

U.S. COAST GUARD CUTTER *FIR* (WLM-212)

A LIGHTHOUSE/BUOY TENDER FOR THE PACIFIC NORTHWEST



This booklet is part of a documentation project completed by the Historic American Engineering Record (HAER), a division of the National Park Service, for the U.S. Coast Guard. Drawings, photographs, and history that make up the documentation for Fir (HAER no. WA-167) are housed in the collection at the Library of Congress, Washington, D.C. The project team consisted of Todd Croteau, HAER Industrial Archeologist (project leader); Jet Lowe, HAER Photographer; Candace Clifford, NCSHPO Consultant (historian); and Pete Brooks, HAER Delineator. This booklet was designed by Candace Clifford. Funding was provided by the U.S. Coast Guard Headquarters, Office of Financial Management, Captain William H. Wissman. The project was directed by Kebby Kelly, USCG Environmental Coordinator.

(Cover) Fir off Cape Flattery Light Station on Tatoosh Island at the entrance to Strait of Juan de Fuca. Photo courtesy of Coast Guard Historian's Office, Washington, D.C.



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Fir at her berth in amongst the reserve fleet at the Maritime Administration Facility, Suisun Bay, California. Historic American Engineer Record Historic American Building Survey (HABS/HAER) photo by Jet Lowe, October 2000.

***FIR*'s STATEMENT OF SIGNIFICANCE**

Designated a National Historic Landmark by the Secretary of the Interior on April 27, 1992, *Fir* is a property of exceptional national significance. Her summary of significance states,

The tradition of aids to navigation in the United States dates to colonial times. One of the first actions of the new federal government was the establishment of lighthouses. Often built on isolated and rugged shores, lighthouses required a special type of vessel to service and maintain them. These vessels were lighthouse tenders, which, with lightships were the only seagoing aspects of the lighthouse service. . . . Laid down at the end of the tenure of the Lighthouse Service, *Fir* was transferred to the newly formed Coast Guard in 1939 when launched. Essentially unmodified, with the exception of re-engining, *Fir* is the last surviving unaltered American lighthouse tender, and the last working member of the U.S. Lighthouse Service fleet. *Fir* represents a largely unheralded workaday-aspect of the lighthouse service, as well as the seafaring foundation from which the modern Coast Guard's buoy tender fleet evolved.¹

Because she is an historic vessel, *Fir* was recorded and documented by the National Park Service's Historic American Engineer Record for the U.S. Coast Guard in 2000. That documentation provides the basis for this report.

EVOLUTION OF THE BUOY TENDER

Lighthouses and buoys have been essential aids to navigation in the United States since colonial times. Originally the government contracted private vessels to service the country's aids to navigation or relied on cutters of the U.S. Revenue Cutter Service. As the nation grew, so did its system of aids to navigation, and in the 1850s, the U.S. Light-House Board designed a vessel specifically for tending aids to navigation. Gradually, most lighthouse districts came to own at least one tender, some powered by sail, others by steam. The steam-powered tenders proved much more maneuverable in tending buoys than their sail-rigged counterparts, allowing for a much more accurate placement.²

Tenders were expected to be maids of all work. Light stations relied on deliveries of replacement parts, paint, oil, coal, wood and other fuel, and supplies. Keepers had to be delivered to their charges along with their family property, livestock, mail, etc. Lighthouse inspectors and engineers had to be transported and non-propelled lightships moved on or off their stations.³ One of the principal duties of tenders was relieving, repairing, and/or replacing navigational buoys. Buoy maintenance was scheduled on a regular basis, most often annually, and was interspersed with work needed to replace buoys that were off station, sunk, or out of order.

The evolution of the buoy tender is directly related to the functions it has served, the materials and technology available at the time of construction, and the mission and traditions of

the administering agency. Over time, the tenders' consistent function has been to service aids to navigation, i.e., buoys, light stations, and lightships. As the technology and care of aids to navigation have evolved and changed, so have the vessels that service them. In more recent years, tender duties have expanded to include search and rescue, icebreaking, military readiness, and law enforcement—a reflection of the expanded mission of the modern U.S. Coast Guard.

The tenders built before the turn of the century ranged from 140 to 200 feet in length and were generally designed individually and not as part of an overall class. They were powered by both single and twin screws ranging from 250 to 900 horsepower. The first screw-propelled tender, *Iris*, was purchased by the Light-House Board in 1865. Other tender types included sidewheelers and sternwheelers. Hoisting capacities varied from 8 to 20 tons. Wood was originally used as a hull material and continued in use as late as 1926. Iron was occasionally used between 1878 and 1890. The first steel-hulled tenders, *Goldenrod* and *Zinnia*, were launched in 1888. The hulls were painted black to better disguise the scrapes of metal buoys. By 1890, the tender fleet consisted of 28 steamers and two schooners “ranging from 18 to 550 tons burden.”⁴

Tenders remained under the jurisdiction of the Light-House Board until 1910, when the Bureau of Lighthouses took over the administration of aids to navigation. The Bureau designed a class of eight tenders called the *Manzanita* or 8-tender class. They differed from their predecessors in that their hoisting mechanisms were made of steel rather than wood. The

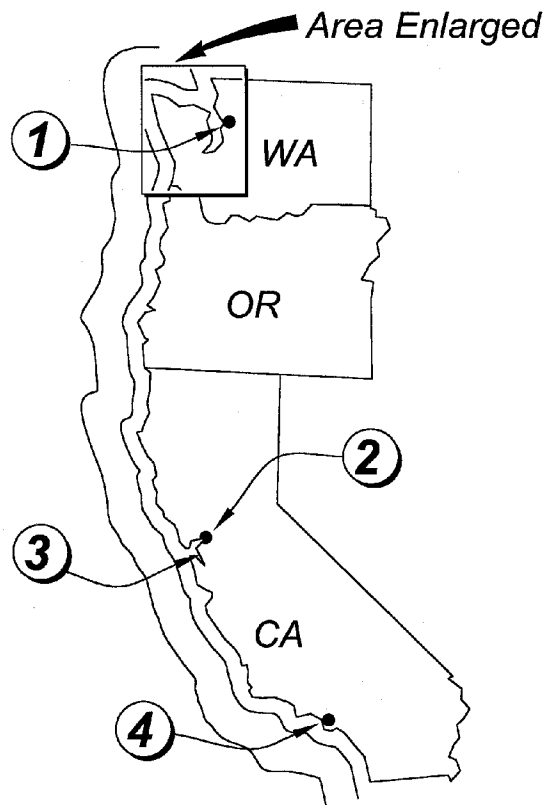


increase in the number of buoys and the development of potentially explosive lighted buoys during this period created a demand for newer, more advanced tenders. The Bureau of Lighthouses defined its four buoy tender classes solely on length and draft. When the Bureau of Lighthouses, also called the U.S. Lighthouse Service, merged with the U.S. Coast Guard in 1939, it owned 64 tenders ranging from 72-foot harbor tenders to 200-foot ocean-going tenders.⁵

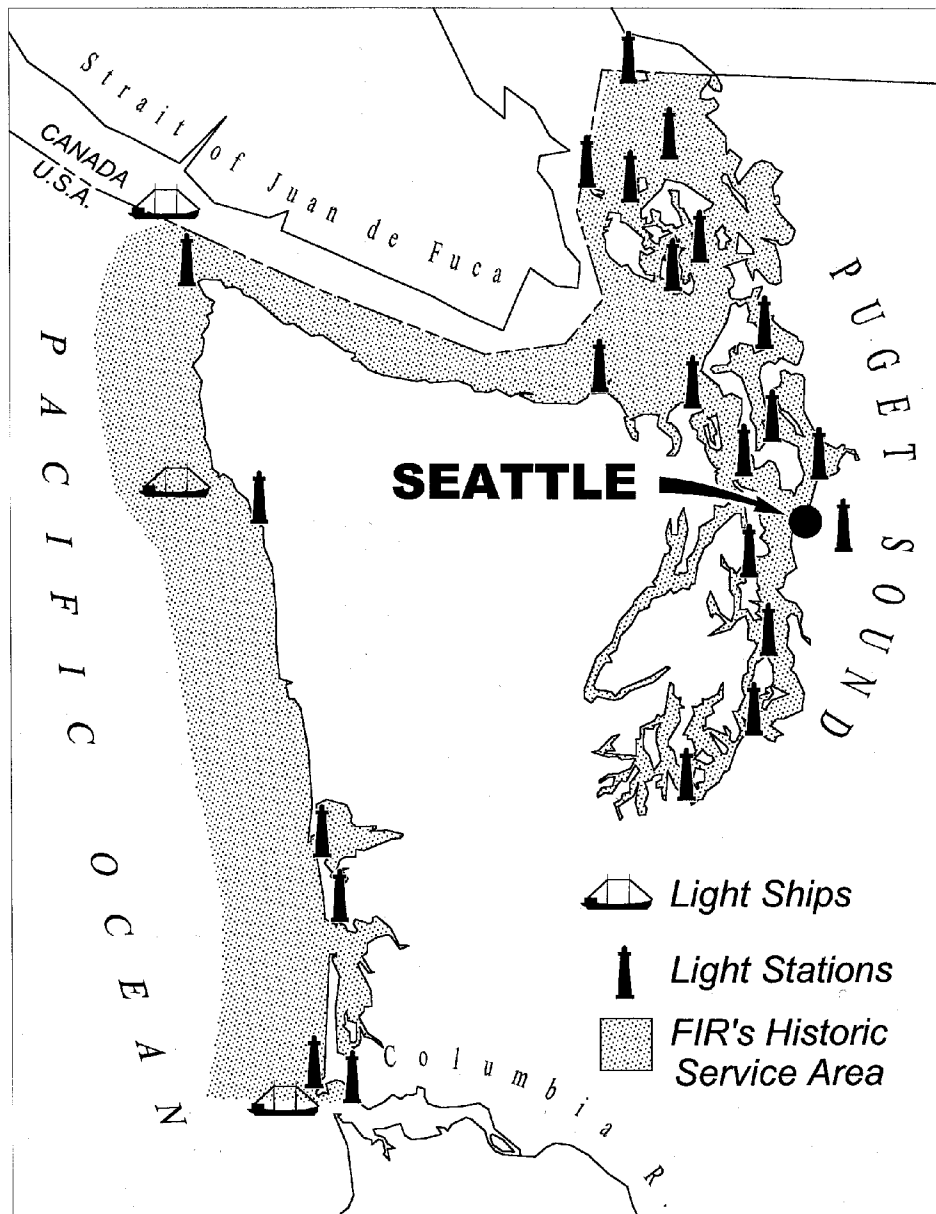
The Engineer's Digest of September 1939 included the following description of a lighthouse tender:

Lighthouse Tenders are used for general duty which consists mainly of servicing navigational aids and supplying necessities to lighthouses and lightships. In order to perform these duties the vessel must be able to carry personnel, cargo, fuel and water. In addition to the above, the vessel must have adequate deck space for working, storing and servicing buoys. In order to lift the buoys with their chains and sinkers, the vessels are equipped with derricks of a capacity commensurate with the size and duties of the vessel. In order that the buoys may be worked alongside, with reasonable safety to personnel, low freeboard is essential. The large tenders are equipped with booms approximately fifty feet long with a working capacity of twenty tons. The vessels are of medium speed, in general rather shoal draft, and are usually twin screw due to the requirement of handling heavy weights over the side, coupled with a low freeboard requirement. The larger tenders are designed for open sea work, a smaller type being used for bays and sounds, and still smaller type for protected waters. Vessels are powered with steam, diesel, and diesel-electric drives.⁶

Fir dockside in 1962. Photo courtesy of the Coast Guard Historian's Office.



