ITEM 24- BOILER REPAIRS: (LNP) (Cont'd)

Renew and properly anchor all insulating blocking, insulating cement and the mild steel sheathing in the superheater header vestibules in their entirety on all four (4) boilers.

Renew all insulating blocking and insulating cement between the superheater headers.

Remove all cross boxes in way of repairs, renew all deteriorated insulation and sheathing in cross boxes, fair up access door framing and upon completion of vestibule repairs reinstall cross boxes and secure by welding.

Renew the packing in superheater nozzle casing penetration soot sealing boxes, three (3) per boiler, total (12) boxes, using loose mineral wool fibers packed tight.

Renew the horizontal casing soot seals on both the inboard and outboard sides of the steam drums, vee out and reweld broken welds on steam drum bars and make gas and soot tight. Renew all steam drum insulation in way of repairs and cover entire top and end insulated surfaces of steam drums with new asbestos cloth properly sized.

ITEM 25 - BOILER UPTAKE INSULATION: (LNP)

Accomplish the following boiler uptake insulation and insulation covering renewal on combustion engineering number 1 and 2 boilers (P2-SE2-R1 Design) forward engine room.

Renew approximately one hundred (100) square feet of insulation and four hundred (400) square feet of insulation covering; defective area to be designated by the chief engineer.

Prior to installation of insulating material, thoroughly clean by wire brushing all uptake surfaces in way of removed insulation to bare metal and apply two (2) coats of heat resistant paint to all clean metal surfaces.

Insulating material shall be of the same type and thickness as original installation, installed to a smooth finish and properly secured in place.

Insulating covering material shall be asbestos cloth properly sized, secured and sealed.

ITEM 26 - WATER DRUM INSULATION; RENEWAL OF: (LNP)

Accomplish the following on numbers 1-3 and 4 boilers :

Remove all remaining insulation from the under side, and the front and rear caps of each water drum.

Wire brush water drum surfaces in way of removed insulation to bare metal and apply two (2) coats of heat resistant paint to all cleaned surfaces.

Install new clas "C" insulation blocking meeting specification MIL-I-2819A same thickness as original installation, properly wired and secured in place. Apply an overall coating of insulation cement trowelled to a smooth surface and cover with asbestos cloth properly sized.

Renew the sheet metal surrounding and the plate covering the manhole plate on the front of each water drum, including new asbestos pads in way of manholes.

ITEM 27 - BOILER BRICKWORK: (LNP)

Accomplish the following refractory repairs on Nos. 1, 2, 3 and 4 C.E. boilers P2 design:

On Boilers Nos. 1, 2, 3 and 4

Renew the plastic burner fronts, including insulation and anchor bolts, in their entirety. Each burner angle shall be formed and checked to angle 35 degrees with metal sweep, and proved concentric and centered on the centerline of the burner atomizer in the presence of both the MSTS inspector and chief engineer.

Install six (6) anchor bolts meeting spec. MIL-B-15382 on each side of the tie bars and the section of the support plates below the bottom element on both the front and rear support plates (a total of plates (a total of twenty-four (24) anchor bolts per boiler).

Install castable refractory meeting spec. MIL-C-717, in sufficient quantity to provide protection for the exposed sections of the support plates and tie bars below the superheater elements.

(Continued)

ITEM 27 - BOILER BRICKWORK: (LNP) (Cont'd)

Renew the top course of firebrick in the furnace floors, including chrome ore over water drum. Prior to installation of firebrick, level off floor, using firebrick 3/8 to fine, spec. MIL-B-15606, Class "B".

Renew the chrome ore corbels with NO water or foreign material added.

Renew the castable refractory in the rear outboard furnace corner. Repair the insulation and reset the bottom fire tile in the economizer soot box front wall.

Form up and pour castable refractory MIL-C-717B flame baffles in the cluster formed by three (3) "B" row and two (2) "C" row screen tubes in way of each superheater support plates, (two (2) support plates per boiler). New flame baffles to entirely cover all support plate clamps and the front edge of support plates and extend from water drum up to the top of each support plate.

Reinforce baffle material by wrapping Ni-Chrome wire 14 GA Bwg. around and criss cross between tubes, equally space 9" apart before pouring.

Expansion joints are not required.

All materials shall meet the following specifications as amended and approved:

Castable Refractory	MIL-C-717B
Chrome Ore	MIL-P-15384B
Plastic	MIL-P-15731B
Firebrick C. "B"	MIL-B-15606C
Insulating Brick	MIL-I-16008A
Insulating Block, Cl "C"	MIL-I-2819A
Insulating Cement, Cl "B"	MIL-C 2861
Mortar	MIL-M-15842A
Anchor Bolts	MIL-B-15382B
Detrick Tile	Manufacturer's Design

Jack hammers SHALL NOT be used in removing refractories.

Item 28 - BOILER HEADER DRAIN NIPPLE: (LNP)

Accomplish the following repair to number 4 combustion engineering boiler, P2 design.

Remove the existing side waterwall header drain nipple, retap drain hole, install new nipple, material to be equal to or better than original equipment and seal welded by certified welder. Install a new 600 PSI - 3/4" drain valve, fabricate and install new drain line using extra heavy pipe and install packing gland around the drain line through boiler casing.

Perform hydrostatic test to the satisfaction of the Coast Guard, MSTS inspector and chief engineer.

