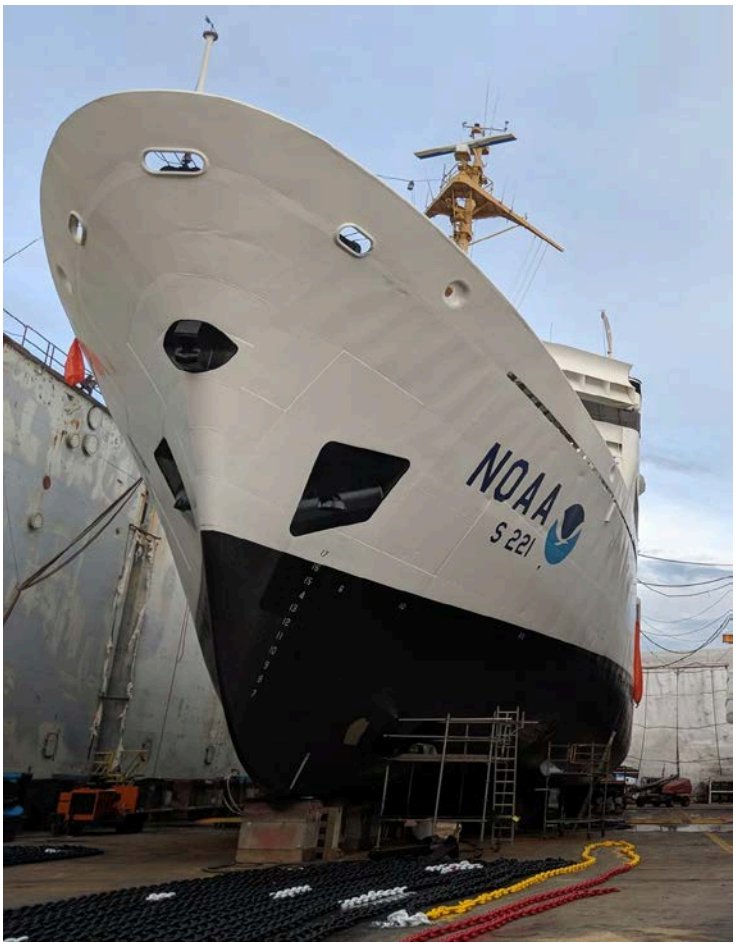
NOAA SHIP RAINIER
FY 2020 DRYDOCK REPAIR PERIOD
Statement of Work
(S-221)



Year Built: 1968
Designer: Maritime Administration
Construction: Welded Steel/Ice Strengthened
Builder: AEROJET – General Shipyards
Jacksonville, Florida
Overall Length: 231 feet (70.4M)
Beam: 42 feet (12.8M)
Displacement: 1800 TONS
Draft: 14.3 feet (4.36M)

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GENERAL REQUIREMENTS

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BASE WORK ITEMS – ORF

10870 DRYDOCKING BERTHAGE AND UTILITIES
10910 ABS ANNUAL LOAD LINE SURVEY AND REPAIRS
10911 FIRE AND SAFETY INSPECTIONS AND REPAIR
11370 DECK AND BULKHEAD STEEL REPAIRS
12330 MAIN ENGINE ANNUAL MAINTENANCE AND INSPECTION
12410 REDUCTION GEAR INSPECTION
13110 SSDG ANNUAL MAINTENANCE AND INSPECTION
13111 EGEN MAINTENANCE AND INSPECTION
15040 MACS SYSTEM SERVICING
15050 FIRE MAIN AND MISCELLANEOUS PIPING REPAIR
15120 VENTILATION CLEANING
15140 AC AND REEFER INSPECTIONS
15170 BOILER SERVICING
15330 GREY WATER TANKS CLEAN
15610 STEERING GEAR INSPECTION AND MAINTENANCE
15720 ELEVATOR INSPECTION
15830 LIFTING GEAR INSPECTIONS
16310 UNDERWATER HULL COATING
16311 FREEBOARD HULL COATING
16340 DECK NON-SKID RENEWAL

BASE WORK ITEMS – PAC

22430 SHAFTS BEARINGS AND PROPELLER HUB REFURBISHMENT
25680 SPP PLC REPLACEMENT
26310 SUPERSTRUCTURE COATING
26440 TOILET AND SHOWER RENEWAL

GROWTH ITEMS – ORF

30000 ADDITIONAL GOVERNMENT REQUIREMENTS – ORF

GROWTH ITEMS – PAC

40000 ADDITIONAL GOVERNMENT REQUIREMENTS – PAC

OPTION ITEMS – ORF

50840 CRANE SUPPORT SERVICES
55290 BILGE PUMPING
55410 DIESEL FUEL STORAGE

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1. INTENT

1.1 This specification contains the general requirements for work performed by the drydock repair contractor for the NOAA Ship RAINIER. These general requirements apply to all work items contained in this contract including care of the ship, sea trials, and services provided to the ship during the contract.

1.2 Work under this contract will be performed at the drydock contractor's facility

2. REFERENCES

2.1 NOAA Standard Specification S4800-2, Piping Systems
2.2 American Bureau of Shipping "Rules for Building and Classing Steel Vessels"
2.3 U. S. Coast Guard "Subchapter F - Marine Engineering", 46 CFR 50 through 46 CFR 64.
2.4 U. S. Coast Guard "Subchapter J - Electrical Engineering", 46 CFR 110 through 46 CFR 113.
2.5 IEEE Std 45-2002, "IEEE Recommended Practice for Electric Installations on Shipboard"
2.6 NOAA Standard Spec S0100, Implementation and Conduct of Check Points

3. DEFINITIONS Wherever used in this specification and in all other work items in this contract, the following definitions of terms apply:

3.1 Inspect. Visually evaluate the specified surface, item, part, or component for evidence of contamination, damage excessive wear, scoring, and any other condition which could interfere with the proper operation or functioning of the surface, item, part or component.

3.2 Install. Place the specified item in position for service and make all connections needed to insure proper use, service, appearance, and operation. Except as may otherwise be specified, this shall include the following:

3.2.1. Provide new or modify existing foundations. Securely mount equipment and components using new fasteners. Align connected equipment and components to meet manufacturer's specifications.

3.2.2. Make all electrical connections. Provide new electrical cable runs between controllers and motors of new equipment. Existing cables may be reused in other applications, except where the existing cables are too short to make connections. Renew cables which are too short and less than 20 feet long. Junction boxes may be used to increase the cable run length where the existing cable runs are longer than 20 feet.

3.2.3. Modify new piping to suit the new equipment, including the rerouting of existing piping and adding of new piping as needed to properly connect equipment and

components. Piping modifications greater than five feet from the equipment are not required. New piping is required only to the extent necessary to accommodate modifications of existing piping.

3.3 Piping. A system of pipe, tube, elbows, tees, valves, couplings, and other pipe fittings. Unless otherwise specified in the detailed item description, all piping systems and components shall comply with material and installation requirements of reference 2.1.

3.4 Rebuild. Disassemble, clean, inspect, repair (including renewal of all parts needed), reassemble, test, and calibrate the specified part, component, system, or machine to restore it to a condition of reliability equivalent to a new part, component, system, or machine. Components and parts shall meet the manufacturer's applicable rebuild specifications.

3.5 Reinstall. Return the same item which was previously removed to its previous configuration and location.

3.6 Renew. Provide and install a new item as replacement for an existing item previously removed or to be removed. The new item must be the same as or comparable in material, performance and configuration to the item removed.

3.7 Replace. Same as "renew", defined above.

3.8 Checkpoint. Instances that have the verbiage "***CHECKPOINT***" in the SOW require the contractor to verify, or inspect, the work performed with the PE. Any section that does not include "***CHECKPOINT***" does not preclude the contractor from obtaining PE approval, or verification, before proceeding work.

4. REQUIREMENTS

4.1 Condition Found Reports

4.1.1. A Condition Found Report (CFR) shall be prepared and submitted by the Contractor to the Port Engineer (PE) on all of the following occasions:

4.1.1.1. Whenever specifically required by this or other documents.

4.1.1.2. Whenever the Contractor determines or notes that additional work or material or other deviation is necessary in order to produce a reliable or complete repair.

4.1.1.3. Whenever defect or deficiencies are noted in Government-furnished Property, or on government equipment or components.

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4.1.1.4. Whenever measurements, tests or inspections are required by other specifications or procurement documents, the results and findings shall be documented on a CFR.

4.1.2. Condition Found Reports shall contain, as a minimum, the following:

4.1.2.1. Name of the ship.

4.1.2.2. Contract number and related work item number.

4.1.2.3. Detailed description of conditions observed, including a record of all measurements taken and other supporting data.

4.1.2.4. Recommendations of additional work and materials deemed to be needed, if any, including the contractors proposed cost for time and material incidental to the recommendation.

4.1.2.5. Estimate of the impact on the completion of the contract, if any.

4.1.3. Submit Condition Found Reports to the PE within twenty-four hours after completing the measurements, inspections, or tests, or after the need for additional work or material is noted.

4.1.4. For work involving disassembling and inspection of equipment, machinery or systems and for work involving opening and inspection of tanks, the work must be completed and a Condition Report must be submitted during the first 25-percent of the work performance period.

4.2 Progress Meetings.

4.2.1. Weekly progress meetings shall be held at a time and place mutually agreeable to the PE and the Contractor. Contractor shall provide a conference phone line for use during the meeting. As a minimum, the meetings shall be attended by the PE and a Contractor's management official having authority to make binding commitments. Other interested parties may attend the meetings as appropriate. Interested Gov't parties may also be in attendance including but not limited to: the Contracting Officer or Contracting Specialist, Ship's CO, XO, Chief Engineer, Chief Boatswain, Chief Steward, and/or Junior Officer/Officer of the Deck.

4.2.2. Prior to the end of the work day preceding the progress meeting, the Contractor shall submit to the PE a preliminary progress report containing the following information:

4.2.2.1. Percentage completion of each contract item, including all additional work items authorized by the Contracting Officer.

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4.2.2.2. Notation of any problems which could impact timely completion, including material delivery delays.

4.2.3. Meeting minutes will be recorded by Contractor and provided to PE in a CFR.

4.3 Personnel Information.

4.3.1. Provide to the PE a list of the Contractor's supervisors, including shop supervisors, and a list of telephone numbers where the supervisors can be reached during non-working hours in event of an emergency.

4.3.2. Provide to the PE a list of all Contractor's and Subcontractor's workers that will be performing work on Government equipment. Include in the list relevant certifications and certification expiry dates.

4.4 Protective Coverings.

4.4.1. Prior to starting work on interior spaces, protect the decks and deck coverings of spaces in which contract work is to be performed and spaces through which workers will traverse by covering the decks and deck coverings with a temporarily fitted heavy vinyl, plywood or particle board. Securely tape all edges and joints of the protective covering. Maintain the protective covering in place during the entire contract period, renewing sections which are damaged during the contract period. For those decks over which equipment, valves, piping, or other materials must be handled, the temporary protective covering shall be plywood or particle board and shall be of sufficient thickness to protect the deck from damage in the event the equipment or materials are dropped.

4.4.2. Protect all compartments, machinery, equipment, deck coverings, furnishings, vent terminals, insulation, glass, cables, piping systems, coatings, structures, and other ship components from damage and from entry of dust, dirt, grit, sand, and other foreign particles. Protect the ship's bulkheads and flooring from shipyard temporary service hoses, cables and ventilation.

4.4.3. Whenever abrasive blasting or other operations which create atmospheric contamination are performed on or near the ship, or which could otherwise allow airborne contaminates to collect on or in the ship, the Contractor shall plug, wrap, blank, cover, or mask all openings to prevent entry of the contaminates into the ship. Install industrial foam filter material on the intake and exhaust end of ventilation systems which will be in use. Renew the filter materials when air flow becomes restricted. Whenever abrasive blasting is performed inside the ship, blast materials shall be confined to the compartment being blasted.

4.4.4. All damage and contamination resulting from failure to provide adequate protection shall be repaired and cleaned by the Contractor at the Contractor's expense to re-establish the condition which existed at the start of the work.

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4.4.5. After completion of all other work, remove and dispose of all protective coverings along with any adhesive residue used to hold coverings in place.

4.5 Restricted Access. Access by workers to the ship's compartments shall be restricted to those in which work is being performed or through which passage is necessary to reach the work site. All other compartments shall be considered off-limits to workers.

4.6 Clean-up.

4.6.1. Clean-up and remove from the ship all dirt, debris, scrap, **AND ALL OTHER MATERIALS** (drink containers, gloves, safety glasses, weld rods, cutting discs, paint chips, residue, grease, etc…) incident to Contractor's work at the end of each work day. During the work day contractors will keep a tidy and organized work space that promotes cleanliness and safety while also ensuring no damage is done to surrounding areas and equipment. Contractor shall make every effort to contain dirt, debris, etc within the immediate vicinity of the item being worked on. Any components being removed shall be wrapped in plastic or other containment prior to removal. Contractor equipment shall not be left energized nor in a precarious position overnight. Tools will be secured daily. The work site shall also be swept after each work day which includes cleaning contractor debris in the bilge areas and under deckplates. Upon completion of all contractor work the ship shall be cleaned in all work areas and returned to the habitable condition on which it arrived in as decided by the Port Engineer or PE.

4.6.2. Contractor will also cover, protect, and perform daily clean-up of any passageway, ladder or common area that they use throughout the day to go to and from work areas. This includes hand prints on doors and bulkheads and tracked dirt and footprints on decks

4.6.3. Whenever abrasive blasting or other operations on or near the ship causes collection of blasting residue or other foreign particles to collect on exterior decks of the ship, the Contractor shall vacuum or sweep the decks to remove the residue and particles prior to the end of the day on which the contamination occurred. Do not wash the residue or particles through the ship's deck drains.

4.6.4. Upon completion of all items in the SOW contractor shall thoroughly clean the vessel in all locations contractor worked. This includes all surfaces within a space including but not limited to overhead cable runs, fittings, equipment, bulkheads, fixtures, piping, deckplating, and bilges. PE and Ship’s force will inspect cleanliness prior to signing off on completion.

4.7 Disruption of Ship's Systems and Spaces.

4.7.1. The ship’s occupied quarters, galley, mess area and laundry are to remain functional and habitable throughout the repair period. The contractor shall identify in its original schedule all work that would disrupt the crew’s live aboard status and group this work to be completed within as short a time frame as possible.

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4.7.1.1. Contractor shall state in their bid the expected duration and dates that the ship will be un-inhabitable.

4.7.1.2. Systems that effect habitability of the ship include but are not limited to HVAC, refrigeration, potable water, grey water, sea water, hot water and sewage.

4.7.1.3. Habitability systems shall be in continuous operation after completion of repairs or modifications for minimum of 24 hours before the crew is requested to move back to the ship.

4.7.2. Except as necessary to perform work, none of the ship's fire main, electrical, steam, heating, potable water, drainage, or other systems which are vital to crew safety or comfort shall be shut off or disrupted. The PE must be provided advanced notice of a disruption at least 4 hours in advance.

4.7.3. Disruptions shall be limited to 4-hour intervals. If the required work will need a longer interval, temporary bypass hoses, blank flanges, or piping shall be installed to keep the system in operation.

4.7.4. Contractor shall not use the vessel’s break facilities, mess decks, coffee areas or water coolers/machines. These areas are for crew use only. Contractors are expected to supply their own break facilities.

4.7.5. Contractors are expected to supply all of their own tools and equipment unless otherwise stated in a particular item.

4.7.6. For purposes of this specification, a "disruption" occurs whenever a large section of a system will be unusable. If the only section of the system affected is that on which work is being performed and the remainder of the system can be operated, a "disruption" has not occurred and the requirements of this section do not apply.

4.8 Habitability.

The ship shall be deemed uninhabitable when any one of or a combination of the following conditions exist and it is impossible for management to correct the problem in a timely manner (4 hours or as noted below):

- Heat and/or air conditioning is not furnished.
- Potable water (hot or cold) is not provided for a period of 12 or more consecutive hours.
- When a working toilet, shower and sanitary drainage are not furnished.
- At all times when the vessel is in drydock overnight, unless the ship is fully habitable with all facilities including heat and/or air conditioning, lights, hot and cold running water, shower and sanitary facilities (working toilets and sanitary drainage). Portable toilets do not meet the requirements for sanitary facilities.

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- Work such as chipping, welding, riveting, hammering and/or pounding, or other noises of a similar nature are being performed in or around vessel personnel quarters or noxious fumes are present that disrupts the employee's ability to rest for more than three (3) hours. Note: Wage mariners not assigned to a watch, are assigned to work during eight (8) hours of duty between 0800 and 1700, Monday through Friday.
- Flooding of quarters or common areas due to bilge or sewage backup not repaired within 24 hours.

When a vessel is in port and declared uninhabitable, no employee will be allowed to live on board. Individual quarters may be deemed uninhabitable when the respective quarters have been painted, the paint is not absolutely dry, and other suitable quarters are not furnished aboard. It is also not intended that any wage mariner shall be assigned to sleep in a flooded berthing area.

4.9 Work Hours. At the beginning of the repair period, the Contractor shall advise the PE in writing of the planned regular work day schedule. In the event the Contractor desires to work at times other than those previously scheduled, notify the Port Engineer at least 4 hours prior to the end of the scheduled work day preceding the unscheduled work time. If previously unscheduled work is to be performed on a weekend or federal holiday, the Port Engineer must be notified prior to 9:00am on the last regular work day before the unscheduled work. While the ship is inhabited no work shall be conducted between the hours of 7:00pm and 7:00am on weekdays and 7:00pm and 10:00am on weekends without receiving permission from the Port Engineer 24hours prior to the desired unscheduled work time.

4.10 Local Policies and Directives. While Contractor personnel, including those of subcontractors, are on the ship or on other government facilities, they shall comply with all policies and directives issued by the Master, Commanding Officer, or Director of the ship or facility.

4.11 Safety Requirements.

4.11.1. Gas Free Certification.

4.11.1.1. The Contractor shall be responsible for certifying that a safe atmosphere exists in and about a compartment prior to the commencement of any work. Whenever compartments must be gas free to meet state and federal regulations, the Contractor shall pump down, open, remove sludge, clean, wipe, ventilate and take all other action required to make the compartments safe for the work to be performed. When requested by the Contractor, and to the extent empty tank space is available, NOAA will shift fuel as required to facilitate gas free requirements. If off-loading of fuel oil and/or lube oil is necessary because of insufficient empty tank space, the Contractor shall submit a CFR to off-load the fuel and/or lube oil.

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4.11.1.2. Copies of gas free certificates, issued by a Marine Chemist certified by the National Fire Protection Association, shall be issued by the Contractor and posted on the ship in two locations designated by the PE. Follow-up inspections by the Contractor's Competent Person shall also be documented at the same two locations.

4.11.1.3. The Contractor shall be responsible for identifying the compartments which require gas free certification. Specific requirements for gas free certification are not normally included in the detail specifications of any work item.

4.11.2. Fire Watch Standers.

4.11.2.1. Hot work is permitted only when fire watch standers are provided by the Contractor. A fire watch stander is required whenever welding, flame cutting or other hot work is performed where combustible materials are present within 35 feet; or where wall or deck openings within a 35-feet radius expose combustible materials in adjacent areas; or when combustible materials are adjacent to the opposite side of metal partitions exposed to hot work, and could be ignited by conduction or radiation. In the latter case, a fire watch stander is required on both sides of the partition.

4.11.2.2. Each fire watch stander shall be outfitted by the Contractor with a fire extinguisher of a suitable size and type.

4.11.2.3. Prior to leaving the work site, the fire watch stander shall verify with the worker performing the hot work that no further hot work will be performed. Fire watch standers shall remain at the hot work location for a minimum of 30 minutes after cessation of hot work to ensure the work has cooled sufficiently prior to leaving.

4.11.2.4. Insulation, sheathing, or other materials which limit access to either side of a partition or structure on which hot work is being performed shall be considered to be an interference, and shall be removed and restored by the Contractor.

4.11.3. Written Hot Work Notice. Prior to starting hot work on any job or separate area of the ship, the Contractor shall provide a written notice to the Officer of the Deck/Day (OOD). The notice shall include the location of the work, the time hot work will commence and the current gas free status of the area if needed. Contractor shall receive a ship-issued hot work permit prior to the start of any hot work. This permit contains approval from the CO, Chief Engineer, and OOD. It is advised that the contractor provide notice before close of business on the day prior to performing hot work so as to expedite commencement of hot work the following day.

4.11.4. Asbestos-Containing Materials (ACM). There is no known ACM aboard the vessel. However, this does not preclude the possibility of the existence of ACM aboard the vessel. Existing panels, insulation, gaskets, and other materials on the vessel may contain asbestos. Suspected ACM shall be removed by a certified ACM removal contractor. All asbestos projects shall comply with all federal, state, and local regulations governing the removal of asbestos.

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4.11.5. Miscellaneous Requirements.

4.11.5.1. Oxygen, acetylene, and gas supply manifold systems shall be located off the ship and have a shutoff valve to the gas supply located on the dock. The shutoff shall be in addition to the master shutoff valve at the inlet to each portable outlet header.

4.11.5.2. Material brought onto the ship shall be stored until used in areas which do not interfere with access to fire-fighting equipment or personnel access. Crating and packing shall be removed prior to bringing the equipment or material aboard the ship, unless needed to protect the equipment or material from damage during handling. In that case, the crating and packing shall be removed from the equipment or material, and shall be removed from the ship, immediately after being brought aboard.

4.11.5.3. Rigging of hoses, welding leads, and temporary lights shall be kept clear of the decks on temporary "trees" or brackets and be arranged so as to minimize tripping and other safety hazards. Passageways shall be kept as clear of obstructions as possible.

4.11.5.4. No welding gas or power cables are to be left rigged through watertight doors or hatches overnight without the specific permission of the Port Engineer and Commanding Officer.

4.11.5.5. Power supplies for any remotely operable watertight doors or hatches shall be tagged out whenever welding gas or power cables are rigged through them.

4.12 Interferences and Restorations.

4.12.1. Remove all interferences and obstructions necessary to complete the required work. This shall include the disassembly and removal of machinery, piping, ducts, cable, wiring, insulation, structures, and anything else which interferes with the proper accomplishment of work. Except as otherwise specified, this does not include relocations made necessary by new installations which physically prevent an interference from being returned to its existing location.

4.12.2. Whenever an interference to be removed involves a structural strength member, temporary supports shall be provided to compensate for the strength loss. Whenever watertight integrity is violated by a removed interference, provide a temporary means of maintaining watertight integrity, except when work is actually being performed or the space is otherwise manned.

4.12.3. Restore all interferences to their existing configuration and condition. Install new gaskets and fasteners. In place of material which is rendered unsuitable for reinstallation during removal or storage, provide and install new materials which are equal

in composition, strength, design, type, and size as existed prior to removal. All insulation removed or damaged shall be renewed with new insulation.

