

ESSO GETTYSBURG  
(Exxon Gettysburg)  
(Gettysburg)  
Suisun Bay Reserve Fleet  
Benicia vicinity  
Solano County  
California

HAER CA-354  
HAER CA-354

PHOTOGRAPHS

WRITTEN HISTORICAL AND DESCRIPTIVE DATA

REDUCED COPIES OF MEASURED DRAWINGS

FIELD RECORDS

HISTORIC AMERICAN ENGINEERING RECORD  
National Park Service  
U.S. Department of the Interior  
1849 C Street NW  
Washington, DC 20240-0001

## HISTORIC AMERICAN ENGINEERING RECORD

*Esso Gettysburg*  
*(Exxon Gettysburg)*  
*(Gettysburg)*

**HAER No. CA-354**

**Location:** Suisun Bay Reserve Fleet; Benicia vicinity; Solano County, California

**Type of Craft:** Product tanker

**Trade:** Coastal and Caribbean Sea shipping

**MARAD Design No.** Stm/39K

**Builder's Hull No.** 519

**Official Registry No.** 273362

**IMO No.** 5107463

**Principal Measurements:**

Length (bp):	685'
Length (oa):	715'
Beam (molded):	93'
Designed operating draft:	35'-2"
Summer freeboard draft:	36'-9.25"
Displacement:	51,549 long tons
Deadweight:	37,800 long tons
Gross registered tonnage:	24,543
Net registered tonnage:	15,141
Maximum continuous shaft horsepower:	26,500
Service speed:	19 knots

(The listed dimensions are as-built, but it should be noted that draft, displacement, and tonnages are subject to alteration over time as well as variations in measurement.)

**Propulsion:** Geared steam turbines

**Dates of Construction:**

Keel laying:	April 23, 1956
Launching:	October 11, 1956
Delivery:	March 1, 1957

**Designer:** E. L. Stewart, manager, Construction and Repair Department, Esso Shipping Company

**Builder:** Newport News Shipbuilding and Dry Dock Co., Newport News, Virginia

**Original Owner:** Esso Shipping Co., Wilmington, Delaware

- Final Owner:** Maritime Administration  
U.S. Department of Transportation
- Names:** *Esso Gettysburg* (to Jan. 1, 1973)  
*Exxon Gettysburg* (Jan. 1, 1973 to Oct. 22, 1987)  
*Gettysburg* (Oct. 22, 1987 to present)
- Disposition:** Scrapped, 2010
- Significance:** The *Esso Gettysburg* was a typical mid-1950s American-flag tanker built for the coastal shipment of petroleum products. Although hailed as the American registry's biggest and fastest tanker when new, the ship was but one step in the broader trend toward ever larger oil tankers that world petroleum consumption encouraged in the decades after World War II. The ship's three-decade-long work-a-day career was marred by a January 1971 grounding when 385,000 gallons of heating oil spilled into Long Island Sound.
- Historian:** Michael R. Harrison, 2010
- Project Information:** This project is part of the Historic American Engineering Record (HAER), a long-range program to document historically significant engineering and industrial works in the United States. The Heritage Documentation Programs of the National Park Service, U.S. Department of the Interior, administers the HAER program.
- The project was prepared under the direction of Todd Croteau (HAER Maritime Program Coordinator), who also generated the vessel drawings. Jet Lowe (HAER Photographer) produced the large format photographs, and Michael R. Harrison (Historian) wrote the historical report.

## PART I. HISTORICAL INFORMATION

### A. Physical History

**1. Dates of construction:** The Esso Shipping Company signed the contract for construction of the *Esso Gettysburg* and its sister the *Esso Washington* on August 1, 1955. Two additional ships in the class were built under a second contract with the same builder signed in 1956. Construction began in April 1956. The ship was launched October 11, 1956, and delivered March 1, 1957.<sup>1</sup>

**2. Designer:** The Esso Shipping Company's in-house magazine *The Ships' Bulletin* credited the *Esso Gettysburg's* design to E. L. Stewart, manager of the company's Construction and Repair Department. He was also a company vice president and director.<sup>2</sup>

**3. Builder:** Newport News Shipbuilding and Dry Dock Company, Newport News, Virginia. The vessel was constructed in the yard's shipway no. 8. Progress photographs demonstrate that construction began amidships and worked outward toward the bow and stern. The ship was sponsored at its launching by Irene Kearns Stott, the wife of William R. Stott, a director of Esso Shipping Company's parent, the Standard Oil Company (New Jersey).<sup>3</sup>

**4. Original plans and construction:** The Esso Shipping Company designed the *Esso Gettysburg* to carry crude oil and refined petroleum products primarily in coastal trade, with additional speed beyond the company's commercial needs built in to meet national-defense requirements. The ship was built as a single-hull tanker powered by a single set of cross-compound steam turbines driving a single screw. The ship's hull was made of welded and riveted steel and subdivided by longitudinal and transverse bulkheads into thirty cargo tanks plus engine, fuel, and ballast compartments. A forecastle, bridge deckhouse, and poop deckhouse were included to house crew accommodations and work spaces.

**5. Original cost:** The total cost of the vessel's construction has not been found. The Maritime Administration paid \$1,540,000 for increased horsepower to meet national-defense requirements for both the *Esso Gettysburg* and the *Esso Washington*. Additional government construction aid came through a trade-in allowance on five obsolete T-2 tankers that Esso Shipping negotiated with the Maritime Administration. The amount of the allowance was originally calculated at \$5,669,081.61. This figure was subject to depreciation as well as

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<sup>1</sup> "Esso Gettysburg," *The Ships' Bulletin* 37, no. 2 (Mar.-Apr., 1957): 5, copy in Ralph E. Cropley Scrapbooks, Maritime Collection, National Museum of American History, Washington, D.C.; "Transport news and notes," *New York Times*, Aug. 27, 1956, 40; U.S. Department of Commerce, *Annual Report of the Federal Maritime Board and Maritime Administration*, 1957, 16.

<sup>2</sup> "Esso Gettysburg," 5.

<sup>3</sup> "A Picture Story of the Super Tanker Esso Gettysburg from Keel Laying to Maiden Voyage," insert in *The Ships' Bulletin* 37, no. 2 (Mar.-Apr., 1957), n.p., copy in Cropley Scrapbooks; Felicity Barringer, "William R. Stott, 91, ex-official at Standard Oil of New Jersey," *New York Times*, Aug. 16, 1999, B8.

reduction for the use of the old tankers before the new ones were delivered; in the end it came to \$5,458,379.<sup>4</sup>

**6. Modifications:** Comparison of construction photographs with the ship's state in the Suisun Bay Reserve Fleet reveals that the *Esso Gettysburg's* original slightly-bulbous forefoot was replaced at an unknown date with one of a more protuberant design, presumably in an attempt to improve the ship's performance in a seaway. No additional documentation for this significant change has been found. In addition, a baffle was added to the boiler exhaust uptakes at an unknown time, raising the uptakes above the top of the funnel.

**7. Names:** Beginning in the 1930s, Standard Oil of New Jersey gave its ships the names of cities, prepended by its "Esso" brand name. Following this convention, the *Esso Gettysburg* was named for the town in Pennsylvania. It was the second company vessel given this name; the first, a T-2 tanker completed in 1942, was lost to a German torpedo 100 miles southeast of Savannah during a June 1943 coastal voyage. Fifty-seven men were killed out of a total complement of seventy-two.<sup>5</sup>

After Standard Oil became Exxon Corporation in 1972, company officials renamed the ships in its fleet. The *Esso Gettysburg* became *Exxon Gettysburg* on January 1, 1973. The ship retained this name until October 22, 1987, when the Maritime Administration removed the "Exxon" in order to remove corporate identifying information from the ship.<sup>6</sup>

## B. Historical Context

The Standard Oil Company of New Jersey, incorporated in 1882, was involved in shipping oil by sea from its very first years. By the late 1930s, the company maintained one of the nation's largest private fleets, and its prominence made it a significant operator of tankers for the Maritime Commission during World War II. In 1950, Jersey Standard created the Esso Shipping Company to manage its tanker operations, an arrangement that lasted only until 1958, when a corporate reorganization transformed the subsidiary back into a division of the parent company. In 1959, tanker services were moved again to the subsidiary Humble Oil and Refining Company, where they remained until the formation of Exxon in 1972.<sup>7</sup>

The participation of U.S.-registered vessels in all sectors of overseas shipping was declining rapidly during the 1950s, as ships built during World War II aged and the cost of replacing

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<sup>4</sup> "Transport News and Notes," 40; Annual reports of the Federal Maritime Board and Maritime Administration, 1954, 4-5; 1955, 5; 1956, 7; 1957, 16.

<sup>5</sup> The 1942 *Esso Gettysburg* was the first of 198 T2-SE-A1 tankers built by Sun Shipbuilding & Dry Dock Co. for the Maritime Commission during World War II; *Ships of the Esso Fleet in World War II* (Standard Oil Co. of New Jersey, 1946), 454-60.

<sup>6</sup> ABS Eagle Record for *Gettysburg*, <http://www.eagle.org/>.

<sup>7</sup> "Esso will shift ship operations," *New York Times*, Jan. 29, 1961, S12; "Esso tanker fleet absorbed in shift," *New York Times*, Apr. 24, 1958, 62. For numerous references to shipping in the early history of Standard Oil, see Ralph W. Hidy, *History of Standard Oil Company (New Jersey)*, vol. 1, *Pioneering in Big Business, 1882-1911* (New York: Harper & Bros., 1955). See also *Ships of the Esso Fleet in World War II*.

them in U.S. yards and manning them with American sailors remained significantly higher than procurement and hiring abroad.<sup>8</sup> American owners who remained in the foreign oil trade, most notably entrepreneur Daniel K. Ludwig and his company, National Bulk Carriers, increasingly turned to building, hiring, and registering abroad to remain competitive.<sup>9</sup>

Coastal trade, however, was closed to foreign-built and foreign-registered tonnage to protect the domestic shipping industry, so a demand remained for American-built tankers to connect America's oil wells to its refineries and to carry its refinery products to home markets. The *Esso Gettysburg* and its sister vessels (*Esso Washington*, *Esso Jamestown*, and *Esso Lexington*) were designed to serve this market. At 37,800 deadweight tons (dwt), these ships were an advancement in scale and power over the company's previous tanker order, the 27,330-dwt *Esso Newark*-class. Although numerous press accounts described the *Esso Gettysburg* as "the biggest and fastest oil tanker under the American flag," Esso Shipping was already planning a 49,500-dwt class of tankers even as the ship entered service.<sup>10</sup>

The increasing size of Esso's ships reflects growth in the oil market and the economies of scale that carriers increasingly exploited by operating fewer large ships in place of many small ones, but it was a mere shadow of the true "race for gigantism" that was then underway in transoceanic oil shipping. Dramatic increases in petroleum demand and production through the entire second half of the twentieth century, coupled with political developments in the Middle East, propelled the construction of immense tankers to carry oil across the world's oceans. To put Esso's fleet in context, the largest tanker in the world at the time of the *Esso Gettysburg*'s launch, the 1956-built *Universe Leader*, was over 85,500 dwt, and its owner, Daniel Ludwig, was already planning the first tanker of more than 100,000 dwt (the *Universe Apollo*, delivered in early 1959).<sup>11</sup>

The service speed of American-built tankers in the 1950s tended to be higher than that of tankers built elsewhere in the world. This was the result of two conditions. First, wages for sailors on American ships were three to four times higher than those paid to sailors on foreign vessels, so American operators were under pressure to deliver more cargo in shorter

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<sup>8</sup> The percent of U.S. waterborne foreign trade carried in American bottoms declined from 68 percent in 1945 to 43 percent in 1950 and 11 percent in 1960. In the late 1950s, ships cost about twice as much to build in American yards as they did in foreign yards, and American shipboard wages were three to four times as great as foreign wages. U.S. Bureau of the Census, *Statistical Abstract of the United States, 1965* (Washington, D.C.: G.P.O., 1965), 598; John M. Will, "By Ship – The Salt of the Sea Not Withstanding," *Annals of the American Academy of Political and Social Science* 345 (Jan. 1963), 84.

