Build Log#12: HMS Daring (D32)

Figure 1. HMS Daring Sails Into British Gibraltar.

Start Date: September 22, 2023

End Date: February 19, 2024

Manhours: 154

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Introduction

This project is the construction of HMS Daring (D32) in 1/350 scale. I do not have a specific sponsor for this kit; I like the modern lines of the ship.

HMS Daring is a Royal Navy Type 45 Air Defense destroyer, and the class is considered one of the finest of its type in the world. The US Navy equivalents are the Arleigh Burke class Guided Missile Destroyers (DDGs).

The kit is from Trumpeter and is well molded with little flash. I am going to slightly customize the model with additional brass photo etch (PE) parts provided by Tetra Models and White Ensign Models, and a Veteran Model's resin detail sets for the following:

- 4.5-inch gun
- 30mm guns
- Vulcan Phalanx Air Defense Guns
- Harpoon Launchers

In total, the kit plus the Tetra add on PE comes to approximately 720 parts. That's an impressive number for a hull which measures 17.55 inches long when complete.

Figure 2. The Box Top Art.

This will be the first build in my new shipyard in a rented space in Long Beach, CA. It is about two miles from home. I have more usable space than my old workshop and the space includes storage and a bathroom.

Figure 3. The New Shipyard.

The following acrylic paints will be used:

Color	Supplier
~~Aircraft Gray~~	~~Mr. Hobby~~
RAF Medium Sea Gray	Tamiya
Hull Red	Mission Models
Dark Sea Gray	Tamiya
Royal Navy Gray	Tamiya
Flat Black	Mission Models
Metallic Bronze	AK Interactive
Light Blue	Tamiya
Flat White	Mission Models
Flat Orange	Mission Models

The first step is to wash the plastic parts in warm soapy water to remove the mold grease. Once the parts were dry, I started a tape up construction. The purpose of the tape up is to identify major parts that don't fit well together and what to do about the fit issues.

The tape up revealed a few areas that will need attention. First, there is a problem with the fit of the hanger bay on the main deck. I will probably have to trim the hanger mounting pad on the main deck so the hanger bay will mate smoothly with the rest of the superstructure. In

addition, all the superstructure parts need to be smooth to ensure minimal gaps between the parts and the deck. Overall, the parts fit well together.

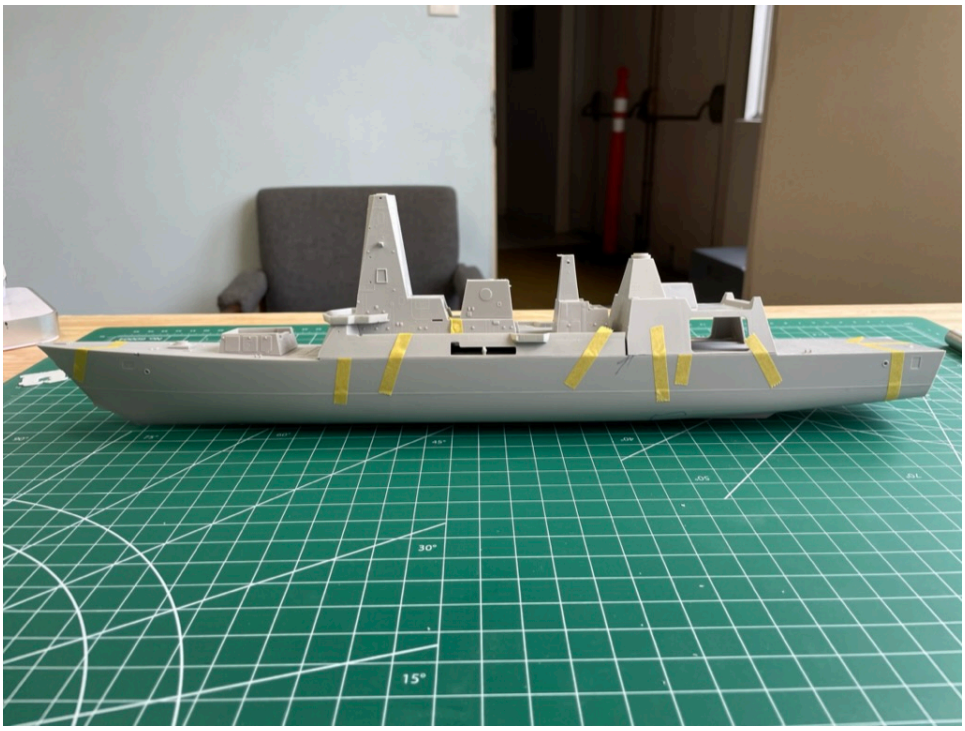

Figure 4. The Tape Up. Note the Gap Marked with an Arrow in Front of the Hanger.

Hull Construction

I noticed some plastic injection points and slide mold lines on the hull. These issues were taken care of by lightly sanding the surfaces with a 600-grit sanding stick and wet sanded with 2500-grit sanding sponge to polish the hull.

The model will be mounted on two brass pedestals that are four inches apart. I measured the hull length and determined the center point of the hull. The forward pedestal center was marked two inches in front of the hull center line. The aft pedestal was marked in the same fashion.

After I marked the pedestal centers, I drilled a 2.0mm hole in the hull. I gradually increased the size of the hull until I had a 4.5mm diameter hole which will accommodate the bolt. If you try to drill a large hole all at once, the drill bit can tear the plastic and that is difficult to fix.

Since the nuts for bolts are inside the hull, I will build the model on its presentation stand and protect the stand with newspaper.

I used a nice piece of cherry wood cut to size and drilled the bolt holes. After sanding, I stained it with Natural stain. This stain highlights the nice grain in the cherry wood.

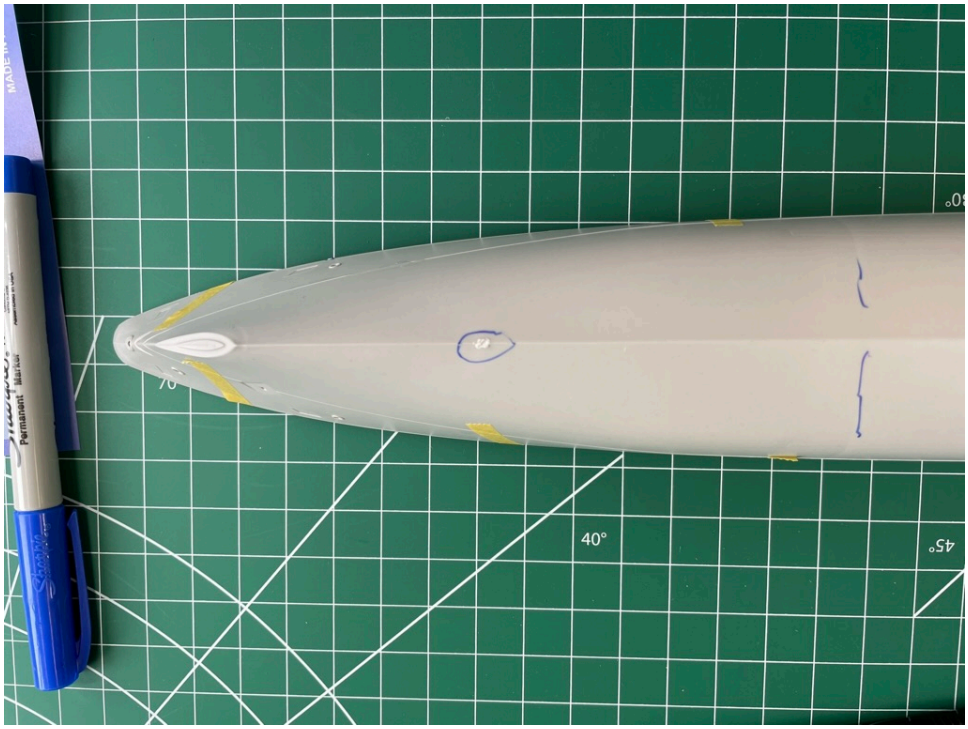

Figure 5. Mold Points and Lines, Forward Hull.

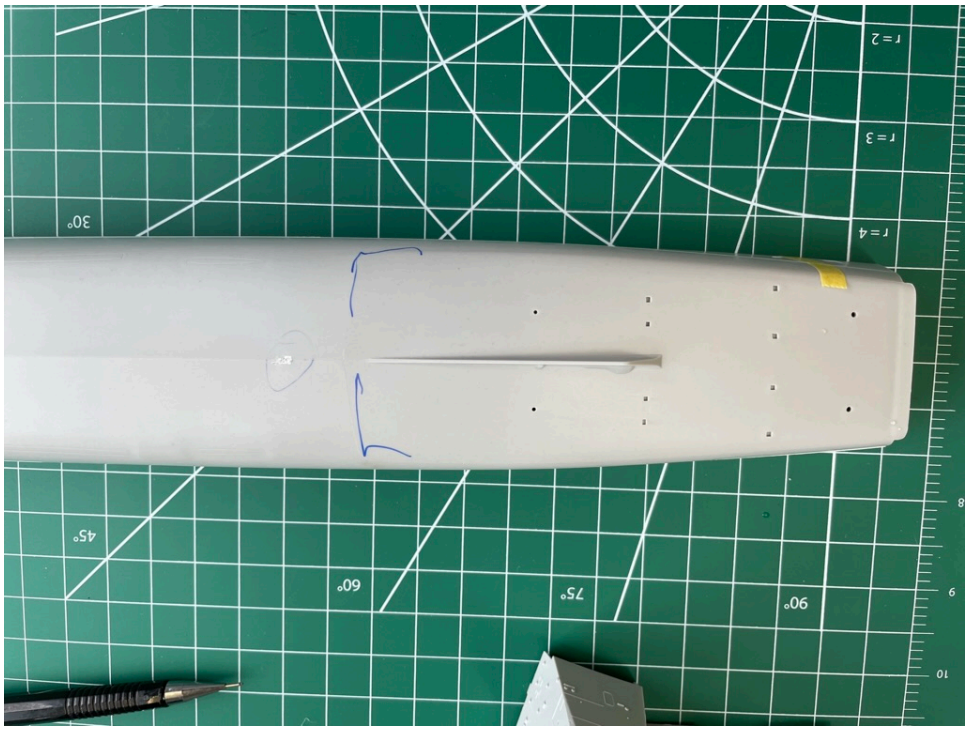

Figure 6. Mold Points and Lines, Aft Hull.

Once the stain was dry, I sprayed satin polyurethane varnish on the stand. After five coats, I lightly sanded the stand with a 1000 grit sanding sponge. After a final coat of varnish, the presentation stand is ready.