Replace all removals.

ITEM 29 - UNFIRED PRESSURE VESSELS: (LNP)

Open-up and thoroughly clean all unfired pressure vessels throughout the ship for U.S. Coast Guard inspection, with the exception of the main evaporator. When passed by U.S. Coast Guard and MSTS inspe ctors, close all units and prove tight.

Set all relief valves to lift and reseat at manufacturer's design pressures as required by U.S. Coast Guard Rules and Regulations as amended and approved.

Leave in ready-to-use condition.

Hydro-test as required where internal inspection is not possible.

ITEM 30 - D. C. HEATERS: (LNP)

Open-up the D.C. heaters in Nos. 1 and 2 engine rooms for U.S. Coast Guard inspection and accomplish the following repairs: Total two (2) heaters.

Clean the interior of the DC heaters to clean metal, including swash plates and steam and water chambers. Free-up and adjust the ball float linkages. Renew defective baffles and swash plates.

Paint the interior of the DC tanks with two (2) coats of apexior No. 1 or equal.

ITEM 30 - D. C. HEATERS: (LNP) (Cont'd)

Open-up spray nozzles, clean and lap in. Free-up the valves and replace defective springs and set valves to proper tension. Open-up the vent condensers, clean the tubes and replace defective ferrules and packing. Hydro test the tube nests and roll leaking tubes. Retest and prove tight.

Remove the safety and relief valves from ship to shop. Open, lap in, assemble and set to designed pressures. Open-up the swing check valves, clean and free-up.

Remove the spill-over valves and overflow traps, from ship to shop. Disassemble spill-over valves and thoroughly clean all parts for inspection. Grind in the double seats and discs. Reassemble valves, using new packing and gasket material. Shop test at operating temperature and adjust valves to manufacturer's specifications. Reinstall valves on ship. Close up and test heaters, renewing all gaskets.

Completely overhaul the 4-inch overflow traps and components and reinstall on ship.

Clean, service, calibrate and put in designed operating condition the DC heater level indicators, including DC heater gauges on engineers throttle boards.

On completion of survey and work close up all removals and leave units ready-for-use, proving all vents free and clear.

DATA: Mfr., Cochrane Corp. - Dwg. G-1238 - Type Deaerating Feed Heater
Capacity, 78000 PPH, from 175° to 240° F.
Number of tubes, sixty-three (63) size 3/4" OD x 18 BWG x 2' 5-5/8" Long Copper
Relief Valve: 2-½" lonergan model ODP set at 25 PSI

ITEM 31 - WOOD WEATHER DECK-RENEWAL OF: (AS) DECK

Accomplish renewal of entire wood weather deck on 02 level between frames 75 - 140 and from centerline outboard to port and starboard sides of superstructure.

Remove wood and hold down bolts to steel deck and clean steel deck free of rust, scale, dirt, grease and debris. Apply a heavy coat of rust preventative compound "NO-OX-ID", Type GGG or equal as approved.

JH/fr Removed all wood 03 level

(Continued)
PATRICK

ITEM 31 - WOOD WEATHER DECK RENEWAL OF: (AS) (Cont'd)

Accomplish repairs to steel deck in way of deteriorated areas by installing 10.2 # seal welded doubler plates (approximately 300 square feet involved) in way of same.

Doubler plates shall be fabricated from mild steel with well rounded corners and plug welded on 6-inch centers, staggered. Prior to installation of doublers apply two (2) coats of red lead primer, MSTS code 52 to faying surface of doubler and areas in way of same. V See Boat Davits

Install new Douglas Fir, grade "Ship Decking" as outlined in the west coast lumberman's, grading rules.

Thickness and width of planking and margin pieces shall be similar to existing when new. Sides of new planking shall be planed for snug fit and shall be rabbitted on top of one edge to provide a vertical seam of 1/4-inch width and a 3/4-inch depth when planks are installed.

New planking and margins shall be installed with Nelson studs, or equal and wood plugs for same, similar construction to existing when new with the exception of seams as heretofore spe cified.

Clean deck seams and apply one (1) coat of "CHEM SEAL" primer No. 2703 as manufactured by "CHEM SEAL CORP.", or equal to sides of seams. Allow thirty (30) minutes drying time and again apply another coat of the primer and allow to dry not less than four (4) hours nor more than twenty-four (24) hours. Fill the above prepared wood deck seams with "FLO-CHEM" No.1-302, or equal. "FLO CAULK" shall conform to the requirements of specification MIL-C-18255 as last amended.

Caulking compound and the primer shall be from the same manufacturer.

After curing of the caulking compound, remove the excess materials and sand new deck to a smooth surface.

Install oak wearing strips at ladder landings and access openings as original.

During inclement weather the contractor shall properly protect area during accomplishment of the aforementioned work to prevent entrance of moisture into open seams, butts and under planking.

ITEM 32- CARGO WINCHES (AS) (BK) (JH) (WR-2)

DECK

Remove four (4) double drum, double gypsy cargo winches, two (2) for the no. 2 hatch 01 deck, frame 59, port and starboard side, and two (2) for the no. 5 hatch frame 159, port and starboard side and accomplish the following:

All interior and exterior surfaces of winch, including motor, guards, levers, brackets, foundation and all other components shall be blasted to clean "white" metal as defined by the Steel Structures Painting Council in "Surface Preparation Specification No. 5, Blast Cleaning to White Metal." Particular attention shall be given to pitted or irregular surfaces to assure a thorough cleaning. Heavily coated or scaled surfaces shall be scaled with hand pneumatic tools prior to blasting. Surfaces which have been blasted and then allowed to oxidize or "turn" prior to being coated, shall be sandwashed before coating.