<sup>9</sup> Steven Spear, "Tankers," in *A Half Century of Maritime Technology, 1943–1993*, ed. Henry Benford (Jersey City, N.J.: Society of Naval Architects and Marine Engineers, 1993), 263–64.

<sup>10</sup> "Large oil tanker passes sea trials," *New York Times*, Feb. 27, 1957, 39.

<sup>11</sup> The closure of the Suez Canal in 1956–57 spurred an enormous jump in tanker size as operators were forced to route their shipments from Middle Eastern oil fields around the Cape of Good Hope. The cost in fuel and man hours required by these thousands of extra shipment miles made large ships of 100,000, 200,000, and (by 1970) over 300,000 dwt economically viable. Alex Roland, W. Jeffrey Bolster, and Alexander Keyssar, *The Way of the Ship: America's Maritime History Reenvisioned, 1600–2000* (John Wiley & Sons, 2007), 335–39 (quote in text from p. 339); Spear, "Tankers," 263–64; "Shipping: The Biggest Tankers," *Time*, Oct. 14, 1957.

spans of time to offset their labor costs. Second, the Maritime Administration could influence the specifications of vessels built with federal financial assistance in order to make the vessels more suitable for use in wartime. As a result, many American merchant ships were capable of speeds beyond their owners' economic requirements.<sup>12</sup> The *Esso Gettysburg*, a typical product of the labor and regulatory environment of its day, was fast for a tanker and had excess engine power built in for national-defense purposes. During its sea trials, the ship made loaded full-speed runs averaging 19-3/4 knots "with power to spare." On one 1957 voyage in ballast from New York to Venezuela, the ship averaged 20 knots, while on other, loaded passages the same year it averaged 19-1/2 knots.<sup>13</sup>

### C. Operational History

The *Esso Gettysburg's* sea trials took place February 25 and 26, 1957. As usual for ships built at Newport News Shipbuilding, the trials were held off the Virginia Capes. Some 250 technicians, observers, and yard and shipping-company executives were aboard. How the catering and sleeping arrangements were worked out to accommodate this number of men overnight on a ship with only about fifty beds is not recorded.<sup>14</sup>

The ship's first master was Capt. Jens G. Olsen, senior master in the Esso fleet. A veteran of both world wars, he ran away from home and became a deckboy aboard a Danish topsail schooner at the age of 14. When he retired a month after the *Esso Gettysburg* entered service, he had been at sea for fifty-one years and with Standard Oil for almost thirty-eight. He called his last command "the finest ship I ever had – and the best handling. She steers as easily as an automobile."<sup>15</sup>

The *Esso Gettysburg* was built for use on the U.S. Gulf and Atlantic coasts. Its first cargo was 10,888,836 gallons (259,258 barrels) of San Joaquin crude oil brought from Puerto la Cruz, Venezuela, to the Bayway Refinery, Linden and Elizabeth, New Jersey, in March 1957.<sup>16</sup> A survey of shipping reports in the *New York Times* and the *Baltimore Sun* shows the ship in regular coastal service into the early 1970s, with frequent calls at such refinery ports as Baytown, Texas; Baton Rouge; Charleston; Baltimore; New York and Long Island Sound; New Haven; and Boston. The ship also made occasional calls at South American and

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<sup>12</sup> Although the government paid the construction costs of national-defense modifications, it did not bear the expense of greater fuel consumption and reduced cargo capacity that such modifications could impose on carriers over the long term. It also prohibited carriers from using their vessels' reserve power except in emergencies. Allen R. Ferguson, et al., *The Economic Value of the United States Merchant Marine* (Evanston, Ill.: Transportation Center at Northwestern University, 1961), 57, 149; Spear, "Tankers," 264.

<sup>13</sup> Most national-defense modifications were an outcome of the Maritime Administration's construction-differential subsidy program. Esso Shipping did not receive these subsidies, but it negotiated payment for militarily useful modifications as an adjunct to its trade-in allowance. The company's own magazine described the *Esso Gettysburg's* emergency power as "considerably in excess of normal commercial requirements." *Annual Report of the...Maritime Administration*, 1955, 5; "Esso Gettysburg," 3, 5; "Large oil tanker passes sea trials," 39.

<sup>14</sup> "Large oil tanker passes sea trials," 39.

<sup>15</sup> "Esso master ends 51 years on ships," *New York Times*, Apr. 12, 1957, 50; quote from "Esso Gettysburg," 3.

<sup>16</sup> "Esso Gettysburg," 3.

Caribbean island ports. Records indicating the ship's use through the 1970s and into the early 1980s have not been found, but nothing substantially different from the ship's previous service is likely.<sup>17</sup>

The ship's otherwise unremarkable career was marred by three known accidents. It collided with the Moore-McCormack freighter *Robin Hood* off North Point while entering Baltimore Harbor on May 14, 1964. Both ships sustained minor damage, but, coincidentally, the *Esso Gettysburg* was bound for Maryland Shipbuilding and Drydock Co. for repairs already. On July 8, 1970, the ship ran aground off Block Island while bound for New Haven, Connecticut, spilling 1,000 gallons (24 barrels) of oil into the Atlantic Ocean.<sup>18</sup>

The ship ran ground again six months later, this time spilling significantly more oil into Long Island Sound. While entering New Haven Harbor in heavy fog and light snow before dawn on January 23, 1971, the *Esso Gettysburg* strayed out of the channel and struck a rock ledge, suffering buckled plates and a long crack in the bottom shell plating amidships. The pilot reversed the engines and backed off the ledge, but, according to a U.S. Coast Guard spokesman quoted in the *New York Times*, "the ship 'instantly began leaking oil' and 'leaked oil all the way up to the Wyatt Terminal' as she proceeded up the harbor, a distance of three miles." The ship reportedly spilled 385,000 gallons (9,167 barrels) of home-heating oil into Long Island Sound, out of a cargo from Baton Rouge of 8.4 million gallons (200,000 barrels). No one aboard was injured, although a cameraman and pilot covering the accident were taken to hospital for exposure after their helicopter crashed into the sound. The accident was blamed on buoys moved out of position by recent ice in the harbor.<sup>19</sup>

Most of the oil dissipated or evaporated before it could be cleaned up. Little of it reached shore because of icy coastal conditions, and short-term harm to wildlife was reported as limited.<sup>20</sup> (The *New York Times* noted, however, that "The harbor here [at New Haven] has little or no wildlife, except for sea gulls. Its waters have been described as polluted, and a number of beaches in this area have been closed in recent summers because of pollution dangers."<sup>21</sup>) The *Esso Gettysburg's* remaining cargo was offloaded at New Haven, and the

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<sup>17</sup> Shipping columns in the *Baltimore Sun* and the *New York Times* were surveyed from early 1957 to late 1971. See also "Large petroleum cargo arrives," *Baltimore Sun*, Oct. 3, 1958, 39.

<sup>18</sup> "2 ships collide off north point," *Baltimore Sun*, May 14, 1964, 38; "385,000 gallons of oil spill into sound," *New York Times*, Jan. 24, 1971, 1.

<sup>19</sup> The ship grounded in the approach to New Haven Harbor "on a rock ledge between the Luddington Rock and East Breakwater, one mile southwest of Lighthouse Point." "385,000 gallons of oil spill into sound," 1; Nelson Bryant, "Chatting replaces shooting on bluebill hunt on icy Long Island Sound," *New York Times*, Feb. 4, 1971, 44.

<sup>20</sup> "Tanker hits rocks, spills heating oil," *Chicago Tribune*, Jan. 24, 1971, 7; Joseph B. Treaster, "12-mile slick held back from sound shore by ice," *New York Times*, Jan. 25, 1971, 16; idem, "Damage is slight from oil in sound," *New York Times*, Jan. 26, 1971, 37; "Fish are unharmed by sound oil spill," *New York Times*, Jan. 27, 1971, 44; Bryant, "Chatting Replaces Shooting on Bluebill Hunt," 44.

<sup>21</sup> "385,000 gallons of oil spill into sound," 1.



ship sailed to Bethlehem Steel's Key Highway Shipyard in Baltimore for permanent repairs.<sup>22</sup>

The ship, renamed *Exxon Gettysburg* in 1973, remained in commercial service until 1986. It was then traded in to the Maritime Administration, which placed it in the National Defense Reserve Fleet at Suisun Bay, California, on October 8, 1986. Formal title was conveyed to the Maritime Administration on June 11, 1987, and "Exxon" was removed from the ship's name later that year. The ship remained in the reserve fleet until May 21, 2010, when it was towed to BAE Systems' San Francisco repair yard for hull cleaning before being towed via the Panama Canal to Brownsville, Texas, where it was scrapped at ESCO Marine, Inc.<sup>23</sup>

## PART II. STRUCTURAL / DESIGN INFORMATION

### A. General Description

**1. Overall:** The *Esso Gettysburg* was a single-hull, welded-steel petroleum tanker with forecastle, bridge deckhouse, and poop deckhouse. A technical description of the ship's structure from a 1957 issue of *The Ships' Bulletin* reads:

The vessel's hull is longitudinally framed, with transverse framing at the ends and at the sides of the poop and midship house[s].

Plate seams are flush and butt welded except for the bilge plating lower seam, two seams of bottom shell plating, two seams of upper deck plating and the sheer strake deck stringer plating connections to the gunwale angle, which are lapped and riveted. All bulkheads below the upper deck are welded. In addition to the support supplied by the longitudinal bulkheads, the transverse bulkheads are strengthened by vertical deep web stiffeners and horizontal stiffeners. Bulkheads are flush plated throughout.

The continuous longitudinal bulkheads, each located 22 ft. 6 in. from the centerline, terminate in deep brackets under the upper deck in the dry cargo spaces forward and under the poop deck aft, in line with the passageway bulkhead in the crew's quarters. These bulkheads also are strengthened by vertical deep web stiffeners and horizontal flanged sections.<sup>24</sup>

The ship's fore to aft arrangement was as follows:

- Forepeak with boatswain's stores and chain locker above tank for ballast water

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<sup>22</sup> Photographs taken at the Key Highway Shipyard, found aboard the ship in lay-up at Suisun Bay and now deposited with the field notes for this report, show the extent and location of the hull damage done during the grounding.

<sup>23</sup> Maritime Administration custody card for *Gettysburg*, <https://pmars.marad.dot.gov/detail.asp?Ship=1960>; Donna Beth Weilenman, "Eighth ship leaves bay," *Benicia Herald*, May 21, 2010, <http://beniciaherald.wordpress.com/2010/05/21/eighth-ship-leaves-bay/>.

<sup>24</sup> "Esso Gettysburg," 5-6.