4.12.4. Material containing asbestos which is removed as interference shall not be reinstalled. Instead, renew the asbestos-containing material with a new non-asbestos material which provides the same function and general appearance as that removed.

4.12.5. Align and conduct strength, tightness, and operational tests to ensure that the reinstalled interferences safely perform their normal functions.

4.12.6. The Contractor shall be responsible for identifying all interferences involved in accomplishing required work. Interferences are not normally identified in the detail specifications of the work item.

4.13 Shipboard Storage. No space or compartment on the ship shall be used for storage by the Contractor of materials or tools. The materials allowed at the work site shall be limited to those which will be installed, consumed, or otherwise used during the work shift in progress. When needed or required, the Contractor shall provide a temporary dry dock storage area to store materials and tools.

4.14 Watertight Integrity. The Contractor shall maintain or restore the watertight integrity of the ship's watertight bulkheads, decks, and hull by installing stuffing tubes, welded bulkhead and deck penetrations, multi-cable transits, couplings, and kickpipes as appropriate. All materials and installation details shall be same as the nearest similar existing penetrations.

4.15 Removals.

4.15.1. Whenever removal of equipment or machinery is specified, but reinstallation is not specified, the Contractor shall remove all related electrical cables, brackets, foundations, and piping. Removal of cables shall be to the nearest circuit breaker or terminal not needed for operation of other equipment or machinery. Removal of piping shall include all related piping not used by other systems or equipment. Install pipe caps as needed to maintain remaining piping tight. Foundations or supports shall be cut close to the deck, bulkhead, or other support and ground smooth.

4.15.2. Whenever removal of piping or cables involve penetration through bulkheads, decks, hull plating or other watertight boundaries, the Contractor shall crop out the penetration and install an insert plate of same thickness as the adjacent plating. Insert plates shall be a minimum of 6-inch diameters.

4.16 Structural Access Openings.

4.16.1. The Contractor may, with prior approval, cut access openings in ship's structure if required to perform work. Such openings shall be limited to those which are essential for access to otherwise inaccessible areas or which greatly improve accessibility

for removals or installations. Openings should not affect the structural integrity of load bearing structures.

4.16.2. Prior to making any access opening in ship's structure, the Contractor shall submit to the PE a sketch of the proposed opening, showing the location and dimensions of the proposed access cut, adjacent framing members, nearby penetrations, and scantlings of the structure. Generous radii shall be provided at all corners. Also include a description of the eventual restoration configuration, with material and welding details, and a narrative justification for cutting the opening. Submittal of the sketch does not ensure that the PE will authorize the cut as proposed. The Contractor shall proceed with the access cut only after obtaining approval by the PE via a signed copy of the sketch. All access cut restorations will need to be approved by ABS as well.

4.17 Brackets and Supports. All pipe, cables, ducts, furniture, equipment, and machinery installed by the Contractor shall be bracketed, supported, and secured so as to carry the weight of the material, prevent vibration, and withstand inertia forces resulting from rolling and pitching of the ship.

4.18 Gaskets, Packing, and Seals. Whenever the Contractor performs work which disturbs existing gaskets, packing, or seals, new gaskets, packing, and seals of same material as existing shall be installed unless otherwise specified, except use 3/16-inch thick cork rubber impregnated gasket material conforming to SAE-AMS-6183 for all fuel oil tank manhole covers and fuel oil service piping.

4.19 Welding and Allied Processes.

4.19.1. All welding, brazing, and allied processes shall be in accordance with the requirements and recommendations of references 2.2 and 2.3.

4.19.2. While the ship is water-borne, welding shall be permitted only when welding leads are properly grounded. Welding machines and other welding power sources shall have both cables connected only to the ship where welding is done. The return ground cable shall never be grounded to anything but the ship it is servicing. All welding cables shall be fully insulated and not be permitted to drop overboard into the water. The total cross-sectional areas of the return ground cable shall be at least one million circular mils per 1,000 amperes per 100 feet, but not less than 85,000 circular mils. The ground cable shall be securely fastened to grounding plates or to an integral part of the ship, with contact areas thoroughly cleaned to bare metal. When completed the attachment points (lugs) will be removed, prepped and painted in accordance with 4.20 Painting below.

4.19.3. When welding on equipment, machinery, pressure vessels, or piping, the return ground cable to the welding equipment shall be connected in the immediate vicinity (as close as practical) of the work to ensure that current does not flow through bearings, pipe hangers or other areas where arcing or high resistance paths exist.

4.20 Painting.

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4.20.1. Prior to applying any paint or coatings, the Contractor shall verify that all surfaces have been properly prepared and that weather conditions are suitable for painting.

4.20.2. Paint shall be applied only when the following conditions exist and can be maintained until the paint has cured:

4.20.2.1. Apply paint only to dry surfaces and when there is no chance of precipitation until after the paint has cured. The temperature of the surface to be painted shall be at least 5 degrees Fahrenheit above the dew point. The dew point can be presumed to be satisfactory if a thin, clearly defined film of water applied to the cleaned surface with a damp cloth evaporates within 15 minutes. Otherwise, the dew point shall be measured prior to painting by taking the dry-bulb temperature of the surface and the wet-bulb temperature at the jobsite.

4.20.2.2. The air temperature and surface temperature must both be a minimum of 45 degrees Fahrenheit at all times, unless a lower temperature is specifically authorized by the paint manufacturer's printed instructions.

4.20.2.3. Painting is permitted only when the humidity is less than 80 percent unless otherwise specified in the paint manufacturer's written instructions. In the event the Contractor desires or must proceed with painting when the existing weather conditions do not meet the above specified conditions, the Contractor shall erect a cover over the surfaces to be painted and shall heat the surfaces and the surrounding air to establish the required conditions. The conditions shall be maintained until the paint has fully cured in accordance with the paint manufacturers' application instructions.

4.20.3. Restore all existing coating systems which are damaged during performance of work. The new coating system shall be same as existing.

4.20.4. Surface preparation and paint application shall be in accordance with applicable NOAA specifications and comply with the paint manufacturers' printed recommendations and instructions for all aspects of surface preparation, and handling, mixing, and application of paint materials.

4.20.5. Paint schedule: Paint systems used on the ship shall consist of a primer coat followed by a minimum of two top coats unless otherwise specified either in the detailed specification or by the manufacturer of the paint. It is the responsibility of the Contractor to ensure that paint used is compatible with existing paint on the ship. As a general guide, the paint used on the vessel is manufactured by AkzoNobel under the INTERNATIONAL brand name. Interior paint on the ship is latex; exterior paint is epoxy. Painted surfaces below the walking flat in the engine room and inside tanks shall be epoxy. Bare steel shall be coated with a zinc rich primer before rust bloom is allowed to form unless otherwise specified by the paint manufacturer. Top coats shall be applied according to the manufacturer's procedures.

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4.21 Electrical. All requirements and recommendations of references 2.4 and 2.5 shall be followed in the selection and installation of electrical cables, equipment, and machinery.

4.22 Weight and Stability: Throughout the performance period of the repair contract, the contractor shall track the weight changes to the vessel resulting from the work items in the repair contract. The location and amount of the weight shall be recorded for both removals and additions including the differences between equipment being replaced with new equipment. The current record of weight changes shall be provided to the PE at each weekly progress meeting with the total itemized record to be provided at the contract completion date. The weight record shall be actual and not an estimate, utilizing certified weighing devices.

4.23 Sea Trials and Testing.

4.23.1. Upon completion of work all systems that were worked on shall be tested per manufacturer's recommendation. If this includes time at sea (in salt water) contractors shall provide support to test components and will be provided transportation ashore upon completion of the testing.

4.23.2. The Contractor shall provide the services of the American Bureau of Shipping (ABS) as required to provide certification of completed work.

4.23.3. The Contractor will, prior to departure, provide a thorough clean up of all work areas to be approved by the PE. The clean up shall restore all work areas and associated passageways and access pathways to the same condition of cleanliness and serviceability as they were in upon the ships arrival. Clean up shall include, but not be limited to activities such as sweeping, vacuuming, wiping, washing, degreasing, waxing, painting and repairing/replacing as necessary to return the ship to the arrival condition of cleanliness and serviceability. Port Engineer will conduct a walkthrough of the vessel upon arrival at Contractor's facility and video record the spaces walked through. This video may be used as a reference for cleanliness standards upon the completion of the contract.

4.23.4. The contractor shall submit to the PE a schedule for testing all equipment the contractor has worked on one week before departure. The contractor must submit a list of the personnel who will ride the ship during departure for testing work if required. The list must include Name, SSN, Citizenship, Address and person to be notified in case of emergency.

4.23.5. The contractor shall provide at least one supervisor for departure testing to coordinate testing, adjustment and repair of discrepancies.

4.23.6. All equipment will be operated by ship's force personnel.

4.23.7. An attempt will be made to do all testing during normal working hours; however, it may be necessary to depart early and return contractors late.

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4.23.8. No contractor work will be allowed during trials except as approved by the PE.

4.23.9. Departure trial discrepancies must be corrected before the completion of the contract.

4.23.10. At the PE's discretion, departure trials may be replaced with either a fast cruise or dock trials.

4.23.11. Ship's Force may startup various systems to ensure operation up to 2 weeks prior to scheduled departure. Contractor will be notified of systems tests.

4.24 Tests and Inspections.

4.24.1. At least four hours (during normal working hours), in advance of conducting each required test and inspection, notify the PE in order to allow the PE the opportunity to witness, or to arrange for another NOAA representative to witness, the tests and inspections. For non ABS related testing/inspection, the PE must be present unless the PE has authorized testing/inspection to proceed without his presence.

4.24.2. Any test or inspection requiring the attendance of an ABS Surveyor will require at least 24 hour notice be given to ABS (Confirm with the local ABS office as to their notification preferences), unless otherwise instructed by the Surveyor. If the PE or other NOAA representative is not present at the scheduled time of the test or inspection, and if the required 4-hour advance notification was furnished to the PE, the Contractor may proceed with the test or inspection.

4.24.3. Contractor shall provide for all ABS inspections and support services for these inspections. A completed ABS Inspection report shall be provided to the PE for all inspections.

4.24.4. All tests and inspections shall be witnessed by the Contractor's supervisor responsible for the work. A Condition Found Report (See 4.1) shall be prepared to document the results of all tests and inspections.

4.24.5. To the extent possible, all tests and inspections shall be scheduled during the normal weekday work shift. Tests and inspections may be scheduled for other times only when necessary to avoid a delay in the contract completion. When necessary to schedule a test or inspection after the normal day shift or on a weekend, the PE shall be notified of the test or inspection at least four hours before the end of the last preceding regular work shift.

4.24.6. The Contractor shall perform an operational test of all newly installed, overhauled, and repaired equipment to demonstrate proper operation. Shipboard equipment will be operated by the ship's crew.

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4.24.7. Whenever a "hose test" is specified, conduct the test by directing a 50-psig stream of water from a 1-1/2 inch fire hose through an all purpose nozzle at a distance of not more than 10 feet from the surface being tested. Direct the stream of water in a manner most likely to disclose a leak and inspect the opposite side of the surface for leaks.

4.25 Fuel Oil and Lube Oil Offloading.

4.25.1. Whenever the Contractor is required to or elects to offload fuel oil or lube oil from the ship, the oil shall be pumped to and stored in clean moisture-free storage tanks. Meter the oils with a calibrated meter during offloading and during return. Take test samples during offloading and during return, and have the test samples analyzed by a lab for water and impurities to verify that the oils were not contaminated while in the Contractor's possession. Provide copies of lab reports to the PE. It is estimated that the ship will arrive with 45,000 gallons of fuel. Additional fuel shall be addressed by CFR prior to removal of additional fuel.

4.25.2. After all work which necessitated the oil's removal has been completed, return the oil to the ship. In lieu of storing the oil, the Contractor may accept title and responsibility for disposal of the oil and provide an equal amount of new clean oil, same as that removed. Test samples are required, even if this option is exercised by the Contractor.

4.26 Disposal of Fluids. Whenever work requires that equipment, machinery, piping, or tanks be drained of fluids, the Contractor shall be responsible for draining and proper disposal of the fluid in accordance with local, state, and federal regulations. If the Contractor drains the fluid into the ship's bilges, the Contractor shall pump all fluid from the applicable bilges into dry dock tanks and properly dispose of the fluid, including the fluid that existed prior to and the fluid that accumulates between the time the equipment, machinery, piping or tanks were drained and the time the bilges have been pumped dry by the Contractor. The cost of this should be included in the specific work items.

4.27 Disassembly and Inspections. Whenever equipment, machinery, systems, or other system components are required to be disassembled, opened or overhauled, the contractor shall complete all disassembling and inspections during the first 25-percent of the work performance period. All tanks required to be opened shall also be opened and gas-freed during the first 25-percent of the work performance period. No time extension of the work performance period will be granted for delays caused by the contractor's failure to comply with this 25-percent time requirement. The 25-percent time requirement is calculated by multiplying the total number of work days proposed in the Contractors schedule by 0.25 and rounding up to the next whole number then adding that number of days to the scheduled start date not counting weekends or holidays not worked.

5. NOTES

5.1 The requirements and provisions of this specification are additions to or amplification of the requirements and provisions set forth in other specifications,

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solicitation, or procurement documents. In the event a conflict should occur, the requirements of the other documents take precedence over those contained herein.

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ITEM 10870: DRYDOCKING BERTHAGE AND UTILITIES

1. INTENT

1.1 The intent of this work item is to provide details for accomplishing the drydocking of the NOAA Ship RAINIER for the purpose of accomplishing work items detailed within this specification package as designated by the Port Engineer.

2. REFERENCES

2.1 Drawing RA-S0701-2-2, Rev E, Docking Plan.
2.2 Drawing RA-079-001 Rev -, Trim and Stability Booklet
2.3 NOAA Standard Spec S0700-1, Drydocking of NOAA Ships
2.4 NOAA Standard Spec S0700-3, Drydock Standards for NOAA Ship Availabilities
2.5 NOAA Docking Report Form, S0700

3. GOVERNMENT FURNISHED EQUIPMENT (GFE)

3.1 None

4. REQUIREMENTS

4.1 The contractor shall furnish all labor and materials required to dock and undock the ship in a safe and satisfactory manner and perform the work and associated services, including inspections and reports outlined herein and/or required in the detailed specifications.

4.1.1 The ship shall be lifted in a suitable drydock or marine railway, in accordance with the ship's docking plan. Blocks and shoring shall be placed clear of obstructions and so as to support the ship without strain and distortion. Care shall be taken to haul the ship without list or trim. The ship shall be docked in **docking position number 2** as detailed on reference 2.1, or the contractor may develop a drydocking plan which must be approved by the Port Engineer prior to implementation. Provide the services of a commercial diver to verify interferences in the hull, such as transducers, with the blocking arrangement and to assist in the initial drydocking.

4.1.2 Provide commercial tug services to assist in docking and undocking of the vessel.

4.1.3 After the ship is hauled, service lines shall be provided and hooked up to enable the use of the services and utilities detailed in section 4.3 through 4.6 of this item. The temporary utilities and services listed in these sections shall be provided to the vessel for the duration of the drydocking period and if/when the ship is moored alongside the pier at the contractor’s facilities during the conduct of this contract. Staging shall be erected as required to accomplish the work specified in the detailed specifications. Two gangways with suitable lighting shall be furnished and maintained to provide a safe access to the ship at all times.

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4.2 The ship will remain out of the water until all work in the detailed specifications requiring vessel drydocking is completed. Upon completion of the underwater work, and approval of the Port Engineer, the ship shall be re-floated and all services removed, and the vessel undocked.

4.2.1 During the entire docking and undocking procedure, and while the ship is out of the water, special care shall be taken against damage and/or fire. Temporary fire fighting capabilities shall be installed on the vessel at all times that the ship's fire main is out of service.

4.2.2 Prior to undocking, the ship's representative, Port Engineer, and Contractor's dockmaster shall meet to determine the ship's loading requirements to safely undock the ship with minimum list and trim. The required loading should be based upon tracked weight changes provided by the Contractor, previous and current tank load conditions, and any miscellaneous weight changes. The Contractor is responsible for obtaining a copy of the ship's current tank soundings on the days of docking and undocking to verify proper loading.

4.2.3 In undocking the ship, the dock shall be flooded or the railway lowered, as the case may be, until as many underwater openings as possible are covered without lifting the ship off the blocks. An adequate watch shall be posted to check for leaks. If a leak is reported before reaching this point, the severity of the leak shall be established. If, in the opinion of the Port Engineer, the leak is not serious, the flooding may be continued to the desired depth to cover other openings and to determine the existence of any other leaks. If leaks are found, the dock shall be pumped down, or the railway raised and repairs made before again flooding. If no leaks occur, upon permission of the Port Engineer, the undocking may continue. Bow and centerline sighting marks shall be provided so the ship may be re-landed, if necessary.

4.2.4 Prior to drydocking the ship, the contractor shall remove all gasoline storage tanks as required by local fire safety regulations. While the tanks are removed, the contractor shall provide safe and adequate storage facilities. After the drydocking is complete, the contractor shall replace the gasoline tanks in their storage racks as originally stowed.

4.2.5 When the ship is docked in cold or freezing weather, all sea valves, pipes or similar fittings attached to the hull, shall be drained to prevent freezing and possible cracking.

4.2.6 While the ship is in drydock, all hull openings shall be secured outside of normal working hours. Blanks shall be fabricated of sufficient strength to prevent water entry into the hull and sustain flotation in the event of drydock failure. All closures shall be accepted by the Port Engineer.

4.2.7 Drydock time for the accomplishment of all above items and work items described in the detailed specifications is considered within the scope of this item.

4.3 Except as otherwise required, provide all facilities, utilities and services required by this specification for the entire period the ship is at the Contractor's facility. Provide all cables,

SPECIFICATIONS FOR FY 2020 DRYDOCK REPAIR
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ITEM 10870: DRYDOCKING BERTHAGE AND UTILITIES

hoses, fittings and equipment needed to provide the specified utilities and services to the Ship. After completion of all contract work and immediately before the Ship departs, the Contractors' facility, disconnect all temporary services and remove all related cables, hoses, fittings and equipment. Make all connections and provide all services within two hours after the Ship arrives at the facility. The services and utilities are to be disconnected only when necessary to shift the Ship or upon satisfactory completion of all authorized work items of the contract. When the Ship is shifted, drydocked or refloated, the services and utilities shall be restored for normal use and service within one hour of completion of the shifting, drydocking or refloating.

4.3.1 Telephone Service: Provide a total of 4 general use telephone lines, two on the ship and two in the office(s) provided by paragraph 4.3.15 of this item. These phone lines shall access local and toll free 800 numbers. Long distance charges shall be billed directly to the Ship.

4.3.2 Potable Water: Provide potable water at 50 PSIG, 15 GPM to the ship's potable water connection. Install a pressure regulator and pressure gauge to monitor and regulate the supply. Additionally, provide potable water at a suitable flow rate for filling the ship's water tanks prior to departure.

4.3.3 Sanitary Flushing and General Service Water: Provide sanitary flushing and general service water at 55 PSIG, 150 GPM. Air conditioning and refrigeration cooling water and sanitary flushing water may be fresh or salt water. Install a pressure regulator and pressure gauge to monitor and regulate the supply.

4.3.4 Trash and Garbage Disposal: Provide receptacles within 100 feet of the gangway for disposal of ship's garbage and for recycling disposal (glass, plastic, and cardboard/paper). These containers shall be emptied as required. The contractor shall clean up dirt and debris incidental to shipyard work on board daily and remove same from the ship.

4.3.5 Gangways: Two gangway systems shall be provided with suitable lighting while the ship is drydocked or berthed at the Contractor's facility. Safety nets will be provided at all gangways. One gangway shall be located forward and the second aft.

4.3.6 Fire Protection: All times when the ship is pierside or on drydock in the Contractors' facility, provide 2 each charged fire manifolds each served by 2-1/2 inch hose shall be located on the foredeck and fantail. Provide firefighting water at 100 PSIG and 400 GPM to the manifolds. Each manifold shall be fitted with enough 1-1/2" hose to reach any space on the Ship. Each fire hose so supplied shall be fitted with fog fire nozzle.

4.3.7 Electric Power: Furnish the ship with 450 VAC, 400 Amp, 3 phase electric power to the Ships' shore power connection box. The shore power tie cable shall be provided by the Contractor and shall be suitable for the maximum service.

4.3.8 Steam: The ship uses steam for ship's heating system and HW system. Provide 10 boiler horsepower of saturated steam at 35 PSI at ship's shore steam connection in

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quarter deck breeze way. Note: Ship does not have a condensate return pump, so if the contractor prefers to recirculate the condensate back to the boiler to conserve energy, a pump will have to be provided by the contractor with adequate suction head to be located outside on quarter deck or at boiler.

4.3.9 Sewage Disposal: Provide means of disposal of the ship's combined greywater and sewage via connection to metro system in drydock and pierside.

4.3.9.1 Aboard ship, provide 3 portable toilets (2 unisex, 1 female) when the ship's sewage system is to be disabled for accomplishment of specification work items for periods longer than four hours. These must be in place prior to shutting down the ship's sanitary water or disposal facilities. Service the toilets daily to maintain them in a clean, sanitary condition. These portable toilets are for crew use only.

4.3.10 Parking: Provide parking for a total of 20 NOAA government and employee vehicles inside the contractor's facility or within 100 feet of the gate to the facility. Parking outside of the gate is acceptable only if the contractor has means to control unauthorized use of the parking. Reserved spaces shall be clearly marked to prevent their use by others.

4.3.11 Access: Provide 24 hr facility access for up to 60 NOAA personnel who will require access to the vessel during the repair period.

4.3.12 Mooring Lines: The ship's mooring lines shall be utilized while alongside at the Contractor's pier. The contractor's lines shall be used for handling and positioning the vessel during drydocking and undocking. All mooring lines and service lines shall be fitted with rat guards.

4.3.13 High Speed Internet Service: Provide Secure DSL business class or equivalent Internet access service that can be accessed by all NOAA computers in offices provided by the contractor or aboard the vessel both alongside and while in dry dock. Contractor shall provide and install a Cat-5 cable terminated with RJ-45 connector to a location on the vessel that allows connection to the vessel's computer network at a location designated by the Port Engineer. Alternatively, the Contractor may provide a wireless Internet connection to the vessel that will provide unobstructed and constant Internet service. Internet service bandwidth shall be 15 MB minimum.

4.3.14 Refrigerated Storage: Provide 200 cubic feet of freezer storage (0 degrees Fahrenheit or below) for the Stewards Department for the duration of the availability. Provide 200 cubic feet of refrigerated space (32-41 degrees Fahrenheit) for the Stewards Department for the duration of the availability.

