REQUEST FOR PROPOSALS ("RFP")

The Research Corporation of the University of Hawaii ("RCUH") requests proposals for:

Research Vessel Kilo Moana, Shipyard/Dry-dock 2027

University of Hawai'i Marine Center ("UHMC")
965 N. Nimitz Hwy, Honolulu, HI 96817

SHIPYARD TECHNICAL SPECIFICATION

August 8, 2026

965 N. Nimitz Hwy
Honolulu, HI 96817

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This RFP Contain 209 pages, plus Appendix D Work Items Cost Breakdown – 2027, which should be included in the Offeror's proposal.

References

NOTES:

ALL REFERENCES LISTED BELOW WILL BE LOCATED ON A CLOUD SHARE SITE. For access, email porteng@soest.hawaii.edu

These drawings and manuals are provided for reference only. RCUH does not guarantee the accuracy of these drawings. Offerors shall verify actual as-built and current details of hull and machinery as well as all interferences through onboard ship checks prior to providing their proposal.

The 125 kHz Transducer located in the port hull was replaced by a 300 kHz ADCP unit. Location remains the same, but is now a round transducer mount, not rectangular.

1. Rules for Building and Classing Steel Vessels under 90 Meters (295 Feet) in Length, American Bureau of Shipping (ABS), 2017.
2. ABS Minimum Plate Thickness for Renewal (2002).
3. Shipbuilding and Repair Quality Standard, International Association of Classification Societies (IACS), Document No. 47, Rev. 7, 2013.

List of References

DWG./Reference No.	Title
20160607	KM FENDERING SKETCH
07084-07-004	DOCKING PLAN
07084-07-03	EM710 MULTIBEAM CONSTRUCTION DRAWINGS
24068.02-512-01	EXHAUST FAN INSTALLATION
GPA 00199-111-02 REV F	HULL BOTTOM PLATING & FRAMING
GPA 00199-111-03 REV G	HULL STRUT PLATING & FRAMING
GPA 00199-111-04 REV F	WET DECK, LAUNCH & SIDE PLATING & FRAMING
GPA 00199-117-01 REV F	STRUCTURAL ARRANGEMENTS MIDSHIP SECTION
GPA 00199-117-02-1 REV G	HULL/CROSS STRUCTURE FRAMES & BULKHEAD
GPA 00199-117-02-2 REV G	HULL/CROSS STRUCTURE FRAMES & BULKHEAD
GPA 00199-117-02-3 REV G	HULL/CROSS STRUCTURE FRAMES & BULKHEAD
GPA 00199-117-03 REV F	HULL/CROSS STRUCTURE LONG'L SECTIONS
GPA 00199-131-01 REV G	MAIN DECK PLATING AND FRAMING
GPA 00199-136-01 REV G	O1 DECK PLATING AND FRAMING
GPA 00199-136-02 REV F	SUPERSTRUCTURE DECKS PLATING & FRAMING
GPA 00199-167-01 REV D	O1&O2 WATERTIGHT CLOSURES & VERTICAL LADDERS
GPA 00199-171-01 REV E 1>3/10	MAST ARRANGEMENT AND DETAIL
GPA 00199-171-01 REV E 4>10/10	MAST ARRANGEMENT AND DETAIL
23048-171-01	UH KILO MOANA MAIN MAST MODIFICATION
GPA 00199-182-02- REV B	STRUCTURAL ARRANGEMENTS BOW THRUSTER FOUNDATION
GPA 00199-182-03 REV E	FOUNDATION OF BOW THRUSTER MOTOR
GPA 00199-182-04 REV A	BOW THRUSTER GRATING
GPA 00199-184-03 REV E	FOUNDATIONS, SONAR, & TRANSDUCER TUBE
GPA 00199-184-06 REV C	STRUCTURAL ARRANGEMENTS FDN - AFT FIN STABILIZER
GPA 00199-184-14 REV A	FOUNDATION SHAFT BEARING
GPA 00199-185-01 REV A	STEERING GEAR
GPA 00199-243-01 REV B	STERN TUBE & SHAFT DETAILS
GPA 00199-256-10 REV B	SEA CHEST A&D
GPA 00199-320-01 REV D	ELECTRICAL ONE LINE DIAGRAM
GPA 00199-461-01 REV A	SONAR INSTALLATION A&D
GPA 00199-461-01 REV C	SONAR INSTALLATION A&D
GPA 00199-506-01 REV F	VENTS & SOUNDING TUBES SCHEMATIC
GPA 00199-509-01 REV B	PIPE INSULATION SCHEDULE

GPA 00199-521-01 REV E	FIRE MAIN SCHEMATIC
GPA 00199-524-01 REV H	SEAWATER SERVICE SYSTEM
GPA 00199-526-01 REV B	WEATHER DECK DRAIN SCHEMATIC
GPA 00199-528-01 REV C	SEWAGE SYSTEM SCHEMATIC
GPA 00199-529-01 REV E	BILGE AND BALLAST SYSTEM
GPA 00199-529-02 REV D	OILY WASTE SYSTEM SCHEMATIC
GPA 00199-541-01 REV E	FUEL OIL SYSTEMS
GPA 00199-556-13 REV A	HYDRAULIC POWER PIPE A&D DECK MACHINERY
GPA 00199-558-01 REV D	SCIENTIFIC SEAWATER SYSTEM
GPA 00199-562-01 REV D	RUDDERS A&D
GPA 00199-573-01 REV A-1	DECK MACHINERY LAYOUT
GPA 00199-573-01 REV A-2	DECK MACHINERY LAYOUT
GPA 00199-581-01 REV D	ANCHOR HANDLING A&D
GPA 00199-602-01 REV A	HULL DESIGNATION AND MARKING
GPA 00199-612-01 REV C	RAILS, STANCHIONS, & ARRANGEMENT DETAILS
GPA 00199-624-01 REV G	DOOR SCHEDULE
GPA 00199-625-01 REV D	WINDOW AND PORTLIGHT SCHEDULE
GPA 00199-631-01 REV A	PAINT SCHEDULE
GPA 00199-635-01 REV C	INSULATION SCHEDULE
GPA 00199-801-02 REV E	OUTBOARD PROFILE
GPA 00199-801-05	BOOKLET OF GENERAL DRAWINGS
9510832	KILO MOANA GENERATOR ROOM VENTILATION STRUCTURAL MODIFICATIONS
292111831_07084-512-02	KILO MOANA GENERATOR ROOM VENTILATION STRUCTURAL MODIFICATIONS
24068.02-512-01	EXHAUST FAN INSTALLATION
WO214313 DR LC 5804174273	ABS WORK ORDER FOR VENTILATION MODIFICATIONS
GPA S18405	38kHz SONAR FOUNDATION
KBH-01-D206	AUX HPU FOUNDATION & CABLE GUARD INSTALLATION
KBH-01-D220	AUX HPU ASSEMBLY
KBH-05-D204	HYDRAULIC PIPING INSTALLATION
KBH-05-D206	KILO MOANA HYDRAULIC SCHEMATIC
	TEES WHITE GIL INSTRUCTION MANUAL
	PPG PAINT SPECIFICATION-2019
	ROLLS ROYCE INSTRUCTION MANUAL
	CATERPILLAR SERVICE AND PARTS MANUALS SR4 (onboard only)
	ABS MINIMUM THICKNESSES FOR PLATE RENEWAL (2002)

	WORK ITEM 2027-27 DETAILED WORK LIST
	OFM STEEL – INVENTORY AND MATERIAL CERTIFICATIONS

Owner Furnished Materials (OFM)

Work item 2027-03	Anodes
Work Item 2027-05	Reference: OFM STEEL – INVENTORY AND MATERIAL CERTIFICATIONS

Steel
.250 1 sheet 96" W x 240"L
.250 1 sheet 96" W x 78"L

.313 1. sheet 96"W x 97"L
.313. 1 sheet 63"W x 63"L
.313. 1 sheet 35"W x 48"L

.375. 1 sheet 96"W x 240"L

.500 1 sheet 96"W x 168"L
.500. 1 sheet 96"W x 240"L

Bow material non ABS
.500 1 sheet 52"W x 40"L
.500. 1 sheet 52"W x 59"L

I beam 1 12"W x 120"L x 4"D
T beam 1 8"W x 120"L x 4"D

Bulb Stiffeners 28 6.25"W x 240"L+

Work item 2027-10	Tees Gland GFO packing material.
Work Item 2027-12	Motor Brushes and Grounding Brushes
Work Item 2027-20	Navigational Light

Work Item 2027-37 Insulation Repairs

3/8" x 6' long	25pcs
3/4" x 6'	15pcs
1" x 6'	26pcs
1 1/4" x 6'	29pcs
2" x 6'	11pcs
3" x 6'	10pcs
4" x 6'	5pcs
5" x 6'	2pcs

3/4' thick mat
34" x 48"
24" x 17"

Certificates available upon request.

1. Notice to Offeror's

1.1. RFP Availability

A copy of the Request for Proposal ("RFP") Solicitation for 2027 DRYDOCK AND MAINTENANCE PERIOD is available on the website: http://www.soest.hawaii.edu/UMC/cms/Procurement.php. The Research Vessel Kilo Moana ("Vessel") is owned by the U.S. Navy and operated by the University of Hawai'i Marine Center as an ABS classed, SOLAS/ MARPOL and U.S. Coast Guard ("USCG") inspected ship (Subchapter U). All work performed by the Contractor is to conform to these rules.

This preliminary scope of work is subject to change. Offerors shall submit firm, fixed pricing for every work item, including both Base Work Items and Optional Items. Pricing of each Optional Item is mandatory for Offerors; exercising any option is at the Owner's sole discretion and subject to funding availability. For each work item, the Contractor shall provide all labor, materials, and equipment required to accomplish each task as described. The intent of each item is to deliver a fully functional and tested system. Gas-free certificates, if required, shall be provided and maintained by the Contractor throughout the period of performance.

1.2. Questions about the RFP

All questions about the RFP must be directed to porteng@soest.hawaii.edu

1.3. Schedule Of Key Dates

The schedule of key dates set forth herein represents the RCUH best estimate of the schedule that will be followed. Any of the dates listed below may be changed at any time at the sole discretion of the RCUH Procurement Officer or Delegated Procurement Officer.

Date of Notice (RFP Issued)	August 08, 2026
Closing Date for Receipt of Offeror's Attachment A - Notice of Intent to Submit a Proposal (Mandatory)	August 14, 2026 17:00 (UTC-10)
Dates for Ship Check (Honolulu HI, Pier 35):	August 12, 18 and 19, 2026
Dates for Ship Check (Honolulu HI, Pier 35):	August 25, 2026
Dates for Ship Check (Honolulu HI, Pier 35):	September 1, 2026
Closing Date for Receipt of Offeror Questions:	Aug 28, 2026 17:00 (UTC-10)
Closing Date for Posting Responses to Questions:	Sep 1, 2026 17:00 (UTC-10)
Closing Date for Receipt of Proposals:	Sep 9, 2026 17:00 (UTC-10)
Proposal Review Period:	Sept 14, 2026 through Sept 28. 2026
Date of Contractor Selection and Award:	Oct 2, 2026
Services Start Date (Tentative):	April 1, 2027 to no later than May 21, 2027

Estimated Vessel location on:	May 12, 2027: Guam
Estimated Vessel location on:	May 5, 2027: Honolulu
Expected Redelivery date:	50 days after Service start day.
Certificate Due Date:	May 21, 2027

Start date, drydock period, and Agreement for Services completion date to be mutually agreed upon by CONTRACTOR and RCUH via an executed written Agreement for Services.

Scheduling site visit for the ship check shall be directed to porteng@soest.hawaii.edu. Advance notice must be provided in order to receive access to Vessel. Note: Although the site visit/ship check is optional, it will be factored into scoring. See Section 8.3 Criteria for Proposal Evaluation and Scoring Methodology.

This RFP is issued by:

Research Corporation of the University of Hawaii (RCUH).

1601 East-West Road, Burns Hall 4th Floor, Makai Wing

Honolulu, HI 96822

2. Administrative Overview

2.1. RFP Amendments

The RCUH reserves the right to amend the RFP at any time prior to the Closing Date for Receipt of Proposals. All RFP amendments will be posted on the following website: http://www.soest.hawaii.edu/UMC/Procurement.php. Offerors are solely responsible with checking the website for any modifications to the RFP. The RCUH reserves the right to cancel this RFP at any time for any reason at no cost to the RCUH.