All abrasive and dust shall be removed from blasted surfaces by means of industrial type vacuum cleaners.

Provide adequate protection of machine finished surfaces and electrical components and parts.

NOT DONE AS OF 1/25/67

Upon completion of repairs and renewals, re-sandblast as specified above and apply inorganic zinc coating as approved. Coating application shall be in strict accordance with manufacturer's instructions.

PAINTING MACHINERY

Apply inorganic zinc coating to all normally painted surfaces such as exterior of motor housing winch base, winch base sides, gear guards, etc. Coating shall be applied in strict accordance with COMSTS Instructions 9190.4A enclosure (6).

After drying time of primer coat apply two (2) coats of haze gray as recommended by manufacturer of applied coating system.

GENERAL REPAIRS EACH WINCH
MECHANICAL:

Remove drum shaft to shop. Check shaft for true and correct runout as found. Polish all shaft journals. Machine minimum from brake drum wear surfaces to obtain true diameters.

Replace with new, all journal bearing bolts.

Take clearances of all shaft bearings with the journals and refit to design. Renew intermediate shafts and shaft bushings, packings, gaskets and oil seals.

(CONTINUED)

ITEM 32- CARGO WINCHES (AS) (BK) (JH) (WR-2) (Con't)

Straighten bent brake foot levers and treadles.

Blow clear all lubrication lines upon assembly and pressure lubricate all parts, renewing all zerk fittings.

Install new cadmium plated springs to brake levers, shaft linkages, brake bands and renew supporting clips and eyebolts.

Hot galvanize brake bands. Replace with new, brake band and lining for mechanical and magnetic brake. Build up all worn holes in linkages and clevices and remachine to original design diameters. Renew all linkage pins, washers, nuts and cotters, using corrosion resistant steel material and upon reassembly, properly adjust same. Remove all lost motion.

Rope and brake guards shall be secured with bolts, studs and nuts. Guards shall not be secured by welding.

Build up by welding the worn ends of engaging jaws on drum and shifting clutches, dress same for proper fit. Check gears for wear and proper mesh, correcting deficiencies as directed.

Renew clutch blocks and pins. Refit all shaft keys and keyways. Machine a radius on clutch jaws to facilitate easy engaging.

ELECTRICAL

Install junction boxes on overhead below weather deck and new cable of the same or larger circular mic size from junction boxes to raised winches.

Hookup and test to approval of MSTS Inspector. Crop off and renew kick pipe to accommodate new installation.

Remove the four (4) existing winch foundations flush to deck. Install new foundations in way of removals, fabricated from 20.4# mild steel plate (flanged) with a gusset bracket at each hold down bolt to support same, height of new foundations shall not be less than 12-inches. All removals in way of foundation renewals shall be reinstalled as original installation.

Prime and finish paint new foundations and deck area under winches as follows. Remove all paint, rust, scale, grease and dirt, to bare metal apply one (1) overall coat of wash primer, MSTS Code 32 followed by one (1) coat of red lead primer, MSTS Code 52. Apply two (2) overall finish coats of paint in accordance with COMSTS Instructions 4750.1B

NOT DONE
SEE BOAT DAVITS

(CONTINUED)

JH/lm

PATRICK

ITEM 32- CARGO WINCHES (AS) (BK) (KH) (WR-2) (Cont'd)

Reinstall all removals in true alignment, using new gaskets, securements and seals.

Lubricate all moving parts make final adjustments, conduct an operational test to include a static test to the four (4) winches as required by the National Cargo Bureau Surveyor and prove units in good operation to the satisfaction of the MSTS Representative.

Services of the National Cargo Bureau Surveyor will be furnished by U.S. Government.

DATA: Mfg. Lakeshore Type SW-A Model 21 Ser. no. 6344, 6348, 6349, 6346

OFF SHIP ARE THESE THE RIGHT TYPE OF WINCH

ITEM 33- LIFEBOAT WINCHES (BK) (WR-13)

Remove and off load from ship two (2) (No 11 and No 12) lifeboat winches located O1 deck, frame 165, port and starboard side.

Scale and clean the foundation to bare metal.

Apply a wash primer, apply two coats of red lead MSTS Code 52 and a finish coat to match surrounding area. Repaint all disturbed areas.

Receive two (2) government furnished winches. Install units in true alignment equal to original, properly chocked with new galvanized securements.
Renew kickpipes equal to original when new.
Make final adjustments ready for testing in accordance with USCG Regulations as outlined in another item of these specifications.

DATA: Welin Type, BWB vertical with 25 HP motor.

JH/lm

ITEM 34- SOIL AND SCUPPER VALVES: (BK) (WR-54)

Open up, clean and prepare for examination by the USCG, and MSTSP Representatives a total of four single type and four (4) double type soil and scupper valves.

The single type valves are $6\frac{1}{2}$", the double type are approximately $5\frac{1}{2}$" and $6\frac{1}{2}$".

