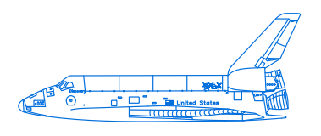
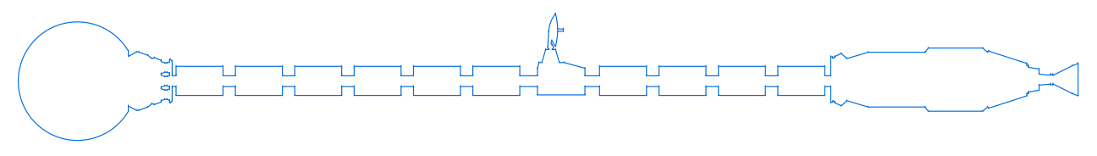
COMPARISON CHART

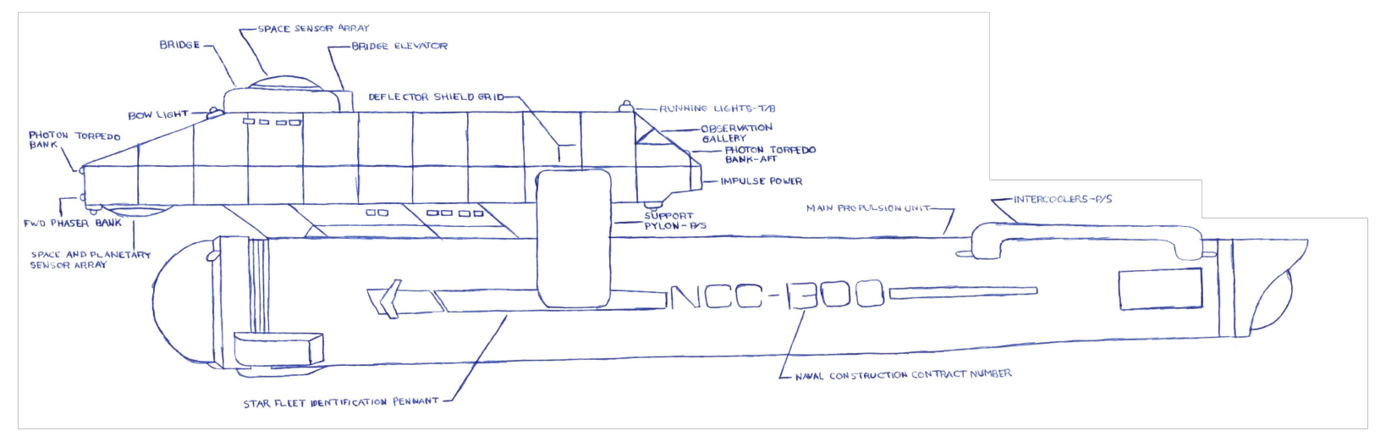
U.S.S. DISCOVERY CLASS

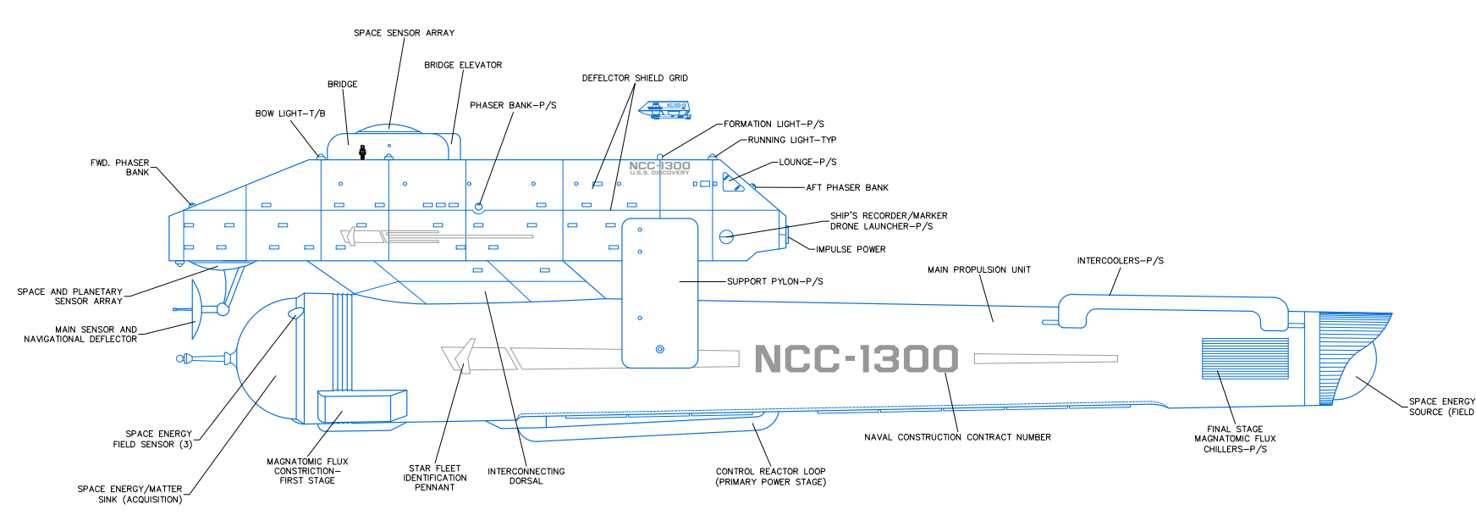

OV-103
C. 1984

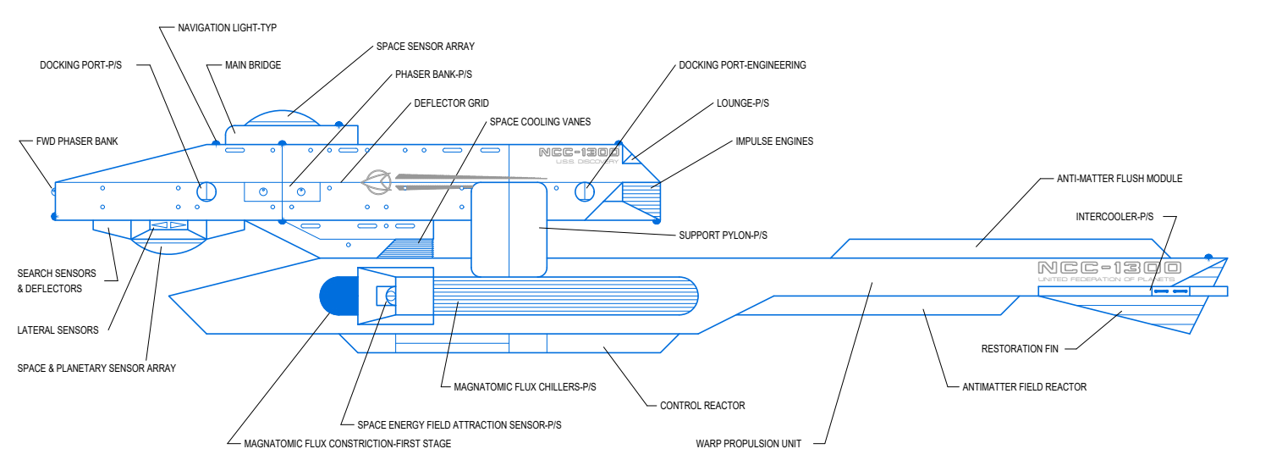

XD-1
C. 2001

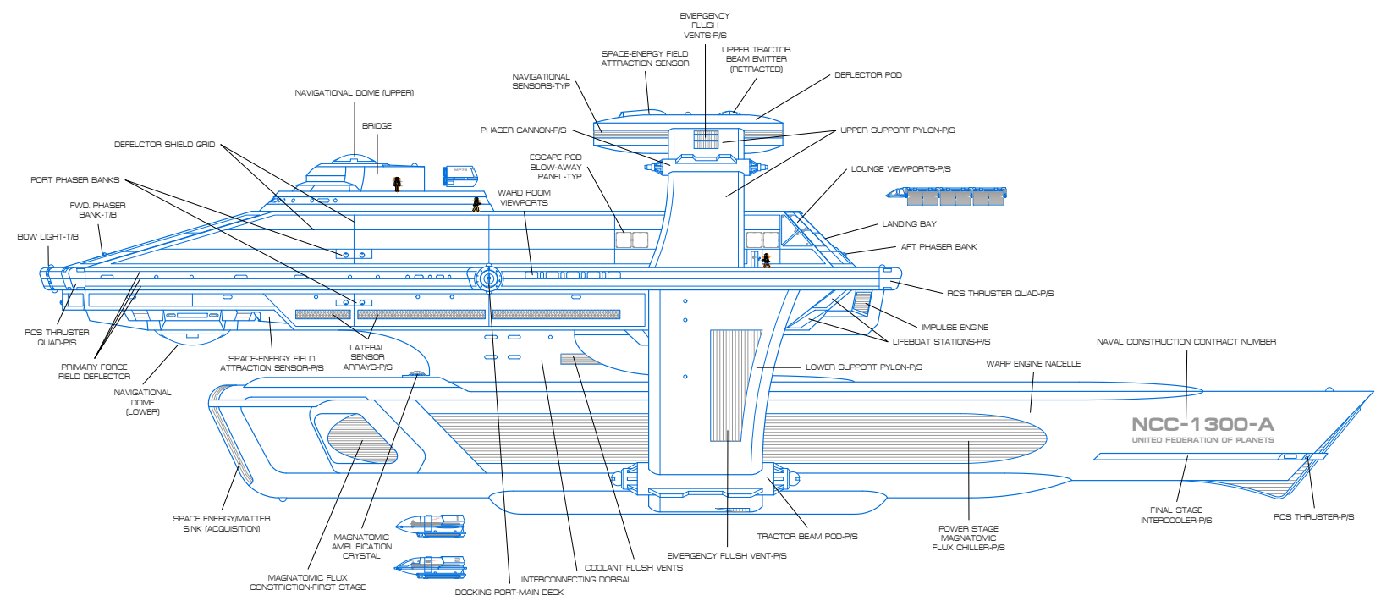
HAND-DRAWN CONCEPT PLAN C. 2235	AS COMMISSIONED C. 2243	REFIT CONCEPT C. 2269	AS COMMISSIONED C. 2278

