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STAR TREK™

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U.S.S. VOYAGER™
NCC-74656

INTREPID CLASS

LAUNCHED: 2371

LENGTH: 343 METRES

NUMBER OF DECKS: 15

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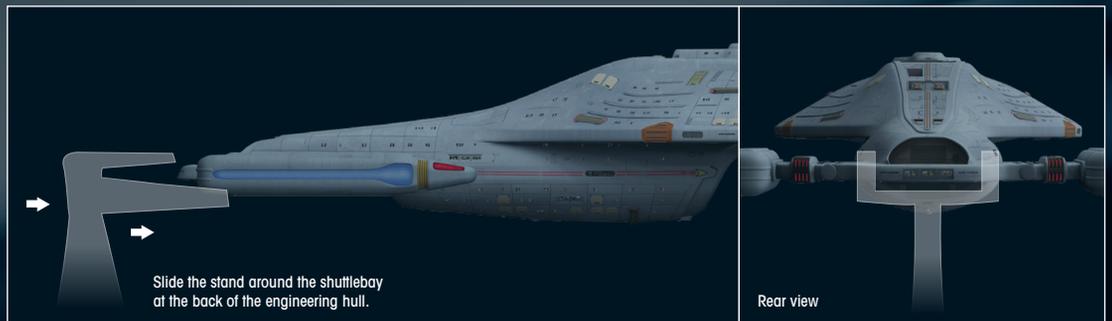
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U.S.S. VOYAGER
NCC-74656

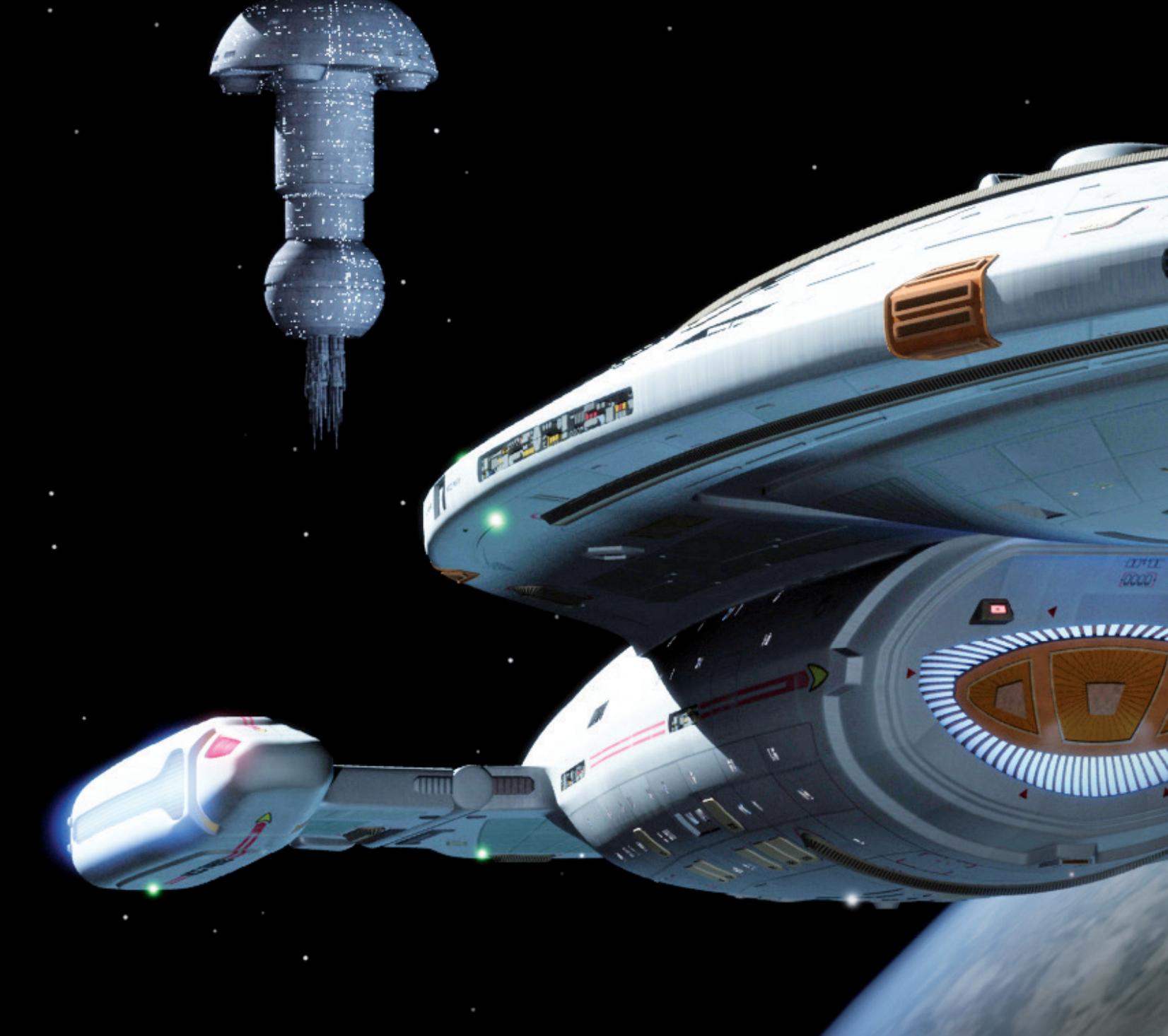
U.S.S. VOYAGER NCC-74656

SPECIFICATION



REGISTRY:	NCC-74656
CLASS:	INTREPID CLASS
CONSTRUCTED:	UTOPIA PLANITIA FLEET YARDS
LAUNCHED:	2371
RETURN TO EARTH:	2378
LENGTH:	343 METERS
DECKS:	15
CREW:	141
TOP SPEED:	WARP 9.975 (12 HOURS)
WEAPONRY:	11 PHASER ARRAYS
	4 PHOTON TORPEDO LAUNCHERS
CAPTAIN:	Kathryn Janeway