4.3.15 Ship's Boats: Provide covered storage on cradles or boat trailers furnished by the contractor for the Ship's Fast Rescue Boat and two skiff's for the duration of the availability. Moorage and storage facilities shall have 110VAC power available for each craft.

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4.3.16 Office Space: Provide a standard office for use by the port engineer that can be secured by the PE throughout the time at Contractor's facility. Office shall include a desk, office chair, file cabinet and bookshelf. The office space must have heating and/or air conditioning as necessary to hold the temperature between 70˚ F and 80˚ F. It must have 115 VAC, 30 Amp electrical service, local telephone service (at least to separate phone line) and high speed internet access. A second temporary office space of at least 800sqft shall be provided for the crew while the ship is uninhabitable. It must be furnished with 15 each desks, 15 each chairs, 3 book case, 3 each four drawer legal width filing cabinet and one each long table. The office space must have heating and/or air conditioning as necessary to hold the temperature between 70˚ F and 80˚ F. It must have 115 VAC, 30 Amp electrical service, local telephone service (at least to separate phone line) and high speed internet access. The PE office and temporary office space may be adjacent or adjoining but the PE office must have a closing/locking door to separate it from the temporary ship's office.

4.3.17 Ships' Gasoline Tank: Remove from the ship and provide covered storage for the ships' gasoline tank located on the port fantail. Reinstall prior to the ship's departure for sea trials.

4.4 Pump, clean and maintain dry the Main Engine Room and Shaft Alley bilges. Dispose of oily bilge water in the bilges, sludge tank and waste tank. The total oily waste to be disposed of is approximately 4000 gallons Main Engine Room and Shaft Alley bilges shall be cleaned free of oil, sludge or other liquids, dirt, rags, foreign material and industrial debris and maintained in this condition for the entire period the contractor is working on the ship.

4.5 Ship's Moorings. The contractor shall provide adequate pier or dock space acceptable to the Port Engineer for safely mooring the ship.

4.5.1 The facilities and services shall be sufficient to permit the contractor to comply with all other requirements of the contract.

4.5.2 The contract award is based, in part, on information provided by the contractor as part of their bid and during the pre-award survey (if requested by the Port Engineer prior to contract award) regarding the pier or dock facilities which will be used to moor the ship. Unless specifically approved in writing by the Port Engineer, the ship shall not be moored at any pier or dock space other than those previously proposed.

4.5.3 When shifting of the ship is required, the Port Engineer shall be given a minimum of three days advance notice of the proposed shift. Shifting the ship shall be performed only during regular work days and hours except when dry docking and refloating the ship.

4.5.4 The mooring space to for the ship shall be under the complete and legal control of the contractor. If the contractor proposes to use any mooring space which is not

owned by the contractor, a legally binding lease or agreement must be signed by the owner which clearly gives the contractor complete control of the mooring for the entire period of the contract, including any time extensions which may be approved by the Contracting Officer.

4.6 Transiting and Mooring Requirements:

4.6.1 Water Depths and Height Restrictions: At no time shall the ship be moored at any dock which has a water depth at low tide less than that required to provide a minimum clearance of one foot under the lowest underwater projection. Additionally the ship shall not transit any waterway which has a water depth at low tide less than that required to provide a minimum clearance of two foot under the lowest underwater projection.

4.6.2 Vessel Arrival Conditions: The minimum liquid load, drafts and displacement of the ship at which the government intends to transit and arrive at the Contractor's facility will be provided upon request prior to arrival. Also included will be information concerning any changes in the ships liquid load which the Contractor will be permitted to make in order to meet the minimum underwater clearance requirements. Contractor can assume that the vessel will arrive with 45,000 gallons of fuel. Contractor should plan on offloading fuel as needed to accomplish the work outlined in this specification, and returning the fuel to the vessel prior to departure.

4.6.3 Transit Restrictions: At no time will the ship transit a waterway which has non-opening bridge or other overhead structure that would cause less than one-foot clearance over the ship's highest projection. In order to permit passage of the ship under bridges or other overhead structures in the waterway, the government will lower masts which have hinged connections for that purpose. However, the government will not remove, and will not permit the Contractor to remove, any part of the ship's structure or equipment for the purpose of providing the required overhead clearance.

5. TESTS/REPORTS/INSPECTIONS

5.1 Prior to flooding the dock in advance of docking the ship, the blocks shall be inspected by the Port Engineer, with the assistance of the contractor, to verify the dimensional accuracy of the block build. Blocks found out of tolerance shall be corrected prior to docking.

5.2 After docking, the contractor and Port Engineer shall jointly inspect the hull. The contractor shall complete and submit a report of findings and recommendations, including estimates, on a preliminary Docking Report form (Reference 2.5); said report to be submitted within 24 hours after inspection. No remedial work, except as specified in other items, shall be commenced until authorized in writing by the Contracting Officer or designated representative. Items to be inspected include:

5.2.1 Hull: Condition as to structural damage, corrosion, welds, fastenings, caulking or evidence of grounding, collision or excessive strain.

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5.2.2 Shaft And Rudder Bearings: Remove fairwaters and rope guards, etc., as required, and measure and record port and starboard tail shaft and intermediate bearing clearances (both ends of each bearing) by dial indicator other means acceptable to the Port Engineer. Use a feeler gauge to read the rudder bearing clearances. Apply bottom coating system, in accordance with the Hull Preservation work item, to areas to be covered by rope guards and fairwaters, then reinstall the guards and fairwaters prior to undocking.

5.2.3 Miscellaneous Items: Items such as zinc anodes, propellers, rudders, sea chests, scuppers, drains, bilge keels, sonic equipment, propulsion shaft protective covering, etc.

SPECIFICATIONS FOR FY 2020 DRYDOCK REPAIR
NOAA SHIP RAINIER

ITEM 10910: ABS ANNUAL LOAD LINE SURVEY AND REPAIRS

1. INTENT

1.1 Contractor is to provide coordination and assistance to the American Bureau of Shipping (ABS) representative to conduct the ABS Annual Load Line Survey 2 for the renewal of the Load Line Certificate.

1.2 Contractor is to provide coordination and assistance to ABS for additional repairs required by ABS.

1.3 Contractor is to perform NDT of areas specified by ABS for the End of Service Life Assessment

1.4 Contractor shall complete known ABS repairs

2. REFERENCES

2.1 American Bureau of Shipping Annual Load Line Survey 2 for NOAA Ship RAINIER
2.2 RAINIER Stability Booklet
2.3 RAINIER Loading Guidance Manual

3. GOVERNMENT FURNISHED EQUIPMENT (GFE)

3.1 None

4. REQUIREMENTS

4.1 The ABS Checklist (ref 2.1) for this survey is provided at the end of this work item for guidance only. The contractor shall verify with ABS that this checklist is accurate and up-to-date prior to the period of performance.

4.2 The Contractor shall supply all labor and material to accomplish the checklist items that ABS requires to complete this survey of the ship. All assistance in preparation of the vessel, special inspection services and labor to accomplish this shall be provided by the contractor. Inspection work shall be coordinated by the contractor to avoid interference or duplication of work with other tasks under this contract.

4.3 Contractor shall schedule the Annual Load Line Survey of the RAINIER when the vessel is at contractor's Facility. Inspection areas of the ship are to be cleaned, as necessary, and examined together with appendages, as applicable, and placed in satisfactory condition

4.4 Provide an estimate to the Government for ABS's fees for services. The Government will pay ABS via a separate BPA, but an estimate must be provided ahead of time.

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ITEM 10910: ABS ANNUAL LOAD LINE SURVEY AND REPAIRS

4.5 Any and all inspections in this item are in support of the ABS Load Line certification process and must be carried out to the satisfaction of the ABS Surveyor.

4.6 Provide all assistance to the ABS Surveyor as required to conduct the survey. This assistance may include but is not limited to opening, cleaning and gas freeing spaces including tanks, tank hydrostatic tests, shell inspections and opening for inspection all Sea Water Pumps and various other equipment. Upon completion of the surveys, restore the ship to normal operating condition. The services in support of the ABS inspection are significant. The contractor is advised to consult ABS on what will be inspected and what they expect the contractor to do in support of the inspections. The ABS Surveyor inspects many areas of the vessel and the contractor is expected to make everything the Surveyor wants to look at available to him.

4.7 A survey planning meeting will be held prior to the commencement of the survey. The Contractor, Port Engineer, Ship's Force, and ABS Surveyor are to review the scope of the survey. In addition, the areas that will be required to be NDT'd for the ESL evaluation will be identified. For bidding purposes, assume that there are twenty (20) 1' x 1' locations that will need to be prepped (coating removed and cleaned) to do dye-pen or mag-particle NDT. They will be weld locations, often in the overhead.

4.8 In addition to the unknown repairs that will be required after the initial inspection, the following locations will also need to be repaired and inspected properly by ABS:

4.8.1 Intentionally Left Blank at this time. Assume $20,000 of labor and material for various crop/renew work for bid purposes only. This paragraph will be updated at a later time

4.9 The Contractor shall conduct a joint completion meeting with the Port Engineer, Ship's Force, and ABS Surveyor to discuss the results of the survey. At this meeting, Contractor is to provide the Port Engineer with a report listing all corrective actions which must be taken to prior to issuing the Load Line Certificate.

4.9.1 Contractor shall submit a CFR to include estimated time and cost to complete required corrective actions.

5. TESTS/REPORTS/INSPECTIONS

5.1 The Contractor shall provide the ship with a Provisional Load Line Certificate issued by ABS as a final deliverable of this Item. The Contractor shall make arrangements with ABS for the Final Load Line Certificate to be delivered directly to the Port Engineer.

SPECIFICATIONS FOR FY 2020 DRYDOCK REPAIR
NOAA SHIP RAINIER

ITEM 10910: ABS ANNUAL LOAD LINE SURVEY AND REPAIRS

Vessel Name	**RAINIER**	Class Number	**6801064**
Checklist Date	**14-May-2019**	Blank Checklist	

Checklist Item(s): All	**Description**	**Notes**

A. The vessel's hull was generally examined as far as could be seen and considered satisfactory. The following parts were particularly examined and considered satisfactory.

1. Protection of Hatch Openings

a. Coamings including deck connections, stiffeners, stays and brackets.

b. Hatches fitted with portable covers, wood or steel, portable beams, carriers and securing devices, steel pontoons, tarpaulins, cleats, battens and wedges, including structural integrity and weather tightness.

c. Hatches fitted with mechanically operated steel cover including cover plating, stiffeners, cross joints, gaskets, cleats and dogs, including structural integrity and weather tightness.

2. Protection of Other Openings

a. Hatchways, manholes and scuttles in the freeboard deck and superstructure decks.

b. Machinery casings, fidley covers, companionways and deck houses protecting openings in the freeboard deck or enclosed superstructure decks.

c. Portlights together with deadcovers, means of attachment, securing devices and gaskets; windows together with either deadcovers or storm covers means of attachment and securing devices or other openings in the vessel's sides or ends below the freeboard deck or in way of enclosed superstructures.

d. Ventilators, air pipes together with flame screens, scuppers and discharges serving spaces on or below the freeboard deck.

e. Watertight bulkheads, bulkhead penetrations, end bulkheads of enclosed superstructures and the operation of any doors in same.

f. Weathertight doors and closing appliances for all of the above including stiffening, dogs, hinges and gaskets.

SPECIFICATIONS FOR FY 2020 DRYDOCK REPAIR
NOAA SHIP RAINIER

ITEM 10910: ABS ANNUAL LOAD LINE SURVEY AND REPAIRS

g. The proper operation of the weathertight doors and closing appliances was confirmed.

h. The means provided to minimize water ingress through the spurling pipes and chain lockers.

B. Freeing ports together with bars, shutters and hinges were examined and considered satisfactory.

C. Means of protection for crew, guard rails, bulwarks, lifelines, gangways and deck houses accommodating crew, as fitted, were examined and considered satisfactory.

D. Structural areas of the hull particularly susceptible to accelerated corrosion, including spaces used for salt-water ballast, as accessible were examined and considered satisfactory.

E. Sea valves and overboard discharges were externally examined, including their attachment to shell, and considered satisfactory.

F. Loading Guidance Manual was verified as being on board.

Vessel Name	**RAINIER**	Class Number	**6801064**
Checklist Date	**14-May-2019**	Blank Checklist	

Checklist Item(s): All	**Description**	**Notes**

G. Loading Instrument was verified as being on board and was confirmed to be in satisfactory working order.

H. Stability Data was verified as being on board.

J. It was verified that no alterations have been made to the hull or superstructure(s), which affected the position of the current Load Line.

K. For timber, tanker, or special Load Line assignments; an examination was made of the related structural arrangements, fittings, and appliances and all was considered satisfactory.

L. Vessel Markings:

1. Freeboard Marks were sighted, found plainly visible or recut and/or painted, as necessary, and were in accordance with the Load Line Certificate.

2. Load Line Certificate was examined for accuracy in accordance with the assignment specified by Load Line Department in VIM including correct shading of grid.

3. Draft Marks were sighted and correspond (align) appropriately with the freeboard

SPECIFICATIONS FOR FY 2020 DRYDOCK REPAIR
NOAA SHIP RAINIER

ITEM 10910: ABS ANNUAL LOAD LINE SURVEY AND REPAIRS

marks. (SOLAS Chap. II-1, Part B-1, Reg. 5-6)

N. For areas with substantial corrosion:

1. Areas of substantial corrosion were visually examined.

2. Thickness measurements were taken in way of areas with substantial corrosion.

3. Hard coating in way of areas with substantial corrosion was examined and found satisfactory.

O. Vessels over 5 years of age. Examination of the following tanks is to be carried out:

1. Ballast tanks and combined cargo/ballast tanks other than double bottom tanks, where a hard protective coating was found in poor condition during a previous survey, or a soft or semi-hard coating has been applied, or a hard protective coating has not been applied from the time of construction.

2. Double bottom ballast tanks, where substantial corrosion was found within the tank, a hard protective coating was found in poor condition during a previous survey, or a soft or semi-hard coating has been applied, or a hard protective coating has not been applied from the time of construction.

P. Vessels over 15 years of age. Examination of the following tanks is to be carried out:

1. Ballast tanks and combined cargo/ballast tanks other than double bottom tanks in way of spaces designated for the carriage of cargo, where fair coating conditions were identified at previous surveys, a minimum of three (3) so identified tanks, i.e., one (1) forward, one (1) midship and one (1) aft.

2. Peak tanks where fair coating conditions were identified at previous surveys.

Q. Where extensive areas of corrosion are found or when considered necessary by

Vessel Name	**RAINIER**	Class Number	**6801064**
Checklist Date	**14-May-2019**	Blank Checklist	

Checklist Item(s): All	**Description**	**Notes**

the Surveyor, thickness measurements are to be carried out and renewals and/or repairs made when wastage exceeds allowable margins. Where

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substantial corrosion is found, additional thickness measurements are to be taken to confirm the extent of substantial corrosion. These extended thickness measurements are to be carried out befor the survey is completed and credited. Where reduced scantlings on the basis of effective corrosion control have been adopted, the results of any measurements are to be evaluated based on the scantlings before reduction.

NaNCertificate are to be endorsed/issued/extended, as applicable.

NOTES:

When applying these requirements, the attending surveyor should be guided by the following:

- Any form of the term "Examine" should be understood as a thorough examination, using appropriate techniques, of the components, system or appliance in question for satisfactory provision, arrangement and condition and for any signs of defects, deterioration or damage;
- Any form of the term "Test" should be understood as a functional test of the system or appliance in question, to confirm its satisfactory operation and performance for its intended use.

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ITEM 10911: FIRE AND SAFETY EQUIPMENT

1. INTENT

1.1 This item is used to inspect test and certify firefighting equipment and life rafts aboard the NOAA Ship RAINIER

2. REFERENCES

2.1 Drawing RA S9300-1 Fire Fighting Equipment
2.2 Tech Manual CS4000 Fire Alarm System
2.3 NOAA Standard Spec MOC-583-1: General Requirements for Life Raft Inspections

3. GOVERNMENT FURNISHED EQUIPMENT (GFE)

3.1 None

4. REQUIREMENTS

4.1 Contractor shall supply all necessary labor, tools, equipment, and consumables necessary to accomplish this Item. Contractor performing this work item must be on the ABS list of recognized specialists.

4.2 Fire Equipment:

4.2.1 Perform the annual inspection and testing, including certification of the following equipment located on the NOAA Ship RAINIER:

4.2.1.1 All portable fire extinguishers including on launches if launches are available

4.2.1.2 All fixed fire suppression systems including on launches if launches are available. Coordinate any testing of fixed fire suppression systems with the Executive Officer at least 24 hours in advance of test.

4.2.1.3 All fire detection systems including pull stations, heat detectors, smoke detectors, remote pull stations, time delays, warning alarms and lights and ship's fire panel. Location of these items can be found in references 2.1 and 2.2.

4.2.1.4 Galley Hood Fire systems

4.2.1.5 All SCBA units and cylinders

4.2.2 Perform a pressure test on all fire hoses on board in accordance with the stated

service test pressure stenciled on each hose and the requirements of the NFPA. Write the date tested on each hose in permanent marker. Provide the Port Engineer and Commanding Officer with a certificate of testing and documentation of each hose tested. Locations of all hoses can be found in reference 2.1

4.2.3 Contractor shall provide a CFR to the Port Engineer with recommendations for renewal or replacement of any of the above components. Recommended actions may not be taken prior to receiving authorization.

4.3 Life Rafts

4.3.1 The services of a crane will be required to remove the life rafts from their stowed locations and to return them upon completion of inspection. The contractor will provide crane services.

4.3.2 Perform the annual inspections and service to ten (10) Elliott Mk III Liferafts and four (4) DBC TO Liferafts in accordance with reference 2.3

4.3.3 All work on life raft inspections must be completed by certified technicians for Elliot and DBC for their respective rafts

4.3.4 All pyrotechnic signaling devices must be within 3 months of the date of manufacture when replaced on each life raft during servicing

4.3.5 Replace all expired SOLAS equipment pack items. Any Life Rafts without a RADAR reflector will be affixed with a weather proof label that reads “RADAR REFLECTOR NOT INCLUDED” on the life raft case near the manufacturers plate. For Bidding purposes assume $15,000 worth of expired equipment will be required to be purchased

4.3.6 Contractor shall provide a CFR to the Port Engineer with recommendations for renewal or replacement of any required items beyond those stated above and beyond the $15,000 included in contractor’s bid. Recommended actions may not be taken prior to receiving authorization from the Port Engineer.

4.3.7 Inspect hydrostatic release devices on all life rafts and the release on life jacket containers. Contractor shall provide a CFR to the Port Engineer with recommendations for replacement of defective or expired releases and releases that will expire prior to February 2020. Any new hydrostatic releases purchased shall not expire before December of 2022.

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ITEM 10911: FIRE AND SAFETY EQUIPMENT

5. TESTS/REPORTS/INSPECTIONS

5.1 Provide copies of all service records, inspection reports and certificates to the Port Engineer and the Commanding Officer.

SPECIFICATIONS FOR FY 2020 DRYDOCK REPAIR
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ITEM 11370: DECK AND BULKHEAD STEEL REPAIRS

1. INTENT

1.1 To renew deck and bulkhead steel as directed at a later date

2. REFERENCES

2.1 RA-S0900-2-2 Rev B Gen Plans
2.2 NOAA Standard Specification MOC-000-1G; General Requirements for Ship Repair
2.3 RA-S1106-3 Rev 10; Plating & Framing Super Deck

3. GOVERNMENT FURNISHED EQUIPMENT (GFE)

3.1 None

4. REQUIREMENTS

4.1 Contractor shall supply all labor, material, and equipment to replace the steel in the following locations:

4.1.1 Intentionally left partially blank at this time. For bidding purposes assume that there will be $120,000 worth of labor and material for various crops and renewals that will require the following work

4.1.2 Install a powered exhaust vent in the Bostswain's Locker

4.1.3 LODAR Room (will require blast and recoat)

4.1.4 Forepeak Void (will require blast and recoat)

4.1.5 Bow Thruster Compartment deck

4.2 In each of the indicated spaces, relocate or remove any interferences such as cables, or furniture and remove the existing flooring, insulation, false bulkheads or other covering down to bare steel.

4.3 Visually inspect the areas of concern. Perform an ultra-sonic (UT) NDT survey to determine the condition of the steel plate in the areas of concern. Where corrosion is present, UT shall be accomplished to determine the remaining thickness of steel deck plating and to bound the area(s) of concern. UT measurements shall be taken in square grids with two foot spacing and recorded in accordance with Reference (2.2). Where steel wastage in excess of 15% of nominal thickness is found the survey is to be expanded locally to determine the extent of the deteriorated plate. Provide a Condition Found Report (CFR), capturing the results of the NDT survey to the Port

Engineer and/or ABS Surveyor. Areas exhibiting wastage exceeding 15% of original material thickness, as well as other areas deemed to be of concern, are to be identified for renewal (length and breadth or other means of clearly defining scope of renewal) and any interferences or other issues that would need to be considered in conjunction with performing the renewal work. The survey report shall be reviewed with the Port Engineer, and regulatory representatives as necessary, to obtain concurrence on the extent of required steel renewal and replacement. See References 2.3 for information regarding the as-built thickness of steel deck plate.

CHECKPOINT

4.4 Crop and renew locations as determined by the results of the survey in 4.3. For bidding purposes, assume that there will be 16 square feet of steel to be replaced in each specified location and up to 32 linear feet of welding per location.

4.5 Ensure ABS approval is received for plan, fit-up, and final installation as necessary.

4.6 Upon completion of crop and renewal, restore locations to service by installing appropriate covering, coatings, insulation, or flooring.

4.7 Restore interferences and equipment as necessary

5. TESTS/REPORTS/INSPECTIONS

5.1 Contractor will perform a final walkthrough inspection with the COR and resolve any resulting workmanship action items.

5.2 ABS shall sign off on any repairs.

SPECIFICATIONS FOR FY 2020 DRYDOCK REPAIR
NOAA SHIP RAINIER

ITEM 12330: ANNUAL MAIN ENGINE SERVICE

1. INTENT

1.1 To provide the services of a factory authorized Electro-Motive Diesel (EMD) service center to accomplish an inspection of the main engines.

2. REFERENCES

2.1 NOAA Standard Spec S0100, Implementation and Conduct of Checkpoints
2.2 NOAA General Repair Requirements
2.3 Code of Federal Regulations, Title 29, Chapter XVII, OSHA Section 1910.1001 and 1915.1001
2.4 General Motors Maintenance Instruction, M.I. 9601.
2.5 General Motors Maintenance Instruction, M.I. 1721, REV H.

