ITB 2018-1200-3853
TECHNICAL SPECIFICATIONS

P/V STIMSON
SHIPYARD

156’ Length
38.0’ Breadth
16.0’ Depth

413.0 Gross Tons

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Definitions:

"Owner" means the State of Alaska, Department of Public Safety

"Owner's Representative": The Owner Representative is Colonel Steven Hall, or his designated representative.

1. GENERAL REQUIREMENTS

This Invitation to Bid (ITB) is intended to result in a contract to enter a shipyard environment and dry-dock belonging to or leased by the Contractor for maintenance work on the Department of Public Safety Patrol Vessel Stimson. The PV Stimson is home-based in Kodiak, Alaska.

1.01 WORK SCOPE

The successful contractor shall supply all labor, materials, and facilities to provide services as described in the tasks and subtasks of this ITB. This includes all ancillary support of tasks such as: removing interferences, tank cleaning, gas freeing spaces, disposal of waste, access (such as scaffolding), protection of adjacent surfaces or equipment, and re-installing equipment/components previously removed as interferences.

All work shall be conducted while the vessel is at the Contractor's facility. Contractor shall comply with all relevant State and Federal environmental and worker safety regulations.

Contractor shall ensure the safety of the vessel during all aspects of work. Contractor shall provide specific fire safety procedures for this project, to the satisfaction of the Owner's Representative.

1.02 QUALITY ASSURANCE

All work in this specification must be conducted to a high marine quality, similar to requirements in 46 CFR Subchapter T USCG inspected small passenger vessels and ABS guide for shipbuilding and repair quality standard for hull structures during construction. Contractor shall be responsible for conducting all quality control inspections. Once the Contractor has inspected and approved the work, a final inspection shall be conducted by the Owner's Representative. The Owner will not pay for any work that is not inspected and approved by the Owner's Representative. Any work that fails to meet the expected quality standard shall be removed and replaced at no cost to the Owner.

The Owner reserves the right to inspect Contractor progress and work quality at any time.

1.03 CHANGE ORDERS/CONTRACT AMENDMENTS

During the course of the shipyard period, any change orders shall be processed by first negotiating a firm bid price agreeable to both parties with justifiable man-hours and/or materials at current price/cost as set by the contract. No additional work shall be conducted until a signed Change Order from the Division Director's Office is obtained.

Attached is a copy of a sample form that will be used to address these conditions, changes, and additional work as found or required. This form will be required throughout the shipyard period for any deviations to the Task Specifications, slippage of the re-delivery date, or any cost change to the contract. Change Orders shall be numbered consecutively and specifically for this project. Each Change Order shall be filled out to address the problem and its correction.

Where additional time and expenditures are required, the Contractor shall state the exact costs and the exact extended time required. The Change Order is to be signed by the Contractor's Representative. The Change Order, as a condition report, is to be presented as needed to the Owner's Representative. At that time, the Owner's Representative will seek approval from the Director's Office.

*****NOTE*****

At **NO TIME** will the Contractor act on any Change Order unless the Director's Office has signed the appropriate box for APPROVAL. At **NO TIME** shall the Contractor assume or commence work on verbal approval. The CONTRACTOR must have a signed Change Order stating the work is approved.

1.04 PRE-SHIPYARD MEETING

The Contractor and Owner's Representatives shall conduct a meeting immediately after the Vessel arrives at the Contractor's facility to identify the Owner's Representative and to discuss the work to be completed, and to establish a firm re-delivery date of the vessel. At this meeting the Contractor shall identify the designated Vessel's "Superintendent" and provide a reasonable schedule that shows the Contractor can complete the work in the Contract period. The Contractor provided schedule shall also indicate when each Contingent Item must be activated to permit completion during the Contract period.

The Owner's Representative shall provide the Contractor with amounts of fuel, lube oil, water and other characteristics stowed aboard the Vessel, at the planned pre-shipyard meeting.

1.05 PROGRESS MEETINGS

The Contractor and Owner's Representatives shall conduct a progress meeting at a mutually agreed upon time each week during the contract period. At these meetings the Contractor shall present his schedule to complete all work tasks and give a brief progress report on each task. At this time all coordination, interferences, and quality issues shall be resolved.

The Contractor shall supplement the weekly meetings with a brief daily meeting with the Owner's Representative. The Contractor's Project Superintendent shall meet with the Owner's Representative on a daily basis to briefly discuss that day's work plan, any problems, and any required coordination between vessel and the Contractor's personnel.

1.06 ARRIVAL AT CONTRACTOR'S FACILITY AND RE-DELIVERY

The vessel is available to depart the town of Kodiak Alaska (8) days prior to the day of arrival. The arrival date of the vessel will be negotiated based on the availability of the shipyard between the dates of April 1, 2018 and May 31, 2018. The arrival date at the Contractor's facility depends on the location of the facility, and weather encountered en-route.

Re-delivery of the vessel shall be no more than <u>30 days</u> from the official arrival at the Contractor's facility. For the purpose of this specification, the Contract period shall be considered to start on the date the vessel arrives at the Contractor's facility until the vessel is re-delivered to the Owner.

The Contractor shall be held liable for re-delivery of the vessel on a fixed re-delivery date established at the pre-shipyard meeting. For each day the vessel is not re-delivered back to the State after the date established above, the Contractor shall be assessed a $2,155 per calendar day penalty for the first 5 days and $4,325 each day of delayed thereafter. However, if events occur that are unrelated to Change Orders, such as weather caused delays, the re-delivery date may be changed upon mutual agreement between the Owner's Representative and the Contractor.

The Bidder shall review all the Task Specifications for this shipyard project. The Bidder shall allow for the need to double shift the shipyard crew and possibly work through weekends to complete this work on time.

If during the shipyard period a required Change Order or additional order causes the re-delivery date of the vessel to change, the Contractor shall justify the delay by notifying the Owner in writing using a Change Order. The correspondence shall state the Change Order cause, effect and the new delivery date of the vessel. The Change Order must be approved by the Director's Office prior to commencement of any work.

It is expected that the Bidder will include in the Bid Schedule any State taxes that may apply to this shipyard project. (There are no State taxes applicable in Alaska.) Any taxes would be based on the tax percentage requirement compared to the total of the bid cost to meet the Tasks of these specifications as written and clarified.

Where State law requires, bidders shall include the cost of re-delivery fees in International waters. Where re-delivery to International water is unavailable and a State tax for the shipyard must be imposed, the bidder will provide the tax rate based on the summary of the items listed in the Bid Schedule.

If there is a State tax that applies and the Contractor chooses to re-deliver the vessel in International waters to forego taxation, it is expected that the Bidder will include the cost of the re-delivery fee in lieu of the taxes.

If there are no taxes or re-delivery fees, it is expected that the Bidder will not apply any costs for this item in the bid.

1.07 REQUIREMENTS

The successful Contractor shall supply all labor, materials, and facilities to provide services as described in the Tasks and subtasks of this ITB. This includes all ancillary support of tasks such as tank cleaning, gas freeing spaces, disposal of waste, access (such as scaffolding), and protection of adjacent surfaces or equipment.

1.08 CONDITION FOUND REPORTS

The Contractor shall provide written documentation of any and all readings and measurements taken and any abnormalities concerning all Tasks with a "Condition Found Report". With abnormalities found, a written correction and firm price quote will be noted on the report.

Summary reports shall be used to document all Contractor tasks completed during the shipyard period. A summary report shall be generated after each task is completed and signed off by the Contractor and the Owner.

1.09 DAMAGE TO VESSEL

The Contractor is responsible for any and all damage to the vessel and its systems while at the shipyard facility. The vessel is to be covered by insurance to cover any damage incurred during the shipyard period as a result of neglect or normal work. The vessel is to be cleaned prior to completion of the shipyard period. All dirt, grease, paint over-spray and other items are to be removed and if, in the process of cleaning the vessel, damage is incurred, the Contractor shall be responsible for correcting damages.

1.10 WORK STANDARDS

All work is to be done in accordance with normal marine practices for a vessel of its size and service. All State and Federal rules and regulations will be followed accordingly. The vessel follows the USCG standard for Uninspected Fishing Vessels. ABS and/or DNV rules apply for hull and machinery repairs.

1.11 OUTSIDE VENDORS

The Owner may choose to have other work done by other vendors. Prior notification will be given to the Contractor regarding this work to make sure there is no interference.

1.12 ENVIRONMENTAL PROTECTION

The Contractor shall provide and maintain all environmental protection required to meet local, State, and Federal requirements for all work specified in this contract. The Contractor shall also provide environmental protection if it is required for painting, or for vendors, or for any other work items. Protection shall be in place during entire shipyard period.

The cost for environmental protection shall be included in the cost for each work item. The Owner will not pay for additional charges for environmental protection, unless they are clearly addressed in the Contract or they are the subject of a written and approved Change Order.

1.13 VESSEL CREW WORKING ONBOARD VESSEL

The Contractor shall arrange and schedule the majority of the work in this contract so that the vessel's crew may work onboard the vessel. The vessel crew will require: access to the vessel, adequate vessel habitability, and temporary vessel services (as defined in Section 1 of this specification) to conduct their work. Contractor and Owner's Representative shall coordinate activities to minimize interference between Contractor and vessel crews. Contractor shall provide at least three days advance notice to the Owner's Representative if the Contractor requires the vessel crew not work onboard the vessel.

1.14 VESSEL CREW LIVING ONBOARD VESSEL

The Contractor shall assume that the vessel's crew will not be living on board the vessel during the Contract period.

2. TEMPORARY SERVICE

The Temporary Services described in this Section shall be provided for the entire contract period.

2.01 MOORING

Immediately upon the vessel arriving at the Contractor's facility, the Contractor shall provide adequate moorage, mooring fenders, and mooring lines to secure the 156 foot vessel pier-side throughout the Contract period. The vessel is to be moored to the assigned berth so that the vessel's crew, shipyard workers and their materials and equipment have easy access. Appropriate fenders shall be strategically placed so wearing or damage to the vessel does not occur. TIRES SHALL NOT TO BE USED AS FENDERS.

If the Contractor intends to moor the vessel alongside a pier with tidal fluctuations, the Contractor shall ensure that the vessel can safely move up and down through any expected tidal range, without mooring line adjustment. The Skipper of the vessel will make the final determination that adequate mooring lines have been provided.

2.02 SHORE POWER

Immediately upon the arrival of the vessel at the Contractor's facility, the Contractor shall provide shore power hook up for the vessel. The Contractor shall supply 480 VAC three phase, 200 amp service. The vessel has a standard four-prong receptacle. Electrical shore power is required at all times, including while out of the water, except when the vessel is being shifted. The vessel consumes an average of 30 KW/hr.

2.03 TELEPHONE

This Section not used.

2.04 POTABLE WATER

Contractor shall provide a 1½" fire hose with potable water, so that the vessel's crew may fill the vessel's potable water tanks after work is completed, but prior to the vessel departing the shipyard.

2.05 SHIP'S SERVICE AIR

Contractor shall provide an air hose for ship's service air with a pressure of 125 PSI minimum and a volume of 10.0 CFM.

2.06 GANGWAY

The Contractor shall provide an OSHA approved gangway system to provide personnel access to the main deck of the vessel and adequately safeguard the passage of persons coming and going from the vessel. Vessel access is required at all times, including while the vessel is out of the water, except when the vessel is being shifted.

2.07 FIRE PROTECTION

The Contractor shall provide one 1½" fire hose to the vessel's main deck to charge the vessel's fire-fighting system. In addition, the Contractor shall provide at least one shore based fire station, with a stowed 2½" hose and nozzle that is capable of spraying a large stream of water anywhere on the vessel.

Fire main pressure is required at all times, including while the vessel is out of the water, except when the vessel is being shifted.

In addition to fire main pressure, the Contractor shall provide a fire and safety plan to the Skipper of the vessel during the Pre-shipyard meeting. This plan shall include 24 hour per day phone numbers for all safety, fire, and emergency response personnel. The plan shall also detail the yard's fire-fighting and safety procedures and capabilities. Emergency services response is required 24 hours per day, seven days per week. Emergency contact information shall be prominently posted by Contractor, on laminated or waterproof paper, at the entry points of the vessel's house and forecastle.

2.08 DECK COVERING

Immediately upon the arrival of the vessel to the Contractor's facility, the Contractor shall provide and maintain, during the entire shipyard period, a protective covering to all areas inside the vessel's main deck, passageways, the wheel-house deck and any other internal areas or paths that will be used by the Contractor's crew. At the end of the shipyard period, the Contractor shall remove and discard the protective covering. Any internal or exterior areas soiled during the shipyard period are the sole responsibility of, and shall be cleaned and/or repaired by, the Contractor.

2.09 GARBAGE

The Contractor shall provide for one standard size dumpster with regular dumping service for use by the vessel's crew, within 50 yards of the vessel's gangway, during the entire shipyard period.

2.10 PARKING

The Contractor shall provide two assigned parking spaces for use by the crew's rental vehicles at a location near the vessel and convenient for daily use during the entire shipyard period.

2.11 TOILET FACILITIES

The Contractor shall provide toilet facilities within 200 yards of the vessel's gangway, during the entire shipyard period. If the toilet facilities consist of a portable toilet, Contractor shall provide regular cleaning services for the portable toilet, minimum of once per week.

2.12 TANK ACCESS AND TESTING

The intent of this item is provide a marine Chemists' "Safe for Entry Certificate/Safe for Hot-work Certificate" for the spaces requiring hot work.

The Contractor shall open the following tanks and voids, test the air quality of these spaces, and re-install all covers after work in this specification is completed.

TANKS, VOIDS OR SPACES:

1. Engine Room (FR 47-63)
2. Port Hold # 2 (FR 28 – 38)
3. Port Hold #3 (FR 38-47)
4. Port Fuel Oil #2(FR 28 – 38)
5. Port Fuel Oil #3 (FR 38-47)
6. Port Fresh Water Tank (FR 55-62)
7. Stbd Fresh Water Tank (FR 55-62)
8. Fwd Ballast Tank (Bow – FR 9)
9. Aft Ballast Tank (FR 73- Stern)

10. Lazzarette (FR 70-FR 73)

Prior to certifying a space safe for hot work, Contractor shall empty and dispose of the residual tank contents in accordance with local, State and Federal regulations. For the purposes of this bid, Contractor shall assume 25 gallons of residual liquids in each tank. Any changes to the anticipated amount of liquids shall be handled as a Change Order

Contractor shall remove applicable quick access covers and or bolt down covers on the tanks, voids, and spaces listed above. Contractor shall ventilate and provide a marine Chemists' "Safe for Entry Certificate/Safe for Hot-work Certificate" for the tanks, voids, and spaces listed above. This item includes the cost of the Chemist, travel, per diem, and any safety covers/protection, if required. The Contractor shall maintain the voids, tanks, and spaces Safe for Entry / Safe for Hot Work certificates during the contract period unless otherwise indicated in writing by the Owner. If a transfer of the vessel requires new inspections by a marine Chemist, then Contractor is responsible for re-certifying the spaces. At the completion of the contract, or earlier if requested by Owner, Contractor shall reinstall covers with new gasket and existing hardware and visually ensure tanks and voids are properly sealed.

