I. WORK ITEM 2025-09 SEA VALVES OVERHAUL OR RENEW (AMENDED)

1. SCOPE

1.1 Intent. This work item describes the requirements for the Contractor to overhaul or renew sea water (hull) valves.

1.1.1 Valves designated for overhaul. See separate list

2. REFERENCES

- GPA 00199-256-10 rev. B SEA CHEST A&D
- GPA 00199-524-01 rev. H SEAWATER SERVICE SYSTEM
- GPA 00199-558-01 rev. D SCIENTIFIC SEAWATER SYSTEM
- GPA 00199-529-01 rev. E BILGE AND BALLAST SYSTEM

OTHER REFERENCES

- American Society of Mechanical Engineers (ASME) B16.34, 2020, Valves-Flanged, Threaded, and Welding End
- Manufacturers Standardization Society of the Valve and Fittings Industry (MSS) SP-72, 2010 Edition, Ball Valves with Flanged or Butt-Welding Ends for General Service
- Manufacturers Standardization Society of the Valve and Fittings Industry (MSS) SP-80, 2019 Edition, Bronze Gate, Globe, Angle and Check Valves

3. REQUIREMENTS

3.1 General.

3.1.1 CIR.

None.

3.1.2 Tech Rep.

Not applicable.
3.1.3 **Interferences.** Known interferences include, but are not limited to the below-listed:

- Deck plates
- Piping
- Insulation
- Pipe contents
- Associated system tanks and filters.
- Valve flanges.
- Remote Operators

3.1.4 **Valve material.** The Contractor must assume all above-listed valves (paragraphs 1.1.1 and 1.1.2) have a bronze housing and flanged connections for the purposes of bidding. The Contractor must verify required valve list against referenced drawings and by ship-check prior to purchasing any materials. If the actual required valve list differs from what is listed in this work item, submit a CFR.

3.1.5 **Fluid handling.** The Contractor must drain and dispose of all residual fluids in the piping system in accordance with all Federal, state, and local rules and regulations. Any fluids spilled on deck or in bilges shall be removed/cleaned as soon as practical and before end of work day of the spillage.

3.1.6 **Remove.** Prior to removal, all remote operators will be operated by the ship’s crew. All remote operated valves are to be left in the closed position when disconnected from remote assembly. Submit CFR for any which bind or need repairs. Contractor to remove all remote operators. The Contractor must remove all designated valves in Section 1.1 (Intent). Immediately after valve removal, install blank flanges and gaskets over all openings and secure each flange with at least two bolts, 180 degrees apart. Visually inspect associated flanges and piping; submit a CFR.

3.1.7 **Contractor’s option for valve renewal.** The Contractor may, at no additional cost to the RCUH, opt to renew valves designated for overhaul if preferable for the Contractor. If the Contractor elects to renew valves designated for overhaul, ensure all new valves are commercial-standard type valves, conforming to the applicable standard listed in Table 1 (Valve Standards). New valves must be equivalent (including identical material) to the valve being renewed. Visually inspect the piping, flange and mounting arrangements; and submit a CFR detailing any required modifications to accommodate the new valve(s). If the Contractor elects to renew a valve after attempting overhaul, if will be at no additional cost to RCUH. All new yard provided valves are to have completed ABS pressure testing and documentation provided to the Owners Rep and ABS. New valves shall be of correct dimension to work with installed remote actuation/operators, or be adapted to the satisfaction of ABS and Owner’s Representative.
3.2 Overhaul. The Contractor must accomplish the following as required for each valve designated for overhaul (not including valves the Contractor has opted to renew) to meet the specified valve testing standard:

3.2.1 Disassemble. The Contractor must disassemble the valve to the extent necessary to perform the required work and inspection by ABS, USCG and Owner’s Representative.

3.2.2 Clean. The Contractor must clean all internal surfaces and visually inspect for defects in body and structural material. Inspect the surface finish and condition of seats, disks, parting faces, plugs, and sealing surfaces.

3.2.3 Machine. The Contractor must conduct all machining necessary, including but not limited to grind, lap and spot-in seat-to-disk, in order to obtain an acceptable leakage rate acceptable to ABS standards.