Valves are located at the following locations:

4-45-1	$6\frac{1}{2}$" Single Valve
4-98-1 & 2	$6\frac{1}{2}$" Single Valves
4-104-1	$6\frac{1}{2}$" Single Valve
4-59 & 60-1	$5\frac{1}{2}$" & $6\frac{1}{2}$" Double Valves
4-44 & 45-2	$5\frac{1}{2}$" X $6\frac{1}{2}$" Double Valves
4-59 & 60-2	$5\frac{1}{2}$" X $6\frac{1}{2}$" Double Valves
4-134 & 135-1	$5\frac{1}{2}$" X $6\frac{1}{2}$" Double Valves

On each valve, renew seats and discs and install new stainless steel hinge pins. Renew defective disc pads.

Clean to bare metal and paint interior of each valve with "apexior #3" or equal.

Free-up and lubricate operating rods where installed, repack stuffing boxes and close-up ready for services each valve with new bolting and new gasketing throughout.

ITEM 35- FUEL OIL HEATERS (BK)

Accomplish the following repairs and part renewals to the no. 3 fuel oil heater, exact location to be designated, in the fwd Eng. Room, by the MSTS Representative.

Using an approved method, chemically clean the no. 3 fuel oil heater removing all sludge and dirt. Hydrostatically test all elements locating all leaks in accordance with mfg. recommendation.

Renew one (1) defective heating element using ship furnished element.

Reassemble removals with new gaskets and securements.

Conduct an operational test and prove heater in good operating condition.

Renew insulation and lagging damaged in way of work.

DATA: MFG: The Grisson-Russell Co.
Type: G-Fin Fuel Oil Heater - DWG: No. 2674 Max. Press.
Shell 350 # Sq. Inch.
Tubes 450 degrees F. 8 passes per section
Heating surface per section 112 Sq. Ft.

JH/lm

ITEM 36 - NO. 3 D.B. PORT FUEL OIL TANK (WR-60): (LJF)

Accomplish the following work in No. 3 D.B. port fuel oil tank.

Tank will be chemically sea cleaned and pumped down to within limits of the ship's pumps prior to arrival.

Remove all remaining oil, sludge, solidified sludge, water and debris from tank and fuel lines.

Provide and post gas-free certificates certifying tank and lines gas free and safe for men to enter, prior to hot work.

Apply hydrostatic test to all heating coils and piping within the tank to 150 PSI.

Conduct a meticulous inspection during the hydrostatic test and mark all leaks and sections of piping showing excessive external deterioration and pitting found, submit a report of all leaking and deteriorated sections to the MSTS Inspector.

A. Renew approximately sixteen (16') ft. of 3/4 inch IPS schedule 80 steel steam supply piping serving the fuel oil tanks as designated by the MSTS Inspector.

B. Renew approximately eighty (80') ft. of 1½ inch schedule 80 fuel oil tank and heating coil piping located within the tank as designated by MSTS Inspector.

Upon completion of all repairs apply second hydrostatic test and prove tight to MSTS Inspector. When notified close up tank, renewing all man hole gaskets and defective or missing bolts, studs or nuts.

Apply an air test to tanks at not more than 2 pounds PSI.

DATA: No. 3 port D.B. fuel oil tank, fr. 60-78, tons 78 tons.

ITEM 37 - NO. 4 D.B. CENTERLINE FUEL OIL TANK HEATING COIL RENEWAL (WR-61): (LJF)

Accomplish all work to the No. 4 D.B. centerline fuel oil tank heating system, as hereinafter specified.

Nos. 4 and 5 D.B. fuel oil tanks will be chemically sea cleaned and pumped down to within limits of the ship's pumps prior to arrival.

Remove all remaining oil, sludge, solidified sludge, water and debris from tanks and fuel lines.

Provide and post gas free certificates certifying tanks safe for men to enter, prior to hot work.

(CONTINUED)

ITEM 37 - NO. 4 D.B. CENTERLINE FUEL OIL TANK HEATING COIL RENEWAL (WR-61):(LJF) (CONTD)

Renew in its entirety including tank top and bulkhead penetrations the No. 4 D.B. fuel oil tank steam heating coil and piping consisting of the following.

Three hundred twenty eight (328') ft. of schedule 80 seamless steel piping and couplings.

Twenty five (25') ft. of 1 inch and twenty five (25') ft. of 3/4 inch IPS schedule 80 piping located in the Nos. 4 and 5 D.B. centerline fuel oil tanks and engine room bilges, renewals shall include steam supply and return lines from steam supply and return manifolds located in the forward engine room.

All pipe fitting and connections shall be of the socket weld type.

Upon completion of all repairs hydrostatic test and prove tight to MSTS Inspector.

When notified close up tanks renewing man hole gaskets and defective or missing bolts, studs or nuts.

Apply an air test to tanks at not more than 2 PSI and prove tight.

DATA: No. 4 D.B. centerline fuel oil tank, fr. 78-98 - 174 tons and No. 5 D.B. centerline fuel oil tank fr. 98-112, 124 tons.

ITEM 38 - MISCELLANEOUS INSULATION REPAIRS: (LJF) (WR-63 & 64)

Renew the deteriorated and missing insulation and lagging on the following listed piping, valves and equipment in locations as listed and designated by the MSTS Inspector.

Install insulation and lagging that is equal to deteriorated insulation when new and suitable for each respective service.