- Two decks of dry-cargo space above two deep tanks
- Forward cofferdam in line athwartships with the forward pump room for bilge-water, ballast-water, and fuel-oil handling
- Thirty cargo-oil tanks arranged in ten groups fore to aft, each group comprising a center tank and two wing tanks (port and starboard), all separated by transverse and longitudinal oil-tight bulkheads
- After cofferdam athwart the cargo pump room
- Fuel-oil tanks
- Forward engine space
- After engine space
- Boiler space (on a 30' flat above the engine spaces)
- Washing-water and reserve-feed-water tanks (in the double bottom below the engine spaces)
- Afterpeak with distilled-water tanks and steering-gear room above tank for ballast

**2. Decks:** The *Esso Gettysburg's* navigation spaces and deck-officers' quarters were located in a three-deck forward (or bridge) deckhouse. The Navigating Bridge Deck contained the wheel house, chart room, master's sea cabin, and a fan room. Just below, the Upper Bridge Deck held the master's stateroom and office, chief mate's room, ship's office, purser's room, radio room, radio officer's room, and a spare cabin (designated for a junior mate on the ship's general arrangement plans). The Bridge Deck enclosed the officers' lounge; quarters for the steward and the second, third, and junior-third mates; two two-berth passenger cabins; the hospital; and the officers' laundry. Wash-water tanks, stores, and a large workspace filled the Upper Deck area below this deckhouse.<sup>25</sup>

The after (or poop) deckhouse contained engine-department quarters and crew facilities on two decks. The Boat Deck aft held the chief engineer's stateroom and office; first, second, third, and junior-third assistant engineers' quarters; engineers' changing room; another officers' lounge; and a spare cabin (designated for a junior engineer). This deck also held various fan rooms and the emergency diesel-generator room. The poop deck, just below, contained rooms for the chief cook, second cook, machinist, boatswain, pump men, mess men, and utility men. Here also were the crew's recreation room, galley, and the three mess rooms, one each for officers, petty officers, and crew.<sup>26</sup>

The Upper Deck aft, just beneath the poop deckhouse, held accommodations originally assigned to oilers, firemen, wipers, deck maintenance men, and seamen plus galley storerooms, crew laundry, and other miscellaneous stores.<sup>27</sup>

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<sup>25</sup> "Esso Gettysburg," 4, 6-7.

<sup>26</sup> *ibid.*

<sup>27</sup> *ibid.*

Two fore-and-aft gangways connected the forecastle and two deckhouses. In the affectionate language of a writer for *The Ships' Bulletin*, "the walkway between the poop and bridge will seem a half-mile long to a hungry man going aft for chow."<sup>28</sup>

**3. Cargo holds:** As built, the *Esso Gettysburg's* thirty cargo tanks gave the ship a total capacity of 13,344,030 gallons (317,715 barrels); just over 50 percent of this could be carried in the center tanks alone (6,720,294 gallons [160,007 barrels]).<sup>29</sup>

Considered in terms of weight instead of volume, the ship's maximum deadweight capacity was 37,800 long tons when loaded to its maximum summer freeboard draft of 36'-9.25". In normal service, however, the ship had a designed operating draft of 35'-2"; at this level the ship's deadweight capacity was reduced to 35,420 long tons.<sup>30</sup>

A small amount of dry-cargo space was designed into the ship's forecastle, divided into an upper dry-cargo hold of 32,269 cu. ft. capacity and a lower one of 50,400 cu. ft. These were accessed through two 10' x 20' hatches and served by two king posts, each with a cargo boom. Designers positioned additional cargo- and equipment-handling booms midships, forward of the poop deckhouse, and aft of the poop deckhouse.<sup>31</sup>

**4. Crew accommodations:** The *Esso Gettysburg* entered service with a crew of forty-seven. By 1971, this number had been reduced to thirty-five.<sup>32</sup> These men were accommodated in a variety of simply appointed compartments distributed between the two deckhouses. In the words of *The Ships' Bulletin*:

The [*Esso Gettysburg's*] well-proportioned after house rises sparkling white and contains quarters for the entire ship's company except Deck Officers, the Radio Officer, Steward and Purser, who are housed amidships. Every man aboard has an individual room, insulated, sheathed and equipped with a built-in metal bed with four drawers and a locker underneath, innerspring mattress, built-in wardrobe, wash basin with hot and cold water, comfortable metal furniture and convenient accessories. At least one toilet and shower for each two rooms is provided. All quarters, in addition to the officers' lounges, crew's recreation room, dayrooms, chart room, radio room and hospital, are mechanically ventilated and air cooled in hot weather.<sup>33</sup>

Heating in the crew spaces was provided through steam convector radiators. Radio shelves were provided in every cabin, and the three lounges each had a 21' television set. These were still enough of a shipboard novelty that the company writer felt it worth noting, "The

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<sup>28</sup> "Esso Gettysburg," 3.

<sup>29</sup> The no. 10 port and starboard wing tanks were piped to double as emergency fuel-oil bunkers if needed; "Esso Gettysburg," 6.

<sup>30</sup> "Esso Gettysburg," 5.

<sup>31</sup> "Esso Gettysburg," 6.

<sup>32</sup> "Large Oil Tanker Passes Sea Trials," 39; "385,000 gallons of oil spill into sound," 1.

<sup>33</sup> "Esso Gettysburg," 3.

sets are served by rotating, stainless steel antennas, especially designed and ruggedized for sea service."<sup>34</sup>

**5. Safety:** The *Esso Gettysburg* carried four metal lifeboats, each 24' x 8' x 3'-7", two on the Upper Bridge Deck and two on the Boat Deck aft. The port boat amidships and starboard boat aft were originally Diesel propelled with thirty-seven-person capacities. The remaining boats, equipped with oars, held forty persons. All the boats were suspended from gravity davits operated with electric winches.

## B. Mechanical Features

**1. Engine plant:** The ship was propelled by a single set of cross-compound turbines comprising a single-flow impulse high-pressure turbine and a single-flow impulse-reaction low-pressure turbine. These were coupled to the drive shaft and single screw through a double reduction gear. Astern elements were built into the low-pressure turbine. Newport News Shipbuilding designed and built the engines; General Electric designed and built the reduction gear.

Engine power:

H.P. turbine	13,570 shp	5,950 rpm
L.P. turbine	12,930 shp	3,436 rpm
Propeller	26,500 shp	108.5 rpm <sup>35</sup>

**2. Boilers:** The ship's two two-drum watertube boilers, manufactured by Babcock & Wilcox, were located on a flat above the rear portion of the engine space. As originally constructed, each was fired by six Babcock & Wilcox "Iowa"-type steam/mechanical atomizing oil burners. The system was designed to supply steam to the high-pressure turbine chest at 815 psig and 850 degrees F on a vacuum of 28.4 inches of mercury.<sup>36</sup>

**3. Electrical system:** The ship's electrical system comprised two 750-kW steam-powered turbo generators. A 100-kW Diesel generator installed on the Boat Deck aft provided emergency electrical generation.

**4. Cargo handling arrangements:** The aft pump room, a tall compartment between the engine room and the no. 10 center cargo tank, contained the four main centrifugal cargo pumps, each rated at 6,000 gallons per minute of sea water at 150 psig. They were driven by reduction-gear steam turbines located in the engine room. Two additional pumps in this room served for cargo stripping; they were rated 1,400 gpm at 150 psig. A final pump with its own piping system was installed to handle ballast water to and from no. 4 and no. 6 cargo tanks.

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<sup>34</sup> *ibid.*

<sup>35</sup> "Esso Gettysburg," 7.

<sup>36</sup> Additional technical specifics about the propulsion and other mechanical systems (including a detailed pump table) appear in "Esso Gettysburg," 9-13.

Cargo-loading and discharge crossover connections, cargo-heating valves, and fire-suppression piping were all provided on deck.

In addition to two water-jet eductors included in the aft-pump-room piping to facilitate cargo tank cleaning, the ship was originally equipped with six Butterworth machines for cleaning the cargo tanks with heated seawater. The water main for the fire-suppression system, installed along the fore-and-aft walkway on deck, doubled as the main supply pipe for the Butterworth machines.

**5. Steering gear:** The ship's electrically-activated steering gear was of the four-cylinder hydraulic opposed-ram type.

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## HISTORIC AMERICAN ENGINEERING RECORD

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*ESSO GETTYSBURG*  
(*Exxon Gettysburg*)  
(*Gettysburg*)  
Suisun Bay Reserve Fleet  
Benicia vicinity  
Solano County  
California

HAER CA-354

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Jet Lowe, photographer, July 2007

CA-354-1	Stern view.
CA-354-2	Stern view from water.
CA-354-3	Bow view from starboard.
CA-354-4	View of Upper Deck and forecastle taken from wheel house roof, looking forward.
CA-354-5	Fire-suppression nozzle, Upper Deck walkway aft, looking to starboard.
CA-354-6	Cargo-handling pipes, starboard side of Upper Deck, looking aft.
CA-354-7	View looking forward from roof of after deckhouse.
CA-354-8	View looking forward along the length of the Upper Deck, taken from forward edge of the Boat Deck.
CA-354-9	View looking forward along the starboard side of the Upper Deck showing cargo-handling pipes, valves, and access hatches.
CA-354-10	Upper Deck seen from the wheel house roof, looking aft.
CA-354-11	Aft pump room controls, Upper Deck.
CA-354-12	View of Upper Deck, starboard side, looking to port, showing king posts, cargo-handling pipes and valves, and after side of bridge deckhouse.



*ESSO GETTYSBURG*  
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- CA-354-13 Forward side of bridge deckhouse seen from starboard.
- CA-354-14 View of starboard side showing bridge deckhouse.
- CA-354-15 Poop deck, looking forward, with anchor and mooring windlasses in foreground.
- CA-354-16 Wheel house, looking to port.
- CA-354-17 View of wheel house equipment, radar console on left and Sperry Gyropilot on right.
- CA-354-18 First Assistant Engineer's office, Boat Deck Aft, port side.
- CA-354-19 Captain's stateroom, bridge deck house, Upper Bridge Deck, starboard side.
- CA-354-20 Officers' Lounge, Boat Deck Aft.
- CA-354-21 Mess room, Poop Deck
- CA-354-22 Boilers, view looking to port.
- CA-354-23 Engine room, looking forward. Reduction gear sits in the foreground, with the low-pressure turbine forward of it to port and the high-pressure turbine to starboard.
- CA-354-24 Engine room, starboard side, looking forward across the turbines.
- CA-354-25 Shaft alley, looking aft.
- CA-354-26 Steering gear compartment, starboard side, looking aft.
- CA-354-27 Aft pump room, looking down.
- CA-354-28 View looking forward between boilers toward combination control and gage board in distance.