- 1. Seattle, WA**
Permanent duty station
- 2. Suisun Bay, CA**
Location in 2001
- 3. Moore Dry Dock Co.**
*Constructed in 1939
Oakland, CA*
- 4. Long Beach, CA**
1982 duty station



TENDERS IN THE PACIFIC NORTHWEST

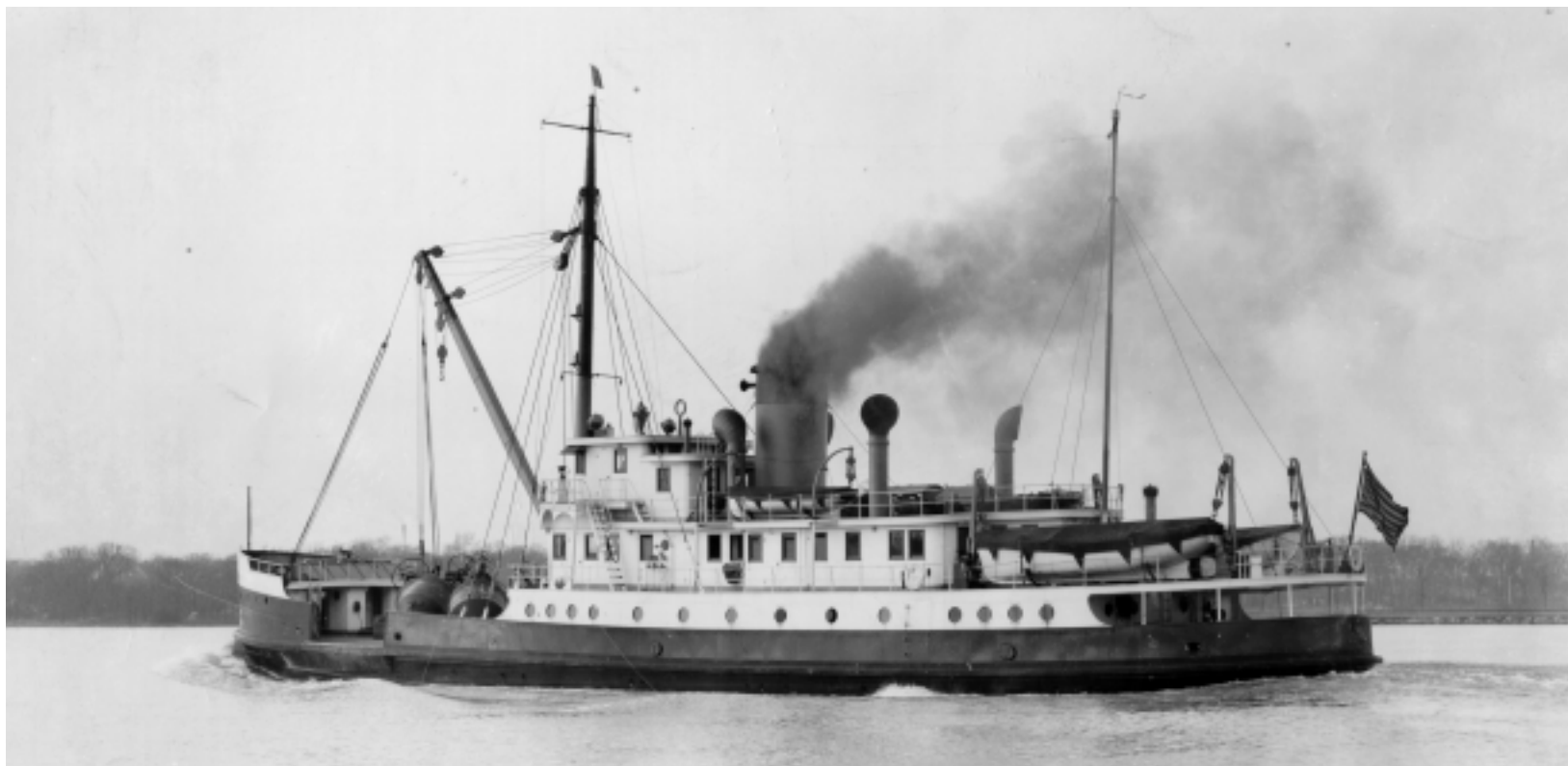
The first revenue cutter dispatched to the Northwest was the topsail schooner *Jefferson Davis*, which sailed into Puget Sound on September 28, 1854. The first lighthouse tender to serve the Pacific coast was *Shubrick*, a wooden-hulled sidewheeler built in Philadelphia in 1857. After arriving on the West Coast, she assisted in the construction of the first lighthouses in Washington Territory. She served double duty as a buoy tender and a revenue cutter, carrying three 12-pound cannons and small arms. *Shubrick* serviced the entire Pacific coast until 1880, when a second vessel, *Manzanita*, was assigned the northwest portion and *Shubrick* continued to serve the lower Pacific coast. As traffic increased in Northwest waters, so did the need for aids to navigation, and *Manzanita* was joined by *Columbine*, a U.S. Army Engineers vessel, to help maintain the increasing number of aids. After *Manzanita* sank in the Columbia River off Warrior Rock, Oregon, a second *Manzanita* was constructed.⁷

Fir's service area encompassed the waters of Washington State. In 1940, this area included the following active light stations: Admiralty Head, Alki Point, Browns Point, Burrows Island, Cape Disappointment, Cape Flattery, Destruction Island, Grays Harbor, Lime Kiln, Marrowstone Point, Mukilteo, New Dungeness, North Head, Patos Island, Point No Point, Point Robinson, Point Wilson, Slip Point, Smith Island, Turn Point, and West Point. Fir also served three lightship stations: Swiftsure Bank at the entrance to the Strait of Juan de Fuca; Umatilla Reef off La Push; and Columbia at the mouth of the Columbia River at the Washington-Oregon border. Map by Pete Brooks.

When the Coast Guard took over the Lighthouse Service, the 13th District had four tenders in service: *Heather*, *Rose*, *Manzanita*, and *Rhododendron*. Upon the arrival of *Fir*, *Heather* was removed from duty; she was later loaned to the Army for war service and never returned.⁸ In 1940 the U.S. Coast Guard had to maintain a grand total of 30,420 aids to navigation in U.S. waters. These included lighted aids (lighthouses, lightships, and buoys), fog signals, unlighted buoys, and daymarks.⁹ In the 13th U.S. Coast Guard District, which included Washington and Oregon, it was reported that at the time of consolidation in 1939, there were 1,362 aids to navigation, including “31 major light stations, four lightships, 133 fog signals, 12 radiobeacons, 672 minor light station including lighted buoys, and 676 unlighted buoys and daymarks.”¹⁰ Two tenders were commissioned and assigned to the 13th Naval District during World War II—*Basswood* and *Bluebell*. The tenders performed their regular duties during the war but were equipped with small arms, depth charge racks, and deck guns for protection against enemy submarines.¹¹

The hazardous nature of work on the Northwest tenders during the 1940s was described as follows:

The jobs confronting the buoy tenders were much the same—relieving buoys annually, replacing and recharging batteries, installing acetylene accumulators, and establishing new aids. The routine, however, was never monotonous. Treacherous waters, dangerous shoals, fog, storms, and the nature of the equipment made the task of the buoy man a hazardous as well as a highly specialized operation. Winter activities were especially grueling, as sharp winds blew icy water on



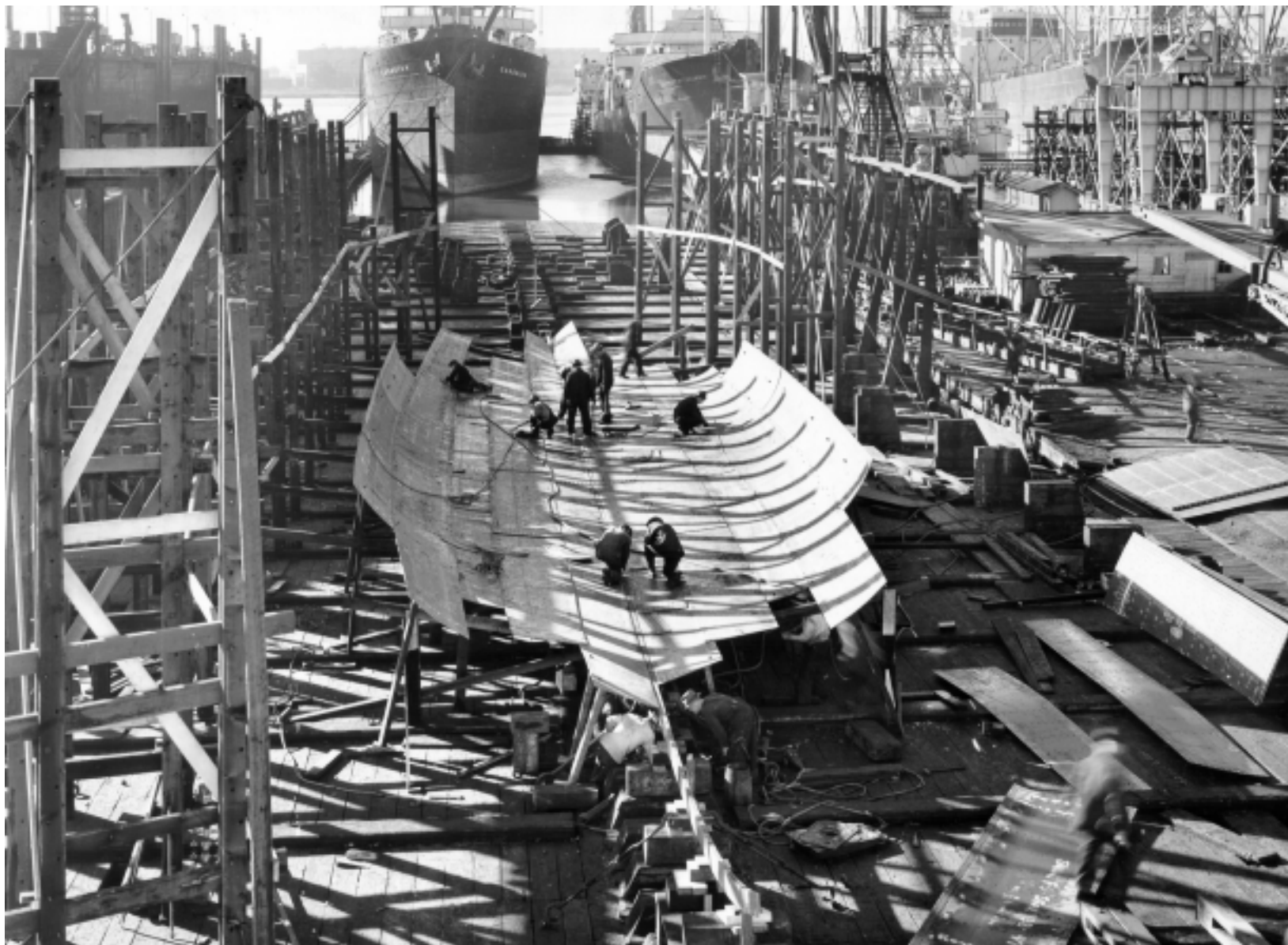
Fir's sister ship Walnut was also built by the Moore Dry Dock Company. Photo courtesy of the U.S. Coast Guard Historian's Office.

the men as they worked, while the rolling ship with its slippery deck made each movement a hazardous one.¹²

***FIR'S* SISTER SHIPS**

Fir was part of the *Hollyhock* class, a three-ship class designed as coastwide (type "A") tenders for use by the Lighthouse Service. The first ship of the class, *Hollyhock*, was contracted

in March 1936, launched on March 24, 1937, and commissioned on August 7, 1937. Constructed by the Defoe Boat & Motor Works, Bay City, Michigan, *Hollyhock* was built to replace the aging USLHT *Sumac*. *Hollyhock* was first assigned to duty in the 12th Lighthouse District and was homeported in Milwaukee, Wisconsin. She was designated WAGL-220 at the start of World War II. *Hollyhock* worked out of Detroit, Michigan, from 1959 to 1962 and Miami, Florida, from 1962 until she was



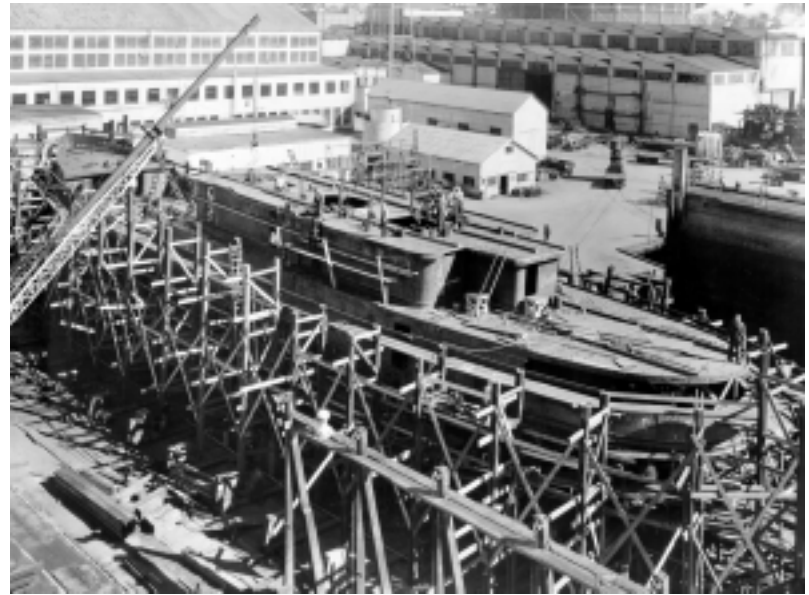
Fir's hull laid down at Moore Dry Dock Company, Oakland, California; photo taken January 6, 1939, courtesy of the Coast Guard Historian's Office.