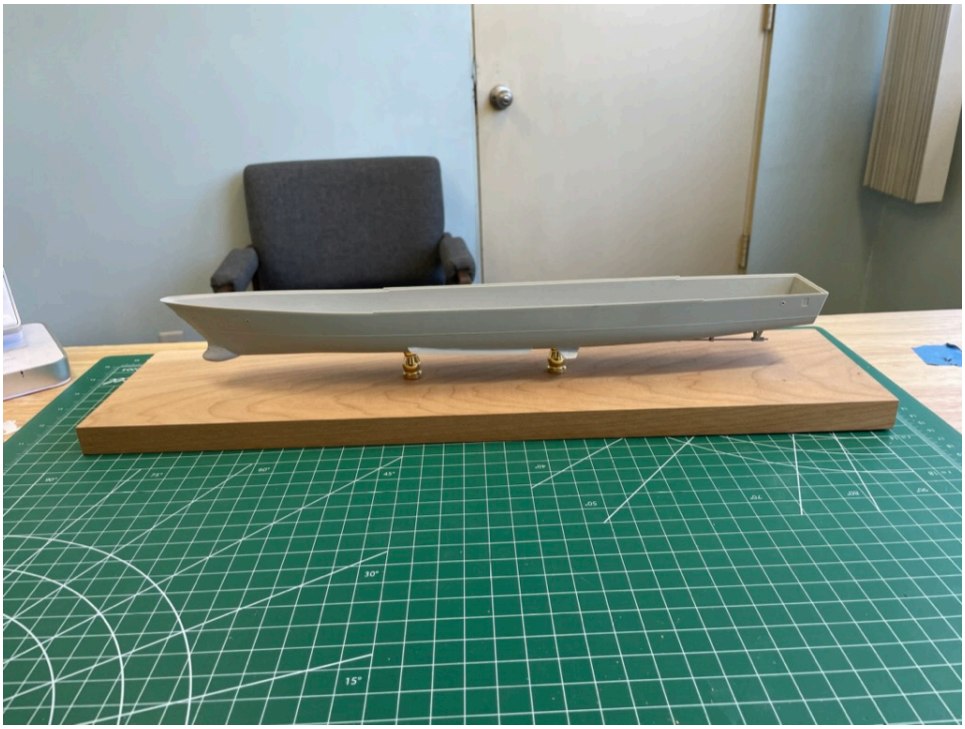

Figure 7. Dry Fit of the Hull on the Presentation Stand.

I taped the bilge keels and fin stabilizers in place and glued them to the hull using extra thin plastic glue. I brushed the glue on the inside seam and capillary action pulled the glue underneath the part. I followed a similar process with the propeller shafts and struts.

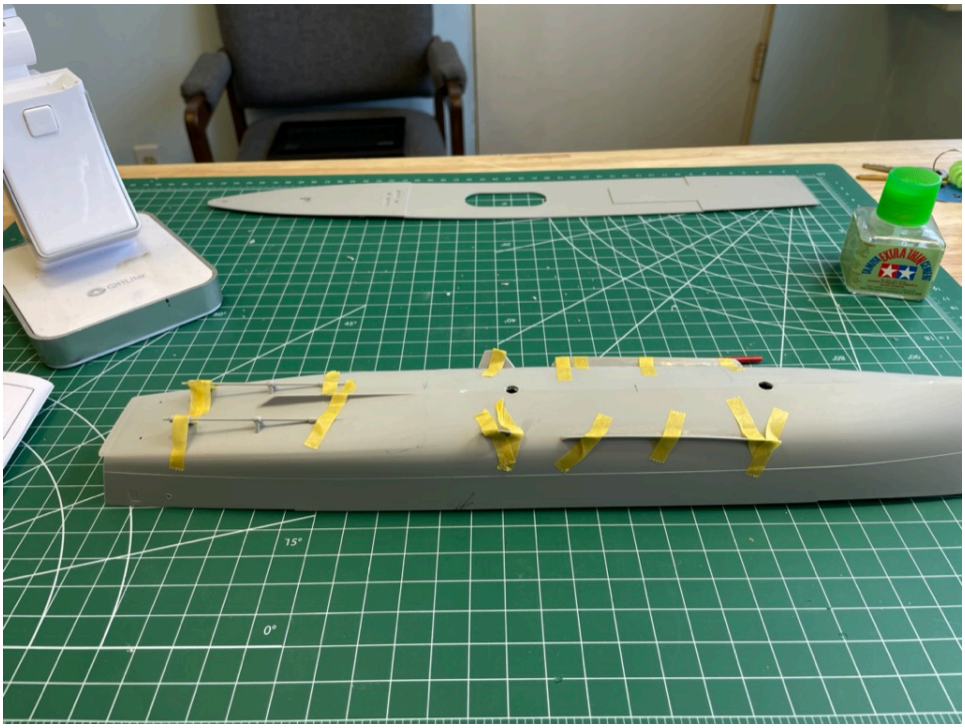

Figure 8. Installing Lower Hull Pieces.

I glued the two halves of the bow sonar dome together and was treated to a big gap in the seam. To make it easier to work on the gap, I went ahead and glued the sonar dome to the hull. There are some gaps between the hull and sonar dome that also need to be taken care of.

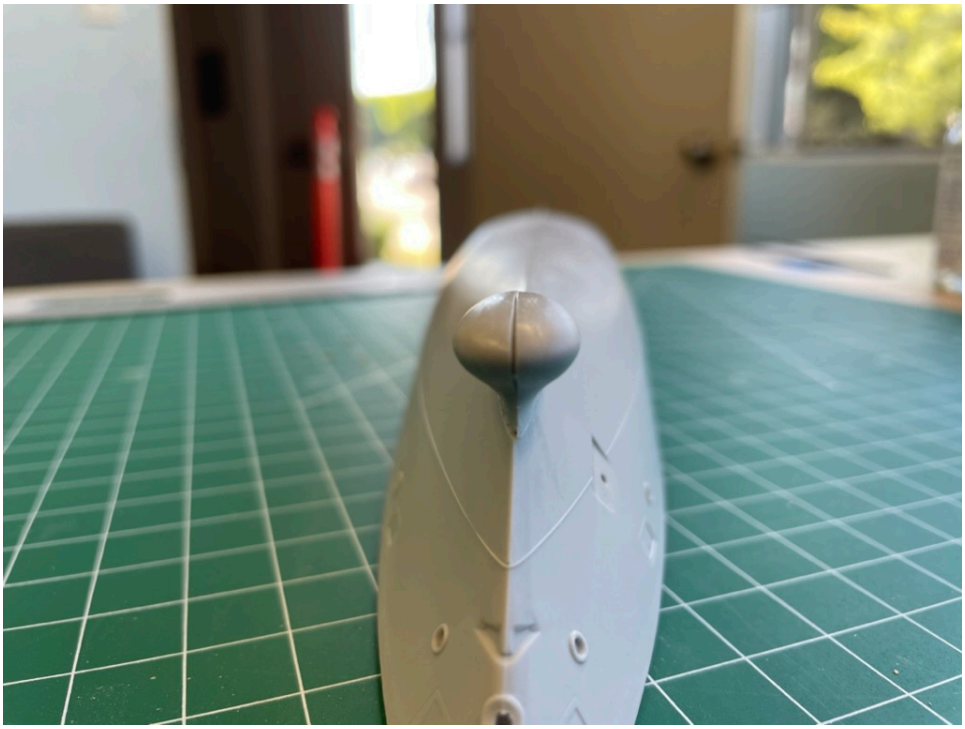

Figure 9. Note the Gap in the Sonar Dome.

To address the gaps in the sonar dome and all the parts I've already attached to the hull, I diluted Vallejo plastic putty with water, making a slurry. I used a tooth pick to run the slurry along the gaps and the slurry flowed into each gap. Once the slurry was dry, I lightly sanded the slurry with a 200 grit sanding sponge, followed by a 1000 grit sanding sponge. This process filled the gaps with minimal work by me.

The hull is ready for paint. The rudders and propellers won't be installed until the hull is painted because the rudders make it more difficult to install the propellers.

First, I airbrushed the hull, rudders, and propellers with Badger's Stynylrez gray primer. After the primer had cured, I noticed that I need to do some additional gap work, especially on the Sonar dome. Once the gaps had been fixed and cleaned up, I resprayed primer on the fixed gaps.

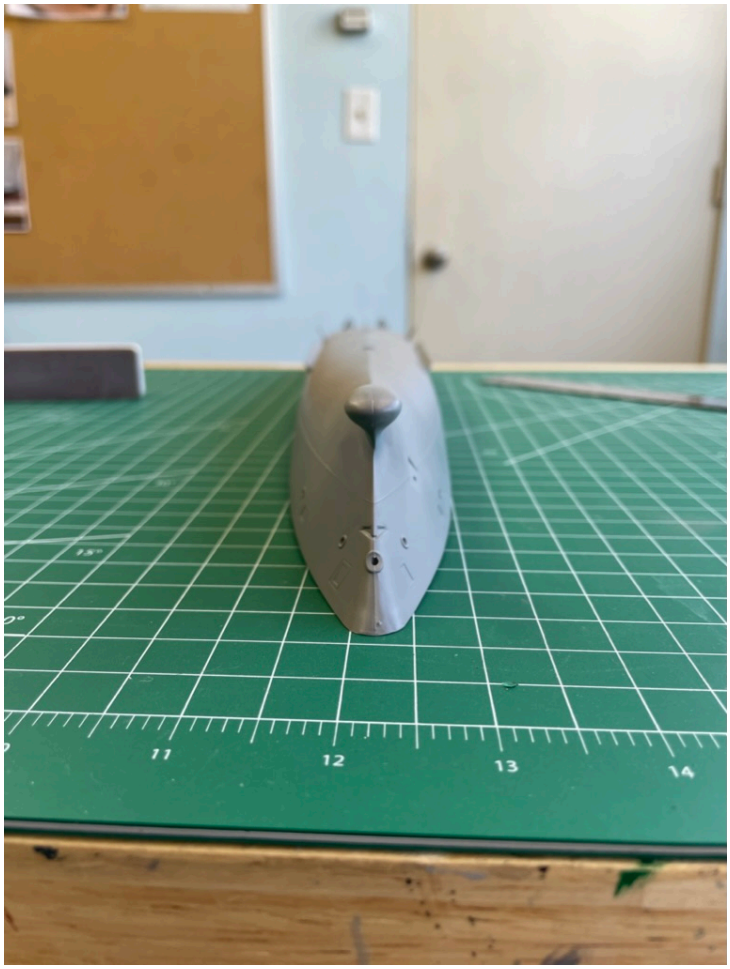

Figure 10. The Sonar Dome Gap has been fixed.

The next step was to spray a band of flat black for the boot topping at approximately the water line on the hull. Once the flat black was dry, I masked a 6mm wide strip to delineate the boot toping.

I masked the upper hull with wide masking tape, and then airbrushed the lower hull and rudders with hull red.

Once the hull red had dried overnight, I masked the lower hull with wide masking tape and airbrushed the upper hull with two coats of Royal Navy gray.

Once the gray had cured, I removed the wide masking tape from the lower hull and the 6mm boot topping masking tape.