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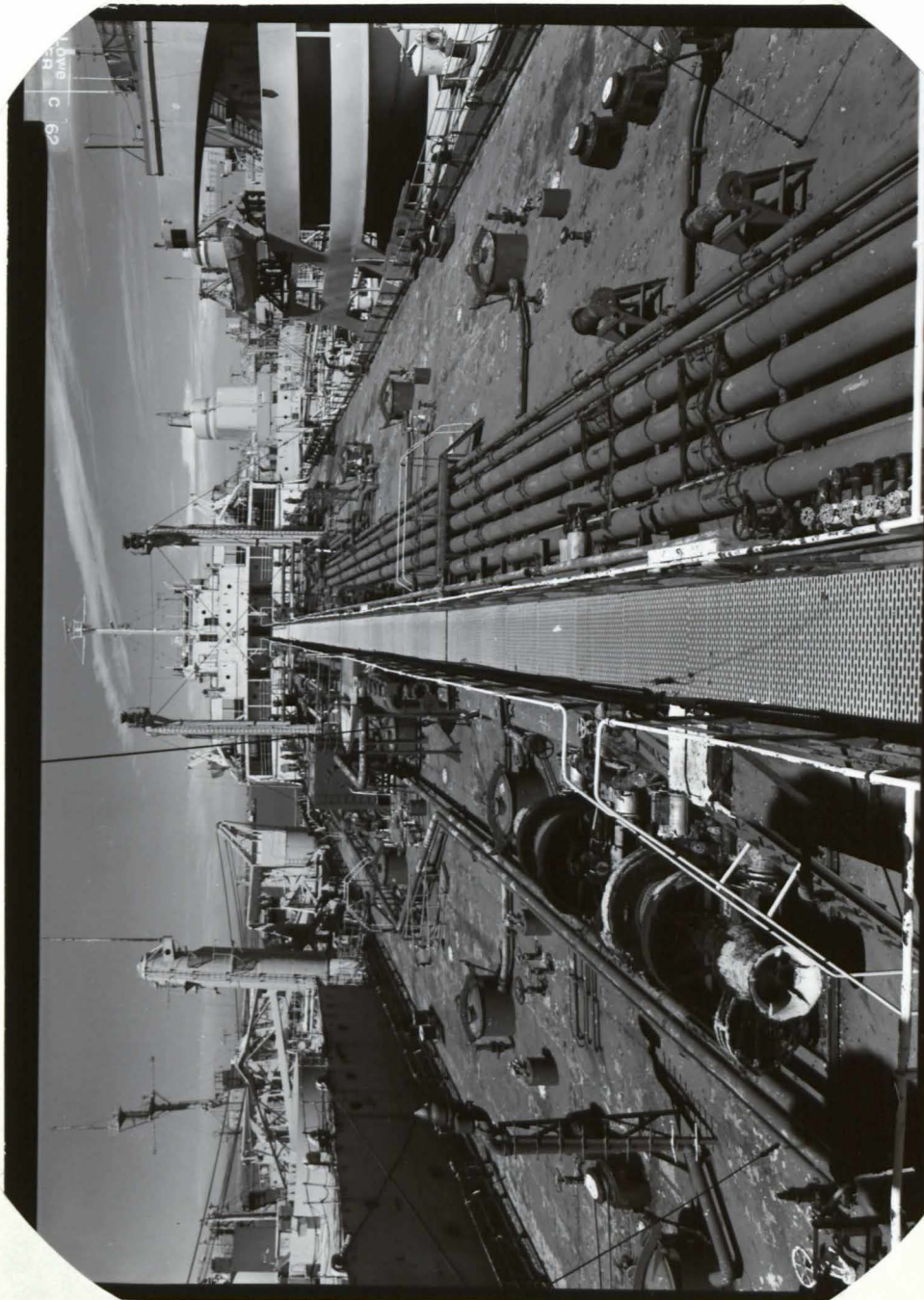
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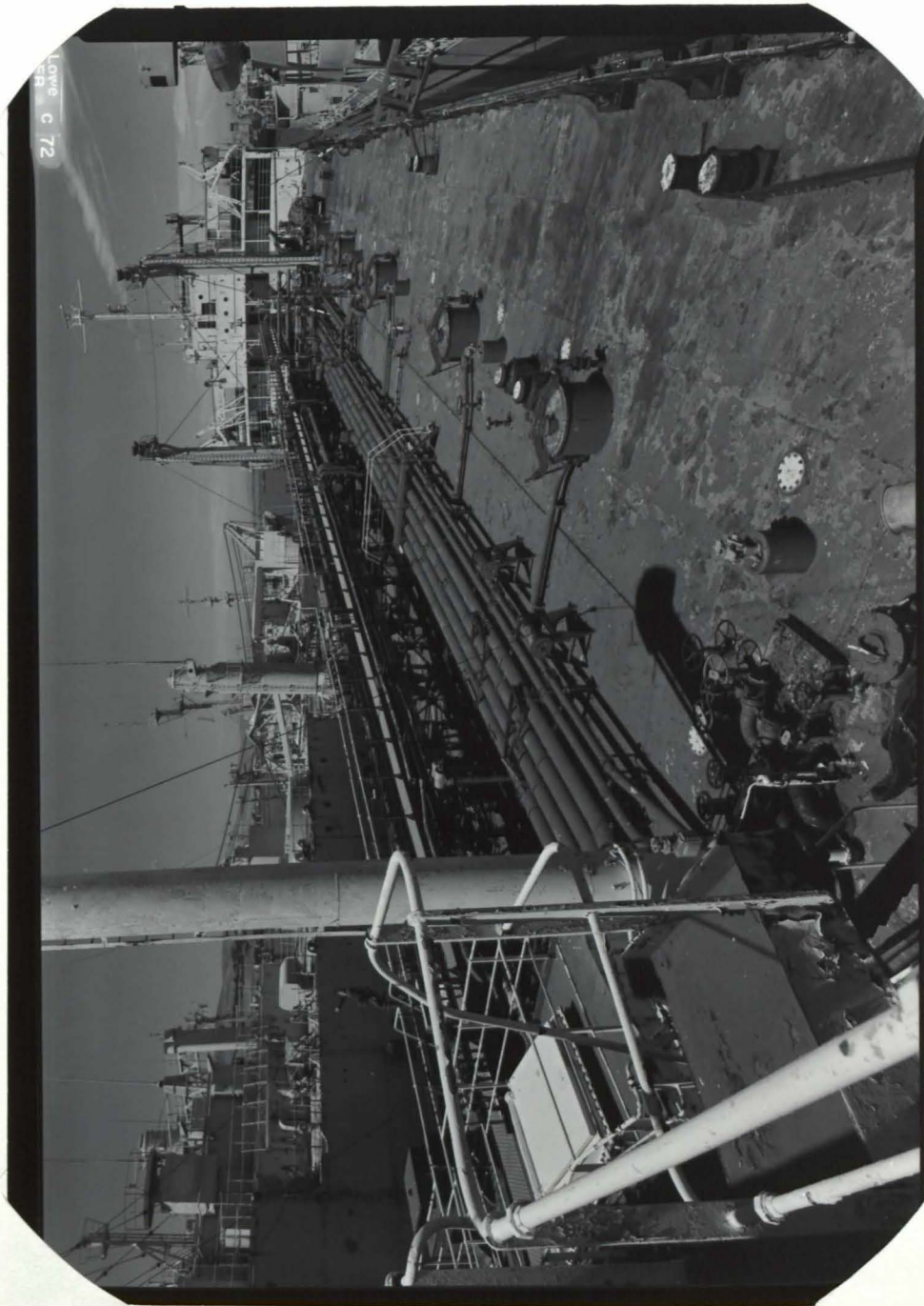


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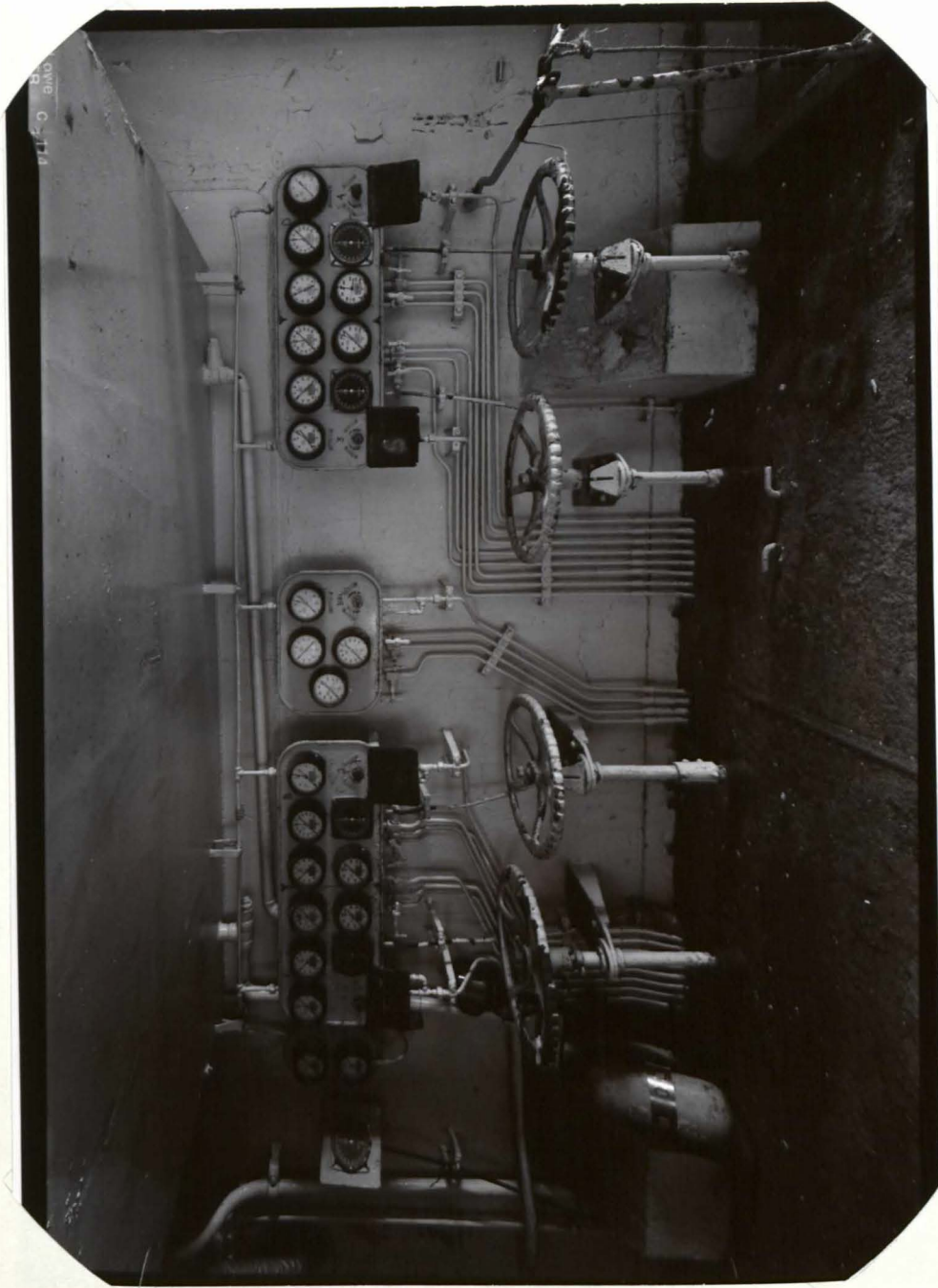


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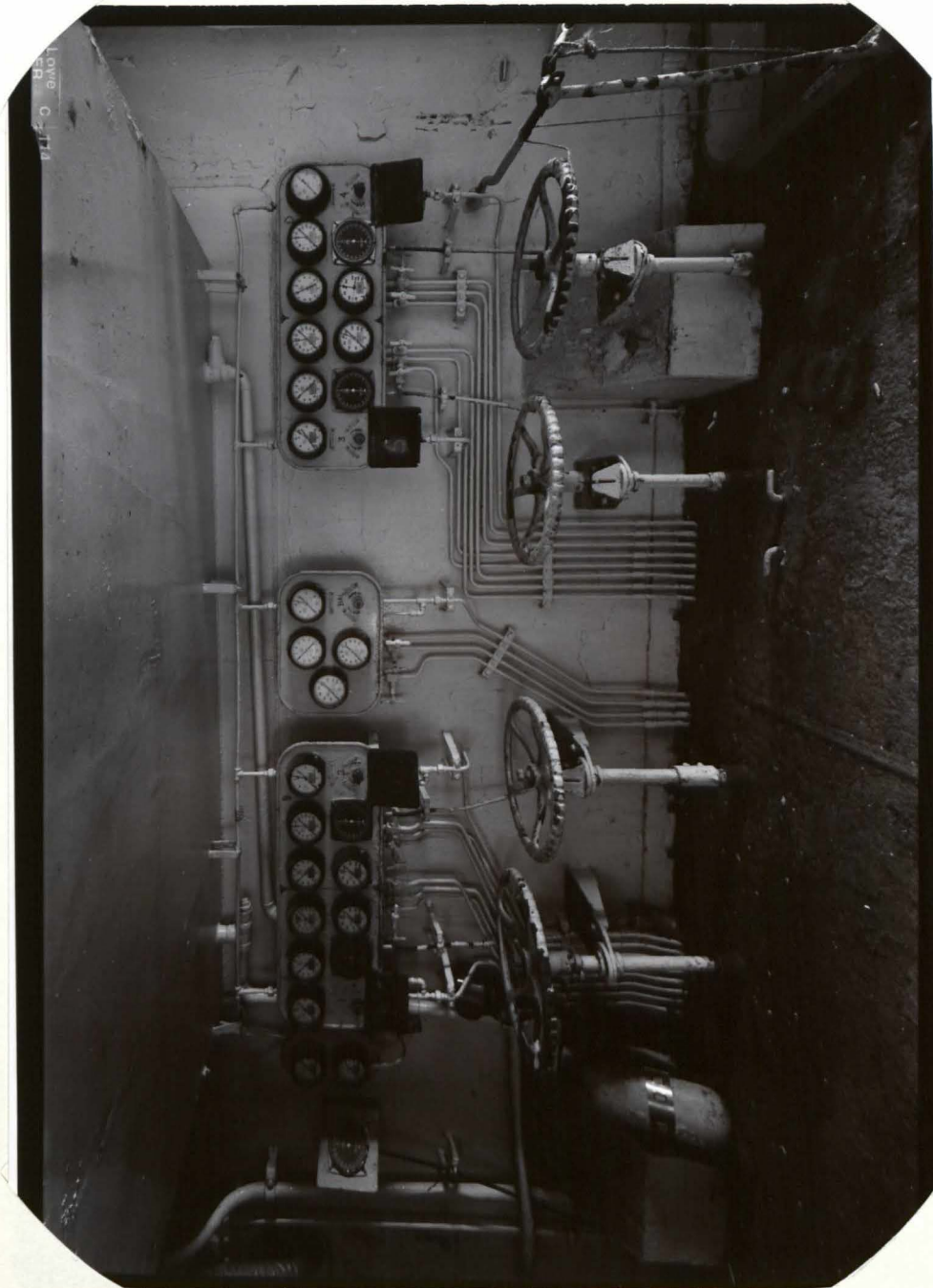