decommissioned from the U.S. Coast Guard on March 31, 1982. She was sold and served for a time as *Good News Mission Ship*. She was sunk as an artificial reef off Pompano Beach, Florida, in 1990.¹³

The third sister ship, *Walnut*, was contracted to the same shipyard as *Fir* and was launched in the same month on March 18, 1939; however, *Walnut* was commissioned on June 27, 1939, more than 15 months earlier than *Fir*. Replacing USLHT *Marigold*, *Walnut* serviced aids to navigation in Lake Huron and Lake Superior until June 1941, when she was reassigned to the Hawaii Territory. Designated WAGL-252 in January 1942, *Walnut* was redesignated WLM-252 in January 1965. *Walnut* was assigned to Miami, Florida, from 1954 to 1967, and San Pedro, California, from 1967 until she was decommissioned from the U.S. Coast Guard in 1982. In July 1982 *Walnut* was transferred to the government of Honduras, and was renamed *Yojoa* (FNH-252) in 1989.¹⁴

CONSTRUCTION OF *FIR*

Fir was constructed by the Moore Dry Dock Company, a shipyard located at the Foot of Adeline Street in Oakland, California. The contract was let by the U.S. Lighthouse Service on August 17, 1938. The cost of construction—\$389,746—was covered by funding from the Public Works Administration (PWA); additional fittings brought the price closer to \$400,000.¹⁵ Plans for the previously built sister ship *Hollyhock* were used as the contract plans for *Fir*.¹⁶ The Superintendent of Lighthouses in Portland, Oregon, F.C. Hingsburg, noted,



Construction of Fir's superstructure continues above the waterline. Photo taken February 15, 1939, courtesy of the Coast Guard Historian's Office.

The design of the FIR has been reviewed with interest, but no changes are indicated for her operation in this district as this question has not been raised by the Bureau. There are no spare state rooms for keeper or lightship personnel when making patrols for supplying outlying stations and carrying liberty parties. Some of the state rooms are small and valuable space is taken up with 4 ft. berths. These could well be standard single width size, 3'-6" x 6'-6" to take standard mattresses and bedding sheets and give some additional room space. It is noted that the forecabin is in the old style arrangement with sixteen men occupying crews space and not in keeping with modern trends on new ships.¹⁷



Fir, ready for her launch, on March 18, 1939. Note 'PWA' sign in the foreground indicating that a Public Works Administration project was in progress. Photo courtesy of the Coast Guard Historian's Office.

Correspondence in April 1939 indicated additions and changes were made to some of the quarters aft in the main and upper decks.¹⁸

The first available progress report for work completed on *Fir* during October 1938 listed 133 workers completing 3,642 hours on the project. In November 1938, the number of workers had increased to 311, logging 8,010 ¼ hours. Seventy-five percent of the frames had been laid out and five percent were riveted. Cast-iron work had been started by the Phoenix Iron Works,



and brass castings had been received from the Oakland Brass Foundry. In December 1938, the number of workers had increased to 515, logging 16,299.57 hours. The keel was 90 percent fabricated; the stern frame was cast on December 30th. The frames and reverse frames were 90 percent riveted, the loftwork completed, and the floors assembled and riveted. The stringers, side keelsons, built-in fuel tanks, lower and main deck beams and plating had also been fabricated. Lighthouse Service Inspector W. H. Griffin noted, "Marine Ways are fitted for laying keel January 2. Fabrication and assembly of steel

keeps well up with first ship 'Walnut'. Laying of this keel will make for better work by doing away with most of the last minute work on first vessel."¹⁹

Fir's keel was laid on January 7, 1939. The progress report for January 1939 indicated there were 788 workers on the payroll, logging 31,332.72 hours. The stem was in place with the cant framing and floors completed. The upper deckhouse, pilothouse, and radio room were being fabricated while the main deckhouse, including divisional bulkheads, was being erected. Inspector Griffin remarks, "Work on Tender '*FIR*' has gone ahead well for the time under way. Riveting and welding of hull following well up to erection of steel. Struts for this vessel up for inspection at Columbia Steel Plant tomorrow. Moxley Boilers received January 27th, 1939. . . ."²⁰

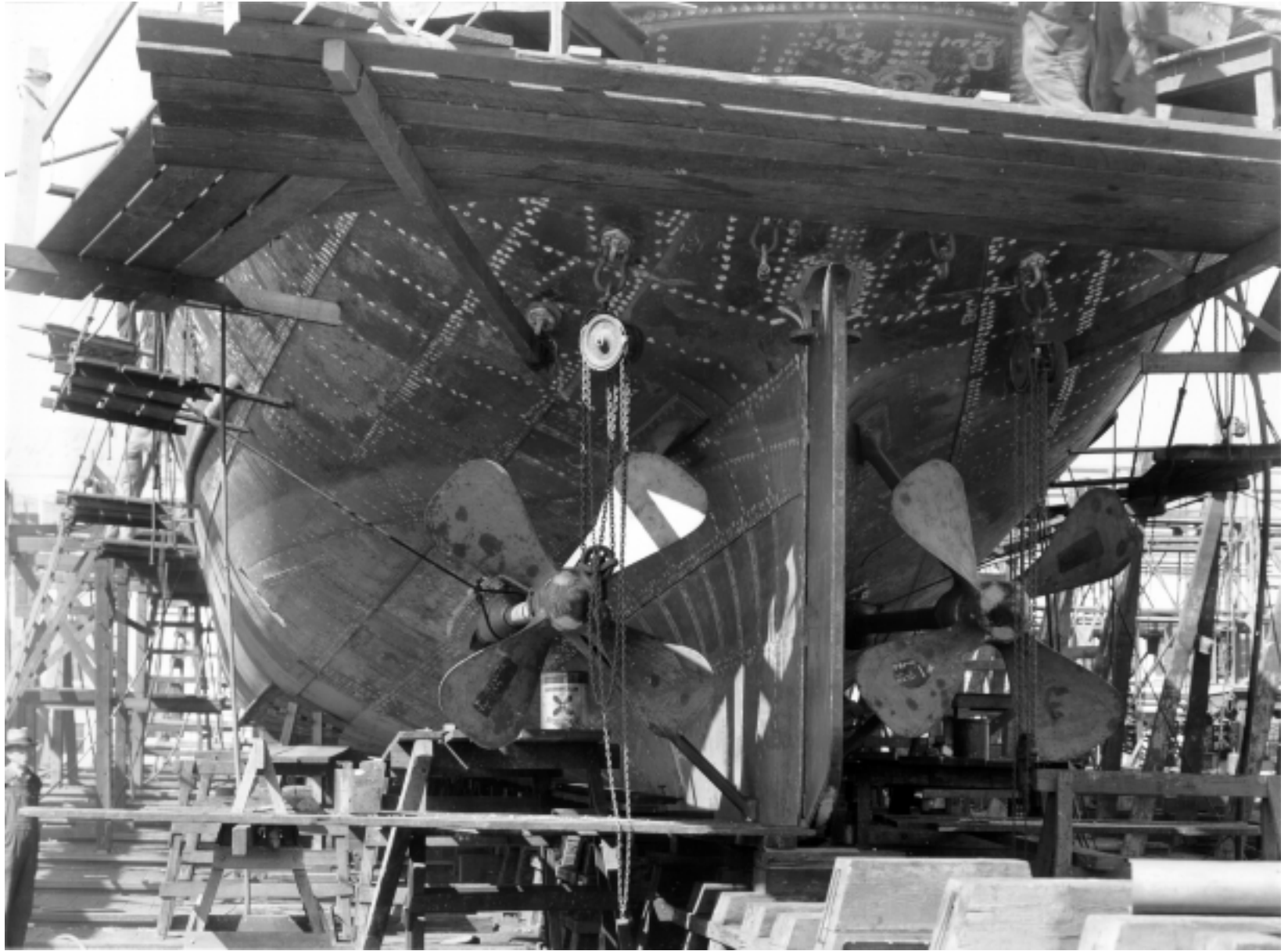


The February 1939 progress report indicated there were 1,287 workers, logging in 57,229 hours, working primarily below the main deck. The hull was close to completion with fuel, freshwater, and ballast tanks finished, and bulkheads had been completed below the main deck. Some delays were reported due to late arrivals of materials, such as wrought iron pipe and lumber for the fenders.²¹

*Photos taken on launching day, March 18, 1939. (Facing page, left) Completed hull, without propellers. Photo courtesy of the U.S. Coast Guard Historian's Office. (Facing page right) Sponsor, Harriet Birta Mason, does the honors. Photo courtesy of the Coast Guard Museum Northwest, Seattle, Washington. (Above) The launching party. Photo courtesy of the Coast Guard Historian's Office. (Right) *Fir* is launched. Photo courtesy of Coast Guard Museum Northwest.*



(Above) The framework in place, work on installing deck machinery and hardware begins. Photo taken April 1, 1939, courtesy of the Coast Guard Historian's Office. (Facing page) Detail of twin propellers taken while Fir is on the marine railway. Photo taken April 28, 1939, courtesy of the Coast Guard Historian's Office.



A Lighthouse/Buoy Tender in the Pacific Northwest



Nearing completion, Fir at the 'fitting out pier' on June 30, 1939. Photo courtesy of the Coast Guard Historian's Office.

Fir was launched at the Moore Dry Dock Company Shipyard on March 22, 1939.²² Her sponsor, Harriet Birta Mason of Sacramento, California, was the daughter of Major General Wallace A. Mason, a good friend and “war comrade” of Assistant Secretary of Commerce J. M. Johnson.²³ During the month *Fir* was launched, the number of workers was reduced to 836, logging in 37,206 hours. The boilers were installed as well as the steering engine, chain lockers, sea chests, and all tanks.²⁴

The progress report for April 1939, listed 498 workers, logging 37,643.12 hours. All deck machinery including hoisting engine and control gear, anchor windlass and chain stoppers, boat hoister, and capstan was completed. All pumps and fuel oil heaters were installed as well as chain and lamp lockers and store rooms forward and aft. Inspector Griffin remarked, “Vessel hauled out on Marine Ways to complete testing and painting. Hull work is about complete. Wheels and rudder installed. Auxiliaries being installed. Boilers tests and work going smoothly although falling back a little.”²⁵

The May 1939 report listed 210 workers logging 30,809 hours. Cork installation was being completed in the quarters for the superintendent, officers, and crew; windows were being installed in the main deck, upper deck, and pilothouse. Outside and inside doors and hardware had been installed. The davits, foundations, and chocks for boats were completed as well as the steering gear engine, rudder, quadrant, and arrangement. The main engines, hand gear, stern tubes, propeller struts, bearings, line and propeller shafting were completed in the shop. Installation of the propellers, condenser, and feed water heater

with grease extractor was completed on the ship. The inspector noted, “Vessel to undock June 6th, mast and engines to be installed next day. All work progressing satisfactory and no doubt of keeping delivery dates.”²⁶

The last progress report on file is for June 1939. With 162 workers, logging 23,767 hours, furniture was being installed; air ports and lights completed; components of the electrical system were either in the yard or had been installed; fire extinguishers had been installed; interior communication including telegraph system, bells and pulls, electric bells, alarm and ships bell, was 75 percent completed. Cementing of tanks and bilges was listed as being complete and the piping systems close to completion. Skylights were complete but not tested; ventilation of the engine room, fire room, officers quarters, and crews quarters was 80 percent complete. Derrick mast and boom as well as standing and running rigging, main mast, ensign and jack staff had been completed. Painting of the underwater body and boot topping had been completed and was well underway for the exterior of the hull above the waterline, superstructure, quarters, and pilothouse. Red lead paint was used on machinery casing and radio room, galley, and engine room. Anchors, cleats, chocks, freeing ports, hand rails, grab rails, and ladders were complete or close to completion.²⁷

Trials were held on San Francisco Bay on August 17, 1939.²⁸ The Trial Board consisted of R. R. Tinkham, Chief Lighthouse Engineer, Portland, Oregon; W. C. Dibrell, Superintendent of Lighthouses, Ketchikan, Alaska, with F. C. Hingsburg,



Fir's trials were conducted on San Francisco Bay on August 17, 1939; she departed for Portland, Oregon, the following day. U.S. Lighthouse Service photo courtesy of the Columbia River Maritime Museum, Astoria, Oregon.