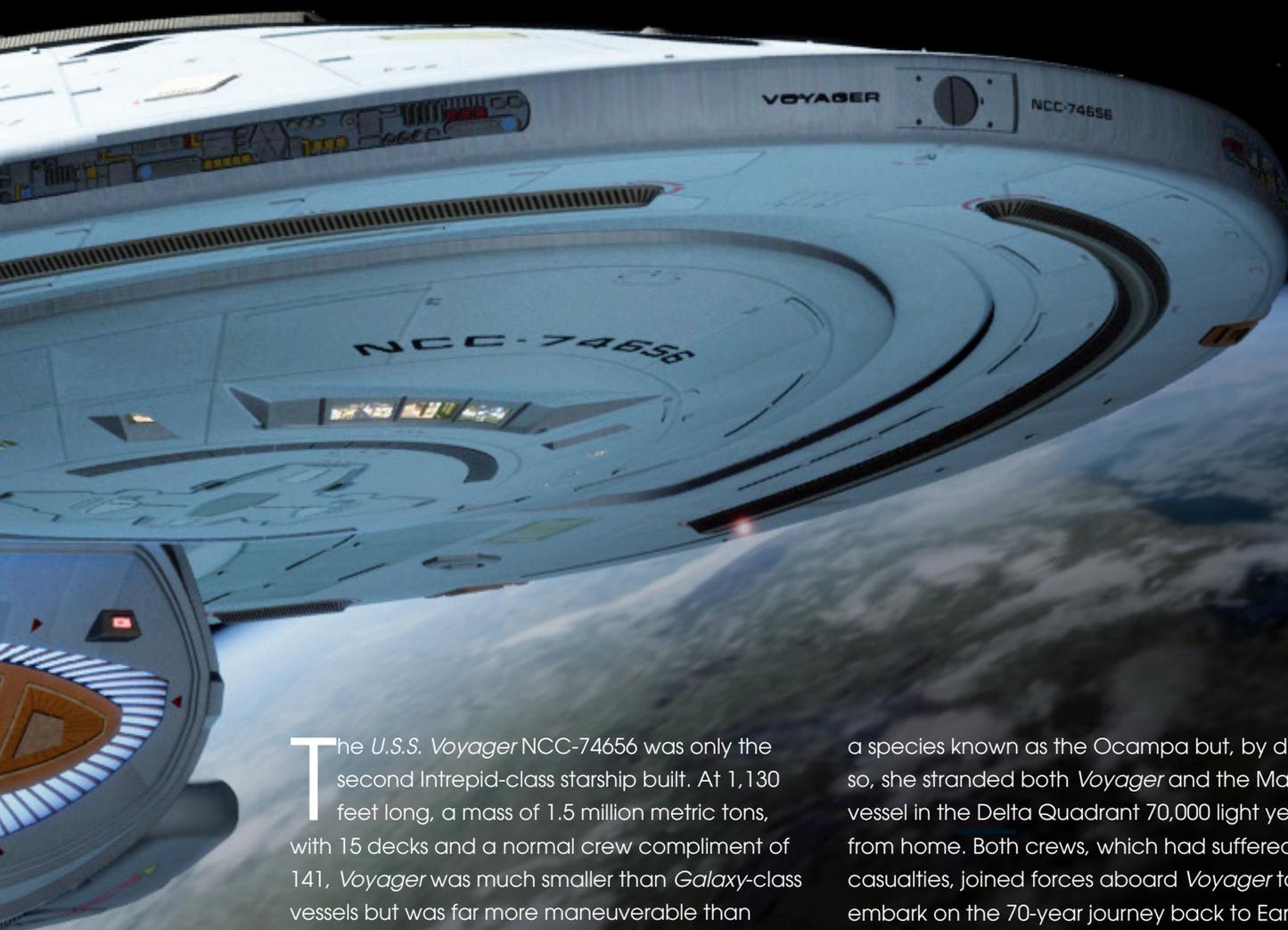


U.S.S. VOYAGER

NCC-74656

Voyager was lost in the Delta Quadrant, 70,000 light years from Earth, and made an epic journey home





The *U.S.S. Voyager* NCC-74656 was only the second Intrepid-class starship built. At 1,130 feet long, a mass of 1.5 million metric tons, with 15 decks and a normal crew compliment of 141, *Voyager* was much smaller than *Galaxy*-class vessels but was far more maneuverable than larger ships in the fleet.

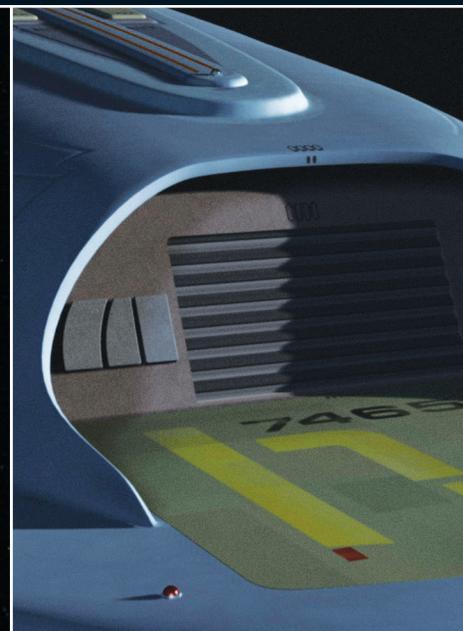
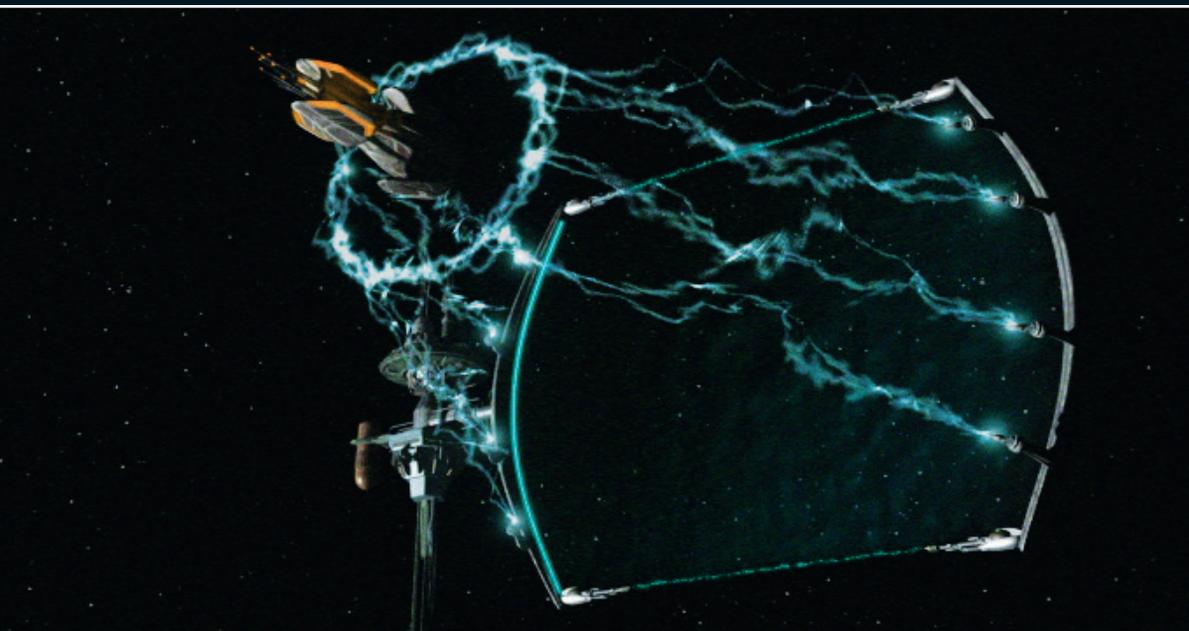
On the ship's first mission – locating and capturing a Maquis vessel that had disappeared in the Badlands – both *Voyager* and the Maquis ship were swept across the Galaxy and deep into the Delta Quadrant by an alien known as the Caretaker. Captain Kathryn Janeway opted to destroy the Caretaker's array to help protect

a species known as the Ocampa but, by doing so, she stranded both *Voyager* and the Maquis vessel in the Delta Quadrant 70,000 light years from home. Both crews, which had suffered serious casualties, joined forces aboard *Voyager* to embark on the 70-year journey back to Earth.

Voyager was designed as a multi-mission exploration vessel that would be supported by regular visits to Starbases, and, although she represented the cutting edge of Starfleet technology, she was far from the ideal vessel for such a massive journey. She had a normal cruising speed of warp 6 and a sustainable cruise velocity of warp 9. If necessary she could maintain a top speed of warp 9.975 for up to 12 hours. This meant she could cover approximately 1,000 light years every 12 months. She was built to carry enough fuel (antimatter and deuterium) for roughly three years of continuous space operation so from the



◀ During her time in the Delta Quadrant, *Voyager* made first contact with many new species. None proved to be more dangerous than the race the Borg dubbed 'Species 8472'. These three-legged creatures used organic technology and could survive in the vacuum of space.



▲ *Voyager* used a number of advanced technologies to make the 70,000 light year journey to Earth in a relatively short period of time. They used a graviton catapult to cut three years off the journey and completed the last leg using Borg transwarp conduits.

beginning it was clear that the crew would have to modify their ship.

Systems were re-routed to conserve as much power as possible. In particular the use of replicators was severely restricted. The captain's private dining room was removed and replaced with a galley that provided the crew with freshly cooked meals using vegetables grown in the hydroponics garden, which had been established in the cargo bays. The mess hall doubled as a reception area for diplomatic events and was also used by crewmembers as a rec room. To further let the crew relax, they were able to use *Voyager's* two holodecks, albeit on a strictly rationed basis.

Crew quarters were also affected by the modifications. *Voyager* had never been intended to accommodate families, so quarters located on decks 3 through 6 were modified to enable crew members to have the option of marrying and

raising children during the 70 years it would take for them to return home.

The most serious casualties involved the loss of the ship's entire medical staff. Fortunately, *Voyager's* state-of-the-art sickbay incorporated advanced holographic systems that generated an Emergency Medical Hologram. The EMH, which was programmed with the experience of 47 doctors, was left active and developed an unexpected level of independence.

