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GALAXY CLASS STARSHIP
U.S.S. ENTERPRISE NCC-1701-D

STARSHIP	CLASS	REGISTRY	CURRENT ASSIGNMENT
9823423	45782378	73 293848	87834 3482

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SCREEN 13