2.2. Questions by Offerors and potential Offerors to RCUH

All questions by Offerors or potential Offerors should be submitted in writing via email to the email address, porteng@soest.hawaii.edu. Questions regarding proposal requirements, contents, and details will receive a response only for those received by the Closing Date for Receipt of Offeror Questions. All received questions and responses will be posted by "Closing Date for Posting Responses to Questions" on the University of Hawaii Marine Center website, http://www.soest.hawaii.edu/UMC/Procurement.php.

2.3. Questions by RCUH to Offeror(s)

The Offeror is responsible for ensuring the correctness and readability of its proposal. However, the RCUH reserves the right to seek clarifications during the Proposal Review Period. Content for which a clarification may be requested includes obvious mislabeling of figures or tables, illegible text (such as may occur in a figure label being reduced to too small a font size), or an obvious clerical mistake (e.g., a misplaced decimal point or obvious mistake in designation of a unit such as feet instead of meters). The authority to permit correction of proposals is limited to proposals that, as submitted, are responsive to the RFP and may not be used to permit correction of proposals to make them responsive.

2.4. Clarification of the RFP

An Offeror shall carefully review this RFP for defects and questionable or objectionable matter. Comments concerning defects and questionable or objectionable matter shall be promptly submitted to the RCUH prior to the Closing Date for Receipt of Offeror Questions. This shall allow issuance of any necessary amendments to the RFP. The Offeror hereby acknowledges, agrees, and waives any claim arising from any knowledge of any defect in this RFP acquired prior to the Closing Date for Receipt of Offeror Questions and failing to inform the RCUH prior to said deadline. The Offeror further acknowledges and agrees that:

1. the RCUH reserves the right to waive any technical irregularity not affecting an unbiased and objective evaluation of all proposals;
2. such waiver will be in the best interest of the RCUH; and
3. the Offeror hereby waives any claim against the RCUH arising from such technical irregularity.

2.5. Tax Clearance for Proposals

In accordance with Section 103-53 of the Hawaii Revised Statutes, the selected Contractor shall submit a valid tax clearance from the Hawaii Department of Taxation and the U.S. Internal Revenue Service prior to execution of the Agreement for Services. A Certificate of Vendor Compliance that reflects a "Compliant" status from Hawaii Compliance Express ("HCE"), https://vendors.ehawaii.gov/hce/splash/welcome.html is acceptable in satisfying the tax clearance requirement.

Due to the fact that the proposal review and contract award period may be tightly scheduled, it is highly recommended that Offeror(s) submitting proposals apply for tax clearance upon submission of a proposal in order to meet key dates.

2.6. Preparation costs

Any costs incurred by Offeror in preparing or submitting a proposal shall be the sole responsibility of the Offeror.

2.7. Proprietary information

The Offeror should clearly identify any proprietary information in the Offeror's submitted proposal. Upon final execution of an Agreement for Services, all non-proprietary information in an Offeror's proposal may be made available by the RCUH for public inspection upon request. Accordingly, material designated as confidential should be readily separable from the proposal in order to facilitate inspection of the non-confidential portion of the proposal.

2.8. Submission of proposals

Offerors may submit proposals by mail or email. Email submittals are strongly preferred. Note that the maximum allowable file size for email attachments is 10 MB, so an Offeror may need to send its complete proposal in multiple parts. If submitting by mail, please include the original and three (3) copies. It is the responsibility of the Offeror to confirm that the RCUH has received its proposal prior to the Closing Date for Receipt of Proposals. Proposals may be modified by an Offeror prior to the Closing Date for Receipt of Proposals.

Address, if submitting by mail:
C/O UHMC Port Engineer
University of Hawaii Marine Center
965 North Nimitz Hwy
Honolulu, Hawaii 96817

Address, if submitting by email:
porteng@soest.hawaii.edu

2.9. Certification of proposal

By submitting a proposal, the Offeror certifies that the proposal submitted to the RCUH is in accordance with any required authorization by the governing body of the Offeror's organization. The Offeror further certifies that the information and responses contained in the proposal are true, accurate, and complete, and that the RCUH may justifiably rely upon said information for purposes of evaluation and contracting with the Offeror. If it is later discovered that any information provided in the Offeror's proposal is false, it will result in the Offeror's elimination from consideration.

2.10. Proposal withdrawal

An Offeror may withdraw its proposal by submitting a written request to the RCUH any time prior to the Closing Date for Receipt of Proposals.

2.11. RFP submittals become the property of RCUH

All proposals and other material submitted shall become the property of the RCUH, and may be returned at the sole discretion of the RCUH.

2.12. Opening of proposals

Proposals will be opened after 7:00 A.M. Hawaii Standard Time, on September 14, 2026, or as amended at the office to which the proposals are submitted. The proposal opening will not be open to the public. Proposals will not be subject to public inspection until after an Agreement for Services is signed by all parties, but in no case will

proprietary information or proprietary material designated as such and submitted by an Offeror as part of an Offeror's proposal, be available for public inspection.

2.13. Disqualification of proposals

The RCUH reserves the right to consider as acceptable only those proposals submitted in accordance with all the requirements set forth in this RFP, and which demonstrate an understanding of the scope of work. Any proposal offering any other set of terms and conditions contradictory to those included in this RFP, or that reserves the right to accept or reject award or the right to enter into a contract pursuant to an award, may be disqualified without further notice, at the discretion of the RCUH.

An Offeror shall be disqualified and its proposal automatically rejected for any one or more of the following reasons:

- The proposal shows any noncompliance with applicable law.
- The proposal is conditional, incomplete, or irregular in such a way as to make the proposal indefinite or ambiguous as to its meaning.
- The Offeror is debarred or suspended. Entities that are currently debarred or suspended from federal procurement transactions are listed in the Excluded Parties Listing System. A search can be performed at www.sam.gov to determine whether an entity has an active exclusion.

2.14. Selection on initial proposals

The RCUH may select a Contractor on the basis of initial offers received, without discussions. Therefore, each initial offer should contain the Offeror's best terms. RCUH may elect to require oral presentations following the submission of proposals, if requirements for the oral presentation process are included in §8.5.

2.15. Basis for selection

Based on the evaluation process discussed in Section 8 of this RFP, the highest ranked responsible and responsive Offeror will be selected.

2.16. Process for negotiations

The RCUH will attempt to negotiate with the selected Offeror a mutually acceptable Agreement for Services. If this cannot be accomplished within 21 calendar days after initial Selection, the RCUH reserves the right to terminate contract negotiations with the first-ranked Offeror, and may select the second-ranked Offeror for negotiation of a potential award. This process may continue in order of Offeror ranking until a mutually acceptable Agreement for Services is achieved with the RCUH and an award is made to a selected Offeror.

2.17. Availability of funds

Offerors are advised that entering into an Agreement for Services is contingent upon availability of funds. If funds are not available, the RCUH reserves the right not to enter into an agreement.

2.18. Notice to proceed

The RCUH shall not be responsible for work done, even in good faith, prior to the RCUH's execution of an Agreement for Services unless specific provisions are made in the Agreement for Services.

2.19. Changes to contractor's fee

It is recognized that financial audit disallowances and other changes may require adjustments in the compensation due to the Contractor. In the event that future actions would either disallow or minimize the payments already made to the Contractor, the Contractor shall assist the RCUH in defending the correctness of the claim for reimbursement. If the disallowance or adjustment is upheld, then the Contractor will repay RCUH to the extent the

amount of the disallowance or adjustment was included in the total fee received by the Contractor. Payment to the RCUH shall be made within THIRTY (30) calendar days from which official notice is received by the Contractor from the RCUH.

2.20. Procurement officer

This RFP is issued by the Research Corporation of the University of Hawaii, on behalf of the University of Hawaii Marine Center ("UHMC" and " Owner"). The Delegated Procurement Officer responsible for overseeing the RFP process and Agreement for Services is Anita Lopez, Director of Research Vessel Operations at the University of Hawaii Marine Center. The Owner's Representative of the Delegated Procurement Officer is the University of Hawaii Marine Center Port Engineer ("Owner's Representative").

3. Bid Requirement

3.1. General

This specification and each work package specification includes a section detailing the requirements that the Contractor shall supply in order for the RCUH to evaluate the proposed approach. These specification sections state the minimum items to be included in the cost and documents to be submitted as part of the proposal. The cost requirements, as stated in 3.3 of the work package specifications, are not intended to be all inclusive and the Contractor shall include all costs they deem appropriate to complete the work package. It is also acceptable to provide more documentation than required, if appropriate.

3.2. References

The Offeror must disclose all contracts for similar services for the last five (5) years, and these will serve as potential references to be contacted by the RCUH as part of the evaluation of the Offeror's proposal. Points of contact and contact information should be indicated for each contract listed. The RCUH reserves the right to contact the references named in the Offeror's proposal and any other references provided by the Offeror during the past five (5) years. The results of discussions with the references will be used to score the proposal, as described in Section 8 of this RFP.

3.3. Cost

For each work package the Offeror shall supply the cost to complete the work as stated in the work package, and other items as specified for that work package. The costs associated with this Shipyard Contract Technical Specification should include, but are not limited to, the general costs associated with completing the overall overhaul of the R/V Kilo Moana and costs that are not included in the individual work package specifications. The Offeror shall include in their proposal as line items, costs for the following:

1. Labor or other costs associated with project management of the overall shipyard effort, not included in the work packages.
2. Labor or other costs associated with scheduling.
3. Costs associated with providing temporary services.
4. Engineering documents and working drawings.
5. As-built drawings.
6. Assembling manuals for new equipment.
7. Overall test and trials costs:
   - 7.1. Management and implementation of the Integrated Test and Trials Plan.
   - 7.2. Logistics and support for trials, including sea trials.
   - 7.3. Consumables including fuel, lube oil, coolant, etc.
   - 7.4. Noise and vibration testing.
8. The Contractor shall provide the crane, certified weights, and labor to support the contract.
9. Costs associated with unloading and storing of Owner-furnished material.
10. Progress meetings.
11. Weight estimating.
12. Completion of lot work items.
13. Other administration efforts.Vessel condition surveys.
14. Bonding, insurance, and other Contractor costs.

3.4. Documentation

The Offeror shall include in their proposal the following documentations:

1. Project manager's resume.
2. Organizational chart for the Offeror's project team.
3. Scheduler's resume.
4. Test/trials manager's resume.
5. Engineering support – The Offeror shall identify the engineering subcontractor(s), the scope assigned to each engineering subcontractor(s), and provide their resumes demonstrating the ability to meet requirements.
6. Production software and strategy for utilizing the Owner provided design.
7. Description of scheduling approach.
8. Bonding and insurance documentation.
9. Preliminary project schedule.
10. Sample test procedure for initial engine light off.
11. List of long lead items with estimated lead times.
12. Description of system integration approach.
13. The following documentation is required where a vendor substitution is requested.
    - 13.1. Written justification for vendor substitution.
    - 13.2. Vendor's termination and commissioning costs.
    - 13.3. A description of vendor's locations, facilities, part inventories, technician staff sizes, days/hours of operation, and response times for service calls throughout the South Pacific Ocean.
    - 13.4. Cost savings justification.
14. The following documentation is required where an equipment substitution is requested.
    - 14.1. Written justification for equipment substitution.
    - 14.2. Make, model number, and quantity of all components in the proposed system.
    - 14.3. One-line diagram of the proposed system modifications indicating all components and their locations.
    - 14.4. Cut sheets for new components in the proposed system, including dimensions and discussion of potential interference issues.

4. General Specification

4.1. Intent

The intent of the Shipyard Contract Technical Specifications ("General Specifications"), the work package specifications, and the drawings listed in scope of work herein is to describe the requirements for the Auxiliary General Purpose Oceanographic Research ("AGOR") 26 (R/V Kilo Moana) 2027 Shipyard package. The Research Vessel Kilo Moana is owned by the U.S. Navy and operated by the University of Hawaii Marine Center as an ABS classed, SOLAS/ MARPOL and U.S. Coast Guard inspected vessel (Subchapter U). All work performed by the Contractor is to conform to these rules.