Unwilling to accept that the journey would take generations, the crew worked on several engine projects using the ship's holodecks for extensive flight simulations vital to the development of the ground-breaking warp 10 engines that were tested on the Cochrane shuttle. In 2375, *Voyager* itself was equipped with a quantum slipstream drive, which enabled it to travel 300 light years closer to Earth within a short space of time. Both methods of

◀ *Voyager's* shuttlebay was located at the rear of the main hull. The ship carried a variety of Class-2 and Class-6 shuttles, all of which were warp capable. The shuttles were regularly sent on reconnaissance and diplomatic missions.

▶ During the journey home the crew lost many of their shuttles but fortunately they had the resources to build new ones. They also built an advanced ship known as the Delta Flyer (right), which incorporated Borg technology provided by Seven of Nine.



◀ In emergencies *Voyager* could eject the warp core from a hatch in the underside of the main hull. Assuming the core did not detonate it could be retrieved, repaired and reinstalled in the ship.

◀◀ If the ship were lost, the crew could use escape pods that were under small hatches around the hull. Each escape pod had a small engine and enough shielding to allow it to make plane-fall.



propulsion were, however, ultimately deemed to be too unstable.

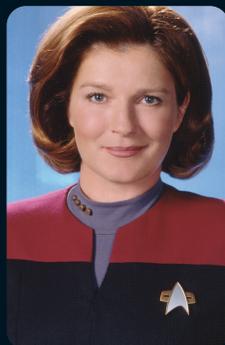
The crew also used Borg technology to update *Voyager's* astrometrics laboratory and enhance the ship's navigational sensors. The new astrometric sensors measured the radiative flux of up to three billion stars simultaneously. The upgraded system allowed the crew to plot a new course home that shaved five years off their original projected journey.

After initially assuming the ship to have been lost, Starfleet learned of *Voyager's* fate. A Starfleet project named Pathfinder was quickly put in place, with the aim of making contact with the ship through a Federation communications array, known as MIDAS, and via a micro wormhole and the Hirogen communications network.

From 2377 onwards the crew was able to send and receive orders and instructions from Starfleet

and messages to and from their loved ones back home in the form of monthly data streams. With the help of the Pathfinder project and the destruction of a Borg transwarp hub, used to deploy vessels anywhere in the quadrant within a matter of minutes, *Voyager* was finally able to return to Earth a mere seven years after the crew was stranded in the Delta Quadrant.

▲ The Captain's ready room was located on Deck 1 to the port of the main bridge. It provided Captain Janeway with a working area where she could perform her administrative duties and talk to crew members.



DATA FEED

The *U.S.S. Voyager* was commanded by Captain Kathryn Janeway who assumed control of the ship as soon as it was launched. The crew was trapped in the Delta Quadrant on the ship's first mission, and she decided it was more important to protect the *Ocampa* than to get home. Under her command *Voyager* made the journey to Earth in a tenth of the time that was expected and on her return she was promoted to Admiral.

DATA FEED

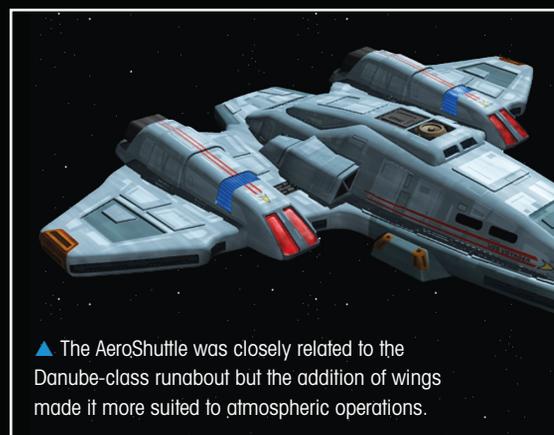
Like the Captain's yacht on the *Enterprise-D* before it, *Voyager's* AeroShuttle was always part of the ship's design but never actually appeared on screen, although this launch sequence was worked out by the show's visual effects team.

VOYAGER's AeroShuttle

Intrepid-class starships were fitted with an autonomous medium-range vessel, known as the AeroShuttle, which was normally docked on the underside of the saucer section. The AeroShuttle, which was designed to operate within a planet's atmosphere, was closely related to the *Danube*-class runabout, and they were based on the same hull design.

The AeroShuttle was a multi-mission vessel that was intended for long-range

reconnaissance missions, planetary landings and crew evacuation. It was considerably larger than a standard shuttle and was suitable for extended missions. It was warp capable, and the warp core ran down the spine of the ship, with a single racetrack dilithium swirl chamber positioned roughly in the middle that fed the twin warp nacelles. The warp core also provided power to the defensive shields, the navigational deflector and four pairs of Type VI



▲ The AeroShuttle was closely related to the *Danube*-class runabout but the addition of wings made it more suited to atmospheric operations.

1 Docked in saucer section



2 Docking clamps released



3 Independent operation



phaser arrays. The AeroShuttle was also fitted with two microtorpedo launchers.

The AeroShuttle was designed to dock seamlessly with its mothership, with structural integrity fields ensuring that it was completely integrated. Hatches in the hull allowed *Voyager's* crew to walk straight in from the main ship.

Aeroshuttles were considered a ship class, and some entered service as independent vessels, or were assigned to the hangars or larger Starfleet vessels.