The Contractor is responsible for keeping all water and dirt out of open voids and tanks. Should water or dirt enter these spaces, the Contractor shall remove it at no additional cost to the owner. The Contractor shall provide suitable safety guards around open covers.

3. MISCELLANEOUS ACCOUNTS

The Contractor shall provide the materials, equipment and labor for each of the following subtasks, including any removal of items in providing the following services. The Bidder shall provide cost information for each subtask in the ITB Bid Schedule.

3.01 VESSEL ACCOUNT

This Section not used.

3.02 WELDING ACCOUNT

The Contractor shall provide the services of a certified marine welder and all necessary welding equipment, supplies, and support systems. This item shall be bid as a unit price in dollars per hour for a welder. For purposes of bid comparison, the hourly rate bid on the ITB shall be multiplied by 200, however the actual quantity of welding hours shall be determined during the Contract period by the Owner's Representative. The Owner shall be invoiced only for the actual number of hours of welding, multiplied by the hourly rate shown in the ITB.

The intent of this item is to assist the vessel's crew to accomplish small miscellaneous work projects that may arise during the shipyard period. The Owner's Representative has authority to direct projects from this account.

3.03 GENERAL PAINTING ACCOUNT

The Contractor shall provide the services of at least two skilled painters and all necessary preparing, painting, and cleaning equipment to properly prepare and paint designated areas on the vessel. This item shall be bid as a unit price in dollars per hour for one painter. For purposes of bid comparison, the hourly rate bid on the ITB shall be multiplied by 200, however the actual quantity of painting man-hours shall be determined during the Contract period by the Owner's Representative. The Owner shall be invoiced only for the actual number of man-hours of painting, multiplied by the hourly rate shown in the ITB.

The intent of this item is to assist the vessel's crew in painting small areas of the vessel that are not defined as major painting tasks in Section 6. This work shall consist mostly of power grinding preparation and hand painting with rollers and brushes. These workers shall perform no more than 200 man-hours total for this effort. The Owner's Representative has authority to direct projects from this account.

3.04 CRANE AND/OR BOOM TRUCK SERVICE ACCOUNT

The Contractor shall provide the services of a crane or boom truck to lift gear off and on the vessel. Crane/Boom truck shall be large enough to pick a 5 ton load from the top deck of the vessel while it is both moored at the Contractor's facility and in dry dock.

This item shall be bid as a unit price in dollars per hour for crane/boom truck and qualified operator. For the purposes of bid comparison, the hourly rate bid on the ITB shall be multiplied by 10, however the actual quantity of use hours shall be determined during the Contract period by the Owner's Representative. The Owner shall be invoiced only for the actual number hours of crane/boom truck use, multiplied by the hourly rate shown in the ITB.

The intent of this item is to assist the vessel's crew in removing and installing large and or bulky items on and off the vessel. The Owner's Representative has the authority to direct projects from this account.

4. DRY DOCKING

4.01 DRY DOCKING

REFERENCES

4A) Homeport Marine Services Dwg. D-1 Rev A Docking Plan & Anode Locations
4B) Historical Foss Docking Plan. Accuracy unknown, provided for general information only.

SCOPE

This work consists of safely lifting the vessel from the water, safely launching the vessel, and allows for the necessary time for the vessel to sit on the lifting facility (Lay Days), in order to complete all related definite bid items. The ITB schedule shall include all fees and costs associated with dry docking, lay days, and moving the vessel in and out of the dry dock, including tug fees if required, as described in this section.

The Contractor shall provide labor, material, and equipment, for dry docking and undocking the vessel to accomplish all work described herein. The Contractor is responsible for all docking and un-docking activities and shall thoroughly review the vessel's docking plan with regard to blocking in way of the keel, transducers, keel coolers, propellers, anodes, rolling chocks, and other sensitive areas.

It is the Contractor's responsibility to plan for a dry dock period of adequate length to accomplish all work items, both Definite and Contingent, so that all work occurs during the same dry dock period.

The Contractor shall own, be the primary lessee, or be the secondary lessee of the haul out facility. If the Contractor is the secondary lessee, a statement indicating that the Contractor is the secondary lessee and copy of the lease contract shall be provided with the bid. The secondary lease shall indicate that the Contractor is the primary party responsible for all rights and responsibilities.

The Contractor shall provide the Owner a certificate for the dry dock/lifting facility (i.e. American Bureau of Shipping). Mechanical lifting facilities shall provide certificates indicating size, type, and age of any cables used for lifting or hauling the vessel.

The location of the docking blocks shall be alternated every other dry docking to ensure that the area under the blocks that do not get painted will get painted every other time the vessel is dry docked. The vessel was last lifted by Foss Shipyards in 2014. Final docking position and any required additional vessel drawings will be provided by vessel owner at contract award.

Contractor shall develop a blocking plan in accordance with Reference 4A) and to meet the requirements of this section. The Contractor shall provide the Owner with calculations which demonstrate the pressure that the keel and side docking blocks will exert on the vessel's hull and the associated load rating of the lift facility. Special attention shall be paid to the pressure under the keel of this vessel.

a) Keel blocks shall be designed to support 85% of total vessel weight. Under no circumstances shall keel block pressure exceed **10** long tons/ft^2. Keel blocks shall be 4 feet in width (as measured along the transverse axis of the vessel); no less than 2 feet in length (as measured along

the longitudinal axis of the vessel); and no less than 4 feet high (as measured above dock floor). Maximum keel block spacing is 10 feet on centers. Keel blocks shall support the vessel over the entire length of the keel.

b) Side blocks shall be designed to support 25% of total vessel weight. Under no circumstances shall side block pressure exceed **5** long tons/ft^2. Side blocks shall be 4 feet in width (as measured along the transverse axis of the vessel), and no less than 1-1/2 feet in length (as measured along the longitudinal axis of the vessel). The final position of the side blocks shall be such that the middle portion of the side block is in way of a major vessel longitudinal structural member, located beneath the shell plating of the vessel. The minimum allowable number of side blocks is 3 per side (3 port and 3 starboard). Calculations used to determine the number of needed side blocks shall be approved prior to lifting. Side blocks shall support the vessel over a length not less than one-third of vessel LBP.

c) The angle of side blocks to dry dock floor shall be such that the average line of force perpendicular to the upper face of the block must pass within the middle third of the block, at the block's base.

d) Individual blocks shall contact the vessel by at least 75% of the block's bearing area. A block's bearing area shall be assumed to be the entire upper face of the block, unless otherwise stated in the bearing calculations presented at the dry dock meeting. Blocking shall be considered inadequate if more than 1 side block, more than 2 consecutive keel blocks, or more than 3 total keel blocks fail to contact the vessel properly. Shoring of blocks is not acceptable. The Contractor shall immediately refloat the vessel if these requirements are not met.

e) Block faces must be wood and must be smooth and level (plus or minus 1/4 inch) along the entire bearing length. If necessary, 2 inches of soft wood crush caps may be installed on blocks along the entire bearing length of vessel.

f) All docking plugs, sea chests, transducers and other penetrations indicated on the docking plan must be well clear of blocking.

The Contractor shall lift the vessel such that work can occur on all parts of the vessel. The vessel shall be lifted such that it is protected from work, dirt, and overspray from adjacent vessels. If the Stimson is impacted from adjacent vessels or vessel work, the Contractor shall remedy any impact, prior to launching.

The contractor shall provide a diver to inspect the vessel to ensure that the vessel is properly landed on the docking blocks and that all appendages and sensitive areas are free and clear prior to lifting the vessel.

DRY DOCK MEETING.

A dry dock meeting shall take place at least 1 day prior to the vessel being dry docked. At this time the Dockmaster will present his blocking plan and calculations and describe his plan for docking the vessel including: schedule, weather, the use of engines, tugs, communications, and other relevant items. The Contractor shall assume that the crew and the vessel's propulsion engines will not be available. The Contractor shall present a plan for all waterborne movements of the vessel for review and approval by the Owner. If appropriate, the Contractor shall present, in detail, the plan for land transfer of the vessel.

The Contractor shall notify the Owner a minimum of 48 hours prior to dry docking/undocking the vessel. The Contractor shall not initiate docking activities without the expressed permission of the Owner. The Contactor may not undock and redock the vessel during the period that the work is in progress on the underwater hull items.

4.02 LAY DAYS

Lay Days is defined as space rental and all necessary expenses to provide a suitable place to perform required construction work on the vessel, while it is out of the water.

Lay Days for the time required to complete all Definite Bid items are not included in this section and shall be included in the price for Dry Docking, as required in Section 4.01.

Lay Days shall not be charged for the day of lifting and the day of launching the vessel

Contractor shall price the Contingent Items to include cost of any additional Lay Days, if required. If a Contingent Item of work is activated, the Contractor shall add the required additional Lay Days to the dry dock period at no additional cost or impact to the Owner, other than the Contingent Item bid cost.

At the dry dock meeting (above) the Contractor's plan for work shall include the number of Lay Days required by the Contractor to perform the Definite Items and each Contingent item. The plan shall also indicate when each Contingent Item must be activated to permit completion within the dry dock period.

This item shall be bid as a unit price in dollars per one Lay Day. Using this daily price, the Owner may elect to extend the dry dock period for up to 10 consecutive days, as necessary to accomplish the Owner's unforeseen or delayed work. Owner is not responsible for Lay Days that are the result of Contractor's unforeseen or delayed work.

5. HULL SERVICES

The Contractor shall submit firm fixed prices for the work contained in each item in this section. The price for each item shall include all material, labor, and equipment costs associated with the work as defined within each item.

5.01 SHAFT BEARING WEAR-DOWN MEASUREMENTS AND PACKING REPLACEMENT

REFERENCES

5A) Homeport Marine Services dwg M-1 Shafting Details

GENERAL

The vessel has two 5 inch diameter Aquamet 17 propulsion shafts, as shown in Reference 5A). Figure 4.01A shows the below water propeller and rudder arrangement. The intent of this section is to obtain normal shaft bearing wear-down measurements with the shafts in place.

Figure 4.01A: Shaft and Rudder Arrangement

REMOVALS

The propeller shafts were replaced in 2014 with new shafts. The vessel's crew indicates that there are no signs of vibration or damage to either the shafts or the propellers. If damage is discovered which requires removal of the vessel's propulsion shaft or propellers, this effort shall be handled as a Change Order.

Contractor shall remove the packing from both the port and starboard stuffing boxes and provide a sample of the removed packing to the Owner.

INSTALLATIONS AND MODIFICATIONS

The shaft forward and aft of the strut barrel and aft of the stern tube shall be cleaned of all marine growth, including hand scraping of barnacles if necessary, and then flushed with water before taking bearing readings. Contractor shall visually inspect the exposed portions of both the port and starboard propeller shafts for any signs of wear, pitting, or other damage.

Contractor shall provide a work platform, such as scaffolding, at the strut barrel and the aft stern tube to support bearing wear-down measurements. Contractor shall take bearing wear-down measurements on the strut bearing and aft stern tube bearing with a 12 inch feeler gauge at 12, 3, 6, and 9 o'clock positions. Bearing wear-down measurement procedures shall be approved by the Owner and all measurements shall be witnessed by the Owner's Representative.

Contractor shall provide a Condition Found Report, documenting the results of the visual inspections and the bearing wear-down measurements, to the Owner for approval. Replacement of any bearings found to be out of clearance shall be handled by Change Order.

The Contractor shall repack both the port and starboard main propeller shaft stuffing boxes with new 1 inch Duramax Ultra X (greaseless) packing. The propulsion shafts are 5 inches in diameter (15.7 inches circumference), with approximately 7 packing rings per shaft. Contractor shall provide 2 spare rings of packing for each propulsion shaft to the vessel Owner.

5.02 RUDDER BEARING WEAR-DOWN MEASUREMENTS AND PACKING REPLACEMENT

REFERENCES

5B) Homeport Marine Services dwg M-2 Rudder Details

GENERAL

The vessel has two 9 inch diameter rudder shafts as shown in Reference 5B). The intent of this section is to obtain normal rudder bearing wear-down measurements with the rudders in place.

REMOVALS

The Contractor shall remove all packing from both the port and starboard rudder stuffing boxes and provide a sample of the removed packing to the Owner. As shown in Figure 4.02A, the packing gland follower can be lifted sufficiently for packing removal.

INSTALLATIONS AND MODIFICATIONS

The underwater portions of the rudder shafts shall be cleaned of all marine growth, including hand scraping of barnacles if necessary, and then flushed with water before taking bearing measurements. Contractor shall visually inspect the exposed portions of both the port and starboard rudder shafts for any signs of wear, pitting, or other damage.

Contractor shall provide a work platform, such as scaffolding, at both the port and starboard rudder to support bearing wear-down measurements.

As shown in Reference 5B), the vessel rudders each have the following 3 bearings:

1) One upper bearing, which is a bronze bushing (item 48 in Reference 5B) located in the Lazarette and above the tiller arm,

2) One neck bearing, which is a rubber cutlass bearing (item 23 in Reference 5B) located in the rudder tube and below the stuffing box, and

3) One pintle bearing, which is a rubber cutlass bearing (item 48 in Reference 5B) located below the rudder.

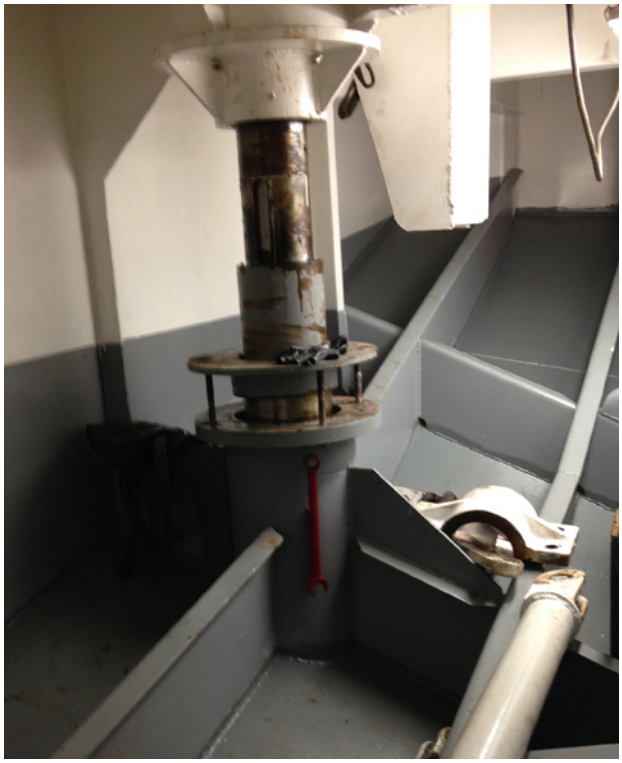

Figure 4.02A: Rudder Shaft in Lazarette with Tiller Arm Removed

The Contractor shall take and record bearing wear-down measurements for the neck bearing and pintle bearing. Pintle bearing wear-down measurements shall be taken with feeler gauges at 12, 3, 6, and 9 o'clock positions. Neck bearing wear-down measurements shall be taken by means of dial indicators with the rudder shaft jacked hard over to the opposite side of the bearing. Four readings shall be taken, one each with the rudder jacked forward, aft, to port and to starboard.