4.2. External contractors engaged directly

The Owner reserves the right to engage and bring onboard independent contractors, vendors, service providers, technical representatives, and RCUH/UHMC employees or contractors to perform specialized inspections, surveys, repairs, testing, commissioning, equipment servicing, vessel-related research, or other ongoing project work during the repair period. Such personnel shall be permitted reasonable access to and about the vessel and may perform their work freely, provided that they do not unreasonably interfere with the Contractor's progress or operations. The Contractor shall provide reasonable access, coordination, and cooperation necessary to facilitate such work. Any required permits, safety inductions, access arrangements, and scheduling shall be coordinated as necessary among the Owner, Contractor, Shipyard, and the Owner's personnel. The Contractor shall not be entitled to any additional compensation, delay claim, or other adjustment for accommodating Owner's personnel unless specifically identified in the Agreement for Services or otherwise approved in writing by the Owner. The Owner's external contractors engaged directly with ongoing projects may include, but are not limited to, the following:

Ockerman Automation	(Automation & Propulsion)
Drake Controls	(Automation & Propulsion)
Progressive Electric	(Automation & Propulsion)
CommSystems	(SeaTel Antenna)
Systems Interface	(Aux HPU Electrical)
Controls) Glosten	(Naval Architect)
Kongsberg-Simrad	(Various Electronics and sonars, including DP)
TECO-Westinghouse	(Main Propulsion Motors)
Tees Components LTD	(Tees White-Gill Bow Thruster)
Neuver Maritime, LLC	(Shafts, Tenfjord/Rolls-Royce Steering Gears)
Kobelco {Kemel}	(Shaft Seals)
PPG/Akzo Nobel	(Coatings Rep)
International / Hempel / Jotun	(Coatings Rep)
POP Marine	(Diesel Generator Services)
HSI Electric Boat	(Electrical Distribution)
Foure Lagadec	(Canard Systems)
Hawboldt	(Hawboldt Crane)

C-Lars	(A-Frame)
North Pacific Crane Company	(Crane)
Palfinger	(MOB boat and Davit)
AlfaLaval	(Evaporator and BWTS)
ERMA First	(BWTS)
ACH Engineering	(Canard)

4.3. Definition and Terms

The following terms and respective definitions apply throughout these specifications.

ABS

American Bureau of Shipping – The classification society under which rules, guidelines, and survey the Vessel shall adhere to and be modified by.

AGREEMENT FOR SERVICES

The written agreement between the Contractor and the Owner setting forth the obligations of the parties thereunder including but not limited to: the work to be done, and by when, the furnishing of labor and materials, and the basis of payment. The Agreement for Services includes the specifications, contract drawings, addenda, and change orders. The Agreement for Services may also be referred to as the Contract, herein.

AGOR

Auxiliary General Purpose Oceanographic Research

ANSI

American National Standards Institute

AWS

American Welding Society – Organization which provides certification and training of welders as well as welding standards and guidelines.

BID

The offer of a bidder on the prescribed bid form properly executed to perform the contract.

BIDDER

A pre-qualified person, firm, co-partnership, joint venture, or corporation submitting a bid.

CFR

Condition-found report – A report generated by the Contractor which denotes the condition in which a particular piece of equipment, material, system, or another Vessel item is found upon receiving the Vessel from the Owner.

CONTRACT DRAWING

Contract drawings are those drawings and specifications provided by the Owner that illustrate design features of the Vessel. While it is recognized that exact adherence to details, arrangements, machinery layout, etc., is not always possible in progressing from the contract drawings, any deviations made by the Contractor shall be kept to a minimum. The Owner shall be notified of changes which shall be subject to approval by the Owner.

CONTRACTOR

The person, firm, co-partnership, joint venture, or corporation, and his/hers/theirs or its heirs, executors, administrators, successors, and assignees, or the lawful agent of any such person, firm, co-partnership, joint venture, or corporation, or his/hers/theirs or its surety under the contract bond, constituting one of the principals of the contract and undertaking to perform the word herein specified. Wherever any pronoun is used as referring to the word " Contractor," it shall mean the Contractor as defined herein.

DAYS

Any reference to days" herein shall be calendar days."

DFT

Dry Film Thickness.

FCAW

Flux-cored arc welding.

FURNISH

The term " furnish" shall mean deliver to the ship. When applied to Owner-furnished," it shall mean delivery by the Owner, unless otherwise specified, to the Contractor s facility for off-loading and care by the Contractor.

GUIDANCE DOCUMENT

Those Documents or models that illustrate Owner s concept, intent, or goal regarding a certain system, aspect, or feature of the Vessel. These Drawings set forth an objective or standard that Contractor is to achieve by exercising its experience, ingenuity, and judgement. Contract Guidance Drawings, when used in conjunction with corresponding provisions of the Technical Specifications, will assist Contractor in achieving Owner s concept, intent, or goal. Contractor will demonstrate to Owner that it has achieved the requisite objective or standard, in part, through Owner review and approval of Contractor s submitted This Drawings.

INSTALL

The term " install" shall mean the Contractor shall supply all materials, tools, labor, and incidental materials to perform the work required, including incorporating Owner-furnished material, machinery, and equipment into the complete work.

LOTO

Lock out/tag out - procedures are to be used to prevent inadvertent use, start-up, or energizing of any system that needs inspection, maintenance, or repair.

OEM

Original Equipment Manufacturer

OFE

Owner-furnished equipment - Equipment supplied by the Owner as stated herein the Technical Specifications. Contractor is responsible for all equipment necessary to complete task unless specified herein as OFE."

OFM

Owner-furnished material - Material supplied by the Owner as stated herein the Technical Specifications. Contractor is responsible for all material necessary to complete task unless specified herein as OFM."

OR EQUAL

An or equal" product is a product, approved by the Owner, that exhibits the same salient characteristics, performance, reliability, and maintainability as the product identified in the specifications as fulfilling the specification requirements. "or equal also to be approved by all regulatory authorities.

OWNER

The Research Vessel R/V Kilo Moana (AGOR 26) is the property of the United States Navy, Office of Naval Research (ONR), University of Hawaii Marine Center (UHMC) and The Research Corporation of the University of Hawai'i, RCUH is the bareboat character and operator of the AGOR 26 which will be responsible for executing the Contract. For purposes of these specifications, Owner means the University of Hawaii Marine Center (UHMC). Owner may also mean the duly authorized representative as designated in writing by the Owner.

OWNER'S REPRESENTATIVE

The shipbuilding inspector or other designated agents or employees of the Owner to the extent that those individuals have been authorized by the Owner to act on their behalf.

NAVAL ARCHITECT

The term " naval architect" shall mean naval architecture/marine engineering firm so designated by the Owner, if applicable.

NDT

Non-destructive Testing.

PDS

Product Data Sheet

PROVIDE

The term " provide" shall mean the Contractor shall supply all materials, equipment, tools, and labor to perform the work required.

QC

Quality Control.

RCC

Request for Contract Change.

REMOVE

The term " remove" shall mean, unless indicated otherwise, the Contractor shall supply all labor, tools, and services to take the materials named off the ship and care for them ashore, as required in these specifications.

SDS

Safety Data Sheet.

SAW

Submerged-arc welding.

SMAW

Shielded metal arc welding.

SSPC

Steel Structures Painting Council

SUBCONTRACTOR

An individual, co-partnership, firm, corporation, or joint venture, to which the Contractor sublets part of the work under the contract.

TAO

Temporary Access Opening

TDS

Technical Data Sheet.

T&M

Time and material – a rate or cost based on time and material expended for work performed.

USCG

United States Coast Guard – The regulatory authority under which regulations the Vessel shall adhere to and be modified by.

UT

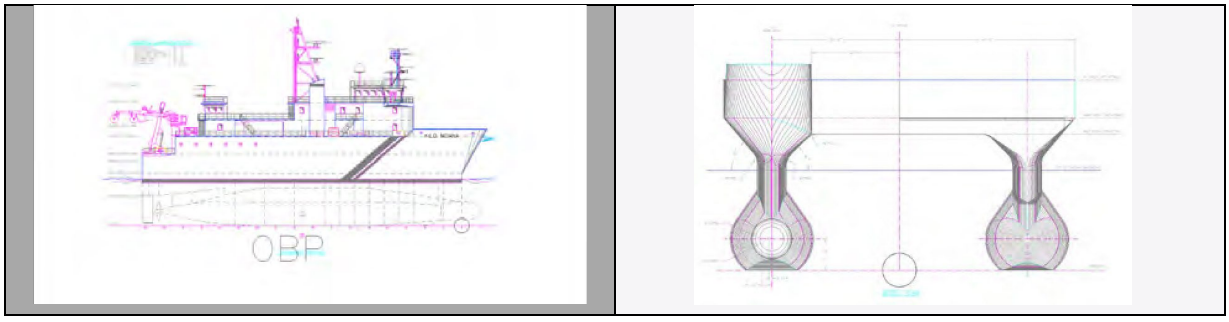
Ultrasonic Testing.

WORK

"Work" shall mean the furnishing by the Contractor of all labor, materials, equipment, and other incidentals necessary or expedient to the successful completion of the project and the carrying out of all the duties and obligations imposed by the contract.

4.4. Research Vessel KILO MOANA, AGOR-26, Ships Particulars & Drawing

The Vessel's principal characteristics list below are for general information only. The vessel docking plan shall be consulted for specific docking requirements. See fendering sketch 20160607 for alongside docking reference.



Point of Contact			
Relationship	Entity	Contact info	Link
Primary Contact	University of Hawaii Marine Center, UHMC	Port Engineer, porteng@soest.hawaii.edu	
Secondary Contact	University of Hawaii Marine Center, UHMC	Captain Paul Mospens Marine Operations Superintendent maropsup@hawaii.edu	
Operator Contract Officer	University of Hawaii Marine Center, UHMC	Director of Research Vessel Operations, Anita Lopez drvo@soest.hawaii.edu	https://www.soest.hawaii.edu/UHMC/

Class Society	American Bureau of Shipping, ABS		https://ww2.eagle.org/en.html
Flag State	United States, USCG		https://www.dcms.uscg.mil/Our-Organization/Director-of-Operational-Logistics-DOL/Bases/Base-Honolulu/

BUILT

Type	Small Water Area Twin Hull (SWATH) Oceanographic Research
Builder	Atlantic Marine Florida LLC
Location	Jacksonville, FL
Hull Number	244
Keel Laid	9 February 2001
Delivery	24 June 2002
Year Acquired by Owner/Operator	2002

PRINCIPAL DIMENSIONS / PARTICULARS

Home Port	Honolulu, Hawaii			
IMO #	9229037			
HAWAII STATE REGISTRATION	HA0532XS			
Call Sign	WDA 7827			
Length Overall	57.5	m	188.75	feet
Length Waterline	51.8	m	169.9	feet
Breadth	26.8	m	88	feet
Depth	11.6	m	38	feet
Loadline Draft	8	m	26.27	feet
Full Speed/RPM	15	knots	150	RPM
Cruising Speed/RPM	12	knots	120	RPM
Endurance	50	Days	Limited by Stores	
Range	10,000	nautical miles @ 12 kts		
Load Line Displacement	2,595	long tons		
Lightship Displacement	2,046	long tons		
International Tonnage	3,060	GT		
Regulatory Tonnage	1,407	GRT		
Port and Starboard Anchor Chains	9	Port	8	Starboard
Windless				
ACCOMMODATION CABINS	20	Crew	28	Scientist

MACHINERY PARTICULARS

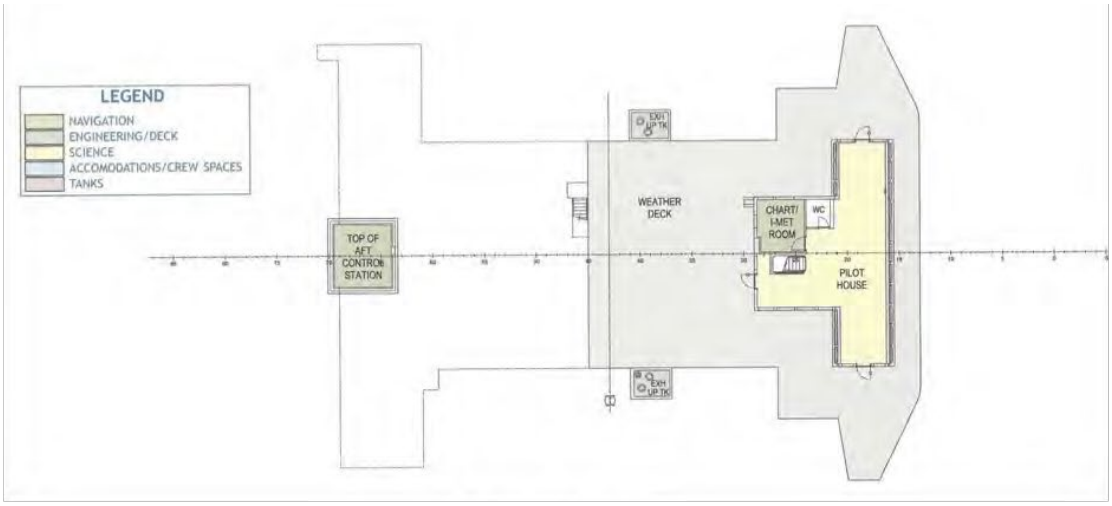
Propulsion	Diesel Electric Twin Screw with Omni-directional Bow Thruster
Propellers	2 – Fixed pitch, 5 blade, 11 FT Dia. Outboard Turning
Horsepower	2 each 1.5 MW Westinghouse (C1.3) DC motors 4020HP Combined
Main Propulsion Engines	4 each Caterpillar 3508 Diesel 910KW each
Motors	50 RPM Teco-Westinghouse DC Main Prop Motors
Bow Thruster	1,150 HP 40" Elliott White Gill Type 40T3 MkIII, starboard hull
Rudders	2 - 9.3 m^2 (100 sqft), Located aft of props, Individual or synchronized operation
Emergency Generator	Caterpillar 1406,190 kW
Automatization controls	Ockerman Automation Consulting Control System