I touched up the hull paint were required and sprayed the entire hull with semi-gloss clear. The semi-gloss protects the color coats, provides a good surface for hull decals, and gives the ship the slight semi-gloss sheen which comes from using oil-based paints.

The propellers were airbrushed with metallic bronze and were glued to the appropriate shafts after the paint had dried. Looking from the stern, the starboard propeller rotates clockwise, and the port propeller rotates counterclockwise. Once the propellers were installed, I glued the rudders to the hull.

The hull is now ready for installation on the presentation stand.

Figure 11. The Flat Black for the Boot Topping.

I carefully tightened the bolts while holding the nut inside the hull and ended up with the hull slightly tilted to starboard. This probably occurred due to the shape of the hull and the flat top of the pedestals. To take care of the list, I used a small piece of .030" x .080" plastic stock to shim the hull. Once the hull was level, I tightened the screws.

Once the hull was properly installed, I glued the nuts down with thick super glue.

Figure 12. The Painted Hull on the Presentation Stand.

Fitting Out

A ship under construction is considered fitting out, i.e., is being completed, when the hull has been launched. The hull is towed to a fitting out pier and the ship is completed. Modern construction techniques are to build a ship in fully completed modules that are welded together. The ship isn't launched down a slipway, it is transferred to a floating dry dock and the dock is flooded. Tugboats then take the ship to the fitting out pier.

While this dialog will be written sequentially, most of the work is going on in parallel.

Main Deck and Hull Detail

I assembled the Veteran's Model 4.5-inch gun and realized I needed to remove the molded mounting ring from the bow. The Veteran Model gun has the base ring glued to the gun mount. This kind of modification is typical when using custom parts. To remove the mounting ring from the main deck, I drilled multiple holes through the ring to eliminate most of the ring and reduce its structural integrity. I then used an X-Acto knife to remove the rest of it. I used a round file to remove the rest of the ring and sanded the surface smooth. As a final step, I wet sanded the surface with a 1000-grit sanding sponge.

I airbrushed the main deck with dark sea gray and after the paint had cured, I masked the deck around the various deck fittings and hatches. Once the masking tape frenzy was over, I air brushed the fittings and hatches with Royal Navy gray.

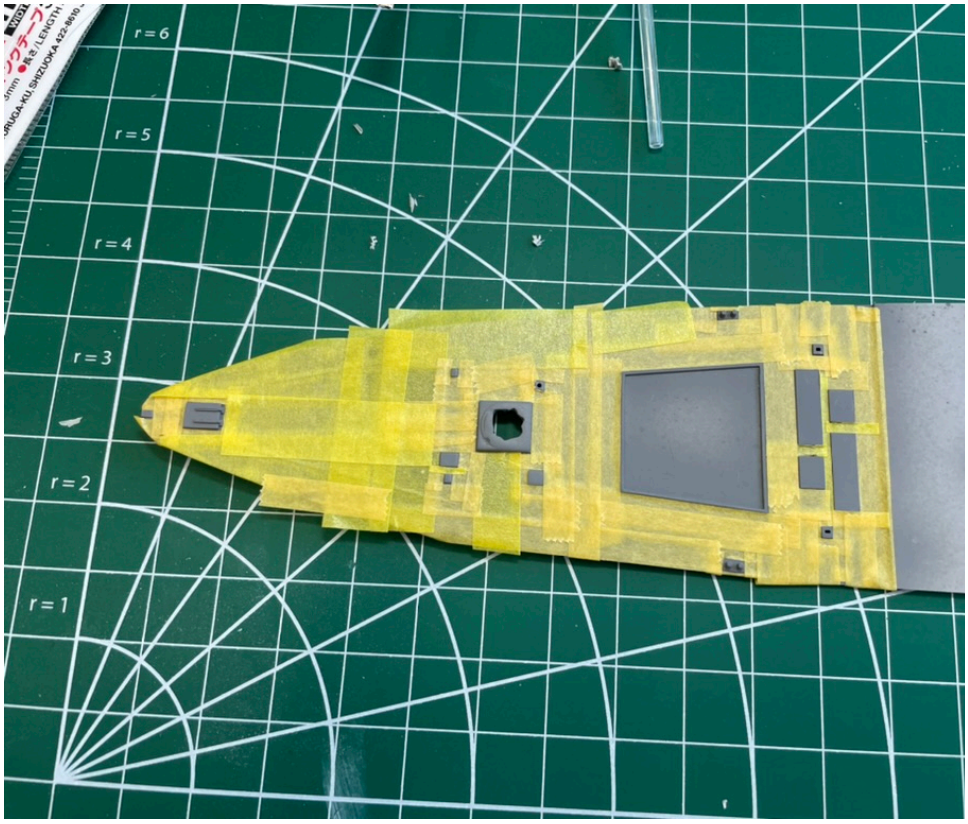

Figure 13. Masking Tape Frenzy on the Forward Deck.

Once the paint was dry, I glued the main deck to the hull using Revell Contacta Professional glue. Revell Contacta Professional is a medium viscosity plastic glue that dries slowly. Once the deck was on the hull, I used masking tape to ensure a tight fit.

I addressed the gaps with putty slurry and medium thick super glue. Once the slurry and super glue had dried, I sanded the gap areas with a 400 grit sanding sponge. Once the excess material had been removed, I polished the gap areas with a 1000 grit sanding sponge. The gap areas were masked off and the deck paint was updated.

I assembled the various detail parts and after priming and painting them, I added them to the model. I didn't install easy to break items such as jack staffs and flag staffs; these will be glued into position during final assembly.

Figure 14. The Main Deck has Been Glued to the Hull.

Figure 15. The Forward Main Deck is Almost Done.

When I was ready to install the chocks for the Rigid Inflatable Boat (RIB) I found out I had either sanded the positioning guides off the hull when fixing gaps or the deck was missing mounting holes. I will deal with this by gluing the chocks to the RIB during its installation.

The Vertical Launch System for the surface to air missiles was built, primed, painted, and installed on the forward main deck.

Figure 16. The VLS, as Built.

O-1 Level Superstructure

Since I'm using third party Vulcan Phalanx Close In Weapon System (CIWS) gun mounts, I need to remove the gluing guides from the foundation for both CIWS gun mounts before I glue the O-1 level superstructure to the hull. The third party CIWS gun mounts don't need the gluing guides. In addition, I need to fill one of the mounting holes; the other hole will be covered by the gun mount. I used an X-Acto knife to remove most of the gluing guide and then removed the rest of it with sand paper. I polished the foundation with 400 grit and 2500 grit sanding sponges. The mounting hole was filed with putty. Once the putty was dry, I sanded the excess putty.

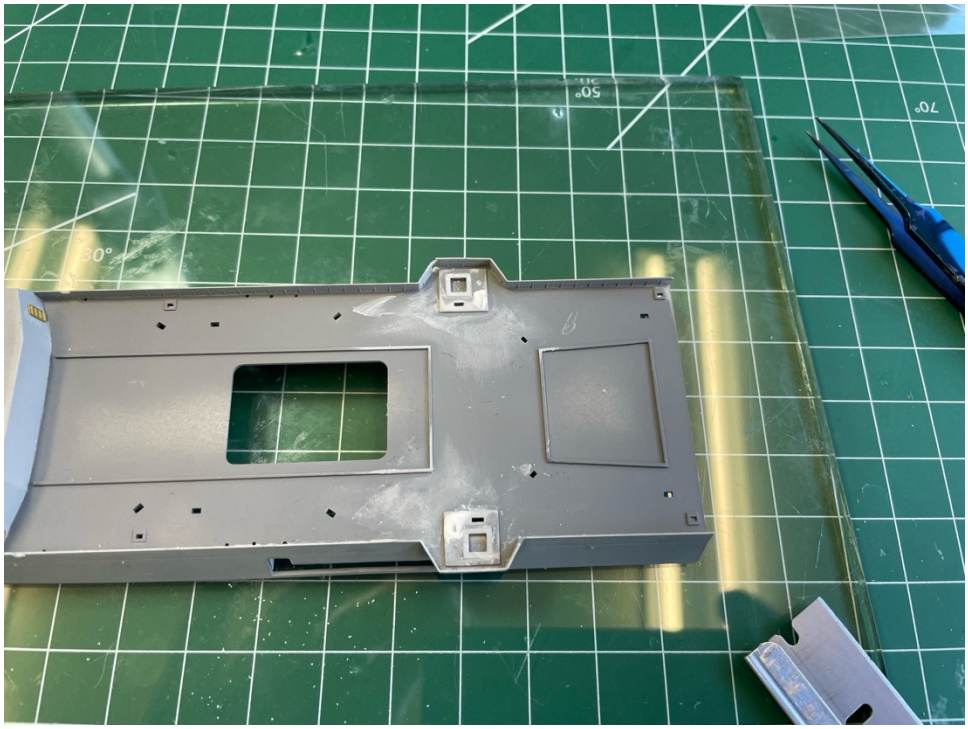

Figure 17. Cleaning Up the Vulcan Phalanx Foundations.

I masked the inside of the O-1 level superstructure and touched up the deck's dark sea gray paint.

I determined that the O-1 superstructure part needs to be added to the hull well before the instructions call for it. My rationale is that there is a major seamline between the O-1 level and the main deck that will probably require a significant amount of gap maintenance. I don't want to do that kind of work with lots of detail parts already installed.

I put a thin bead of Revell Contacta Professional glue on the O-1 superstructure and taped it to the hull. I let the glue dry overnight and then sanded the seamlines to remove the excess glue. I addressed the gaps with putty and putty slurry. Once the putty had cured overnight, I removed the excess with a file and 220 grit sanding sponge. I then polished the surface with a 400 grit sanding sponge. The seam was then wet sanded with a 2500 grit sanding sponge.

I was a bit too enthusiastic with the file and made some scratches on the hull. I also have a couple of gaps that need more attention. Once the putty slurry had dried overnight, I carefully filed and sanded the excess putty. The seams and scratches were then polished with a 400 grit sanding sponge, followed by wet sanding with a 2500 grit sanding sponge.

This is the best seam work I have done to date.