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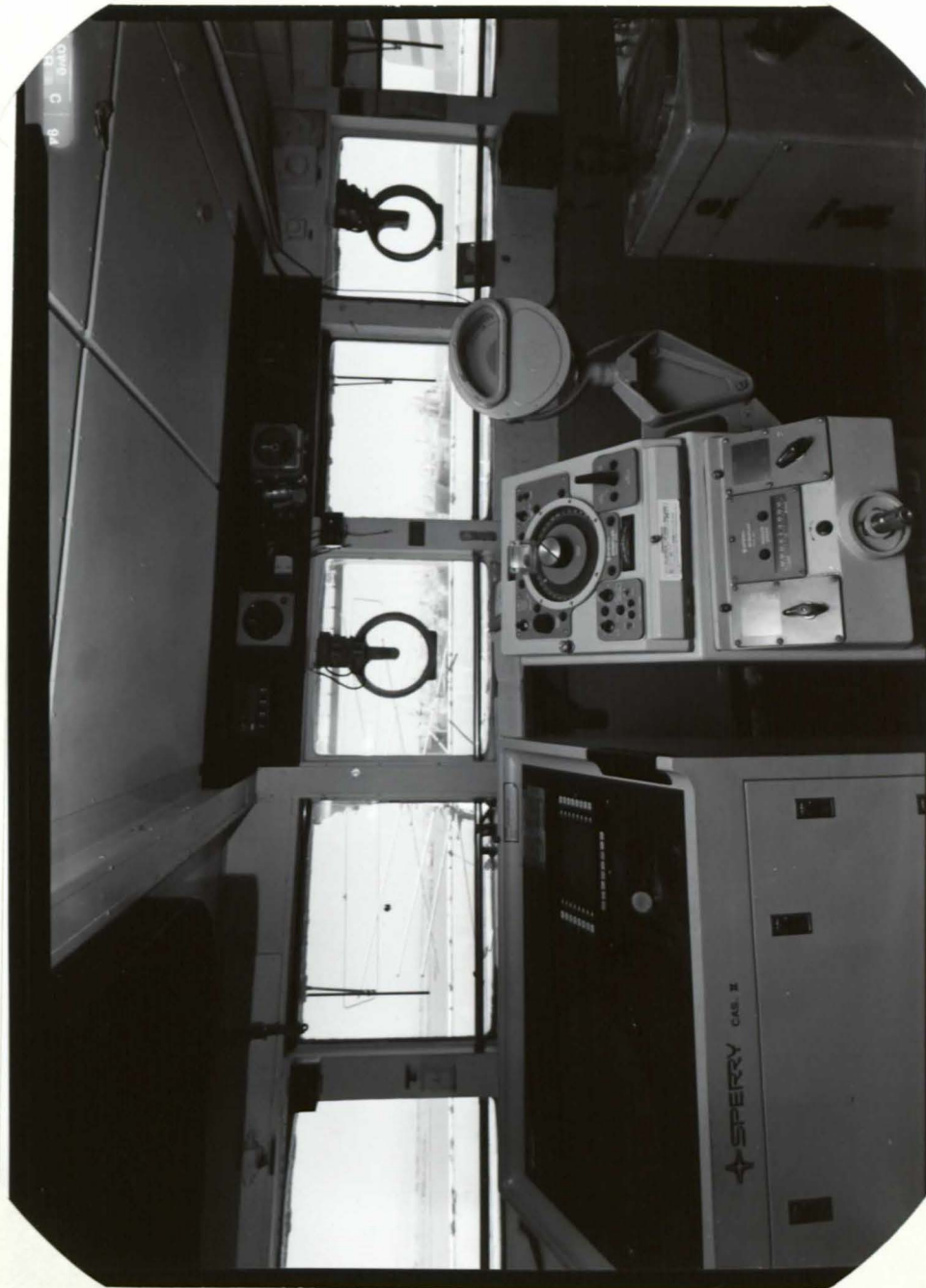
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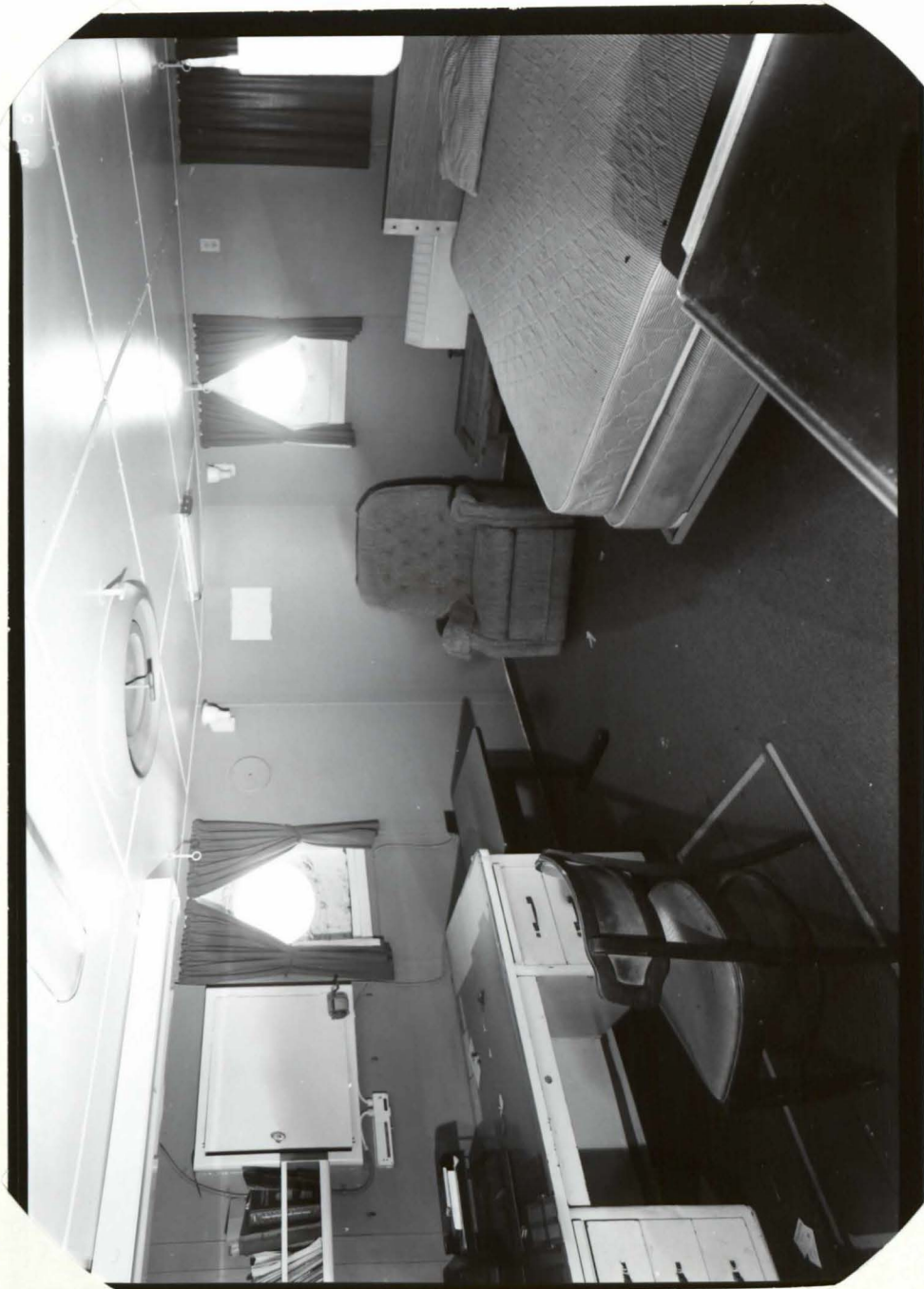
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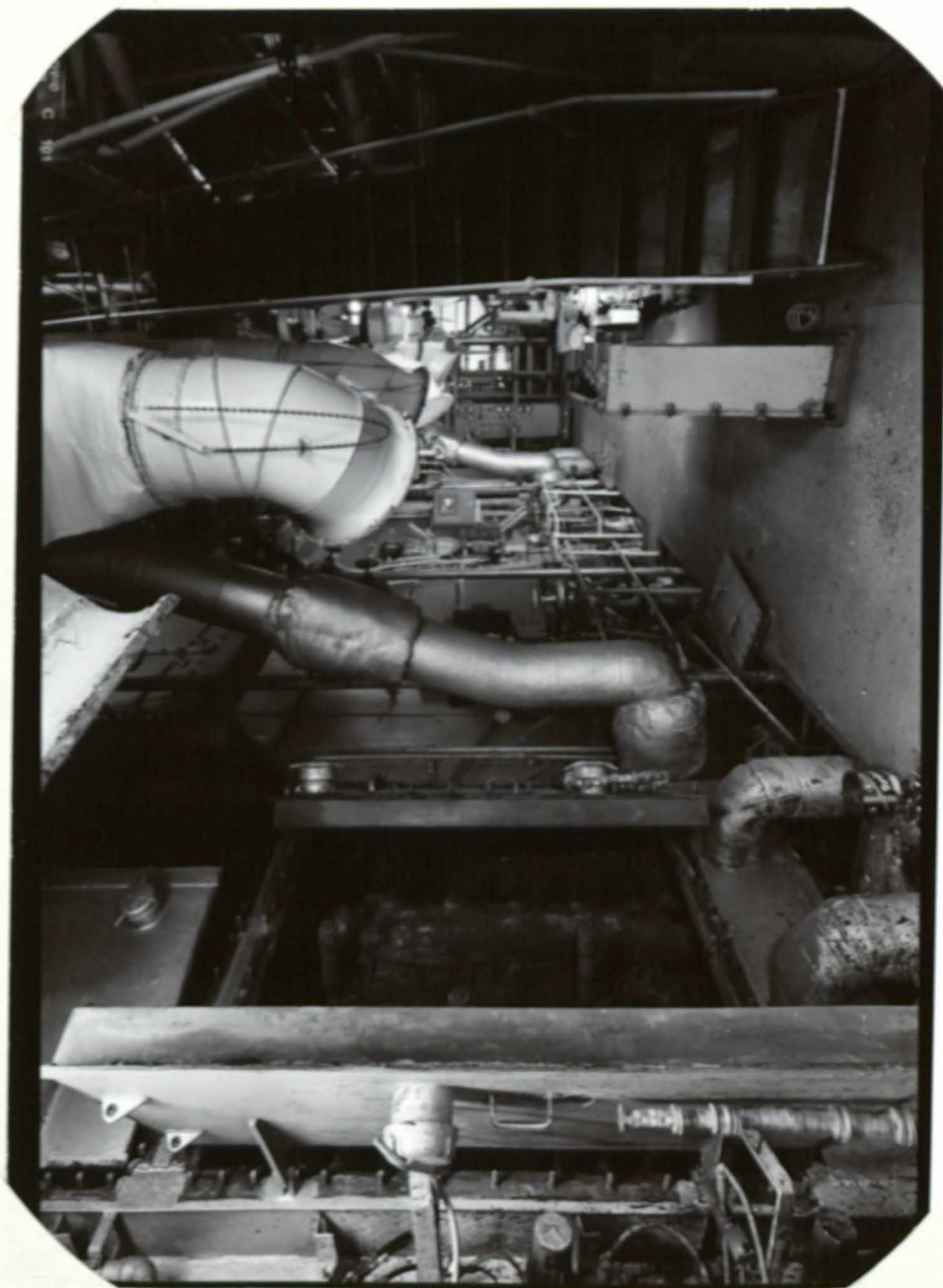
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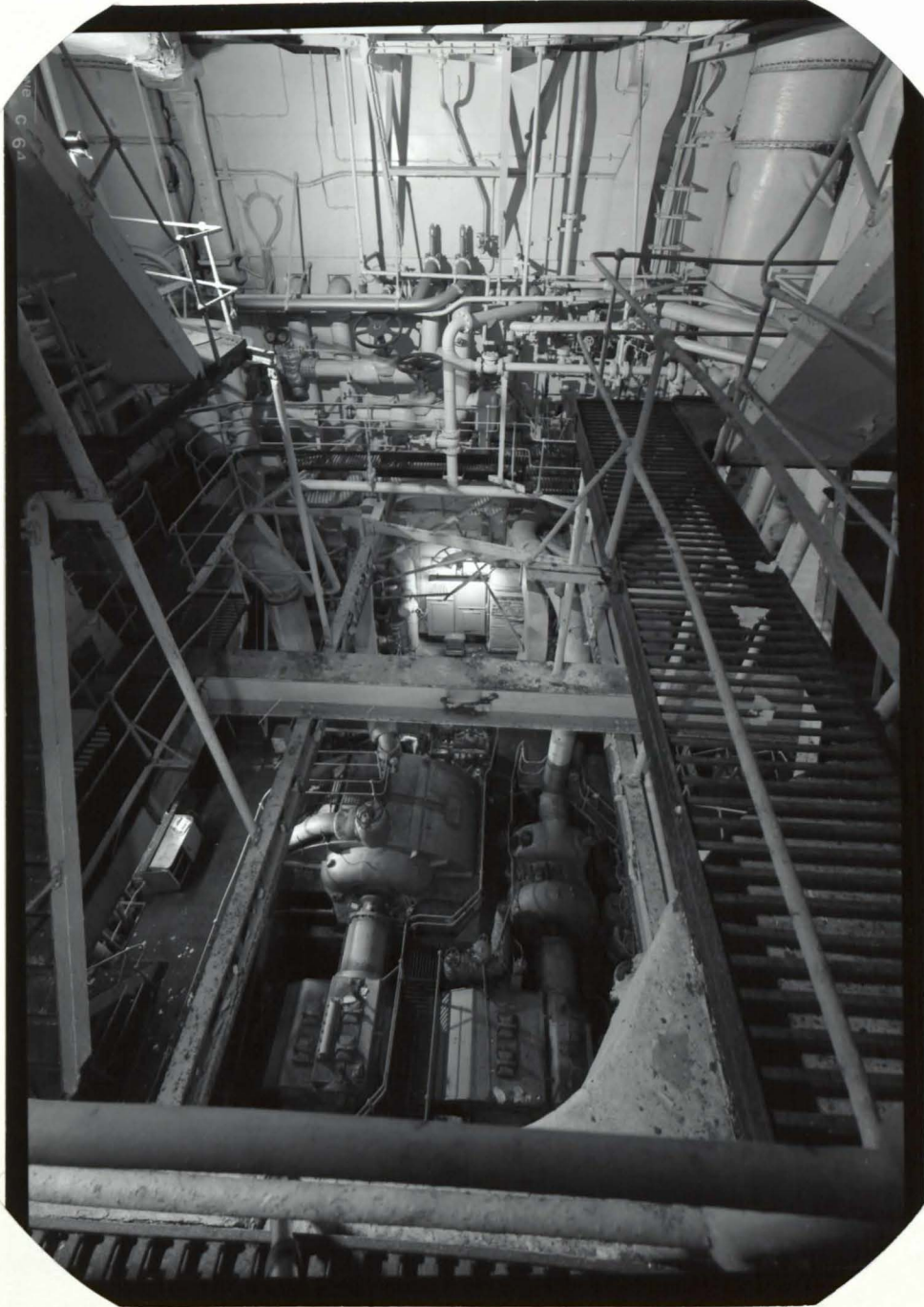