OUTBOARD PROFILES

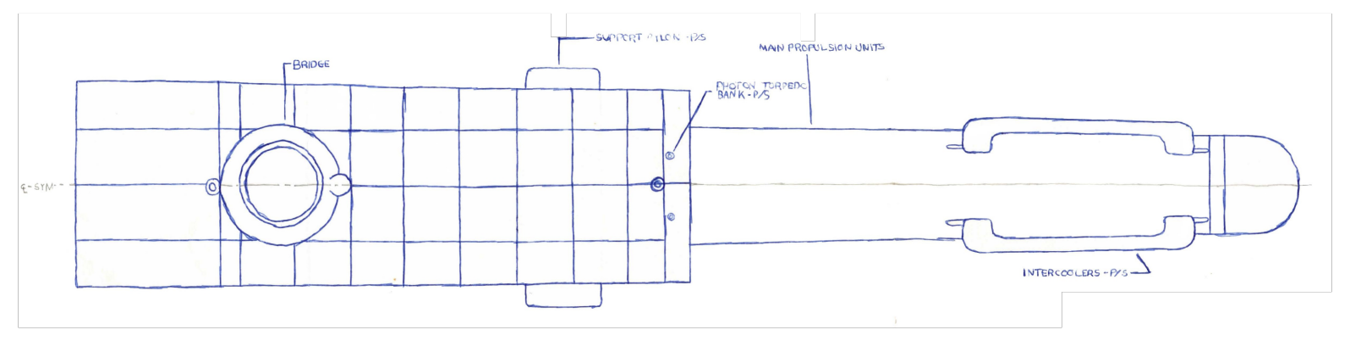


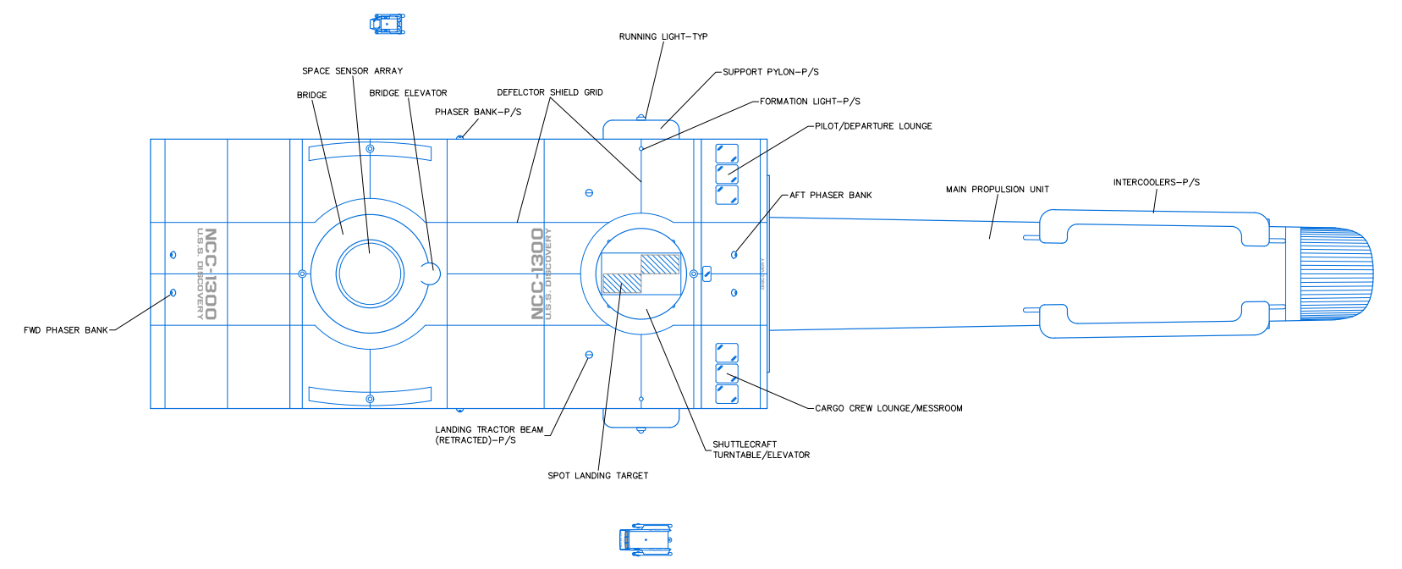


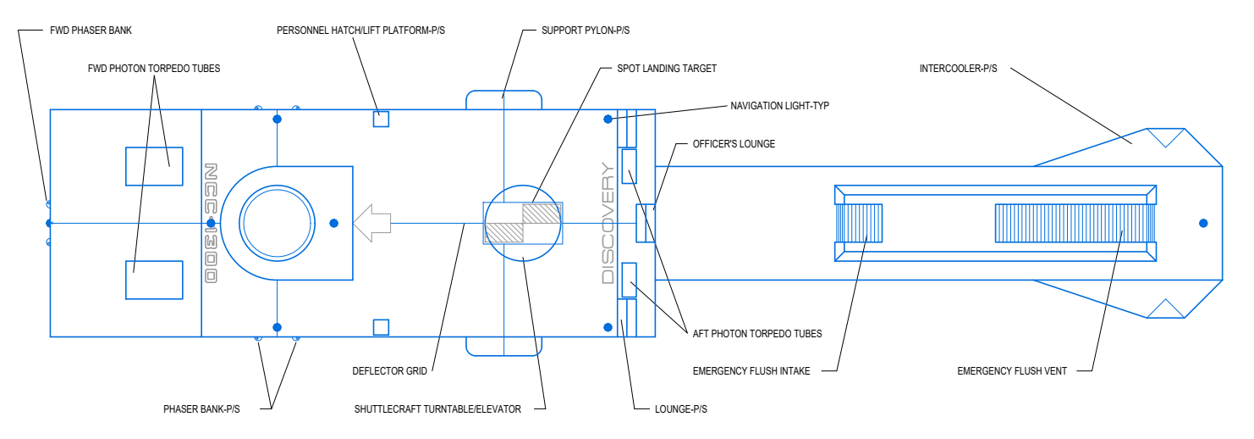


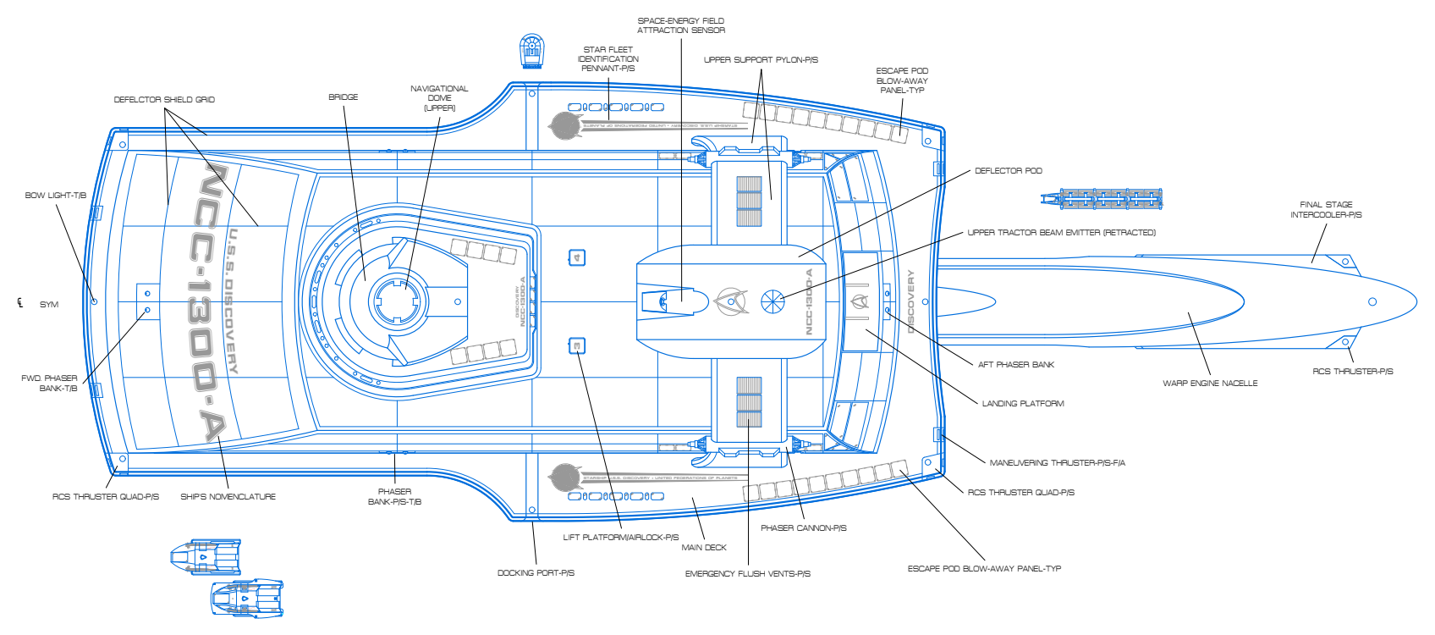


OUTBOARD TOP PLANS

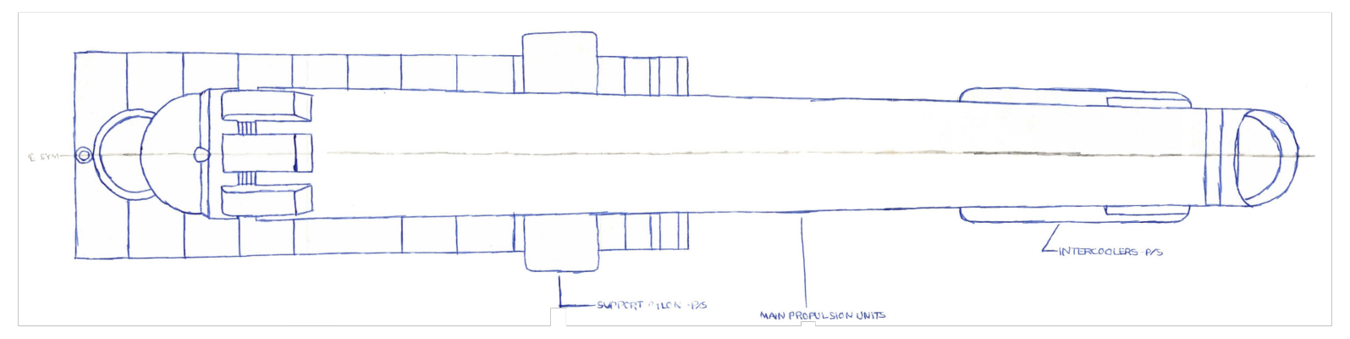


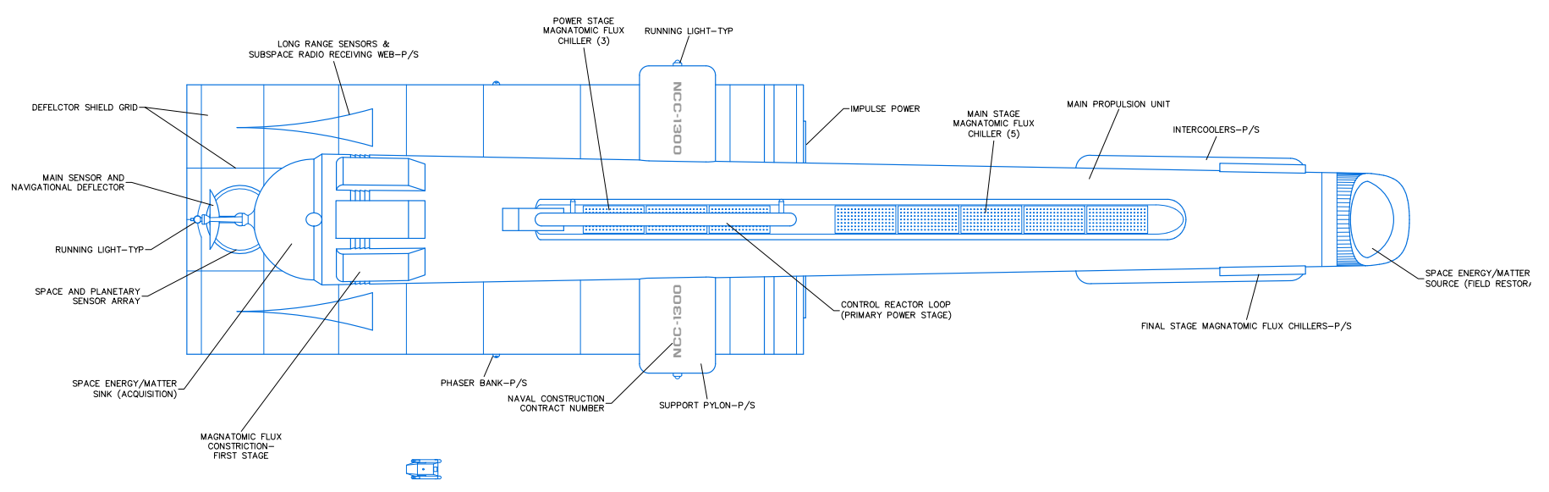


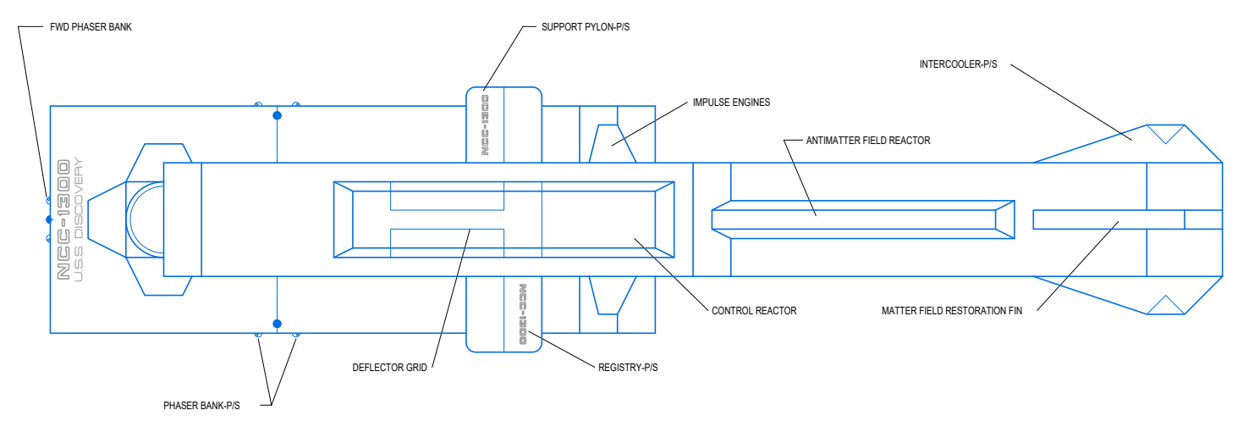


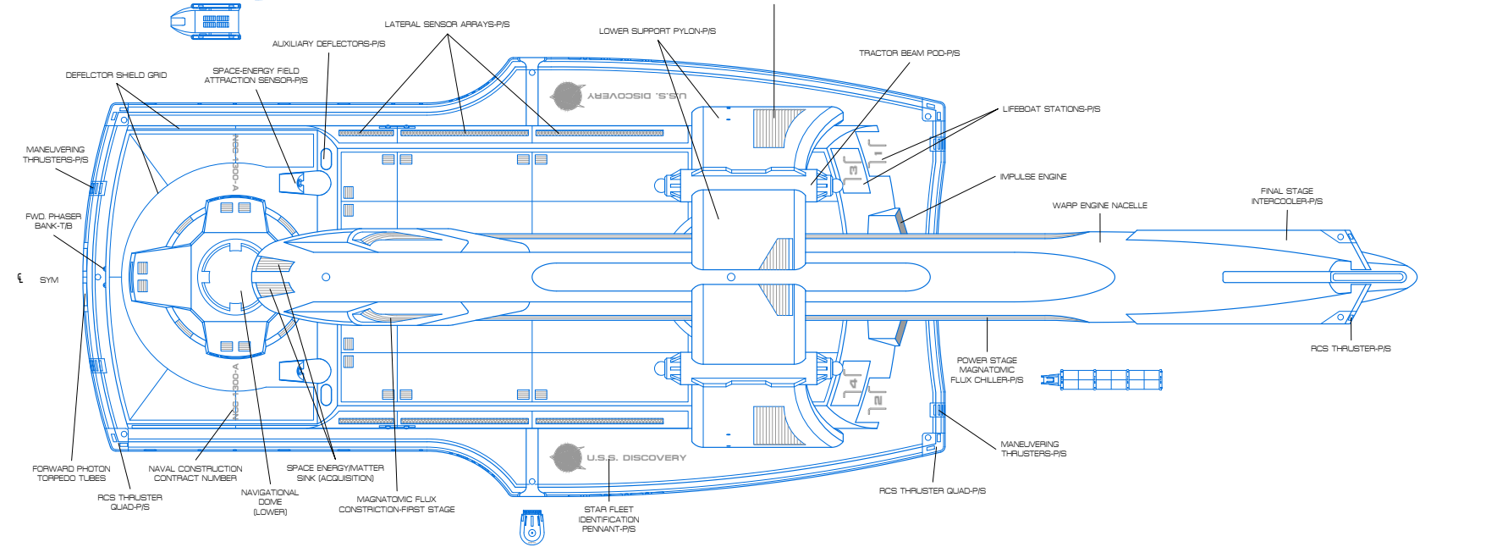


OUTBOARD BOTTOM PLANS

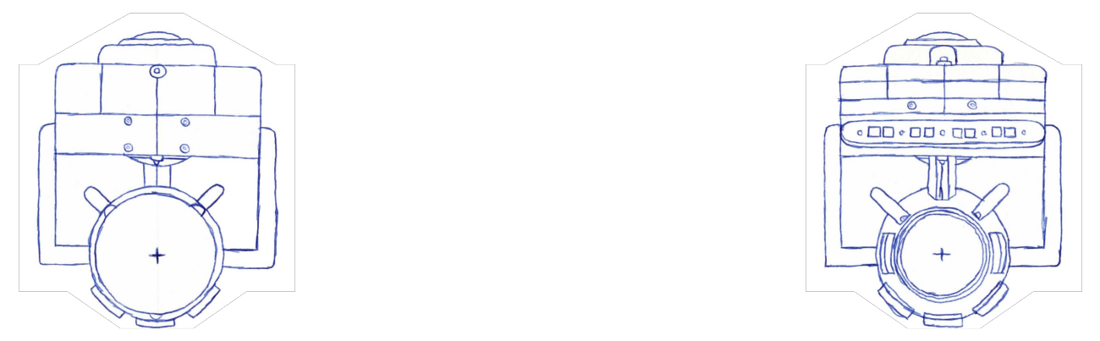


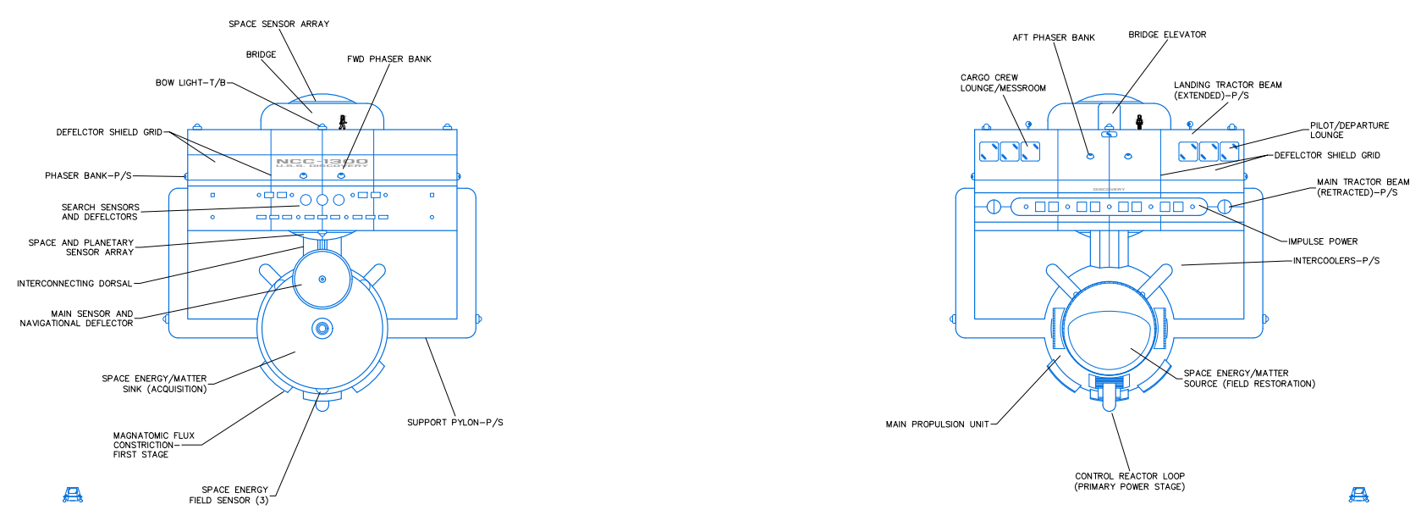


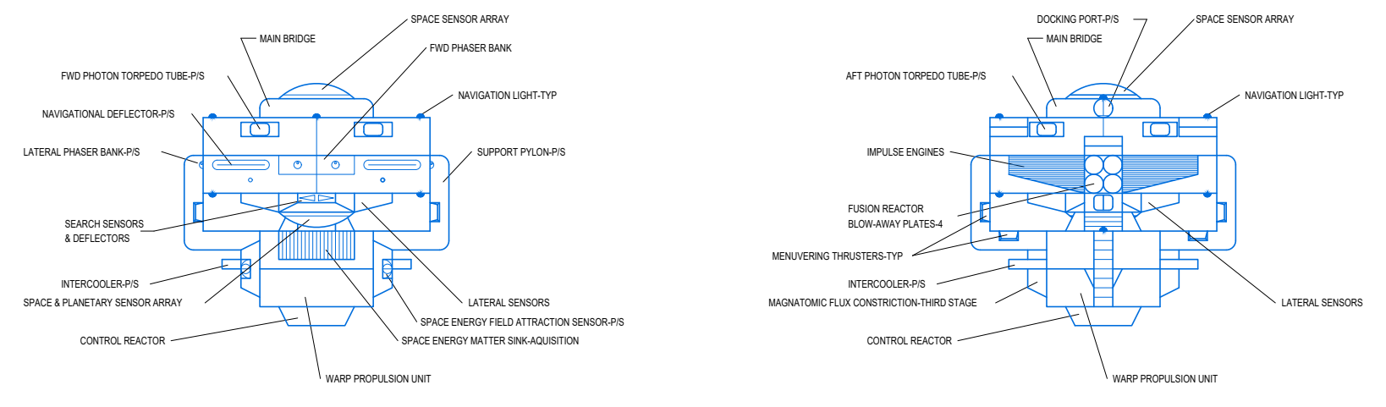


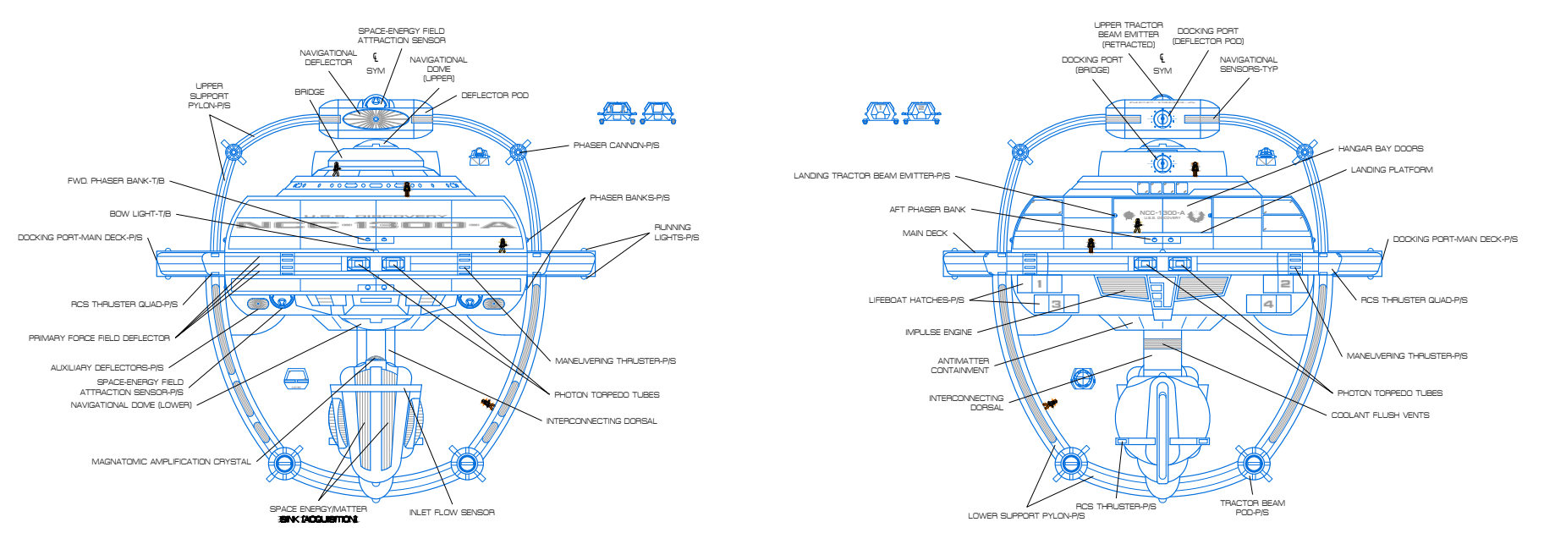


OUTBOARD BOW AND STERN ELEVATIONS

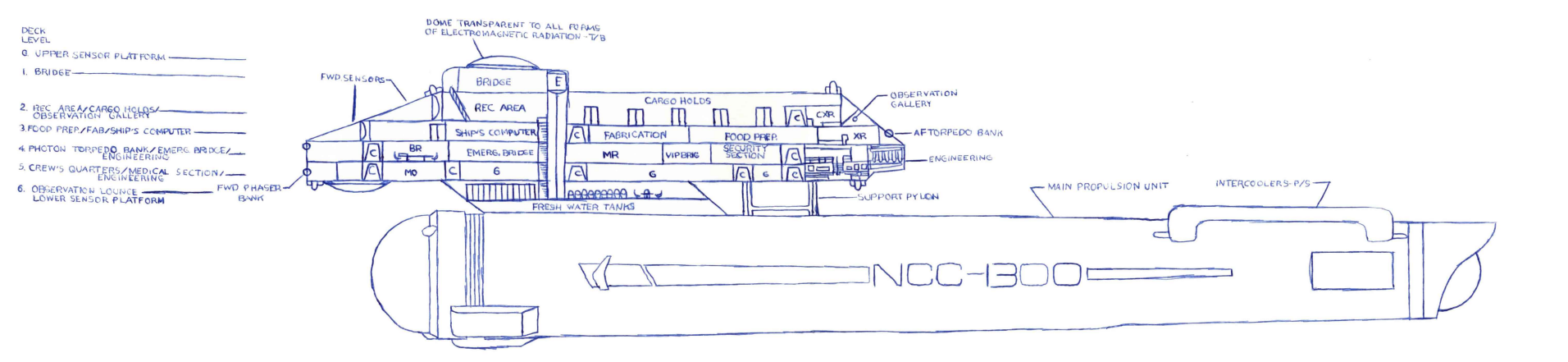