3. GOVERNMENT FURNISHED EQUIPMENT (GFE)

3.1 None

4. REQUIREMENTS

4.1 RAINIER MAIN ENGINE MODEL AND SERIAL NUMBERS ARE AS FOLLOWS:

PORT M/E: MODEL LR-12-567-C, SERIAL NUMBER 65-M1-1106

STARBOARD M/E: MODEL RL-12-567-C, SERIAL NUMBER 65-L1-1140

4.2 Provide the services of an Electro-Motive Diesel, (EMD), factory authorized repair contractor acceptable to the PE. All work shall be performed by, or under the direct supervision of factory-trained mechanics.

4.2.1 The contractor shall supply all necessary labor, tools, equipment, parts and consumables necessary to accomplish the task.

4.2.2 The parts supplied shall be genuine new EMD parts or remanufactured by an authorized EMD factory service center. Any rebuilt parts shall conform to EMD dimensions, tolerances and specifications. All engine exchange cores shall revert to the Contractor for core exchange.

4.2.3 Required Repairs: The following work is required on the port and starboard main engines:

4.2.3.1 Inspect all valve bridges on both main engines.

SPECIFICATIONS FOR FY 2020 DRYDOCK REPAIR
NOAA SHIP RAINIER

ITEM 12330: ANNUAL MAIN ENGINE SERVICE

4.2.3.2 Perform air box inspections to verify condition of pistons, cylinder liners, piston rings, and lead wire readings.

4.2.3.3 Inspect the crankcase, crankshaft and connecting rods.

4.2.3.4 Inspect cylinder head mechanisms with engine idling and at operating temperature.

4.2.3.5 Perform a nut and bolt tightness check

4.2.3.6 Rebuild Engine coolers

4.2.3.7 Visually inspect and clean electrical control cabinet and associated equipment

4.3 Conduct dock trials to verify engine operation.

4.3.1 Perform a Low Oil Pressure Shutdown test

4.3.2 Perform a High Water Temperature shutdown test

4.3.3 Technician to provide documentation of all testing conducted and satisfactory results to the Chief Engineer and Port Engineer.

4.4 Provide updates detailing current service bulletins and environmental compliance engine upgrades performed in overhaul.

4.5 Provide a CFR to the Port Engineer detailing the findings of the inspections and outlining any recommended repairs.

5.0 TESTS/REPORTS/INSPECTIONS

5.1 Accomplish dock trials to allow adjustment of engine and demonstrate proper operation.

5.2 Provide repair reports if applicable.

5.3 Report any necessary repairs outside the scope of this statement of work via a CFR to the Port Engineer. Prior to accomplishing any work listed in the CFR, obtain Port Engineer approval.

SPECIFICATIONS FOR FY 2020 DRYDOCK REPAIR
NOAA SHIP RAINIER

ITEM 12410: REDUCTION GEAR INSPECTION

1. INTENT

1.1 This item is used to inspect the port and starboard main reduction gears.

2. REFERENCES

2.1 Lufkin Marine gears Unit Part list for H2720 gear box."LM094"

2.2 Drawing RA S4106-5 Engine & Reduction Gear installation REV.B

3. GOVERNMENT FURNISHED EQUIPMENT (GFE)

3.1 None

4. REQUIREMENTS

4.1 Contractor shall supply all necessary labor, tools, equipment, and consumables necessary to accomplish this Item. Contractor performing this work item must be Lufkin certified to perform the work.

4.2 Open and inspect port and starboard reduction gears using the references provided:

4.2.1 Perform a visual inspection of the reduction gear in place bearings.

4.2.2 Perform a blue check between the reduction gears to insure proper tooth engagement.

4.2.3 Thoroughly clean the case ensuring there is no metal fragments still in the gear box. The reduction gear oil shall be removed and disposed of. Replace the reduction gear oil with SAE80W-90. Each gear box will require 45 gallons. Please note that current reduction gear oil is Chevron 80W-90.

4.2.4 Contractor shall provide a CFR to the COR with condition of the equipment and recommendations. Recommended actions may not be taken prior to receiving authorization.

SPECIFICATIONS FOR FY 2020 DRYDOCK REPAIR
NOAA SHIP RAINIER

ITEM 12410: REDUCTION GEAR INSPECTION

5. TESTS/REPORTS/INSPECTIONS

5.1 Provide copies of all service records, inspection reports and certificates to the COR and the Commanding Officer.

5.2 Provide a sign off letter from the reduction gear OEM engineering office stating the technical acceptability of the modifications to the main reduction gear boxes, the removal of the CPP pump and drive gear.

6. NOTES

6.1 Any time the reduction gear is opened for work, including inspection, a crew member must be present to ensure no foreign debris enters the gearbox and extra care must be taken by the contractor to ensure the same.

SPECIFICATIONS FOR FY 2020 DRYDOCK REPAIR
NOAA SHIP RAINIER

ITEM 13110: GENERATOR DIESEL ENGINE 10000 HOUR SERVICE

1. INTENT

1.1 To provide the services of a factory authorized MTU Detroit Diesel service center to accomplish inspection and maintenance services on the two ship service diesel generators (SSDG). Any potential subcontractor to be used for this effort shall be preapproved by the Port Engineer.

2. REFERENCES

2.1 NOAA General Repair Requirements
2.2 Code of Federal Regulations, Title 29, Chapter XVII, OSHA Section 1910.1001 and 1915.1001
2.3 NOAA Ship Rainier Generator Set Technical Manual MS15010/00E 06-10 for MTU 12V2000P82, S/N 5352010141 and S/N 5352010142
2.4 MTU Value Service Technical Documentation, Diesel Engine V 2000 Px2 Maintenance Schedule M050782/01E

3. GOVERNMENT FURNISHED EQUIPMENT (GFE)

3.1 None

4. REQUIREMENTS

4.1 RAINIER SHIP SERVICE GENERATOR MODEL AND SERIAL NUMBERS ARE AS FOLLOWS:

TWO (2) MODEL MTU 12V2000P82, SERIAL NUMBERS 5352010141 & 5352010142

4.2 Provide the services of an MTU Detroit Diesel, factory authorized service contractor acceptable to the Port Engineer. The contractor performing the work shall also be a recognized factory service provider as a diesel generator repair facility. All work shall be performed by, or under the direct supervision of factory-trained mechanics.

4.2.1 The contractor shall supply all necessary labor, tools, equipment and consumables necessary to accomplish the task.

4.2.2 If parts are supplied, they shall be genuine new MTU parts or remanufactured by an authorized MTU factory service center. Any rebuilt parts shall conform to MTU dimensions, tolerances and specifications.

4.2.3 Required Maintenance: Perform all work indicated in References 2.3 Maintenance Schedule and 2.4 Technical Manual to complete the manufacturer's recommended 9,500 hour maintenance of the port and starboard SSDGs within the scope of this work item,

SPECIFICATIONS FOR FY 2020 DRYDOCK REPAIR
NOAA SHIP RAINIER

ITEM 13110: GENERATOR DIESEL ENGINE 10000 HOUR SERVICE

including, but not limited to, the following list. All work is to be performed in accordance with the requirements and procedures of reference 2.4.

4.2.3.1 Fit new fuel filter or new fuel filter insert.

4.2.3.2 Inspect Valve Gear

4.2.4. In addition to the 10,000 hour required maintenance listed above, perform a visual inspection of the generators to determine the need for additional maintenance or repair. See 4.5 below for direction.

4.3 Inspect the Cylinder Heads of each unit and look for signs of leakage. Replace seals as necessary..

4.4 If any work is discovered that needs to be addressed and is outside the scope of this statement of work, record the necessary work on a CFR and provide it to the Port Engineer for his/her review and approval. PE approval shall be obtained prior to proceeding with any additional work.

4.5 Provide updates detailing current service bulletins and environmental compliance engine upgrades.

4.6 Perform the following tests of the generator sets and provide a report detailing the tests and results to the Port Engineer and Chief Engineer:

4.6.1 Emergency Stop

4.6.2 Low Oil Pressure shut down

4.6.3 High Water Temperature shutdown

5. TESTS/REPORTS/INSPECTIONS

5.1 Test run each generator in accordance with the maintenance manual upon completion of inspections.

CHECKPOINT

5.2 Provide a report detailing the work accomplished as well as the valve clearance adjustments that were made.

SPECIFICATIONS FOR FY 2020 DRYDOCK REPAIR
NOAA SHIP RAINIER

ITEM 13111: EMERGENCY GENERATOR INSPECTION

1. INTENT

1.1 To provide the services of a factory authorized Sperry technician to inspect the Steering gear

2. REFERENCES

2.1 NOAA General Repair Requirements
2.2 Code of Federal Regulations, Title 29, Chapter XVII, OSHA Section 1910.1001 and 1915.1001
2.3 Technical Manual for Emergency Generator to be filled in at a later date if available

3. GOVERNMENT FURNISHED EQUIPMENT (GFE)

3.1 None

4. REQUIREMENTS

4.1 RAINIER EMERGENCY GENERATOR MODEL AND SERIAL NUMBERS ARE AS FOLLOWS:

To be filled in at a later date

4.2 Provide the services of a General Motors/EMD factory authorized service contractor acceptable to the Port Engineer. All work shall be performed by, or under the direct supervision of factory-trained mechanics.

4.2.1 The contractor shall supply all necessary labor, tools, equipment and consumables necessary to accomplish the task.

4.2.2 If parts are supplied, they shall be genuine new EMD parts or remanufactured by an authorized EMD factory service center. Any rebuilt parts shall conform to EMD dimensions, tolerances and specifications.

4.2.3 Required Maintenance: Perform all work indicated in tech manual for annual maintenance.

4.2.4 Test emergency shut down and document test results in a CFR.

4.3 If any work is discovered that needs to be addressed and is outside the scope of this statement of work, record the necessary work on a CFR and provide it to the Port Engineer for his/her review and approval. PE approval shall be obtained prior to proceeding with any additional work.

SPECIFICATIONS FOR FY 2020 DRYDOCK REPAIR
NOAA SHIP RAINIER

ITEM 13111: EMERGENCY GENERATOR INSPECTION

4.4 Provide updates detailing current service bulletins and environmental compliance engine upgrades.

5. TESTS/REPORTS/INSPECTIONS

5.1 Test run steering gear on each pump in accordance with the maintenance manual upon completion of inspections.

CHECKPOINT

5.2 Provide a report detailing the work accomplished as well

SPECIFICATIONS FOR FY 2020 DRYDOCK REPAIR
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ITEM 15040: MACS SYSTEM SERVICING

1. INTENT

1.1 Contractor is to troubleshoot, upgrade, repair and replace MACS System items to ensure reliability and integrity of System.

2. REFERENCES

2.1 MACS System Field Notes Rev 3 dated XX/XX/20XX

3. GOVERNMENT FURNISHED EQUIPMENT (GFE)

3.1 None

4. REQUIREMENTS

4.1 Provide the services of an Automation and Controls Engineering contractor that is acceptable to the Government. The contractor performing the work shall be a recognized service provider or otherwise acceptable to the Port Engineer as competent with regards to GE and Modicon PLCs. All work shall be performed by or under the direct supervision of a trained automation engineer/consultant. Verus Associates (verusaec.com, 925-446-6586) is an example of a contractor that is acceptable to the Government.

4.2 Contractor shall supply all necessary labor, tools, equipment, and consumables necessary to accomplish this task in coordination with the Automation and Controls Contractor. This will include but is not limited to the following:

4.2.1 Ensuring timely access to the CERC Room, Engine Room and other spaces as may be required.

4.2.2 Ensuring MACS monitored and controlled systems are functioning and online in order to be tested as necessary.

4.3 The following work is required to be completed by the Automations and Controls Engineer/Consultant:

4.3.1 List to be determined at a later date. For Bidding Purposes Estimate $30,000 in subcontractor parts and labor with the subcontractor travelling to the Contractor's facility from the San Francisco area.

4.3.2 Develop specifications and requirements to upgrade the GE 9030 PLCs to a GE supported hardware. Provide report to Port Engineer

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NOAA SHIP RAINIER

ITEM 15040: MACS SYSTEM SERVICING

5. TESTS/REPORTS/INSPECTIONS

5.1 Contractor will perform a final close-out meeting with the Port Engineer and Ship's Force to discuss items found and action items.

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NOAA SHIP RAINIER

ITEM 15050: FIRE MAIN PIPING REPAIR

1. INTENT

1.1 To provide all labor and material required to perform repairs on the Fire Main.

2. REFERENCES

2.1 ABS Steel Vessel Rules
2.2 NOAA STD SPEC S4800-2 Piping Systems – General Requirements
2.3 NOAA STD SPEC 635-1 Thermal Insulation of Piping
2.4 Drawing RA-S3902-2, Insulation Schedule Machinery and Piping
2.5 Drawing RA S3901-1, Insulation & Sheathing, Thermal, Acoustic & Fire Arrangement
2.6 NOAA STD SPEC 635-2 Thermal Insulation of Compartments
2.7 NOAA STD SPEC 631-2C Coatings Systems for Steel Surfaces

3. GOVERNMENT FURNISHED EQUIPMENT (GFE)

3.1 None

4. REQUIREMENTS

4.1 Provide all labor and material to accomplish the following piping repairs. All pipe welding shall be accomplished in accordance with reference 2.1. Pipe hangers/supports shall be spaced to meet the requirements of reference 2.2. In areas where insulation was removed or damaged for repairs of pipe, it shall be replaced in accordance with the requirements listed in reference 2.3.

4.1.1 Replace up to 50 linear feet of 3 inch, schedule 40 Fire Main pipe as identified by the Port engineer. The Port Engineer, Chief Engineer and Contractor shall tour the ship and identify the repair locations required within the first week of the Period of Performance or any time after award.

4.1.1.1 Repair/replace the MSD over board discharge piping in shaft alley port side

4.1.2 For bidding purposes, assume that there will be a total of 10 locations of up to 5 feet in length each containing 1 elbow (10 elbows total) and a set of flange connections (20 flange faces total). Account for demolition and installation and welding of the same.

4.1.3 Substitutions and alternatives to the above list will be made based on the walkthrough conducted aboard the ship. The Port Engineer, will determine the final work list in this item. Do not procure the items listed above, they are provided for bidding purposes only.

4.1.4 Hydrostatically test the fire main upon completion of work.

4.1.5 Remove all interferences in way of affected piping. Assume five days of labor for two people to remove and restore interferences. Interferences may include but are not limited to: Insulation, machinery, wiring/cabling, decking, deck support structure, and foundations.

4.1.6 It is assumed that all steel piping and fittings will have to be coated in accordance with reference 2.8.

4.1.7 It is assumed that all new piping and fittings will need to be insulated in accordance with references 2.4 and 2.7.

4.1.8 Restore any interferences previously removed.

5. TESTS/REPORTS/INSPECTIONS

5.1 Submit, in hard copy or in electronic format, a report including any conditions found requiring further repairs, recommendations for accomplishing those repairs and a man-hour and material cost estimate to accomplish each recommended/required repairs.

5.2 Submit, in hard copy or in electronic format, the verification for hydrostatic testing results for all pipe repairs listed above.

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ITEM 15120: VENTILATION SYSTEM CLEANING

1. INTENT

1.1 Clean ventilation systems throughout the ship as specified below.

2. REFERENCES

2.1 Dwg No. RA-S3801-2; Ventilation and A/C Diagram
2.2 NOAA Std Spec 510-1B HVAC Cleaning

3. GOVERNMENT FURNISHED EQUIPMENT (GFE)

3.1 None

4. REQUIREMENTS

4.1 Provide the services of a qualified marine ventilation cleaning company to thoroughly clean the interior surfaces of the ventilation systems and stacks listed below, including ducts, trunks, screens, filters, heaters, and fan casings. All interferences shall be removed to provide access to ducting and ventilation components for the purpose of cleaning the ventilation systems. After completion of ventilation cleaning and acceptance by NOAA, restore all removed interferences and accomplish touchup painting of any disturbed surfaces. The cleaning of ducts and trunks shall be accomplished by high vacuum suction augmented by hand tools or cryogenic cleaning augmented by hand tools and vacuum suction. All fan room components such as fans, pre-heaters, and cooling coils shall be thoroughly cleaned with solvents or cleaners. Galley ducts shall be thoroughly degreased with commercial detergents and scrapers. Prior to any galley duct cleaning, remove the Gaylord hood damper control switch solenoid to prevent it from getting wet during cleaning. Re-install the solenoid after cleaning is complete.

4.2 The systems requiring cleaning are as follows:

4.2.1	**F-54-1** Supply	Vents and ducts servicing the galley
4.2.2	**E-71-2** Exhaust	Main Galley & CPO Pantry including interior Surfaces of hoods
4.2.3	**D-95-1** Exhaust	Laundry Exhaust

4.2.4 All reference 2.1 Zone II ventilation Supply and Exhaust. Zone II includes all of ‘B’, ‘C’ and ‘D’ decks forward of the galley.

4.3 Coordinate all cleaning of galley vents, ducting, and hoods with the Chief Steward.

Port Engineer to inspect completed ventilation systems prior to closure.

***** CHECKPOINT *****

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NOAA SHIP RAINIER

ITEM 15120: VENTILATION SYSTEM CLEANING

5. TESTS/REPORTS/INSPECTIONS

5.1 The Port Engineer or his designated representative shall be provided the opportunity to inspect paragraph 4.2 systems both prior to cleaning and after performance of cleaning while access covers, screens, and sheathing are removed (ventilation system opened).

5.2. Provide a report of all areas cleaned and a galley hood cleaning certification sticker.

SPECIFICATIONS FOR FY 2020 DRYDOCK REPAIR
NOAA SHIP RAINIER

ITEM 15140: AC AND REEFER SYSTEMS INSPECTION

1. INTENT

1.1 Inspect and repair HVAC System
1.2 Inspect and repair refrigeration system

2. REFERENCES

2.1 Ship's Dwg No. RA-S0900-2-2, Rainier General Plans

3. GOVERNMENT FURNISHED MATERIAL

4.1 None

4. REQUIREMENTS

4.1 Provide the services of an AC/Refrigeration specialist, factory authorized repair contractor acceptable to the Port Engineer. All work shall be performed by, or under the direct supervision of factory-trained mechanics. An example of an AC Specialist that is acceptable to the government is West Coast Mechanical (www.westcoast-mc.com, 503-315-2277).

4.1.1 Prior to performing inspections ensure the environment is conducive to opening the compressors. Ensure that condensation will not form within the compressor and protect the internal portions of the compressor from moisture

4.1.2 Drain oil and refrigerant from compressors

4.1.3 Open and inspect both AC and both Reefer Compressors and look for signs of damage, wear and corrosion.

4.1.4 Open and inspect AC and Reefer motors

4.1.5 Provide tuning and balancing of the AC and Reefer systems and ensure oll setting and setpoints are within manufacturer parameters.

4.1.6 Prepare a CFR detailing recommended repairs or replacements needed for the AC and Reefer Compressors and motors.

4.1.7 Provide up to six (6) gallons of POE oil and complete a full oil change on the AC and Reefer systems

4.1.8 Replace/rebuild all valves in both Reefer systems

4.1.9 Re-charge the systems with coolant

SPECIFICATIONS FOR FY 2020 DRYDOCK REPAIR
NOAA SHIP RAINIER

ITEM 15140: AC AND REEFER SYSTEMS INSPECTION

4.1.10 Test systems to ensure proper function

4.2 Provide an authorized Johnson Controls service technician to inspect and write a CFR for adjustments of the HVAC controls and gauges for the #1, #2 and #3 A/C fan rooms. West Coast Mechanical is a contractor that would be acceptable to the Government.

5 TEST, INSPECTION, REPORTS

5.1 Provide service technician inspection reports and recommendations to the Port Engineer for record.

5.2 Ensure Port Engineer or Chief Engineer witnesses the satisfactory operation of the AC Systems.

SPECIFICATIONS FOR FY 2020 DRYDOCK REPAIR
NOAA SHIP RAINIER

ITEM 15170: BOILER SERVICING

1. INTENT

1.1 To provide the services of a Boiler service technician to perform annual maintenance on the numbers 1 and 2 main boilers.

2. REFERENCES

2.1 NOAA General Repair Requirements
2.2 Vapor Power Instruction Manual Model: MNC-5953-AHK-25, Spec: 65095010-43, Serial: 23656

3. GOVERNMENT FURNISHED EQUIPMENT (GFE)

3.1 None

4. REQUIREMENTS

The work under this item will make the ship uninhabitable. See General Requirements for additional information and contractor requirements for uninhabitablility.

4.1 RAINIER SHIP SERVICE BOILERS MODEL AND SERIAL NUMBERS ARE AS FOLLOWS:

TWO (2) MODEL MNC-5953-AHK-25, SERIAL NUMBERS 23656

4.2 Provide the services of a factory certified Vapor Power Boiler Technician. All work shall be performed by, or under the direct supervision of the Boiler Service Technician.

4.2.1 The contractor shall supply all necessary labor, tools, equipment and consumables necessary to accomplish the task.

4.2.2 If parts are supplied, they shall be genuine new Vapor Power parts. Any rebuilt parts shall conform to Vapor Power dimensions, tolerances and specifications.

4.2.3 Required Maintenance: Perform all work indicated in References 2.2 Maintenance Schedule to complete the manufacturer's recommended annual maintenance of the #1 an #2 boilers within the scope of this work item, including, but not limited to, the following list. All work is to be performed in accordance with the requirements and procedures of reference 2.2.

4.2.3.1 Perform required lubrications

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ITEM 15170: BOILER SERVICING

4.2.3.2 Analyze heat transfer fluid properties

4.2.3.3 Remove blower inspection plate and check blower wheel for dirt accumulation

4.2.3.4 Change the drive belts

4.2.3.5 Verify the operation of the Flame Detector Control and Program Control as part of proving the operation of all safety devices.

4.2.3.6 Change the fuel oil nozzle if required.

4.2.3.7 Remove the coil inspection covers and check the coils for soot deposits

4.2.3.8 Check all operating controls to be sure they operate through their complete range and within operating tolerance.

4.2.4. In addition to the annual maintenance listed above, perform a visual inspection of the boilers to determine the need for additional maintenance or repair. See 4.3 below for direction.

4.2.5 Perform a pressure test of the boilers in accordance with reference 2.2

4.3 If any work is discovered that needs to be addressed and is outside the scope of this statement of work, record the necessary work on a CFR and provide it to the Port Engineer for his review and approval. Port Engineer approval shall be obtained prior to proceeding with any additional work.