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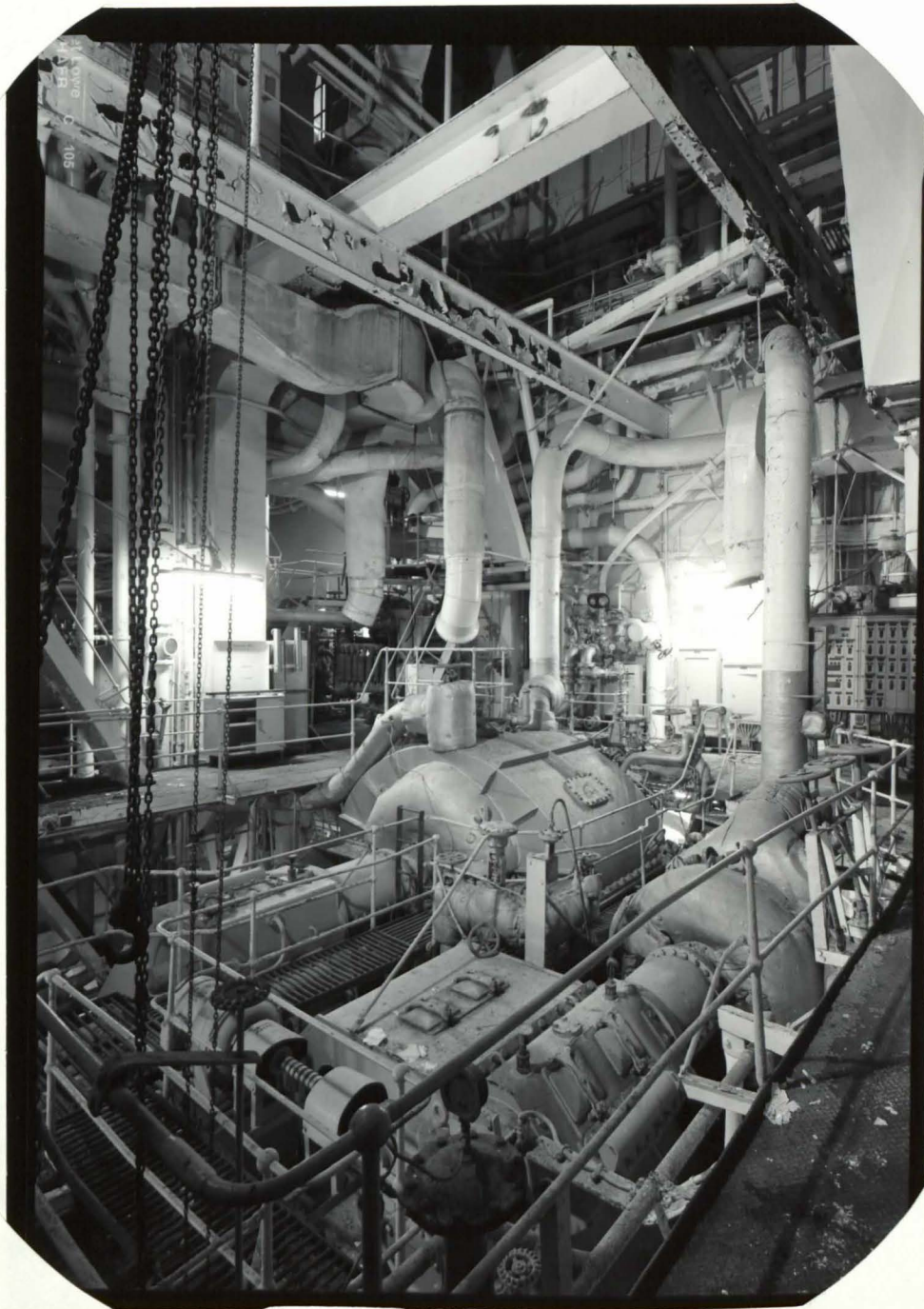
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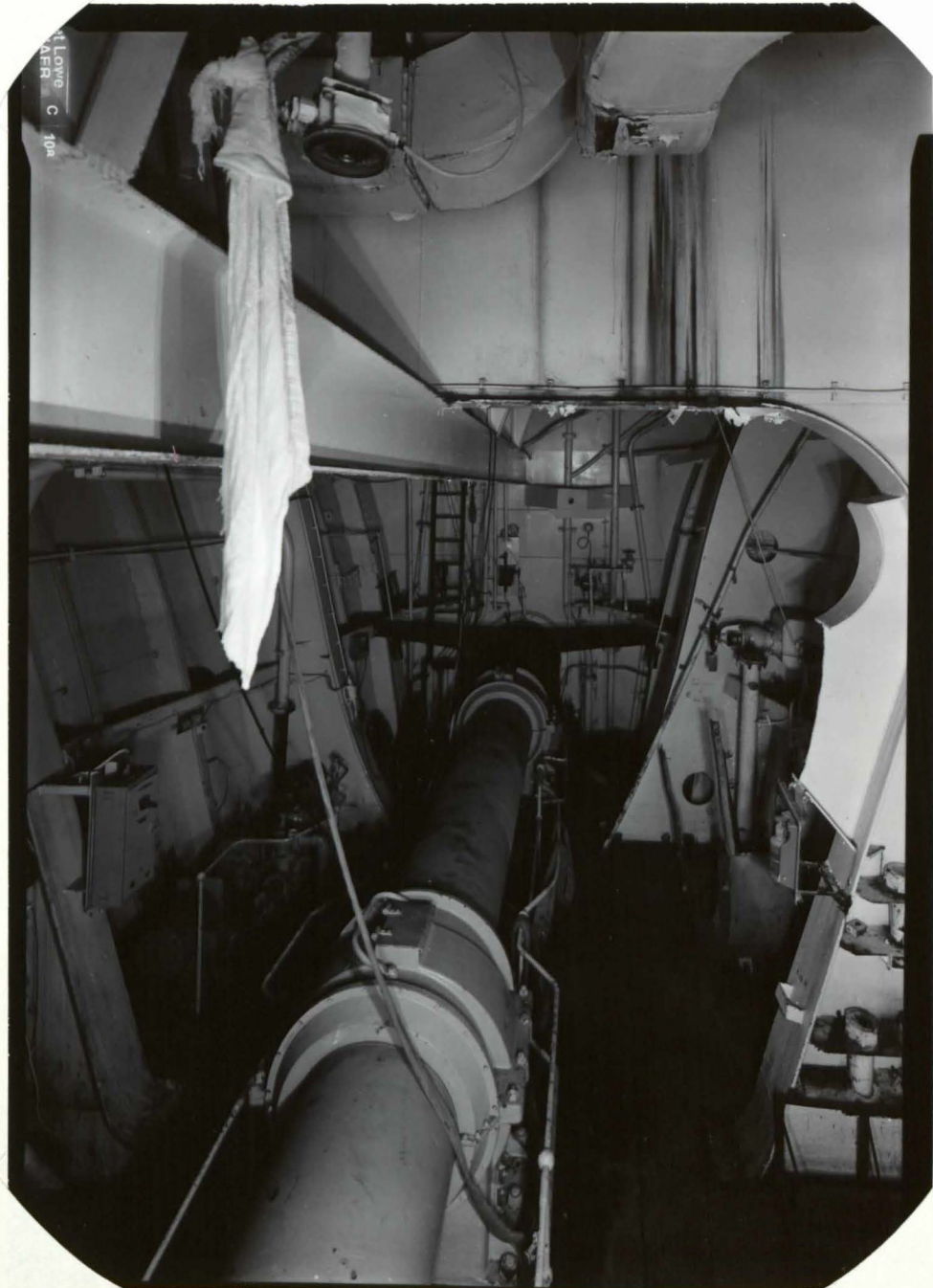
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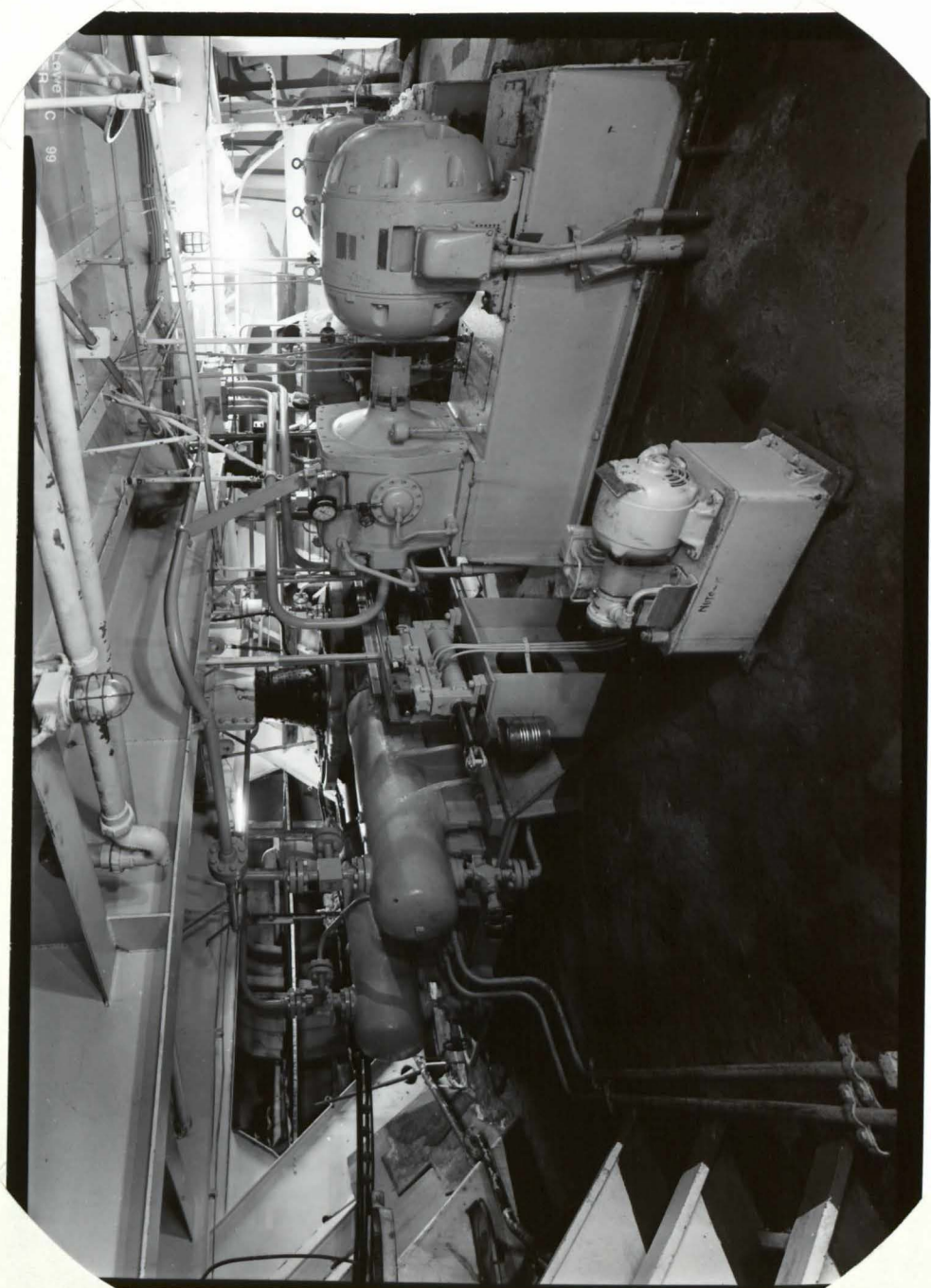