The new insulation being installed on boiler steam systems shall be "HIGH TEMP" insulation properly installed and wrapped.

The new insulation being installed on auxiliary steam shall be standard 1½ inch of 85% magnesia insulation properly installed and wrapped with asbestos cloth.

The new insulation being installed on cold water, waste and soil lines shall be sectional ½ inch wool felt and ½ inch hair felt properly installed and lagged.

On completion of installation, paint to match surrounding areas and leave be worked in area clean and in a ready-to-use condition.

Sizes and lengths quoted are approximate and contractor shall take exact dimensions from installed locations.

(CONTINUED)

ITEM 38 - MISCELLANEOUS INSULATION REPAIRS: (LJF) (WR-63 & 64) (CONTD)

A. Nos. 1 and 2 boiler steam lines a total of forty (40') ft. of 3 inch steam line as designated by ship's Chief Engineer.

B. Auxilary exhaust line one (1) ten (10') ft. section of 10 inch IPS exhaust line fr. 98, port side, forward engine room as designated by the ship's Chief Engineer.

ITEM 39 - NO. 8 FUEL OIL TANK (WR-97): (LJF)

Accomplish the following work in No. 8 port double bottom fuel oil tank.

Tank will be chemically sea cleaned and pumped down to within limits of the ship's pumps, prior to arrival in Contractor's yard. Contractor shall remove all remaining oil, sludge, solidified sludge, water and debris from tanks and lines.

Provide and post gas free certificate certifying tank safe for men to enter before commencing and during accomplishment of hot work.

Conduct 150 PSI hydrostatic test of fuel oil tank heating coils search out, locate and mark all leaks.

Renew approximately twenty (20') ft. of deteriorated and leaking 1½ IPS schedule 80, steel fuel oil heating coil piping in scattered locations as designated by MSTS Inspector.

After repairs hydrostatic test to 150 PSI the fuel oil tank heating piping and coils, inspect for leaks and prove tight. Close up the fuel oil tank, using new gaskets, wicking, washers, and nuts.

Air test fuel oil tank and prove tank openings and penetrations tight (air test shall not exceed 2 lbs.).

Data:

No. 8 port double bottom fuel oil tank, fr. 142-158, capacity 64 tons.

ITEM 40- LOW PRESSURE FEED HEATER (LNP) (WR-53)

Accomplish the following work on one (1) low pressure feed heater. Mfg. Bethlehem- Includes 1st stage heater, gland exhaust and aft condenser, feed heater drain cooler, main air eject intercondenser (A total of 475 straight tubes 0.625 X 0.049 wall thickness).

Remove all lagging in way of heads and flanges, break all flanges and remove both heads, clean tube sheets to bright metal, install necessary blank flanges on the shell off stickers and openings and hydro test steam side at twenty five (25) PSI in the presence of the Chief Engineer and MSTS Inspector.

Plainly mark all leaks found.

Repairs to leaks on tubes found during test by rerolling and repacking and plugging of leaking tubes that cannot be repaired by rerolling and repacking shall be on a seperate change order.

Submit a written report of all pertinent data of feed heater leaks found and number of tubes plugged to MSTS Inspector.

After the low pressure feed heater is proven tight to the satisfaction of the Chief Engineer and MSTS Inspector, replace heads, make up flanges, give operational test to prove all joints tight.

Install new lagging (lagging removed for test and repair) and paint to suit surrounding area.

Upon completion of work and acceptance by the Chief Engineer and MSTS Inspector, clean and restore areas to original cleanliness.
DATA: Bethlehem low Pressure Feed Heater, Ser.#1409 located in after engine room.

ITEM 41- TROOP'S HEAD'S AND SHOWERS (V156-12, 14, 79) (RAL)

DECK SCHMIDT ?

Accomplish the following repairs in the troop's heads and showers as hereinafter specified.

(1) Locations: 2-216-2, 2-220-224-2
Replace deteriorated backing plates to thirteen (13) wash basins, using 3" X 3/8" steel flat bars, two (2) for each basin and welded to existing support frames between stanchions.

Crop out and renew approximately 4'0" of 2" X 1½" steel angle supports at forward end of basins as directed.

(CONTINUED)

ITEM 41- TROOP'S HEAD'S AND SHOWERS (V156-12, 14, 79) (RAL) (Con't)

(2) Location: 3-213-1

Remove three (3) bulkhead mounted wash basins, renewing support brackets.

Remove all scale and rust on bulkhead to clean bare metal in way of basins. Prime and finish paint and reinstall basins as original.

(3) Location: Fwd. Troop Head, 2nd Deck, Fr. 45

Crop out and replace with new a total of eighteen (18) square feet of wasted bulkhead plating, from deck thence to a height of approximately twelve (12) inches.

Install as original new ceramic deck and cove tile in way of repairs.

NOTE: MSTS Inspector will designate exact locations of repairs to be accomplished.

Chip flush and grind smooth all protrussions in way of new work.

Prime and finish paint new and marred surfaces in accordance with COMSTS Instruction 4750.1B.

Prove all work satisfactory to MSTS Inspector.

ITEM 42- HYDRAULIC STEERING PUMPS (BK) (WR-84)

Accomplish the following repairs and part renewals to two (2) Waterbury Hydraulic Pumps, located in the steering engine room, fourth deck, frame 185, port and starboard. Disassemble the pumps and remove the control shafts.