4.4 Provide updates detailing current service bulletins and environmental compliance upgrades if applicable.

5. TESTS/REPORTS/INSPECTIONS

5.1 Test run each boiler in accordance with reference 2.2 upon completion of inspections.

CHECKPOINT

5.2 Provide a report detailing the work accomplished.

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ITEM 15330: GREY WATER TANKS CLEAN AND RECOAT

1. INTENT:

1.1 The intent of this work item is to open and inspect, clean, and re-coat grey water tanks A-04-001 and A-08-001.

2. REFERENCES:

2.1 Ship's Dwg RA-S1101-2; Structural Tanks, FW, LO, DO (DAY) & ANTI-ROLL
2.2 NOAA MOC 631-2D-Coating Systems for Steel Surfaces
2.3 NOAA STD SPEC S1901-4-1; Painting Potable Water Tanks
2.4 NAVSEA Standard Item 009-32, FY 13

3. GOVERNMENT FURNISHED MATERIAL:

3.1 None

4. REQUIREMENTS:

4.1 The work under this item will make the ship uninhabitable. See General Requirements for additional information and contractor requirements for uninhabitablility. Coordinate this work item with other uninhabitability work

4.2 Provide the services of a marine chemist and tank cleaners to render Grey Water tanks A-04-001 and A-08-001 clean and "Safe for Hotwork ". This work item shall include maintaining these tanks safe for Hotwork throughout the availability as necessary

4.2.1 Provide air blowers to vent the tanks to render and maintain them safe for entry and hotwork. These spaces shall be checked for condition using a marine chemist, and a gas free certificate provided.

4.2.2 Coordinate with the PE to inspect each opened tank before closure.

4.2.3 This item includes removal and disposal of up to 6 inches of sludge from the bottom of each of the grey water tanks.

4.2.4 Contractor shall minimize time grey water tanks are open and shall provide dedicated ventilation exhausting downwind outside the vessel from the time of opening until final closure.

4.3 With the PE present, assess the grey water tanks to determine if structural material needs to be replaced. Where material thickness is questionable, provide the services of a

qualified UT inspector to provide measurements. Assume the need for 40 UT shots per tank will be required. Provide CFR to PE for all UT Findings and recommendations.

*****CHECKPOINT*****

4.4 If wasted structure is found submit a CFR with recommendations and a price proposal to the PE.

4.5 After replacement of wasted structure and tank penetration cuts, conduct a fit-up inspection with the PE and ABS present if necessary.

4.6 Extend Aft Grey water suction piping closer to the bottom of the tank. Lower the lower float switch as well

*****CHECKPOINT*****

4.6 After final welding, the tank shall be hydrostatically tested to verify tightness with the PE and ABS present.

*****CHECKPOINT*****

4.7 Prepare the surface of the tanks to manufacturer specification for the Ameron 240 LT Epoxy or equivalent to be used.

4.8 Paint the grey water tanks per reference 2.2 with Ameron 240 LT epoxy, International Brand Interline 624 epoxy or equivalent conforming to MIL-PRF-23236C. If an equivalent product is being proposed, prior to application, the Contractor shall verify its equivalency with the PE. Coats shall include a primer coat, a stripe coat and a top coat. Use varying colors for the primer and top coat. Paint film thicknesses and cure times between coats shall be in accordance with the manufactures specification and the above references. The paint sequence shall be as follows:

4.8.1 Apply the primer coat at the manufactures specified film thickness.
Allow the paint to cure. Measure the primer dry film thickness at 5 random places with the PE present prior to proceeding. Obtain PE approval to proceed to the next coat.

4.8.2 Apply the stripe coat. Obtain PE approval to proceed.

4.8.3 Apply the top coat at the manufactures specified film thickness.
Allow the paint to cure. Measure the top coat dry film thickness at 5 random places with the PE present.

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ITEM 15330: GREY WATER TANKS CLEAN AND RECOAT

*****CHECKPOINT*****(surface mil thickness, and after each coat)

4.9 After completion of tank restorations, coating and inspections, reinstall the tank TLIs and bolted man hole covers using new gaskets and stud cotton sealing grommets. Contractors QC representative will inspect tanks prior to filling to ensure no plugs, rags or contamination remain in the tanks before closure. Provide condition found report certifying cleanliness QC. The PE will approve the tank cleanliness prior to tanks closing.

5. TESTS/INSPECTIONS/REPORTS:

5.2 Provide all inspection data and reports listed in paragraph 11 of reference 2.2.

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NOAA SHIP RAINIER

ITEM 15610: STEERING GEAR INSPECTION

1. INTENT

1.1 To provide the services of a factory authorized Sperry technician to inspect the Steering gear

2. REFERENCES

2.1 NOAA General Repair Requirements
2.2 Code of Federal Regulations, Title 29, Chapter XVII, OSHA Section 1910.1001 and 1915.1001
2.3 Technical Manual for Steering Gear to be filled in at a later date if available

3. GOVERNMENT FURNISHED EQUIPMENT (GFE)

3.1 None

4. REQUIREMENTS

4.1 RAINIER STEERING MODEL AND SERIAL NUMBERS ARE AS FOLLOWS:

To be filled in at a later date

4.2 Provide the services of a Sperry factory authorized service contractor acceptable to the Port Engineer. All work shall be performed by, or under the direct supervision of factory-trained mechanics.

4.2.1 The contractor shall supply all necessary labor, tools, equipment and consumables necessary to accomplish the task.

4.2.2 If parts are supplied, they shall be genuine new Sperry or Rolls Royce parts or remanufactured by an authorized Sperry factory service center. Any rebuilt parts shall conform to Sperry dimensions, tolerances and specifications.

4.2.3 Required Maintenance: Perform all work indicated in tech manual for annual maintenance

4.3 If any work is discovered that needs to be addressed and is outside the scope of this statement of work, record the necessary work on a CFR and provide it to the Port Engineer for his/her review and approval. PE approval shall be obtained prior to proceeding with any additional work.

4.4 Provide updates detailing current service bulletins and environmental compliance engine upgrades.

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ITEM 15610: STEERING GEAR INSPECTION

5. TESTS/REPORTS/INSPECTIONS

5.1 Test run s in accordance with the maintenance manual upon completion of inspections.

CHECKPOINT

5.2 Provide a report detailing the work accomplished as well

SPECIFICATIONS FOR FY 2020 DRYDOCK REPAIR
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ITEM 15720: ELEVATOR INSPECTION

1. INTENT

1.1 Provide labor and materials for maintenance and repair of the Montgomery service elevator.

2. REFERENCES

2.1 None

3. GOVERNMENT FURNISHED EQUIPMENT (GFE)

3.1 None

4. REQUIREMENTS

4.1 Contractor shall provide all manuals, tools, and materials required to complete the work described in this specification

4.2 Perform service and maintenance including brake, and limit switch adjustments, lubrication, governor inspection and testing, and slip ring and commutator inspection and adjustment.

4.3 Troubleshoot any alarms and lockouts present in the control system.

4.4 Prepare and deliver a CFR to the Port Engineer (PE) documenting the results of the inspection within 24 hours of completing the inspection. Include deficiencies and recommended repairs to correct deficiencies beyond the scope of these requirements.

4.5 If the CFR recommends repairs, include with the CFR a price quote to perform those recommended repairs. The quote shall include labor, parts, and materials to correct any deficiencies.

5 TEST AND REPORTS

5.1 After all work is complete, demonstrate to the PE and Chief Boatswain that the elevator is fully functional.

5.2 Provide a certificate of inspection to the Port Engineer

SPECIFICATIONS FOR FY 2020 DRYDOCK REPAIR
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ITEM 15830: LIFTING GEAR INSPECTION

1. INTENT

1.1 This item is used to inspect and test the VESTDAVIT davits on board the NOAA Ship RAINIER.

2. REFERENCES

2.1 VESTDAVIT HN-9001 Operation Manual

2.2 VESTDAVIT HN-7000 Operation Manual

2.3 VESTDAVIT PLR-3000 Operation Manual

3. GOVERNMENT FURNISHED EQUIPMENT (GFE)

3.1 None

4. REQUIREMENTS

4.1 Contractor shall supply all necessary labor, tools, equipment, and consumables necessary to accomplish this Item.

4.2 This Item shall be completed in the first 15% of the Period of Performance

4.3 VESTDAVIT Davits

4.3.1 Contractor shall provide the services of a certified VESTDAVIT technician, or other Davit technician approved by the Port Engineer to inspect and perform annual maintenance on four (4) VESTDAVIT HN-9001, one HN-7000, and one PLR-3000 davits. The davit technician shall perform the following:

4.3.1.1 Visually inspect the davits and note any deficiencies

4.3.1.1.1 If wire ropes appear “dry” re-grease the wire rope with appropriate marine grade grease.

4.3.1.1.2 If the Hydraulic hoses or steel tubing appear to be worn, cracked, or leaking identify recommended actions to the Port Engineer in the form of a CFR.

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ITEM 15830: LIFTING GEAR INSPECTION

4.3.1.2 Operationally test the davits and note any deficiencies. Report deficiencies to the Port Engineer in the form of a CFR.

4.3.1.2.1 After operating the davits for at least 5 minutes, shut down, de-energize, lock out and tag out the davits and perform a gear oil, brake oil, and hydraulic oil change. Open return filter on oil tank and check for particles, replace filter element if necessary.

4.3.1.3 Nitrogen charging set will be needed to place the system back in service

4.3.1.4 Replace leaking stainless steel compression fittings and tubing as necessary. For bidding purposes assume a total of 16 compression fittings and 20 linear feet of steel tubing will be required.

4.3.1.5 Inspect the cable tensioners and adjust as necessary to ensure proper tension on the cables.

4.3.1.6 Inspect davits for signs of cracking or other structural deteriorations. Report findings immediately to the Port Engineer.

4.3.2 Restore the davits to working order and operationally test to ensure proper function. Provide a CFR to the Port Engineer outlining work performed and any recommended action items.

4.4 Anchor Windlass

4.4.1 Contractor shall provide the services of an Anchor Windlass technician approved by the Port Engineer to inspect and perform annual maintenance on Anchor Windlass

4.4.2 Technician shall visually inspect both sides of the windlass for necessary repairs while in the following conditions:

4.4.2.1 Static and stowed. While the anchors and chain are in the stowed position, inspect the running surfaces for the chain including but not limited to the riding pawl, wildcat and welps, hawse pipe, brake and drum, riding chock, and stopper connections and linkages.

4.4.2.2 Dropping anchor. Observe the windlass in operation while dropping the anchor and paying extra attention to the braking mechanisms.

4.4.2.3 Weighing Anchor. Observe the windlass in operation while weighing anchor paying extra attention to the motors, wildcat, and brake.

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ITEM 15830: LIFTING GEAR INSPECTION

4.4.3 Technician shall inspect foundations of the windlass and determine if repair of the foundation is recommended

4.4.4 Technician shall prepare a report of findings and recommendations and submit it to the Contractor. Contractor shall provide a CFR outlining any required repairs and provide an estimate for those repairs in accordance with the contract.

4.5 Cranes, Davits, A-Frames

4.5.1 Contractor shall weight test all lifting equipment aboard the vessel to 110% SWL.

4.5.2 Weight test shall be observed by OSHA.

5. TESTS/REPORTS/INSPECTIONS

5.1 Provide copies of all service records, and inspection reports to the Port Engineer and the Commanding Officer.

SPE SPECIFICATIONS FOR FY 2020 DRYDOCK REPAIR
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ITEM 16310: UNDERWATER HULL COATING

1. INTENT

1.1 The intent of this specification is to provide a blast and recoated paint system for complete recoating of existing epoxy system bottom paint (keel to deep load line).

1.2 The existing hull coating is as follows:

1. One coat, Primer INTERNATIONAL INTERTUF KHA303 H S Epoxy (Primer)
2. One coat, INTERNATIONAL INTERTUF KHA302 Epoxy Gray (Intermediate Coat)
3. One coat, INTERNATIONAL Anti-Fouling Formula 640 (BRA640) Red
4. Two coats, INTERNATIONAL Anti-Fouling Formula 642 (BRA642) Black

2. REFERENCES

2.1 Ship's DWG RA S2806-2, Painting and Identification Scheme (RAINIER)
2.2 Steel Structures Painting Council STD SPEC, SSPC-PA-1
2.3 NOAA Std Spec 631-2D Coating Systems for Steel Surfaces

3. GOVERNMENT FURNISHED EQUIPMENT (GFE)

3.1 None

4. REQUIREMENTS

Contractor shall accomplish all required set-up, masking, and containment requirements applicable with any/all local, state, and federal regulations pertaining to work in this work item.

Contractor shall provide and erect all necessary staging and/or provide suitable alternative means (scissor lift, manlifts, etc.) required for proper working conditions and inspection. Remove and replace interferences as necessary to accomplish the preparation and painting of the superstructure. Weather deck cabinets welded in place are not considered interferences and need not be removed.

Contractor shall provide and maintain adequate lighting, of a suitable nature, during the course of all blasting, coating and inspection activities.

4.1 SURFACE PREPARATION: Within 3 hours after drydocking, the entire underwater body from 12" above the top of the parabolic waterline to the keel, including all appendages, sea chests, etc. are to be pressure washed with fresh water to remove dirt and slime. The water wash shall meet the following requirements.

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ITEM 16310: UNDERWATER HULL COATING

1. The most heavily slimed areas shall be washed within the first hour.
2. Hose pressure – 3000psi.
3. Hose size - 1 1/2" minimum.
4. Transducers shall be protected from full hose wash.

4.1.1 100% of the total surface area of the underwater hull, including the rudders, seachest interiors and screens, and wind and water zone, and boot top of the ship are to be recoated. The total area shall be surface prepped and recoated as follows.

4.1.2 Sandblasting and High Pressure Wash: Upon completion of the water wash in par. 4.1, the underwater body shall be abrasive blasted to a "Near White" finish in accordance with SSPC Specification No. SP-10. The entire hull area in addition to the rudders, seachest interiors and screens to be abrasive blasted as part of this item. The surface profiles shall be measured and verified to meet the surface preparation requirements of the anti corrosive primer. The Port Engineer may request these records to verify. The hull surface preparation shall be divided into sections for timing purposes as necessary to ensure that a “Near White” SP-10 surface is maintained when primer coat is applied.

***** CHECKPOINT *****

Port Engineer examination of surface preparation

4.1.3 Prior to any sandblast and sandsweep of the parabolic boot top, the contractor shall record the height of the parabolic boot top so that this line can be re established during recoat. Photograph the hull as an aid to reinstalling the ship's distinguishing hull marks. Provide the Port Engineer with a complete set of photographs. The contractor shall also record the locations of other distinguishing marks as noted in Ref. 2.1 as well as those not found in Ref. 2.1, such as the Load line marks.

4.1.4 Special precautions shall be taken to protect the following from any sandblasting and sandsweeping.

* Cathodic protection anodes and sensors.
* Transducers
* Rudder bearings and propeller shaft bearings
* Sea valves
* Port and Starboard Propulsion Shafts
* Propellers
* Bow thruster
* Machinery, Equipment, Ventilation, and Accesses in Weather Deck Areas

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Ventilation fan inlets shall be covered with particulate filters to prevent intake and distribution of dusts during the entire period the ship is in the drydock. The filters shall be changed weekly, immediately after the hull sandblasting operations are complete and at other times as necessary (COR determination).

***** CHECKPOINT *****

4.1.5 All seachest screens shall be removed for inspection, sandblasting, and painting of the screens and seachests.

***** CHECKPOINT *****

Renew corroded or damaged screens as directed by the COR. Assume 30% of combined ships screen area will require renewal as part of this item. Renew corroded or damaged screen attachments as directed by the Port Engineer. Assume 30% of attachments will require renewal as part of this item.

Clean mussels and sea growth from seachest piping interior to sea valves. Plug all seachest connections with tapered wooden plugs to prevent damage of the sea valves, or blank piping if the sea valves have been removed to prevent entry of grit into the ship. When all subsequent painting work is complete under this item, remove plugs/blanks and re-attach the screens in their original locations.

***** CHECKPOINT *****

4.1.6 Following the sandblasting operation, blow down the hull with dry compressed air to remove all dust, dirt, and spent abrasives. Operating moisture traps shall be used on all sandblasting/sandsweeping and painting equipment.

***** CHECKPOINT *****

4.2 PAINT SYSTEM: Provide labor and materials necessary to paint the underwater body, wind and water zone, and boot top of the ship. Provide the services of a Level III National Association of Corrosion Engineers (NACE) qualified technical representative for the coating products for supervision of surface preparation and coating system application. The technical representative shall be primarily used to observe the surface preparation, paint film thickness of coats, and to resolve technical difficulties such as allowable overcoat times, low ambient temperature or high relative humidity. The preparation and application is to be in strict accordance with the paint manufacturer's instructions and reference 2.2. Where no written guidance is provided, follow the requirements of reference 2.3. No coating work shall be done under unfavorable weather conditions unless the work is well protected from such conditions, and then only with the specific approval of the Port Engineer. All equipment shall be maintained in good working order, and shall be comparable to that described in the printed instructions of the coating manufacturer. All equipment shall be thoroughly cleaned before use with the

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appropriate cleaning solution as indicated by the coating manufacturer. Minimum/maximum between coat drying times must be carefully observed. The general application instructions such as drying and overcoat times indicated in this specification and in the manufacturer's product literature may be modified as indicated by the paint manufacturer's representative to accommodate cold weather. Except where otherwise specified, thinning shall be done only if necessary for workability of the coating material and then in accordance with the guidance of the manufacturer's representative. Use only the appropriate manufacturer's thinner. All federal and local regulations regarding this item are to be followed. The hull shall be painted with an epoxy system as described below:

4.2.1 PRIMER COAT: For those areas of the underwater body including the seachests which have been sandblasted and/or sandswept, apply one (1) coat of primer equivalent or equal to International brand primer as noted in section 1.2 above. If an equivalent product is being proposed, prior to application, the Contractor shall demonstrate its equivalency with the Port Engineer. All sandblasted or sandswept areas are to be prime coated within the same working day. These same areas shall be sandswept again when left exposed for a longer period, or exposed to high relative humidity, fog, or rain to remove any contamination or oxidation. Recoat time shall be within manufacturers recommended minimum and maximum allowable time range for overcoating.

***** CHECKPOINT *****

For Port Engineer examination of primer coating

4.2.2 INTERMEDIATE COAT: To all primed areas apply one (1) coat of anti-corrosive (AC) epoxy coating equal to or compatible with the existing INTERNATIONAL brand of intermediate coat to a minimum of 5 mils DFT. If an equivalent product is being proposed, prior to application, the Contractor shall demonstrate its equivalency with the Port Engineer prior to application. Total thickness of primer and intermediate coat shall be 10 mils minimum DFT. Recoat time shall be within allowable time range as required by manufacturer of the coating system.

***** CHECKPOINT *****

Port Engineer examination of intermediate coat

4.2.3 TOPCOATS: Apply one (1) coat of INTERNATIONAL Formula 640 (Red) antifouling (AF) paint, or equal, to the existing coating on underwater hull surface areas including seachests, rudders, and all other areas which have been sandblasted, sandswept to manufacturers specifications. If an equivalent product is being proposed, prior to application, the Contractor shall demonstrate its equivalency with the Port Engineer prior to application. After all underwater hull surfaces have had the bottom coating system restored up to and including the red AF layer, apply two (2) full coats to entire underwater hull surface including seachests using a coating INTERNATIONAL formula 642 (Black) AF paint, or equal, to the existing AF in

accordance with the manufacturer's specifications. Topcoat recoat time shall be within coating manufacturers recommended allowable time range. Any surface preparation prior to the final top two AF coats shall be in accordance with the manufactures recommendations.

***** CHECKPOINT *****

Port Engineer examination of topcoat

4.2.4 Cut in the parabolic waterline as described in Ref. 2.1 and previously recorded, with new topside primer and topcoat paint. Areas above parabolic waterline must be protected against overspray. Any overspray shall be removed and the painted hull repaired to the satisfaction of the Port Engineer.

***** CHECKPOINT *****

4.2.5 TOUCH UP: Repaint any distinguishing features on the hull, such as the draft marks and Load line. Draft and load line marks shall be superimposed with white anti fouling paint in the boot topping area and below; gloss black enamel above. Any over spray shall be removed and the painted hull repaired to the satisfaction of the Port Engineer.

***** CHECKPOINT *****

4.2.6 At the completion of all painting, replace all sea chest screens.

***** CHECKPOINT *****

4.3 SUBSTITUTE PAINT SYSTEM: Upon award of the contract, the successful contractor may submit a proposal for a complete ablative or hydrolyzing tin free paint system considered to be equal to, or exceed that specified. All aspects of the proposed system shall be addressed including the following:

1. 48 month rating
2. Coating compatibility
3. Manufacturer's representative availability
4. Detailed price comparison to that specified

4.3.1 Upon review of the proposal by the Contracting Officer and COR, a decision will be made to accept or reject the proposal. If the proposal is accepted a formal modification to the contract will be issued. If the proposal is rejected, the specified paint system will be applied.

4.3.2 An incomplete list of anti fouling paint manufacturers which have coating systems that may satisfy the general description of non tin bearing, ablative, self polishing, or

hydrolyzing characteristics includes the following: Pro Line Paint Co., Devoe Coatings, Ameron Amercoat, International Paint Co., and SIGMA.

4.4 Paints and paint products required to be applied by this specification are registered with the U.S. Environmental Protection Agency (EPA). EPA Material Safety Data Sheets, as required by the EPA, are to be obtained, read, and understood by the contractor and special precautions listed are to be adhered to.

4.5 Sufficient cure time shall be allowed between the final coat of AF and hull immersion during undocking.

5. TESTS/REPORTS/INSPECTIONS

5.1 Surface inspection after waterwash, sandblasting, sandsweeping, and high pressure water wash shall be conducted by the Port Engineer or his representative, as well as the paint manufacturer's representative. Provide the Port Engineer bare metal surface profile measurements and paint thickness reports between coats to verify that application requirements have been met.

5.2 Any overspray must be removed and painted area repaired to the satisfaction of the Port Engineer.

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ITEM 16311: HULL FREEBOARD PRESERVATION

1. INTENT

1.1 To accomplish re-coating of the ship's freeboard.

2. REFERENCES

2.1 Ships' DWG RA S2806-2, Painting and Identification Scheme (RAINIER AND FAIRWEATHER)
2.2 Steel Structures Painting Council STD SPEC, SSPC-PA-1
2.3 NOAA Std Spec 631-2D Coating Systems for Steel Surfaces

3. GOVERNMENT FURNISHED EQUIPMENT (GFE)

3.1 None

4. REQUIREMENTS

Provide the services of a certified Level III NACE marine coating specialist/inspector acceptable to the Port Engineer to assess the existing coating system, provide recommendations, and supervise surface preparation for and application of coating systems used in this work item.

4.1 The surfaces to include in this work item include from the top of the boot top to the top of bulwarks and transom, include the interior portions of bulwarks and transom down to the associated weather deck and include the shear line handrails (here on described as "the freeboard").

4.2 Accomplish all required set-up, masking, and containment requirements applicable with any/all local, state, and federal regulations pertaining to work in this work item.

4.3 Provide and erect all necessary staging and/or provide suitable alternative means (scissor lift, manlifts, etc.) required for proper working conditions and inspection. Remove and replace interferences as necessary to accomplish the preparation and painting of the superstructure. Weather deck cabinets welded in place are not considered interferences and need not be removed.