Superintendent of Lighthouses, Portland, Oregon, acting as his alternate; and F. H. Conant, Assistant Lighthouse Engineer, San Francisco, California.²⁹ Although launched under the U.S. Lighthouse Service, the vessel was completed under the U.S. Coast Guard, making her the last U.S. Lighthouse Service

tender constructed.³⁰ She was commissioned as the U.S. Coast Guard Cutter *Fir* (WAGL-212) on October 1, 1940.

Fir was outfitted with several small boats: a 24-foot cargo boat on the starboard side; a 26-foot, 3-inch surf boat on the port side; and a 17-foot, 3-inch powered dinghy on the upper deck,

port side. *Fir* was also equipped with a radiotelephone as part of the PWA project; radio equipment was ordered from the General Lighthouse Depot in New York. *Fir* was also outfitted with a deep-water "Type 480" fathometer.³¹

***FIR* CHARACTERISTICS**

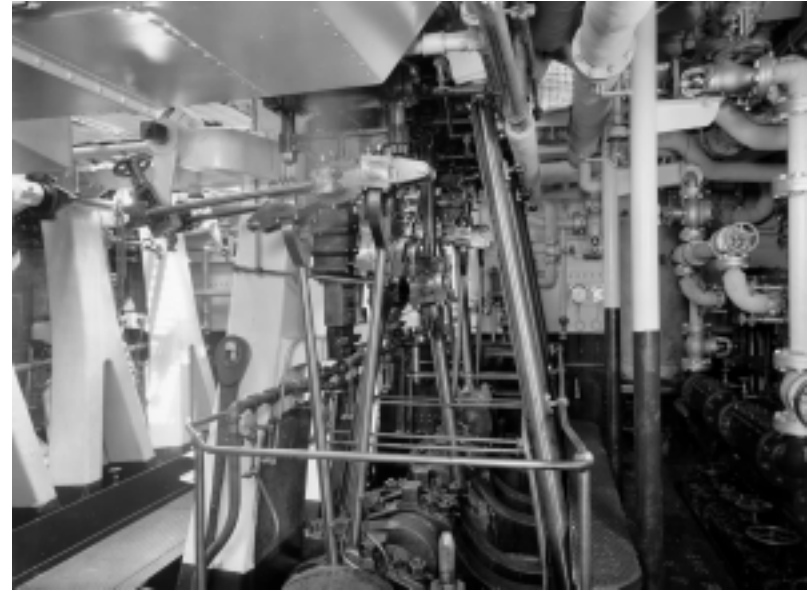
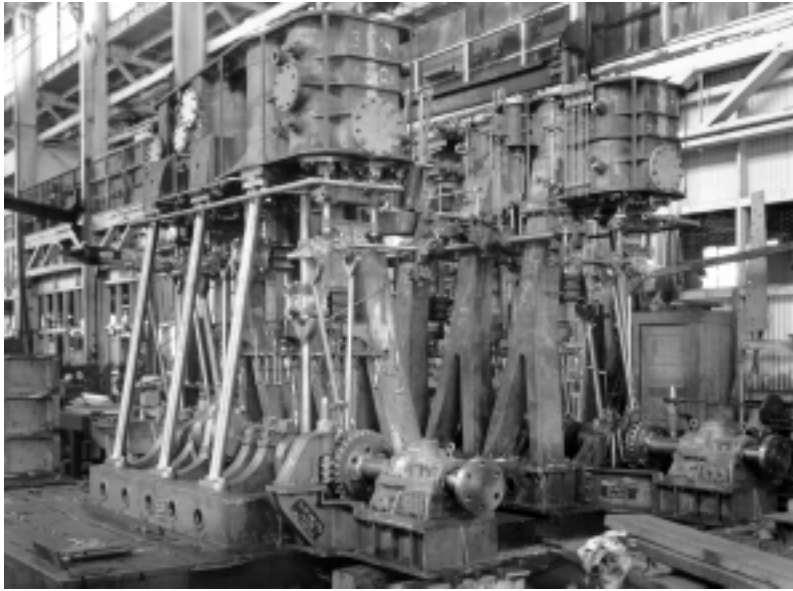
Fir is 174 feet, 8 ½ inches in overall length; 32 feet in breadth; 11 feet, 3 inches in draft; and displaces 885 tons. Measurements at decommissioning were the same except the extreme beam was listed as 34 feet and her length between perpendiculars as 163 feet, 6 inches. Her hull is steel and her superstructure steel and wood. Her propulsion is twin screw and, when launched, she had two triple-expansion steam engines. Her Diesel engines at decommissioning were two four-cylinder Fairbanks-Morse 38D 8-1/8, with a shaft horsepower of 1,350, and two Detroit Diesel 100KW generators. She had a maximum cruising speed of 12 knots or a radius of 1,824 nautical miles. Her normal complement was six officers and 24 enlisted men, which increased to 41 enlisted men during wartime. In 1991, she had four officers, two warrants, and 35 enlisted men.³²

ORIGINAL EQUIPMENT AND MODIFICATIONS

Fir began her career equipped with two triple-expansion horizontal steam engines (1,000 combined steam horsepower) and two oil-fired Babcock and Wilcox watertube boilers. Her steel boom with hydraulic hoist had a 20-ton capacity.³³ During an overhaul and conversion at the Todd Shipyard, Seattle,



Detail of Fir's hoisting boom (above) and berthing (below) in 2000. HABS/HAER photos by Jet Lowe.



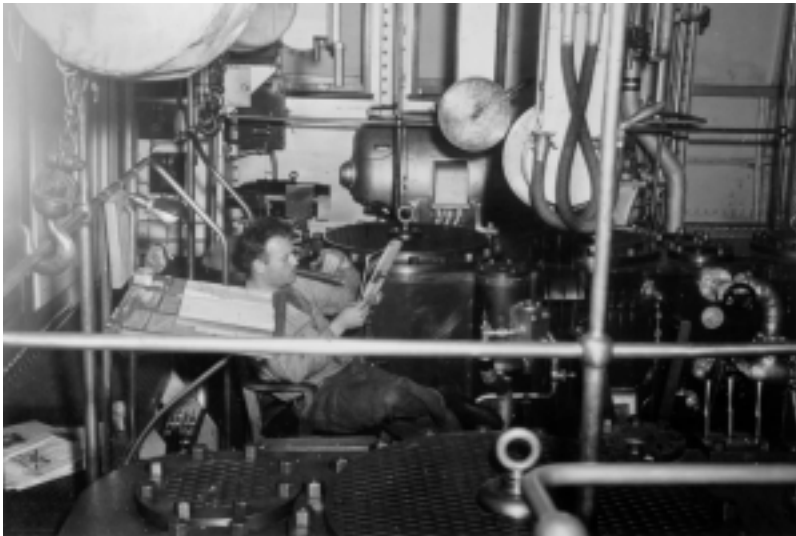
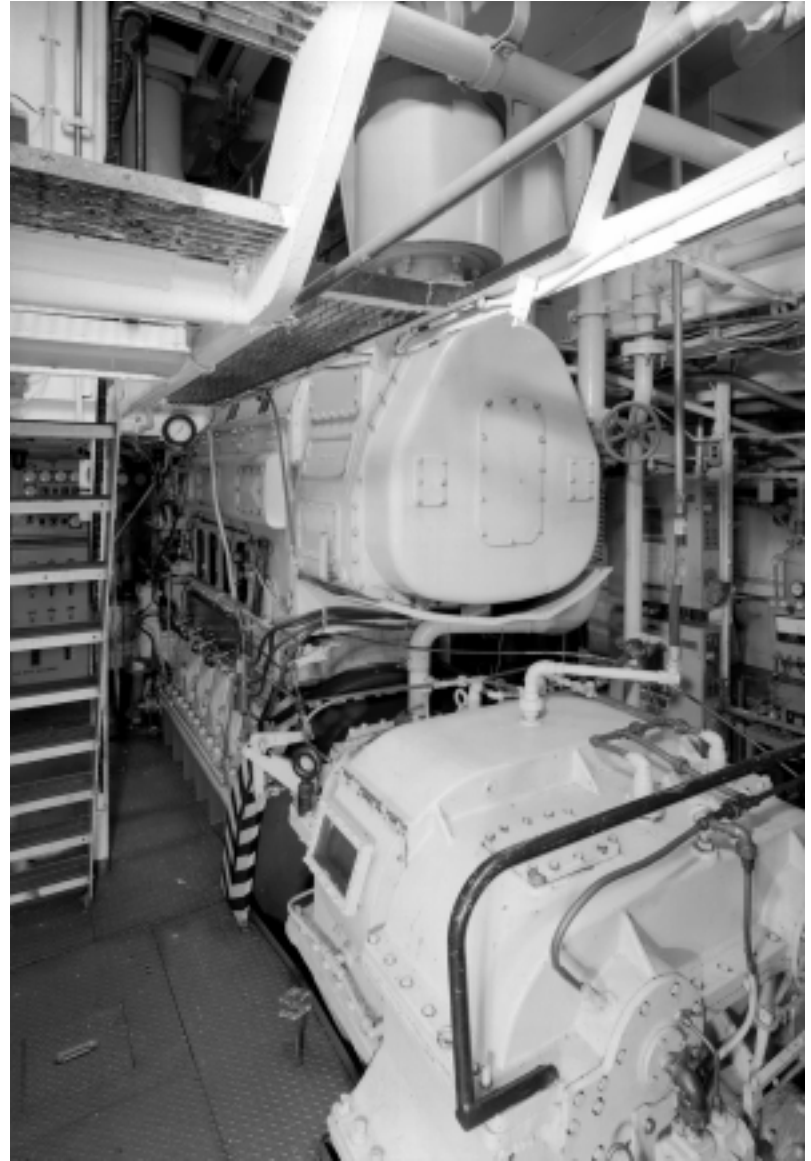
(Above left) Triple-expansion steam engines before installation. Photo taken on May 16, 1939, courtesy of Coast Guard Historian's Office. (Above right) Starboard engine after installation. (Facing page, above left) Shot of engine room after installation. Photos taken August 12, 1939, courtesy of Coast Guard Historian's Office. (Facing page, below left) Engine room during 1940s. Photo courtesy of National Archives, Seattle. (Facing page, right) Diesel engine in 2000. HABS/HAER photo by Jet Lowe.

Washington, from February 1 to October 1, 1951, *Fir* was re-engined from steam to diesel with twin 1,350-horsepower Fairbanks-Morse diesel engines coupled with reduction gears. She was the last American steam-powered tender to be dieselized.³⁴ In 1974, two maneuvering rudders were added to improve her shiphandling and in 1982, a new hydraulic boom and A-frame system³⁵ replaced the old electrically powered one, giving her the 30,000-pound hoisting capacity needed to work the nine-foot buoys and nine-ton sinkers found off the coast.³⁶ Her electronics package was modernized during her career so that by the time of her decommissioning, she had

five computer work stations, two radar, a variety of receivers and transmitters, a thermal imaging scope for damage control, and a computerized telephone system.³⁷

The living spaces were modified in the late 1980s to provide a four-rack berthing area for female crew.³⁸

Despite the modifications that were necessary for continued operation, *Fir* retains her original character and many of her original features, making her a unique legacy to the Lighthouse Service.



A Lighthouse/Buoy Tender in the Pacific Northwest



Oak bannisters adorn the ladders, polished brass is throughout the bridge, many staterooms have the original wooden racks, desks, and wardrobes, and screen doors still open onto the weather decks. She has a classic lighthouse tender design, including a white pine "rub" rail 2 feet above the waterline, a spacious bridge with curved windows which roll down, outboard passageways on the maindeck, skylights in the engine room, and windows in the staterooms and engine room looking out into the passageway.³⁹

***Fir's* GENERAL CONFIGURATION⁴⁰**

Starting below the waterline and working up, *Fir's* hold and lower deck, moving aft forward, consist of the rudder, auxiliary rudder, steering gear room above after peak tank, crew's berthing above aft freshwater tanks, auxiliary engine room, main engine room, fuel tanks, workshop, main hold, more crew's berthing above the boatswain's locker and forward freshwater tanks, chain locker and forepeak tank. The engine room contains the twin Diesel engines that replaced the steam engines in 1951 as well as two generators for electricity while underway and boilers for heat.