Bearing wear-down measurement procedures shall be approved by the Owner and all measurements shall be witnessed by the Owner's Representative.

The Contractor shall provide a Condition Found Report, documenting the results of the visual inspections and the bearing wear-down measurements, to the Owner for approval. Replacement of any bearings found to be out of clearance shall be handled by Change Order.

After approval of bearing readings, Contractor shall install new Duramax Ultra X (greaseless) packing in the port and starboard rudder stuffing boxes in accordance with manufacturer recommendations. The rudder tube stuffing boxes are custom stuffing boxes with approximately 5 rings of 1 inch packing. The rudder shaft outside diameter is 9½ inches (29.8 inch circumference). Contractor shall provide 2 spare rings of packing for each rudder post to the vessel Owner.

5.03 OILY WATER AND WASTE OIL REMOVAL

REFERENCES

5C) Tank Arrangement

SCOPE

The Contractor shall empty and dispose of the contents of the oily water tank, waste oil tank, and the engine room bilge. For purposes of this ITB, the Contractor shall anticipate 3,000 gallons of oil and existing oily water.

5.04 BILGE CLEANING

This Section not used. However, bilge cleaning is addressed in Task 9.0

5.05 SEA VALVE AND OVERBOARD DISCHARGE VALVE MAINTENANCE

REFERENCES

– None –

GENERAL

The intent of this section is to test the vessel's sea valves and overboard discharge valves while the vessel is on the dry dock.

APPLICABLE VALVES

The valves applicable to this section are as follows:

SEA VALVES:

1) *Bow Thruster Fire Pump Sea Valve (Bow Thruster Room Bilge)*
   8-inch gate valve, 8 bolt flange
2) *SONAR Sea Valve* (Tank Alley Bilge)
   8 inch gate valve, 8 bolt flange, 150#, marine bronze, OKV
3) *Starboard Crab Pump Sea Chest (Engine Room Bilge)*
   8-inch wafer valve, 8 bolt flange, bronze, 150#, DEMCO
4) *Port Crab Pump Sea Valve (Engine Room Bilge)*
   8 inch gate valve, 8 bolt flange, 150#, marine bronze, OKV
5) *Wash Down Pump Sea Valve (Bow Thruster Room Bilge)*
   3-inch gate valve, 4 bolt flange, bronze, 150#, PIMA
6) *Bow Thruster Fire Pump Vent (Bow Thruster Room Bilge)*
   1½-inch gate valve, NPT, bronze, 150#
7) *Starboard Crab Pump Vent (Engine Room Bilge)*
   1-inch gate valve, NPT, bronze, 150#
8) *Port Crab Pump Vent (Engine Room Bilge)*
   1-inch gate valve, NPT, bronze, 150#
9) *Wash Down Pump Vent (Bow Thruster Room Bilge)*
   ½-inch gate valve, NPT, bronze, 150#
10) *Port Crab Pump Sea Valve, Not Used (Engine Room Bilge)*
    2-inch gate valve, NPT, bronze, 150#
11) *Aft Engine Room Sea Chest (Engine Bilge)*
    3-inch gate valve, 4 bolt flange, bronze, 150#, PIMA
12) *Fire Pump Suction Sea Valve (Engine Bilge, Starboard Sea Chest)*

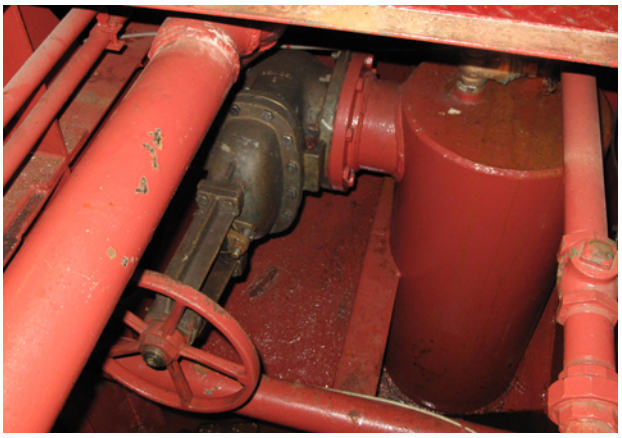

Figure 4.05A: Bow Thruster Fire Pump Sea Valve

3-inch gate valve, 4 bolt flange, bronze, 150#, PIMA

OVERBOARD DISCHARGE VALVES:

13) *Crab Pump Overboard, Starboard (Engine Room Overhead)*
8-inch wafer valve, 8 bolt flange, bronze, 150#, DEMCO

14) *Crab Pump Overboard, Port (Engine Room Overhead)*
8-inch wafer valve, 8 bolt flange, bronze, 150#, DEMCO

15) *Bilge Pump Overboard (Engine Room Overhead)*
3-inch gate valve, 4 bolt flange, bronze, 150#, PIMA

16) *Sewage Overboard (Shaft Alley Overhead)*
3-inch gate valve, 4 bolt flange, bronze, 150#, PIMA

17) *Sewage Overboard (Shaft Alley Overhead)*
3-inch swing check valve, 4 bolt flange, bronze, 150# PIMA.

18) *Galley Sink Overboard (Lazarette Overhead)*
2-inch gate valve, NPT, bronze, 150#

19) *Galley Sink Overboard (Lazarette Overhead)*
2-inch check valve, NPT, bronze, 150#

NO ACTION

There will be no action on valve number 3 (Starboard Crab Pump Sea Valve) as the wafer valve is being replaced with a gate valve in Section 9 of this specification.

There will be no action on valve number 12 (Fire Pump Suction Sea Valve) or valve number 7 (Starboard Crab Pump Vent) as these valves are being relocated in Section 9 and will no longer be sea valves.

DISASSEMBLE AND TEST VALVES IN PLACE

The Contractor shall disassemble and test valves number 1 and 2 in the vessel, in accordance with this section.

The Sonar sea valve (valve number 2) does not close with the Sonar in place and inspection/testing of the Sonar sea valve requires that the Sonar be removed. Prior to removal of the Sonar, the Contractor and the Owner's Representative shall inspect the Sonar sea chest and the lifting mechanism, to determine if modifications are desired to either the Sonar sea chest, or the lifting mechanism. Any modifications to the Sonar sea chest or lifting mechanism shall be handled as a Change Order.

The Contractor shall provide a qualified Sonar field service technician to disconnect and remove the Sonar from the sea chest. The Sonar is a Furuno Model CH-250, type CH-254, serial number 4611-1185. The Sonar is installed in a bolted flange on the top of the 8 inch sea chest, as shown in Figure 4.05B. Once removed the Sonar shall be stored in a secure location and protected from weather and shipyard debris. Any damage to the Sonar during removal or storage shall be repaired to like new condition by the Contractor at no cost to the Owner.

Figure 4.05B: Sonar Mounted on an 8 inch Sea Chest in the Tank Alley

After the removal of the Sonar, the Contractor shall disassemble, clean, visually inspect, and "Prussian Blue" test valves number 1 and 2 to ensure 100% seat contact. Owner's Representative shall witness the results of blue testing. If a valve passes testing, it shall be reassembled with new cloth-inserted gaskets and valve stem packing material. If a valve is in good visual condition but fails the "Prussian Blue" test the valve shall be lapped with grinding compound for a minimum of 30 minutes and retested with "Prussian Blue". Following inspection and blue testing, Contractor shall provide a Condition Found Report to the Owner detailing the condition of each valve.

If a valve fails the second "Prussian Blue" test, the repair or replacement shall be handled by a Change Order. In the Condition Found Report, the Contractor shall propose a method and cost to repair or replace any defective valves. Any costs to reassemble the valves with new gaskets and stem packing material shall not be included in the Change Order as this effort is included in the normal scope of work for this section.

After reassembly of valve number 1, Contractor shall close valve number 1 and loosen the piping immediately inboard of the valve for leak testing in accordance with this section, at the time of undocking. After the valve passes the leak test, Contractor shall tighten the loosened piping.

After reassembly of valve number 2, Contractor shall provide a qualified Sonar field service technician to re-install, reconnect, and commission the Sonar in accordance with the manufacturer's specifications.

REMOVE, TEST, AND REINSTALL VALVES

Valve number 4 (Port Crab Pump Sea Valve), shown in figure 4.05C, is known to be leaking. Contractor shall remove valve number 4 from the vessel and move the valve to a clean workshop for "Prussian Blue" testing and lapping. Removal of this valve will require the port crab pump, and associated 40Hp motor and couplings, and the "T" connection between the crab pump and the sea valve be removed and stored for reinstallation. Crab pump, motor, and couplings shall be stored in the Engine Room, with the final storage location to be approved by the Owner's Representative. The port crab pump is shown in Figure 4.05D

Figure 4.05C: Port Sea Chest Sea Valve

Figure 4.05D: Port Crab Pump to be Removed and Stored for Reinstallation

The Contractor shall disassemble, clean, visually inspect, and "Prussian Blue" test valve number 4 to ensure 100% seat contact. Owner's Representative shall witness the results of blue testing. If the valve passes testing, it shall be reassembled with new cloth-inserted gaskets and valve stem packing material. If the valve is in good visual condition but fails the "Prussian Blue" test, the valve shall be lapped with grinding compound for a minimum of 60 minutes and retested with "Prussian Blue". Following inspection and blue testing, Contractor shall provide a Condition Found Report to the Owner detailing the condition of the valve.

If the valve fails the second "Prussian Blue" test, the repair or replacement shall be handled by Change Order. In the Condition Found Report, the Contractor shall propose a method and cost to repair or replace the defective valve. Any costs to reassemble the valve with new gaskets and stem packing material shall not be included in the Change Order as this effort is included in the normal scope of work for this section.

After the valve passes a "Prussian Blue" test and prior to moving the valve to the vessel, Contractor shall hydrostatically bench test the valve at a pressure of 1.5 times the rated valve operating pressure. The

hydrostatic test pressure shall be held for a minimum of 15 minutes. All hydrostatic testing shall be witnessed by the Owner's Representative.

After the valve passes the hydrostatic pressure test, Contractor shall reinstall the valve with new gaskets and new marine grade stainless steel nuts, bolts, and washers using marine grade never-seize on all fasteners. The valve shall be in the closed position with the inboard piping off for leak testing in accordance with this section, at the time of undocking.

After the valve passes the leak test, Contractor shall reinstall the removed piping and the port crab pump and associated 40Hp motor and couplings. Contractor shall verify Crab pump to motor alignment and if needed, adjust alignment to provide a no more than 0.003 inch misalignment.

REMOVE AND REPLACE VALVES

Contractor shall remove and replace valves 5, 6, & 8 through 18.

For each removed valve that is less than 3 inches (valves 6, 8, 9, 10, 18 & 19), Contractor shall procure a new valve of identical model, material and performance

For each 3 inch flanged valve (valves 5, 11, & 15 through 17), Contractor shall procure a new valve of identical model and performance, with the exception that the valve body shall be ductile iron. New valves shall be painted in accordance with Section 6, with color to match associated piping

For each removed wafer valve (valves 13 & 14), Contractor shall procure a new valve of identical model, material, and performance.

After replacement valves are procured, Contractor shall install valves 5, 6, & 8 through 11 & 13 through 18. All non-threaded valves shall be installed with new gaskets and new marine grade stainless steel nuts, bolts, and washers using marine grade never-seize on all fasteners. Valves 5, 6, & 8 through 11 shall be installed in the closed position with the inboard piping loose for leak testing in accordance with this section, at the time of undocking. After the valves pass the leak test, Contractor shall reinstall the inboard piping.

HYDROSTATIC LEAK TESTING

In order to complete this item, all sea valves (valves 1 through 6 & 8 through 11) and the reinstalled Sonar must pass a hydrostatic leak test (float test) just prior to the vessel being lifted off the dry dock blocks. During undocking, the Dock Master shall hold the vessel within two feet of the waterline as docked, for as long as it takes to examine each sea valve. If a valve fails for any reason, the Contractor shall lift the vessel from the water and correct the defective valve. The Owner shall not be liable for any additional costs, such as docking crews, tugs, etc., which result from this extra time.

QUALITY ASSURANCE

The Contractor shall insure that the Owner's Representative inspects all phases of this task and that all materials are of good marine grade.

DOCUMENTATION

The Contractor shall provide a Condition Found Report documenting the condition of all valves and copies of any purchase orders associated with new valves or valve repair components.

5.06 BOW THRUSTER

REFERENCES

– None –

GENERAL

The vessel has a Schottel STT170 bow thruster at Frame 11. This section is intended to clean and inspect the bow thruster propeller. The bow thruster tunnel cleaning and coating is included in Section 6.

REMOVALS

Each bow thruster tunnel grate consists of five horizontal flat bars with bolts on each end of the flat bars as shown in Figure 4.06A. To prevent the bolts from backing off during operation, the nuts are welded to the bolt as shown in Figure 4.06B.

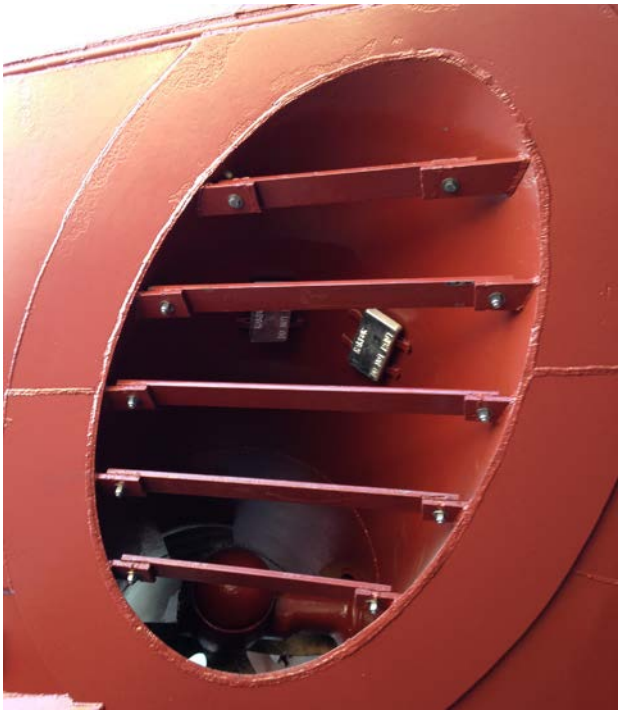

Figure 4.06A: Bow Thruster Grating

Contractor shall remove the bow thruster grates on both the port and starboard side of the bow thruster tunnel. The flat bar grates shall be retained for reinstallation.

Contractor shall remove the weld-on zincs in accordance with Section 5.07.

INSTALLATIONS AND MODIFICATIONS

Prior to cleaning, Contractor shall protect the bow thruster seals.