REGULATORY

Class	ABS: ✠A1 ✠AMS Loadline Ice Class D0 ✠ACCU UWLD

TANK CAPACITIES PLAN

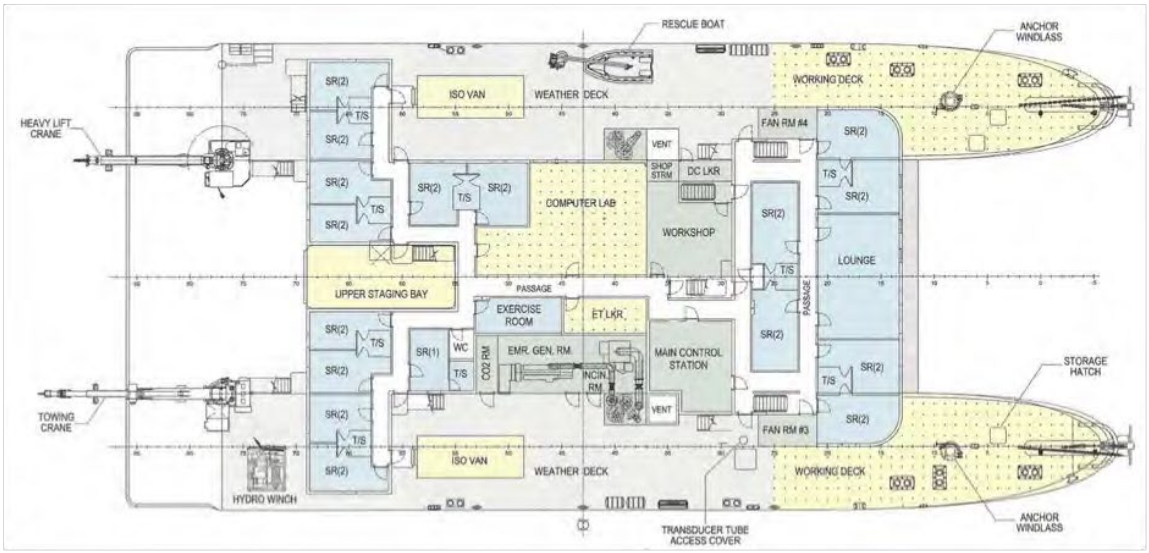
TANKS	LOAD	SP GR	GAL	WEIGHT (LT)	LCG (ft)	TCG (ft)	VCG (ft)
FUEL:							
Fuel No 1 Starboard	96%	0.870	18,241	59.12	38.13	32.00s	11.10
Fuel No 2 Port	96%	0.870	18,241	59.12	38.13	32.00p	11.10
Fuel No 3 Starboard	96%	0.870	21,173	68.63	46.08	32.00s	10.78
Fuel No 4 Port	96%	0.870	21,173	68.63	46.08	32.00p	10.78
Fuel No 5 Starboard	96%	0.870	22,136	71.75	70.01	32.02s	10.72
Fuel No 6 Port	96%	0.870	21,900	70.98	70.01	32.02p	10.84
Fuel Oil Day Starboard	96%	0.870	3,987	12.92	60.02	11.64s	41.15
Fuel Oil Day Port	96%	0.870	3,987	12.92	60.02	11.64p	41.15
			130,837	424.08			
POTABLE WATER							
Fresh Water Starboard	98%	1.000	3,977	14.82	62.05	36.51s	34.44
Fresh Water Port	98%	1.000	3,977	14.82	62.05	36.51p	34.44
			7,954	29.63			
BALLAST							
Ballast No 1 Starboard	100%	1.025	17,202	63.61	3.31	31.83s	18.24
Ballast No 2 Port	100%	1.025	17,202	63.61	3.31	31.83p	18.24
Ballast No 3 Starboard	100%	1.025	15,583	59.56	30.15	32.00s	12.01
Ballast No 4 Port	100%	1.025	15,583	59.56	30.15	32.00p	12.01
Ballast No 5 Starboard	100%	1.025	23,015	88.05	62.00	31.99s	11.37
Ballast No 6 Port	100%	1.025	22,775	87.11	62.00	32.03p	11.48
Ballast No 7 Starboard	100%	1.025	16,563	63.02	144.86	31.99s	15.73
Ballast No 8 Port	100%	1.025	16,563	63.02	144.86	31.99p	15.73
			144486	547.55			
MISC. TANKS							
Lube Oil	96%	0.924	697	2.40	60.05	0.00	43.83
Oily Waste Port	96%	1.015	1,239	4.68	78.10	13.74p	35.92
Waste Oil Port	96%	0.900	1,239	4.15	78.10	19.24p	35.92
Sewage Tank	96%	1.025	3,294	12.58	46.08	26.49p	31.12



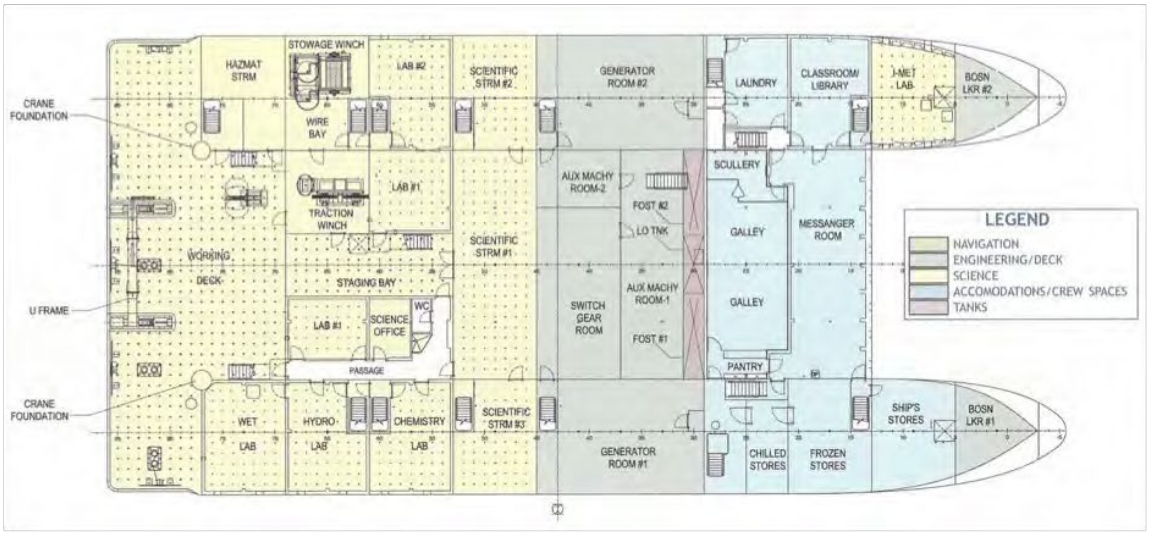
03-LEVEL



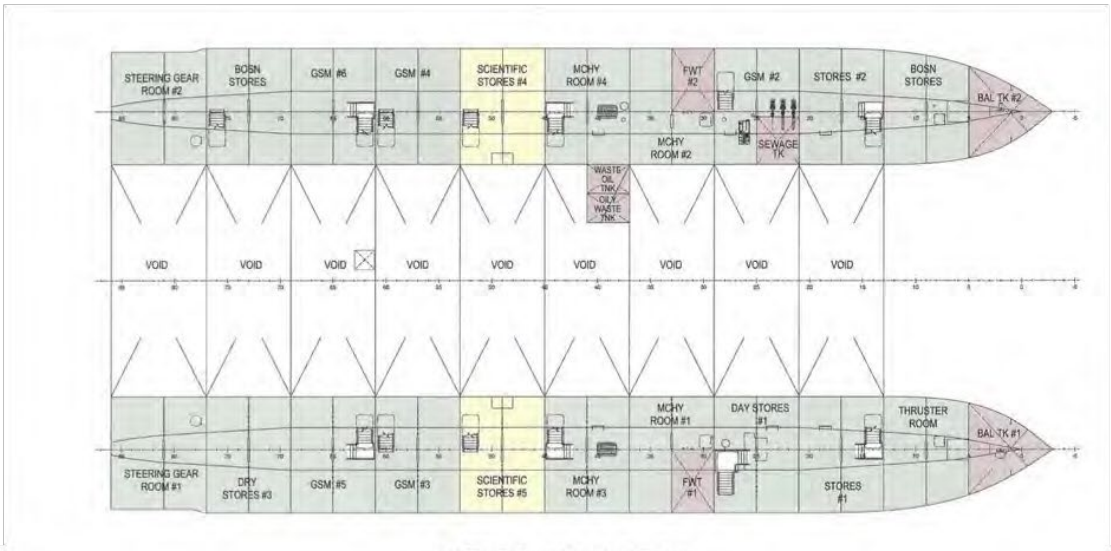
02-LEVEL



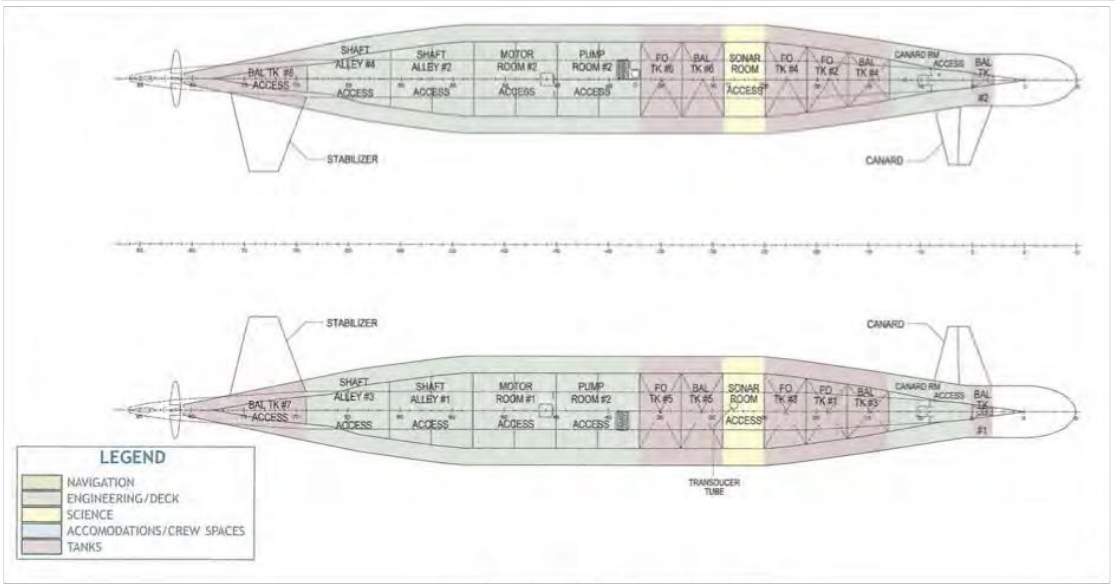
01-LEVEL



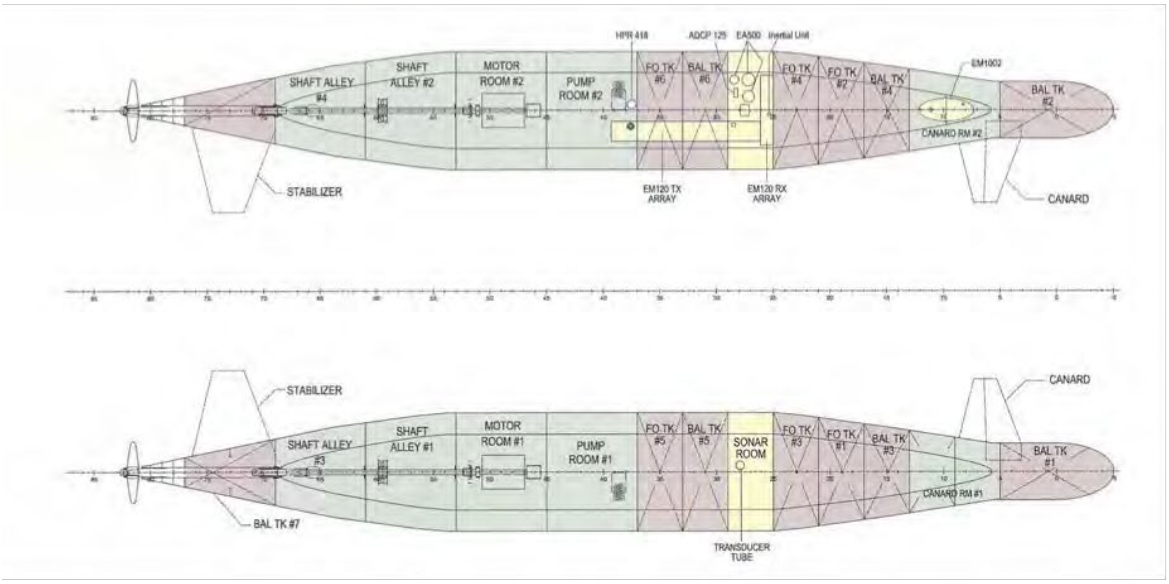
MAIN DECK



1ST PLATFORM



2ND PLATFORM



3RD PLATFORM

5. Project Protocols and Requirements

5.1. Intent

The specifications, modification packages, and drawings set forth the requirements for the services period. The Contractor shall provide all labor, material, equipment, tools, transportation, and supplies required to complete the scope of work in accordance with the drawings, specifications, and terms of the Contract. It is not the intent for the drawings and specifications to include all details of the work.