3.2.4 Reassemble. The Contractor must reassemble the valve using new hardware and software (packing, O-rings, gaskets, seal rings, non-metallic seats, pins, washers, inserts, etc.).

3.2.5 Test. The Contractor must test the overhauled valves in accordance with the applicable standards listed in Table 1 (Valve Standards). Submit a CFR.

TABLE 1 - VALVE STANDARDS

3.3 Renewal.

3.3.1 Valve renewal. The Contractor must renew all designated with commercial-standard type valves, conforming to the applicable standard listed in Table 1 (Valve Standards). The Contractor must replace any Mil-Std valves listed for renewal with equivalent commercial standard valves. The Contractor must be aware substitution of body material is not authorized.

3.4 Valve reinstallation/installation. Upon completion of all authorized work, the Contractor must accomplish the following:

- Remove and dispose of all blank flanges and associated gaskets.
- Reinstall/install all overhauled and new valves with new gaskets of proper gasket material. Valves are to be installed in the closed position.
- Renew all missing or damaged valve label plates.
- Renew all bolting hardware using new 304 stainless steel fasteners.
- Prepare and coat all new and disturbed surfaces to match existing adjacent surfaces in accordance with Kilo Moana paint schedule (Touch-ups and minor coating repairs).
- Install remote operators that were previously removed. Verify operation of all remote operators to the satisfaction of ABS and Owners Representative.
3.5 Valve labeling. The Contractor must install valve label plates on all new valves indicating date of installation.

3.6 Leak test. After completing all authorized mechanical (i.e. threaded, bolted, etc.) joint repairs, the Contractor must test the effected seawater system's operation using the system fluid at normal operating pressure. Ensure zero visible leakage from or deformation of mechanical parts by repairing all leaks and discrepancies. Submit a CFR.

4. **NOTES:** The following threaded overboard valves must be replaced with flanged valve connections. Any pipework outboard of the valve to skin of ship shall be replaced with new and repainted IAW paint schedule. Interferences shall be reinstalled. Any insulation which was removed for this work item shall be renewed in kind and painted IAW paint schedule:

Sewage Flat
- Sewage overboard connection, aft inboard
- MSD overboard connection, aft Inboard

Chem Lab
- Sink overboard connection, forward outboard

Lab 2
- Sink overboard connection, forward outboard

GSM 3
- Sink overboard connection, aft outboard

GSM 4
- Condensate drain, inboard aft under ladder

GSM 5
- Sink overboard connection, aft outboard Stern tube vent, aft inboard

GSM 6
- Winch cooling water overboard, forward outboard Stern tube vent, aft inboard

Under Wet Lab
- Uncontaminated SW overboard, aft outboard
- Sink overboard connection, mid outboard
- Old Winch cooling overboard, mid outboard.

All additional valves (58) listed for renewal/overhaul/inspect are listed on separate page at end of this work item.
II. WI-10 (OPTIONAL) PAINT UNDERWATER HULL FROM KEEL TO WATERLINE

1. GENERAL SCOPE
Spot coat underwater hulls from keel to waterline. This work includes all markings shown in reference drawing C and to include all hull designations and markings below waterline. Contractor to ensure that AF coating system and application meets current IMO requirements for anti-fouling systems on ships and shall have ABS provide signed endorsement for the records.

2. REFERENCES
A. PPG Paint Specifications - RV Kilo Moana May 2019
B. GLOSTEN 07084-07-004 DOCKING PLAN
C. GPA 00199-602.01 rev. A HULL DESIGNATION AND MARKING
D. GPA 00199-801-02 rev. E OUTBOARD PROFILE

3. OUTLINE OF WORK
A. Surface Preparation
1. Ensure that adequate protection is given to all electronic transducer heads, arrays, electronic equipment, zinc anodes, and propellers. No thinner, solvents or paints (with the exception of the final coat of AF to be applied to most transducers and ONLY via guidance from the Owners’ Representative shall be applied to any electronic transducer head, array probe or any other electronic sensing surfaces, propellers or, zinc anodes.
2. Ensure all areas to be painted are free from rust, growth, or any substance that would impair proper paint adhesion prior to the beginning of the paint process.