Figure 4.06B: Typical Bow Thruster Grating Bolt

Contractor shall high pressure wash the bow thruster tunnel and bow thruster area in accordance with Section 6. Contractor shall remove all marine growth from the bow thruster propeller and bow thruster housing. Then Contractor shall polish the propeller blades from the root to the tip.

Contractor shall visually inspect the bow thruster propeller blades for visible damage. Then Contractor shall use an owner approved nondestructive test method (such as dye penetrant) to check the propeller for cracks. All visual inspections and nondestructive testing shall be witnessed by the Owner's Representative. Contractor shall provide a Condition Found Report documenting the results of the visual inspections and nondestructive testing on the propeller. Any repairs to the bow thruster propeller shall be handled by a Change Order.

After the hull, tunnel and tunnel grates have been painted in accordance with Section 6 and the new hull bow thruster tunnel zincs are installed in accordance with Section 5.07, the Contractor shall reinstall the previously removed bow thruster tunnel grates with new stainless steel hardware, similar to existing. The nuts shall be welded to prevent the bolts from backing off.

5.07 INSPECTION AND REPLACEMENT OF HULL ZINC'S

REFERENCES

4A) Homeport Marine Service Dwg D-1 Rev A Docking Plan & Anode Locations

GENERAL

The vessel has fifty-nine hull zincs, 4 bow thruster tunnel zincs and 2 propeller nut zincs. The intent of this section is to replace all the hull zincs and propeller zincs.

REMOVALS

Contractor shall measure the location and size of each hull zinc, and provide measurements to the Owner for purposes of updating the docking plan. Zinc anodes shall be removed prior to the underwater hull coating in Section 6.

Contractor shall remove all hull, bow thruster tunnel, and propeller nut zinc anodes. The majority of the hull zincs are **bolt-on** type, with the exception of the bow thruster tunnel zincs. Removal of the bow thruster zincs requires that the bow thruster grates be removed in accordance with Section 5.06.

Prior to installing new bow thruster zincs, the area where the original zincs were located shall have the welded spots ground and the area shall be recoated as if it were spot blasted.

INSTALLATIONS

The Contractor shall supply the following zinc anodes:

1) Quantity 10: bolt-on style, 50#, 5 inch x 24 inch
2) Quantity 49: bolt-on style, 23#, 6 inch x 12 inch,
3) Quantity 4: weld-on style, 23#, 6 inch x 13 inch, and
4) Quantity 2: Propeller nut zincs, sized for a 10" propeller nut

After the underwater hull, rudders, tunnel, and sea chests are coated in accordance with Section 6, the Contractor shall install the bolt-on, weld-on and propeller zincs. Bolt-on zincs shall be installed with new stainless steel hardware. Weld-on zincs shall be installed in the bow thruster tunnel.

All zincs shall be installed in the same location as the previously removed zinc anodes. After installation, Contractor shall perform a conductivity test on each zinc anode. Conductivity testing shall be witnessed by the Owner's Representative.

Prior to launching the vessel, Contractor shall install the 2 new propeller zincs. If required, a filler approved by the Owner, shall be used to fill any voids between the hub zinc and the propeller nut. The propeller nut zincs shall be installed similar to existing, with nuts welded to a threaded rod, as shown in Figure 4.07A.

Figure 4.07A: Propeller Nut Zinc

QUALITY ASSURANCE

The Contractor shall insure that the Owner's representative inspects all phases of this Task and all materials are of good marine grade.

DOCUMENTATION

The Contractor shall provide a Condition Found Report documenting the results of all conductivity tests.

The location of all hull zincs shall be recorded by the Contractor and provided to the Owner for update of the docking plan.

5.08 TANKS AND VOIDS VENT CHECK VALVES

REFERENCES

5D) Homeport Marine drawing P-2 Rev A Fills Vents & Sounds
5E) Ball Check Valve Vendor Information. 2 page pdf of vendor information

GENERAL

The vessel has ball check vent valves on voids and tanks as identified below. For the purpose of this item, the Contractor shall assume a maximum of 28 ball check valves. As shown in Reference 5D), the majority of the ball check valves are located on the Main Deck, between FR 19 and FR 56. However, one ball check valve is located on the focsle, and one ball check vale is located on the poop deck. Any additional valves shall be the subject of a Change Order.

REMOVALS

The Contractor shall tag and remove each of the following tank and void vent/ball check valves and move them to a clean workshop.

BALL CHECK VALVES

4 each –2½ inch, threaded, inverted check valves, Manufacturer: PMC
Tanks: Fresh Water Stbd, Waste Oil (P/S), Lube Oil
14 each - 4 inch, threaded, inverted check valves, Manufacturer KPM, Model 1027
Tanks: Fuel Oil #4 (P/S), Fuel Oil Day, Hold #3 (x2) Stbd, Hold #3 Port, Hold #2 Stbd, Hold #2 (x2) Port, Hold #1, Hydraulic Oil, Aft Ballast, Forward Ballast
7 each – 4 inch, threaded, inverted check valves, Manufacturer: Wager, Model 1700
Tanks: Fuel Oil #3 (P/S), Fuel Oil #2 (P/S), Hold #3 Port, Fuel Oil #1 (P/S)
2 each- 3 inch, threaded, inverted check valve, Manufacturer: Wager, Model 1700

Tank: Hold #1 (P/S)
1 each – 2½ inch, threaded, inverted check valve, Manufacturer: Wager, Model 1700
Tank: Fresh Water Port

The Contractor shall remove the vessel's ball check valves and install protection prior to blasting the main deck surfaces in accordance with Section 6. Contractor shall install a threaded pipe cap (either steel or pvc caps are acceptable) on each of the void vents to ensure no blasting grit, dirt, or other foreign debris enters the vent. The threaded pipe caps shall remain installed throughout the preparation and coating of the main deck.

INSTALLATIONS AND MODIFICATIONS

The Contractor shall disassemble and clean each ball check valve in accordance with manufacturer's recommendations. Ball check valves shall be visually inspected to ensure that the check ball is free moving and not holed, and that the vent screen is not holed or distorted. Contractor shall provide a Condition Found Report to the Owner detailing the condition of all check balls and flame screens. Any valve requiring repair or replacement shall be the subject of a Change Order.

In the Change Order, the Contractor shall propose a method and cost to repair or replace defective valves. In general, valves 3" or greater shall be repaired with new parts and valves less than 3" shall be replaced with a new valve of identical model, material, and performance. The cost to reassemble valves with new stainless fasteners shall not be included in the Change Order; this effort is assumed to be included in the normal scope of work for this section.

Following inspection and approval of each ball check valve, Contractor shall reassemble each ball check valve using new gaskets and new stainless steel fasteners.

After the main deck is coated in accordance with Section 6, and all ball check valves are reassembled, repaired, or replaced the Contractor shall move the valves back to the vessel and reinstall each valve on the same vent from which it was removed. Vent/ball check valve coatings shall be repainted in accordance with the Paint Schedule in Section 6 after reinstallation. The tank name for each vent is stenciled on the bulwarks above each vent. If the stenciled names are damaged or removed during the blasting and painting in Section 6, the Contractor shall repair the stenciled names to like new condition at no expense to the Owner.

DOCUMENTATION

The Contractor shall provide a Condition Found Report documenting the results of the ball check valve inspections.

6. HULL PAINTING

6.01 REFERENCES

Not Used

6.02 PREREQUISITES TO PREPARATION AND COATING

Welds and piping system joints or connections requiring pressure or water testing or visual inspection shall not be coated until after all tests and inspections are complete and the weld, piping joint or connection has been accepted by the Owner.

Scuppers and drains shall be sealed or extended as required to prevent moisture or water contamination on coated surfaces during the drying period.

Prior to any surface preparation or coating, all adjacent surfaces, fittings, ducts, wiring, components, equipment, etc. shall be fully protected to the satisfaction of the Owner's Representative. Protection shall be specifically provided for all bearings, shafts, stocks, transducers, keel coolers, zincs, and any other underwater appendages that may be damaged or affected by preparation or paint. Protection shall be provided for windows, doors, hinges/dogs, hoses, hydraulic fittings, and any machinery or electronic components on the exterior of the vessel that may be damaged or affected by preparation or paint. The Contractor shall protect all interior portions of the vessel at all times from blast grit, dust, and paint. The protection of ventilation systems shall be specifically addressed by the Contractor prior to preparation or painting.

Protection from sand blasting shall be inspected and approved by the Owner's Representative prior to blasting.

Any delays or damage to the vessel or its systems as a result of poor protection, shall be addressed in accordance with Section 6.04 of this specification.

Prior to the application of coatings, all surfaces shall be dry and free of foreign matter such as dirt, dust, crayon marks, grease, mill scale, residual abrasive, rust, salt deposits and weld spatter.

6.03 PREPARATION AND COATING OF NEW STEEL

All new steel used in this contract shall be prepared to at least "near white" SSPC-SP-10 standard and coated with a two component, weld-through primer at the steel manufacturer's or supplier's facilities, prior to shipment to the construction site. Interplate Nippe Ceramo NQA997 pre-construction primer is the preferred primer. In this case, the preconstruction primer should be applied at 0.6-1.0 MDFT.

6.04 GENERAL PREPARATION AND PAINTING REQUIREMENTS

REQUIREMENTS DURING COATING APPLICATION AND CURING

All surfaces shall be kept dry, clean and free of rust and foreign matter at the time of application of any coating and throughout the curing period.

Coatings shall be applied under environmental conditions conforming to the manufacturer's recommendations as listed on the manufacturer's published data sheets for the coatings being applied. Coatings shall not be applied at ambient or surface temperatures less than the minimum application

temperature recommended by the manufacturer for the particular coating involved. No coating shall be applied when the dew point temperature is equal to or greater than the surface temperature of the surface to be coated.

For each coat applied, the Contractor shall take readings and produce a record of the ambient, surface, and dew point temperature as measured 1) before starting the coat application, 2) upon completion of the application, and 3) for every 4 hours in between (if applicable to the coat). The Contractor shall also take wet and dry film thickness measurements during and following coating applications and maintain records that map these readings to the coated areas and indicate compliance or non-compliance with intended millage (for wet film) and required millage (for dry film).

All paint coats and required thickness of coatings shall be confirmed through spot checks in the presence of the Owner after each coat is applied.

The Contractor shall provide a copy of the temperature and wet film thickness records, including notations regarding compliance and non-compliance with requirements, to the Owner's Representative within 24 hours after the coating event. The Contractor shall provide a copy of the dry film thickness measurements, including notations regarding compliance and non-compliance with requirements, to the Owner and review the results with the Owner prior to application of the next coat. Timing between coats shall also be specifically addressed at this time.

Should the Contractor choose to paint hull structures or attachments which may be affected by condensation caused by the vessel being waterborne or another reason, extraordinary care shall be exercised to ensure that surfaces to be painted are thoroughly dry and remain dry throughout the coating and curing periods. Spaces shall be heated and dehumidified to levels in accordance with the paint manufacturer's preparation and application guidelines to obtain and maintain proper application and curing temperatures and prevent the onset of condensation.

A copy of the paint manufacturer's preparation and applications guidelines applicable to each coating system shall be provided to the Owner's Representative prior to application of any coatings.

CORRECTION OF DAMAGE FROM PAINT OVERSPRAY

Any paint overspray applied to any of the equipment and surfaces shall be immediately and carefully removed at no expense to the Owner.

CLEANING OF GRIT BLASTING

All affected spaces and surfaces shall be cleaned free of grit and residue immediately after grit blasting and prior to any coating. Sequence of blasting shall be arranged to keep blasting grit off new paint.

Machinery, equipment and surfaces damaged, marred or contaminated shall be promptly repaired, replaced or cleaned to pre-existing condition at the Contractor's expense.

SURFACE PREPARATION

Prior to surface preparation, all adjacent surfaces shall be fully protected in accordance with this specification.

During a multi-day blasting effort, the Contractor shall apply an appropriate primer coat to blasted areas immediately upon completion of the day's sand blasting to avoid rust bloom and staining. Under no circumstances shall a freshly blasted steel surface be left more than six hours without primer. Should freshly blasted steel be left unprimed, the Contractor shall re-blast to the originally required quality, removing all traces of rust bloom.

All welds and weld affected or burned areas not sand blasted shall be power ground to bare metal and prepared and painted in accordance with the paint schedule.

DOCUMENTATION

The Contractor shall provide the following documentation and technical documentation:

A) Paint manufacturer's preparation and applications guidelines shall be available on site for review by Owner.

B) Paint Application Log. Create and keep on site for review and approval by Owner and submit to Owner after completion of painting. The log shall contain the information required in Subsection 6.04 and also specific paint catalog numbers and colors.

6.05 PAINT SCHEDULE

PAINT MANUFACTURER

In order to maintain paint compatibility, all paint used on this project shall be manufactured by the below listed paint manufacturers, unless approved otherwise in writing by the Owner. Paint reducer and accelerator (if necessary) shall also be manufactured by the below listed manufacturers in accordance with manufacturer's guidelines.

International Paint Representative: PCCI – Barney Lubetkin
Ph. 206-730-0143

The Contractor shall use the latest paint products in all phases of this item. All stock utilized shall not be more than 6 months old.

ALL UNDERWATER SURFACES INCLUDING BOOT STRIP

Coat 1 First Coat A/C	Paint: Intershield 300V (Bronze)	6.0 mils DFT
Coat 2 Second Coat A/C	Paint: Intershield 300V (Aluminum)	6.0 mils DFT
Coat 3 Anti-fouling A/F	Paint: Interspeed BEA468 (Red)	5.0 mils DFT
Coat 4 Anti-fouling A/F	Paint: Interspeed BEA469 (Black)	5.0 mils DFT

Interspeed BEA460 requires salt water immersion in salt water at first launch. If vessel will be immersed in fresh water at first launch use Intersmooth BRA640 Anti-fouling, with colors as indicated above.