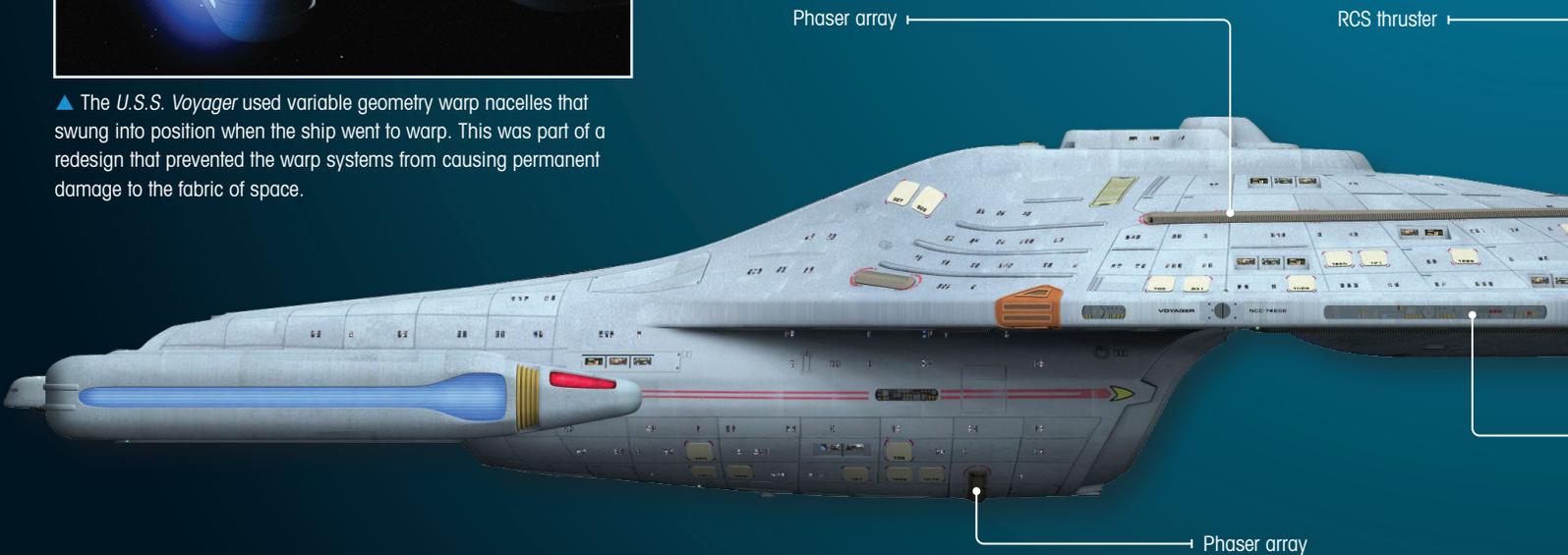
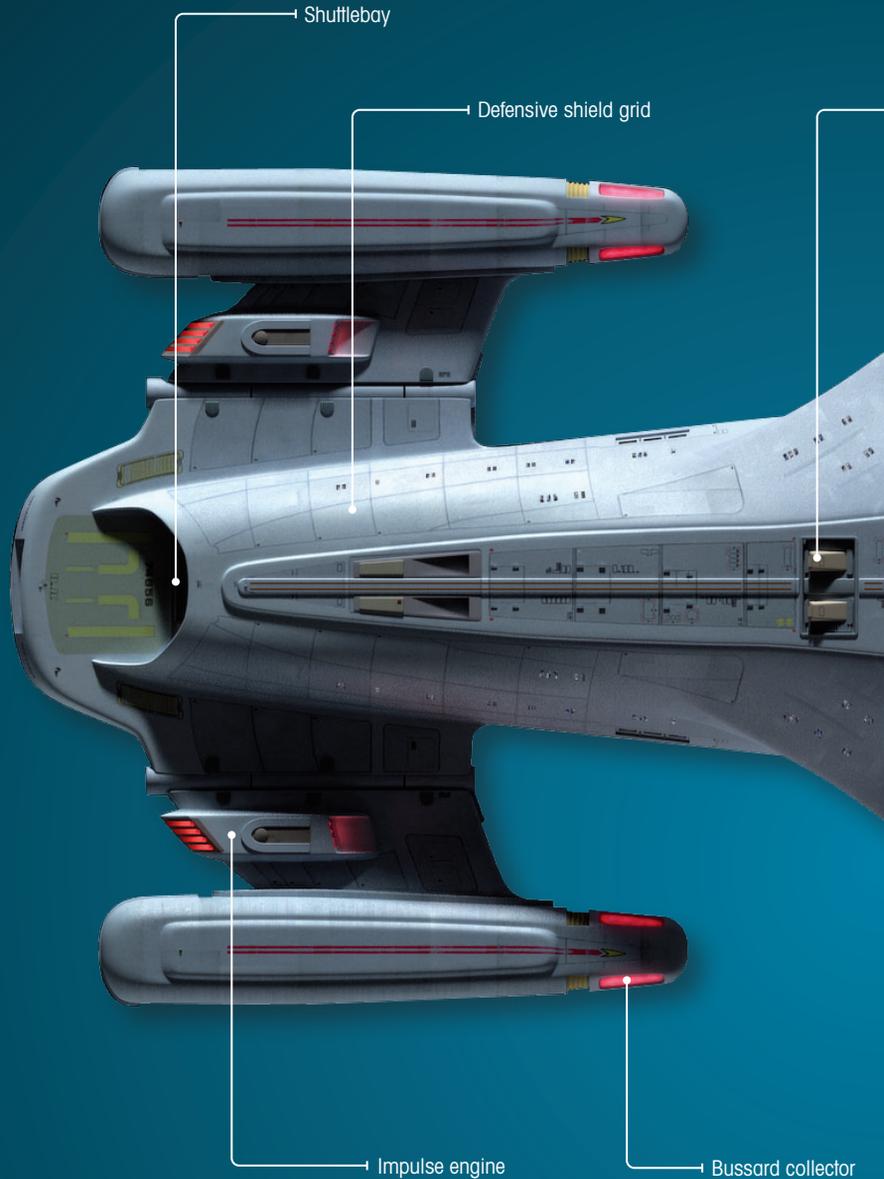


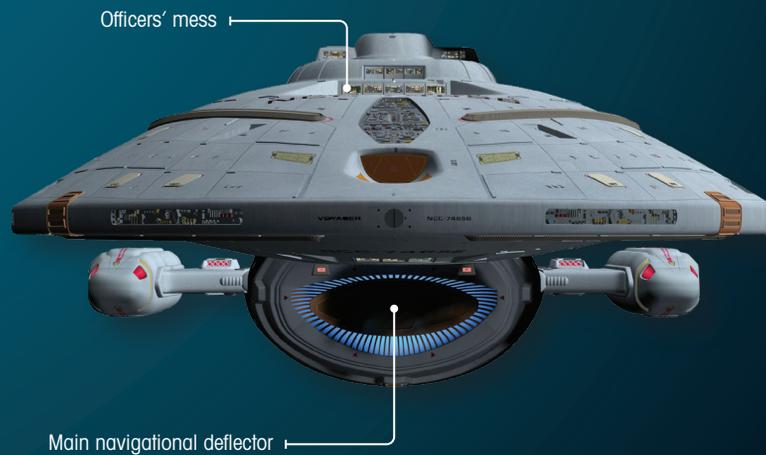
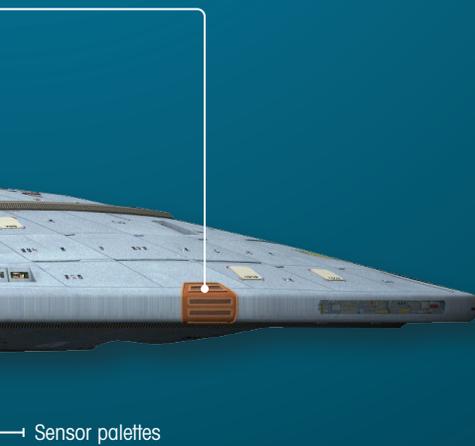
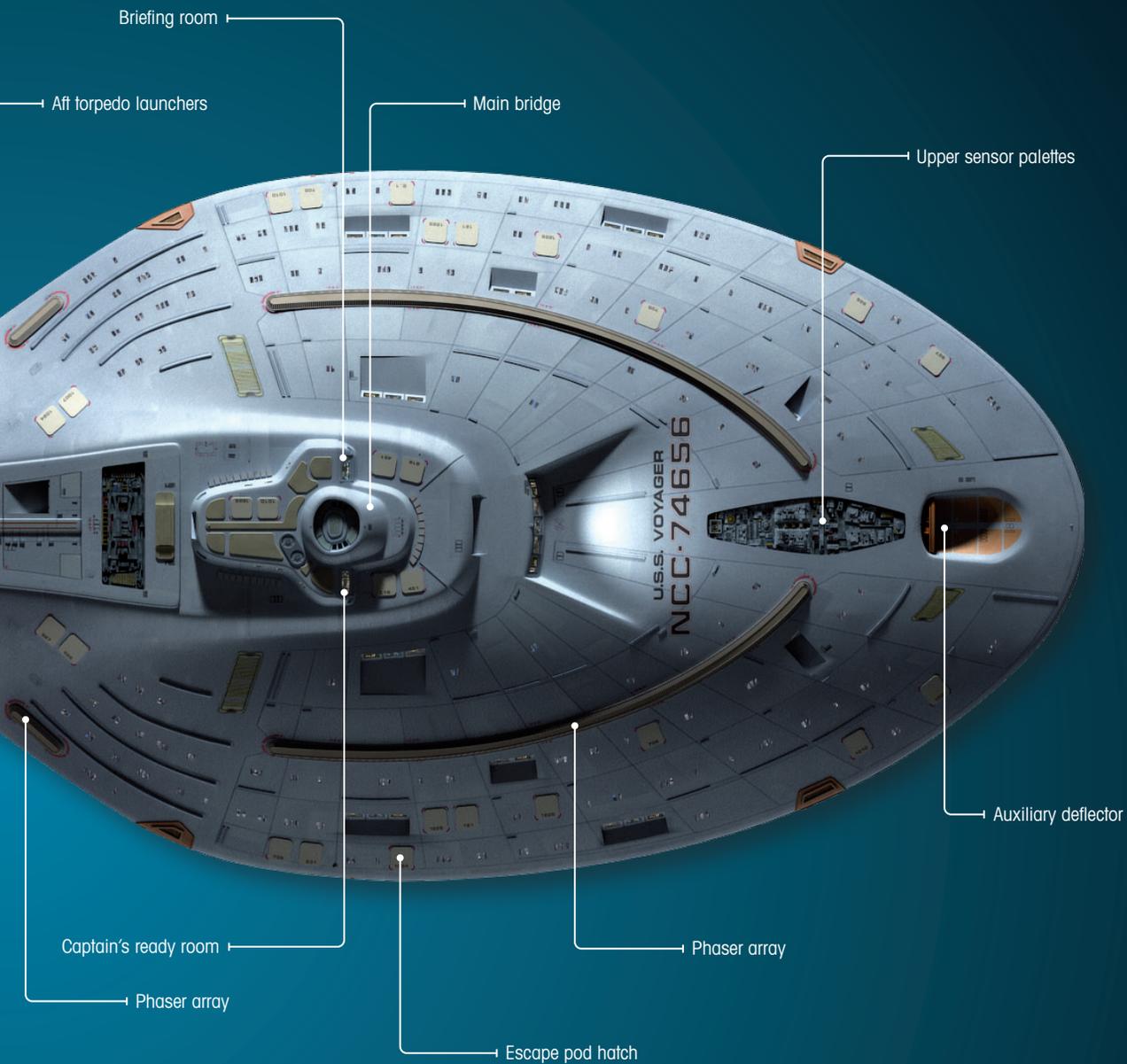
PLANETARY LANDING