Thoroughly clean all parts and inspect for worn or defective parts.

Chrome plate control shafts and finish grind to manufacturers recommended dimensions.

Lap valve plates, removing any high spots, burrs to a true surface.

Renew the pintle seals.

Insert plugs in broken hydraulic lines, take the necessary precautions to prevent any foreign material from entering system.

Open pump and gear box couplings checking for defects, correcting as required.

Reinstall all removals in true alignment, using new gaskets, seals and securements. Refill couplings with manufacturers recommended lubricant.

(CONTINUED)

ITEM 42- HYDRAULIC STEERING PUMPS (BK) (WR-84) (Cont'd)

Make final adjustments, conduct and operational test, purge system and replinish system as required with contractor furnishing oil as recommended by the manufacturer.

System is to be in good operating condition to the satisfaction of the MSTS Representative.

DATA: Mfg. Lidgerwood Hydraulic Steering Gear
Serial 9055
Inst. Book 322-0058
Pumps: Waterbury Speed Gear
Size 10 Type A RPm 580 PSI 1100 Ser. No. 20097

ITEM 43- BOTTOM BLOW VALVE (BK) (WR-47)

Provide the services of a qualified, licensed deep sea diver, equal to Podesta Divers to attend ship and apply a water tight seal for the $1\frac{1}{2}$ inch boiler bottom blow overboard valve located in the forward engine room, frame 102 port side MSTS Representative will designate exact location.

Remove the $1\frac{1}{2}$ inch bottom blow valve.

Furnish and install new valve equal to original when new with new gaskets and securements.

Remove hull seal and prove valve in good operating condition and all joints tight to the satisfaction of the MSTS Representative.

ITEM 44 - NO. 2 MAIN CIRCULATOR PUMP SUCTION LINE (WR-83): (LJF)

Detach and remove twenty (20') ft. of 20 inch and four (4') ft. of 14 inch schedule 80, shaped and flanged steel main injection piping from the following terminuses: High sea injection valve, low sea injection valve, emergency bilge suction valve to the No. 2 main circulator pump inlet casing flange.

Renewal of the two (2) 20 inch expansion joints are not included in this item.

Using removed sections as a template fabricate new replacement section equal to original when new.

After all welding has been completed hot dip galvanize.

Reinstall aboard ship in respective location using all new securements.

Test under ship's normal load and prove tight to MSTS Inspector.

ITEM 45 - MAIN BOILER FEED PUMPS: (HCA) (WR-48)

DATA: Mfr., Ingersol Rand Co.
Size: 2½ R.T.M.-4, 1760 feet head,
4600 RPM, Capacity, 225 G.P.M.
Hydro test 1090 lbs., Serial No. C443280 - location of main feed pumps, #1 and #2 engine rooms, No. 2, No. 4, pumps.

Open up No. 2 and No. 4 main feed pump casings. Remove from ship to shop the two (2) main feed pump rotating elements.

Disassemble the two (2) rotating elements, clean and examine shafts, check pump shafts for trueness. Provide new packing sleeves, line bearings, thrust bearings, and thrust bearings shoes.

Renew all impeller wear rings and remachine case rings, center chanel bearing, and interstage chanel rings to suit impeller wear rings to design clearance. Check and renew any defective interstage sleeves, sleeve nuts, thrust journal sleeve and thrust collar.

Reassemble the two (2) pump rotating elements using new replacement parts equal to originals, making sure rotating elements run true.

Turn main feed pump rotating elements to ship, fit and install elements in pump using new bolting, gaskets and fittings throughout.

Check and realign the pump elements to the turbine driven unit, reassemble coupling, fill coupling with ships furnished oil.

Conduct operational test and prove the two (2) main feed pumps tight to the satisfaction of the Chief Engineer and MSTS Inspector.

ITEM 46 - VERTICAL SLIDING WINDOW: (RAL) DECK CARP.

Replace with new one (1) vertical sliding window located in Wheel House.

Check operating mechanism, clean ajust, lubricate and prove in proper working condition. Replace disturbed panel and refinish to match decor.

Material shall be same as existing when new or equal.

ITEM 47 - SECURING PADEYES, CARGO: (RAL) DECK 1/

Install a total of six (6) cargo securing padeyes in number 1, 2 and 5 cargo holds in locations designated by the First Officer.

The padeyes shall be fabricated, staple type, constructed from 1 inch diameter steel bar stock, with a 3 inch by 8 inch steel plate pad 3/4 inch thick. The staple loop shall be 6 inches, with each end set through the pad with the pad holes countersunk on each side and the staple welded to the pad at each penetration with a full weld for the depth of the countersinks and a final 3/8 inch fillet weld on the loop side of the pads. The pads shall be welded to the shell frames with a continuous 3/8 inch fillet weld. COMP.

After fabrication, clean all exposed surface of the padeyes, prime with one (1) coat of zinc chromate, formula 84 and finish paint with one (1) coat of red enamel, MSTS formula No. 4.

ITEM 48 - WATER TREATMENT ROOM - DECK RENEWAL: (AS)

Accomplish renewal of deck plating in its entirety in water treatment room located at 4th deck between frames 105 - 112 and from approximately 23'-0" off centerline of ship starboard outboard to ship"s shell plating.

Remove interferences in way of deck plating renewal and provide complete protection for machinery, electrical components, etc. in machinery space.