ALL ABOVE WATER EXTERIOR SURFACES

Coat 1 First Coat A/C	Paint: Intershield 300V (Bronze)	6.0 mils DFT
Coat 2 Second Coat A/C	Paint: Intershield 300V (Aluminum)	6.0 mils DFT
Coat 3 Top Coat	Paint: FS15055 Blue International 990	2.0 mils DFT
Coat 4 Top Coat	Paint: FS15055 Blue International 990	2.0 mils DFT

SLASH METALLIC GOLD

Coat 1 Top Coat	Paint: Sign Painters 109-L	2.0 mils DFT
Coat 2 Top Coat	Paint: Sign Painters 109-l	2.0 mils DFT

EXTERIOR DECKS

Coat 1 First Coat A/C	Paint: Intershield 300V (Bronze)	6.0 mils DFT
Coat 2 Stripe Coat A/C	Paint: Intershield 300V (Red Oxide)	6.0 mils DFT
Coat 3 Second Coat A/C	Paint Intershield 300V (Aluminum)	6.0 mils DFT
Coat 4 Top Coat	Paint: Haze Gray Interthane 990 Sprinkle with grit while still wet	1.5 mils DFT
Coat 5 Top Coat	Paint: Haze Gray Interthane 990	1.5 mils DFT

ALL VOID SPACES

Coat 1 Stripe Coat A/C	Paint: Intershield 300V (Bronze)	6.0 mils DFT
Coat 2 First Coat A/C	Paint: Intershield 300V (Aluminum)	6.0 mils DFT
Coat 3 Top Coat	Paint: Haze Gray Interthane 990	1.5 mils DFT
Coat 4 Top Coat	Paint: Haze Gray Interthane 990	1.5 mils DFT

ALL INTERIOR SPACES COVERED WITH INSULATION

Coat 1 Stripe Coat A/C	Paint: Intershield 300V (Bronze)	6.0 mils DFT
Coat 2 First Coat A/C	Paint: Intershield 300V (Aluminum)	6.0 mils DFT

ALL INTERIOR SPACES NOT COVERED WITH INSULATION

Coat 1 Primer Stripe Coat	Paint: Intershield 300V (Bronze)	6.0 mils DFT
Coat 2 Primer Full Coat	Paint: Intershield 300V (Aluminum)	6.0 mils DFT
Coat 3 Top Coat	Ace Rust Stop Med Gray Gloss 225A103	1.50 mils DFT
Coat 4 Top Coat	Ace Rust Stop Med Gray Gloss 225A103	1.50 mils DFT

ALL BILGE AREAS

Coat 1 Primer Stripe Coat	Paint: XO Rust 1267 Red	1-1.50 mils DFT
Coat 2 Primer Full Coat	Paint: XO Rust 1267 Red	1.75 mils DFT
Coat 3 Top Coat	Paint: Ace Rust Stop 225A114 Regal Red	2.0 mils DFT
Coat 4 Top Coat	Paint: Ace Rust Stop 225A114 Regal Red	2.0 mils DFT

POTABLE WATER TANK

Coat 1 Full Coat	Paint: Interline 100% solids 925 (White)	10.0-12.0 mils DFT
Coat 2 Stripe Coat	Paint: Interline 100% solids 925 (White)	6.0 mils DFT

Potable water tank shall be continually mechanically ventilated and dehumidified for at least seven days immediately following coating application

The top coat colors for the vessel are:

Hull –	**FS15055 Blue**
Slash –	**Sky Blue and 109-L Metallic Gold**
Superstructure –	**White**
Fwd Mast -	**Black and White**
Cranes, Aft Mast, Pot Launcher, & Davit –	**Black**
Decks, Inside Bulwarks and Air Pipes –	**Haze Gray**
Bilges –	**CB 110 Cranberry Crush**

6.06 UNDERWATER SURFACES: KEEL TO TOP OF BOOT STRIPE

The vessel's underwater surfaces shall be prepared and painted in accordance with this section.

Required Surfaces:

The surfaces applicable to this item are:

All hull surfaces from the keel to the 14 foot navigation draft, including rudders, struts, keels, sea chests, sea chest grates, bow thruster tunnel and tunnel grating, etc.

The required surface area is all applicable surfaces with a total area of approximately 8,200 square feet.

Preparation:

Prior to surface preparation, all adjacent or sensitive surfaces shall be fully protected in accordance with this specification. For example: shaft and rudder bearings, sea chests, zinc anode studs, transducers, etc.

All required surfaces shall be washed immediately after vessel is hauled with fresh water high pressure wash (3500-5000 psi) to remove all salts, contaminates, oils etc. This includes any marine growth and dirt along the waterline of the vessel, propeller, rudder, and strut surfaces, etc. After washing, Contractor shall inspect the hull (with Owner's Representative) and report any deficiencies.

Contractor shall conduct spot commercial grade power tool cleaning, to SSPC-SP-15, to any areas of barnacles, rust or other areas as designated by Owner. Edges of cleaned areas shall be feathered to tight intact coatings. The total cumulative area of spot commercial grade power tool cleaning shall be less than 100 square feet.

Prior to Coating, Contractor shall layout and mask the waterline to provide a crisp edge. The Contractor shall protect the hull sides and house as necessary to protect the surfaces from overspray. The Contractor shall coordinate the overspray protections for this section with the protections required in Section 6.07. The Contractor is responsible for ensuring that all vessel equipment and coated surfaces, not included in the required area, are adequately protected for the prevailing conditions and to the Owner's satisfaction. Any equipment or coating system damaged from overspray shall be repaired to like new condition at no cost to the Owner, as required by Section 6.04.

If the white house is over sprayed, Contractor shall remove the overspray and repair the house coatings to like new at no cost to the Owner, as required by Section 6.04.

Surface Coating:
The work in this section shall occur after the hull zincs are removed in accordance with Section 5.08.

In way of spot commercial grade power tool cleaning, Contractor shall apply two coats of anti-corrosive paint. Color and thickness shall be as required by *Underwater Surfaces*, Coat 1 and 2, in Section 6.05.

In way of all required surfaces, Contractor shall apply two coats of anti-fouling paint. Color and thickness shall be as required by *Underwater Surfaces*, Coats 3 and 4 in Section 6.05. Any disturbed trim stripes shall be touched up.

Draft marks shall not be coated with anti-fouling paint. After applying anti-fouling paint to all required surfaces, the Contractor shall recoat the vessel's forward and aft draft marks with one coat International 990, white.

6.07 MAIN DECK PLATING AND WEAR DECK SUPPORTS

The intent of this section is to remove the vessel's wear deck, prepare and coat the main deck and wear deck support structure, and reinstall the vessel's wear deck.

Prior to arrival at the shipyard, the Owner will have removed the vessel's independent gasoline tank (located just aft of the focsle), ATV, 2nd skiff, and line coiler from the Main Deck.

Removals:
The vessel's crane shall be removed and a new pedestal installed in accordance with Section 7 prior to conducting surface preparations or coating in this section.

The vessel's ball check valves shall be removed and threaded caps installed in accordance with Section 5.08 prior to conducting surface preparations or coating in this section.

The vessel will have only one skiff, a 25 foot safe boat as shown in Figure 5-1, on the Main Deck upon arrival at the shipyard. Contractor shall carefully remove the vessel's skiff, from the Main Deck, using Owner supplied lifting sings. Skiff shall be moved to a secure (locked) location, and protected from weather and shipyard debris. The vessel's skiff does not have a trailer or cradle. The Contractor is responsible for providing a cradle or blocking the vessel in a manner to prevent any damage. Any damage to the vessel's skiff during storage shall be repaired at no cost to the Owner.

Figure 5-1: Vessel Skiff to be Removed and Stored

The Contractor shall remove the wear deck from the vessel. The wear deck is between frame 19 and 56, approximately 8 inches above the Main Deck steel plating. The wear deck consists of approximately 45 wood panels, approximately 6.5 feet wide by 8 feet long. Each panel is built from approximately 12 longitudinal deck boards (nominal 2x6 Apaton lumber) bolted to three transverse boards (nominal 2x6 Apaton lumber). The bolts are a mixture of lag bolts and through bolts with a nut on the underside of the transverse board.

Figure 5-2: Typical Deck Hold Down Tabs

The panels rest on horizontal 3x4x1/4 inch steel support angles. Each wear deck panel is held down with approximately eight, hold down tabs. The hold down tabs are 2 inch metal clips welded to the support angles, as shown in Figure 5-2. Contractor shall carefully remove each tab by grinding, or a similar method that does not damage the wear deck boards.

Once the hold down tabs are removed, the wear deck panels shall be labeled by location, and removed from the vessel and stored for re-installation after application of coating system. During previous deck panel removal cycles, some of the panel longitudinal boards have been pulled off the transverse boards. Contractor is responsible for lifting the panels in a manner that prevents longitudinal boards from being pulled off the transverse boards. Any damage caused to the panels during removal, storage, or reinstallation shall be repaired at no cost to the Owner.

Figure 5-3: Grating Outboard of Wear Deck

There are approximately 30 panels of metal grating between the edge of the wear deck and the bulwark plating (up to 12 inches wide and 4 feet long as shown in Figure 5-3). The Contractor shall label and remove the grating along the outboard edge of the wear deck. Grating shall be stored for re-installation after the application of the Main Deck coating system.

Surfaces to be Prepared and Coated:

The surfaces to be prepared and coated are:

All exterior Main Deck plate surfaces between frame 19 and frame 57. Main Deck plate, full width of the vessel starting at the aft end of the focsle up to the forward house bulkhead (approximately 74 feet in length.) Main Deck area to be prepared shall include a 6 inch height along the entire perimeter of the Main Deck and a 6 inch height along the perimeter of all hatch coamings or trash chutes.

Wear deck support structure between fame 19 and frame 57. Support structure includes:

Flat bars along the house and focsle bulkheads, bulwarks, and hatch coamings. Area for flat bars shall include approximately 1.5 inches above the flat bar and below.

Approximately 26, carbon steel angles (3 inch x 4 inch) at 38 foot length, oriented transversely to support the wear deck. These transverse support angles are approximately 8 inches above the main deck plating and the underside of the support angles is included in the required area.
Approximately 230 carbon steel angles (3 inch x 4 inch) at 8 inch length, between the transverse angles and the Main Deck.

The total required surface area is approximately 2,900 square feet of deck plating and approximately 1,600 linear feet of 3 inch x 4 inch angle (both sides).

Preparation:
Prior to installation of protections, the vessel crew shall remove the lifesaving gear, firefighting gear and any loose hoses, lines or wires mounted on the bulwarks or focsle bulkhead in way of the areas to be prepared and coated. Gear removed by the crew shall be stored by the crew in house.

At a minimum, the following areas and equipment shall be fully protected from damage caused by both direct blast grit and blasting dust. The protection shall generally be plywood or rubber installed to the satisfaction of the Owner's Representative.

a. Hydraulic equipment including the forward crane, crab block davit, crab block, and the associated hydraulic valves shall be completely covered and sealed to prevent any ingress of blasting grit and damage to sealing or wear surfaces. The hydraulic equipment is generally located on the starboard side of the vessel, aft end of the Focsle as shown in Figure 5-4.
b. Hydraulic hoses for the removed line coiler shall be capped with threaded plugs and protected from blasting grit.
c. The pot launcher shall be set in the launch position, and the launcher, hinges, and associated hydraulic components shall be covered and sealed to prevent damage.
d. The port and starboard bulwark doors, exterior Main Deck house door, and the exterior Focsle door shall be covered and sealed to prevent damage to the hinges or sealing surfaces.
e. The first 8 feet above the area to be blasted of the bulwarks, focsle, Focsle Deck overhang, and forward house bulkhead shall be covered to protect the surface coating from damage.
f. The light fixtures and electrical outlets (including the shore power) on the forward house bulkhead and the focsle bulkhead, within 8 feet of the area to be blasted, shall be covered and sealed to prevent the ingress of blasting grit.
g. The vessel has approximately 10 scuppers on each side of the vessel. Scupper hinges shall be protected from ingress of blasting grit and the gap around each scupper shall be sealed to prevent blasting damage to the exterior hull coating. .

The above list contains the minimum recommended items to be protected. The Contractor is responsible for ensuring that all vessel equipment and coated surfaces, not included in the area to be prepared and coated, are adequately protected for the prevailing conditions and to the Owner's satisfaction. Any equipment or coating system damaged from blasting grit shall be repaired to like new condition at no cost to the Owner.

Figure 5-4: Vessel's Deck Equipment Requiring Protection

At a minimum, the following areas shall be protected from ingress of blasting dust and paint overspray. The protection shall generally be light plastic draped over the surface and sealed along the edges, installed to the satisfaction of the Owner's Representative.

a. The vessel's ventilation systems shall be locked out and the exterior louvers sealed to prevent the ingestion of blasting dust, paint, or any other contaminants into the ventilation systems. The ventilation louvers include the:
   1. Focsle Deck exhaust louver – located in the aft end of the forward mast, shown in Figure 5-4.
   2. Engine Room intake louver– located below the Bridge deck stairs.
   3. Accommodation intake louver– located below the Bridge deck stairs.
   4. Engine Room exhaust louver– located at the aft end of the house, above the house roof.
   5. Accommodations exhaust – Gooseneck located on the port side of the Poop Deck.
   6. Dryer exhaust – located on the starboard side of the Poop Deck.

b. The vessel structure not included in the required area shall be protected from dust and paint overspray. Structure to be protected includes:
   1. The bulwarks not previously protected from direct blasting grit, such as the focsle bulwarks and exterior bulwarks side.
   2. The house bulkheads and decks not previously protected from direct blasting grit, up to the pilothouse roof including the pilothouse windows, and railings.
   3. The Focsle Deck not previously protected from direct blasting grit, including any railings and the forward mast.

The above list contains the minimum recommended items to be protected. The Contractor is responsible for ensuring that all vessel equipment and coated surfaces, not included in the area to be prepared and coated, are adequately protected for the prevailing conditions and to the Owner's satisfaction. Any

equipment or coating system damaged from overspray shall be repaired to like new condition at no cost to the Owner, as required by Section 6.04.

After protections are approved by the Owner's Representative, the Contractor shall prepare all required surface using one of the following methods:

Method A - Dry Abrasive Blast Cleaning: Contractor shall conduct dry abrasive blast cleaning, to SSPC-SP-6 to all required surfaces, or

Method B – Wet Abrasive Blast Cleaning: Contractor shall conduct wet abrasive blast cleaning, to SSPC-WAB-6 to all required surfaces.

The Contractor is responsible for ensuring all required surfaces are prepared to the specified visual standard. Owner's Representative shall inspect the cleaned areas, including the underside of the transverse support angles, prior to application of any coating system. Contractor shall select one of the above two preparation methods and clearly identify which preparation method was selected for the submitted bid.

After blasting, the Contractor shall visually inspect the deck plating, in the presence of the Owner's Representative, and provide a Condition Found Report with any deficiencies. Any deck plating repairs or additional ultrasonic testing (UT) shall be handled by a Change Order.

If the Contractor requires a coat of paint to hold the blast as required in this contract, the Contractor shall use one coat of Interplate 937 (zinc silicate), applied at 0.4-0.7 mils DFT to the blasted area. If the hold coat is not applied prior to rust bloom, or the hold coat thickness is applied too thick, the Contractor shall re-blast the specified visual standard at no additional cost to the Owner. Application of a hold coat, if required, shall be included in the Contractor's bid for this item.

Surface Coating:
In way of prepared areas, apply three separate coats of anticorrosive: one full coat, one stripe coat, and a final full coat. Color and thickness shall be as required by *Exterior Decks,* Coats 1, 2 and 3, in Section 6.05.

Reinstallations after Coating:
After approval of the coating system, the Contractor shall remove the plywood or rubber protections and install any equipment removed from the vessel to prevent damage from blast cleaning and/or coating.

The Contractor shall reinstall the previously removed wear deck panels and grating panels. New hold down tabs shall be installed in the same locations as the previously removed hold down tabs. New hold down tabs and all portions of the coatings disturbed during installation of the weld down tabs shall be repainted in accordance with Section 6.04, with the top coat color to match existing.

The Contractor shall re-install the previously removed pot launcher and any removed hydraulic cylinders, valves, or hoses. After installation of the hydraulic components, the Contractor shall bleed the hydraulic system and top off the hydraulic tanks.