4.4 Provide and maintain adequate lighting, of a suitable nature, during the course of all blasting, coating and inspection activities.

4.5 The Port Engineer is to be notified at least 4 hours in advance and offered an opportunity to attend all surface preparation, paint applications, and mixing inspections with the Paint Representative.

4.6 The areas identified in paragraph 4.1 shall be pressure fresh water washed to remove loose and flaking paint, loose scale, salts and dirt. Equipment utilized shall maintain a discharge

pressure of 3,000 psi at a minimum. Warm water (140-160 degrees Fahrenheit) and a 100% biodegradable detergent shall be used. All surfaces shall be rinsed clean and allowed to thoroughly dry.

4.7 SURFACE PREPARATION:

4.7.1 100% of the total surface area of the freeboard described in 4.1 shall be recoated. The area shall be surface prepped and recoated as follows.

4.7.2 Sandblasting and High Pressure Wash: Upon completion of the water wash in par. 4.6, the freeboard shall be abrasive blasted to a "Near White" finish in accordance with SSPC Specification No. SP-10. The entire freeboard and screens to be abrasive blasted as part of this item. The surface profiles of the SP-10 blasted locations shall be measured and verified to meet the surface preparation requirements of the anti-corrosive primer. The Port Engineer may request these records to verify. The hull surface preparation shall be divided into sections for timing purposes as necessary to ensure that a “Near White” SP-10 surface is maintained when primer coat is applied.

***** CHECKPOINT *****

Port Engineer examination of surface preparation

4.7.3 Prior to any sandblast and sandsweep of the parabolic boot top, the contractor shall record the height of the parabolic boot top so that this line can be re established during recoat. Photograph the hull as an aid to reinstalling the ship's distinguishing hull marks. Provide the Port Engineer with a complete set of photographs. The contractor shall also record the locations of other distinguishing marks as noted in Ref. 2.1 as well as those not found in Ref. 2.1, such as the Load line marks.

4.7.4 Damaged or deteriorated (rusting, peeling or delaminating) areas one square foot or less shall be spot power tool cleaned to bare metal in accordance with SSPC-11 “Power Tool Cleaning to Bare Metal”. Apply prime coat within 12 hours but before flash rusting occurs, repeating power tool cleaning if necessary.

4.7.5 Damaged or deteriorated (rusting, peeling or delaminating) areas greater than one square foot shall be abrasive blasted to “Near White Metal” in accordance with SSPC-10, or UHP hydroblasted to WJ-3. Apply prime coat within 12 hours but before flash rusting occurs, re-blasting if necessary.

4.7.6 The hawse pipe internals are not included in this item.

4.7 Apply the following coating systems in way of repairs:

4.7.5 Apply one (1) primer coat of zinc rich epoxy conforming to MIL-PRF-

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24441 Formula 159, INTERNATIONAL Interzinc 52 or equal, 2-3 mils DFT.

4.7.6 Apply one (1) coat of high build, high solid, low temperature curing, re-coatable build epoxy conforming to INTERNATIONAL Intertuf 262(KH) or equal, 4-6 mils DFT. The first coat shall be a color contrasting with the primer coat.

4.7.7 Apply one (1) top coat using Interthane 990 to the entire freeboard including all areas identified in paragraph 4.1. Recoat time shall be within a minimum of "When Firm" to a maximum time of 24 hours. The surface shall be prepared in accordance with the manufacturers recommendations for overcoats.

4.7.8 Distinguishing marks, load lines, frame numbers, name, draft marks, NOAA Emblem and IMO Numbers and other numerals and lettering shall be renewed using Semi-Gloss silicone-alkyd enamel conforming to MIL-E-24635, 1.5-2.5 mils DFT.

4.7.8.1 Black lettering and numerals and other markings shall be Semi Gloss.

4.7.8.2 Light Blue in the NOAA Emblem shall be Semi Gloss NOAA Process Blue.

4.7.8.3 Dark Blue in the NOAA Emblem shall be Semi Gloss NOAA Reflex Blue.

4.11 For surface preparation and coating application, where the paint manufactures requirements and reference 2.2 requirements are silent, refer to reference 2.3.

5. TESTS/REPORTS/INSPECTIONS

5.1 Condition report on inspection, see paragraph 4.7

SPECIFICATIONS FOR FY 2020 DRYDOCK REPAIR
NOAA SHIP RAINIER

ITEM 16340: DECK NON-SKID RENEWAL

1. INTENT

1.1 Renew approximately 6000 Square feet of the deck non-skid where excessive wear is taking place on the Boat Deck, and Fo'c'sle.

2. REFERENCES

2.1 Steel Structures Painting Council, Surface Preparation Specification No. 10, Near white blast cleaning (SPCC-10)

2.2 NOAA Std Spec 631-2D Coating Systems for Steel Surfaces

3. GOVERNMENT FURNISHED EQUIPMENT (GFE)

3.1 None

4. REQUIREMENTS

4.1 Remove interferences and clean deck area to be repaired as indicated in 1.1. Cleaning shall be accomplished with suitable bio-degradable soap and water wash. After initial cleaning, provide a waterproof canopy or tarp over the deck tight to the topside structure such that no rain water leaks past onto areas of deck being repaired. Heaters shall be provided prior to and during surface preparation and application of coating system to maintain proper temperature and humidity environment. Seal supply ventilation openings in work area that may intake dust or paint solvents during deck coating work (Notify ship's engineering department 48 hours in advance of sealing ventilation intakes to allow systems to be secured, and personnel berthing to be relocated). Mask or cover deck machinery such as the anchor windlass and forward cranes to protect from entry of dust and debris. Mask off and protect from painting all deck inserts, sounding tube penetrations, and remote valve operating gear as designated by Port Engineer. Accomplish all surface preparation and paint application under the supervision of an authorized INTERNATIONAL Coatings manufacturer's representative. Accomplish all required set-up, masking, and containment requirements applicable with any/all local, state, and federal regulations pertaining to work in this work item.

4.2 Accomplish vacuum grit blast surface prep in accordance with reference 2.1 over all accessible areas of the deck. For those deck areas that cannot be accessed by vacuum blast unit, accomplish hand tool surface prep removing all non-skid, scale, and rust to SSPC-SP 15 requirements for Power Tool Cleaning. Also accomplish this level of surface preparation to all deteriorated areas bordering the deck to be non-skid coated up to and including deck equipment foundations, foundation doubler plates on deck and bulwark structure (up to top of deck coaming or top of foundation). Surface should not be polished such as by wire wheel, but rather roughened by needle gun and coarse grinding wheel to achieve best adhesion of primer. Vacuum and wipe down with solvent all dust and debris from prepared deck area prior to primer application.

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ITEM 16340: DECK NON-SKID RENEWAL

*****CHECKPOINT*****

Port Engineer to inspect areas after surface preparation prior to priming. Verify environmental conditions (Humidity, temperature) are in accordance with manufacturers recommendation.

4.3 Apply Zinc Rich Epoxy Primer conforming to MIL-P-24441 Formula 159, INTERNATIONAL INTERZINC 52 or equal (Receive Port Engineer approval if using "equal" alternative) to areas which have become exposed to bare metal in 4.2 from grinding, needle gun work, and vacuum blast in accordance with the manufacturer's recommended procedures to a DFT of 2 – 2 ½ mils. Priming of exposed areas shall be accomplished before end of shift daily to not leave any bare exposed metal overnight. Assure proper conditions are met for applying primer regarding temperature, humidity and cleanliness. Primer shall be applied by roller with brush touch up in hard to reach areas.

4.4 After primer cure, apply non-skid Epoxy Tiecoat, MIL-P-24441 Formula 150, INTERNATIONAL 5747/5748 or equal, to the horizontal deck surfaces prepared in 4.2 in accordance with the manufacturer's recommended procedures to a DFT of 4-6 mils.

***** CHECKPOINT *****
Measure and record the DFT of the coating system in ten random locations. Provide data to Port Engineer.

4.5 Apply one coat of an Epoxy Non-Skid conforming to MIL-C-24667 Type II, Color Deck Gray, INTERNATIONAL DECK NON SKID No. 631 or equal (Receive Port Engineer approval if using "equal" alternative), to all areas prepared in 4.2 up to within six inches of all vertical bulkhead and bulwark surfaces and superstructure. Hold Back up to within one inch of all deck vents, deck fittings and equipment. Non-Skid shall be applied in accordance with the manufacturer's recommended procedures to a DFT of 30 – 40 mils.

***** CHECKPOINT *****
Port Engineer shall inspect masking of all borders prior to application of nonskid

***** CHECKPOINT *****
Port Engineer shall inspect new non-skid coated areas to assure that the coating is uniform, matches surrounding non-skid, and is adequately clean of all oil, grease, dust, etc. prior to over-coating with top coat.

***** CHECKPOINT *****
Measure and record the DFT of the coating system in ten random locations. Provide data to Port Engineer

4.6 Apply one coat of Epoxy top coat, Color Deck Gray, INTERNATIONAL 670HS or equal (Receive Port Engineer approval if using "equal" alternative), to the areas prepared in 4.2 and extending four inches up all adjacent vertical bulkhead and bulwark surfaces. Top coat shall be applied in accordance with the manufacturer's recommended procedures to a DFT of 6-8

SPECIFICATIONS FOR FY 2020 DRYDOCK REPAIR
NOAA SHIP RAINIER

ITEM 16340: DECK NON-SKID RENEWAL

mils. Vertical surfaces of deck equipment foundations shall be black enamel and vertical surfaces of superstructure shall be white polyurethane to match type used by deck department.

4.6.1 Distinguishing marks, lettering and numerals shall be renewed using Semi-Gloss silicone-alkyd enamel conforming to MIL-E-24635, 1.5-2.5 mils DFT.

4.6.2 Touch-ups of damaged coating systems shall conform to existing coating system used by the deck department

*****CHECKPOINT*****
Port Engineer to Inspect completed deck coating repair for acceptance.

5. TESTS/REPORTS/INSPECTIONS

5.1 PE shall inspect the work in accordance with REQUIREMENTS

SPECIFICATIONS FOR FY 2020 DRYDOCK REPAIR
NOAA SHIP RAINIER

ITEM 22430: SHAFTS BEARINGS AND HUBS REFURBISHMENT

1. INTENT

1.1. This item describes the requirements to remove the propellers, hubs, and shafts for inspection, overhaul hubs, and then reinstall new replacement shaft bearings.

2. REFERENCES

2.1. Tech Manual: Bird Johnson Controllable Pitch Propeller

2.2. Drawing: RA-S4301-15: Propulsion Shafting Arrangements and Details

2.3. Drawing: RA-S4302-1: Arrangement and Details of Stern Tube, Stuffing Box, and Bearings.

2.4. MILSPEC: MIL-R-23461

2.5. RA-S1108-1, Arrgt & Details stern tube stuffing box and bearings.

3. GOVERNMENT FURNISHED EQUIPMENT/MATERIAL

3.1. 2 ea. Stern Tube Bearings, Reference 2.6, undrilled.

3.2. 2 ea. Fwd Strut Bearings, Reference 2.3 item No. 2, undrilled.

3.3. 2 ea. Aft Strut Bearings, Reference 2.3 Item No 1, undrilled.

3.4. Replacement propeller blades are available.

Refurbished bearings cost approx. $70000.00

4. REQUIREMENTS

4.1. Coordinate with and provide assistance to the government furnished ABS Surveyor to accomplish inspections and witness test required in order to maintain Load Line by the American Bureau of Shipping incidental to the work contained in this item. ABS Tail Shaft Surveys shall be coordinated with this item.

4.2. Provide the services of a controllable pitch propeller, field service engineer to witness and supervise the tests, inspections, disassembly, assembly, and any required repairs of propeller blades and the controllable pitch propeller (CPP) systems, which will be accomplished in the shipyard or at subcontractors' facilities as indicated in this item. The individual(s) must have extensive training in the design, construction, and operation of Bird-Johnson controllable pitch propellers as well as pneumatic and electronic control systems. The individual(s) must also have extensive hands-on experience with the disassembly, repair, assembly, and testing of same. Any potential subcontractor to be used for CPP field service engineering services shall be preapproved by the COR.

SPECIFICATIONS FOR FY 2020 DRYDOCK REPAIR
NOAA SHIP RAINIER

ITEM 22430: SHAFTS BEARINGS AND HUBS REFURBISHMENT

Conduct Pitch Check in accordance with Section 6-1 in Reference 2.1.

4.3. Drain and flush the CPP system:

4.3.1. Rotate the propeller shafts using portable air drive tool at engine flywheel, so that hub drains are at the lowest point.

4.3.2. Open the drain plugs and drain the hub oil and remove all of the hydraulic fluid and any water from the port and starboard controllable pitch propeller systems.

4.3.3. Collect hub fluid for inspection, noting the quantity of water and dirt and provide condition report to the COR including CPP system field service technician assessment and recommendation.

4.3.4. Flush CPP system with clean filtered Chevron Clarity EA 46 hydraulic oil to remove any remaining particles or debris.

4.3.5. Open the sumps and head tanks, and remove any hydraulic fluid, dirt, contamination and water.

4.3.5.1. Using lint free rags, clean the interior of each sump.

4.3.5.2. Clean sump tank cover seating areas of old gasket materials and provide new sealing gaskets prior to replacing cover.

4.3.5.3. Ensure no contaminants can enter sump between cleaning and refill.

4.3.6. Dispose of used hydraulic fluid.

4.4. Remove the three propeller blades from the port and starboard hubs in accordance with Chapter 7 of Reference 2.1. Provide the services of an engineering firm to take shaft alignment readings prior to removal and then again upon installation. Alignment readings shall consist of strain gage readings afloat, before and after drydocking, to determine shaft alignment in terms of bearing loads through the line shaft and gear shaft bearings.

4.4.1. All grit and dust shall be blown and flushed from the crevices of the hub prior to disassembly or re-floating of the vessel.

4.4.2. Identify the blades and their respective hubs and hub positions.

4.4.3. Fabricate suitable crib(s) on the dry dock floor for cradling propeller blades.

4.4.4. Wrap the openings in the hubs to prevent contamination of the internals and to hold the blade seal base ring, springs, and O-rings in place until blade seal base ring removal and inspection

4.4.5. Clean and polish propeller blades.

4.4.6. Conduct visual inspection of propeller blades and provide results to the COR in a CFR.

SPECIFICATIONS FOR FY 2020 DRYDOCK REPAIR
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ITEM 22430: SHAFTS BEARINGS AND HUBS REFURBISHMENT

4.5. Remove and overhaul/rebuild both port and starboard propeller hubs in accordance with 2.1, manufacturers recommendations, and controllable pitch propeller, field service engineer's guidance.

4.6. Remove the tail shafts and tube shafts.

4.6.1. Remove protective grates around tube shafts at aft end of shaft log and retain for reuse.

4.6.2. Remove Tail and Tube shafts in accordance with References 2.1 through 2.3.

4.6.3. Remove the waterproof rubber or fiberglass coating on the shaft and provide a CFR with the visual inspection results along with any recommended corrective action.

4.7. Checkpoint: Conduct visual inspection of shafts, bearings, blades, and hubs in the presence of the COR.

4.8. Replace the forward and aft strut bearings and stern tube bearings in accordance with Reference 2.3 and 2.5

4.8.1. New bearings shall be manufacturer's recommended material.

4.8.2. Upon removal of each bearing, clean, inspect, and preserve the strut bores and measure the inside diameters of each bore to determine the correct OD to machine each strut and stern tube bearing shell.

4.8.3. Following the measurements, plug the bearing bores to prevent damage due to sand blasting, sweeping, or painting.

4.8.4. Take care to avoid damage to the existing bearing shells upon removal and turn used bearing shells over to the COR.

4.8.5. Align the new bearing shells with the bolt pattern of the struts and drill the bearing flanges if, required, and reinstall the new bearings.

4.9. Apply a glass-reinforced epoxy laminate covering on each shaft where the steel shaft is exposed to salt water.

4.9.1. Epoxy laminate application shall be in accordance Reference 2.4.

4.9.2. Epoxy laminate shall be Philadelphia Resins Corp. PHILLYCLAD propeller coating system, or equal.

4.9.3. Mask the bronze shaft journal sleeves

4.9.4. Sandblast the steel shaft with #2 shot to bare metal, achieving a profile of at least 3 mils.

4.9.5. Rinse the shafting with solvent and fill the pits with PHILLYCLAD #6, or equal.

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ITEM 22430: SHAFTS BEARINGS AND HUBS REFURBISHMENT

4.9.6. Tension wind 6" wide woven edge glass tape and epoxy resin around the shaft while being rotated in a lathe.

4.9.7. Wrap four complete layers around the shafts, overlapping preceding layer slightly and completely at the journal sleeves.

4.9.8. Alternate glass wraps with applications of epoxy resin, insuring a completely wetted surface and barrier to water entry.

4.9.9. Finish with a generous application of resin to provide a glass-like surface.

4.9.10. Conduct a spark test in the presence of the COR in accordance with Reference 2.4 to ensure there are no holidays in the coating which would allow water entry to the shafts.

4.10. High-pressure water wash, clean, and inspect the inside of each stern tube while the propeller shaft is removed from the ship.

4.10.1. Insert shaft logs for galvanic corrosion

4.10.2. With each SIMPLAN seal removed, blank the inboard ends of the shaft logs, and sandblast, prime, and paint the interior surface of each shaft log in accordance with Item **16310** (Underwater Hull Preservation)

4.11. Checkpoint: Reinstallation of propulsion system shall not commence until all sandblasting and painting operations are complete on the underwater body of the ship and related ABS inspection requirements have been met.

4.12. Reinstall the vessel's propulsion system in accordance with References 2.1 through 2.4 and the controllable pitch propeller field service engineer.

4.12.1. Reinstall the shafts in their respective shaft logs

4.12.2. Make up the shaft couplings

4.12.3. Reinstall protective grates around tube shafts at aft end of shaft log

4.12.4. Reinstall hubs onto their respective tail shafts

4.12.5. Install the blades and blade seal base rings on the hub.

4.12.6. Install the blade seal base rings using new O-rings and new springs (two O-rings and eighteen springs on each seal ring). If existing springs are recommended for reuse by field service engineer, turn old springs over to the COR.

4.12.7. Stake the blade seal base rings securely to prevent them from backing out. One stake is required on each ring.

4.12.8. Install a new O-ring beneath each blade bolt and torque to a

value of 1,880 ft-lbs, unless directed differently by the controllable pitch propeller field service engineer.

4.12.9. Reinstall the valve rod assemblies using new O-rings in their respective shafts. Note that the head of each socket head cap screw in the valve rod flanges must be filed so that it does not stand proud of the flange face.

4.13. Fill the hydraulic systems and sumps to the full operating level with Chevron Clarity EA 46 hydraulic oil.

4.13.1. It is estimated that each system will take approximately 200 gallons to fill.

4.14. Conduct a 40 psi pressure test of the port and starboard propeller hubs in accordance with Reference 2.4 and Chapter 6-1 of Reference 2.1.

4.14.1. To prevent contamination of the CPP hydraulic system, the fill/test equipment fittings, hose, gauge, oil, pump etc. shall be inspected by field service engineer to verify cleanliness and acceptability for use in filling and pressure testing of CPP system.

4.14.2. Hold the pressure for a period of one hour.

4.14.3. Check for leakage and identify any propeller blades, bolts, or hub mating surfaces, from which oil leaks.

4.14.4. Fix any leaks and retest.

4.14.5. When the testing is complete, reinstall the hub plugs securely in their original locations.

4.15. In accordance with Chapter 6-1, (a) and (c) of Reference 2.1, exercise the controllable pitch propeller system and conduct a pitch check.

4.15.1. Verify the reference pitch, full ahead, and full astern positions with the marks on the oil distribution (OD) box.

4.15.2. Make linkage adjustments as necessary.

4.15.3. Observe the operating pressures of the hydraulic systems and make adjustments in the sequence, pressure regulating, and relief valves as necessary.

5. TEST, INSPECTIONS, REPORTS

5.1. The Contractor shall establish, document, and maintain an effective quality assurance system to ensure and verify that the material, processes, and procedures used comply with the requirements.

5.2. Provide Shaft Alignment Report generated by engineering firm assigned to provide the shaft alignment verification.

SPECIFICATIONS FOR FY 2020 DRYDOCK REPAIR
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5.3. Provide a report of all work accomplished by the controllable pitch propeller field service engineer.

6. NOTES

6.1. No sandblasting, sweeping, or painting of the ship or ship's structure shall be accomplished while the propeller hub is opened.

6.2. To facilitate additional repairs not specified for the shafting, OD boxes, and propeller hubs or blades, provide a CFR to the COR which is to include a description of the additional repairs recommended as well as a price proposal to execute the same.

6.3. Preserve the hub internals with a light lubricant and wrap the hubs, propeller blades, journals, shaft ends, and valve rods with plastic sheeting when shafts and hubs are not being worked.

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ITEM 25680: CPP PLC REPLACEMENT

1. INTENT

1.1 To provide the services of PLC technician to replace the existing Bow Thruster Control System

2. REFERENCES

2.1 NOAA General Repair Requirements
2.2 Ship's Drawing No. RA-S4003-2, Bow Thruster Machinery Arrangement

3. GOVERNMENT FURNISHED EQUIPMENT (GFE)

3.1 None

4. REQUIREMENTS

4.1 Replace the Existing CPP Process Logic Controller with a modern PLC

4.1.1 Contractor shall secure the services of a PLC Specialist that is acceptable to the Government. All work performed shall be under the guidance of the PLC Specialist. An example of a PLC specialist that is acceptable to the government is Verus Associates (www.verusaec.com, 925-446-6586)

5. TESTS/REPORTS/INSPECTIONS

5.1 Provide a report detailing the work accomplished

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ITEM 26310: SUPERSTRUCTURE PRESERVATION

1. INTENT

1.1 To accomplish a full recoat of the ship's superstructure

2. REFERENCES

2.1 Ships' DWG RA S2806-2, Painting and Identification Scheme (RAINIER AND FAIRWEATHER)
2.2 Steel Structures Painting Council STD SPEC, SSPC-PA-1
2.3 NOAA Std Spec 631-2D Coating Systems for Steel Surfaces

3. GOVERNMENT FURNISHED EQUIPMENT (GFE)

3.1 None

4. REQUIREMENTS

Provide the services of a certified Level III NACE marine coating specialist/inspector acceptable to the COR to access the existing coating system, provide recommendations, and supervise surface preparation for any application of coating systems used in this work item.

4.1 The surfaces in this work item include the entire ship's superstructure from the base of the associated exterior weather deck up to and including the flying bridge and all superstructure mounted handrails and welded brackets/fixtures, including decks, davits, masts, and weather deck cabinets.