Unlike most large Starfleet vessels, *Voyager* was designed to land on a planet's surface. The landing procedure starts with the Chief Engineer taking the warp core offline and venting plasma from the nacelles. The Conn officer then brings the landing mechanisms online and sets the inertial dampeners and structural integrity fields to maximum. The Ops officer monitors for any EM discharges. On the final stage of approach the four landing struts are deployed and immediately before touchdown the structural integrity field is adjusted to match planetary gravity. After landing, the engines are disengaged and the thruster exhaust is secured.



▲ The *U.S.S. Voyager* used variable geometry warp nacelles that swung into position when the ship went to warp. This was part of a redesign that prevented the warp systems from causing permanent damage to the fabric of space.





COMPUTERS

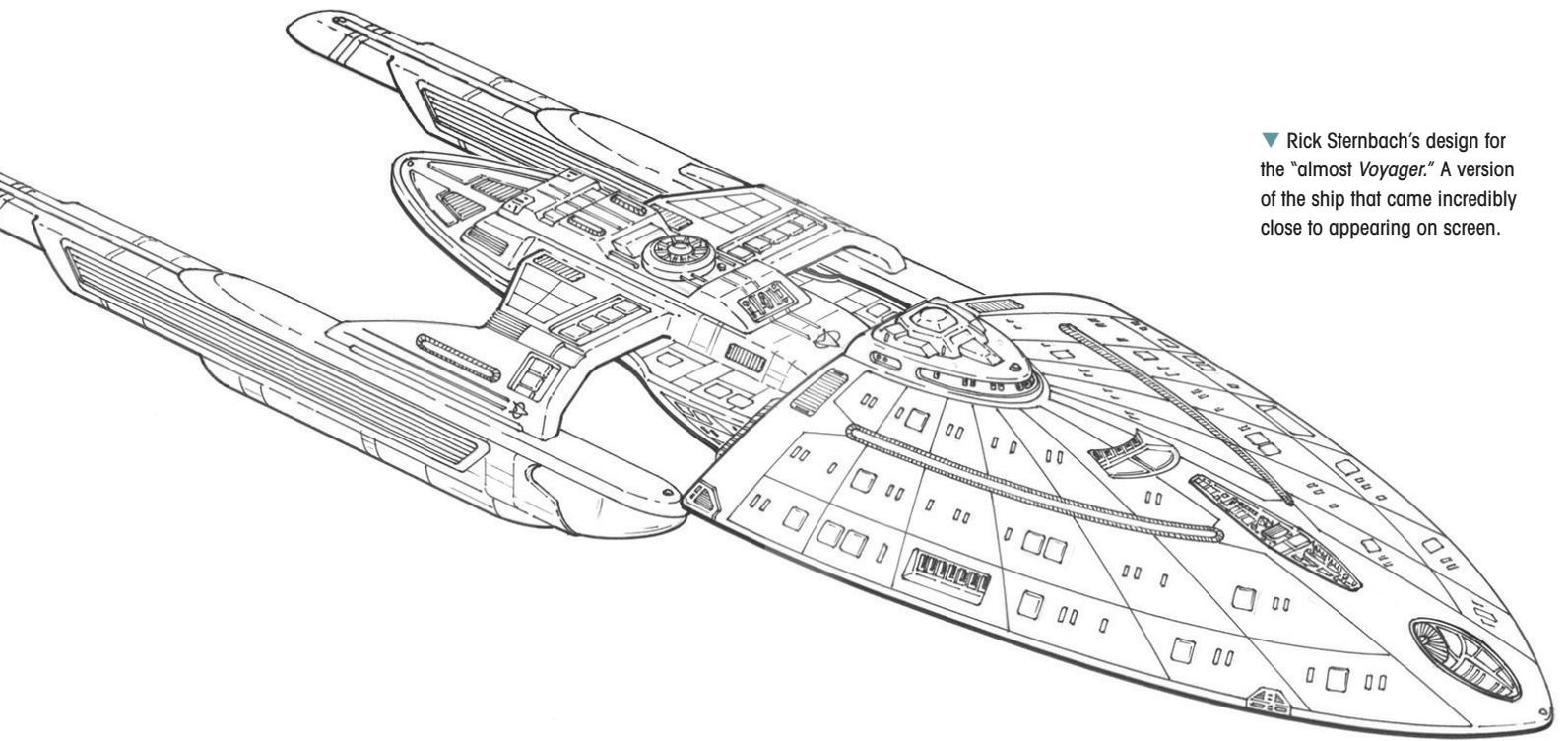
Voyager was fitted with state-of-the-art computers that used bio-neural gel packs. These organic components could make extremely fast calculations but were vulnerable to disease.

TORPEDOES

In addition to the regular complement of photon torpedoes *Voyager* was issued with tricobalt charges, that had a massive explosive yield. Janeway used two of them to destroy the Caretaker's array.

UPGRADES

Voyager completed the journey to Earth with the help of technology that a version of Janeway brought back from the future. The technology, included advanced armor and transphasic torpedoes that were a match for the Borg.



▼ Rick Sternbach's design for the "almost Voyager." A version of the ship that came incredibly close to appearing on screen.

DESIGNING THE



U.S.S. VOYAGER

The design for the *U.S.S. Voyager* drew inspiration from a killer whale, a Starfleet runabout and a sleek and curvy car.

When work first started on *STAR TREK: VOYAGER* very little was known about the ship. The only things that concept designer, Rick Sternbach knew for certain were that the producers wanted the new design to be much smaller than the *Enterprise-D* and that it would have the ability to land and take off from a planetary surface.

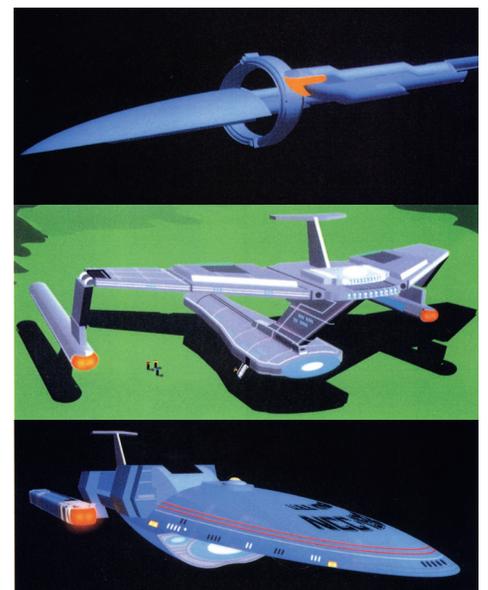
"This was a real departure from the norm," recalls Sternbach. As a result, many of his early design sketches featured swept down nacelles like the runabout that could support the ship when it had landed.