Next, the main deck consists of the rear bulwarks, officers' quarters, linen locker, commanding officer's locker, sick bay, upper engine room, galley and mess; outside are the king post supporting the hoisting mechanism, cargo hatch, buoy port, crew's wardroom, and paint locker.

The upper deck includes davits anchoring two lifeboats, boat winch, main mast, staterooms, engine room trunk, offices,



(Facing page and above) Fir underway in 1974. Photos courtesy of Coast Guard Historian's Office.

uptakes for funnel, wardroom, and the topping winch and boom of the hoisting mechanism. The officers' stateroom is relatively large and contained wooden furniture and a screen door leading to the boat deck. The wardroom, where the officers ate and worked, is unusual for cutters in that it offers a view of the buoy deck. The forecastle deck includes various vents and the anchor windlass.

The bridge deck level is occupied by the wheel house with the control house for the hoisting mechanism above. Bridge equipment includes the helm controlling three hydraulic rudders; radar; radio; engine controls for twin shafts, port and starboard; gyro and magnetic compass; searchlight controls; captain's chair; and voice tube to flying bridge. A photo of the old bridge



Officers' dining saloon in 1939. Photo courtesy of Coast Guard Historian's Office.



Officers' dining saloon/stateroom in 2000. HABS/HAER photo by Jet Lowe.

was kept to show contrast. Both windows and balcony provide a view of the buoy deck.

***FIR*'S OPERATIONAL HISTORY**

At the start of her career, *Fir* relieved the old USLHT *Heather*⁴¹ of her duty tending aids in the Puget Sound area of Washington. She reported for duty at the Coast Guard Buoy Repair Depot in Salmon Bay near the Ballard Locks. The *Seattle Times* reported on June 9, 1940, that she was “one of the most modern vessels of her type” with both a gyro stabilized compass and a radio direction finder. Within a month of the article's publication,

a depth sounder was installed, completing the state-of-the-art electronics package.⁴² With the exception of a short stint in Long Beach, California, where she temporarily replaced *Walnut* after her decommissioning in 1982, *Fir* spent her entire career operating out of Seattle.

Fir started her career under the command of Chief Warrant Officer Ole Eriksen, a seasoned Lighthouse Service master who had last served on USLHT *Heather*. *Fir*'s duties included resupplying coal, potable water, food, and other vital provisions to lightships and lighthouses in the Strait of Juan de Fuca and on the Washington coast. *Fir* also transported personnel on and off these remote stations and delivered mail and personal



(Clockwise, starting at upper left) Fir's pilothouse in 1939. Photo courtesy of the Coast Guard Historian's Office. Pilothouse in 1940s. Photo courtesy of National Archives, Seattle. Pilothouse in 1951. Photo courtesy of the Coast Guard Historian's Office. Pilothouse in 1990. NPS photo by Candace Clifford.

goods. In addition to servicing the manned aids, *Fir* maintained the automated acetylene buoys throughout the waters of northwest Washington.⁴³

Washington had several remote offshore light stations where the transfer of personnel was often a dangerous and time-consuming task. "At Cape Flattery, Washington, for instance,



Fir servicing Cape Flattery Light Station on Tatoosh Island at the entrance to Strait of Juan de Fuca. Photo courtesy of Coast Guard Historian's Office.

keepers had to be hoisted by derrick onto the island in an open box dangling from a hook. A small boat had to be worked in under the box as personnel were transferred, sometimes under rough sea conditions. *Fir*, like other tenders, had to routinely go into water where no other type of boat dared venture.⁴⁴ *Fir* also served three lightship stations: *Swiftsure Bank* at the entrance to the Strait of Juan de Fuca; *Umatilla Reef* off La Push; and *Columbia* at the mouth of the Columbia River at the Washington-Oregon border.⁴⁵

During World War II, *Fir* was placed under the direction of the Navy and painted grey. Armament installed included 50-caliber machine guns, one 3-inch gun, and depth charges. Her war duties included standing picket duty, towing gunnery targets, and patrolling in and around Washington and Oregon waters.⁴⁶ “With the scarcity of Coast Guard Cutters in this [13th] district during the war, a vast amount of assistance work fell upon the tenders. The increased size of the fishing fleet had the effect of causing more rescue operations, and in these, the tenders did an extraordinarily fine job.”⁴⁷

After the war, *Fir* returned to her regular routine tending the many buoys marking Washington's waterways.

Maintaining and servicing buoys means long hours of hard, often dangerous work. The buoy's anchor, tons of cement with chain attached, hangs suspended alongside her low buoy deck. Taking continuous bearings, the ship maneuvers into the exact position matching the buoy's charted location. On command, the huge anchor is released and plunges to the bottom of the sea, pulling row after row of heavy chain, clattering off the steel decks after it. The freshly painted and serviced buoy,



*Methods for placing buoys changed from using handheld sextants to computerized Global Positioning Systems (GPS) during *Fir*'s career. Photo courtesy National Archives, Seattle.*

laying on its side on deck, is then hoisted aloft with the boom, swung over the side and released. The ship backs away and another aid to navigation is back on the job.

Initially the bearings were taken with lead line and sightings from the bridge deck. Now Global Position System satellites provide much more accurate, and quicker fixes. The buoys, once lighted with acetylene, were updated to storage batteries and then to solar power. *FIR* lived long enough to witness these transitions over the years.⁴⁸

In addition to servicing aids to navigation, *Fir* performed search and rescue, marine environmental protection, and law enforcement. Search and rescue missions included rescuing 19 people off the distressed MV *Andalucia*, which had caught fire off of Neah Bay on November 4, 1949; assisting MV *Beliot*



Servicing buoys aboard Fir in 1943: (Right) Bringing aboard a double bluff whistle buoy. (Below left) Scraping off sea growth. (Below right) Preparing scraped and repainted buoys for relief. Photos courtesy National Archives, Seattle.



Victory near Destruction Island on April 30, 1952; escorting USS *Yuma*, which had developed trouble while towing USS *Tinian* six miles south of Swiftsure Bank on February 19, 1958; and assisting in the search for a downed navy aircraft in Guemes Channel on March 14, 1963. Recovery and salvage missions included salvaging a CG HO4S helicopter and delivering it to Port Angeles on November 11, 1962, and assisting in the recovery of a USAF T-34 aircraft on July 16, 1965. *Fir* also helped fight a fire at the Todd Shipyard in Seattle on November 28, 1968. Her last dramatic rescue occurred on July 5, 1990, when *Fir* saved the life of a mariner trapped on the bow of a burning pleasure boat on Shilsole Bay, extinguishing the fire and saving the boat. On a lighter side, *Fir* patrolled the Maritime Day tugboat races in Elliott Bay on March 22, 1954, and the Lake Washington Gold Cup Regatta August 9-11, 1958; and in June 1972 she transported 600,000 Chinook salmon fry to Squaxin Island to seed the local waters.⁴⁹

In the 1980s, *Fir* assisted in the aftermath of two major oil spills. She was awarded a Unit Commendation for her work after the 833-foot *Arco Anchorage* grounded in Port Angeles, spilling 239,000 gallons of crude oil in 1985. After the *Exxon Valdez* went aground in 1988, *Fir* conducted the regular duties of USCGC *Iris* so that *Iris* could assist with the cleanup.⁵⁰

As part of the Coast Guard's reclassification system, *Fir* was redesignated a Coastal Buoy Tender (WLM-212) in 1965. The only mishap listed on a table compiled by the Cutter Operations Division in late 1990 is that *Fir* "grounded" on July 15, 1965, suffering minor damage.⁵¹



Fir crewman alters buoy mooring chain. Photo courtesy National Archives, Seattle.



Lamp changer and mechanism are being completely checked and tested after being reattached to renewed buoy before it is taken off the dock. 1943 photos courtesy of National Archives, Seattle.



After a thorough inspection in 1985 identified the need for major repairs, restrictions were placed on *Fir's* coastal operations:

The vessel has been prohibited, at least temporarily, from servicing 9' buoys, and she is required to observe certain loading conditions while servicing 8' buoys. Her hull form is unusually susceptible to synchronous rolls.

Since *Fir's* usefulness is limited in exposed waters, a second WLB would be a more suitable vessel for performing ATON work in this district. The Seattle tender is required to respond to discrepancies along the coast whenever the Astoria tender is in a maintenance status; furthermore, it would be desirable to more evenly distribute the coastal ATON and ELT workload by routinely assigning the Seattle tender to duties along the coast.⁵²



Search and rescue were part of *Fir's* mission: (Left) *Fir* raises a CG 40-footer and hydroplane which had collided during a 1958 race on Lake Washington. Photo courtesy Coast Guard Museum Northwest. (Above) Control room for operating boom and hoisting mechanism in 2000. HABS/HAER photo by Jet Lowe.

Repairs extended *Fir's* life for another four years, but the next cycle of repair work had a price tag of more than \$2.5 million and would not have extended her service life beyond 1995.⁵³ Many felt it would be more cost effective to replace her with a modern tender.

When USCGC *Ingham* was decommissioned on May 27, 1988, *Fir* became the Coast Guard's oldest cutter and was designated "Queen of the Fleet." She received gold hull numbers on May 30, 1988, for this distinction. Her durability may in part have been due to the fact that she served in a freshwater environment with limited exposure to heavy seas; the loving care provided by her captain and crew no doubt also played a role.⁵⁴

Before decommissioning in 1991, *Fir* was responsible for 138 lighted and unlighted buoys in the Strait of Juan de Fuca and the Puget Sound area.⁵⁵ In the spirit of her original mission, *Fir's* last active-duty assignment was assisting in the rehabilitation of Cape Flattery Lighthouse on Tatoosh Island at the entrance of the Strait of Juan de Fuca.⁵⁶

DECOMMISSIONING AND FUTURE PLANS

Fir was decommissioned on October 1, 1991, one year after her 50th birthday. Over 600 attendees were on hand to honor the last surviving lighthouse tender in the United States. The oldest commissioned cutter award was transferred to the next oldest U.S. Coast Guard Cutter, *Storis*. A decommissioning booklet was prepared to pay tribute to *Fir*. In describing her career, the booklet states,



Fir received gold numbers on her designation of "Queen of the Fleet" and oldest active cutter in the Coast Guard fleet on May 27, 1988. Photo courtesy of Coast Guard Historian's Office.

Through her 51 years, FIR's primary responsibilities of maintaining aids to navigation have remained the same. She has adapted to the major technological advances of the past five decades while still retaining the heritage of her Lighthouse Service days. During her career, she saw the power used to light buoys change from acetylene to solar while the hulls [of tenders] changed from riveted construction to steel or foam. She saw the art of positioning buoys advance from lead line and seaman's eye to computerized plotting and satellite positioning. She has also seen the replacement of lightships with large navigational buoys and light keepers by automated lighthouses.⁵⁷

The Commander of the 13th Coast Guard District stated that upon her decommissioning,

The physical condition of the FIR is excellent. She has been maintained in extraordinary condition for a vessel of her age and is, therefore, an ideal candidate for historic preservation. As a floating museum, she would provide an excellent opportunity for visitors of all ages to learn a little about the maritime history of Puget Sound. Virtually all areas of the ship including the engine room, living quarters, galley and buoy deck are readily accessible from the main deck. The pilothouse has beautiful woodwork and brass appointments.⁵⁸

After decommissioning, *Fir* remained in Seattle for many years while efforts were made to turn her into a floating museum. When these efforts failed, she was transferred to the Maritime Administration (MARAD) facility, Suisun Bay, California, in 1997. Her shafts and rudder locked, she was towed 930 miles from Seattle by CGC *Mariposa* to San Francisco's Golden Gate, where she was met by a commercial tug that towed her the rest of the way to Suisun Bay.⁵⁹ Significant objects were

removed from the vessel and stored at the U.S. Coast Guard facility in Forestville, Maryland. In May 2001 she remains in storage in the Reserve Fleet in Suisun Bay. The U.S. Coast Guard is currently seeking a new caretaker for *Fir* and is trying to find one that will preserve and interpret her to the public.