In the case of inconsistency between contract documents, the following order of precedence (from highest to lowest) applies:

1. Contract
2. General Specifications
3. Work Item Specifications
4. Contract Drawings

Where two or more requirements provide inconsistent direction, the more stringent requirement will apply unless the Owner specifies otherwise. Silence of one document with respect to details shown on another will not be considered an inconsistency, error, or omission. If a conflict arises regarding the order of precedence, the Owner will make a determination after being notified by the Contractor in writing. The Owner's determination will be final and will not be grounds for a monetary or schedule claim by the Contractor.
Some requirements in the specifications and drawings may exceed those of regulatory bodies. These requirements shall not be relaxed. If the Contractor discovers an error or omission in the drawings or specifications, the Contractor must notify the Owner in writing immediately. The Owner will provide necessary corrections or interpretations to fulfill the intent of the documents. The existing ship's drawings and manuals will be available during the bid period for review by qualified bidders. These drawings may not reflect the current configuration of the Vessel and their use is at the Contractor's risk. The Contractor is encouraged to conduct a thorough inspection of all areas and items to be refurbished before submitting their bid. Failure to inspect the vessel prior to bidding will not be grounds for claims against the Owner. The Owner will provide a ship schedule with available dates and locations for ship checks.

Prior to beginning fabrication and installation, the Contractor shall verify the design with the Vessel condition. This is particularly true for areas that become accessible during the services period that could not be verified during ship checks. Items that could be verified prior to the services period shall not be grounds for a claim against the Owner.

5.2. Conferences and Administration

5.2.1. Pre-Arrival Conference:

Upon the award of the Contract and prior to the Vessel's arrival at the Contractor's facility, the Owner's Representative shall schedule a Pre-Arrival Conference. The purpose of the conference is to review the technical specifications, discuss any unusual conditions, outline the Contractor's plan for the work, schedule tests and inspections, and address any other relevant items. The Contractor is encouraged to include the Owner's Representative in the preliminary planning stages of the services period to ensure a shared understanding.

5.2.2. Arrival Conference:

Upon the arrival of the Vessel at the Contractor's facility, an Arrival Conference shall be held aboard the Vessel or at another suitable location, as determined by the Owner. The Contractor's Ship Superintendent, the Vessel Captain, the Chief Engineer, and appropriate Owner personnel shall attend. The purpose of the conference is to finalize any last-minute details and arrangements.

5.3. Conference Room Requirements:

The Contractor shall provide a conference room of sufficient size to accommodate five (5) to eight (8) Owner Representatives, along with any necessary Contractor representatives. Critical subcontractors, Owner-furnished technical representatives, and regulatory inspectors (as needed) should also have adequate representation for these meetings. The meeting location is required to have availability to video conference for outside attendance.

5.4. Progress Updates

The Contractor shall provide weekly progress update meetings to the Owner's Representative at a mutually agreed-upon time and location. Such progress meetings shall commence upon arrival of the Vessel at the Contractor's facility. The Contractor shall prepare an agenda before each progress meeting providing synoptic statements of progress made since the last meeting, current and pending activities, current and potential problem areas that could affect project cost or scheduling, and inspections planned for the following week. A copy of the agenda shall be provided to the Owner's Representative no less than 24 hours prior to each scheduled meeting date.

Contractor is not to schedule "call outs" during the progress meetings. Weekly progress update meetings shall include safety, review of the status, and include, but are not limited to, the following:

1. Ongoing work – Status of current tasks and activities.
2. Growth work – Any additional work that has emerged during the project.
3. Costs to date – Financial status of the project, including expenses incurred so far.
4. Risks to workers and the environment – Identified safety or environmental concerns and mitigation efforts.
5. Schedule of Deliverables
6. Drawing Schedule
7. Material Control Schedule
8. Compartment Close-Outs
9. Project GANTT Chart Schedule – Status of the project schedule, including any delays or changes. (See 5.23 regarding GANTT chart.) Percentage completion of all work items to be discussed and agreed during the progress meeting.

The Contractor shall also provide daily morning toolbox talk meetings with the Owner's Representative and the Vessel's staff, at a mutually agreed-upon time and location. The Contractor's Project Manager, Trade Supervisors, and the Contractor's assigned Health Environment Safety Quality ("HESQ") supervisor to attend the toolbox talk. The Contractor will no later than 18:00 the evening before electronically provide a list of the next day's work plan/tasks. These updates shall include, but are not limited to, the following:

1. Planed work for the day – Status of current tasks and activities.
2. Work/ Shift schedule and activity in the yard that might impact the Vessel.
3. Any additional work that has emerged during the project.
4. Safety Risks for the day.

5.5. Worker Safety and Security

Work areas must be always kept properly lit, free of clutter and debris. The Contractor is responsible for ensuring that a safe worksite is maintained daily, with proper Personal Protective Equipment (PPE) worn by everyone on the worksite. Temporary barricades must be set up to prevent access when hazards exist, and adequate walkways shall be established and maintained to allow work and the Owner's inspections to proceed effectively. Employees of RCUH/UHMC and their agents shall have free, ready and safe access to vessel at any time, and any of the spaces where work is being performed. Employees of RCUH/UHMC and their agents reserve the right to document any and all of the work items at any stage of completion. This documentation may include taking and archiving video, pictures, and sound recordings.

Unless otherwise specified, the Contractor is responsible for all costs associated with staging, lift equipment, safety rails and barriers, lighting, ventilation, and PPE necessary to maintain a safe work environment.

5.5.1. Personnel on Board (POB) System

The Contractor is to have an established system and specification for tracking personnel (crew, contractors, visitors) on board and in the Dry Dock. The system can be manual, but an electronic system that utilizes active RFID for Personnel on Board (POB) with a system designed to track, report, and manage authorized access in real-time is preferred. Any system must comply with international safety standards ISPS (International Ship and Port Facility Security Code) to ensure accountability for who is on board in case of an emergency. The system is required to have but is not limited to:

- Real-time Database: A centralized system that immediately updates with personnel arrivals and departures.
- Mustering and Emergency Tracking: Capability to instantly generate a list of everyone currently on-board during emergencies, fires, or mustering drills.
- Visitor Management: Mandatory visitor identification, sign-in/sign-out processes, and safety briefing tracking before or upon boarding.

5.6. Personal Protection Equipment (PPE)

The Contractor shall provide all required Personal Protection Equipment (PPE) to minimize exposure to hazards that cause serious workplace injuries and illnesses. These injuries and illnesses may result from contact with chemical, physical, electrical, mechanical, or other workplace hazards. PPE may include items such as gloves, safety glasses and shoes, earplugs or muffs, hard hats, respirators, or coveralls, vests, and full Tyvek body suits. All PPE must meet or be equivalent to standards developed by the American National Standards Institute (ANSI).

High humidity and heat can lead to heat exhaustion and heat stroke. When working in these conditions, the Contractor is to provide drinking water at convenient locations and ensure adequate clothing, including a hat, is worn by all workers to protect against the sun's harsh rays and avoid sunburn.

5.7. House Keeping

The Contractor shall ensure that all work areas are maintained in a safe and clean condition. The following housekeeping practices must be consistently observed:

- Wet or Oily Surfaces: Decks, floors, and deck plates should be kept free of wet or oily substances. These should be cleaned immediately. If such surfaces cannot be avoided, extreme caution should be exercised when crossing.

- Tools and Equipment: Tools, working lines, rigging, and any other equipment should never be left unattended on floors or decking where they present tripping hazards. All equipment must be stored properly when not in use.
- Loose Items and Debris: Small objects, such as disconnected joints of pipe, wood chips, or other debris, must not be left lying around in walkways or work areas to avoid any potential hazards.
- Warning Signs and Tripping Hazards: Warning signs must be posted, or areas cleaned up promptly, where slip hazards exist. Tripping hazards should be clearly marked or eliminated wherever possible.
- Work Area Cleanliness: All work areas must be maintained in a " broom clean" condition. Welding and temporary service cables, hoses, and fixtures must be routed and organized in a systematic manner to minimize hazards to workers.
- Excessive Clutter: In the event that work areas become excessively dirty or cluttered, as determined by the Owner's Representative, the Contractor will be required to clean the area. Additionally, any improperly installed or routed equipment (e.g., welding cables) must be pulled back and reinstalled properly.

5.8. Lock Out/Tag Out (LOTO)

The Contractor shall follow the vessel approved Lockout/Tag Out (LOTO) procedures to prevent the inadvertent use, start-up, or energizing of any system during inspection, maintenance, or repair. This applies to all equipment that receives energy from electrical power, hydraulic fluid under pressure, compressed air, steam, energy stored in springs, or any other source that may cause unexpected movement during maintenance work. It also applies to systems containing hazardous materials.

LOTO procedures are essential to ensure that all sources of energy—whether electrical, hydraulic, pneumatic, or otherwise—are completely isolated and free from any stored energy before work begins.

- LOTO Coordinator: The Owner's Representative or designated crew member will oversee the LOTO Program. This person will be responsible for maintaining the vessel-specific LOTO Logbook, located in the Engine Control Room (ECR). The coordinator will communicate the location of the logbook to all affected personnel, including but not limited to the Owner's Representative, the Contractor's workers, Subcontractors, vendors, and the Vessel's crew.
- LOTO Procedures: Before performing any LOTO procedure, all personnel must obtain approval from the LOTO Coordinator. Multiple locks may be used to secure energy sources to protect individual workers, but all LOTO actions must be logged into the vessel specific LOTO logbook for consistency.
- Locks and Tags: The LOTO system will use suitable locks, in addition to tags, to temporarily deactivate energy sources and prevent accidental reactivation of vessel equipment. The Contractor is required to inform the Owner's Representative of any Vessel equipment that cannot be locked out.

5.9. Safety Data Sheets

The Contractor shall provide Safety Data Sheets (SDS) for all paints, coatings, and chemicals to be used on the Vessel. All SDS shall be submitted to the Owner's Representative prior to the commencement of any painting or coating work, except when the materials are Owner-furnished. The SDS should include all relevant health, safety, and environmental information regarding the materials.

5.10. Confined Spaces and Ventilation

The Contractor shall provide all necessary labor, materials, and equipment to clean and gas-free all confined spaces, including tanks, piping, reservoirs, and other enclosed spaces related to the work. This includes compliance with all ABS and USCG safety protocols for confined space and entry, as outlined below. If the Contractor's regular

practice is of a lesser standard than ABS and USCG safety protocol, the Contractor to follow the higher / stricter standard:

Gas-Freeing:

- Marine Chemist Certification: The Contractor is responsible for obtaining a Marine Chemist certificate confirming that all spaces are "Safe for Entry" and "Safe for Hot Work." The certificate must be maintained throughout the duration of the shipyard period. The certificate is also to be posted at each access point to the space.
- Daily Inspections: A certified, competent person will be provided by the Contractor to perform daily checks of all voids, tanks, pipelines, pump wells, skegs, etc., as per the Marine Chemist certificate. The inspections must be done at the beginning of each shift. Each tank and space will be tagged with the time, date, and name of the competent person who performed the check.
- Inspection Logs: The Contractor will maintain a daily log of all tank and space inspections, which will be posted in a conspicuous location on board the vessel. The log will include the time of the inspection, the condition of the space, and all readings taken during testing.
- Certificate Revalidation: If, at any point, the gas-free certificate becomes invalid, all hot work will cease immediately, and the Owner's Representative shall be notified. The Contractor is responsible for obtaining a new certificate if needed.