After re-installation of the wear deck, the Contractor shall move the vessel's skiffs back to the Main Deck.

7. CRANE PEDESTAL REPLACEMENT

REFERENCES

7A) North Pacific Crane dwg FA-2154 Rev 0 Final Arrangement and Crane Data for Model MCKT-2265
7B) North Pacific Crane Sweep Chart, Alaska Marine Crane Model: MCKT-2265, As Rigged Sweep Load Chart.
7C) Coastwise dwg 17012-08-02 Rev – Crane Pedestal
7D) Coastwise dwg 17012-02-01 Rev – Pedestal Support Structure
7E) North Pacific Crane dwg HS-2154 Rev 0 Hydraulic Schematic for Serial Number 2154

5D) Homeport Marine Services dwg P-2 Rev A Fills Vents & Sounds.

GENERAL

The vessel recently installed a new crane on the existing port crane pedestal, located on the Main Deck at Frame 38. The new crane has a larger reach and higher load capacities than the original crane. The operation of the new crane was subsequently de-rated due to insufficient strength of the existing pedestal. The Owner desires to upgrade the vessel's pedestal to permit the crane to be loaded up to the original manufacturer's load capacities. The intent of this section is to remove the existing crane pedestal and install a new, stronger crane pedestal and crane bolting flange.

The new crane is an Alaska Marine Crane, Model MCKT-2265, Serial #2154 and is installed on the port side pedestal at Frame 38 as shown in Figure 6-1. The crane is described in Reference 7A) and the original manufacturer's load capacities are defined in Reference 7B). All subsequent references to "crane" in this section shall refer to this crane, unless specified otherwise.

The work in this section may require opening, entry, and gas freeing of #2 and #3 Fuel Oil double bottom tanks P/S. This effort is required and defined in Section 2.12 of this specification and the associated costs shall not be included in this section.

The work in this section requires coordination with the blasting and coating efforts required and defined Section 6 of this specification.

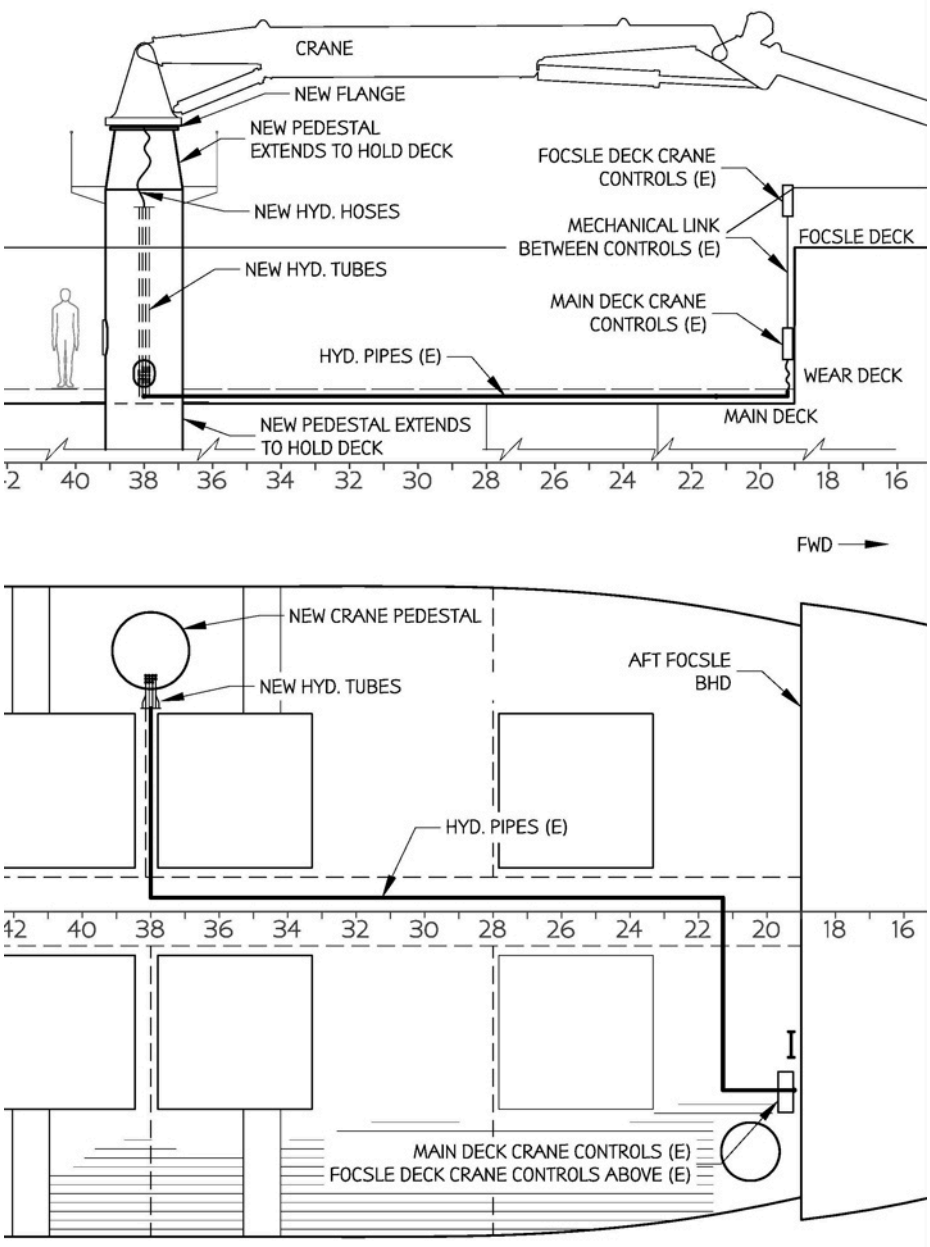

Figure 6-1: Key Plan

CONTRACTOR SUPPLIED EQUIPMENT

CRANE PEDESTAL ASSEMBLY

The Contractor shall provide one new crane pedestal assembly in accordance with Reference 7C). Pedestal assembly shall be fully fabricated, assembled, tested, and painted prior to installation on the vessel. Prior to fabrication, the Contractor shall submit weld procedures to the Owner for approval in accordance with Reference 7C).

The new crane pedestal shall be a circular steel pedestal with access openings, hose ports, ladders and platforms as described in Reference 7C). Crane pedestal welding shall meet the specific qualification, procedures, and testing shown in Reference 7C). The Contractor shall provide a Condition Found report

with the results of all crane pedestal weld testing to the Owner for approval prior to installation of the new pedestal on the vessel.

One vendor that can fabricate the required pedestal is:
Richards Pipe & Steel, Inc
Contact: Mike Richards
Phone: (253) 939-9660

The Contractor shall design and provide one new crane bolting flange and associated flange brackets to suit the existing crane turret and the slewing bearing. For bidding purposes, the Contractor shall assume the crane bolting flange size, bolting holes, and supporting brackets are as shown in Reference 7C). Prior to fabrication of the crane bolting flange, the Contractor shall obtain written verification from the crane manufacturer that the notional crane bolting flange, shown in Reference 7C), is of acceptable strength and size for the crane and the bolt holes match the crane turret bolt holes. Alternately, the Contractor may procure a pre-engineered crane bolting flange from the crane manufacturer that fits the pedestal tube in Reference 7C) and can support the rated crane capacities.

The crane manufacturer is:
North Pacific Crane Company
Phone: (206) 361-7064

The crane bolting flange and flange brackets shall be installed on the crane pedestal, prior to installation of the pedestal in the vessel. Crane bolting flange welding shall meet the specific qualification, procedures, and testing shown in Reference 7C). The Contractor shall provide a Condition Found report with the results of all crane bolting flange weld testing to the Owner for approval prior to installation of the new pedestal.

After the crane bolting flange has been successfully welded to the pedestal, the Contractor shall design and provide ladders and platforms. Ladders and platforms shall be mounted on the crane pedestal assembly as shown in Reference 7C). Final ladder and platform arrangements shall be approved by the Owner's Representative prior to installation. Once the Owner has approved all crane pedestal assembly fabrication and weld testing results, the pedestal shall be blasted and painted as required by *All Above Water Exterior Surfaces* in Section 6.05 with the exception that the final top coat (coat 4) color shall be black. After painting, the pedestal shall be delivered to the vessel for installation.

REMOVALS

WEAR DECK

Prior to starting the effort in this section, the Contractor shall remove the wear deck as required by Section 6.07. Costs for removal and reinstallation of the wear deck shall not be included in this section as these costs are included in Section 6.07.

The Contractor shall remove the wear deck supports around the base of the existing pedestal. Removal shall include both the flat bar attached directly to the pedestal and the horizontal 3x4x1/4" steel support angles on the forward and aft side of the pedestal. The Contractor is responsible for removing any wear deck support structure that may be an interference to the removal of the existing 41 inch diameter pedestal, or installation of the new 54 inch diameter pedestal. The existing wear deck support structure is shown in Figure 6-2.

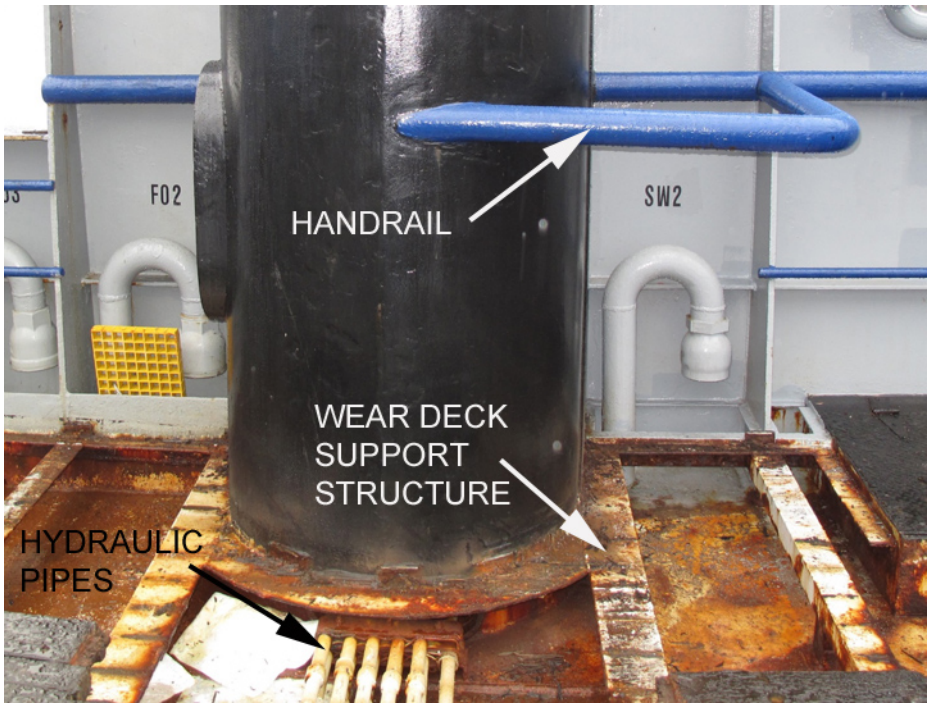

Figure 6-2: Existing Port Crane Pedestal at Main Deck

HYDRAULICS

The port crane has eleven, 1 inch hydraulic pipes (5 supply, 5 return, and 1 drain) that penetrate the base of the pedestal, as shown in Figure 6-2. The pipes are routed below the wear deck, from the crane pedestal at Frame 38, to the hydraulic controls mounted on the starboard side of the aft focsle bulkhead, as shown in Figure 6-1.

The Contractor shall drain the eleven 1 inch hydraulic pipes and ¾ inch hoses, between the crane and the crane controls. All drained hydraulic oil shall be disposed of in accordance with local, State, and Federal regulations.

The Contractor shall disconnect the eleven ¾ inch hydraulic hoses, inside the pedestal, at both ends of the hoses. The existing hose connections are shown in Figures 6-3 and 6-4. Any hydraulic components attached to the hoses shall be retained for re-installation.

Figure 6-3: Hydraulic Hose Connections to Rotoseal at Base of Crane Turret.

Figure 6-4: Hydraulic Hose Connections to Hydraulic Pipes Inside Pedestal Near Main Deck

The Contractor shall cut the eleven, 1 inch hydraulic pipes at the approximate location shown in Figure 6-1. Piping outboard of the cut shall be disposed of and the ends of the remaining pipes shall be temporarily plugged to prevent ingress of water, dirt, or blasting grit.

CRANE

The Contractor shall remove and store vessel's crane. Once the hydraulic hoses are disconnected, the Contractor shall remove the 30 bolts, shown in Figure 6-5, connecting the crane turret to the existing pedestal. Crane shall be moved to a secure location and protected from weather and shipyard debris. Any damage to the crane that occurs during removal, transportation, storage, or reinstallation shall be repaired at no cost to the Owner.

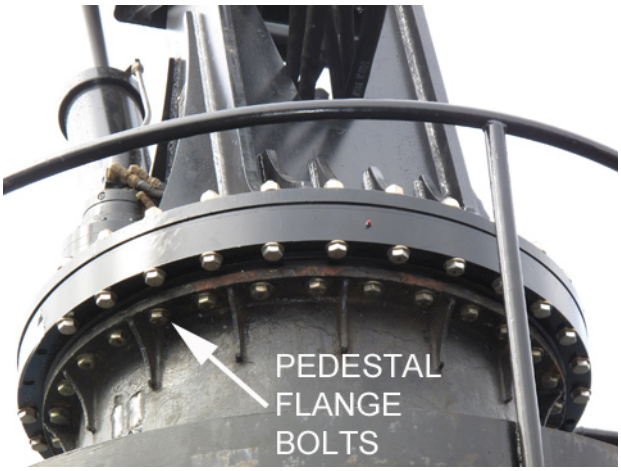

Figure 6-5: Existing Pedestal Flange Bolting

STRUCTURAL REMOVALS

The Contractor shall remove the existing crane pedestal and supporting structure as shown in Reference 7D), including the crane pedestal, portions of the Main Deck plate, pedestal support structure, and portions of bulkhead 38. The bulwark plating and bulwark structure shall be retained, as indicated in Reference 7D).

The 4 inch port Fuel Oil #2 tank vent and the 4 inch port Hold #2 vent shown in Figure 6-2 shall be removed above the Main Deck. Costs for the removal and inspection of the vent ball check valves shall not be included in this section as these costs are included in Section 5.08.

The hand rail, shown in Figure 6-2 shall be removed between Frame 36 and Frame 40 and the end of the handrail shall be sealed with a ¼ inch plate.

HOLD ZINCS

The two hold zincs identified in Figures 6-6 and 6-7 are mounted on Bulkhead 38 in way of the bulkhead plate to be removed. During removal of bulkhead plate, existing zincs shall be disposed.