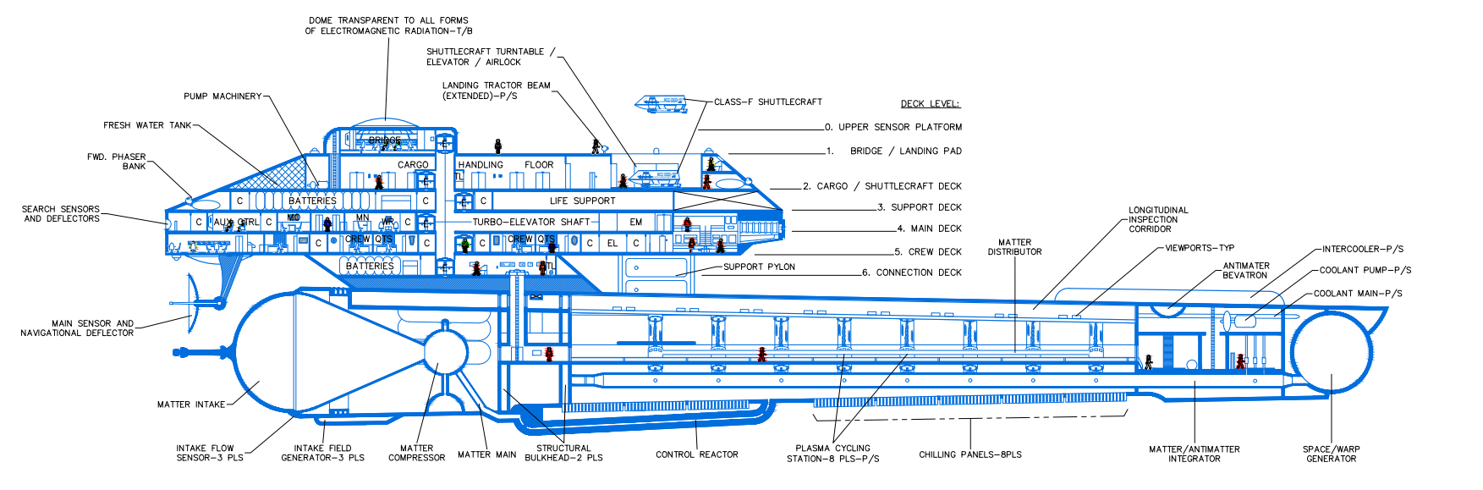


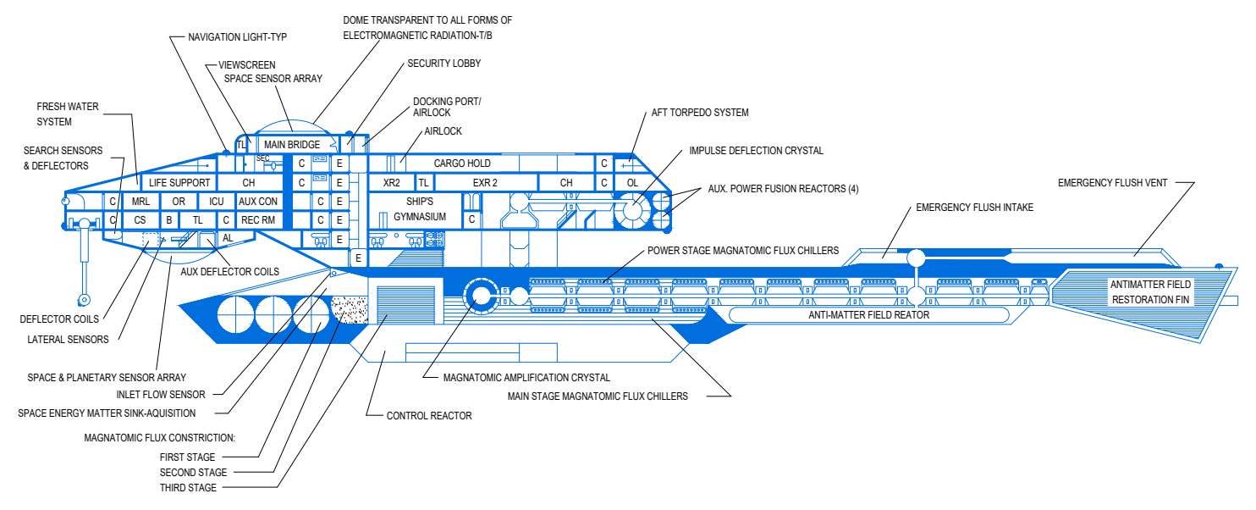


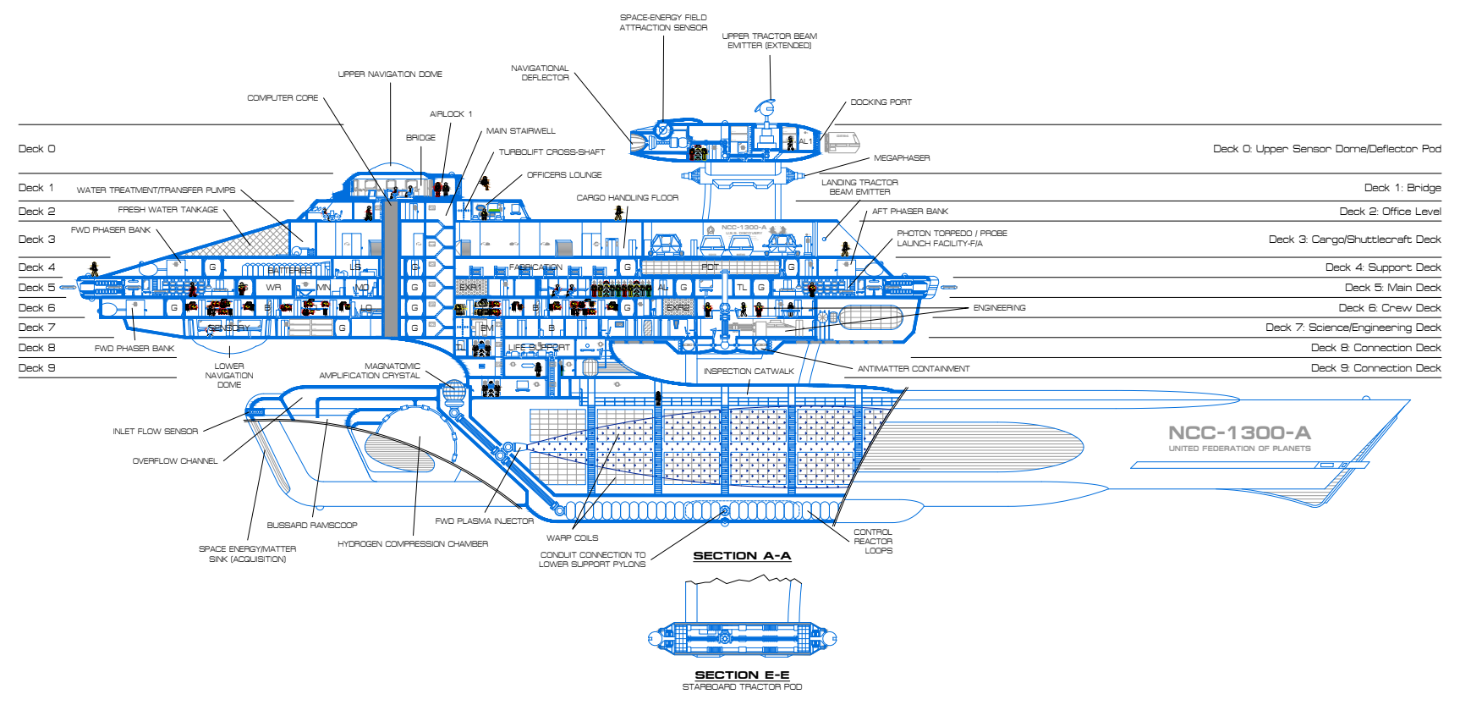


INBOARD PROFILES









PARTICULARS

LENGTH OVERALL	161.53 M
BEAM OVERALL	31.10 M
DRAFT OVERALL	38.00 M
GROSS DEADWEIGHT METRIC TONNAGE	15,000
NUMBER OF MAIN PROPULSION UNITS	1
NUMBER OF DUAL IMPULSE POWER UNITS	4
MAIN HULL LENGTH OVERALL	81.54 M
MAIN HULL BEAM OVERALL	27.00 M
MAIN HULL DRAFT OVERALL	11.834 M
STANDARD CEILING HEIGHT OVER DECK	2.44 M
MAIN PROPULSION UNIT LENGTH OVERALL	153.62 M
MAIN PROPULSION UNIT MAXIMUM DIAMETER	17.30 M
NUMBER OF 8 PERSON STANDARD TRANSPORTERS	1
NUMBER OF 6 PERSON EMERGENCY TRANSPORTERS	2