Confined Space Entry:

- Only certified contractors, shipyard competent persons, or personnel with current confined space entry training and the appropriate equipment are permitted to enter these spaces once certified as "Safe for Entry."
- Signage and Barriers: Appropriate signage, tags, and physical barriers must be used to clearly mark safe and unsafe spaces. Entry is only allowed in spaces that have been certified as safe by the responsible personnel.
- Fire Watch Requirements: As required, fire watches must be provided for all hot work. The fire watch must be qualified and stationed appropriately based on the work being done.
- Ventilation: The Contractor shall ensure that all confined spaces, including tanks and voids, are properly ventilated to maintain the gas-free certificate throughout the course of the work. Ventilation shall be continuous as required and a daily log shall be maintained to document the status of ventilation for each space. This log shall be reviewed and agreed upon with the Owner's Representative. The Owner's Representative reserves the right to discontinue ventilation for any tank or space once it is no longer necessary for entry or work.
- Cost Inclusion: Unless otherwise specified, all costs associated with confined space entry and gas-freeing are to be included in the charges for the relevant work items. This includes maintaining ventilation throughout the shipyard period to preserve the gas-free certificate.
- The Contractor shall provide all necessary labor, materials, and equipment to clean and gas-free all confined spaces, including tanks, piping, and reservoirs related to the work. A Marine Chemist certificate must be obtained to confirm that the spaces are "Safe For Workers" and "Safe For Hot Work". The Contractor is responsible for maintaining this certificate throughout the course of the work and for providing fire watches as required.

Suitable signage, tags, and physical barriers must be used to clearly mark "safe" spaces and restrict access to "unsafe" spaces.

Only a shipyard competent person can certify a space for entry by UHMC personnel. It must comply with all latest ABS and USCG safety protocols for confined space and entry. If the Contractor's regular practice is of a lesser

standard than ABS and USCG safety protocol, the Contractor to follow the higher/stricter standard. All Subcontractors or Vendors must either conduct their own testing or use the services of a Marine Chemist.

Only certified contractors, shipyard competent persons, or personnel with current confined space entry training and the appropriate equipment may enter these spaces, once they have been certified as safe by the personnel listed above.

Contractor to adhere to confined space rescue requirements as per 29 CFR 1915.12.

Unless otherwise specified, all costs associated with this work are to be included in the charges for the relevant work items.

5.11. Work Aloft

Whenever possible, engineering controls such as guardrails, handrails, or scaffolding systems should be implemented to eliminate the need for personal fall arrest protection.

Appropriate signage, tags, and physical barriers must be used to clearly mark and permit access to “inspected and approved" staging towers or ladders, and to prevent access to "unapproved" staging towers or ladders.

Fall protection equipment must be used in the following situations:

- Whenever a person is engaged in prolonged tasks where there is a risk of falling from a height of more than five 1.5 meter.
- When working on top of the wheelhouse outside the guardrails or in areas where guardrails are not installed.
- When working on a fixed ladder more than 6-meter high that does not have an integrated personnel cage.

Only ANSI-approved full-body harnesses, lanyards, and hardware shall be used.

In cases where fall protection for a worker is impractical, or where it creates a greater hazard due to Vessel design, container design, container storage, cargo storage, container handling equipment, lifting gear, or port conditions, the Contractor must develop a safety plan. This plan, in line with the Contractor's safety policies and regulatory standards, should outline a safe method to accomplish the work.

If a fall restraint system is not in use in areas where water hazards exist, workers must wear Type V Personal Flotation Devices (PFDs) or a Type III Float Coat.

5.12. Job Safety Analysis

UHMC requires its staff, and the Contractor is encouraged, to perform pre-task planning daily, particularly when approaching a new or particularly hazardous task. This pre-planning helps to identify and minimize risks associated with the job. The Job Safety Analysis (“JSA”) aims to:

- Identify potential risks.
- Assess the likelihood and impact of those risks.
- Implement mitigations.
- Analyze the results after task completion.

Each worker is accountable for:

- Understanding the basic principles of JSA and applying them to all aspects of their work.
- Having the right tools for the task.

- Always using safe work practices.
- Systematically examining the job to identify hazards, evaluate risks, and specify safeguards.
- Ensuring crew competence – ensuring that crew members possess the necessary skills and job knowledge to safely perform the task.
- Equipping the crew to protect themselves, others, and the environment from harm.
- Ensuring safeguards are in place if additional measures are required.
- Ensuring adequate manpower and supervision – ensuring that the job is sufficient staffed and supervised to achieve safe execution.
- Following the "Take Five" Principles for daily safety:
    1. Stop, step back, and observe.
    2. Walk through the task.
    3. Identify hazards.
    4. Control and communicate.
    5. Safely complete the task.

Each employee is empowered to speak up about unsafe activities and can suggest suspending operations until any identified safety issues are resolved.

5.13. Incident Reporting and Stop Work Authority

The Contractor is required to provide timely notification and submit an Incident Report (within 24 hours of occurrence) to the Owner's Representative for any of the following incidents:

- Worker injury (even minor sprains and cuts)
- Significant illness
- Equipment failure
- Fire
- Near Miss

The Contractor is required to perform an investigation and interview of witnesses, including the Owner's Representative and UHMC employees to develop an accurate understanding of the incident as possible. The Owner's Representative to be informed in advance of the Contractor's interview or questioning of any UHMC employee.

In accordance with UHMC Policy, Stop Work Authority is granted to every UHMC employee. This policy empowers each employee with the right and responsibility to stop any unsafe act or condition that may pose a risk to health, safety, or the environment.

5.13.1. Accident Reports

The Contractor shall promptly report in writing to the Owner's Representative all accidents whatsoever arising out of or in connection with its operations hereunder and which result in death or injury to persons or damage to property. The UHMC or RCUH may request that the Contractor provide further details of such accidents. Additionally, if death, serious injury, or serious damage is caused, the Contractor shall immediately report such accidents by telephone to the Owner's Representative.

The Contractor to track and log all incidents mentioned in 5.13, but is not limited to. The Incident Report log to be part of the weekly presented GANTT Chart Schedule with weekly updates.

5.14. Environmental Protection

In addition to the applicable portions of Division 1-07.5, Wildlife, Fisheries, and Ecology Regulations, the following shall apply:

1. Containment and Waste Disposal:
   Due to the potential harmful effects of pressure washing, grit blasting, and coating, the Contractor must implement containment measures to minimize nuisance conditions and prevent environmental damage. These measures should ensure that wastewater and debris generated during preparation and coating operations are properly contained, recovered, and disposed of in compliance with all applicable environmental regulations.
2. Regulatory Compliance:
   The Contractor shall comply with all Federal, State, and local laws and regulations concerning the protection of the environment. This includes, but is not limited to, regulations related to waste disposal, air and water quality, and preservation of wildlife and ecology.
3. Maintenance of Clean Surroundings:
   The Contractor is responsible for maintaining the area surrounding the vessel in a clean and dust-free condition. This includes ensuring safe egress for both Vessel Crew and Shipyard Personnel.
4. Cost Responsibility:
   Any costs associated with the establishment, maintenance, or restoration of the work environment, including environmental protection measures, shall be the sole responsibility of the Contractor.

5.15. Air Quality

All work shall be in compliance with Federal, State and Local rules and regulations.

The Contractor shall not use sand for grit blasting on the exterior of the Vessel.

The Contractor shall not use industrial slag if it contains any hazardous substances including, but not limited to, lead and arsenic. If the Contractor chooses to use industrial slag for blasting, test results demonstrating that the material does not contain any hazardous substances shall be submitted to Owner's Representative prior to the start of work. Federal, State and Local rules and regulations shall be utilized to determine whether a substance is designated hazardous. Less than one percent (by mass) of the blast grit shall be able to pass through a No. 200 sieve.

During grit blasting operations on the exterior of the Vessel, the work area shall be enclosed on all four sides with tarps or other flexible material. When the Vessel is being blasted on a floating dry-dock, the ends of the dry-dock shall be enclosed. Seams shall be sealed and entry ways partially sealed. Negative air pressure is not required. The Contractor shall minimize the escape of dust and other material which could create a deleterious environmental or nuisance condition. The Contractor shall recover all spent blast grit and paint debris.

5.15.1. Smoking, Vaping, and Substance-Free Workplace Requirements

The Contractor, its subcontractors, employees, vendors, and agents shall strictly comply with the Vessel's no-smoking, no-vaping, and substance-free policies. Smoking, vaping, the use of electronic cigarettes, or any similar products is strictly prohibited at all times onboard the Vessel, on any gangway or access platform connected to the Vessel, and within the dry dock, pier, laydown areas, or any worksite associated with the Vessel.

The Contractor shall be responsible for enforcing this prohibition among all personnel under its control. Any violation of this requirement shall constitute a material breach of the Contract. Upon discovery of a violation, the Owner may require the immediate removal of the offending individual from the Vessel and shipyard worksite, without the right of replacement costs, schedule impacts, or additional compensation being charged to the Owner.

Repeated violations or failure by the Contractor to adequately enforce this requirement may, at the Owner's sole discretion, constitute grounds for withholding payment, assessment of damages, suspension of work, termination for default, or other remedies available under the Contract.

In addition, the possession, use, distribution, sale, or being under the influence of alcohol, illegal drugs, marijuana, controlled substances, or any impairing substance while onboard the Vessel or engaged in work under this Contract is strictly prohibited and contrary to UHMC policy. Any such violation shall be considered a material breach of the Contract and may result in immediate removal from the worksite and further contractual action by the Owner.

5.16. Water Quality

The Work shall be in compliance with Federal, State and Local rules and regulations. To ensure such compliance, the Contractor shall meet one of the following requirements:

The Contractor's operation shall maintain a recycling or pre-treatment system resulting in zero discharge of wastewater to the surrounding waters.

The Shipyard, or facility where the work is being performed, shall hold a valid National Pollutant Discharge Elimination System (NPDES) (or equivalent) wastewater discharge permit and be in compliance with the permit and any order affecting the permit while work under this Contract is being conducted.

If the Shipyard, or Facility, is not in possession of a NPDES permit and not maintaining a "zero discharge system," a letter or other written documentation must be provided to the Owner which demonstrates adherence to one of the following:

- A complete NPDES permit application has been accepted by the State or Local Department of Ecology (DOE).
- Establishes DOE's approval of the Contractor's work plan for compliance with water pollution laws.
- A complete permit from an equivalent organization.

5.17. Hazardous Substances

All hazardous substances, including, but not limited to, solvents and paint debris shall be handled, stored, and disposed of in strict compliance with Chapter 173-303 WAC (Dangerous Waste Regulations) and any local regulations that may apply. Disposal receipts are to be provided to the Owner's Representative at the conclusion of the repair period.

5.18. Vessel/Property Security During Repair Period

The Contractor is responsible for ensuring the safety and security of the Vessel throughout the duration of this Contract, until the Owner's Representative has formally accepted the re-delivery of the Vessel. Every feasible measure shall be implemented to safeguard the Vessel from potential hazards such as fire, flooding, pilferage, malicious damage, and other unforeseen events, including catastrophic natural occurrences.

The Contractor shall be responsible for the security of all Owner property, including, but not limited to, the Vessel and third-party-owned property aboard the Vessel, during the Contractor's possession of such property. The Contractor shall also safeguard the Vessel's machinery and electrical equipment and protect by masking and other means all machinery, equipment, finished surfaces, and any other items or surfaces requiring protection during the course of the work. Vessel-specific components will only be made available upon approval by the Owner's Representative and under the supervision of trained and competent personnel from UHMC. The Contractor shall repair, at no additional cost to the RCUH, any damage caused by the Contractor in the performance of the contract period. Any damage repaired shall be in accordance with regulatory requirements and shall not negatively affect the value of the Vessel in any way. No repair shall include any alteration of original designs or change to the

Vessel's specifications without the Owner's Representative's written approval. Prior to the start of damage repair, the Contractor shall submit a repair plan to the Owner's Representative for approval.

The Contractor and its subcontractors shall not use the Vessel's electrical outlets, power distribution systems, utilities, equipment, or other shipboard services unless expressly authorized in writing by the Owner's Representative. The Contractor shall provide all power, utilities, and services necessary to perform the work and shall take all reasonable measures to prevent unauthorized use of the Vessel's equipment and systems by its personnel and subcontractors. Any unauthorized use of the Vessel's power, equipment, or services shall constitute a Contractor performance deficiency and may result in the Owner withholding payment, back-charging the Contractor for associated costs, or exercising other remedies available under the Contract.