The producers also wanted some part of the ship to animate or articulate. This could be the nacelles, the weapons

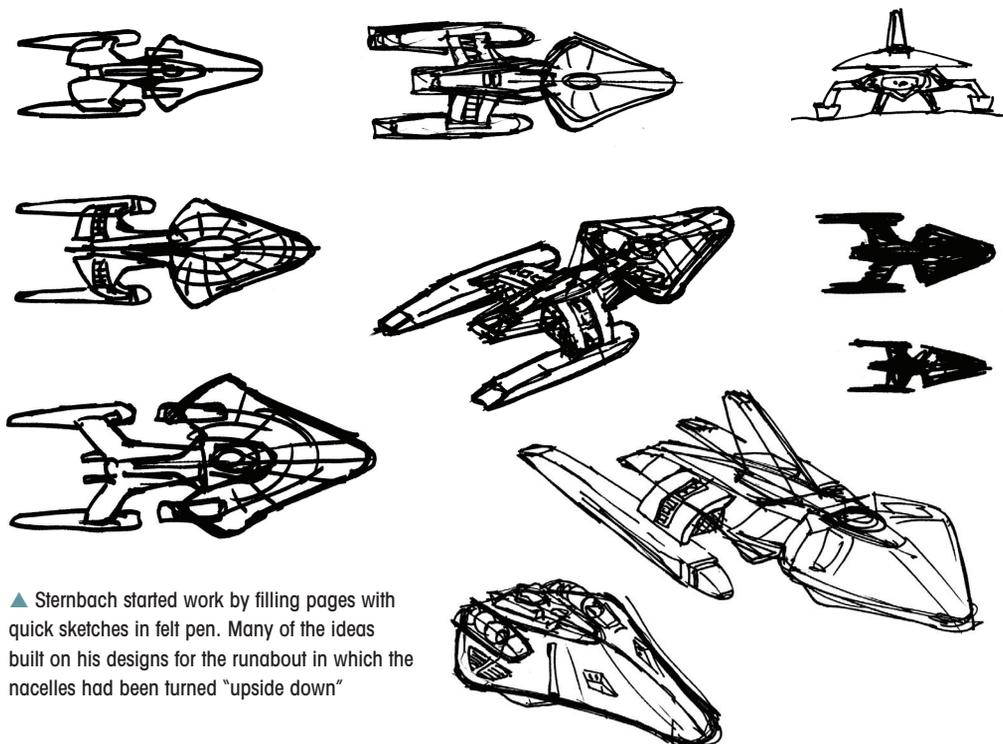
array, or the navigational deflector. Rather than wait for any more details, Sternbach, immediately got to work on preliminary sketches using his design for the runabout as well as conventional Starfleet vessels with the traditional saucer sections and engineering hulls as references. He also looked to nature, knowing that in the past birds and marine animals had provided the inspiration for some of the most successful ship designs.

ORGANIC DESIGN

"*Voyager* began in embryonic form by taking on the characteristics of an Orca whale, a Manta Ray and various birds," recalls Sternbach. "Those biological shapes were then hardened into a

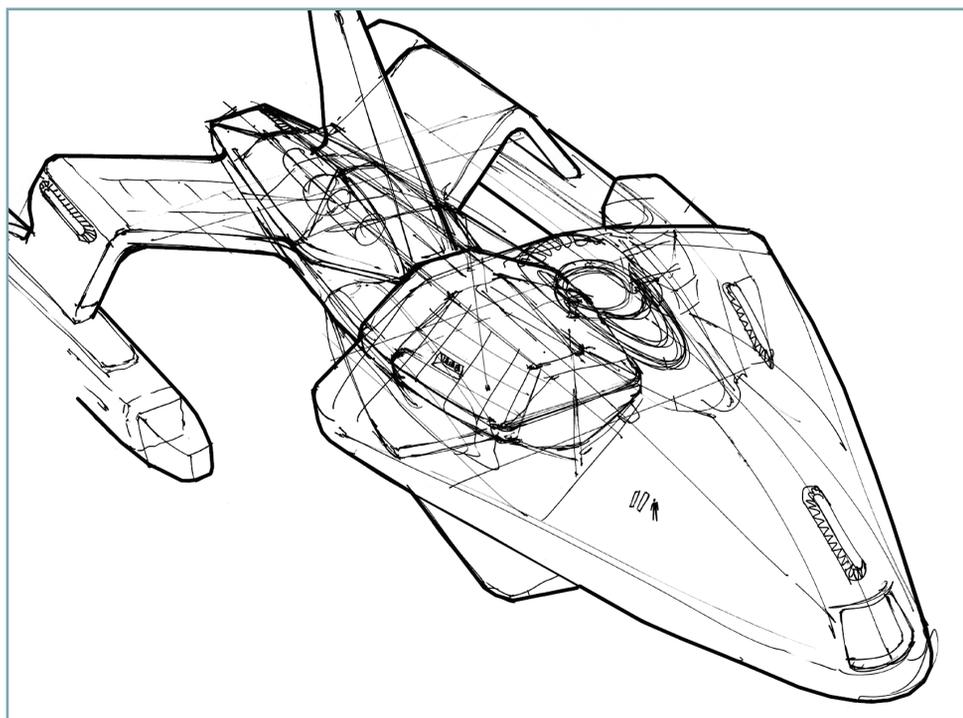


▲ Throughout the design process Sternbach experimented with computer-generated sketches that allowed him to look at his designs from a variety of different angles.



▲ Sternbach started work by filling pages with quick sketches in felt pen. Many of the ideas built on his designs for the runabout in which the nacelles had been turned "upside down"

▼ At this early stage the producers picked out this design, which featured a wedge-shaped "saucer section".



◀ Once he had been given a basic direction for the design, Sternbach started to work on the details – thinking about the scale and the position of all the elements that are essential parts of any Starfleet vessel.

proportions of those preliminary designs gradually evolved with pieces regularly being added and then taken away. Different hull shapes were tried – both curved and angular.

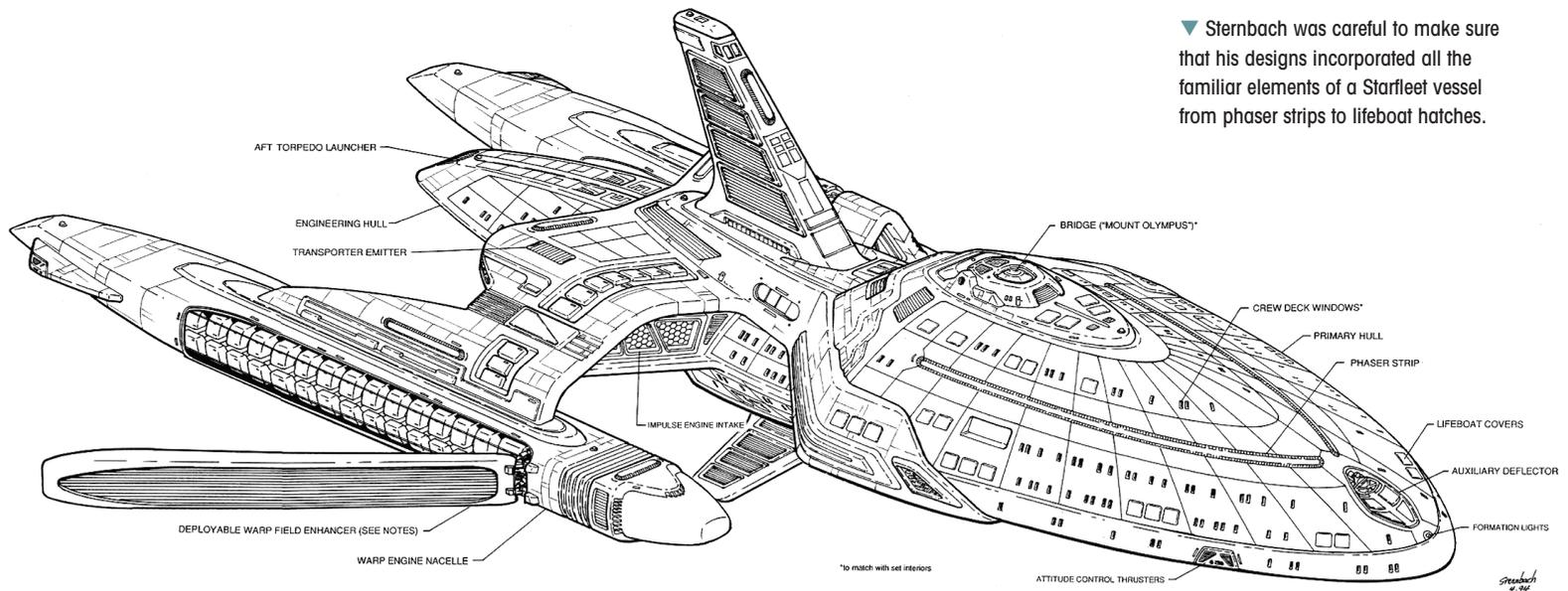
FAMILIAR ELEMENTS

"Many of the eventual design elements such as the dropped nacelles, the fin (which would later disappear) and the extended arrow-shaped saucer section got worked out at this stage as well as the placement of familiar items like the impulse engines and phaser array" explains Sternbach. "Also because *Voyager* itself was going to be so much smaller than previous ships, structures like the windows had to be made proportionately larger and visible and the design required more model details in order to match the stage sets which of course influenced various aspects of the design."

spacecraft structure that echoed some of the Starfleet designs that already existed. Preliminary functions, like radiators or exotic warp stabilizers were then added. Continuing to follow the Starfleet standard, the bridge was then located on Deck 1 at the top of the ship while a variety of 'placeholder' crew windows were dotted about the hull,

which from past experience I knew would most likely be built into the standing set."