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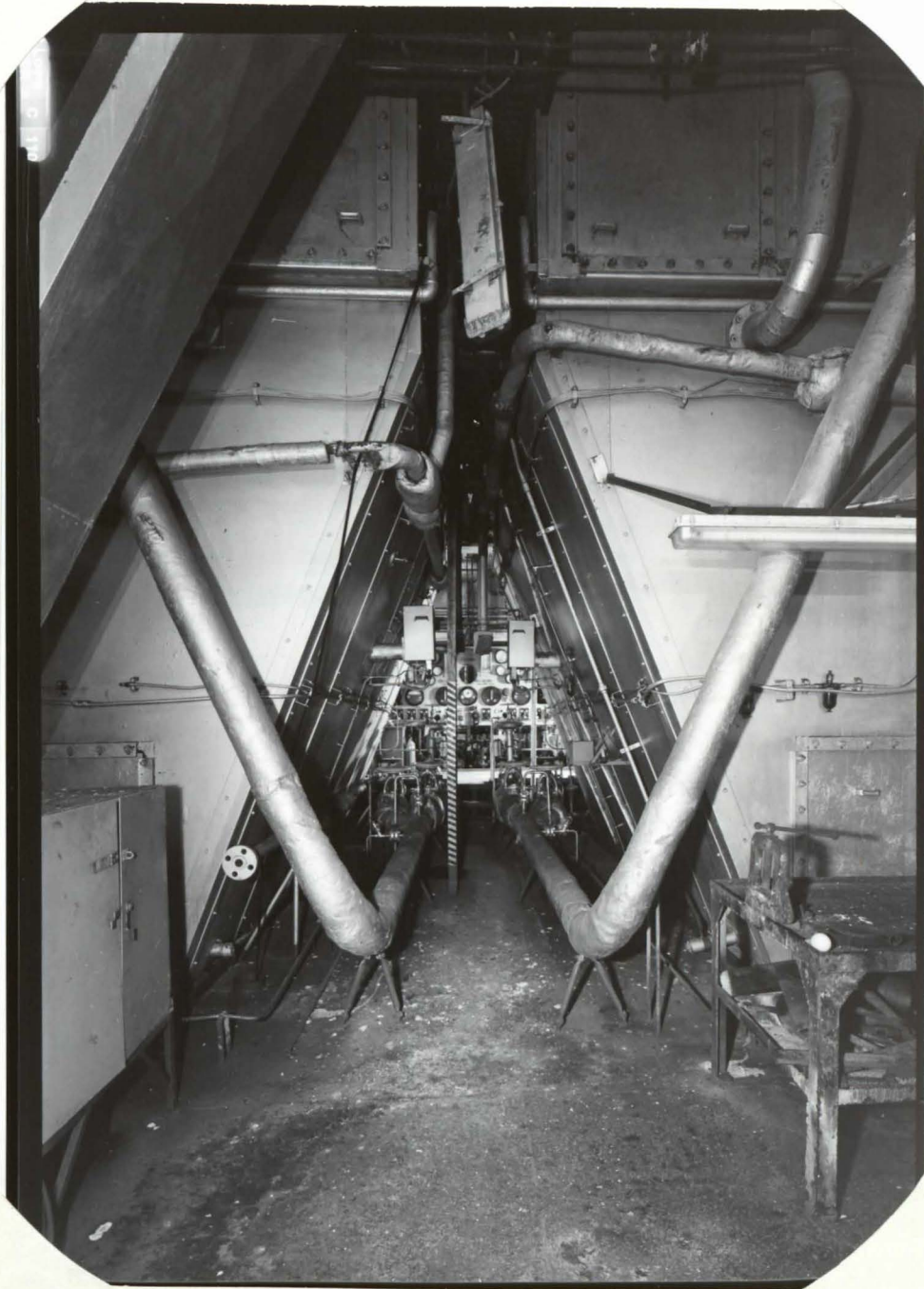
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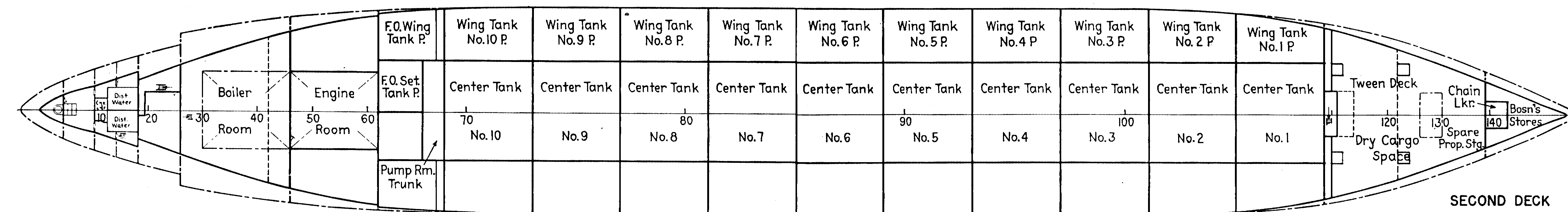
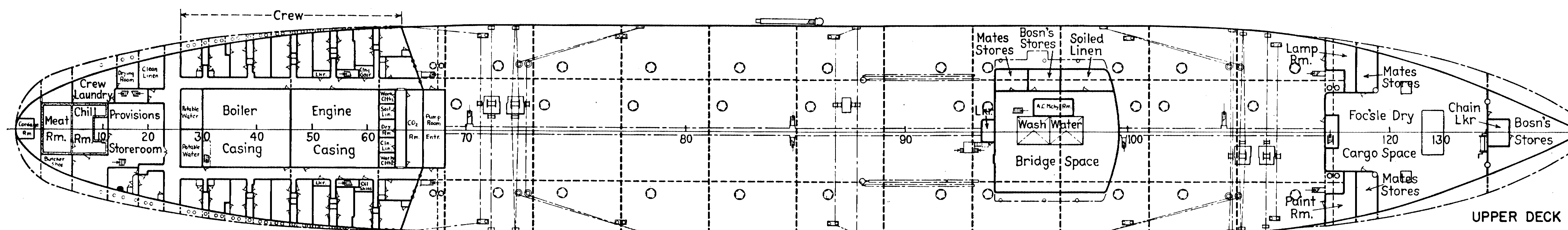
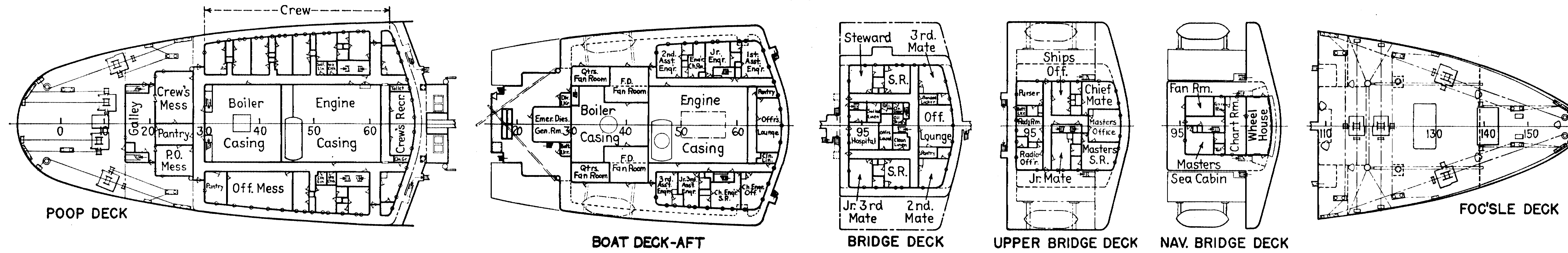
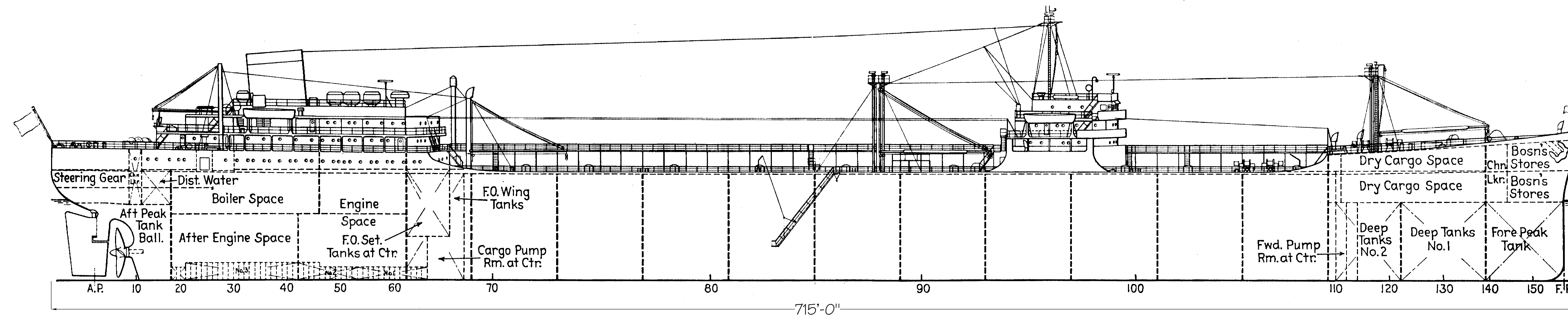
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# Esso Gettysburg