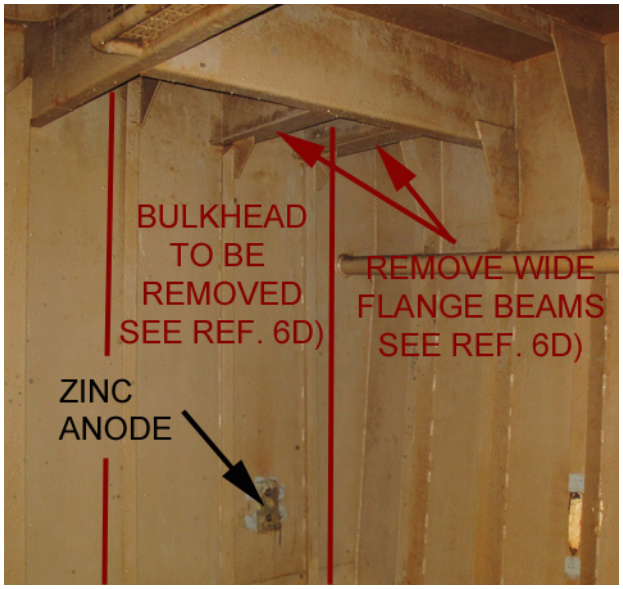

Figure 6-6: Forward Side of Bulkhead 38 (in Hold #2), Looking Aft.

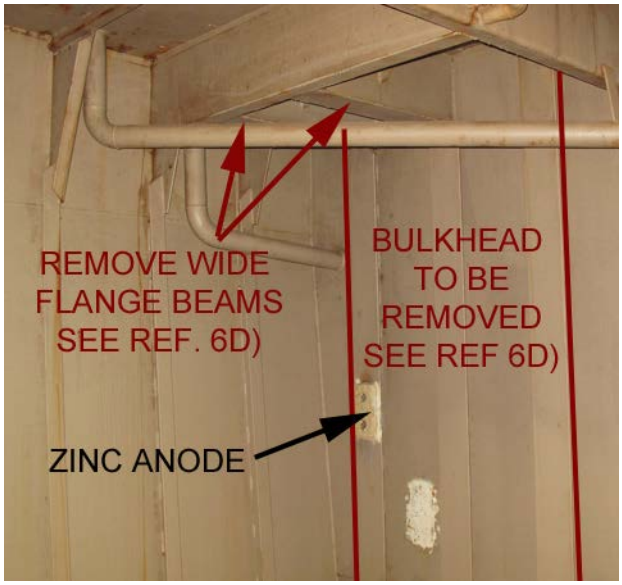

Figure 6-7: Aft Side of Bulkhead 38 (in Hold #3), Looking Forward.

INSTALLATIONS AND MODIFICATIONS

Prior to installing any structure, Contractor shall submit weld procedures to the Owner for approval, in accordance with Reference 7D).

PEDESTAL SUPPORT STRUCTURE

The Contractor shall install the crane pedestal support structure as shown in Reference 6D).

PEDESTAL

After installation of the crane pedestal support structure, the Contractor shall install the new pedestal in accordance with Reference 7C) and 7D).

After installation of the pedestal, the Contractor shall fabricate and install a new flat bar wrap and bolted hatch for the pedestal access hole in the Hold, in accordance with Reference 7D). Bolted Hatch shall consist of a Hatch plate, bolting ring, cloth inserted gasket, and ¾ inch stainless steel bolts with nuts and washers. Bolting ring shall be 3/8 inch plate with an internal clear opening of 15 inches x 23 inches. Bolting ring shall be welded watertight to the access hole wrap. Hatch plate shall be ½ inch thickness. The bolting ring and the hatch plate shall have 24 equally spaced (approx. 3 inch spacing) holes to suit the ¾ inch bolts. New bolts shall be installed in the bolting flange and tack welded on the back side of the bolting flange.

The Contractor shall install new 4 inch piping above the Main Deck for the port Fuel Oil #2 vent and the port Hold #2 vents as shown in Reference 7D). New piping shall be in the same location as the previously removed vent piping, as required for a tank vent in Reference 7D, and similar to the existing vents. Costs for reinstallation of the vent ball check valves shall not be included in this section as these costs are included in Section 5.08

All watertight welds shall be tested in accordance with Reference 7D). Condition Found Report shall be provided to the Owner with the results of the weld tests. Additional pedestal weld testing is required after the 125% Load Test required by this section.

HOLD ZINCS

The Contractor shall provide two new bolt-on style, 23#, 6 inch x 12 inch zinc anodes with new mounting hardware. One anode shall be installed on the forward side of Bulkhead 38 and one anode shall be installed on the aft side of Bulkhead 38. Final location of new anodes shall be approved by the Owner's Representative. The Contractor shall recoat any area of bulkhead plate coating disturbed for installation of the new mounting hardware. After installation, the Contractor shall perform an Owner witnessed conductivity test on each zinc anode in accordance with Section 5.07.

HYDRAULICS

After the Main Deck and the new pedestal are coated, the Contractor shall extend the eleven, 1 inch hydraulic pipes. Pipes shall be routed from the previously cut location, through the pedestal hydraulic penetration, and up the interior side of the pedestal as shown in Figure 6-1 and Reference 7A). New piping shall be 1 inch 316 stainless steel mechanical tubing, ASTM A269 rated for 3,000 psi or greater. New fittings shall be stainless steel, 37° flared ends, ASTM F1387, SAE J514 rated for 3,000 psi or greater.

After fabrication, all modified hydraulic piping shall be hydrostatically tested to 1.5 times the operating pressure of 2,500 psi (as shown in Reference 7E), to the satisfaction of the Owner. A Condition Found Report shall be provided to the Owner with the results of the pressure test.

After fabrication, the Contractor shall provide a polishing unit to clean the modified hydraulic piping. The supply, return and drain hoses shall be disconnected at the valve block on the foclse bulkhead (shown in Figure 6-8), and the pipes at both the foscle bulkhead and the crane pedestal shall be connected to create one continuous loop for cleaning. The Contractor may use the vessel's hydraulic hoses to connect the piping into one continuous loop. The modified hydraulic oil piping shall be cleaned by continuously circulating oil until a cleanliness level of ISO 17/15/12 is obtained. The Contractor shall dispose of all oils used for cleaning in accordance with local, State, and Federal regulations.

After the piping is clean, the Contractor shall, reconnect the hoses to the valve block at the focsle bulkhead. The Contractor shall supply and install eleven, new 1 inch hoses from the roto-seal at the base of the crane turret to the new hydraulic piping. New 1 inch hoses shall be SAE J1942, rated for a minimum of 3,000 psi, with stainless steel 3000# JIC 37° flared ends. The hydraulic fittings on the crane rotoseal, shown in Figure 6-3 are sized for ¾ inch hoses, contractor shall provide reducers to connect the 1 inch hoses to the crane rotoseal.

Figure 6-8: Port Crane Hydraulic Controls at Focsle Bulkhead

With the hydraulic system fully assembled, the Contractor shall bleed all air from the system and top off the vessel's hydraulic system.

WEAR DECK

After installation of the crane pedestal, but prior to blasting of the Main Deck (required by Section 6.07), the Contractor shall install new wear deck support structure around base of crane pedestal. Wear deck support structure shall be similar to the existing support structure shown in Figure 6-2.

The Contractor shall modify the wear deck panels around the crane pedestal to suit the new pedestal size and location. The wear deck panels are 2x6 Abaton lumber. After modification, the modified edges of the panels shall be coated black to match the existing panels.

After completion of all coating and testing, the Contractor shall re-install the wear deck. Costs for re-installation of the wear deck panels shall not be included in this section as these costs are included in Section 6.07.

COATING

After installation of the crane pedestal and wear deck support structure, but prior to installation of hydraulic pipes and re-installation of the crane, Contractor shall blast and coat the Main Deck as required in Section 6.07.

After coating the Main Deck, Contractor shall coat all the new pedestal support structure, and any areas disturbed by the work in this section. Color and thickness shall be as required by *All Above Water Exterior Surfaces* in Section 6.05 with the exception that the final top coat (coat 4) color shall be:

a) Black – for interior and exterior portions of the pedestal above the main deck
b) White – for interior and exterior portions of the pedestal below the main deck
c) Haze Grey – for disturbed areas of the bulwarks
d) FS15055 Blue - for disturbed hand rails, bulwark caps, etc.

CRANE

The Contractor shall install the crane on the new pedestal in accordance with the crane manufacturer's recommendations. Bolting hardware shall be new, length and size in accordance with crane

manufacturer's recommendations. All bolts shall be installed to the torque required by the crane manufacturer.

The crane manufacturer's load chart, (Reference 7B), shall be etched on an aluminum plate, or similar permanent name plate, and mounted on the crane pedestal. Final location of load chart shall be approved by the Owner's Representative.

DOCUMENTATION

The Contractor shall provide Condition Found Reports documenting the results of the piping pressure tests, hydraulic pipe cleaning, weld testing, operational testing, and the Load Test.

TESTING

OPERATIONAL TEST

After installation of the Crane, Contractor shall operationally test the crane to the satisfaction of the Owner's Representative. All operational testing shall be witnessed by the Owner's Representative. Crane operation, including the turret rotation, main boom motion, knuckle boom motion, and boom extension shall be shown to smoothly operate with no interferences from the new pedestal through the entire range of motion. A Condition Found Report shall be provided to the Owner documenting the results of the operational testing.

LOAD TEST

After satisfactory operational testing of the crane, Contractor shall perform an Owner witnessed Load Test in accordance with ABS Rules for Certification of Lifting Appliances. Load Test shall be completed at an outreach of 45 feet with a weight of 10,000 pounds (125% of the 8,000 pound limit shown in Reference 7B). Weight shall be suspended for a minimum of 5 minutes during the Load Test. After completion of the load test, pedestal tube critical welds shall be re-tested in accordance with Reference 7C). Upon satisfactory completion of weld testing, a Condition Found Report shall be provided to the Owner documenting the results of the Load Test and the post-test inspections.

8. BALLAST AND FRESH WATER TANK INSPECTIONS

REFERENCES

8A) Homeport Marine Services dwg S-3 Frames 5-56&61
8B) Homeport Marine Services dwg S-4 Frames 57-73
8C) Homeport Marine Services dwg S-6 Longitudinal BHDs & Girders
8D) Homeport Marine Services dwg P-4 Bilge, Ballast and Fire Piping
5C) Tank Arrangement

GENERAL

The vessel has 2 ballast tanks and 2 fresh water wing tanks, as shown in Reference 5C), that require inspection. The intent of this item is to provide access and inspect the structure and coating system for these tanks.

Costs for opening manhole covers, certifying the tanks as safe for hot work, maintaining the certificates, and closing manhole covers shall not be included in this section as these costs are included in Section 2.12.

REMOVALS

This section not used.

MODIFICATIONS AND INSTALLATIONS

BALLAST TANKS

Portions of the hull plating and structural bulkheads below the chine were replaced during a previous shipyard period. The Owner now desires to inspect the condition of the hull plating and structural bulkheads in both the forward and aft ballast tanks. The forward ballast tank is located forward of Frame 9, and the aft ballast tank is located aft of Frame 73. The structure within the ballast tanks is as shown in Reference 8A) and Reference 8B).

After the forward and aft ballast tanks are opened and certified safe for hot work in accordance with Section 2.12, the Contractor shall complete a visual inspection, witnessed by the Owner's Representative, of the hull plate and structural bulkheads for any pitting, signs of excessive corrosion,

or coating failure. Contractor shall provide a Condition Found Report documenting the condition of the bottom plate and internal structure.

Any structural repairs shall be handled by a Change Order, or through the general welding account. Any coating repairs shall be handled by a Change Order, or through the general painting account. All coating systems repairs in the ballast tanks shall be in accordance with *All Void Spaces* in Section 6.

After the visual inspection of the ballast tank structure, Contractor shall remove the ballast tank valve, a 3 inch gate valve, 4 bolt flange, iron body, 150# valve with a reach rod, as shown in Figure 7-1, and Reference 8D). The Contractor shall procure a new valve of identical model, material, and performance. The new valve shall be painted in accordance with Section 6, with color to match associated piping. Contractor shall install the new 3 inch valve, reconnect the reach rod and conduct Owner witnessed testing to demonstrate the reach rod and valve are fully operational.

Figure 7-1: Forward Ballast Tank Valve and Reach Rod, Inside Forward Ballast Tank

FRESH WATER TANKS

After the forward and fresh water tanks are opened and certified safe for hot work in accordance with Section 2.12, the Contractor shall provide and install nominal 2 inch lumber as scaffolding in both the port and starboard fresh water tanks to support inspection of the coating system. The fresh water tanks are located between Frame 55 and 62, outboard of the Engine Room. Each fresh water tank is approximately 14 feet long, 13.75 feet tall and 5.5 feet wide with 3 non-tight transverse bulkheads at 4 foot spacing, as shown in Reference 8C). Sufficient scaffolding shall be installed between each of the non-tight bulkheads to provide visual access to the all coated surfaces in the fresh water tanks. The vessel crew indicates that metal brackets were previously installed in the fresh water tanks

as support structure for this scaffolding. If any new metal brackets are needed, the installation and coating shall be handled as a Change Order with the placement approved by the Owner's Representative.

The Contractor shall complete a visual inspection, witnessed by the Owner's Representative, of the coating system in the fresh water tanks for any areas of coating failure. Contractor shall provide a Condition Found Report documenting the condition of the coating systems in the fresh water tanks.

Any coating repairs shall be handled by a Change Order, or through the general painting account. All coating systems repairs in the fresh water tanks shall be in accordance with *Potable Water Tank* in Section 6, which includes special ventilation and dehumidification requirements.

Following inspection, ventilation, and approval, the scaffolding shall be removed. The Contractor is responsible for repairing any areas of coating damage from installation or removal of the nominal 2 inch lumber scaffolding.

After the fresh water tanks are closed in accordance with Section 2.12, the Contractor shall clean, flush, disinfect and certify the fresh water tank suitable for use in strict compliance with the regulation of the United States Public Health Service (USPHS) and publication No. 393.

9. STARBOARD CRAB PUMP VALVE

REFERENCES

9A) Homeport Marine Services dwg. P-3 Crab Piping Details

GENERAL

The vessel has two sea chests at frame 48 in the engine room (one port and one starboard) as shown in Reference 9A). These sea chests are primarily used to provide seawater to the crab pumps. The port sea chest was previously modified with the installation of a gate sea valve between the sea chest and the crab pump, as shown in Figure 8-1. The starboard sea chest was not modified and still has a wafer sea valve between the sea chest and the crab pump, as shown in Figure 8-2. The intent of this section is to remove the starboard sea chest wafer valve and install an Owner provided gate valve, similar to the port sea chest.

Figure 8-1: Port sea chest with 8 inch gate valve.

Figure 8-2: Starboard sea chest with 8 inch wafer sea valve and 3 inch fire pump suction.

REMOVALS

The crab pumps have been leaking, resulting in excess rusty water in the engine room bilge. Prior to any removals or modifications in this section, Contractor shall clean the engine room bilges. The Contractor shall first pump any existing bilge water out of the vessel. The Contractor shall assume approximately 100 gallons of bilge water. Once the bilges are pumped out, the Contractor shall wash the engine room bilges, below the deck plating, with a hot water detergent wash to remove any oily residue and rust stains. After washing and rinsing, the bilge shall be pumped dry. The Contractor shall dispose of the bilge water and washing water in accordance with all Federal, State, and local regulations.