ENDNOTES

¹ Ralph Shanks, "U.S. Coast Guard Cutter *Fir* (WLM 212) National Historic Landmark Study," 1991, available at <<http://www.cr.nps.gov/maritime/nhl/fir.htm>>

² Amy K. Marshall, "A history of buoys and tenders," *Commandant's Bulletin*, November 1995, pp. 3-4.

³ According to Douglas Peterson, USCG (Ret), *United States Lighthouse Service Tenders 1840-1939* (Annapolis, Maryland: Eastwind Publishing, 2000), p. xvii, the first propelled lightship was built in 1885.

⁴ George Worthylake, "Buoy Tenders," *The Keeper's Log*, Fall 1998, p. 10; RADM K.K. Covart, USCG, "Development of Vessels Servicing Aids to Navigation for the U.S. Coast Guard," *The Society of Naval Architects and Marine Engineers Transactions*, Vol. 66 (1958), p. 519; and Arnold Johnson, *The Modern Light House Board*, n.p., reprinted in Amy K. Marshall, "Frequently Close to the Point of Peril: A History of Buoys and Tenders in U.S. Coastal Waters 1789-1939," unpublished thesis, 1997, p. 90.

⁵ Peterson, p. xvii.

⁶ U.S. Coast Guard Division of Engineering, "Construction and Repair Topics," *The Engineer's Digest* (September 1939).

⁷ "History of the District Coast Guard Vessel Operations Office, Thirteenth Naval District," written and prepared by Vessel Operations Office under direction and supervision of District Historical Office, 1945, p. 7; and Dennis Noble, "The Coast Guard in the Pacific Northwest" <http://www.uscg.mil/hq/g-cp/history/h_PacNW.html>.

⁸ "History of United States Coast Guard Thirteenth Naval District," p. 23.

⁹ U.S. Coast Guard 13th Naval District, "History of United States Coast Guard Thirteenth Naval District 1917-1945," p. 21, on file in Record Group 26 at the National Archives, Seattle, Washington.

¹⁰ Treasury Department, U.S. Coast Guard, *The United States Coast Guard: General Information* (Washington, D.C.: 1941), p. 28.

¹¹ Aids to Navigation Office, District Historic Office, 13th USCG District, "History of Aids to Navigation Office, United States Coast Guard, Thirteenth Naval District"; and Dennis Noble, "The Coast Guard in the Pacific Northwest" <http://www.uscg.mil/hq/g-cp/history/h_PacNW.html>.

¹² "History of the District Coast Guard Vessel Operations Office . . .," p. 8.

¹³ Peterson, pp. 137-138.

¹⁴ *Ibid.*

¹⁵ "Trials of New Lighthouse Tender 'Fir' held at Oakland, Calif." *Coast Guard Bulletin*, Vol. 1, No. 2 (August 1939); Douglas Peterson, USCG (Ret), *United States Lighthouse Service Tenders 1840-1939* (Annapolis, Maryland: Eastwind Publishing, 2000), p. 137.

¹⁶ Correspondence to the Commissioner of Lighthouses, Washington, D.C., from R. R. Tinkham, Chief Engineer, Lighthouse Service, Portland, Oregon, dated April 8, 1939, National Archives, Record Group 26, Entry 50, "Correspondence of the Bureau of Lighthouses, 1911-1939," subject file 4231E. Letter indicates the contract plans as nos. 24092, 24093, 24094, 24095, 24096, and 23820. Original plans for *Hollyhock* were found in Record Group 26 at the National Archives but none were found for *Fir*.

¹⁷ Correspondence to the Commissioner of Lighthouses, Washington, D.C., from F. C. Hingsburg, Superintendent of Lighthouses, Portland, Oregon, dated September 17, 1938, National Archives, Record Group 26, Entry 50.

¹⁸ Correspondence to the Commissioner of Lighthouses, Washington, D.C., from R. R. Tinkham, Chief Engineer, Lighthouse Service, Portland, Oregon, dated April 8, 1939, National Archives, Record Group 26, Entry 50.

¹⁹ Quote from attachment to report dated December 31, 1938; progress reports to the Commissioner of Lighthouses, Washington, D.C., from Lighthouse Service Inspector W. H. Griffin, Oakland, California, are found in National Archives, Record Group 26, Entry 50.

²⁰ National Archives, Record Group 26, Entry 50.

²¹ *Ibid.*

²² Telegram from Inspector Griffin dated March 22, 1939, National Archives, Record Group 26, Entry 50. According to correspondence dated March 30, 1939, from the Superintendent of the 18th District to the Commissioner of Lighthouses, the launching of *Fir* was postponed from March 18 until March 22 because a chain of the marine railway was found to be broken.

²³ Correspondence from J. M. Johnson to Wallace A. Mason, dated February 21, 1939, National Archives, Record Group 26, Entry 50.

²⁴ National Archives, Record Group 26, Entry 50.

²⁵ *Ibid.*

²⁶ *Ibid.*

²⁷ *Ibid.*

²⁸ "Trials of New Lighthouse Tender 'Fir' held at Oakland, Calif." *Coast Guard Bulletin*, Vol. 1, No. 2 (August 1939).

²⁹ Memo from H. D. King, Commissioner of Lighthouses, dated May 25, 1939, National Archives, Record Group 26, Entry 50.

³⁰ The Lighthouse Service was consolidated under the U.S. Coast Guard on July 1, 1939.

³¹ Correspondence to the Commissioner of Lighthouses, Washington, D.C., from F. C. Hingsburg, Superintendent of Lighthouses, Portland, Oregon, dated September 17, 1938; memo to F. C. Hingsburg, Superintendent of Lighthouses, Portland, Oregon, from G. F. Ganong, Assistant Superintendent, dated December 12, 1938; and correspondence to Hingsburg from Deputy Commissioner C. A. Park, dated December 27, 1938; National Archives, Record Group 26, Entry 50.

³² The old stats come from the vessel card on file at U.S. Coast Guard Historian's Office, Washington, D.C., and the new stats come from the Decommissioning Ceremony program, October 1, 1991.

³³ Peterson, p. 137-138.

³⁴ James Gibbs, *Sentinels of the North Pacific* (Portland, Oregon: Binforde & Mort, 1955), p. 112.

³⁵ The system was removed from CGC *Citrus* according to "FIR Celebrates 50th." *Commandants Bulletin* (January 1991), p. 18.

³⁶ *Fir* needed these improvements in order to meet operational needs faced by *Walnut* which she would be replacing.

³⁷ "USCG FIR (WLM-212)" decommissioning booklet, 1991.

³⁸ *Ibid.*

³⁹ *Ibid.*

⁴⁰ This section is based on a 3-page outline entitled "FIR TOUR NOTES" found in *Fir's* vessel file at the U.S. Coast Guard 13th District Offices in Seattle, Washington; and on her set of drawings.

⁴¹ Peterson says *Fir* replaced *Marigold*, but other sources indicate *Heather*.

⁴² "USCG FIR (WLM-212)" decommissioning booklet, 1991.

⁴³ *Ibid.*

⁴⁴ Ralph Shanks, "U.S. Coast Guard Cutter *Fir* (WLM 212) National Historic Landmark Study," 1991, available at <<http://www.cr.nps.gov/maritime/nhl/fir.htm>>.

⁴⁵ *Ibid.*

⁴⁶ "USCG FIR (WLM-212)" decommissioning booklet, 1991.

⁴⁷ "History of United States Coast Guard Thirteenth Naval District 1917-1945," p. 24.

⁴⁸ Charles W. Lindenberg, "TAPS FOR THE FIR," published on Jack's Joint web site <<http://www.jacksjoint.com/fir.htm>>.

⁴⁹ "USCG FIR (WLM-212)" decommissioning booklet, 1991, and Ralph Shanks, "U.S. Coast Guard Cutter *Fir* (WLM 212) National Historic Landmark Study," 1991, available at <<http://www.cr.nps.gov/maritime/nhl/fir.htm>>.

⁵⁰ "USCG FIR (WLM-212)" decommissioning booklet, 1991.

⁵¹ "Major USCG Cutter Accidents" compiled by the U.S. Coast Guard Historian's Office, Washington, D.C.

⁵² Memo dated February 5, 1986, to the Commandant from the Commander of the 13th Coast Guard District.

⁵³ Report in the vessel file, entitled "USCG FIR (WLM 212) REPAIRS"; according to her file in the USCG 13th district office, *Fir* was last drydocked in 1988.

⁵⁴ Memo dated June 18, 1985, from Lieutenant Marvel to file regarding SSMEB USCGC FIR 10-14.

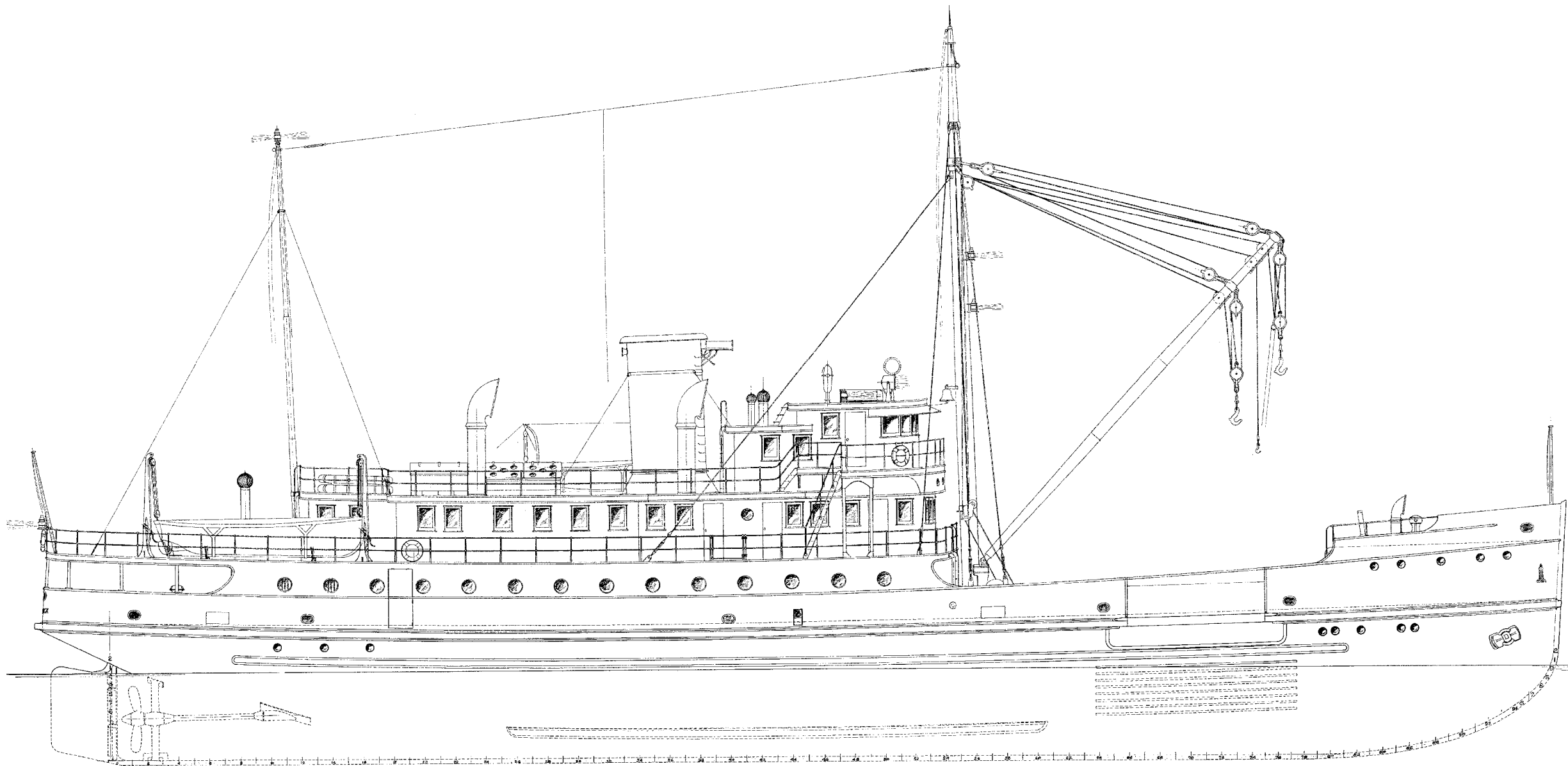
⁵⁵ "FIR Celebrates 50th." *Commandants Bulletin* (January 1991), p. 18.