Remove deck plating from the foregoing specified location. Caution is necessary during removal of plating as not to remove portion or damage the transverse framing, longitudinal girders, etc.

Install new 20.4# mild steel plating from ship's shell plating inboard 4'-3", remaining deck plating in way of removal shall be 12.75# mild steel plate. Size of new plates shall be determined by shipping access to water treatment room, plates shall be cut as large as possible to eliminate unnecessary butts.

All removals in way of installations shall be reinstalled as original installations.

All work shall be accomplished to the satisfaction of the MSTS inspector and regulatory bodies.

Prime and finish paint new and disturbed surfaces in accordance with COMSTS instructions 4750.1B.

ITEM 49 - NO. 3 AND 4 BOILER BULKHEAD STOP VALVES (WR-85): (LJF)

Detach and remove from ship to shop the No. 3 and 4 boiler bulkhead stop valves, exact location to be designated by ship's chief engineer.

Disassemble, thoroughly clean, inspect and accomplish machine work to renew seating surfaces.

Reassemble and hydrostatic test to nameplate data.

Reinstall aboard ship in respective locations as original using all new securements.

DATA: Two (2) five (5") inch stop check valves, after machiner space 4-135-0.

ITEM 50 - REEFER DOORS: (AS)

Remove existing doors, one (1) from fish box (5-78-2-A) and one (1) from dairy box (5-78-1-A).

Install door removed from dairy box which is equipped with frost stop on fish box, and install door removed from fish box on dairy box. Install junction boxes and extend cables using cable of the same or larger circular mil size to the relocated door equipped with frost stop.

Renew broken hinge, align doors, prove tight and in proper operation to the satisfaction of the MSTS inspector.

Leave areas in a clean sanitary ready-for-use condition.

ITEM 51 - HELIUM STOWAGE - INSTALLATION OF: (RAL) DECK

Install a stowage rack to hold nine (9) heliun cylinders located at fantail, starboard side of ballow house as hereinafter specified.

Stowage to be fabricated with a 10.2-pound plate base flanged down 2-inches on all sides. Base plate to be supported by 2-inch by 2-inch by ¼-inch angle bar legs 12-inches long set on 24-inch centers. Base plate is to be complete with nine (9) individual ¼-inch by 2-inch flat bar rings of a suitable diameter to hold the bottles.

Top section of stowage shall consist of 10.2-pound plate flanged down 2-inches on the back and sides. Top plate to be cut with nine (9) semicircles lined with ¼-inch by 2-inch flat bar, the diameter of the finished semi-circle shall be suitable and in line with the rings on the bottom base plate. Install nine (9) ¼-inch by 2-inch flat bar bolted half collars to the top plate of stowage to form an easy access to the cylinders.

The top plate for the helium cylinder stowage shall be held 36-inches above the bottom plate and shall be secured to the bottom plate by use of 2-inch by 2-inch by ¼-inch angle bar supports set on 24-inch centers across the back and one (1) on each end on centerline.

The MSTS inspector will designate the exact shipboard location for installation of stowages.

ITEM 52- BALLOON HOUSE DOOR (BK) (WR-98)

Remove the electric motor and all components for power opening and closing the balloon house door on the main deck aft.

MSTS Representative will designate exact location.

Remove electric cables back to panel and disconnect.

Remove existing sprocket and chain for operating door.

Furnish and install a new 14 inch diameter sprocket and matching chain.

Prove new installation in good operating condition to the satisfaction of the MSTS Representative.

MOTOR DATA:	Mfg. Reliance	ID E-1338N-JN	½ HP,
	Type: PFRL56C	220/440 volts	3 phase
	1725/1425 Code K		

ITEM 53- FUEL OIL SETTLING TANK - REPAIRS TO: (AS)

Open up and accomplish the following repairs to No. 14 Fuel Oil Settling Tank located between 4th and 6th decks, frames 112-120, starboard. The MSTS Inspector will designate the exact location of repairs.

Remove existing temporary patch over crack of Fuel Oil Tank plating which is located approximately 12 inches along 5th deck and 6-inches back from tank bulkhead. Vee out crack to sound metal, drill stopper hole at each end, reweld crack, flush weld and install a doubler plate to extend 2-inches beyond each end of crack.

Prior to any chipping or welding clean tank. Ship's force will pump tank down to within limits of ship's pumps. The Contractor will remove remaining oil, sludge, etc. Obtain and post a chemist "Gas Free" certificate that the tank is safe for men and fire.

Upon completion of repairs close up tank, renewing gaskets and defective bolting, prove tank tight to the satisfaction of the MSTS Inspector and regulatory bodies.

DATA: Tank capacity, approximately 103 tons.

ITEM 54- REPAIRS TO SHIP'S SERVICE AIR COMPRESSOR (AT)

DATA: Mfr. Ingersoll - Rand Co.
2 - stage - $5\frac{1}{4}$" X $5\frac{1}{4}$" X 5" D
Type 40 - 150 lbs 870 RPM 218 CFM
Location: Forward Engine Room 5-110-2

Accomplish the following:

1. Sufficiently disassemble the compressor and remove the two (2) H.P. piston assemblies. Hand dress the cylinder bores and the compression and oil scraper ring grooves of each piston. Provide a new set of compression and oil scraper piston rings and fit same with proper gap.