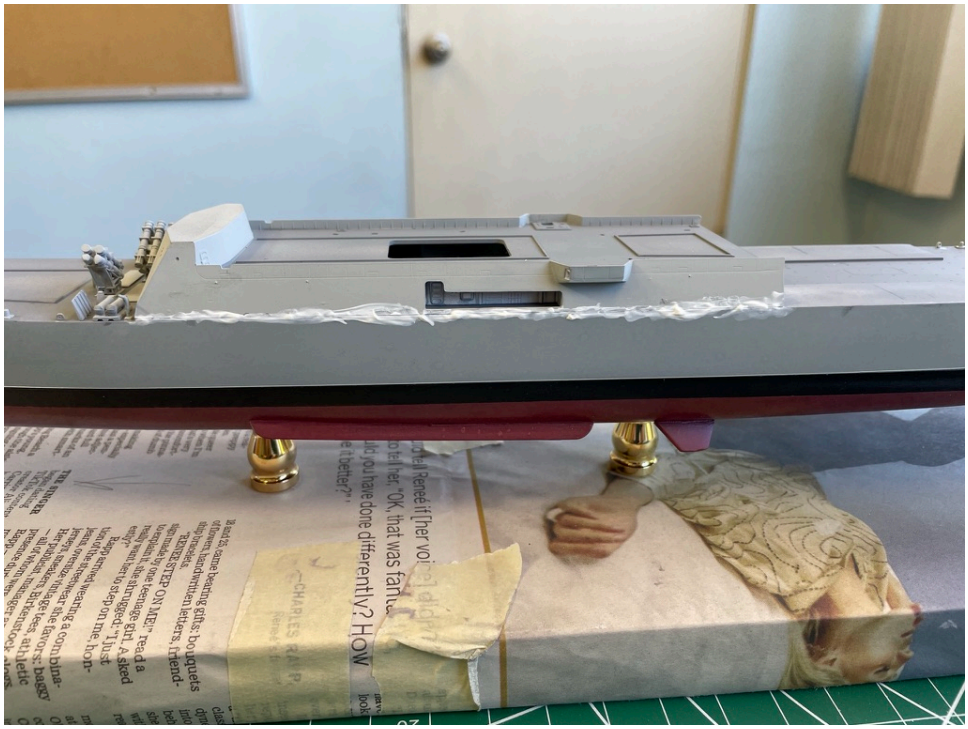

Figure 18. Putty and Putty Slurry Has Been Applied.

Figure 19. Removing the Excess Putty and Polishing the seam.

Figure 20. Round Two of Putty Slurry.

Figure 21. The Finished Port-side Seam.

Once I was satisfied with the gaps, I built and added the various fittings to the O-1 level. This work included building and installing the Vulcan Phalanx CIWS.

Figure 22. The O-1 Level Fittings and Equipment, as-Built.

Much later in the build, I discovered that I installed the wrong version of the Vulcan Phalanx. The Daring carried the newest version which included a Forward Looking InfraRed (FLIR) camera. I carefully removed the installed Phalanx mounts and saved them for a future build. The correct mounts were built, painted, and installed.

Aft Superstructure and Hanger

I realized I'm going to face the same gap problem with aft superstructure that I had with the O-1 level, so I'm going to go ahead and build the interior of the hanger and rigid hull inflatable boat (RHIB) bays and do most of the PE work. I will then glue the aft superstructure to the hull and take care of the gaps.

The hanger interior consists of three bulkheads and an overhead. I added the water tight doors to the appropriate locations.

Each RHIB bay is formed by a forward and aft bulkhead with the inboard bulkhead being the outboard side of the hanger. The port-side RHIB bay will be built with the door open and the RHIB and handling crane visible. I will build the other with the door closed and will not detail the interior of the bay.

I added a platform to the forward RHIB bay bulkhead as well as some PE details and a water tight door.

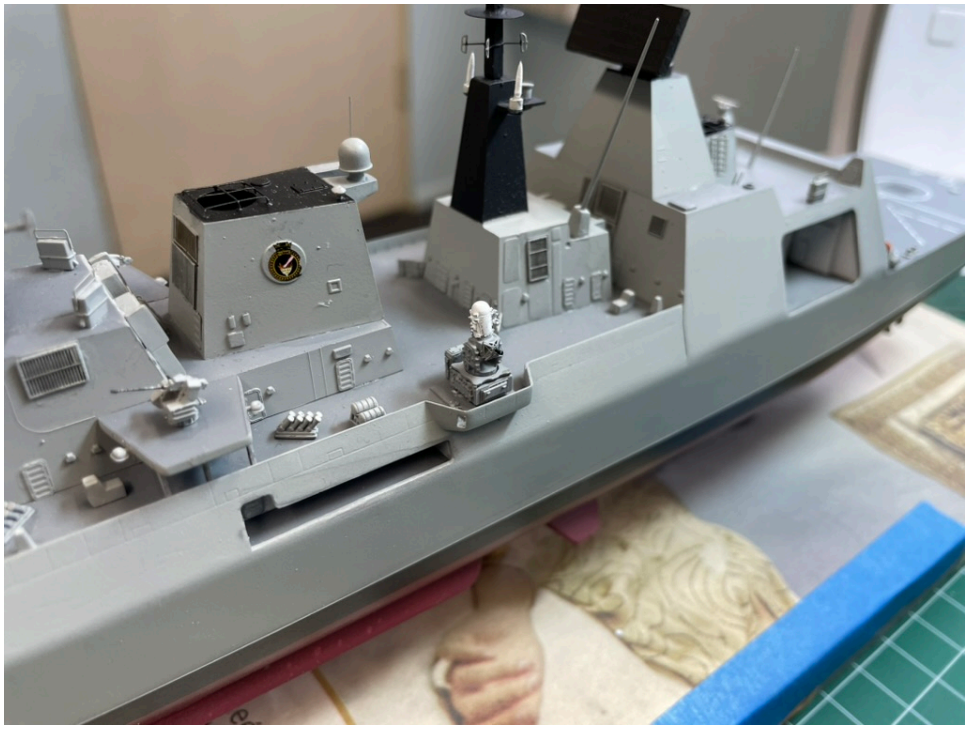

Figure 23. The Correct Vulcan Phalanx, as Built.

The hanger and RHIB bulkheads were primed with white primer. Once the primer had dried, I airbrushed the hanger interior parts with flat white acrylic. Once the white acrylic had dried, I hand painted the walkways and platforms with dark sea gray.

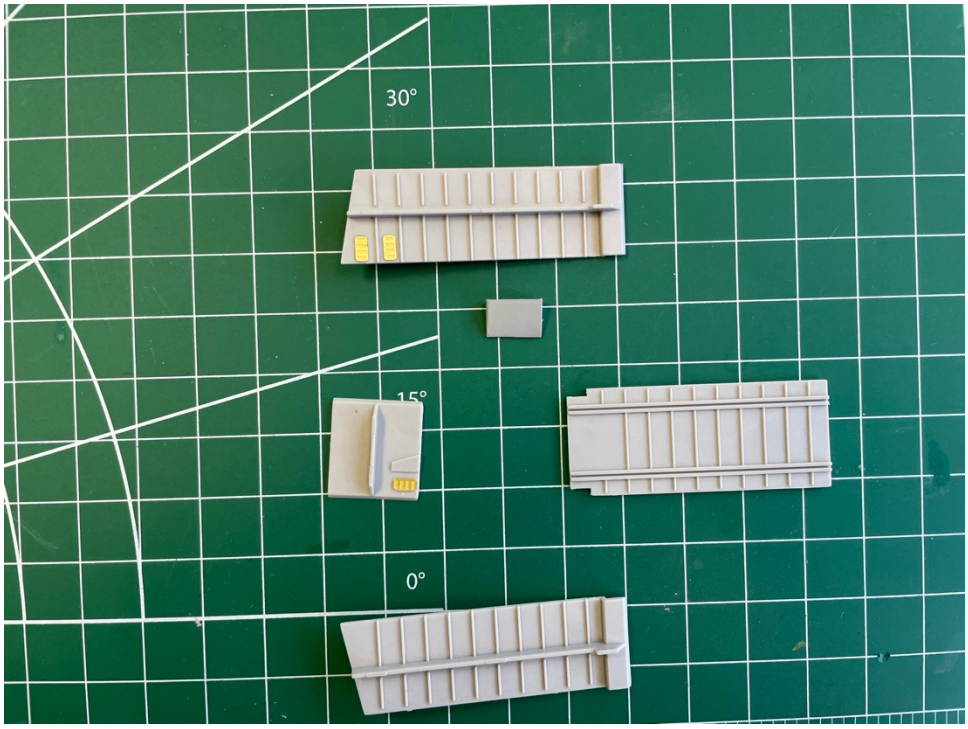

Figure 24. Hanger Pieces Ready for Prime and Paint.

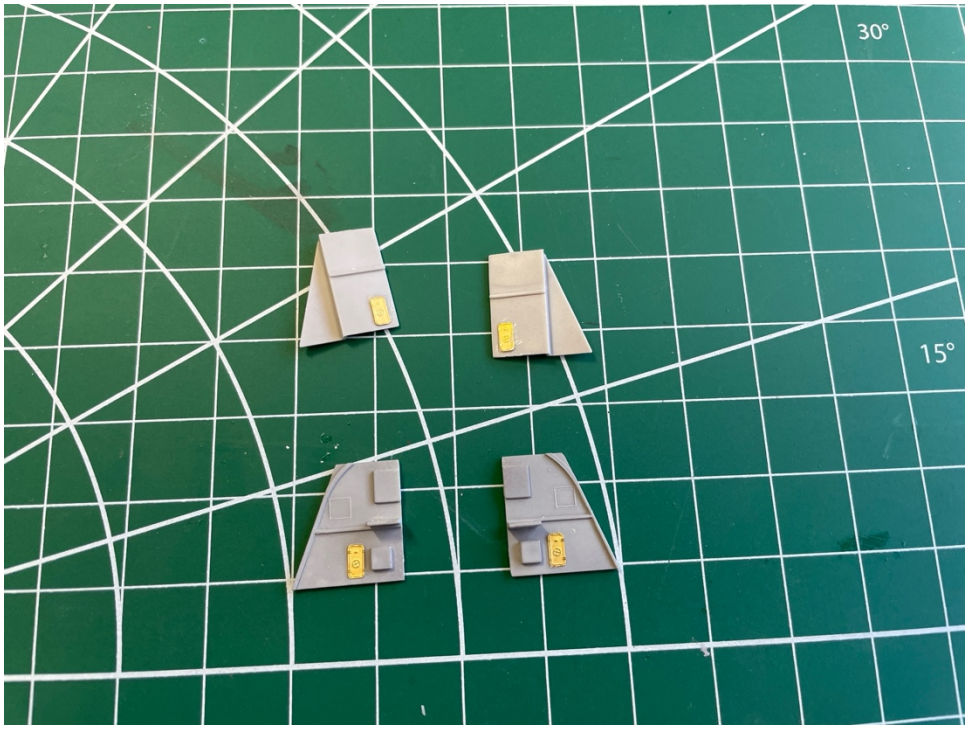

Figure 25. RIB Bay Forward and Aft Bulkheads.

I added a life rail to the portside RHIB bay's forward bulkhead platform and glued the PE vent into place. I then added all the aft superstructure PE, except the ladders.