⁵⁶ "USCG FIR (WLM-212)" decommissioning booklet, 1991; Wilcox, p. 4.

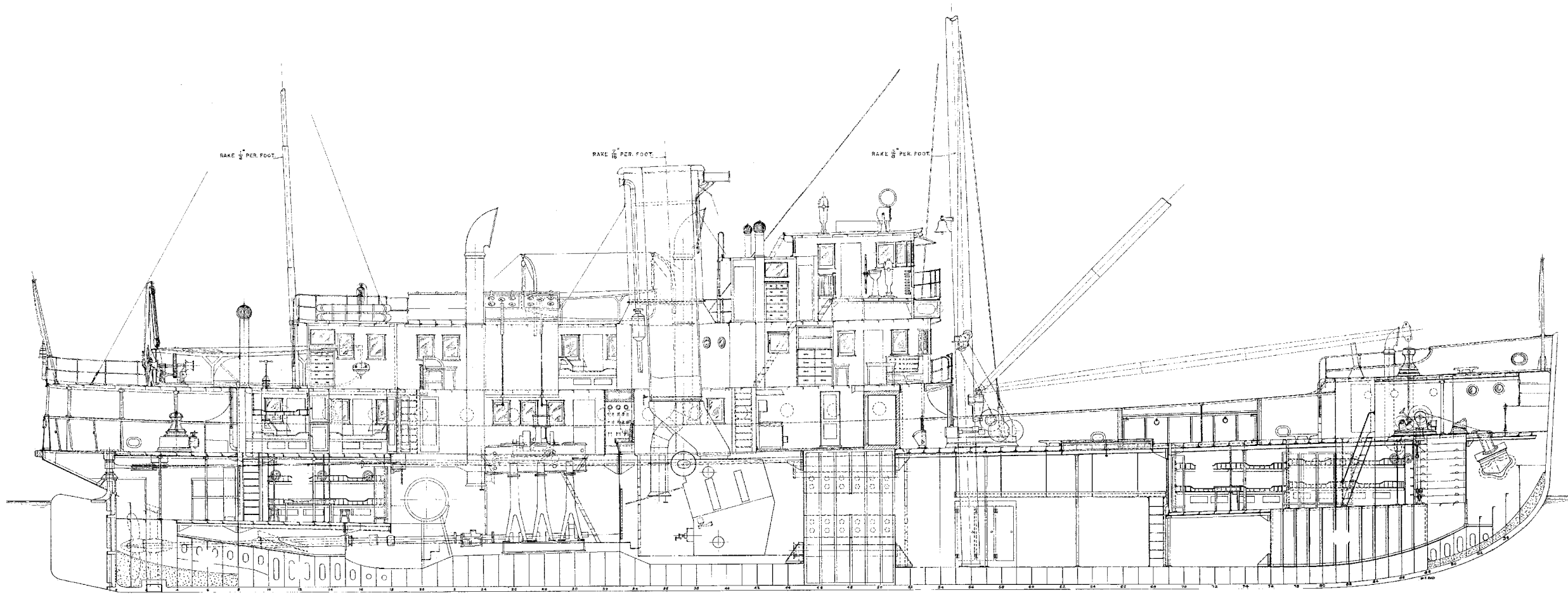
⁵⁷ "USCG FIR (WLM-212)" decommissioning booklet, 1991.

⁵⁸ Correspondence to Commandant (G-CCS) from Commander, Thirteenth Coast Guard District, dated Sept. 30, 1991.

⁵⁹ Wilcox, p. 4. *Mariposa* replaced *Fir* in her duties on Puget Sound.

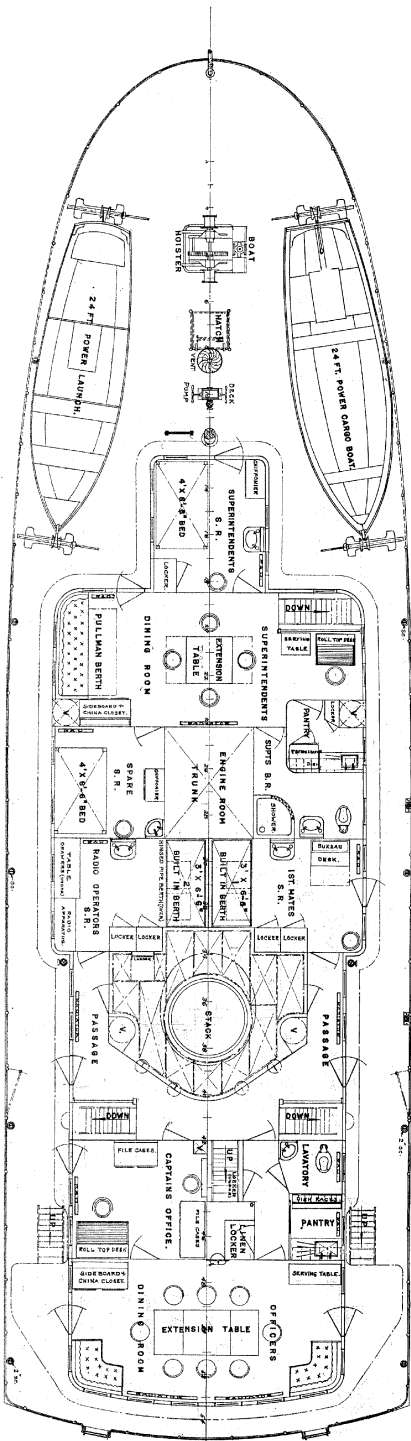


Outboard profile of Fir based on an original U.S. Lighthouse Service drawing of her sister ship Hollyhock. Courtesy National Archives, Washington, D.C.

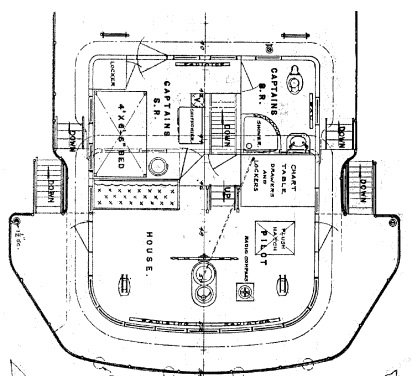


Inboard profile of Fir based on an original U.S. Lighthouse Service drawing of her sister ship Hollyhock. Courtesy National Archives, Washington, D.C.