B. Painting
All painting shall be in accordance with the supplied PPG paint specifications (Reference A) and as directed by the PPG/Akzo Nobel Paint Representative. Substrate and ambient temperature during application and curing should be between 32°F-122°F (0°C-50°C). Substrate during application and curing should at minimum be 5°F (3°C) above the dew point. Humidity must be below 85%.

C. Drying Time Requirements. All drying times shall be in accordance with the supplied paint specifications (Reference A) and as directed by the PPG/Akzo Nobel Paint Representative.

D. The PPG/Akzo Nobel Paint Representative will approve surface preparation and shall be present to monitor the correct application and wet micron thickness of all paints. The PPG/Akzo Nobel Paint Representative will provide a written report of the DFT microns applied, temperature and humidity readings to the Owner’s Representative.

E. If hull conditions are found that require abrasive blasting, abrasive blasting shall be conducted in accordance with the supplied paint specifications and as directed by the PPG/Akzo Nobel Paint Representative. Abrasive blasting will not be allowed on the propellers, arrays, transducers, or any electronic equipment. Areas to be blasted will be
identified to the Owners Representative prior to blasting.

F. Allowance to be made for thirty (30) non-contiguous areas each of 100 square feet requiring mechanical prep or light sand-sweep removing just AF, and then application of two coats of antifouling; and ten (10) non-contiguous areas each of 16 square feet requiring sandblasting to SSPC-SP-10 and full application of coatings as per PPG Paint specifications. Bid to include unit costs per non-contiguous area for each of the two types of allowance work described above; unit costs shall be used for adjusting (upward or downward) final contract price based on the deviation of actual work content from allowances.

4. MISCELLANEOUS

A. Contractor shall be responsible for the proper removal and disposal of all opened paint, thinners, containers, generated wastes, and supplies related to the painting process as part of bid.

B. Owner’s Representative shall approve proper protection to areas not to be painted prior to application of any paint, thinner, or solvent.

C. The final coat of anti-foul paint shall be applied to the transducers as directed by Owner’s Representative. This will not include 38 kHz acoustic window.

D. After the final full coat of anti-foul paint is applied, repaint the white stripe around sensitive areas and transponders using a small paint roller and white anti-foul paint. Owner's Representative to verify locations. Pictures from last drydock are available to show these marks if they are no longer visible when vessel is docked.

E. The temporary rerouting (and removal of same) to redirect any runoff of water away from area to be painted is considered as part of bid.

F. Contractor to ensure that ABS provide current and valid anti-fouling certificate.

G. WORK ITEM # 2025-1 GENERAL REQUIREMENTS applies to all work items.
III.  WORK ITEM 2025-16 (OPTIONAL) RECOAT BALLAST TANKS 1, 2, 7, & 8

1. GENERAL SCOPE
   In conjunction with Work Item 2025-14, clean, blast and recoat ballast tanks 1, 2, 7, and 8.

2. REFERENCE
   • GPA 00199-506-01 VENTS & SOUNDING TUBES SCHEMATIC; Rev F
   • GPA 00199-529-01 BILGE & BALLAST SYSTEM SCHEMATIC; Rev E
   • PPG Paint Specification

3. LOCATIONS
   • Tanks included are:
     • Ballast Tank #1 S
     • Ballast Tank #2 P
     • Ballast Tank #7 S
     • Ballast Tank #8 P

4. OUTLINE OF WORK

A. To be coordinated with WORK ITEM # 2025-14 Open, Inspect, Pressure Test, and make Repairs to Ballast Tanks.

B. The Contractor shall provide all labor and material to accomplish following tasks:

C. Prior to opening the tanks, protective covers shall be put on the deck around the work area and on the stairs and passageway leading to the work area.

D. Remove manhole covers from the ballast tanks and clean tanks in preparation for sandblasting. Have tanks certified safe for entry and hot work if required. Remove the old zincs.

E. Prior to sand blasting, plug the Fill, Suction, Vent, and TLI pipes, cover manholes. Provide adequate protection to any wiring or sensitive components on the interior of the tank.

F. All painting shall be in accordance with the supplied PPG paint specifications (Reference A) and as directed by the PPG/Akzo Nobel Paint Representative. Substrate and ambient temperature during application and curing should be between 32°F-122°F (0°C-50°C). Substrate during application and curing should at minimum be 5°F (3°C) above the dew point. Humidity must be below 85%.