5.19. Contract Performance

Location where Work is to be performed. It is the intent of this Contract that the work be completed at the Contractor's facility. The Contractor shall furnish a dry-dock or dockside/mooring facility at its sole expense, as appropriate to the Contract work and during performance of the Contract. Provide dockside moorage before and after dry-docking during the prescribed period. This to include, services listed above as required. Be advised of the special fendering requirements for this vessel due to its SWATH design. Ensure that lower hulls do not touch dock piles. In the event the Contractor has more than one vessel moored at its Facility, each vessel is to be moored separately to the dock. The mooring of RV Kilo Moana, directly attached outboard of another is not permitted, unless authorized in writing by the Owner's Representative.

If the Contractor intends to accomplish the work at a location other than at the Contractor's facility, such location is to be specified to the Owner with the bid submittal. Transportation to and from an offsite Subcontractor's facility where work is performed is to be provided by the Contractor.

5.19.1. Owner's Self-Help; Cost Reimbursement; Withholding

If Contractor fails to meet a defined service obligation or quality standard under the Contract, Owner may issue a written notice of deficiency. Contractor shall cure within the applicable response window or, if none is stated, within a commercially reasonable period not to exceed twenty-four (24) hours.

If the deficiency is not cured within the stated window, or if an immediate remedy is required for health, safety, environmental, or operational reasons, Owner may perform or arrange third-party performance of the service (self-help). Contractor shall reimburse Owner for all reasonable, documented costs incurred. Owner may withhold or set off such amounts against sums otherwise due to Contractor. These reimbursements and setoffs are agreed cost adjustments reflecting Owner's actual costs and are not penalties.

5.20. Documentation

All documentation from the shipyard to the Owner's Representative shall be in digital format and transferred either through email or through an end-to-end encryption cloud service, (for example "Proton Drive") to shield documents from hackers, data breaches, and surveillance. Every Condition Found Report and Change Order request shall be accompanied by an updated spreadsheet that reflects the latest transmittals. Documentation resulting from requirements shall be provided to the Owner's Representative prior to final acceptance of each work item.

5.21. Condition Found Reports

The Contractor shall provide detailed Condition Found Reports ("CFR") to:

Document contract modifications – to be provided to the Owner's Representative within 24 hours of identification of the need for contract modification.

Document condition found – detailed measurements, observations and photos of found damage are to be provided to the Owner's Representative within 48hours, and are to include detailed recommendations for repair, associate

labor and material costs, and any consequential schedule impacts.

Note: When the Contractor is working directly for an Owner Furnished Technical Representative, CFRs to document detailed measurements, observations and photos can also be provided to the Technical Representative, as well as the Owner's Representative.

5.22. Performance Period

The Owner recognizes that the specified performance period and Vessel berth stated in the Contractor's bid proposal may change. However, any such change of performance period or Vessel berth shall be subject to the following limitations by the Owner:

- Base Work - The Contractor's charges to berth and/or dry-dock the Vessel during proposed performance period are included in the bid and Contract price. The Owner must be notified 48 hours in advance and must agree in writing to make any changes to the performance period to accomplish base work.
- Additional Works - Modifications to the performance period, vessel berth, and work scope are to be covered by Contractor's change order(s). Work will not proceed until the change order is fully approved in writing by the Owner's Representative.

Note: A change order that exceeds 25% (increase or decrease) of the base work scope is open to be renegotiated as a new work item, except for open, inspect and report type work.

5.23. GANTT Chart Schedule

The Contractor shall develop, update and provide a detailed all-inclusive Project GANTT Chart Schedule that effectively illustrates the start and finish dates of the terminal elements and summary elements of a project. Terminal elements and summary elements constitute the work breakdown structure of the project. The GANTT Chart Schedule will also show the dependency (i.e., precedence network) relationships between activities and craft handovers and show current schedule status using percent-complete shadings and a vertical "TODAY" line.
The Contractor is to manage, and the GANTT Chart Schedule is to illustrate the repair project in the following phases:

- Discovery Work – Identification of full work scope requirements, including open, inspect and report work items. Discovery work shall be accomplished at the beginning of the project, or at the earliest opportunity.
- Repair Work – Accomplishment of base and change order work.
- Test and trials – Test and prove successful completion of base and change order work.

Updated GANTT Chart is to be presented digitally to the Owner's Representative weekly, at least 24 hours prior to the weekly progress meeting. If adjustment is made during the progress meeting the Contractor to immediate afterwards send Owner's Representative an updated version of the weeks GANTT Chart.

5.24. Working Plans

The Contractor shall prepare and submit working plans as necessary to accomplish the tasks outlined in these specifications. The plans must be provided in both written format and AutoCAD format (if available).

5.25. Time and Material (T&M) Work

The Contractor shall submit a daily report detailing time and material costs for work performed on a time and material basis. The report must be approved by the Owner's Representative. Time charges shall follow the Contractor's hourly billing rates, and material costs shall be at invoiced cost plus the agreed-upon markup, as per the bid submittal. Failure to provide daily reports may impact the final price for T&M work.

5.26. Owner-Furnished Service and Material

The Contractor shall be responsible for the insurance, storage, handling, and installation of all Owner-furnished

materials once delivered to the Contractor's facility. This includes any items specified by the Owner in the Contract. Owner furnished services and materials can be found in each spec item as indicated.

5.27. Change Orders

No change in Work under this Contract shall be made unless a Change Order is issued and authorized by the Owner's Representative in writing before such change is made or additional work is performed. All submitted Change Orders shall contain:

- A general description of work to be performed
- Reference to the work order or specification number
- A cost breakdown listing all details for man-hours and materials
- Monetary cost component (Net Change) of the change order to the contract
- If change order will affect Date of Delivery of the vessel, and if so, state what the new date will be.
- Any weight changes during the course of Change Order work shall be tracked by the contractor in conjunction with the main weight control log.

5.28. Vessel Movements within or between Contractor s Facilities

The Owner shall not be liable for any additional charges arising from direct or indirect costs associated with the relocation of the Vessel or any movements the Contractor elects to make to accommodate other customers or work during the original or extended repair period. The Contractor must notify the Owner at least 48 hours in advance and obtain written agreement from the Owner prior to any relocation of the Vessel.

5.29. Materials and Workmanship

All Contractor-furnished materials shall be new except as noted herein. All piping connections throughout the vessel shall be reassembled using new, contractor-furnished gaskets and stainless-steel hardware unless otherwise specified. Monel fasteners shall be used on bronze surfaces and CRES fasteners shall be used on steel surfaces. Apply appropriate anti-seize compound to all threaded surfaces. Names of certain Manufacturers and items, where mentioned in the General Specifications as a means of describing the general character of the quality, design, and construction of the various items and articles, are to be understood as meaning the Owner's preference. Departures from, or substitutions for, such items and articles are to be approved by the Owner in writing prior to purchase. Defects appearing at any stage of the work may be cause for rejection, regardless of whether the piece in question may have previously been passed as satisfactory. Unless otherwise specifically provided in the Plans or General Specifications, all workmanship, equipment, materials, articles, and all operational practices of the Contractor used in the performance of this Contract shall be in accordance with ABS and USCG rules and the best commercial marine practice and of a suitable and corresponding grade in their respective kinds.

5.30. Invoices

The Contractor shall provide a detailed invoice that identifies line-item costs for each work item contained in the General Specifications and each agreed Change Order. Preliminary or draft invoices are to be submitted to the Owner's Representative for review and comment prior to submittal for payment.

5.31. Steel Repairs

All dimensions provided are approximate and for estimating purposes only. The Contractor is responsible for determining exact measurements and interferences. The Contractor is to remove and reinstall all interferences as necessary to complete this work.

5.32. Materials

All specified stainless-steel items to be of 316/316L material. Steel plates, shapes, and bars for use in the hull

structure shall meet the requirements of ABS for the specified grade with ABS Stamped Material Certifications as evidence of compliance.

All materials subject to test and inspection used in the repair of the vessel are to be treated and inspected in accordance with ABS rules. All new steel shall be wheel-abraded, or grit blasted to SSPC SP-10 and immediately primed with weld-able primer that is compatible with the Vessel's coating system. All steel not meeting this specification shall be 100% grit blasted to SP6 and immediately primed with weld-able primer that is compatible with the Vessel's coating system. The surface of all parts to be welded shall be clean, dry, and free from rust, scale, epoxy coatings and grease.

Plates intended for cold flanging shall be "flanging quality." Galvanizing shall be completed by the "hot dip" process.

5.33. Welding, Procedures, Equipment Bonding, and Grounding

Route and support welding cords and cables so that they will not become submerged, nor act as a tripping or decapitation hazard to personnel. Provide sufficient slack for tidal variations. Protect deck level runs with suitable matting or other anti-wear protection. Avoid sharp bends and provide suitable anti-chafing protection when passing near sharp corners of ship structure. Proper control of welding and grounding leads shall be maintained for the protection of the hull, systems, and appendages. Control shall be maintained during the contract period, whether waterborne or in dry dock. The following precautionary measures shall be, at a minimum, adhered to:

- The Vessel's welding power source and ground cables shall not be used for another vessel or structure.
- Welding and ground cables shall be properly insulated and not immersed in standing water.
- Grounding lugs shall be tightly secured and contact surfaces periodically cleaned.

Care shall be taken that the welding polarity and ground connections of welding machines used on this Vessel, or other vessels in the immediate vicinity, and on the dock to which the Vessel is moored, shall be controlled in a manner to protect the hull from damage due to electrolytic action. Stray current protection shall be achieved following the American Welding Society Guide for Steel Hull Welding (AWS D3.5-85) Chapter 6.

To protect onboard electronic equipment, Contractor should ensure with the Owner's Representative that all Variable Frequency Drives (VFD), electronic equipment, and starting, control and power back-up batteries are disconnected and isolated from the hull.

5.33.1. Preparation

The preparation of plate edges shall be accurate and free from blemishes. Parts shall be set up and welded in such a way that contraction stresses are kept to a minimum. Welding shall proceed systematically; each welded joint being completed in proper sequence.

5.33.2. Tack Welding

Consumables for tack welding shall be of the same grade as those used for the final weldment.

Tack welds that are to be retained as part of the finished weld shall be clean and free from defects before being incorporated into the weld.

Care shall be taken when removing tack welds used for assembly to ensure that the material of the structure is not damaged.

Any defects in the structure resulting from the removal of temporary attachments shall be prepared, welded, and ground smooth to achieve a defect-free repair.

5.33.3. Alignment and Fit

Care shall be taken to obtain good alignment of structural members, particularly where such members oppose each other on opposite sides of bulkheads or decks. In such cases, misalignment exceeding half the thickness

of the thicker member shall be considered cause for rejection. When misalignment of structural members is required to be corrected, the member shall be released, re-aligned, and re-welded in accordance with the required welding procedure.

Where discontinuities of structure are unavoidable, suitable brackets or other reinforcement shall be installed. Shims, Liners, Dutchmen, or Sleepers shall not be used for correcting improper fit. All joints shall be properly aligned and closed or adjusted before welding. Excessive force shall not be used in fairing and closing the work. Approved methods for holding the work in proper alignment shall be used during welding operations.

Clamps with wedges or strong backs" used for this purpose shall be suitably arranged to allow freedom of lateral movement between adjacent elements. Welded temporary attachments used to aid construction shall be removed with care. All pitting, gouging, or other damage resulting from improper removal shall be repaired by welding and grinding.

5.33.4. Welding

Structural welding shall be accomplished by electric arc processes to include SMAW, FCAW, and SAW using ABS, USCG, or AWS-approved Welding Procedures. Electrodes, Filler Materials, Shielding Gases and all other miscellaneous welding consumables are to be ABS-approved. The use of electrodes and filler materials of low elongation" shall not be employed on any hull, house or structural member. These include E7024, E6010, and E6011. All welds are to be sound, uniform, and free from slag inclusion and porosity.

Care shall be taken to ensure complete penetration and fusion. Undercutting is to be avoided. Before a sealing run is applied to a butt weld, the clean metal of the original root is to be exposed. All welds not meeting these conditions shall be cut out and re-welded.

Penetrations of deck, bulkhead, shell plating, and major framing shall be reinforced as required to maintain structural integrity. Trunks, coamings, and deck cuts shall have large radius corners. All interferences are to be either scarfed off and re-welded or inserted as per ABS rules to the satisfaction of the Owner's Representative.