As shown in Figure 8-3, the starboard sea chest is a 14 inch diameter pipe with an 8 inch wafer sea valve (Valve number 3 in Section 5.05). The sea chest also has a 3 inch fire pump suction with a 3 inch gate valve (Valve number 12 in Section 5.05) and a 1 inch vent with a 1 inch valve (Valve number 7 in Section 5.05).

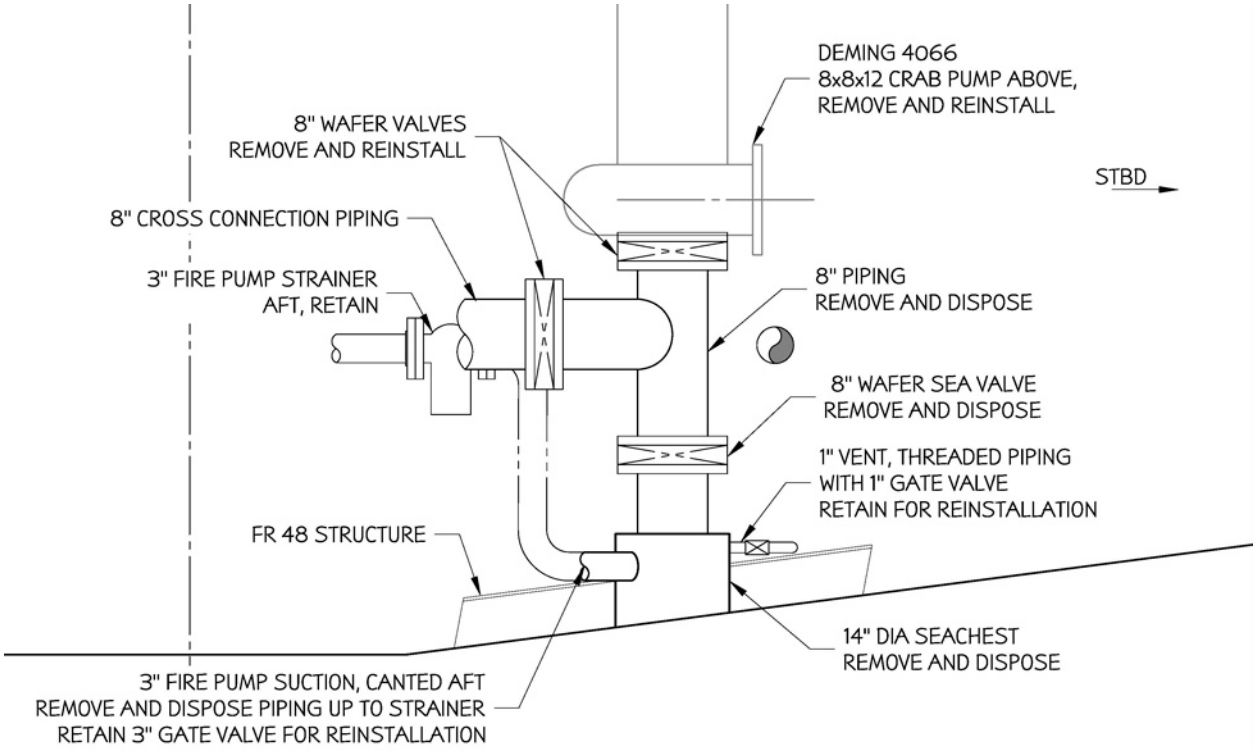

Figure 8-3: Existing Starboard Sea Chest at Frame 48 and Associated Piping

After the bilges are clean, Contractor shall remove the crab pump and associated 40Hp motor and couplings. Crab pump, motor, and couplings shall be stored in the Engine Room, with the final storage location to be approved by the Owner's Representative. Prior to any disassembly, the Contractor shall measure and record the position of the crab pump suction flange. Contractor is responsible for demonstrating, to the Owner's satisfaction, that the new suction flange is in the exact position as the existing suction flange.

The Contractor shall remove and dispose of the existing sea chest, the 8 inch wafer sea valve, the 8 inch pipe spool directly above the sea valve, and the 3 inch fire pump suction piping as indicated in Figure 8-3.

The Contractor shall remove and store for reinstallation, the 3 inch fire pump sea valve, 8 inch crab pump wafer valve, and the 8 inch cross connect wafer valve as indicated in Figure 8-3.

The Contractor shall conduct spot commercial grade power tool cleaning, to SSPC-SP-15, to the plate within 6 inches of the removed sea chest and any areas of rust near the removed sea chest or other bilge areas, as designated by Owner. Edges of the cleaned areas shall be feathered to tight intact coatings. The total cumulative area of spot commercial grade power tool cleaning shall be less than 25 square feet.

The Contractor is responsible for the removal and re-installation of any interferences surrounding the starboard sea chest.

REFURBISH OWNER PROVIDED VALVE

The Owner shall provide an 8 inch flange, bronze, gate valve for installation in this section. The Owner provided valve has been in storage and will require blue testing to determine its condition. Contractor shall move the gate valve from the bow thruster room to a clean workshop for testing.

Figure 8-4: Owner Supplied Gate Valve Stored in Bow Thruster Room.

The Contractor shall disassemble, clean, visually inspect, and "Prussian Blue" test the Owner supplied valve to ensure 100% seat contact. Owner shall witness the results of all blue testing. If the valve passes testing, it shall be reassembled with new cloth-inserted gaskets and valve stem packing material. If the valve fails the "Prussian Blue" test it shall be lapped with grinding compound for a minimum of 60 minutes and retested with "Prussian Blue". Following inspection and blue testing, the Contractor shall provide a Condition Found Report to the Owner detailing the condition of all valves.

If the Owner provided valve fails the second "Prussian Blue" test, repair of the valve shall be handled by Change Order. In the Condition Found Report, the Contractor shall propose a method and cost to repair or replace defective valves. Any cost to reassemble valve with new gaskets and stem packing material shall not be included in the Change Order as this effort is assumed to be included in the normal scope of work for this section.

After the valve is reassembled, repaired, or replaced, the Contractor shall hydrostatically test the valve at a pressure of 1.5 times the rated valve operating pressure (valve is rated for 150 psi). The hydrostatic test pressure shall be held for a minimum of 15 minutes. All hydrostatic testing shall be witnessed by the Owner's Representative.

MODIFICATIONS AND INSTALLATIONS

The Contractor shall modify the existing cross connection piping by removing the existing 8 inch flange and installing a new 8 inch 150# slip on flange approximately 12 inches inboard of the existing flange, as indicated in Figure 8-5.

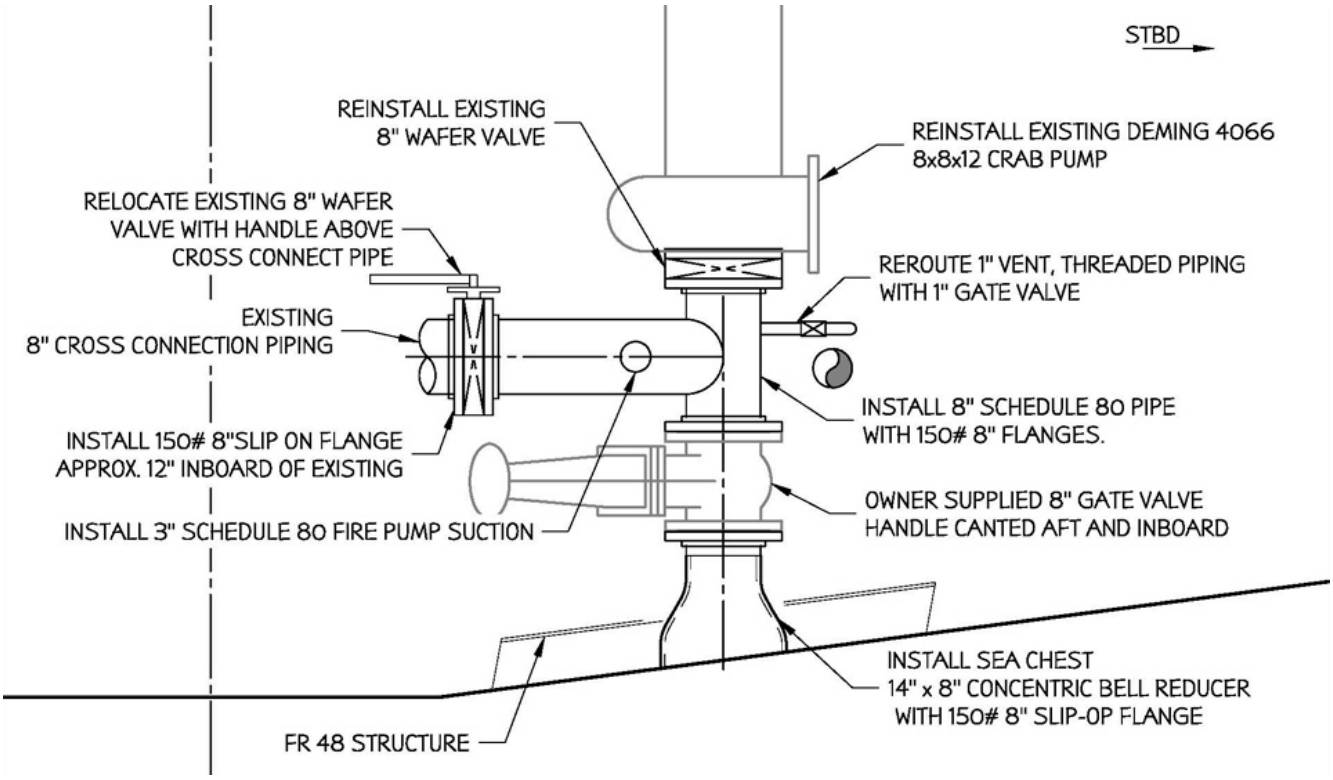

Figure 8-5: New Sea Chest Piping

The Contractor shall install a new sea chest, as indicated in Figure 8-5 and to the satisfaction of the Owner. New sea chest shall be installed in the same location as the previously removed sea chest and shall be provided with a grate, similar to the existing sea chest grate and as shown in (Reference 9A). The sea chest welds shall be hydrostatically tested in the presence of the Owner's Representative to demonstrate a watertight installation.

The Contractor shall install the Owner provided 8 inch sea valve on the new sea chest as shown in Figure 8-5, with new cloth-inserted gasket material and new marine grade stainless steel nuts, bolts, and washers and using marine grade never-seize on all fasteners. The handle of the new sea valve shall be canted inboard and aft to clear existing piping interferences and the bulkhead at Frame 49. Final orientation of the sea valve handle shall be approved by the Owner's Representative prior to installation. Sea valve shall be installed in the closed position for leak testing in accordance with Section 5.05, at the time of undocking.

The Contractor shall fabricate new piping to be installed above the new 8 inch gate sea valve, as shown in Figure 8-5. All piping shall be schedule 80 and all flanges shall be minimum 150#. The Contractor is advised that the distances between the top of the sea valve and the bottom of the crab pump are not suitable for a stock 8 inch "T", therefore the Contractor shall fabricate a "T" connection to suit the

available space. New piping shall include a 1 inch "T" for the vent piping and a 3 inch "T" for the fire pump suction as shown in Figure 8-5 and 8-6.

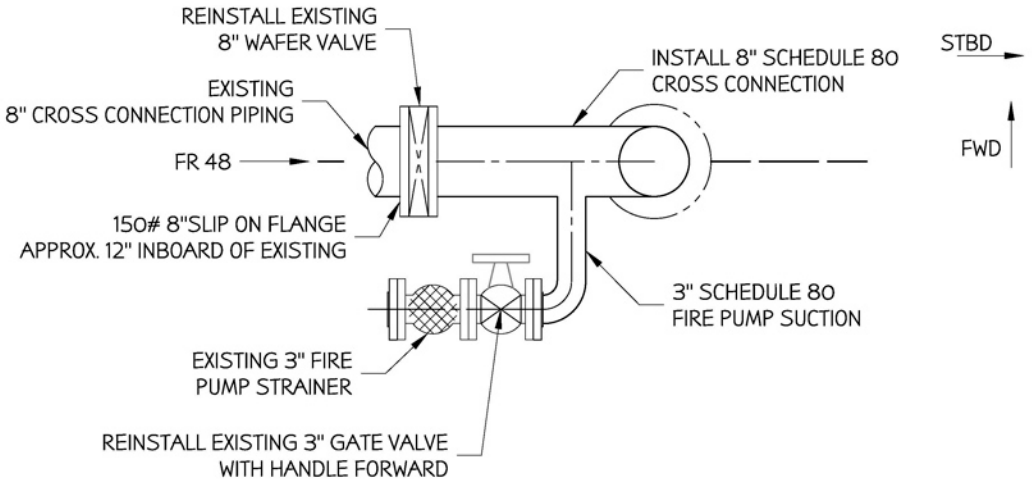

Figure 8-6: Cross Connection Piping Plan

All piping modifications and final valve locations shall be approved by the vessel engineer prior to installation. All new welds shall be hydrostatically tested in the presence of the Owner's Representative.

The Contractor shall install the new piping and existing fire pump 3 inch gate valve as shown in Figure 8-6 with new cloth-inserted gasket material and new marine grade stainless steel nuts, bolts, and washers using marine grade never-seize on all fasteners. The new piping shall be installed loose at the 8 inch gate valve to support leak testing of the gate valve during undocking.

The Contractor shall install the existing 1 inch vent valve on the new piping and reroute the 1 inch threaded pipe to the vent valve. The 1inch vent piping is routed vertically along bulkhead 47, with the nearest threaded connection approximately 8 feet above the engine room grating. The Contractor shall shorten the existing vertical portion of piping and install new horizontal sections of piping to suit the new vent position. Piping shall be installed with no low points in which air can be trapped.

After approval of welds, The Contractor shall recoat all cleaned surfaces, disturbed surfaces, and new piping in accordance with the paint schedule in Section 6.

During undocking, the Dock Master shall hold the vessel within two feet of the waterline as docked, for as long as it takes to examine the sea valve. If the valve fails for any reason, the Contractor shall lift the vessel from the water and correct the defective valve. The Owner shall not be liable for any additional costs, docking crews, tugs, etc., which result from this extra time.

The Contractor shall reinstall the crab pump and associated 40Hp motor and couplings on the existing foundation and the existing 8 inch wafer valves using new marine grade stainless steel nuts, bolts, and washers and using marine grade never-seize on all fasteners. After vessel is launched, the Contractor shall tighten the new piping at the 8 inch gate valve and verify crab pump alignment, and if needed adjust alignment to provide no more than 0.003 inch misalignment.

QUALITY ASSURANCE

The Contractor shall insure that the Owner's Representative inspects all phases of this task and that all materials are of good marine grade.

DOCUMENTATION

The Contractor shall provide a Condition Found Report documenting the condition of the Owner supplied gate valve and copies of any purchase orders associated with valve repair components.