G. Drying Time Requirements. All drying times shall be in accordance with the supplied paint specifications (Reference A) and as directed by the PPG/Akzo Nobel Paint Representative.

H. The PPG/Akzo Nobel Paint Representative will approve surface preparation and shall be present to monitor the correct application and wet micron thickness of all paints. The PPG/Akzo Nobel Paint Representative will provide a written report of the DFT microns applied, temperature and humidity readings to the Owner’s Representative.

I. If conditions are found that require abrasive blasting, abrasive blasting shall be conducted in
accordance with the supplied paint specifications and as directed by the PPG/Azko Nobel Paint Representative.

ADD ALT: Replacement of Ballast Tank 1 (STBD Forepeak) after bulkhead in way of Frame 5, including all required safety permits, labor, and material to remove, prep, and install new to the satisfaction of attending surveyor including NDT.

5. WORK ITEM # 2025-1 GENERAL REQUIREMENTS shall also apply to all work items.
IV. WORK ITEM 2025-31 (OPTIONAL) STBD PUMP ROOM REFURBISHMENT

1. GENERAL SCOPE

Renew Salt Water Service, HVAC, and Evaporator pumps with owner furnished units. Conduct valve renewal/maintenance and refurbish pump motors. Thoroughly inspect the sea chests and fire main seawater supply for advanced corrosion and repair as required. Replace all corroded sea chest and overboard valves and fittings. All deck plating, framing and supports to be mechanically cleaned and repainted per vessel painting specifications.

2. REFERENCE

- 00199-524-01H.dwg SEAWATER SERVICE SYSTEM SCHEMATIC

3. LOCATIONS

- STBD Pump Room

4. OUTLINE OF WORK

A. Ensure all equipment is locked out per vessel policy.

B. All pumps and motors to be removed from the pump room. All electrical to be safe ended to avoid damage and properly labeled for reinstallation.

C. All open piping to be blanked.

D. All motor controllers to be completely protected.

E. All deck plates to be removed.

F. All piping, deck brackets, supports, ladders and pump skids to be mechanically cleaned.

G. All piping to have UT performed. Results to be reviewed by owners rep.

H. Thoroughly inspect sea chest, fittings, fire main seawater supply and provide Condition Found Report for all repairs needed.

I. Any suspect areas to be mutually agreed to by owner and contractor

J. All cleaned surfaces to be repainted per vessel painting specification

K. SP3 surface preparation of 50% of all bilge coatings

L. Renew all valves IAW WI-09

M. Rebuild and hydrostatically test all valves IAW WI-09

N. New Owner Furnished motors to be reinstalled.

O. Removed motors to be overhaul by contractor including internal inspection, electrical insulation readings, repairs, and painting of motor housing.
P. All pumps and motors to be bump tested for proper rotation. Full performance testing will be performed when safe to do so.

Q. All removed hardware shall be renewed using 304 Stainless Steel.

5. WORK ITEM # 2025-1 GENERAL REQUIREMENTS shall also apply to all work items.
V. WORK ITEM 2025-33a NORTH AMERICAN CRANE REPLACEMENT

1. GENERAL SCOPE
   - Owner to furnish replacement crane (NPCC MCT2-4560). Technical Specifications to be released in future amendment to be posted prior to proposal submission date.

2. REFERENCE
   - 00199-184-02C Heavy Lift Crane Foundations (as-built)

3. LOCATIONS
   - Port Side Aft

4. OUTLINE OF WORK
   - Contractor to accept owner furnished crane. All engineering to be the responsibility of the Owner.
   - Contractor to perform demolition of existing crane and removal/disposal from the vessel.
   - Electrical to be replaced back to the supply breaker.
   - Contractor to estimate installation of North Pacific Crane Company Crane, Model MCT2-4560.
   - All rigging, welding, electrical, mechanical connections to be responsibility of the contractor.
   - Contractor to provide all commissioning including weight testing. Commissioning shall be conducting by NPCC personnel or their authorized agent.

5. WORK ITEM # 2025-1 GENERAL REQUIREMENTS shall also apply to all work items.