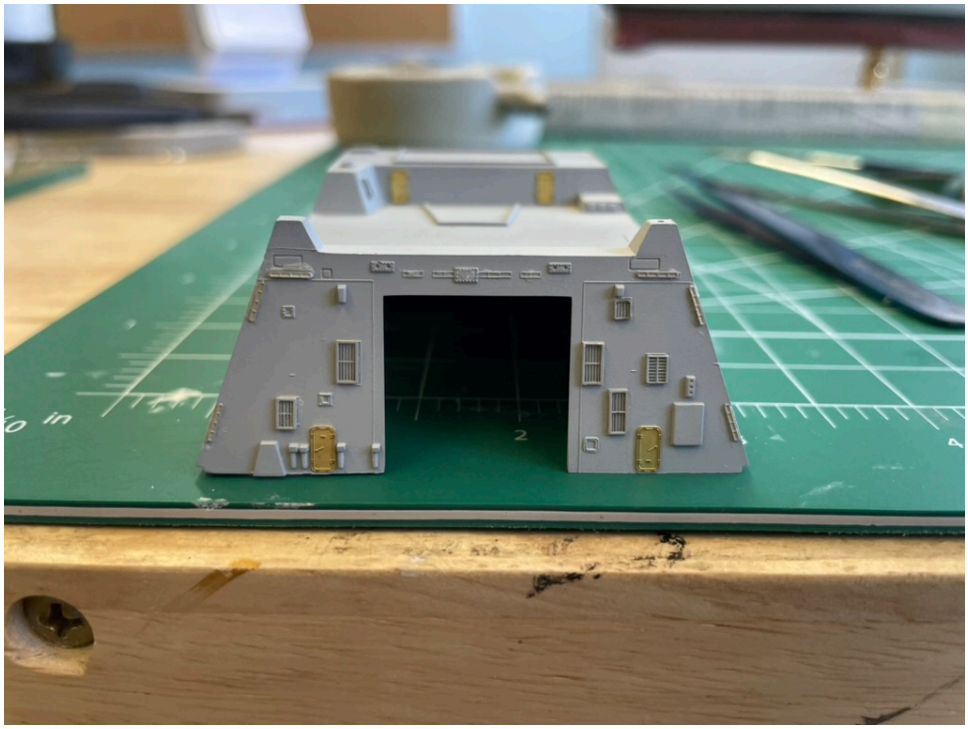

Figure 26. Lots of PE on the Aft Superstructure.

I assembled the hanger, except for the overhead, and added the life rail to the catwalk. Once the glue had set, I added the overhead.

I touched up the Royal Navy gray on the aft superstructure and when it was dry, I masked the part and airbrushed the deck with dark sea gray.

When the paint had dried, I glued the hanger and RIB bay bulkheads into position. After the glue had set, the hanger and aft superstructure were glued with Revell Contacta Professional to the main deck. I used clamps to ensure a tight fit and thus, a smaller gap.

Once the glue had dried overnight, I removed the clamps and masking tape. The part didn't fit very well, but some filing and sanding corrected the fit problems. I then attacked the gaps with putty slurry.

Once the slurry had dried overnight, I sanded the joint smooth and wet sanded it with a 1000 grit sanding sponge. I then reprimed and painted the joint.

Once the paint had cured, I airbrushed the entire model with semi-gloss clear acrylic. An interesting note, semi-gloss clear darkens the base color, but flat clear restores the base color. The reason I'm doing the semi-gloss clear coat is to improve the adhesion of the hull decals—decals don't work too well on flat painted surfaces.

I am now back to building the kit in the sequence called out in the instructions, but will add the hull decals before I add the forward superstructure and bridge.

Figure 27. Gluing the Aft Superstructure and Hanger to the Main Deck.

Figure 28. Working on the Fit and Gaps. Note the RHIB Bay.

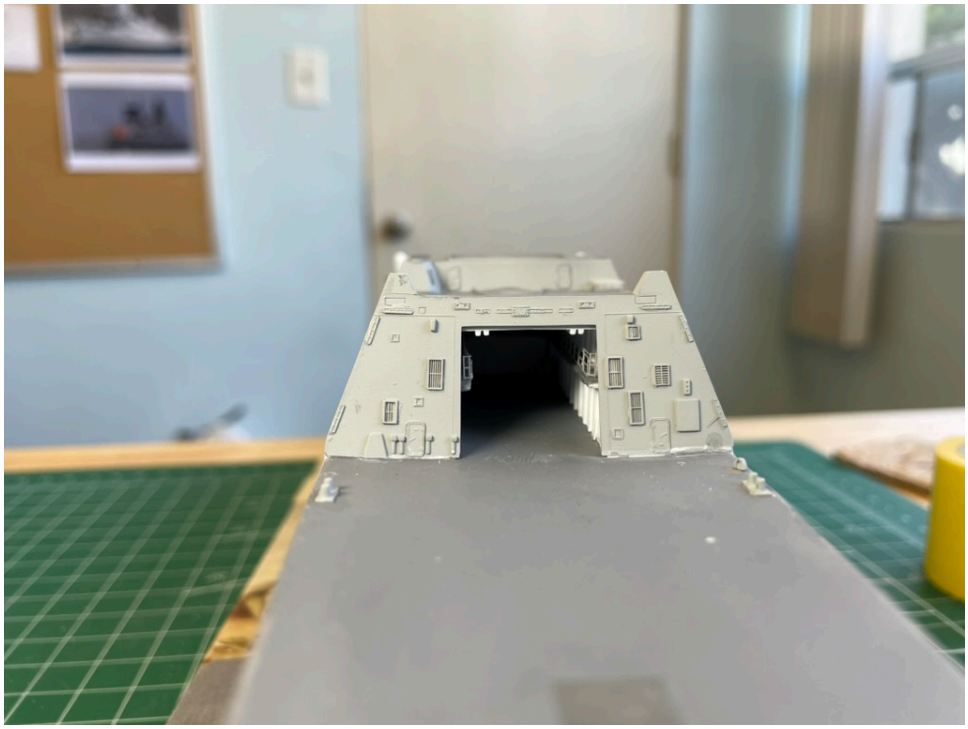

Figure 29. The Hanger Bay.

Bridge and Forward Superstructure Construction

I planned on replacing the kit's bridge deck and bulwarks piece with the PE part from the Tetra detail set. After I folded the PE part into shape, I realized I had to add over 30 very small brass braces to the bottom of the bridge deck. Some of these parts were almost too small for my 67 year-old eyes to see, so I decided to stick with the kit's plastic part.

I glued the bridge's sides, front and overhead together and attacked the seams with putty slurry.

After the slurry had dried, I sanded the seams smooth and added the two PE pieces to the overhead deck.

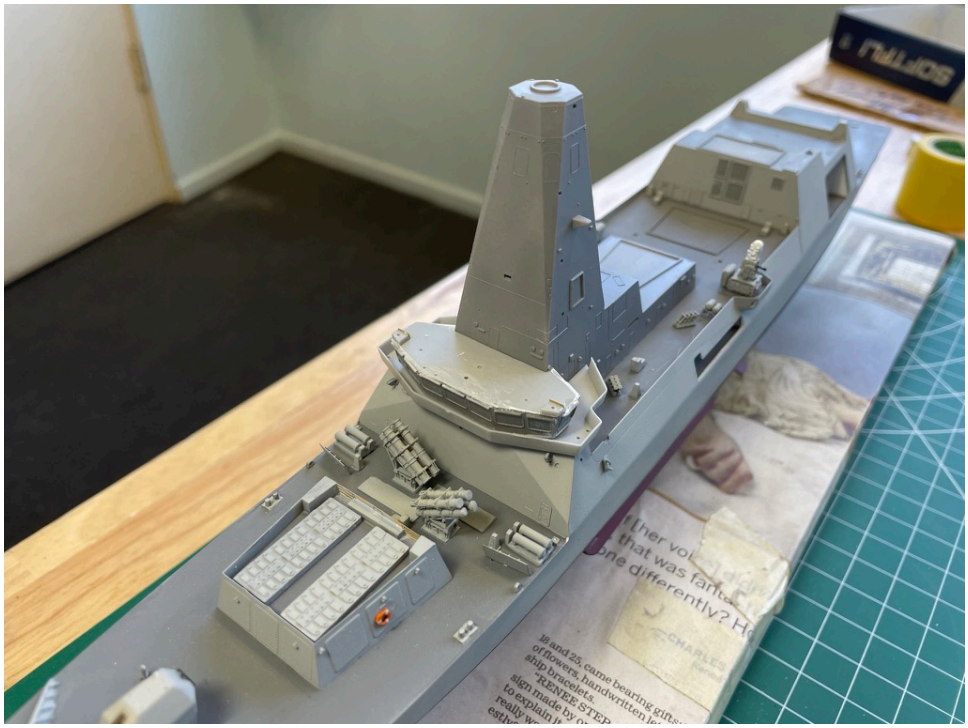

Figure 30. Dry Fit of the Forward Superstructure and Bridge.

I primed the bridge and bridge deck, and once the primer had cured, I airbrushed them with Royal Navy gray.

After the gray paint had dried, I masked the bulwarks and edge of the bridge overhead deck. I then airbrushed the decks with dark sea gray.

The bridge windows are recessed with a nice frame. I used a black Pigma Micron 03 artist pen to fill in the frames to simulate the bridge windows. Once the black ink was dry, I glued the bridge to the bridge deck.

I added the multitude of PE vents and water tight doors to the forward superstructure part. I'm waiting to glue the ladders to the part until it is glued to the hull.

I then airbrushed the forward superstructure with Royal Navy gray. When the navy gray was dry, I masked the decks and airbrushed them with dark sea gray. Once the dark sea gray had

dried, I masked the superstructure and airbrushed the flat black panel on the upper aft side of the tower.

I used a black panel wash to highlight the various vents. Any excess wash was removed with a Q-tip.

After touching up the paint, I used Revell Contacta Professional to glue the superstructure to the O-1 level deck, followed by the bridge.

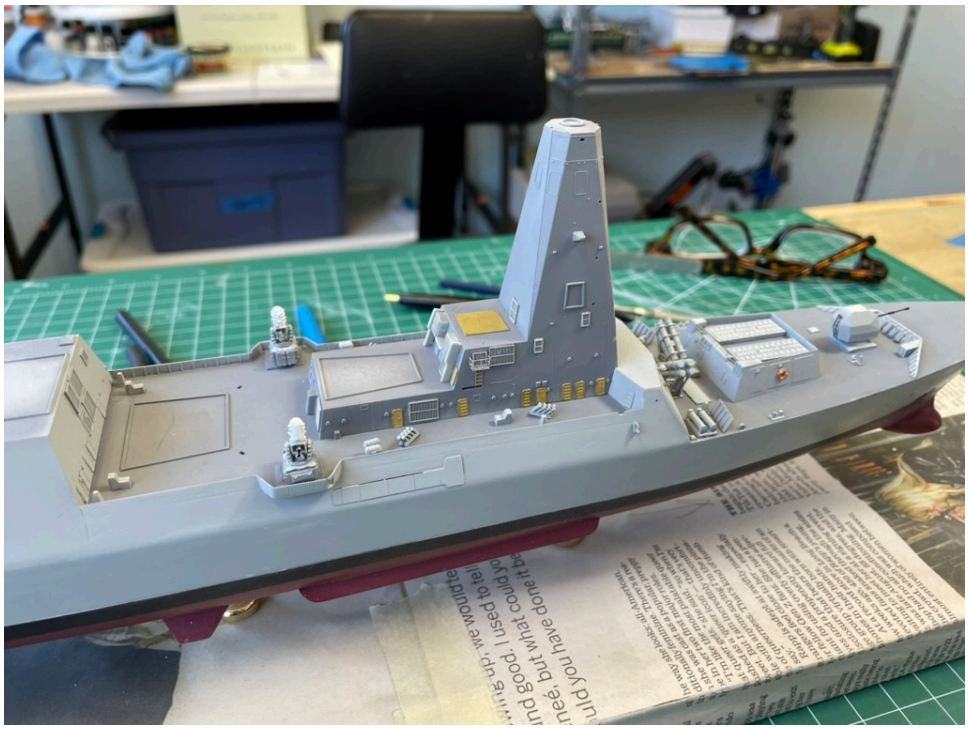

Figure 31. PE Parts Add Great Detail to the Model.