One approach stood out in Sternbach's early sketches: a streamlined dart-like primary hull, which was matched to a flattened, elongated engineering hull with swept-back runabout pylons. Over time, the



▼ Sternbach was careful to make sure that his designs incorporated all the familiar elements of a Starfleet vessel from phaser strips to lifeboat hatches.

At this stage, preliminary hull cross sections were drawn in blue pencil to check different internal deck heights, the total number of decks and the overall length of the ship.

"In the past, many Starfleet ships seemed to have 13 feet between decks, an idea partially driven by set wall heights and the idea that there was a two-foot structural thickness made of deck plating, gravity generators and various conduits," Sternbach says. "So at this stage of the design process, *Voyager* could have been anywhere between 500 to 1,200 feet long, which in comparison to the *Enterprise-D* at 2,108 feet was tiny."

MOVING PARTS

Recalling the producers' desire for the ship to have an obvious moving part, Sternbach played around with various ideas before settling on the nacelles as the most obvious choice. He then experimented with a view to making the warp nacelles swing from a curved down position up in to a horizontal position whenever the ship went into warp flight.

That first batch of hull designs was assembled into a booklet in order to

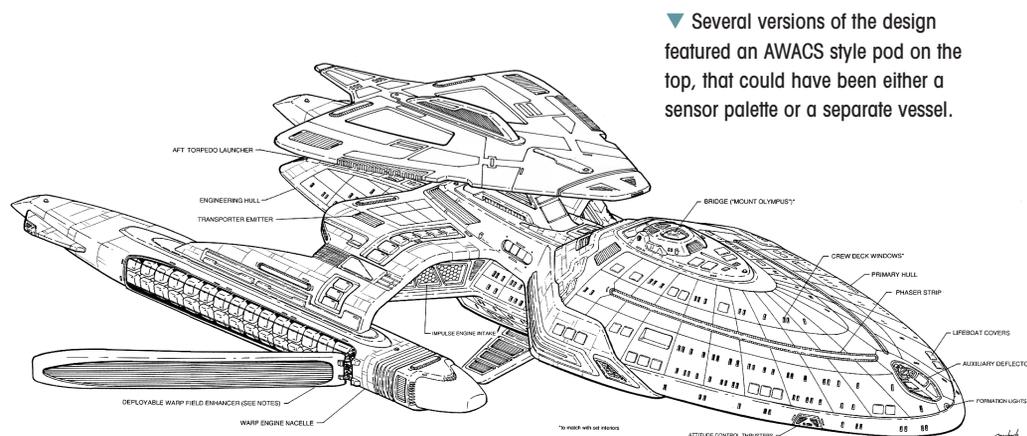
give the producers an idea of what could be achieved and could serve as a starting point for discussions about what they liked or disliked or wanted changed.

VOYAGER EVOLVES

"During those discussions, the producers decided they were keen on the design which featured a more streamlined dart shaped saucer section and they then requested it be used for the next phase of the process." Around this time the slightly angular dart front was smoothed off and nestled into the engineering section. At this point it was still assumed that the two hulls would separate in the same way they did on the *Enterprise-D*,

though this idea would be abandoned at a later stage. The art team also experimented with the idea that doors on the nacelles would open to expose the warp coils for some new kind of energy jump. Impulse thrusters were buried underneath as in the runabout, and a large triangular wedge sat on top of the ship, which would possibly act as an AWACS-type of long range sensor array, or even some kind of detachable ship such as the captain's yacht or a scout vessel.

As work continued Sternbach produced an alternate version featuring a sleeker looking ship, which did away with the AWACS wedge and also combined some shape ideas from the



▼ Several versions of the design featured an AWACS style pod on the top, that could have been either a sensor palette or a separate vessel.

U.S.S. Excelsior. As work continued more details crept in, notably the large forward sensor cut out and a stepped engineering hull that supported a ring of large cargo bays and impulse engines. Sternbach then submitted the sketches to the producers. "The wedgeless and sleeker version was the one that received a thumbs up"

SHIP THAT NEVER WAS

At this point, everyone thought that they had established the final look of *Voyager*, and a study model was built. A top plan view of the ship was scaled up to a length of 48 inches – the presumed size of the motion control model at that time. From the top view, Sternbach derived bottom, side, fore and aft views and worked out that the ship would have at least 14 decks and be at least 1,000 feet long. Details such as photon torpedo launchers, impulse reactors and the warp core were dropped inside, while on the exterior, two doors were added forward of the warp core hatch and aft of the deflector dish allowing for landing gear so the ship could touch down on a planet. Sternbach also sketched in a hint of engine hardware on the exterior. The

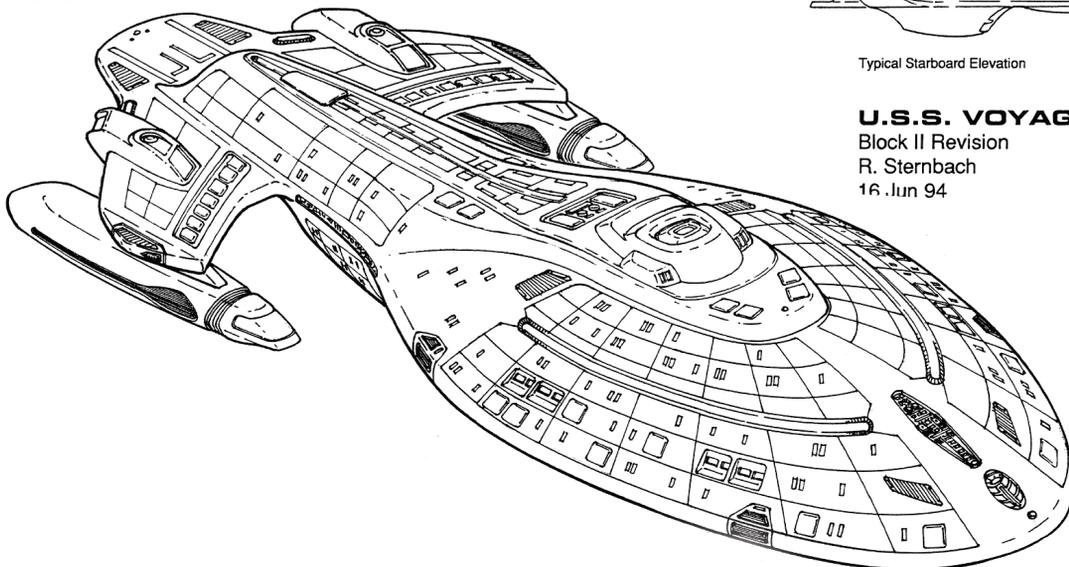


only stage left to the design process was to produce a final set of modelmaker's blueprints but at the last moment the producers had a final request – they wanted the ship to have a "curvier shape, like a Lexus". Sternbach went back to the drawing board and produced a revised version of his design that not only blended the shapes together but also altered the position of the nacelles, which now started horizontal and swept up when the ship went to warp. Nearly a year after he had produced his first sketches, *Voyager* was finally ready to take flight.