NUMBER OF CARGO TRANSPORTERS	1
ENDURANCE IN YEARS AT LIGHT-YEAR VELOCITY	10
MAXIMUM SAFE CRUISING SPEED	W/F 6
EMERGENCY SPEED	W/F 8

DESIGN CONCEPT:

THE DISCOVERY CLASS'S INITIAL DESIGN CONCEPT WAS TO CREATE A SMALL, FAST, MANEUVERABLE SHIP, USING THE SAME MAJOR POWER, PROPULSION, SENSOR, SUPPORT, AND DEFENSIVE SYSTEMS AS THE LARGER CONSTITUTION CLASS. THE SHIP'S PRIMARY MISSION WAS TO BE NEAR-SPACE PATROLS INSIDE FEDERATION TERRITORY, PROVIDING SEARCH AND RESCUE, DISASTER RELIEF, LIGHT RAPID TRANSPORT, INTERDICTION, AND PEACEKEEPING SERVICES TO FEDERATION MEMBERS, COLONIES, AND OUTPOSTS.

BEHIND THE SCENES:

IN APPROXIMATELY 1980, I WAS GIFTED A COPY OF FRANZ JOSEPH'S CLASSIC STAR FLEET TECHNICAL MANUAL, AND A SET OF HIS USS CONSTITUTION CLASS BLUEPRINTS. THESE PUBLICATIONS CHANGED MY LIFE, INSPIRING ME NOT ONLY TO CREATE MY OWN STAR TREK SHIPS, BUT TO PURSUE A CAREER AS A DRAFTER. THIS HAND-DRAWN PLAN SET WAS MY EARLIEST EFFORT, CREATED BY TRACING ELEMENTS FROM THE CONSTITUTION CLASS PLANS WITH A LIGHT-UP DRAWING DESK, A CHILD'S LIGHT TABLE MARKETED IN THE 1970S, ONTO CONTINUOUS-FEED DOT-MATRIX COMPUTER PAPER. THE SET WAS COMPLETED IN APPROXIMATELY 1980 OR 1981, WHEN I WAS ELEVEN TO TWELVE YEARS OLD. I CHOSE A REGISTRY NUMBER OF NCC-1300 AT RANDOM, AND NAMED MY FICTIONAL STARSHIP USS DISCOVERY, AFTER ONE OF NASA'S SPACE SHUTTLE ORBITERS, WHICH AT THE TIME HAD NOT YET EVEN FLOWN IN SPACE (DISCOVERY OV-103 FIRST LAUNCHED ON AUGUST 30, 1984).

THESE PLANS ARE IMAGES OF THE ORIGINAL SET, SCANNED IN 2021, EXCEPT FOR THE SHIP'S PARTICULARS, WHICH I HAD NOT INCLUDED IN THE ORIGINAL SET. THESE I CREATED IN AUTOCAD IN 2021, PRINTED ON PAPER, AND TRACED USING THE SAME TECHNIQUES I USED TO CREATE THE REST OF THE PLAN SET FORTY YEARS PRIOR. AND YES, I TRACED THEM USING THE SAME LIGHT-UP DRAWING DESK I USED IN THE 1980s TO CREATE THE SHIP HERSELF. I HAD A HECK OF A TIME FINDING A BLUE PEN THAT MATCHED WHAT I USED FORTY YEARS AGO, THOUGH.