4.2 Accomplish all required set-up, masking, and containment requirements applicable with any/all local, state, and federal regulations pertaining to work in this work item.

4.3 Where items such as steel cabinets, handrails, vents or other items on the exterior weather deck have rusted through and are in need of repair or replacement provide a condition found report with recommendations.

4.4 Provide and erect all necessary staging and/or provide suitable alternative means (scissor lift, manlifts, etc.) required for proper working conditions and inspection. Remove and replace interferences as necessary to accomplish the preparation and painting of the superstructure. Weather deck cabinets welded in place need not be removed.

4.5 Provide and maintain adequate lighting, of a suitable nature, during the course of all blasting, coating and inspection activities.

4.6 The COR is to be notified at least 4 hours in advance and offered an opportunity to attend all surface preparation, paint applications, and mixing inspections with the Paint

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ITEM 26310: SUPERSTRUCTURE PRESERVATION

Representative.

4.7 The areas identified in paragraph 4.1 shall be pressure fresh water washed to remove loose and flaking paint, loose scale, salts and dirt. Equipment utilized shall maintain a discharge pressure of 3,000 psi at a minimum. Warm water (140-160 degrees Fahrenheit) and a 100% biodegradable detergent shall be used. All surfaces shall be rinsed clean and allowed to thoroughly dry.

4.8 Upon completion of high pressure water washing, an Inspection Team composed of the COR, the paint specialist/inspector, and the Contractor's Rep. shall make a joint inspection of the freeboard and superstructure to identify areas of bare metal, blistered, cracked, peeling or otherwise deteriorated paint. These areas are to be marked. Assume a total area of 100 percent of the superstructure surfaces will require preparation and painting under this item paying special attention to the forward facing structure.

4.9 Accomplish surface preparation of the superstructure. Prepare the areas as follows:

4.9.1 Damaged or deteriorated (rusting, peeling or delaminating) areas one square foot or less shall be spot power tool cleaned to bare metal in accordance with SSPC-11 “Power Tool Cleaning to Bare Metal”. Edges shall be feathered into sound coating system at least 2 inches all around. Apply prime coat within 12 hours but before flash rusting occurs, repeating power tool cleaning if necessary.

4.9.2 Damaged or deteriorated (rusting, peeling or delaminating) areas greater than one square foot shall be abrasive blasted to “Near White Metal” in accordance with SSPC-10, or UHP hydroblasted to WJ-3. Edges shall be feathered into sound coating system at least 2 inches all around. Apply prime coat within 12 hours but before flash rusting occurs, re-blasting if necessary.

4.9.3 Identify any areas of structural concern (excessive corrosion, damage, pitting, buckling etc…) to the COR via a CFR. Provide recommendations in the CFR for structural repair or replacement.

4.10 Apply the following coating systems in way of blasting:

4.10.1 Apply one (1) primer coat of zinc rich epoxy conforming to MIL-PRF-24441 Formula 159, INTERNATIONAL Interzinc 52 or equal, 2-3 mils DFT.

4.10.2 Apply one (1) coat of high build, high solid, low temperature curing, re-coatable build epoxy conforming to INTERNATIONAL Intertuf 262(KH) or equal, 4-6 mils DFT. The first coat shall be a color contrasting with the primer coat.

4.10.3 Apply one (1) top coat using Intercare 755 modified epoxy at 2-3 mils DFT to the entire superstructure. Recoat time shall be within a minimum of “When Firm” to a

maximum time of 24 hours. The surface shall be prepared in accordance with the manufacturers recommendations for overcoats.

4.10.4 Distinguishing marks, lettering and numerals shall be renewed using Semi-Gloss silicone-alkyd enamel conforming to MIL-E-24635, 1.5-2.5 mils DFT.

4.11 For surface preparation and coating application, where the paint manufactures requirements and reference 2.2 requirements are silent, refer to reference 2.3.

5. TESTS/REPORTS/INSPECTIONS

5.1 Condition report on inspection, see paragraph 4.7

SPECIFICATIONS FOR FY 2020 DRYDOCK REPAIR
NOAA SHIP RAINIER

ITEM 26440: TOILET AND SHOWER RENEWAL

1. INTENT

1.1 The existing washrooms (WR), water closets (WC) and showers (SH) on the RAINIER are worn and have design and installation flaws that allow water to get behind joiner work, under toilets, under terrazzo floors, and in some cases out of the compartments under the deck covering of adjacent spaces likely causing corrosion of the underlying steel and unsanitary conditions. The intent of this Work Item is to renew the WR, WC, and SH spaces.

1.2 The contractor shall procure the materials listed in the Bill(s) of Materials. The contractor shall also procure and provide all incidental materials not in the BOM but required to accomplish the work.

1.3 The scope of the WR/WC/SH renewals shall include but not be limited to the following:

- Plumbing fixtures (i.e. toilets, sinks, faucets, and shower heads)
- Interior plumbing (i.e. Potable Water piping, Gray Water Drain Piping, Seawater Flushing piping, and associated piping system components)
- Joiner work (i.e. deteriorated joiner bulkheads, doors, shower sides/surrounds and pans)
- Electrical fixtures (i.e. switches and receptacles)
- Floors (i.e. Terrazzo, tile, epoxy, and carpet where found damaged)
- Miscellaneous fixtures
- Insulation
- Paint

1.4 The contractor shall complete the renewal of the WR/WC/SH spaces in accordance with this specification. The WR/WC/SH spaces to be renewed are listed below and can be located on Reference 2.4, Booklet of General Plans.

COMPARTMENT NUMBER	TYPE OF SPACE
C-03-003	SH
C-03-106	WC/WR
C-04-001	SH
C-04-003	SH
C-04-102	WC (2)/WR
C-05-104	WC/SH
C-05-105	WC/SH
C-06-101	WR/WC

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ITEM 26440: TOILET AND SHOWER RENEWAL

C-07-003	SH (2)
C-07-101	WR/WC (2)
C-07-108	SH
C-08-001	SH (2)
C-08-101	WC/WR
C-08-102	WC/WR
C-09-001	SH (2)
C-09-101	WC/WR
C-09-102	WC/WR
D-03-102	WC/WR/SH
D-03-105	WC/SH
D-03-106	WR/WC/SH
D-04-108	WC/SH
D-05-104	WR/WC
E-03-001	WC/WR/SH
E-03-104	WC/WR/SH
E-04-101	WC/WR/SH
E-04-102	WC/WR/SH
E-05-101	WC/WR/SH
E-05-102	WC/WR/SH

WR= Washroom
WC= Water Closet
SH= Shower

1.5 NOAA General Repair Requirements contain general design, production, and documentation requirements relevant to the work described in this Section. The requirements included in the NOAA General Repair Requirements and NOAA Standard Specification MOC-000-1G shall be applied to all aspects of this work. The requirements described herein shall be considered as additional to the requirements of NOAA General Repair Requirements and NOAA Standard Specification MOC-000-1G.

1.6 The Contractor shall develop and provide all certificates, documentation, labor, material, equipment, tools, rigging and staging, transportation, and supplies necessary to complete the work in accordance with these Specifications. The intent of this Specification and associated drawings is for the Contractor to deliver an installation that is demonstrated to the satisfaction of the Owner to be complete in all respects, fully certified and ready for the service intended. All workmanship and materials shall be in accordance with ABS Under 90 Meter Rules and USCG Regulations.

SPECIFICATIONS FOR FY 2020 DRYDOCK REPAIR
NOAA SHIP RAINIER

ITEM 26440: TOILET AND SHOWER RENEWAL

1.7 Many sections within this work item require removal and installation in conjunction with another section. The order in which the work of this work item is accomplished shall be at the discretion of the Contractor. The Contractor shall account for Port Engineer and Regulatory/Classification reviews and inspections while scheduling the work within this work item.

2. REFERENCES

2.1 NOAA GENERAL REPAIR REQUIREMENTS
2.2 NOAA Standard Specification MOC-000-1G; General Requirements for Ship Repair
2.3 FA-644-001 Rev -; Washroom, Water Closet and Shower Upgrades
2.4 FA-S0201-1 Rev B; Booklet of General Plans
2.5 FA-S4804-12 Rev -; Potable Water Piping System
2.6 FA-S4807-1 Rev 6; Sanitary SW System Diagram/Arrangement
2.7 FA-S4801-11 Rev -; Sewage and Plumbing Drain Piping System
2.8 FA-S6100-2 Rev C; AC Power System One Line Diagram
2.9 FA-S1106-1 Rev 10; Plating & Framing 2nd Deck
2.10 FA-S1106-2 Rev 11; Plating & Framing Main Deck
2.11 FA-S1106-3 Rev 10; Plating & Framing Super Deck
2.12 FA-S1901-2 Rev 7; Paint Schedule
2.13 NOAA Standard Specification S1901-4-1 Painting
2.14 NOAA STD SPEC S0100, IMPLEMENTATION AND CONDUCT OF CHECK POINTS
2.15 ABS U90 Meter Rules Part 2; Materials and Welding
2.16 ABS Guide for Non-Destructive Inspection of Hull Welds

3. GOVERNMENT FURNISHED EQUIPMENT

3.1 None.

4. REQUIREMENTS

4.1 **Preparation/Inspection:** Note that this item will render the ship uninhabitable. See General Requirements for other considerations while ship is uninhabitable.

4.1.1 Prior to the start of work, ensure all systems are tagged-out and drained/de-energized prior to system entry. The Contractor shall ensure that all tanks and confined spaces adjacent to deck plate replacement work are certified gas-free and safe for entry and work as part of the deck replacement work items. Tanks are to be emptied,

cleaned, and certified gas-free in accordance with the General Requirements.

4.1.2 Identify and secure all items in way of deck/bulkhead coating removal and deck inspection. All WR/WC and Shower Spaces shall have the deck coverings removed for inspection. In the spaces listed above in section 1.5, the PRC or terrazzo wall cove/base shall be removed down to the deck steel as part of the inspection preparations. Additional areas identified for flooring removal and deck inspection are the Sick Bay and the C-09 Passageway.

4.1.3 Clean all WR/WC and Shower deck surfaces (in accordance with the spaces identified in section 1.5) to a level consistent with SSPC-SP-2 or SP-3 as defined in NOAA General Requirements. Surface preparation should remove all dirt, grease, loose paint and rust in preparation for the NDT survey.

4.1.4 Perform a survey to determine the condition of the steel plate in the areas of concern by way of a Non Destructive Testing technique including, but not limited to, ultrasonic testing (UT). 100% visual inspection shall be accomplished of the WR/WC and shower decks as well as the deck plate in the Sick Bay and C-09 Passageway. Where corrosion is present, UT shall be accomplished to determine the remaining thickness of steel deck plating and to bound the area(s) of concern. UT measurements shall be taken in square grids with two foot spacing and recorded in accordance with Reference (2.2). Where steel wastage in excess of 15% of nominal thickness is found the survey is to be expanded locally to determine the extent of the deteriorated plate. Provide a Condition Found Report (CFR), capturing the results of the NDT survey to the Port Engineer and/or ABS Surveyor. Areas exhibiting wastage exceeding 15% of original material thickness, as well as other areas deemed to be of concern, are to be identified for potential renewal (length and breadth or other means of clearly defining scope of renewal) and any interferences or other issues that would need to be considered in conjunction with performing the renewal work. The survey report shall be reviewed with the Port Engineer, and regulatory representatives, to obtain concurrence on the extent of required steel renewal and replacement or to establish requirements for additional testing. See References 2.9 through 2.11 for information regarding the as-built thickness of steel deck plating.

4.1.5 Prepare detailed shop drawings of deck plates, support frames, and support structure of any areas requiring steel renewal. The position and size of each deck plate shall be indicated.

4.1.6 Temporarily remove all necessary deck plates, support frames and other structure from the areas to have steel renewal and retain for reinstallation.

4.1.7 During steel/deck removal care shall be taken to prevent damage to all equipment adjacent to work area by proper removal or protection from hot work.

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4.1.8 Piping Inspections: Drain System Piping (Gray Water)- The Contractor is to determine the condition of the Gray Water Drains (Shower and Deck Drains) in the vicinity of each drain. Results of the drain system piping inspection shall be reported to the NOAA Port Engineer via CFR. Inspection shall include visual inspection of the drain fitting and piping, and ultrasonic inspection where signs of leakage or corrosion are present. The boundary of the inspection shall be approximately six (6) linear feet of piping downstream from the drain. Where piping wall deterioration is found in excess of 10%, the inspection shall be expanded locally until piping with sufficient wall thickness is found. Remove piping insulation as necessary to accomplish the piping inspection. See Reference 2.7 for Gray Water Drain System details.

4.1.9 If Contractor chooses to temporarily remove existing interferences, retain for re-installation where ever possible. Dismantle and remove all fans, motors, ducting, and electrical cable associated with removed appliances to allow for easy access to deck plate/bulkhead and to minimize interferences. All components removed as interference to accommodate removal and installation hot work shall be retained for re-use if possible. The Contractor shall assume responsibility for any components damaged during the removal of interferences due to poor work practice. For any components or material unfit for reinstallation, the Contractor shall submit a CFR describing, in detail, the material and quantity needed for a complete installation.

4.1.10 Provide welding blankets and other materials, as necessary, to protect joiner work, and other installed items and surfaces in the adjacent spaces from potential damage from the hot work activities.

4.1.11 Prepare work site and obtain Gas Free for Hot Work and setup Firewatches in accordance with Reference (2.2).

4.2 Interferences:

4.2.1 Remove all interferences and obstructions necessary to complete the required work. This shall include the disassembly and removal of machinery, piping, ducts, cable, wiring, insulation, structures, and anything else, which interferes with the proper accomplishment of work. Except as otherwise specified, this does not include relocations made necessary by new installations, which physically prevent an interference from being returned to its existing location. Interferences shall be removed, handled, stored, and reinstalled in accordance with References (2.1) through (2.3).

4.3 Removals:

4.3.1 Joiner Items

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4.3.1.1 All shower stalls shall be removed. Removal shall include the surround, shower pan coaming, and all fixtures and accessories within the shower (ie grab bar, soap tray, etc). The shower pan deck covering (ie PRC or Terazzo) shall be removed as part of the deck inspection detailed in section 4.1. A portion of the existing showers contain one or more painted steel bulkheads as part of the shower surround. These bulkheads shall be cleaned and preserved as part of the shower renewal. Steel bulkheads making up part of the shower surround shall be cleaned and inspected for wastage. Steel bulkheads shall be preserved in accordance with Section 4.4. NOTE: During shower removal, the Contractor shall measure and record shower dimensions for use during installation. The dimensions of the new showers shall be the same as those removed here.

4.3.1.2 In spaces with multiple toilets, where a partition is installed, the partition and all associated components shall be removed. See Reference (2.3) for removal locations of toilet partitions.

4.3.1.3 The Contractor shall remove joiner doors in the C-09 WR/WC and Shower spaces. See Reference (2.3) for further guidance and the location of the C-09 doors to be removed. Any additional doors found deteriorated shall be reported to the Port Engineer in a written CFR.

4.3.1.4 The intent of this specification is to renew only joiner panels interior to the WR/WC and Shower spaces, mostly acting as components to the shower surrounds. However it is anticipated that several division joiner bulkheads are deteriorated and will require replacement. The Contractor shall remove the joiner bulkheads as shown on Reference (2.3). As base work to this Work Item, the Contractor shall plan to remove the divisional joiner bulkheads separating the C-09 Shower and Head Spaces from each other and from the C-09 Passageway, as well as the aft joiner bulkhead in the Sick Bay. It is suspected that these joiner bulkheads are deteriorated due to leakage and moisture build-up from the adjacent showers.

4.3.1.5 Overhead ceiling systems shall be disturbed to the minimum extent practicable. It is the intention of this work item to retain the overhead ceiling system wherever possible. All ceiling system components removed as interference shall be retained and stored for reinstallation in accordance with section 4.2.

4.3.2 Deck- Deck removal shall be accomplished in accordance with the Deck Inspection Report submitted via CFR in accordance with section 4.1. It is anticipated that upon removal of deck coverings the Contractor will find portions of the structural plating or supports that require replacement due to wastage of material. For the purposes of bidding the contractor shall assume 150 square feet (non-contiguous) of deteriorated deck steel will be required to be replaced.

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Additional square footage requiring steel replacement shall be addressed via CFR. Deck coverings shall be removed to bare steel. Steel decks shall be prepared to SSPC-15 and thoroughly cleaned of all dirt and grease. Existing deck covering materials may contain ACM. All ACM shall be identified and disposed of properly with other ACM materials in accordance with NOAA General Requirements and NOAA Standard Specification MOC-077-1A (Asbestos Containing Materials). Other hazardous materials shall be identified and handled in accordance with Reference (2.2).

4.3.3 Fixtures-The Contractor shall remove the toilets and sinks from the spaces identified in section 1.5 and Reference (2.3). Upon removal of the sinks, the mounting for each fixture shall be removed and the surface restored to its original condition. In this case, restoration means removal of the existing mounting hardware, studs, bolts and hangers and subsequent filling of any holes left from fixture removal. It is not the intent to replace bulkheads if they are not deteriorated, only to fill holes left from the fixture removal in order to maintain fire rating of the bulkhead and to improve appearance after removal of the old fixtures. NOTE: The small hand-sink and faucet in space D-05-104 shall be retained for reinstallation.

4.3.3.1 Upon removal of the toilet, mounting studs shall be removed and the deck prepared to clean bare steel. NOTE: Some toilets have a built up mounting to account for shear and camber in the deck, these built up sections shall be removed to accommodate new toilets. The installation of new toilets is addressed in section 4.4.

4.3.4 Miscellaneous fixtures and accessories located on the joiner and steel bulkheads, such as toilet paper dispensers, trash bins, towel dispensers, heaters, and air fresheners shall be removed and retained for reinstallation. Items removed and retained shall be stored in accordance with Reference (2.2).

4.3.5 Piping:

4.3.5.1 Hot and Cold FW System- The hot and cold Fresh Water (Potable) Piping supply to the sinks within WR/WC spaces is to be removed in accordance with the details provided in Reference 2.3. Removal shall include the flexible (braided) line and the isolation valves. The remaining piping is to be visually inspected for deterioration or damage. Piping found deteriorated shall be removed pending authorization via CFR. The existing piping left after removal shall be temporarily capped to prevent foreign materials from entering the system.

4.3.5.2 Seawater Flushing System- The Contractor shall remove Seawater flushing piping to each toilet within the spaces listed in section 1.5. The boundary of Seawater piping removal shall be from the connection at the toilet, including flushometer, to approximately six (6) inches below the overhead paneling.

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Sufficient room shall be left for fit up and welding of a new coupling. New CuNi piping shall be fit up and installed. All new joints shall be welded or brazed in accordance with Reference (2.2). Piping at the cut location shall be visually inspected for continued use. Piping with excessive pitting or visual deterioration shall be reported to the NOAA Port Engineer via CFR. The CFR shall include the extent of deterioration and a clearly defined proposal for piping replacement. The existing piping left after removal shall be temporarily capped to prevent foreign materials from entering the system.

4.3.5.3 Drain Piping- The existing Gray Water Drain System piping (Showers and Deck Drains) is to be inspected in accordance with section 4.1 above. Piping found deteriorated shall be removed pending authorization from the Port Engineer via the CFR submitted in section 4.1. The extent of piping removals shall be clearly defined prior to its removal. The existing piping left after removal shall be temporarily capped to prevent foreign materials from entering the system. For the purposes of bidding, it shall be assumed that approximately 8 drains will require replacement and approximately 50 linear feet of piping (non-contiguous) along with the associated drains. Loop seals for all removed sinks shall be removed as part of this work item. New loop seals to be installed in accordance with section 4.4.

4.3.6 Electrical Fixtures:

4.3.6.1 **Electrical Removal Warning:** During the performance of work within this Work Item, the Contractor shall take care to identify cables and protect from damage. Work in the affected area may also require some of these transiting cables be temporarily disconnected and/or relocated. Any required repairs or replacement found during inspection of relocated cables shall be provided to the Port Engineer for approval in a written CFR. The itemized cost of any repairs or replacement shall be included in the CFR. Repairs and/or replacements shall be the subject of a change order.

4.3.6.2 The Contractor shall de-energize, disconnect and remove all electrical switches and outlets. Existing wiring shall be megger checked and inspected for reuse where ever possible. Wiring found defective shall be reported via CFR. See Reference (2.8) for electrical system one line and additional electrical system information.

*****CheckPoint*****

4.3.7 Upon completion of the removals in this specification, the Port Engineer and Regulatory Agencies shall be provided access to the WR/WC and Shower spaces for inspection of the steel deck plate. Any wasted steel identified for replacement shall be identified in a CFR. Any steel requiring replacement, which

exceeds the nominal square footage anticipated in accordance with this specification, shall be subject to a change order.

4.4 Installations:

4.4.1 Steel Deck/Structural Renewal- All steel plate replacements shall be carried out in accordance with the general structural requirements, materials requirements, and welding requirements of NOAA Standard Specification MOC-000-1G, ABS "Rules for Classing Steel Vessels", and the Code of Federal Regulations 46 CFR Subchapter F, to the satisfaction of the NOAA Port Engineer, ABS Surveyor and the USCG Inspector. Steel deck plates requiring replacement shall be renewed in accordance with References (2.9) through (2.11). Steel coamings making up the boundary of wet spaces and heads shall be inspected and installed/renewed as necessary. Renewed coamings shall match in height and thickness the removed coaming materials. Coamings shall not be installed against steel bulkheads.

4.4.2 Deck Covering (Including Shower Pans)

4.4.2.1 Prior to installation of deck coverings, the Contractor shall prepare the deck surfaces, including the following steps, performed in accordance with NOAA Standard Specification MOC-631-2D and the manufacturer's recommendations.

- Remove all contaminants, dust and spent abrasives.
- Degrease to remove all oils, contaminants, salts and grease.
- Shower pans shall be fabricated using a waterproof membrane under the epoxy decking system.

4.4.2.2 All surface preparation shall include at least 4 inches up on all structural bulkheads and to the full height of coamings. The Contractor shall take special care to protect adjoining spaces, machinery, equipment and finished surfaces from dust contamination during the above specified work, in accordance with the requirements of References (2.1) and (2.2). Care shall be taken not to contaminate the properly prepared surfaces, and to apply the new coatings systems before contamination or corrosion occurs.

4.4.2.3 Shower pans shall be fabricated using a waterproof membrane under an epoxy decking system. The pan shall be prepared with the waterproof membrane in accordance with manufacturer's instructions prior to the installation of the epoxy deck covering system.

4.4.2.4 The Contractor shall install the following coatings as underlayment beneath all new deck coverings, in accordance with NOAA Standard Specification AMC-634-1A and with the coating system manufacturer's recommendations.