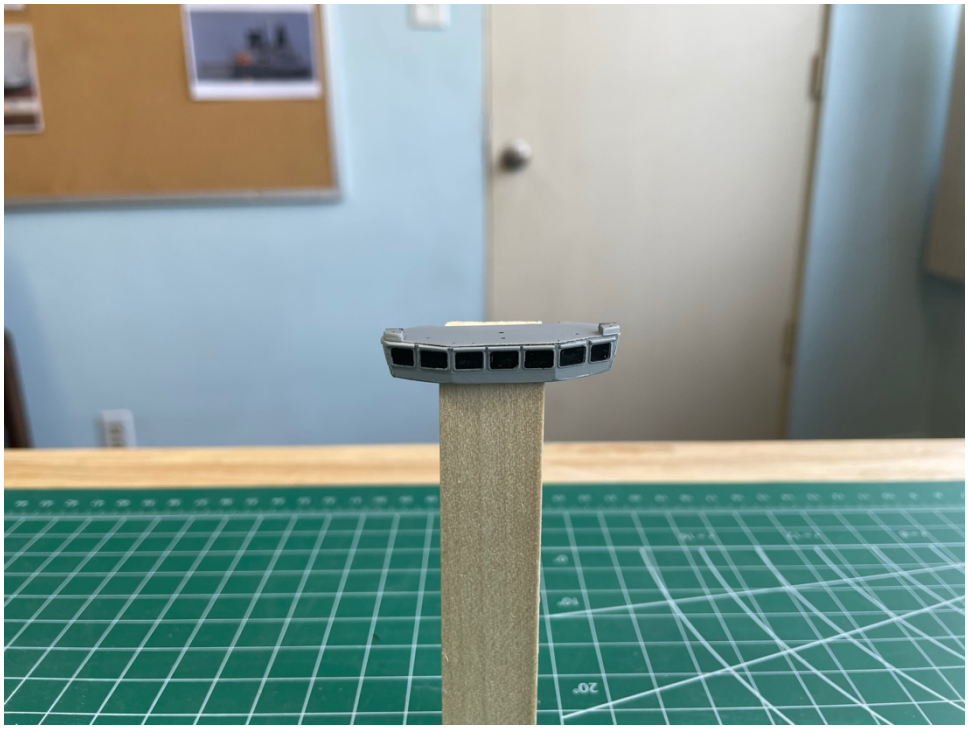

Figure 32. The Bridge Windows Look Good.

Figure 33. She's Beginning to Look Like a Warship.

Hull Decals

Before I get to far along with the superstructure details, I decided to go ahead and apply the hull decals. These decals consisted of draft markings, ship's name, pennant numbers and the flight deck markings.

I messed up one of the draft marking decals, so it won't be present. I doubt most people would even recognize that its missing.

The flight deck decals were quite difficult, and I made a couple of mistakes, but overall, the flight deck looks good.

Forward Superstructure Detailing

I began by assembling the bridge life ring dispensers, the 30mm gun mounts, and what I believe are some kind of antennas. The antennas create an array, so I think it may be some kind of electronic warfare system.

I airbrushed the 30mm gun decks with dark sea gray and Royal Navy gray. While the paint was drying, I installed the gun deck stanchions. After the paint was dry, I glued the gun decks to the superstructure.

Next, I added all the life ring dispensers to the bridge wings and then added all the ladders to the forward superstructure.

I built the 30mm gun mounts and they were a tricky build due to their small size. Once the glue had dried, I primed and painted them. Once the paint had cured, I glued the gun mounts to their platforms.

I installed various pieces of hardware such as compass peloruses, loud speakers, signal lamps and the two bridge wing machine guns. The machine guns consisted of two PE parts. I folded the machine gun into shape and then the ammo box. These parts were primed and painted. Once the paint was dry, I glued the ammo boxes to the guns and then glued the guns to the bridge wings.

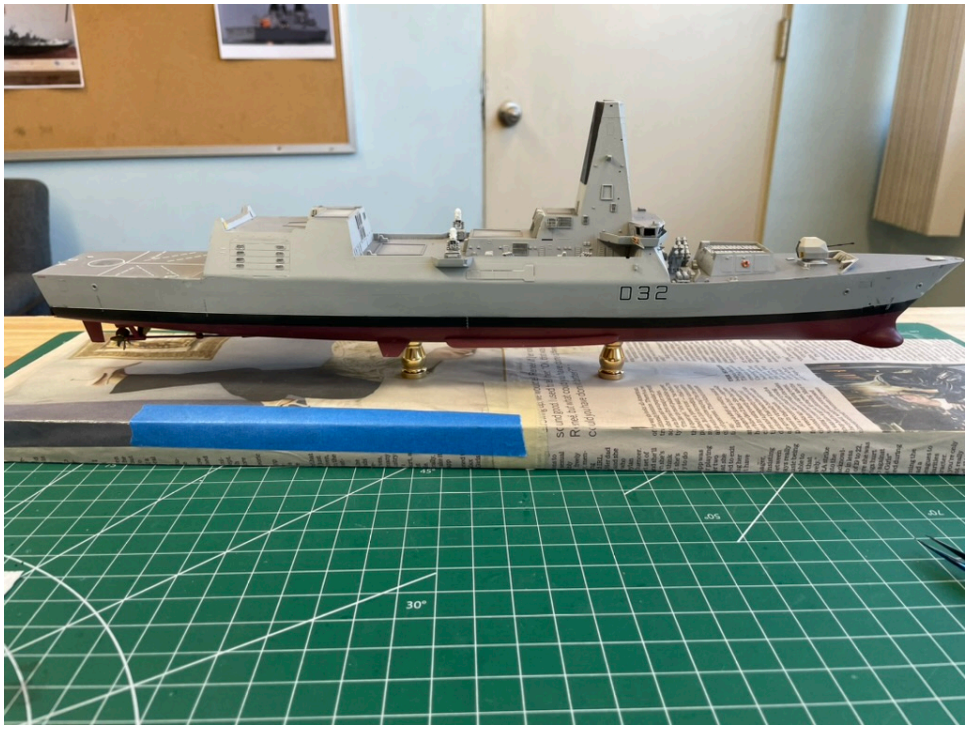

Figure 34. Starboard-side Hull Decals.

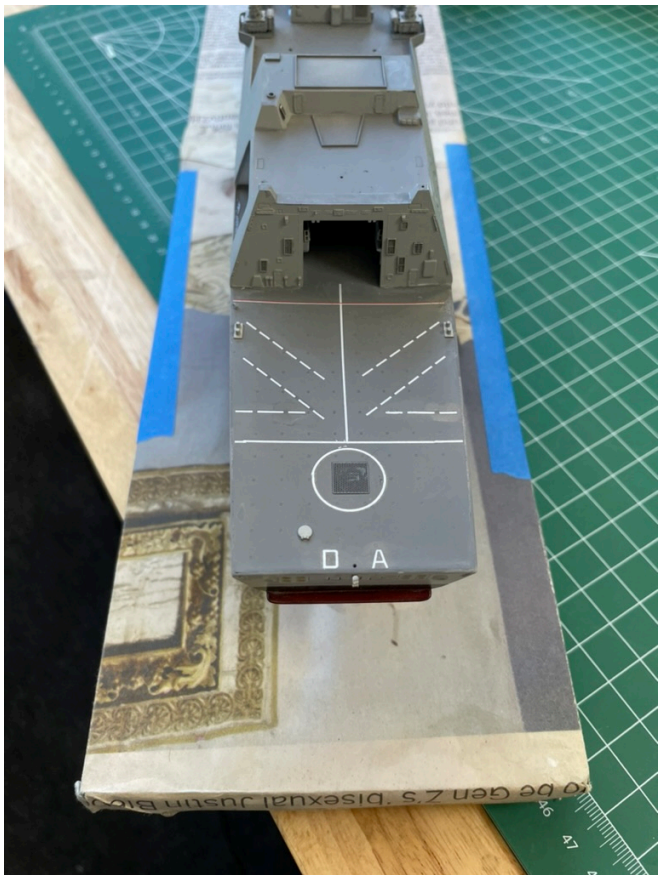

Figure 35. Flight Deck Decals.

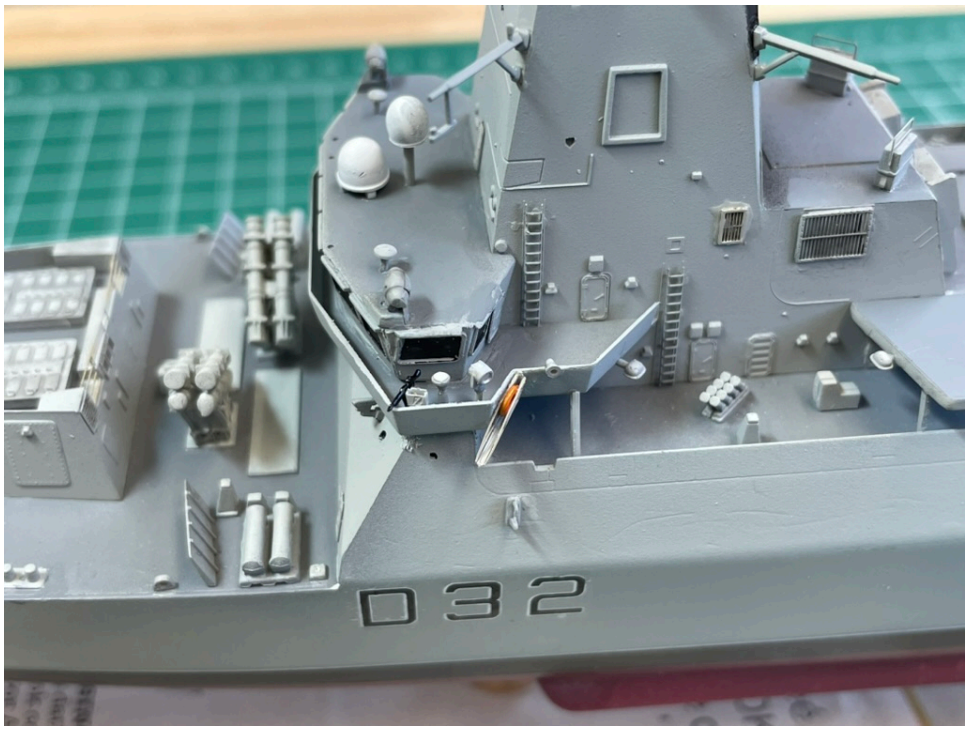

Figure 36. Bridge Details.