2. Disassemble unloaders of the compressor, clean and examine all parts, including all valves, actuators, springs, adjusting devices, tubing etc.

Reinstall and assemble all parts in good condition.

3. Reinstall the removed pistons, close up the compressor ready for operation. Replenish oil with ship furnished lubricant.

4. Adjust and set the unloading system of the machine as per original design and leave compressor ready for automatic operation.

ITEM 55 - FAN ROOM PAINTING: (RAL)

Prepare surfaces, prime and finish paint the deckhead, bulkheads, and deck in supply fan room, 02 level, frame 102, starboard.

Surfaces to be painted shall include all structural members, piping, cabling ventilation duct work. Drain trough, supporting members and brackets, fan housings, blower foundations, etc.

Remove all rust, scale, dirt, grease and loose paint to bare metal or a good adhering paint film, from surfaces specified to be painted by scaling, sanding and wire brushing and remove all dust, dirt and other extraneous substance from surfaces prior to painting.

NOTE: Sand blasting will not be permitted.

After acceptance of surface preparation by the MSTS Inspector, prime and finish paint in accordance with COMSTS Instruction 4750.1B.

All piping shall be stenciled to indicate contents and direction of flow.

The Contractor shall be responsible to properly cover machinery and equipment during accomplishment of above work and remove same upon completion of painting. Leave areas in a clean ready for use condition.

NOTE: Ship's force will secure ventilation to the forward Engine Room prior to starting above work.

ITEM 56 - WATERTIGHT DOORS - REPAIRS OF: (AS) OFF SHIP 1/6/67 DECK

Remove three (3) watertight doors for repairs located at 04-86-0, 01-195-0 and 1-203-1.

Doors shall be striped of all mechanisms, rubber gaskets, etc. Clean doors free of all paint, rust and extraneous substances to bare metal equivalent to "Commercial Sandblast." Repair enlarged hole in hinge blade, renew all deteriorated gasket retaining strips, check doors for distortion, straighten as required. Apply one (1) overall coat of wash primer, MSTS code 32 followed by one (1) overall coat of red lead primer, MSTS code 52. Install new rubber gaskets, renew worn mechanisms and bushings as required, lubricate and assemble. Apply two (2) overall finish coats of haze gray, MSTS code 45 protecting new rubber gaskets from paint.

Repair enlarged hole in hinges, examine knife edge on each door frame in way of removed watertight doors, renew all deteriorated areas of knife edge, straighten new and distorted areas and grind a true surface throughout with radius on edge equal to existing when new.

Reinstall watertight doors, renewing hinge pins, adjust all dogs, chalk test and prove tight to the satisfaction of the MSTS representative. Replace missing hold back hooks and door stops.

The MSTS representative will designate exact location of doors.

ITEM 57 - CPO MESS - BULKHEAD REPAIRS: (AS)

Renew deteriorated areas (approximately 10 square feet by 15.3# plate) of bulkhead, insulation and sheathing (approximately 20 square feet of insulation and metal sheathing) located at bulkhead between CPO mess and F.O. filling station at 3rd deck, frame 113, port. COMP

Remove deck covering in way of repairs and remove deteriorated areas of bulkhead flush to deck.

Reinstall all removals in way of repairs same as original installation when new.

Prime and finish paint new and disturbed surfaces in accordance with COMSTS instruction 4750.1B.

ITEM 58 - TOWING CABLE: (AS)

Remove towing cable from reel located at stern of ship, Port. Range towing cable in a suitable location for inspection by American Bureau of shipping surveyor. Upon approval of towing cable by A.B.S. surveyor, reverse cable end for end and rewind on reel slushing in "VISCOLITE" or equal, while rewinding. COMP

ITEM 59 - BULKHEAD REPAIRS: (RAL)

Accomplish the following repairs to the foward engine room transverse watertight bulkhead, (6-98-1) as hereinafter specified.

Numbers 4 and 5 starboard D.B. fuel oil tanks will be chemically washed and pumped down to within limits of ship's pumps prior to arrival at Contractor's yard.

Remove all remaining oil, sludge, solidified sludge, water and debris, from tanks and fuel lines. Certify tanks gas free and safe for men to enter tanks and hot work.

NOTE: Numbers 4 and 5 centerline D.B. fuel oil tanks are being cleaned in another item of these specifications titled, "No. 4 D.B. centerline fuel oil tank heating coil renewal."

Crop out and replace with new deteriorated bulkhead plating and stiffening from tank top to deck level of CO^2 bottle room, approximately two (2) feet high and from skin of ship, starboard thence inboard approximately forty-five (45) feet.

Renewals shall be same as and equal in thickness and design to existing when originally installed.

The above work shall be accomplished in accordance with U.S. Coast Guard and American Bureau of Shipping Rules and Regulations as last ammended.

Test and prove all work including tanks watertight and to complete satisfaction of regulatory bodies.

Remove and reinstall all interference as original.

Upon completion of work remove all dirt and debris, leave areas in a clean and ready to use condition.

Prime and finish paint new and marred surfaces in accordance with COMSTS Instruction 4750.1B.

When notified by the MSTS Inspector close up tanks renewing all manhole gaskets and defective or missing bolting.

Tank No.	Frames	Capacity (Tons)
4 D.B. F.O. Starboard	79 - 98	671
5 D.B. F.O. Starboard	98-112	605