# General Arrangements

SCALE: 1/32" = 1'-0"  
 0 20 40 80 FEET  
 0 5 10 20 METERS



General arrangement plans of the *Esso Gettysburg*.

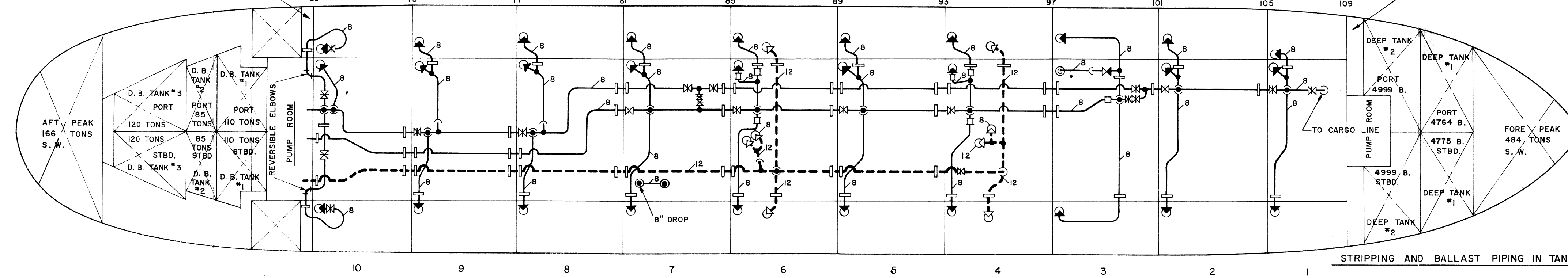
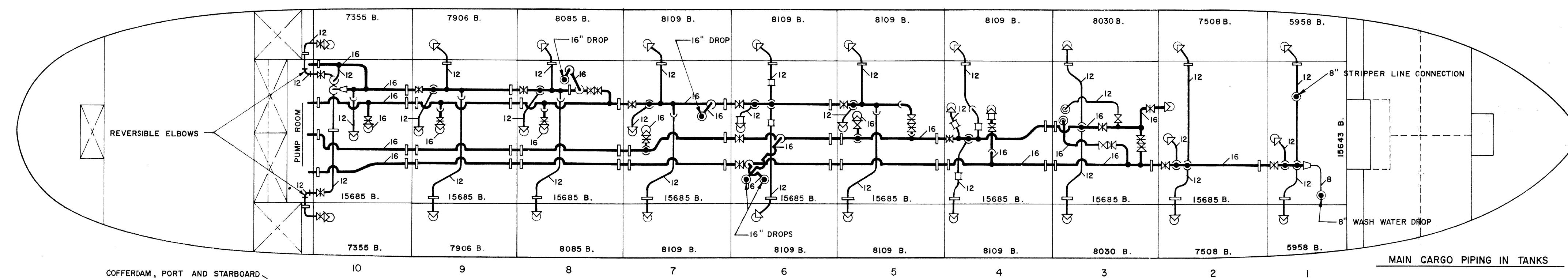
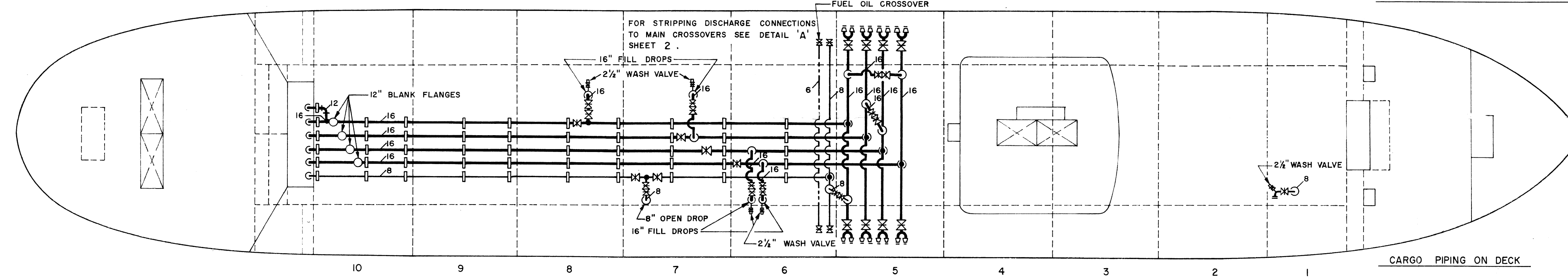
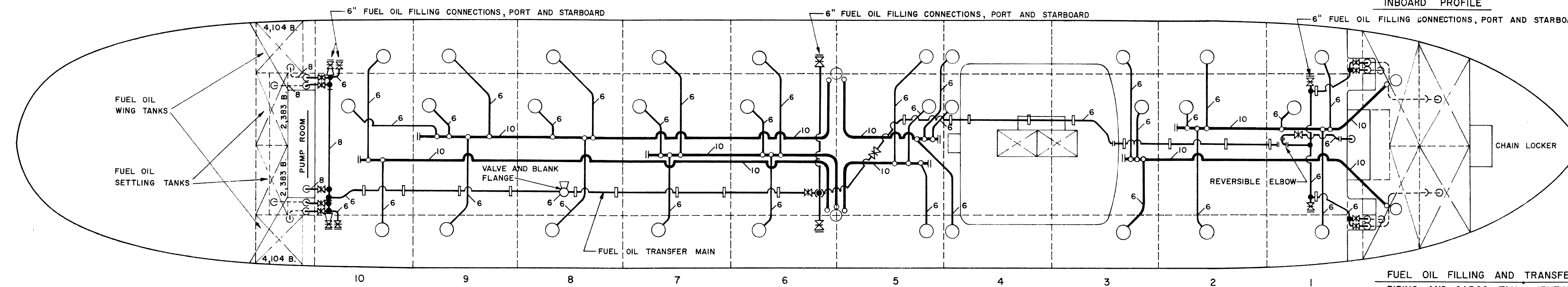
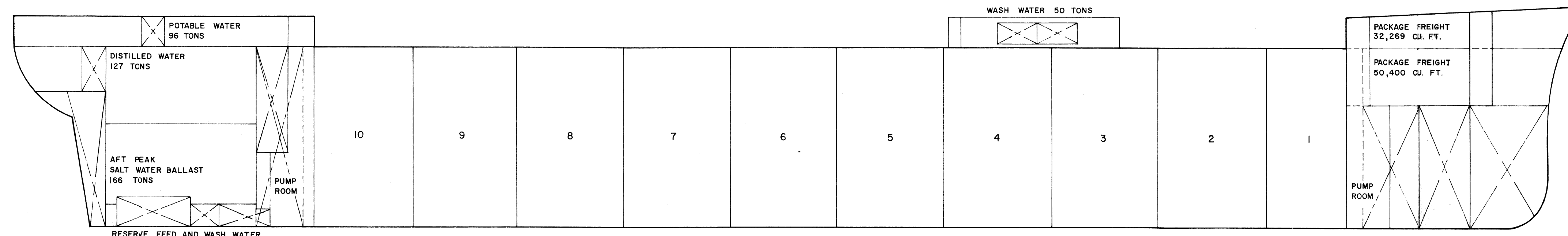
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 BENICIA VICINITY  
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# Esso Gettysburg

# Pipe Schematics

Not drawn to scale



**NOTES**

ALL STRIPPING SYSTEM SUCTION VALVES IN CARGO TANKS ARE STOP-CHECK-LIFT TYPE. CAPACITIES GIVEN IN BARRELS ARE AT 98% FULL, THOSE IN TONS (2240 LBS.) ARE AT 100% FULL.

TEST PRESSURE—CARGO SYSTEM—225 PSIG—FUEL OIL SYSTEM—200 PSIG.

VALVE BODY MATERIAL—CARGO SYSTEM IN TANKS AND ON DECK—NODULAR CAST IRON, BALLAST SYSTEM—CAST IRON, FUEL OIL SYSTEM ON DECK—CAST STEEL.

WASH VALVES—BRONZE, LINE BLINDS—STEEL. SHAND & JURS MODEL ST 10000 TANK LEVEL GAUGES ARE INSTALLED IN ALL CARGO TANKS. WEIGHTED ULLAGE COVERS SET AT 2 PSIG ARE FITTED TO ALL TANK TOPS. PRESSURE/VACUUM VALVES ARE VAC-REL MODEL SET AT PSIG. PRESSURE AND PSIG VACUUM VENT RISERS ON KING POSTS HAVE SPILL VALVES SET AT PSIG AND AT THE FLAME ARRESTORS.

ALL FITTINGS, WELDED OR CAST, ARE OF STEEL.

GASKET MATERIAL—HYDROL, 1/16" THICK.

- SYMBOLS**
- ⊗ GLOBE VALVE
  - ⊘ ANGLE VALVE
  - ⊕ STOP LIFT CHECK VALVE
  - ⊖ GATE VALVE
  - ⊙ STOP CHECK VALVE
  - ⊚ ANGLE STOP CHECK VALVE
  - ⊛ RELIEF VALVE
  - ⊜ PLATE STRAINER
  - ⊝ SPOOL PIECE
  - ⊞ REDUCER
  - ⊟ 3 BOLT HAMER BLIND
  - ⊠ VISIBLE WEDGE HAMER BLIND
  - ⊡ SUCTION BELL MOUTH
  - ⊢ PIPES JOINING
  - ⊣ PIPES CROSSING
  - ⊤ PIPES TURNING DOWN
  - ⊥ PIPES TURNING UP
  - ⊦ BLANK FLANGE
  - ⊧ SOFT SEAT VALVE
  - ⊨ SPECTACLE PLATE
  - ⊩ PLUG COCK
  - ⊪ WASH VALVE
  - ⊫ DRESSER COUPLING
  - ⊬ FLANGED JOINT

NOTE: THIS DRAWING WAS TRACED FROM A SCAN OF AN ORIGINAL DRAWING LOCATED ABOARD THE SHIP. THE DIMENSIONS AND ARRANGEMENTS WERE NOT VERIFIED IN THE FIELD.

**ESSO GETTYSBURG**  
DRAWN: \_\_\_\_\_ DATE: \_\_\_\_\_  
CHECKED: \_\_\_\_\_