The next step was to build out the rest of the forward tower.

I added the four yardarms to the tower (see figure 35) and realized after the fact, that I needed to add the PE footrails before I installed them. I carefully removed the yardarms and added the footrails. I touched up the paint and reinstalled the yardarms. Once the glue had dried, I added the PE detail parts to the yardarms.

I built the two surface search radar platforms and added them to the tower.

Next, I built and painted the Type 1045 multi-functioning air tracking radar (the ball on top of the tower) and the two SATCOM antennas. Once the paint had cured, these items were glued to the tower.

I added a couple of loud speakers and some miscellaneous antennas; the tower is now complete.

Figure 37. Forward Tower, as Built.

Forward Smokestack

The forward smokestack was a straightforward build. I added the PE parts and then primed and painted the structure. Next, I added the antenna platforms and then the antennas.

I airbrushed the structure with semigloss clear and once the clear coat was dry, I added the ship's badge decals to the smoke stack. Once the decals had set, I glued the stack to the O-3 level.

Aft Superstructure Construction

Aft Tower

The aft tower was also a straightforward build. I added the various PE parts and platforms to the structure and then primed it.

I built the tall antenna mast and airbrushed it with flat black acrylic. I then airbrushed the tower structure and whip antennas with Royal Navy gray. The upper part of the tower structure was masked, and I airbrushed it with flat black.

I then glued the antenna mast and antennas to the tower structure. I noticed the kit did not include parts for the "cone" antennas for the port and starboard platforms, so I made them from plastic stock that was shaped with a file and sandpaper. Once the cone antennas were built, I primed and painted them. Once the paint had cured, I glued them to the platforms.

Figure 38. The Forward Smokestack and the Aft Tower, as Built.

Aft Superstructure Build Out

This work includes the 3D air search radar, the aft smokestack, and various ladders and antennas that go on top of the hanger. I also did some additional detail work around the hanger door. Once again, the aft superstructure was a straightforward build.

RHIB Build

The RHIB was a straightforward build, but the cradle and swing arm were not. I had to assemble the cradle and swing arm, and then place the boat in the cradle, but not glue it to the cradle. I carefully placed the entire assembly in the RHIB bay and positioned it. Once in its position, I carefully glued it in place using thin super glue. Capillary action spread the glue under the boat chocks and between the cradle and RHIB hull.

Helicopter Assembly

The helicopter was a straightforward build. Since it was molded in clear plastic, I won't be able to see any seams and gaps, so I will address them after I've airbrushed the fuselage with primer.

Figure 39. The Type 1086 3D Air Search Radar Looks Good.

Figure 40. The RHIB Bay, as Built.

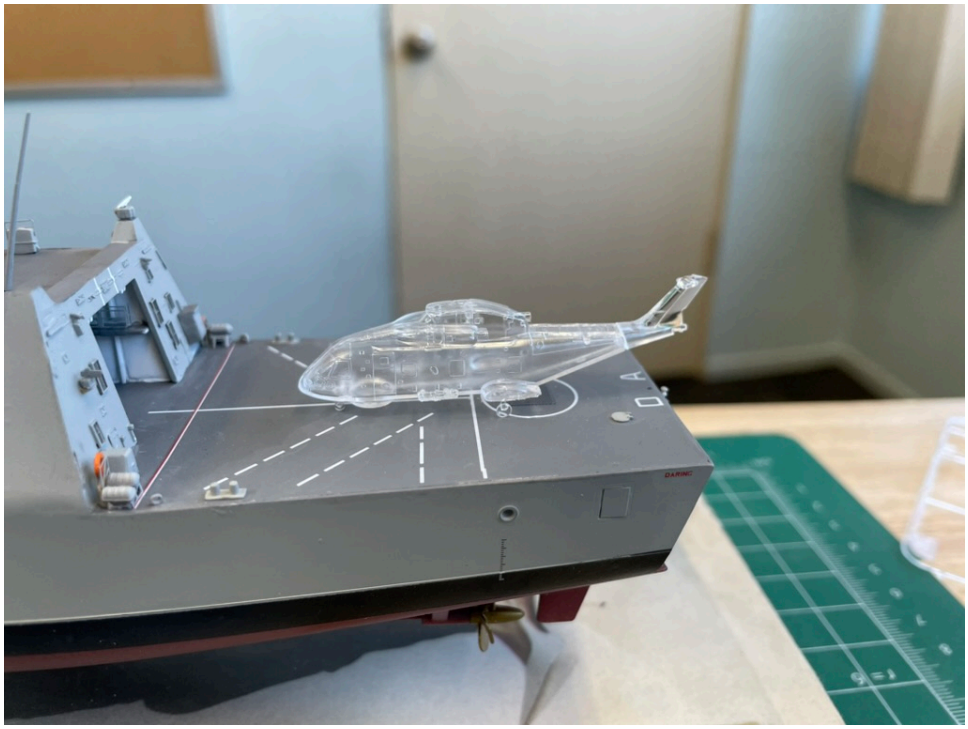

Figure 41. The Helicopter is Ready for Priming.

After priming, I airbrushed the fuselage with Mr. Hobby aircraft gray. I was very disappointed with the results. The paint was too thin and didn't cover well. I added more paint to the mix but got the same results. It is possible that the paint is old. In any case, I airbrushed it with Tamiya RAF medium sea gray. As usual, the Tamiya paint was perfect.

Once the paint had cured, I used black Pigma Micron .005 and .001 artist pens to fill in the windows and canopy. The wheels were detailed with silver and flat black paint.

I added the decals and after they were set and dried, I assembled the main rotor and installed the tail rotor.

As a final detail, I assembled an air-launched torpedo left over from the Truxtun project and added to the helicopter's port pylon.

The helo was glued to the flight deck once the flight deck safety nets were installed.

Final Assembly

Rigging and Flags

I used two pieces of .080" x .100" plastic stock to simulate the flag bag on each bridge wing. Before I glued them in place, I drilled holes for the signal flag halyards.

For the commissioning pennant, I made a “pig stick” out of brass rod and glued it to the forward superstructure. I hand painted the pig stick with flat black.

Figure 42. The Merlin HM-2 ASW Helicopter, as Built.

I ran white mylar thread from the flag bags to the pig stick and yardarms to simulate the flag halyards.

I’m setting up the flags as if the ship is entering harbor. I added the commissioning pennant to the pig stick halyard, and Code Hotel signal flags to the portside outer halyard. Code Hotel translates to “requesting a pilot.”

From photographic and video evidence, the Royal Navy flies the White Ensign from the aft flagstaff when leaving or entering harbor. For the forward and aft flag staffs, I rove a piece of whit mylar rigging thread to it to simulate the halyards. The White Ensign was then glued to the aft flagstaff’s halyard.

Figure 43. Signal Flags, as Built.

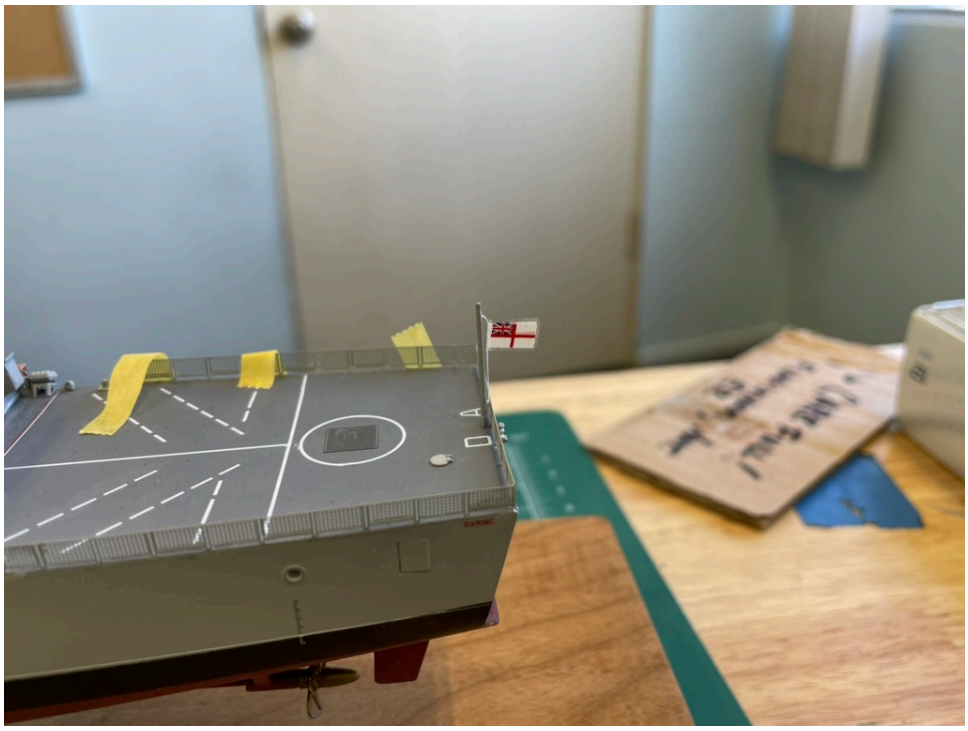

Figure 44. The White Ensign Flying From the Fantail.

Final Photo-Etched Details

I attempted to build the accommodation ladder but messed up both attempts; the steps were too delicate. Regardless of that failure, I completed the entry portal on the port side of the ship.

In addition to the machine guns on the bridge wing, the ship carries four additional machine guns that are manned when entering port or when dealing with small craft, also known as Junk bashing. I built the machine guns and primed and painted them. When done, the machine guns were glued in place, fore and aft.

I added the life rails to the superstructure first and then installed the main deck life rails. Finally, I added the flight deck safety nets to the fantail.

I had trouble keeping the flight deck safety nets in position due to their very small gluing surface. After knocking the port and starboard side nets off a couple of times, I glued tiny blocks of 0.5 x 0.75mm plastic strip to each hinge. Once the glue had set, I painted the blocks with dark sea gray to match the flight deck. After the paint had dried, I glued the nets to the flight deck without any problems.