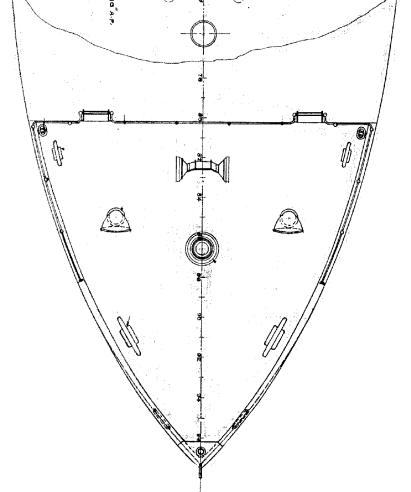
UPPER DECK



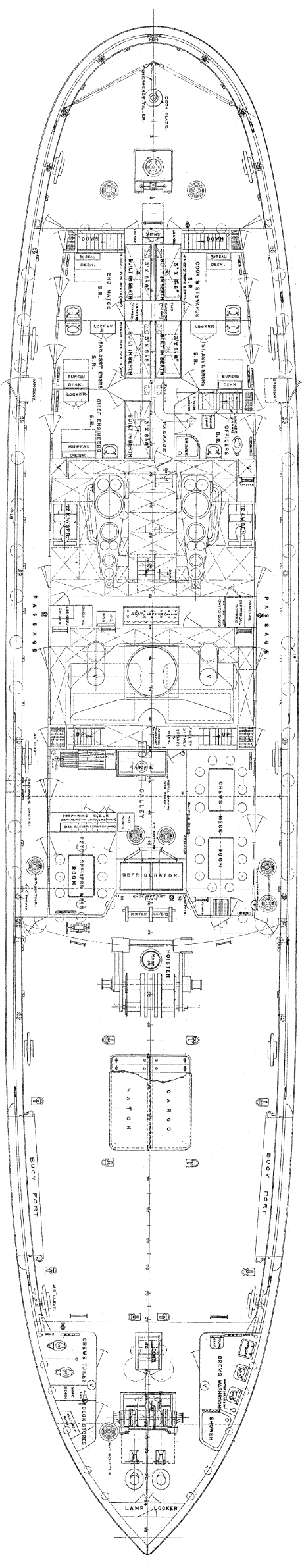
BRIDGE DECK



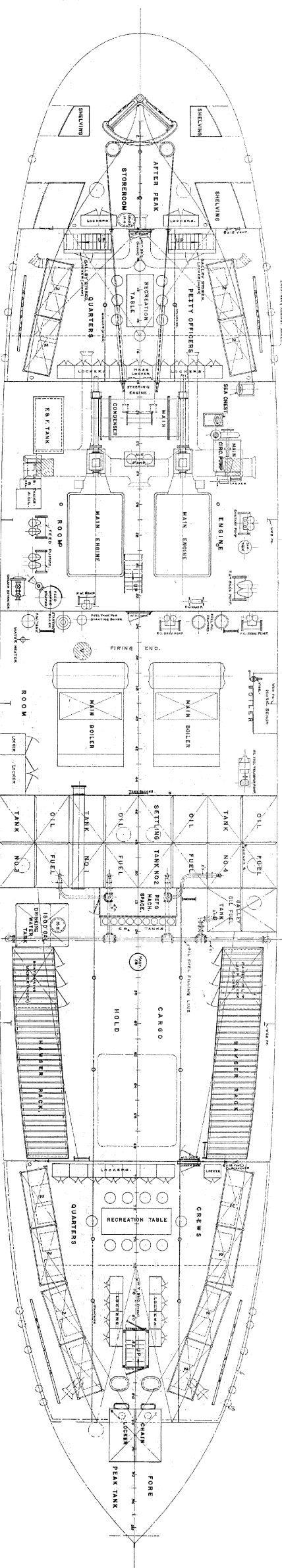
FORECASTLE DECK



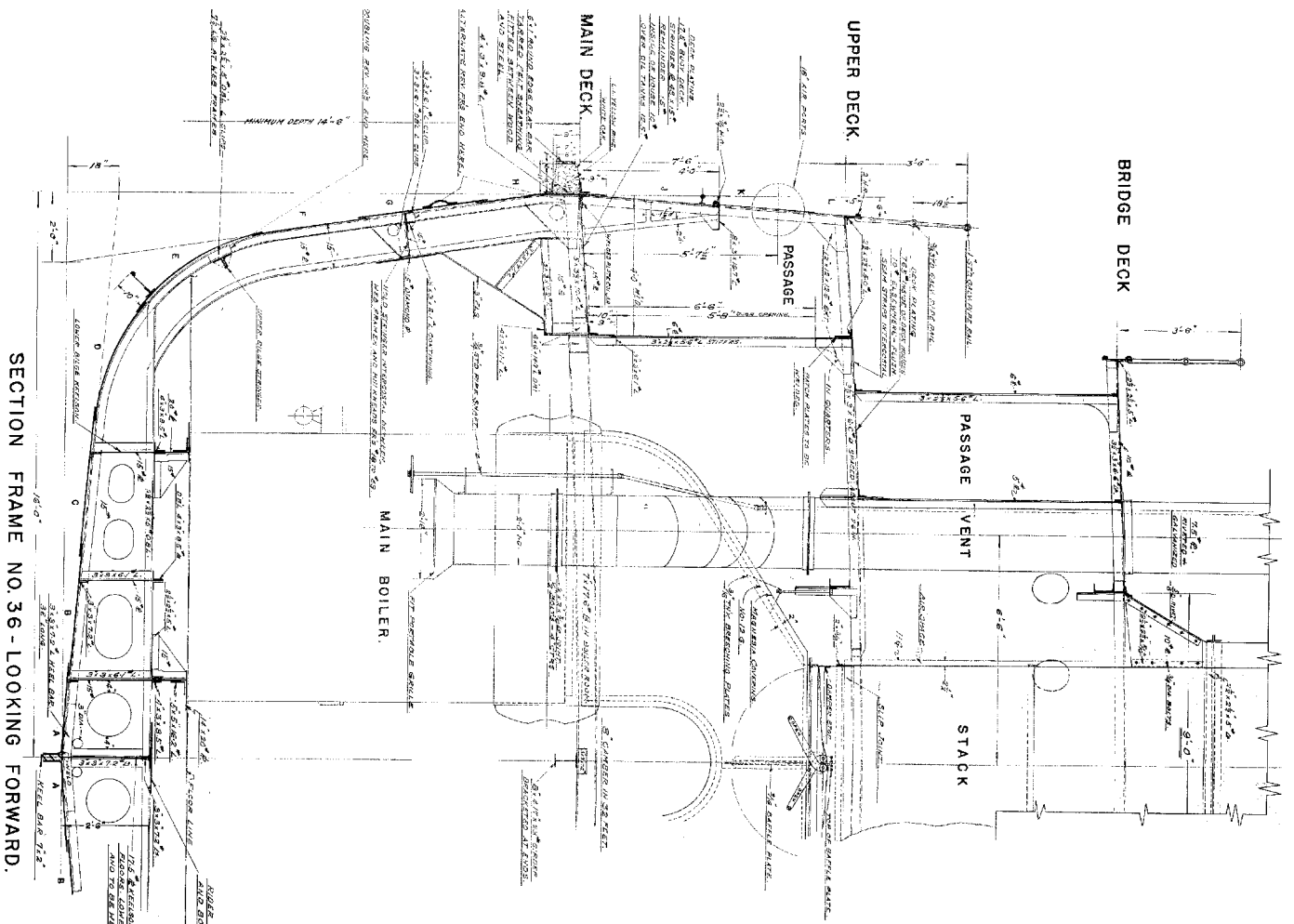
MAIN DECK



LOWER DECK & HOLD

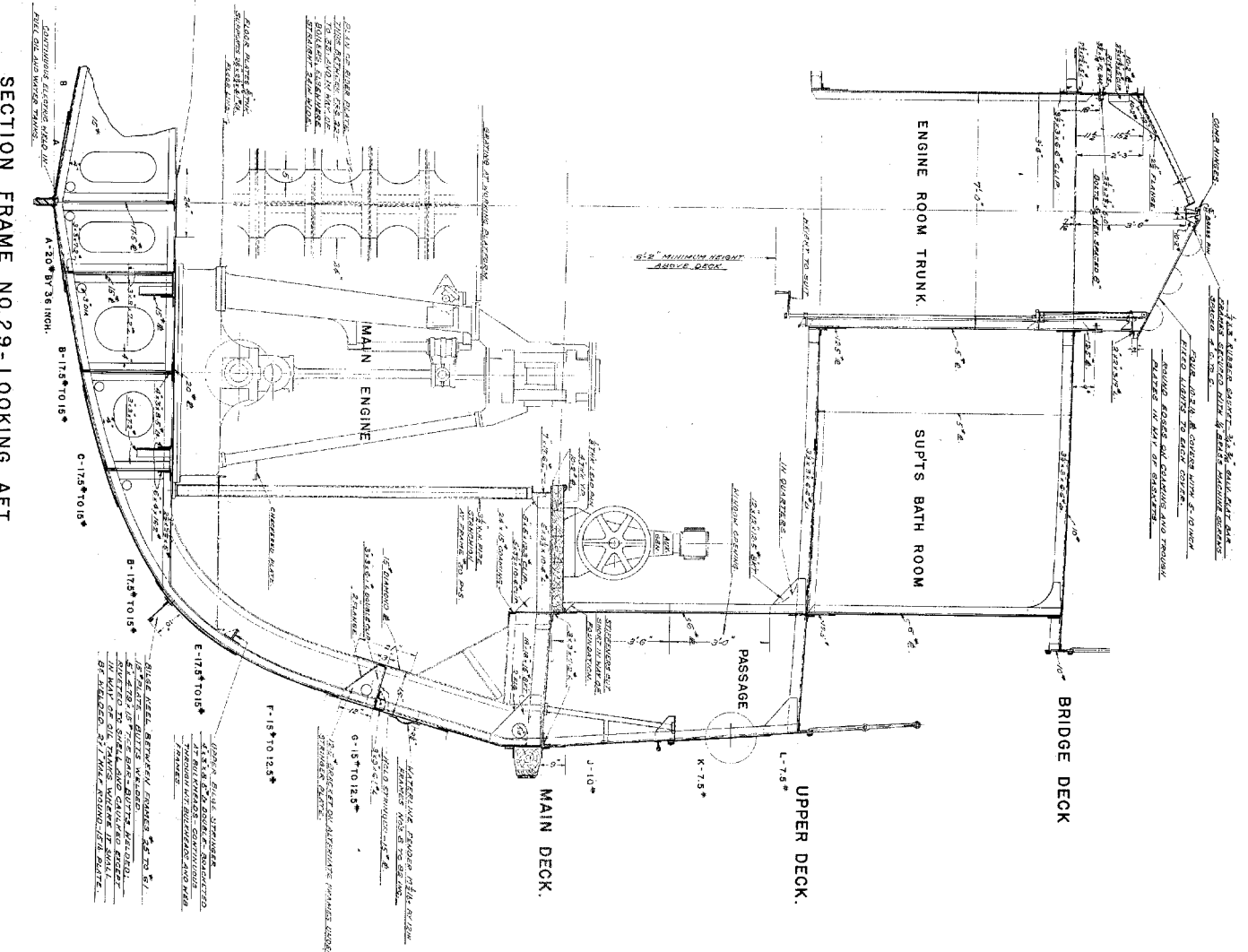


Deck plans of Fir based on an original U.S. Lighthouse Service drawing of her sister ship Hollyhock. Courtesy National Archives, Washington, D.C.



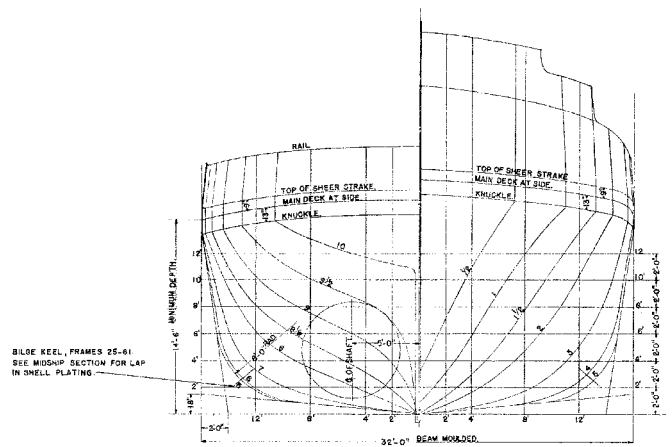
SECTION FRAME NO. 36 - LOOKING FORWARD.

HULL SECTIONS



SECTION FRAME NO. 29 - LOOKING AFT.

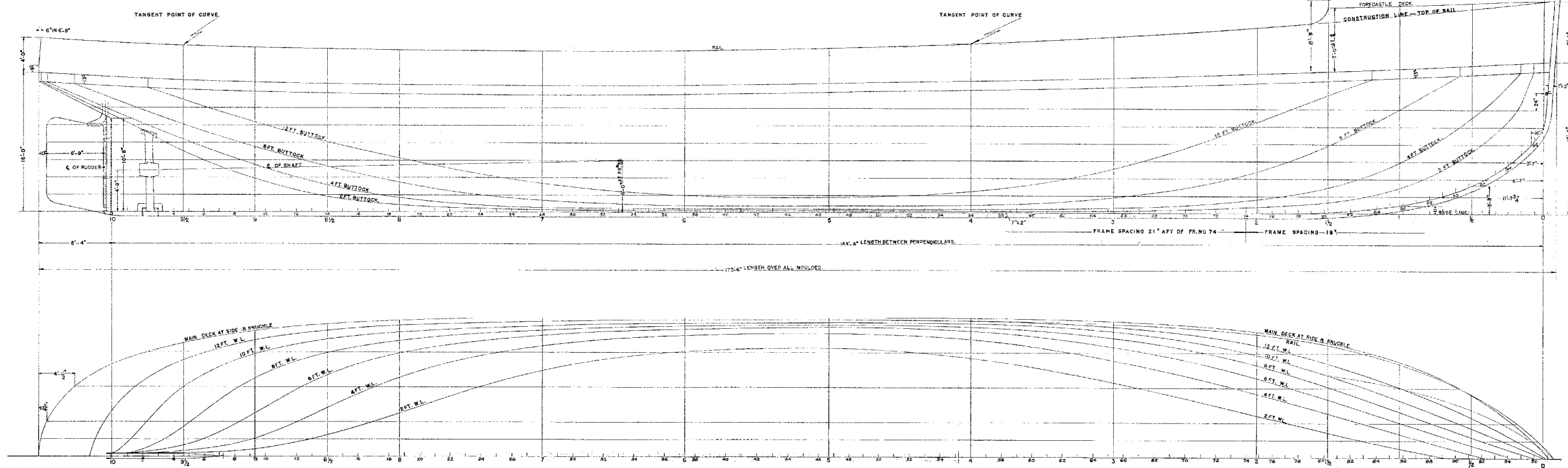
Hull sections of Fir based on an original U.S. Lighthouse Service drawing of her sister ship Hollyhock. Courtesy National Archives, Washington, D.C.



STATIONS	HALF BREADTHS										STATIONS		
	0	1/2	1	1 1/2	2	3	4	5	6	7		8	9
2 FT. W.L.	0	1-1-4	2-11-2	4-10-2	6-2-4	11-4-4	12-6-0	12-1-7	9-10-2	4-10-2	2-4-2	0-10-2	0-3-4
4 FT. W.L.	0-5-6	2-9-4	5-1-7	7-3-6	11-1-2	13-5-7	14-2-3	13-11-0	12-8-7	9-1-4	5-7-1	2-2-4	0-3-4
6 FT. W.L.	1-8-7	4-1-6	6-8-9	8-1-6	12-7-8	14-6-0	14-10-6	14-7-6	12-10-3	11-10-0	9-3-7	4-1-1	0-3-4
8 FT. W.L.	2-4-7	5-4-4	8-2-0	10-7-3	13-8-1	14-11-7	13-2-3	10-0-0	14-5-7	13-3-1	11-10-2	8-3-4	0-3-4
10 FT. W.L.	0-1-0	3-5-7	6-7-6	9-8-0	11-9-3	14-5-0	15-3-7	15-5-7	15-4-4	15-0-2	14-3-7	13-2-1	11-8-7
12 FT. W.L.	0-3-7	4-8-4	8-0-8	10-10-1	12-10-8	15-0-0	15-7-9	15-5-3	15-6-7	15-6-0	15-1-4	14-5-7	13-4-0
MAIN DECK	0-10-4	7-2-7	10-4-7	13-2-7	14-8-4	15-7-0	16-11-0	16-0-0	15-11-0	15-8-1	15-2-2	14-4-3	12-11-4
RAIL	1-6-2	7-3-2	10-9-2	13-0-2	14-3-0	15-2-1							

STATIONS	HEIGHTS										STATIONS		
	0	1/2	1	1 1/2	2	3	4	5	6	7		8	9
2 FT. BUTTOCK	7-2-2	3-9-4	1-1-1	0-7-7	0-2-6	0-2-2	0-2-2	0-2-2	0-3-1	0-9-8	1-9-6	3-9-5	6-11-1
4 FT. BUTTOCK	10-10-9	5-9-4	2-10-7	1-7-2	0-5-7	0-4-4	0-4-4	0-4-4	0-6-1	1-7-3	3-11-6	5-8-0	8-3-6
6 FT. BUTTOCK	11-10-7	7-8-9	4-8-1	1-8-6	0-10-0	0-9-0	0-8-0	0-8-0	1-4-2	3-10-0	5-3-0	7-6-1	10-3-3
8 FT. BUTTOCK	12-6-2	10-4-6	5-1-0	2-8-0	1-8-2	1-11-6	1-11-6	1-11-6	3-3-8	6-2-1	9-2-2	10-3-3	13-0-8
10 FT. BUTTOCK	17-5-2	16-11-5	16-6-6	16-3-2	15-11-4	15-5-6	15-1-4	14-9-7	14-6-2	14-6-0	14-2-1	14-8-4	14-10-3
MAIN DECK	24-5-1	23-6-0	22-6-4	21-11-4	21-9-2	20-2-6	19-6-2	18-10-6					
RAIL									4'-0" ABOVE MAIN DECK AT SIDE				

DIMENSIONS GIVEN IN FEET, INCHES AND EIGHTHS OF AN INCH.



Lines and offsets of Fir based on an original U.S. Lighthouse drawing of her sister ship Hollyhock. Courtesy National Archives, Washington, D.C.