Typical Starboard Elevation

U.S.S. VOYAGER
Block II Revision
R. Sternbach
16 .Jun 94



◀ The study model that was built from Sternbach's drawings and nearly approved. As the producers looked at it in detail they decided that their new ship needed one more pass so they asked the art department to blend the shapes together to make the ship curvier.

◀ Sternbach's revised and all-but final design. After this, he produced a series of close-up sketches for Tony Meining's Brazil Fabrications who made the shooting model. Final details were worked out during the modelmaking process.



FILMING THE



NCC-74656

III Voyager was the last major *STAR TREK* vessel to begin life as a physical model, but as a sign of the times it was also made in CG...

From the very beginning there were a lot of *U.S.S. Voyagers*. For the first time ever, the decision was made to create both physical and digital versions of the ship that would be used on a regular basis. The first version of *Voyager* to be built was the physical model, which was constructed by Tony Meininger's Brazil Fabrication, who worked from sketches produced by Rick Sternbach. This physical model was 61 inches long and included tiny film cells with photographs of the real sets in the windows.

The physical model was then supplied to two different CGI companies, Amblin Imaging and Santa Barbara Studios, both of which scanned the ship in 3D and created shots for the opening title sequence. Inevitably there were subtle differences between the two versions. For their model Amblin used a technique that involved photographing the physical model and then wrapping the images around their CG version. The results were impressive but not without a few problems since it was virtually impossible to fit the 2D photographs around the 3D model perfectly.

During *VOYAGER*'s second and third seasons the *STAR TREK* visual effects team almost completely abandoned traditional models and Meininger's physical version of *Voyager* was effectively retired. It was eventually sold at auction in 2006 for \$132,000.

The two CG companies used different software to create their effects, with Santa Barbara Studios using a unique system that could handle gaseous clouds, but this meant that nobody else could use their version of the model. At the end of the second season Amblin's CG version of the model was handed over to Foundation Imaging, who were now sharing the show's effects with Digital Muse, and the Santa Barbara Studios CG version was also retired.

One of the Foundation supervisors, Rob Bonchune, was horrified to discover that, presumably due to some kind of corruption, the textures on the CG model had a definite purple tint to them. He went through the ship correcting the colors so they matched the practical model. He also upgraded the way the deflector dish was lit, again so that it looked more like the practical model. This improved version of the model was then shared with Digital Muse.

As the series progressed, various episodes called for close-ups of different sections of the ship, including the escape-pod hatches, the exterior of the bridge and the rooms on either side of it. Each time this happened the VFX team improved the detail in this part of the CG model until eventually the entire model had been upgraded, making it the most sophisticated CG model that had ever appeared in *STAR TREK*.

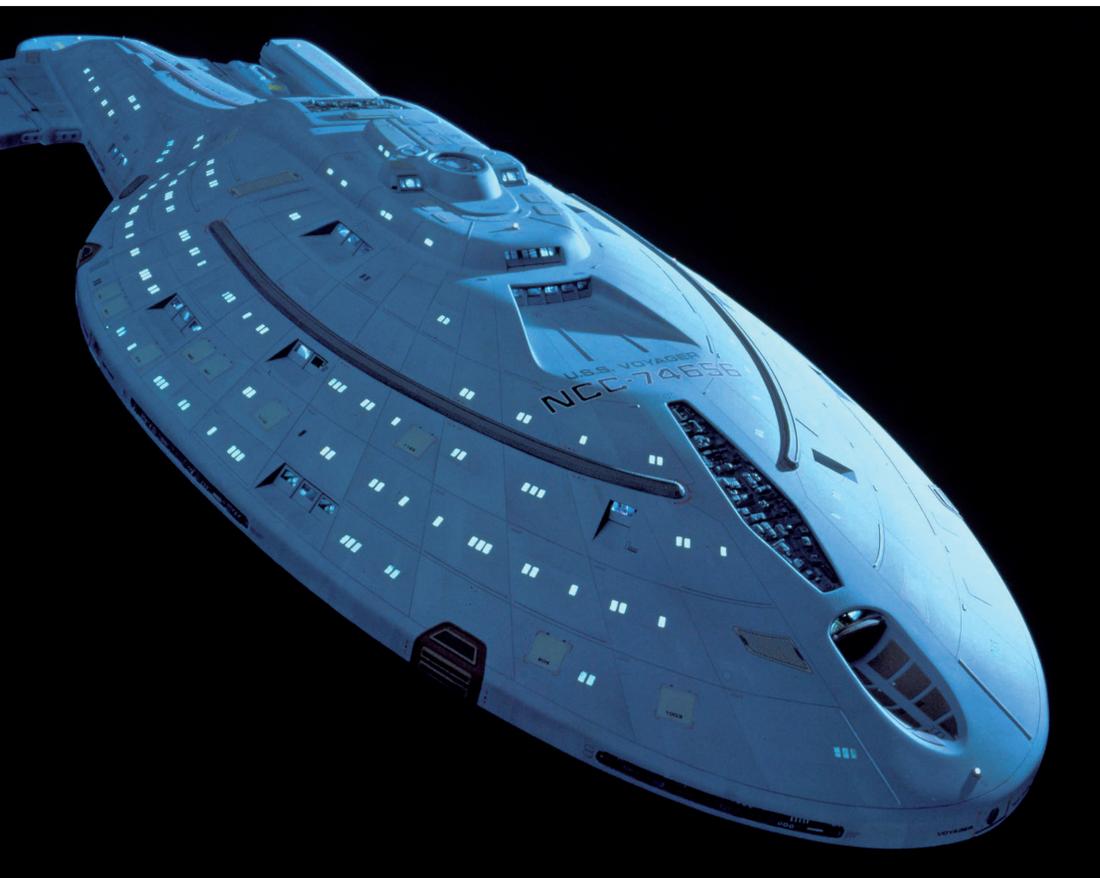


▲ Foundation Imaging's upgraded CG version of *VOYAGER* during the sixth season after several areas had been created in hi-res detail.



▲ The earliest version of the Santa Barbara Studios model, as seen in the title sequence, where their technology allowed it to part 'clouds'.

ON SCREEN



TRIVIA



VOYAGER's producers had always planned to make the Borg into one of the series major adversaries. They held off introducing them until the end of the third season because the Borg were also the adversaries in *STAR TREK: FIRST CONTACT* which was already in development when the new series launched. When the Borg did appear, it revitalised the series not least because the producers also introduced Seven of Nine, who became one of the most popular characters in *STAR TREK*'s history.



The VOYAGER episode 'Threshold' is the first – and so far only – time that we have seen anyone travel at Warp 10. Other episodes have referred to speeds that are higher than this, but we know that they must have been using a different Warp scale and have actually equated to speeds in the high Warp 9.999 range. A person travelling at Warp 10 is travelling at infinite velocity meaning that they occupy every point in the universe simultaneously. Tom Paris is the only person we know who has done this, and it makes him evolve into a bizarre new life form.

FEATURED TV SERIES:	STAR TREK: VOYAGER	
FIRST APPEARANCE:	'Caretaker' (VOY)	
MOVIE APPEARANCES:	None	
FINAL APPEARANCE:	'Endgame' (VOY)	
DESIGNED BY:	Rick Sternbach	

KEY APPEARANCES

'Caretaker'

The *U.S.S. Voyager* made its first appearance in the pilot for *STAR TREK: VOYAGER*. From the beginning it was clear that it was very different from Captain Picard's ship. This was a smaller, advanced explorer that lacked many of the comforts provided by the *Enterprise-D*, which was effectively a town floating in space. We also saw *Voyager*'s new technologies, such as bio-neural computers and variable geometry warp nacelles.

'Year of Hell'

Because *Voyager* was stranded far from home without access to Federation starbases, the crew could only make limited repairs. Most of the time the damage was kept under control, but in the two part story 'Year of Hell' we saw how bad things could get. *Voyager* is caught up in a temporal war that is waged by the Krenim. The ship suffers more and more damage, until it is little more than a burned-out hulk. Fortunately, its final destruction puts an end to the Krenim ship and restores history.

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