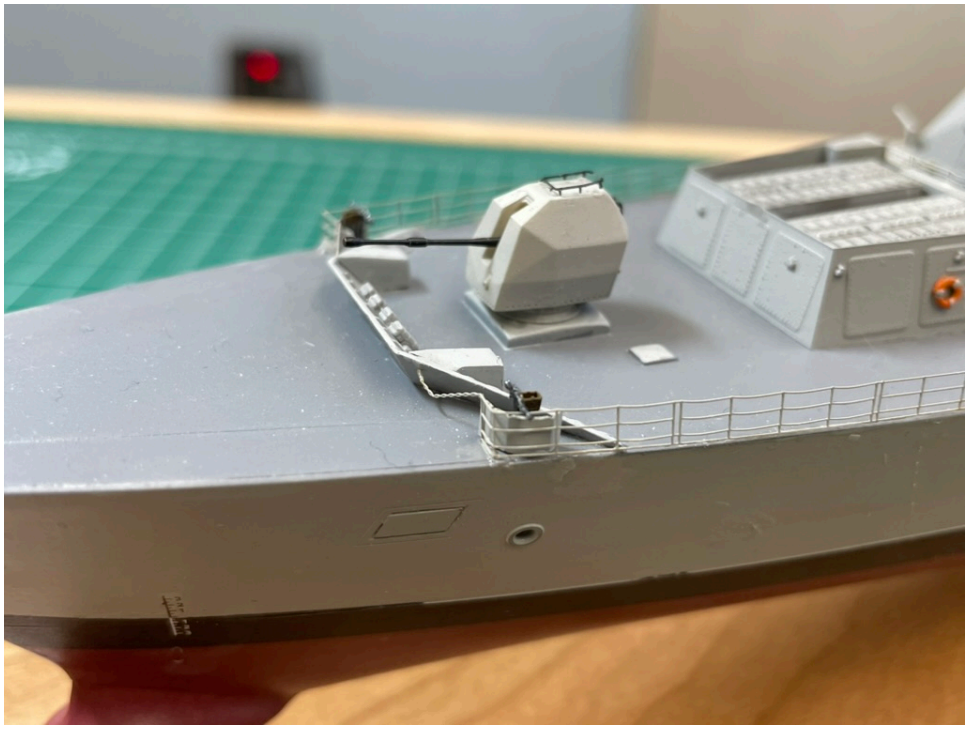

Figure 45. Forward Machine Guns.

Figure 46. Construction Complete, Ready for Weathering.

Final Paint Steps

After touching up paint on the model, I airbrushed the entire model with another coat of semi-gloss clear acrylic. Once the semi-gloss coat had dried, I added some "rust" around the anchors and at various locations along the life rails and flight deck safety nets. The rust agent is mineral spirt based and doesn't react with the acrylic paint. I removed any excess "rust" with a brush dipped in mineral spirts.

I think I overdid the rust, but it was a learning experience.

Once the rust coat had dried, I airbrushed the entire model with flat clear acrylic. The flat coat helps restore the colors to their correct tint. With the completion of the flat coat, the model construction is complete.

Figure 47. Rust on the Bow.

Display

I ordered a cherry wood display case from Bases By Bill and was informed that it would take at least six weeks before the case arrived.

Once, the display case arrived, I drilled two small holes in the bottom of the base and then tightly taped the model to the base. With the model secure, I drilled pilot holes into the bottom of the presentation stand and then screwed the model to the base.

I ordered the name plate was ordered from our local trophy shop, University Trophies and Awards. Once I received the name plate, I glued it in place.

The model is now complete in all respects.

Ship's Data and History

Ship's Data

Builder: BAE Systems Naval Ships

Laid down: 28 March 2003

Launched: 1 February 2006

Sponsored by: The Duchess of Edinburgh

Commissioned: 23 July 2009

Homeport: HMNB Portsmouth

Identification Deck Code: DA
Pennant Number: D32
International Callsign: GPLA
IMPO Number: 4907749

Motto: Splendide Audax. (Finely Daring)

General Characteristics

Class: Type 45 guided-missile destroyer

Displacement: 8,400 tons

Length: 500 feet

Beam: 69 feet-7 inches

Draft: 24 feet-3 inches

Power: 2 x Rolls-Royce WR-21 gas turbines, 28,000 shaft horse power (21.5 MW) each
3 x MTU 4000 Series Diesel Generators, 3 MW each.

Propulsion: Two shafts integrated electric propulsion with 2 x GE Power Conversion Advanced Induction motors and VDM25000 Drives for 27,000 shaft horsepower each.

Speed: In excess of 32 knots

Range: In excess of 7,000 nautical miles at 18 knots.

Complement: 191, with accommodation for up to 285.

Sensors and Processing Systems

- Type 1045 SAMPSON multi-functioning air tracking radar
- Type 1046 S1850M 3D air surveillance radar
- Raytheon Integrated Bridge and Navigation System
- 2 x Raytheon Attitude and Heading Reference System (AHRS) (an inertial navigation system)
- 2 x Type 1047 I-band radar
- 1 x Type 1048 E/F-band Radar
- Ultra Electronics Series 2500 Electro-Optical Gun Control System
- Ultra Electronics SML Technologies radar tracking system
- Ultra Electronics/EDO MFS-7000 sonar

Electronic Warfare and Decoy Systems

- UAT Mod 2.1 (a digital radar electronic surveillance system)
- AN/SSQ-130 Ship Signal Exploitation Equipment Increment F cryptological exploitation system.
- Seagnat
- Naval Decoy IDS300
- Surface ship torpedo defense system

Armament

Anti-air missiles:

- PAAMS air-defense system
- 48 cell Sylver Vertical Launching system for:
    - Short range Aster 15 missiles
    - Long range Aster 30 missiles

Anti-ship missiles:

- 2 x Quad Harpoon missile launchers. (Harpoon to be replaced by Naval Strike Missile in 2023/2024)

Guns

- 1 x 4.5 inch Mark 8 Naval gun
- 2 x DS30V Mark 1 30mm gun
- 2 x 20mm Vulcan Phalanx close in weapon system (CIWS)
- 6 x 7.62mm general purpose machine guns

Armor: 70mm of Kevlar providing splinter protection for the magazines and vertical launch system.

Aircraft: 1 x Merlin HM2, armed with 4x Sting Ray anti-submarine torpedoes.

HMS Daring History

HMS *Daring* is the lead ship of the Type 45 or *Daring*-class air-defense destroyers built for the Royal Navy, and the seventh ship to hold that name. She was launched in 2006 on the Clyde and conducted contractor's sea trials during 2007 and 2008. She was handed over to the Royal Navy in December 2008, entered her base port of Portsmouth for the first time in January 2009 and was formally commissioned on 23 July 2009. As the lead ship of the first destroyer class built for the Royal Navy since the Type 42 in the 1970s, she has attracted significant media and public attention. Her name, crest and motto are a reference to the Roman youth Gaius Mucius Scaevola, famed for his bravery.

Construction

Daring's construction began at the BAE Systems Naval Ships yard (now BAE Systems Surface Ships) at Scotstoun on the River Clyde in March 2003. The ship was launched at 14.21 GMT on 1 February 2006. The Countess of Wessex (now Duchess of Edinburgh) was the ship's sponsor at her launch. On 16 November 2006, the Countess of Wessex brought *Daring* to life on her first official visit. On 17 November 2006, the countess switched on the ship's diesel generators, part of the 'powering up' ceremony.

Sea Trials

On 18 July 2007 *Daring* sailed on the first set of sea trials (Stage 1.1), successfully completing them by 14 August 2007. As she is the first in the class some structural areas needed to be tested, including the loads that the main 4.5-inch Mark 8 naval gun puts on the ship. During these trials, *Daring* reached her design speed of 29 knots in 70 seconds and achieved a speed of 31.5 knots in 120 seconds.

She sailed for Stage 1.2 on 30 March 2008 and returned on 2 May. Stage 1.2 included trials on the Long Range Radar and navigation system, medium caliber gun blast trials, weapon alignment tests and endurance tests.

Stage 1.3 trials were conducted between 26 August and 22 September 2008 with emphasis placed on testing the full range of communications equipment. The ship's company used the opportunity to conduct familiarization and training activities in preparation for the transfer of the vessel to the Royal Navy in December 2008.

Stage 2 trials took place in 2009, once the ship had been handed over to the Royal Navy. HMS *Daring* arrived in her home port of Portsmouth on 28 January 2009 to large crowds along the seafront. She was given the honor of a fly-past to coincide with her passing of the Round Tower, just outside Portsmouth.

Operational Service

Daring was formally commissioned on 23 July 2009 with The Countess of Wessex inspecting an honor guard on the quayside, and reception. The commissioning cake was cut by the wife of the commanding officer and Able Seaman Daniel Small, who was the youngest member of the ship's company. *Daring* was declared officially "in service" one year later, on 31 July 2010.

Daring fired her first Sea Viper missile in May 2011 during a test launch in the Outer Hebrides, after years of trials. During the same year she was equipped with two Phalanx CIWS mounted on either side of the superstructure.

On 6 January 2012, the Royal Navy announced that *Daring* would leave Portsmouth on 11 January 2012 to undertake her first mission, a deployment to the Persian Gulf. *Daring* travelled through the Suez Canal on 2 February 2012, then continued to the Persian Gulf, relieving the Type 23 frigate HMS *Argyll* that was on station there. In February 2012, as part of her Persian Gulf deployment, *Daring* joined Operation Scimitar Anzac, an anti-piracy operation in the Red Sea and the Gulf of Aden. This international operation included the Royal Fleet Auxiliary RFA *Wave Knight*, the Royal Australian Navy frigate HMAS *Parramatta*, and the Pakistan Navy's *PNS Babur.* *Daring* acted as the command ship for all the vessels. During operation in the Persian Gulf and North Arabian Sea, *Daring* operated with the U.S. Navy's Carrier Strike Group One and Carrier Strike Group Nine.

In September 2013, *Daring* transited the Panama Canal and deployed to the Pacific Ocean. She made port visits to the US Naval Base San Diego, Joint Base Pearl Harbor–Hickam, and the Marshall Islands. While in the Pacific, *Daring* took part in the Royal Australian Navy's International Fleet Review 2013 at Sydney and participated in the 2013 Five Power Defense Arrangements exercise, Bersama Lima.

During Bersama Lima, *Daring* was urgently dispatched to the Philippines as part of the British government's humanitarian response to Typhoon Haiyan. Before her return to the United Kingdom, *Daring* made port visits in Japan, South Korea, China, Vietnam, Thailand, and Malaysia.

On 4 July 2016, *Daring* fired an Aster 30 missile off the coast of Scotland.

In September 2016 *Daring* deployed to the Persian Gulf to assist in Operation Inherent Resolve. In April 2017, after being relieved East of Suez by *HMS Monmouth*, *Daring* transited the Bosporus Straits for exercises in the Black Sea with the Romanian Navy.

Daring was laid up, pending a refit, from 2017 to 2020. She began her refit in June 2020 and received a visit from her sponsor, the Countess of Wessex, in 2021 to see the progress of the work. On 15 September 2021, *Daring* left Portsmouth for the first time in four years under tow bound for Cammell Laird shipyard in Birkenhead to allow work to be carried out installing new generators under the Power Improvement Project (PIP). PIP installation work was completed by Cammell Laird at the end of 2022 and the ship was returned to Portsmouth to complete refit and regeneration in January 2023.

As of December 2023, HMS Daring is on deployment and is operating in the Indo-Pacific Ocean area.