PARTICULARS

LENGTH OVERALL	161.707 M
BEAM OVERALL	42.101 M
DRAFT OVERALL	41.918 M
GROSS DEADWEIGHT METRIC TONNAGE	75,000
NUMBER OF MAIN PROPULSION UNITS	1
NUMBER OF DUAL IMPULSE POWER UNITS	4
STANDARD COMPLEMENT OF 7 MAN SHUTTLECRAFT	2
STANDARD COMPLEMENT OF 2 MAN SHUTTLEPODS	2
MAIN HULL LENGTH OVERALL	81.548 M
MAIN HULL BEAM OVERALL	35.000 M
MAIN HULL DRAFT OVERALL	11.834 M
STANDARD CEILING HEIGHT OVER DECK	2.50 M
WARP PROPULSION UNIT LENGTH OVERALL	160.729 M
WARP PROPULSION UNIT MAXIMUM DIAMETER	17.3 M
NUMBER OF 6 PERSON STANDARD TRANSPORTERS	2
NUMBER OF 19 PERSON EMERGENCY TRANSPORTERS	1
NUMBER OF CARGO TRANSPORTERS	2
ENDURANCE IN YEARS AT LIGHT-YEAR VELOCITY	10
MAXIMUM SAFE CRUISING SPEED	W/F 9
EMERGENCY SPEED	W/F 11

DESIGN CONCEPT:

AS FIRST COMMISSIONED IN 2243, THE DISCOVERY CLASS FULFILLS ALL OF HER INTENDED MISSION OBJECTIVES, IN A SMALL, FAST, MANEUVERABLE PACKAGE THAT CAN OUTPERFORM MUCH LARGER SHIPS. STATIONED IN NEAR-SPACE AROUND THE FEDERATION'S MEMBER WORLDS AND THEIR CORE COLONIES AND OUTPOSTS, THE DISCOVERY CLASS PROVIDES QUICK RESPONSE TO EMERGENCIES AND DISASTERS OF ALL KINDS, RESCUING STRANDED TRAVELERS, REPAIRING BROKEN-DOWN VESSELS, TRANSPORTING DISASTER RELIEF SUPPLIES, AND INTERDICTING SMUGGLERS AND LAWBREAKERS OF ALL KINDS. WHEN NECESSARY, A DISCOVERY CAN ALSO JOIN COMBAT MISSIONS ALONGSIDE HER LARGER SALADIN, CONSTITUTION, AND FEDERATION CLASS COUSINS, AND PACKS QUITE A PUNCH WITH SIX PHASER UNITS IN TWO DUAL BANKS AND TWO SINGLE BANKS. A DISCOVERY'S TRACTOR POWER IS EQUAL TO SOME OF HER LARGER COUSINS, CAPABLE OF TOWING A FULLY-LOADED CLASS I TRANSPORT CONTAINER AT SPEEDS UP TO WARP FACTOR SIX, OR TWO LINKED CONTAINERS AT SUBLIGHT SPEEDS. ALTHOUGH THE DISCOVERY CLASS LACKS THE SCIENCE LABS OF THE LARGER VESSELS, THEIR SENSOR SUITES ARE AS POWERFUL AS A CONSTITUTION OR FEDERATION CLASS STARSHIP, ABLE TO SCAN AT EXTREMELY LONG RANGES WITH GREAT PRECISION, OR PERFORM DETAILED ORBITAL SCANS OF AN ENTIRE PLANET'S SURFACE. A DISCOVERY'S EIGHT INTERNAL CARGO HOLDS CAN ACCOMMODATE UP TO 3,976 CUBIC METERS OF PACKAGED, DRY- OR WET-BULK CARGO IN ENVIRONMENTALLY ISOLATED CONDITIONS, ALLOWING FOR COLONY OR OUTPOST RESUPPLY, OR DISASTER RELIEF MISSIONS. AVERAGE PATROLS LAST APPROXIMATELY TWO WEEKS, WITH A FULL CRUISE LASTING TWELVE TO EIGHTEEN MONTHS BETWEEN MAINTENANCE REFITS. EACH DISCOVERY'S DESIGN LIFE IS INTENDED TO BE UP TO THIRTY YEARS

BEHIND THE SCENES:

IN MID-2020, DURING LOCK-DOWNS AND RESTRICTIONS CAUSED BY THE COVID-19 PANDEMIC, I FOUND MYSELF STAYING AT HOME ENOUGH TO GET A LITTLE BORED, AND I REVISITED MY DESIGN FOR DISCOVERY. I DECIDED TO DRAW MY LITTLE SHIP IN AUTOCAD, THE WORLD-WIDE STANDARD COMPUTER AIDED DRAFTING SOFTWARE, AND MATCHED MY ORIGINAL DESIGN EXACTLY. BUT AS I DREW THE VARIOUS DECK PLANS FOR THE SHIP, I REALIZED THAT MY OVERALL LAYOUT FORTY YEARS PRIOR HAD BEEN VERY POOR, INCLUDING TOO MUCH OF ONE THING, NOT ENOUGH OF ANOTHER, AND I DECIDED TO REALLY THINK IT THROUGH AND RE-DESIGN THE SHIP TO HAVE ALL OF THE FACILITIES AND CAPABILITIES THAT I HAD IMAGINED IN 1980. I MADE THE HULL A LITTLE WIDER AND TALLER, ADDED A SHUTTLECRAFT HANGAR WITH A TURNTABLE/LIFT PLATFORM, AND ADDED NUMEROUS OTHER FACILITIES THAT I COPIED, NOT ONLY FROM FRANZ JOSEPH'S CONSTITUTION CLASS PLANS, BUT FROM SEVERAL OTHER EXCELLENT STAR TREK DECK PLANS PUT OUT IN THE LATE SEVENTIES AND EARLY EIGHTIES. THE RESULT IS A MUCH MORE FLESHED-OUT SHIP THAT CAN ACCOMPLISH ALL OF THE MISSIONS I ENVISIONED SO MANY YEARS AGO.

NOTE: IT WAS ONLY LATER, IN THE MID-1980S, WHEN I DISCOVERED (NO PUN INTENDED) ANOTHER FAN HAD CREATED A SHIP CALL USS CARACAL, PUBLISHED IN 1981, WHICH HAS MANY SIMILARITIES TO MY DISCOVERY DESIGN. CARACAL, HOWEVER, IS A MUCH LARGER SHIP, WITH DUAL WARP NACELLES, DESIGNED AS A CRUISER CLASS WITH SEVERAL VARIANTS, AND DESPITE THE SIMILARITIES IN HULL SHAPE, MY DISCOVERY DESIGN WAS COMPLETELY MY OWN.

SHIPS PARTICULARS:

LENGTH OVERALL	155.5M
WIDTH OVERALL	35M
HEIGHT OVERALL	32M
GROSS DEADWEIGHT METRIC TONNAGE	15,000
NO. OF WARP PROPULSION UNITS	1
NO. OF TWIN IMPULSE POWER UNITS	1
STANDARD COMPLEMENT OF 7-MAN SHUTTLECRAFT	1
STANDARD COMPLEMENT OF CARGO SHUTTLECRAFT	0
STANDARD COMPLEMENT OF WORKBEES	2
STANDARD COMPLEMENT OF TRAVEL PODS	1
STANDARD CEILING HEIGHT ABOVE DECK	2.44M
WARP PROPULSION UNIT LENGTH OVERALL	140M
NO. OF 8-PERSON STANDARD TRANSPORTERS	2
NO. OF 22-PERSON EMERGENCY TRANSPORTERS	2
NO. OF CARGO TRANSPORTERS	1
NO. OF PHASERS	6 (3 BANKS)
NO. OF PHOTON TORPEDO SYSTEMS	2 (4 TUBES)
ENDURANCE AT LIGHT-YEAR VELOCITY	7 YEARS (16 MAXIMUM)

DESIGN CONCEPT:

THROUGHOUT THE 2260S AND 2270S, WITH SO MANY WORLDS TO PROTECT AND SERVE, THE FLEET FOUND ITSELF SCRAMBLING TO UPGRADE THE CAPABILITIES OF VIRTUALLY EVERY CLASS OF STARSHIP, THROUGH A CONTINUING PROGRAM OF REFITS AND OVERHAULS. AS THE DISCOVERY CLASS'S ROLE IN STAR FLEET NEAR-SPACE OPERATIONS EXPANDED TO COVER MORE AND MORE DUTIES FEDERATION-WIDE, ALMOST FROM THE DAY THE FIRST SHIP WAS COMMISSIONED, ALL SHIPS OF THE DISCOVERY CLASS UNDERWENT YEARLY UPGRADES TO VARIOUS SYSTEMS AT THE END OF EACH CRUISE CYCLE. HOWEVER, UPGRADING THE SHIPS PIECEMEAL CAUSED AS MANY DIFFICULTIES AS IT SOLVED, LEADING STAR FLEET R&D TO PROPOSE A TOTAL OVERHAUL OF THE CLASS IN 2269. THIS UNUSED CONCEPT INCLUDED A REPLACEMENT OF VIRTUALLY EVERY SYSTEM, TO THE POINT THAT THE SHIP WOULD HAVE BEEN GUTTED ALMOST TO THE SPACEFRAME. THIS PROVED IMPRACTICAL, AND THE CONCEPT WAS ABANDONED BEFORE ANY SERIOUS DESIGN WORK EVER BEGAN.