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- Apply one full coat of Epoxy Primer, to any exposed metal surfaces, and allow to dry.
- Apply Epoxy underlayment to the deck areas per manufacturer's instructions, aggregate can be added to achieve proper slope to the deck drains and door sills.
- Thickness of epoxy coating shall vary to account for deck irregularities, required slope to drains, and build up to door sills. Contractor shall plan for up to 3/4" epoxy thickness.

- In the shower stalls, the Contractor shall plan for sufficient underlayment thickness to provide appropriate drainage in the shower space. The underlayment shall be built up along the perimeter to create a coping for protection of the steel coaming and proper drainage of the shower.

4.4.2.5 The Contractor shall provide and install new PRC deck covering in the Toilet/Shower Spaces, in accordance with NOAA Standard Specification AMC-634-1A and with the coating system manufacturer's recommendations:

- Over full surface area, apply one full coat of Interthane 990 D724/990L (in color selected by Resident Engineer) finish, or equal, at 4.6 mils wet, 2.5 mils Dry Film Thickness (DFT) and allow to dry. Apply one full coat of Intershield 609 clear finish No. PRA 610/PRA611, or equal, at 8.6 mils wet, 6.0 mils DFT. Broadcast white International color chips, over clear finish coat while wet. Minimum time to over coat is 3 hours at 50 degrees Fahrenheit. Maximum time to over coat is 24 hours at 50 degrees Fahrenheit. Apply two full coats, per manufacturer instructions, Intershield 609 clear finish No. PRA610/PRA611, or equal, at 8.6 mils wet, 6.0 mils DFT. Allow to dry. The Contractor shall ensure that the spaces are kept free of all traffic until the coated areas have fully cured. The stainless steel shower surround shall be arranged such that it overhangs the coaming and flooring products to preclude the entrainment of water behind the shower coaming.
- Upon completion of epoxy flooring installation, the Contractor shall install anti-slip shower strips, such as 3M Safety Walk Slip resistant tub strips or equal.

4.4.2.6 In the C-09 Passageway and in the Sick Bay, the Contractor shall renew floor tile materials. Tile shall match those that were removed in regards to color, size and texture. Tile shall be Roppe Fiesta (smooth) or equal. The Contractor shall install all finishes such as wall cove bases and trim upon completion of tile installation. A sample of tile and wall cove choices shall be presented to the NOAA Port Engineer for size, color and texture selection.

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4.4.3 Joiner- The Contractor shall renew divisional bulkheads separating the C-09 Shower and Head Spaces from each other and from the C-09 Passageway. The Contractor shall also renew the divisional bulkhead between WC/WR D-03-106 and the Sick Bay. Structural furring shall be provided to adequately support the panel and eliminate movement or rattling. All panels in way of vessel systems such as electrical or piping installations shall be installed with omega profiles or the equivalent so that they are able to be removed without damaging the panel. The system or joiner panels and profiles shall consist of a complete system from a single manufacturer or vendor with proven fit and finish of the complete system in previous installations.

4.4.3.1 The finish of the new joiner shall closely match that of the existing joiner system.
All joiner panels shall have powder-coated aluminum surface that matches in color, pattern and texture adjacent joiner as approved by the NOAA Port Engineer. The Contractor shall provide the Port Engineer with surface and texture samples from standard options prior to procurement of materials for determination of finish and color schemes. Other surface treatments are acceptable if they are equally durable and approved by the NOAA Port Engineer.

4.4.3.2 In general all joiner bulkheads shall be installed vertically and perpendicular to baseline. Longitudinal panels shall be parallel to the centerline of the vessel and transverse panels shall be perpendicular to the centerline of the vessel. The amount of slope in each compartment will vary with the shape of the hull in way of that compartment. Panels may be fitted to the web of the vertical 10" deep "T" web frames, leaving the flange exposed, or the "r" webs may be boxed in with joiner panels.

4.4.3.3 Hinged or removable access panels of appropriate size and shape shall be fitted in the joiner and overhead systems at locations where electrical equipment, valves, or ventilation equipment is concealed behind joiner panels. Access panels and frames shall be powder coated steel painted to match the joiner lining or brushed stainless steel. Fasteners and hardware for the access panels shall be stainless steel.

4.4.4 Showers - The Contractor shall renew all showers (quantity 22) including fixtures and accessories for a complete system. The showers surrounds shall be constructed of 11 gauge (minimum) stainless steel in a multi-piece configuration consisting of sides, a threshold and a curtain rod. The shower surround system shall be constructed with vertical joints only. Vertical joints in the surround sides shall be welded to ensure watertight integrity of the shower against leakage through the surround joints. Where the sides meet the existing stainless steel overhead, joints shall be flashed and caulked. The curtain rod can be welded in place or mechanically fastened. See Reference (2.3) for details of

the shower installation. A portion of the existing showers contain one or more painted steel bulkheads. These bulkheads shall be cleaned and preserved as part of the shower renewal. Steel bulkheads shall be preserved in accordance with References (2.12) and (2.13). Shower dimensions shall be the same as those removed in section 4.3.

4.4.4.1 A coaming shall be installed by the Contractor making up the perimeter of each shower pan. Coamings shall be manufactured with steel flat bar and welded to the deck. Coamings shall be high enough that after installation of the pan and flooring products, the shower threshold remains approximately four (4) inches above the shower pan surface. Stainless steel multi-piece shower surrounds shall be installed such that the bottom of the surround terminates on the inside and no less than 1 inch below the lip of the coaming. See Reference (2.3) for details of surround and shower coaming installation.

4.4.5 Toilet Partitions- The Contractor shall install toilet partitions in WC/WR spaces C-04-102 and C-07-101. New partition panels, doors, pilasters, and hardware shall be of stainless steel construction. A means of keeping the doors from swinging open during normal ship motions shall be provided. Partitions shall be installed in accordance with Reference (2.3) and manufacturers shop drawings.

4.4.6 Doors- The Contractor shall provide and install three new B-15 rated joiner doors, each door serving one of the C-09 Spaces, as identified on Reference 2.3. Doors shall provide a clear opening width of 24-1/2", a clear opening height of 75-1/8. Sill height shall be nominally three inches. Each door shall be fitted with hardware and locks equal to that of the door removed in section 4.3. Door fit and finish shall approximately match that of the doors of adjacent spaces. The Contractor shall field verify all door measurements prior to procurement of the new doors.

4.4.7 Fixtures: The Contractor shall renew the toilets and sinks in each of the spaces identified in Section 1.5. Sinks shall be mounted securely to the bulkhead in accordance with Reference (2.3). NOTE: The small hand-sink and faucet in space D-05-104, retained after removal per section 4.3, shall be reinstalled.

4.4.7.1 The Contractor shall ensure that the toilets are mounted on a flat surface, accounting for shear and camber of the deck, so that the toilet is level in the fore/aft and athwart ship directions. The method of toilet installation shall account for the shear and camber of the deck, which may be unique to each of the toilet locations. Four (4) studs shall be welded to the deck to secure each toilet. Studs shall be welded to the deck, prior to installation of the deck leveling compound, and shall be templated to match the toilet base. The contractor shall utilize a self leveling compound, such as Dex-O-Tex Marine Dex-Screed to create the flat and level toilet base. The self leveling compound shall be mixed and installed in accordance with

manufacturer instructions. The self leveling compound shall be allowed curing time in accordance with manufacturer's instructions prior to installation of subsequent flooring products.

4.4.7.2 During installation of the toilet mounting surfaces, the Contractor shall ensure that the ship is maintained at zero trim and list, ± 0.5 degrees. Zero trim and list is necessary to ensure that the use of self leveling compound results in a level base for the mounting of each toilet.

4.4.7.3 Toilets shall be Acorn Replacement Siphon Jet Toilet, model R2141-3. Toilet shall be fabricated from 16 gage, type 304 stainless steel. Construction shall be seamless welded and exposed surfaces shall be have a satin finish. Toilet shall be siphon jet with an elongated bowl and a self draining flushing rim. Toilet waste outlet shall be located on the bottom of the fixture and shall be a gasketed waste. Included in the installation of the toilets shall be a toilet seat and all sealing and flushing equipment and hardware. The Contractor shall renew the flushing valve. The flushing valve shall be suitable for use in salt water flushing systems.

4.4.8 Piping: All piping removed in accordance with section 4.3 shall be renewed. The system design and equipment shall be in accordance with NOAA General Requirements and References (2.5) through (2.7). All renewed systems shall be complete with all necessary components for satisfactory operation. In gravity drain systems, elbows shall have a minimum radius of 1.5 times the diameter and tees shall not be used. See Reference (2.3) for piping renewal guidance. Reinstall piping insulation in accordance with NOAA Standard Specification S3900.

4.4.8.1 Upon completion of work on the Potable Water System, the Contractor shall accomplish Potable Water system disinfection and sampling in accordance with NOAA Standard Specification AMC-533-1.

4.4.9 Electrical: Switches and Outlets- The Contractor shall provide and install new switches and receptacles in each of the spaces identified in section 1.5. New electrical switches and receptacles shall be installed as renewals of all fixtures removed in section 4.3. New fixtures shall be rated for the same amperage and voltage as those removed. The Contractor shall reinstall all additional electrical items removed as interference during accomplishment of this work item.

4.4.10 Miscellaneous Renewals:

4.4.10.1 The Contractor shall paint all WR/WC and shower walls as part of this work item. Painting shall be accomplished in accordance with NOAA Standard Specification AMD-631-1D and References (2.12) and (2.13). Stainless steel panels shall not be painted.

4.4.10.2 The contractor shall restore minor deficiencies in the overhead ceiling system such as missing fasteners, missing or damaged trim, and missing or damaged blanking plates where applicable. Upon completion of the minor repairs, the overhead shall be cleaned and surface finish restored. Corrections outside the scope of this specification shall be subject to change order.

4.4.10.3 Other miscellaneous new materials and components will also be required to complete the installation required under this Section but are not discussed as they are not considered "major" items. Such materials and components include, but are not limited to: trim, fittings, fasteners, equipment for furnishing foundations and bracketing materials, electrical cabling, cable and equipment labeling materials, and replacement insulation materials.

4.4.10.4 Miscellaneous fixtures such as towel pins, towel rings, waste baskets and shelves shall be installed in the WR/WC and Shower spaces where needed. These materials are stocked and readily available from a distributor, as such it is the responsibility of the contractor to identify where these fixtures are needed and to determine the quantity of items required for a WR/WC and Shower arrangement meeting the satisfaction of the NOAA Port Engineer. It is not the intent of this work item to renew washroom components and accessories that are in “like new” condition.

5. TESTS/INSPECTIONS/REPORTS

5.1 INSPECTIONS, APPROVALS, AND TECHNICAL DOCUMENTATION: The Contractor shall obtain ABS approval, if necessary, of the installations, equipment, and details described in this Section. NOAA General Requirements and Reference (2.2) provide further requirements regarding regulatory body inspections and requirements for certificates and other documentation associated with regulatory body certification processes.

5.1.1 The NOAA General Requirements provide further requirements pertaining to schedule, drawings development and revision, material control, engineering, estimates, purchase technical specifications, signage, paint schedule, test memorandums, instruction books, equipment identification, and spare parts.

5.2 TESTING: All welds shall be inspected and tested in accordance with NOAA General Requirements. In addition to the requirements of the NOAA General Requirements, all deck plate butt welds joining new plates together and new plates to retained plates shall undergo 100% Visual Inspection (VT) plus Ultrasonic Testing (UT) of 10% of linear weld length. Fillet welds joining main longitudinal girders and transverse web frames to plating shall undergo 100% VT. Welds to transverse stiffeners shall be 100% Visually Inspected (VT) for acceptance.

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5.2.1 Visual Inspection (VT) shall be in accordance with Part 2, Chapter 4 of Reference (2.15) and Reference (2.16). Documentation of all weld inspections and testing shall be provided to the COR and ABS Inspector describing any deficiencies discovered and remedial actions taken.

5.2.2 New structure and welds shall undergo testing as required by References (2.15) and (2.16).The Contractor shall conduct testing in conformance with Contractor-developed test memorandums approved by the COR and meeting test program requirements of the NOAA General Requirements.

5.2.3 Structural test of all new and modified structure shall be conducted to demonstrate the water-tightness, as applicable, of the boundaries. All testing shall be prior to the application or installation of deck covering, paint, etc. Water-tightness test of all interior structural renewals shall be accomplished by soap/vacuum box or air lance test. Accomplish a 2 pound air test for all tanks in which steel renewal work was accomplished. Care shall be taken to not over pressurize any structure. The 2 pound air test shall be accomplished in accordance with NOAA General Repair Requirements.

5.2.4 Testing shall also include: all electrical equipment removed and reinstalled for interference shall be tested in accordance with 46 CFR Subchapter J, 111.60-21 Test and Inspection, and operational testing of any cabling, or equipment removed as interferences to access areas covered in this Section. Conduct operational test of reinstalled electrical items. All new or modified piping and piping joints shall be tested for strength and tightness in accordance with 46 CFR Subchapter F, 56.97-40.

5.2.5 The Contractor shall operationally test and demonstrate proper operation and performance of the equipment and installations described in this Section with respect to design functions, features, and capabilities as identified in the equipment instruction books (operating manuals), USCG regulations, ABS Rules and these Specifications. Operational testing shall also include all applicable manufacturer specified installation and functional testing. Manufacturer testing shall be incorporated in contractor developed test memorandums, clearly identified as manufacturer testing requirements, and approved by the COR.

5.2.6 In addition to the requirements of this Section, all work shall comply with the General Structural and Mechanical Requirements of the NOAA General Requirements and Reference (2.2). All welding shall be in accordance with Reference (2.2) and References (2.15) and (2.16).

5.2.7 The Contractor shall develop and provide all certificates, documentation and supplies necessary to complete the work in accordance with these Specifications. The intent of the specification and associated drawings is

that the Contractor will deliver an installation that is demonstrated to the satisfaction of the Owner to be complete in all respects, fully certified and ready for the service intended.

5.2.8 Prior to close out of this work item the contractor shall conduct a walkthrough and inspection of each renewed space with the NOAA COR. The work item shall not be considered complete until all WC/WR and Shower spaces are inspected and complete to the satisfaction of the COR. During the walkthrough, the Contractor shall provide a checklist to be completed for each space to ensure that work satisfies the intent of this specification. The checklist shall contain the following inspection items:

- Shower Surround is installed IAW Reference (2.3)
- Vertical Shower Joints are welded, other shower joints are sealed with an appropriate sealant
- Shower corners, coaming and ceiling joints are flashed and installed IAW Reference (2.3)
- The Shower Threshold is no less than 4” off the finished Shower Pan
- Shower fixtures and finishing accessories are installed.
- Deck Covering is complete and includes wall coving
- Sink and piping components have been renewed.
- Toilet and piping components have been renewed.
- Toilet is level in fore/aft and athwart ship directions and is securely mounted.
- Toilet and sink fixtures and finishes are installed for a complete and functional system.
- All steel surfaces requiring paint have been preserved.
- All adjacent items disturbed as a result of the work accomplished by this specification have been restored to their previous, or new, condition.
- All renewed and disturbed piping systems and components have been operationally tested and visually inspected for tightness.

Upon completion of the walkthrough and inspections, the Contractor shall submit the completed checklists via CFR.

Optional – Class B Items

Item No. 30000 Title: Additional Government Requirements ORF

1 SCOPE

1.1 Objective To accomplish work items identified after the start of the repair period and necessary to complete other repair work or repair mission-essential equipment. Hours of skilled production labor requirement will be determined at the time the work is identified.

2 REFERENCE DOCUMENTS

2.1 None

3 GOVERNMENT FURNISHED MATERIAL (GFM)

3.1 None

4 REQUIREMENTS

4.1 Provide up to 1,500 man-hours of labor to be used for additional work if ordered by the Contracting Officer pursuant to the contract or mutually agreed upon by the parties by supplemental agreement to accomplish additional work not required elsewhere in the work items. Pursuant to the Additional Government Requirements Clause, the above specified man-hours are estimates and the Government reserves the right to order up to the total number of aggregate production man-hours set forth above.

4.2 The Contractor shall indicate in The Price Schedule the man-hours reservation rate to be used in the evaluation of the proposal and also to be used for negotiating changes as required by the contract. This rate shall be the rate for pricing changes negotiated in the contract up to the maximum man-hours specified therein.

4.3 Because the quoter's accounting system may include production support and other costs, as either direct or indirect related charges, depending on the particular quoter, each quoter is required to show the composition of its proposed man-hour reservation rate for the 1,500 man-hour reservation for production hours or growth work, in accordance with the bidder's disclosure statement or accepted accounting system as appropriate.

4.3.1 The contractor's hourly rate shall be weighted average to cover the entire effort, all direct and indirect charges, burdened to include, but not limited to the following: overhead, general and administrative, quality control, supervision, support functions, facilities, capital cost of money and profit, for the prime contractor and subcontractors selected by the prime

contractor. The hourly rate will not be used to price work which may be directed to a subcontractor by name in the work specifications. Material cost shall not be included in the rate. The Contractor is required to include in its hourly rate any overtime premium, and delay and disruption dollar costs to accomplish these additional requirements as the contractor's business judgment dictates. Pay for personnel traveling to and from the job site shall be included in the contractor's man-hour rate if required. All material will be paid based on the contractor's return cost plus markup specified in the contractor's bid. Estimated material for additional work is $50,000.

4.4 Man-hours of labor are in addition to those required to accomplish work specified elsewhere.

4.5 Upon conclusion of negotiations for each additional work item to be included under this specification modification will be issued, specifying the agreement reached between the contractor and the Contracting Officer on the number of man-hours allocated for the change. Pending negotiation of a final price for a work item, the Government retains the unilateral right to issue unpriced or maximum price work orders (modification) under this specification item.

4.6 Additional work will be ordered in accordance with the schedule shown in the contract section titled Additional Requirements at the earliest feasible time after the need for the work is identified.

5 QUALITY ASSURANCE

5.1 As required by activating the item.

6 NOTES

6.1 None

Optional – Class B Items

Item No. 40000 Title: Additional Government Requirements PAC

1 SCOPE

1.1 Objective To accomplish work items identified after the start of the repair period and necessary to complete other repair work or repair mission-essential equipment. Hours of skilled production labor requirement will be determined at the time the work is identified.

2 REFERENCE DOCUMENTS

2.1 None

3 GOVERNMENT FURNISHED MATERIAL (GFM)

3.1 None

4 REQUIREMENTS

4.1 Provide up to 500 man-hours of labor to be used for additional work if ordered by the Contracting Officer pursuant to the contract or mutually agreed upon by the parties by supplemental agreement to accomplish additional work not required elsewhere in the work items. Pursuant to the Additional Government Requirements Clause, the above specified man-hours are estimates and the Government reserves the right to order up to the total number of aggregate production man-hours set forth above.

4.2 The Contractor shall indicate in The Price Schedule the man-hours reservation rate to be used in the evaluation of the proposal and also to be used for negotiating changes as required by the contract. This rate shall be the rate for pricing changes negotiated in the contract up to the maximum man-hours specified therein.

4.3 Because the quoter's accounting system may include production support and other costs, as either direct or indirect related charges, depending on the particular quoter, each quoter is required to show the composition of its proposed man-hour reservation rate for the 500 man-hour reservation for production hours or growth work, in accordance with the bidder's disclosure statement or accepted accounting system as appropriate.

4.3.1 The contractor's hourly rate shall be weighted average to cover the entire effort, all direct and indirect charges, burdened to include, but not limited to the following: overhead, general and administrative, quality control, supervision, support functions, facilities, capital cost of money and profit, for the prime contractor and subcontractors selected by the prime

contractor. The hourly rate will not be used to price work which may be directed to a subcontractor by name in the work specifications. Material cost shall not be included in the rate. The Contractor is required to include in its hourly rate any overtime premium, and delay and disruption dollar costs to accomplish these additional requirements as the contractor's business judgment dictates. Pay for personnel traveling to and from the job site shall be included in the contractor's man-hour rate if required. All material will be paid based on the contractor's return cost plus markup specified in the contractor's bid. Estimated material for additional work is $30,000.

4.4 Man-hours of labor are in addition to those required to accomplish work specified elsewhere.

4.5 Upon conclusion of negotiations for each additional work item to be included under this specification modification will be issued, specifying the agreement reached between the contractor and the Contracting Officer on the number of man-hours allocated for the change. Pending negotiation of a final price for a work item, the Government retains the unilateral right to issue unpriced or maximum price work orders (modification) under this specification item.

4.6 Additional work will be ordered in accordance with the schedule shown in the contract section titled Additional Requirements at the earliest feasible time after the need for the work is identified.

5 QUALITY ASSURANCE

5.1 As required by activating the item.

6 NOTES

6.1 None

SPECIFICATIONS FOR DRYDOCK REPAIR
NOAA SHIP RAINIER

ITEM 50840: CRANE SUPPORT SERVICES

1. INTENT

1.1 Shipyard to provide 100 hours of crane support during general repairs and operations of the ship's crew when requested.

2. REFERENCE

2.1 None.

3. GOVERNMENT FURNISHED EQUIPMENT

3.1 None.

4. REQUIREMENTS

4.1 Provide crane support to the ship when requested. Contractor shall provide services within 4 shipyard working day hours (contiguous day to day) of the request.

5. TESTS/INSPECTIONS/REPORTS

5.1 None.

SPECIFICATIONS FOR DRYDOCK REPAIR
NOAA SHIP RAINIER

ITEM 55290: BILGE PUMPING

1. **INTENT**

1.1 To predetermine the cost of additional marine vacuum services required to maintain the Main Engine Room and Shaft Alley bilges in a dry condition incidental to Ship's Force generated bilge water.

2. **REFERENCES**

2.1 None.

3. **GOVERNMENT FURNISHED MATERIALS (GFM)**

3.1 None

4. **REQUIREMENTS**

4.1 Provide marine vacuum services to remove in 1000 gallon increments oily water from the Ships' Main Engine Room and Shaft Alley bilges.

SPECIFICATIONS FOR FY 2020 DRYDOCK REPAIR
NOAA SHIP RAINIER

ITEM 55410: ADDITIONAL DIESEL FUEL STORAGE

1. **INTENT**

1.1 To remove, store, test, clean and reload ship diesel oil.

2. **REFERENCES**

2.1 None

3. **GOVERNMENT FURNISHED MATERIALS**

3.1 None.

4. **REQUIREMENTS**

4.1 Provide cost for labor and materials as necessary to remove, store and reload fuel in increments of 5000 gallons from the ship's storage or day tanks up to 40,000 gallons (max). The diesel oil shall be stored and reloaded on the ship when tank inspections or work is complete. At the option of the contractor, fuel may be offloaded and sold by the contractor as long as an equal amount is re-purchased and restored to the vessel in order to save storage costs. The fuel shall be metered, stored (or sold and re-purchased), and tested as required by general requirements prior to reloading back on the ship.