BEHIND THE SCENES:

IN THE LATE 1980S, I GRADUATED FROM TRADE SCHOOL WITH A CERTIFICATE IN ENGINEERING DRAFTING TECHNOLOGY, AND BEGAN MY CAREER AS A COMPUTER AIDED DRAFTER. IT DIDN'T TAKE LONG BEFORE I DECIDED TO TRY MY HAND AT DRAWING A STARSHIP IN AUTOCAD. ATTEMPTING TO DRAW A REFIT OF THE DISCOVERY CLASS SEEMED LIKE A LOGICAL CHOICE, SO I DESIGNED THIS VERSION OF THE SHIP, FIRST BY HAND ON GRAPH PAPER, AND LATER TRANSPOSING IT INTO CAD. THE ANGULAR NATURE OF THE DESIGN DOESN'T REALLY FIT WELL WITH THE STAR TREK AESTHETIC, SO I ABANDONED THE IDEA ONCE I HAD COMPLETED THE PLAN SET, BUT I STILL HAVE THE AUTOCAD FILES, AND THEY REPRESENT AN IMPORTANT MILESTONE IN MY PERSONAL DEVELOPMENT AS A DRAFTER AND AS A STAR TREK FAN - THIS WAS MY FIRST ATTEMPT AT DRAWING A STARSHIP OF ANY KIND IN CAD. ALTHOUGH THE RESULTS ARE SOMEWHAT LESS THAN STELLAR (AS IT WERE), THE DESIGN LAID THE GROUNDWORK FOR FUTURE PROJECTS.

PARTICULARS

LENGTH OVERALL	176.423 M
BEAM OVERALL	58.005 M
DRAFT OVERALL	53.763 M
MAIN HULL LENGTH OVERALL	114.000 M
MAIN HULL BEAM OVERALL	58.005 M
MAIN HULL DRAFT OVERALL	25.220 M
WARP PROPULSION UNIT LENGTH OVERALL	154.800 M
WARP PROPULSION UNIT BEAM OVERALL	12.6 M
WARP PROPULSION UNIT DRAFT OVERALL	18.3 M
STANDARD CEILING HEIGHT OVER DECK	2.35 M
STANDARD COMPLEMENT OF CLASS A WORK BEES	4
STANDARD COMPLEMENT OF CLASS C TRAVEL PODS	2
STANDARD COMPLEMENT OF CLASS F SHUTTLECRAFT	2
STANDARD COMPLEMENT OF CLASS I SHUTTLECRAFT	2
STANDARD COMPLEMENT OF SINGLE-OCCUPANT ESCAPE PODS	36
STANDARD COMPLEMENT OF 22-OCCUPANT SUBLIGHT LIFEBOATS	4
GROSS DEADWEIGHT METRIC TONNAGE	176,260
NUMBER OF MAIN PROPULSION UNITS	1
NUMBER OF DUAL IMPULSE POWER UNITS	1
NUMBER OF 2 PAD INTRASHIP TRANSPORTERS	2
NUMBER OF 6 PAD STANDARD TRANSPORTERS	2
NUMBER OF 22 PAD EMERGENCY TRANSPORTERS	2
NUMBER OF CARGO TRANSPORTERS W/ 3 BIO PADS	2
ENDURANCE IN YEARS AT LIGHT-YEAR VELOCITY	15
MAXIMUM SAFE CRUISING SPEED	W/F 10 (1,000C)
EMERGENCY SPEED	W/F 12.5 (1,953C)

DESIGN CONCEPT:

AFTER THE REDESIGN AND REFIT OF U.S.S. ENTERPRISE WAS COMPLETED IN 2279, THE LEGENDARY SHIP'S NEW SYSTEMS PERFORMED SO WELL TOGETHER THAT STAR FLEET R&D RE-EXAMINED ALL OF THE ONGOING REFIT AND OVERHAUL PROGRAMS FLEETWIDE, AND DEEPENED A NUMBER OF THOSE PROGRAMS INTO TOTAL REDESIGNS IN AN ATTEMPT TO EMULATE THE SUCCESS OF THE ENTERPRISE REDESIGN. ONE OF THE EARLIEST SUCH PROGRAMS WAS THE DISCOVERY CLASS, AND AN AGGRESSIVELY EXPANDED NEW DESIGN WAS PROPOSED IN EARLY 2280. BUT U.S.S. DISCOVERY (NCC-1300) HAD BEEN COMMISSIONED IN 2243 AND WAS RAPIDLY APPROACHING FORTY YEARS OF SERVICE, WELL BEYOND HER ORIGINALLY PLANNED SERVICE LIFE OF THIRTY YEARS, AND DESPITE THE YEARLY UPGRADES AND OVERHAULS, DISCOVERY AND ALL OF HER SIBLINGS WERE SHOWING THEIR AGE. AFTER A CAREFUL COST-BENEFIT ANALYSIS, STAR FLEET COMMAND CAME TO THE CONCLUSION THAT IT WOULD BE FAR MORE EFFICIENT TO RETIRE THE DISCOVERY CLASS, REPLACING IT WITH A NEW CLASS THAT INCORPORATED BOTH THE LESSONS OF THE ORIGINAL DISCOVERY AND THE LESSONS LEARNED FROM THE REDESIGN OF U.S.S. ENTERPRISE. SINCE THE DISCOVERY REFIT PROJECT HAD AT THAT POINT ALREADY MODELED THE PROPOSED NEW DESIGN NEARLY TO THE ONE HUNDRED PERCENT DESIGN PHASE, IT WAS DECIDED TO CONSTRUCT A NEW CLASS OF SHIPS FROM SCRATCH USING THE DESIGN FROM THE REFIT PROJECT. WITH THE FIRST SHIP OFF THE WAYS SET TO REPLACE NCC-1300 IMMEDIATELY AFTER HER LOSS IN THE LINE OF DUTY IN LATE 2280, THE NEW CLASS WAS SIMPLY CALLED THE DISCOVERY REFIT, AND THE LEAD SHIP WAS COMMISSIONED AS U.S.S. DISCOVERY (NCC-1300-A). SUBSEQUENT NEW DISCOVERY REFITS WERE COMMISSIONED IN A ONE-TO-ONE REPLACEMENT AS THE ORIGINAL FIFTEEN DISCOVERY CLASS SHIPS WERE DECOMMISSIONED OVER THE NEXT FIVE YEARS, AND ANOTHER TWENTY WERE CONSTRUCTED THROUGH THE NEXT DECADE, BRINGING THE CLASS TO AN EVENTUAL TOTAL OF THIRTY-FIVE SHIPS.

BEHIND THE SCENES:

AFTER COMPLETING THE REIMAGINED TOS DESIGN OF DISCOVERY DURING THE COVID-19 PANDEMIC, IT WAS ONLY NATURAL THAT I WOULD WANT TO TRY A TMP REFIT OF THE LITTLE SHIP TO GIVE HER A MOVIE-ERA MAKEOVER. I DREW INSPIRATION FOR THE REFIT DESIGN FROM ENTERPRISE, AS SHE APPEARED IN THE FIRST THREE TOS MOVIES, AND FROM RELIANT, TAKING MANY SPECIFIC INTERIOR AND EXTERIOR FEATURES FROM BOTH SHIPS, BUT I ALSO DREW INSPIRATION FROM THE TOS SHUTTLECRAFT AND THE OBERTH CLASS. THE OVERALL LOOK OF THE SHEETS WAS INSPIRED BY THE PUBLISHED TMP BLUEPRINTS OF THE EARLY 1980S, BUT WITH A MORE SOPHISTICATED MULTI-COLOR AESTHETIC MORE IN LINE WITH MODERN DESIGN AND GRAPHICS SOFTWARE.

> No man ever made a great Discovery
> without the exercise of the imagination
> *- George Henry Lewes*