All gouges deeper than 3 mm and/or called out by ABS will be welded and ground smooth prior to coating.

All disturbed internal areas and plating and welds shall be prepared to minimum SSPC-SP11 Power Tool Cleaning and coated per Section 5.35.

All inserts to watertight boundaries will be tested to the satisfaction of the Owner's Representative and ABS/USCG. Seam welding will entail air arc gouging or grinding to a smooth and clean existing seam and a minimum of two passes of weld sufficient to re-establish shell plate seam crown. Fracture welding will entail air arcing out and dead ending the fracture, welding from one side, back gouging opposite side, and welding out.

Structural welding shall be carried out in such sequence as to make allowance to compensate for creeping and shrinkage as the work progresses, holding distortion to an acceptable minimum. Steel plating shall be installed using proper welding procedures and sequences to ensure fair plating panels with minimum distortion. The Contractor may not add extra structure to minimize plating distortions due to welding. Locked-in stress shall be avoided or relieved as far as possible in accordance with ABS rules or USCG requirements.

Penetrations of deck, bulkhead, shell plating, and major framing shall be reinforced as required to maintain structural integrity. Trunks, coamings, and deck cuts shall have large radius corners. All interferences are to be either scarfed off and re-welded or inserted as per ABS rules to the satisfaction of the Owner's Representative. Rat holes to be of appropriate size so the weld will go all way around.

5.33.5. Welder Qualifications

Welders and Welding operators shall be proficient in the type of welding to be performed and Certified by ABS.

5.33.6. Welding Procedures

Welding Procedures shall be approved by ABS, USCG or AWS. Approved Welding Procedures are to be made available to the Owner's Representative and ABS/USCG upon request.

5.33.7. Defective Weld Repair

Repairs to defective welding shall be carried out using approved consumables and procedures.

Repairs shall be re-examined for further defects. Care shall be taken when repairing defects that require the application of small weld beads. Tears and scars left on plating after the removal of temporary attachments shall be built up by welding, if necessary, and dressed smooth.

When modifications or repairs have been made that result in openings having to be closed by welded inserts, particular care shall be given to the fit of the insert and the welding sequence.

5.33.8. Inspections

During the Vessel repairs and any time prior to delivery and acceptance, the Contractor shall permit the Owner's Representative, ABS Surveyors and USCG Inspectors free access to Contractor's facility for the purpose of inspecting materials and workmanship. The Owner's Representative and other inspectors, within the limits of their jurisdiction, will have the authority to reject any materials or workmanship that, in their opinion, is defective, unsuitable, or that does not conform to the requirement of the General Specifications. Such material or work is to be replaced at the expense of the Contractor. Prior to the delivery and acceptance, Contractor shall perform required testing of repaired, new, and modified structures to the satisfaction of the Owner's Representative, ABS, and USCG.

All new welds shall undergo inspection as required to meet regulatory standards and the Owner's Representative's approval, in accordance with ABS Guidelines for Non-Destructive Testing (NDT). Inserts to watertight boundaries, framing, structural support, piping etcetera will be tested to the satisfaction of both the Owner's Representative, ABS, and USCG. Any additional inspection requirements, if applicable, will be outlined in the detailed work scope.

All required inspection labor, equipment and materials are the responsibility of the Contractor.

In addition to any requirements of ABS, the Owner's Representative reserves the right to employ radiography or other non-destructive testing (NDT) of welds at a suitable stage of construction. The Contractor is to provide access and assistance as required. Defective welds are to be opened up and examined to determine the extent of defect and subsequently re-welded. All additional time, labor and associated cost needed to rectify unacceptable welds shall be borne by the Contractor.

5.33.9. Acceptance

The finished work is to be clean and smooth, free from weld spatter and flux. All rough edges, sharp corners, weld spatter, and weld scars shall be made flush and ground smooth. All welds, tacks, projections, material associated with fitting, rigging, and staging of steel renewals/repairs shall be removed upon satisfactory completion of the work, flushed and ground smooth, and coated.

5.33.10. Removal of Paint and Insulation Prior to Hot Work

All paint, coatings, and insulation shall be removed in areas where grinding, cutting, welding, or any hot work is to be performed. Removal shall extend sufficiently beyond the heat-affected zone and in accordance with regulatory requirement, to prevent the release of toxic fumes and eliminate fire hazards.

Approved removal methods shall be used to control dust, fumes, and debris. Open burning of coatings is strictly prohibited. Insulation shall be removed in a manner that minimizes fiber or particulate release, with additional controls such as wet methods or containment used as necessary.

All combustible materials and residues shall be cleared from the work area before hot work begins. Adequate

ventilation shall be provided, especially in enclosed or confined spaces, to prevent the accumulation of hazardous atmospheres.

5.33.11. Protecting Adjacent Areas and Sensitive Equipment

The Contractor shall mask off with drop cloths and temporary sheet metal barriers to contain all dust and welding fumes, and prevent their spread into sensitive equipment as well as contain all welding, grinding, and burning operations, cover, and otherwise protect all adjacent areas not being worked from direct heat, burning, slag, and weld splatter.

The Contractor shall remove and dispose of all masking/covers at job completion. The Contractor is responsible for all pick up/clean up following renewals/repairs and any associated disposal of spent materials, scrapped steel, all remaining tank residual fuel, sludge, or accumulation remains in accordance with Federal, State, and Local regulations.

All work areas are to be maintained " broom clean" at the completion of each shift.

The spaces listed below are spaces containing mission-critical electronics and electrical equipment.

- Propulsion Motor Room
- Switchboard Room
- Generator room # 1 & 2
- AMR-1
- Electronics Computer Laboratory
- Laboratory #1
- Science Office
- Wet Laboratory
- i-Met Laboratory
- Chemistry Laboratory
- Hydro Laboratory
- Steering gear room # 1 & 2
- Galley
- Mess room
- Lounge
- Conference room
- Sonar room # 1 & 2
- Aft Control Station
- Pilot House

Before beginning any work in these spaces, the Contractor shall cover all louvers and other openings in the enclosures of the alternators, switchboards, transformers, drive cabinets, controls enclosures, and all other electrical/electronic enclosures with temporary filter media to prevent contaminants from entering the enclosures. Filter media shall allow airflow to permit cooling of equipment through louvers as required. Once new equipment in installed, it too shall have filter media placed over all louvers. The filters shall be checked regularly and replaced if visibly dirty or damaged. The filters shall remain on the enclosures until after all grinding and welding operations are complete and the spaces have been vacuumed clean, when they shall be removed and disposed of by the Contractor.

5.34. Pricing Inclusions

All repair items requiring the provision of a competent person, ventilation, lighting, staging, access arrangements, gas-freeing, safety equipment, temporary services, or other support necessary to execute the work safely and efficiently shall be deemed included in the unit or lump-sum price for the respective work item. No separate compensation will be allowed for such provisions unless specifically identified elsewhere in the General Specifications.

All access openings, access cuts, hull penetrations, temporary removals, inserts, reinstatement, and associated work required to facilitate inspections, repairs, renewals, testing, or coatings specified herein shall be included in the pricing of the applicable work item.

All planned steel renewals identified in the General Specifications shall be included in the Contractor's pricing and executed in accordance with the requirements herein.

The Contractor shall provide pricing for each individual Work Item, all applicable Additional Pricing Tables, and the overall Lot Pricing as specified in Section 6. Pricing shall include all labor, materials, equipment, consumables, supervision, testing, and incidental work necessary to complete the specified scope.

5.35. Coating Repairs

The areas for cleaning, preparation, and painting shall also include spill plate/fishplate at the decks, fashion plates, hawse pipes, rudders, bilge keels, propeller guards, and bulwarks in areas along side of house. These areas shall be incorporated into each paint grouping, as detailed in the repair specification and appendix. The contractor shall provide man lift, crane, or other access to areas as required to accomplish work specified.

The minimum distance between the Vessel's sides and dry-dock shall not be less than 2.5 meter.

If grit to be utilized, it shall be un-used, angular dry silica sand, garnet, or mineral slag and free from iron chloride salts. When grit blasting, the minimum pressure shall be no less than 7.5 bar. The distance from the surface shall be no more than 500 mm and the angle approximately 20 degrees from normal to the surface. The blasting air shall be free of oil and water. After abrasive blasting, areas of bare steel shall be cleaned of dust and blasting debris before commencement of paint application. Any surface prepared to SSPC-10 (SA 2½) shall be free from soluble salt contaminants. After the first touch up coat of paint has been applied over bare steel, the entire hull shall be fresh water rinsed to remove all blasting residues.

The use of ultra-high pressure water blasting is acceptable as an alternative to abrasive grit blasting, provided the paint manufacturer's specification is adhered to.

The Contractor shall ensure the safe storage of paint and bear the responsibility for the safe disposal of empty paint containers, grit, wash water, waste, and debris, in full compliance with all applicable Federal, State, and Local regulations. To ensure accurate monitoring of paint consumption, empty paint cans must be stored in a designated location close to the Vessel. No empty paint cans shall be removed from the work area without prior approval from the Owner's Representative.

All paints shall be high shear mechanically stirred without the introduction of air and applied using the airless spray method. The spray equipment pressure, nozzles, and fan angles shall be in accordance with the paint manufacturer's recommendations. Thinning of paints shall only be completed if approved by Owner's Representative or Owner-Furnished Paint and Coatings Representative and as specified in the Product Data Sheet for that specific product.

At all times during the application of paint, the temperature of the steel shall be at least three (3) degrees Celsius above the dew point of the ambient air, and the relative humidity shall not exceed 85%, or as per the specifications provided by the Paint Manufacturer. The air temperature and relative humidity (RH) must be measured a minimum of four times daily during the painting process. These measures shall be recorded and made available to the Owner's Representative or Owner-Furnished Paint and Coatings Representative.

The Contractor shall work under direction of the Owner's Representative or Owner-Furnished Paint and Coatings Representative in accomplishing cleaning, preparation, and painting of Vessel. The final determination of work scope shall be agreed to after inspection of underwater hull and prior to commencement of cleaning, other than the initial water washing.

Drying times between paint coats are to be in accordance with the paint manufacturer's recommendations.

Paint shall not be applied to surfaces where condensation is present. The specified film thickness shall be supplied and checked periodically in the presence of Owner's Representative or Owner-Furnished Paint and Coatings Representative.

Where necessary, remove all weld splatter and smooth weld seams and sharp edges/ beveling to be done prior to fist coat of paint. All edges in the grit blasted areas shall be feathered smooth.

Special attention shall be given to prevent sags, drips, runs, etc. Wet film and maximum dry film thickness readings shall be spot-checked to assure adequate thickness in accordance with manufacturer s recommendations. Adequate drying times shall be adhered to in accordance with the paint manufacturer's recommendations.

Transducers, speed log, hull and sea chest anodes shall be adequately covered and protected from blasting and painting. All protective devices shall be cleaned, and coverings removed prior to undocking. Transducers to be cleaned and coated according to Owner's Representatives and the Manufacture's direction.

Upon completion of all coating work, Contractor is to provide Owner's Representative with a report detailing the following:

- Paint storage conditions
- Ambient and steel temperatures and humidity during application of coatings
- Paint thicknesses

5.35.1. Paint Log Requirements

The Contractor shall maintain a complete and accurate Paint Log at all times for all coating work performed during the availability. The Paint Log shall be updated daily and shall be available for review by the Owner's Representative upon request.

As a minimum, the Paint Log shall include:

- Date, Time and location of coating application.
- Identification of tank, compartment, structure, or surface coated.
- Coating manufacturer, product name, and batch/lot number.
- Surface preparation method and achieved surface cleanliness standard.
- Ambient conditions, including air temperature, steel temperature, relative humidity, and dew point.
- Dry film thickness (DFT) measurements for each coat and final system thickness.
- Wet film thickness (WFT) measurements, where applicable.
- Date and time start and stop times of each coat application.
- Recoat intervals between coats.
- Name of coating applicator, name of paint supervisor on duty and coating inspector, as well as name of shipyard quality control personnel overseeing the operation.
- Details of any coating repairs, touch-up work, or non-conformances.
- Copies of environmental monitoring records and DFT inspection reports.

The completed Paint Log shall be submitted to the Owner's Representative as part of the final work Project Close-Out Package prior to the Vessel's redelivery. Failure to maintain or submit an acceptable Paint Log may result in rejection of the coating work, including but not limited to withholding of amounts otherwise payable until cure and, if not cured within the stated response window, Owner's performance of the service at Contractor's expense with reimbursement through setoff/back-charge, or other contractual remedies as determined by the Owner.

5.36. Hoisting and Rigging

All hoisting and rigging will be accomplished in accordance with OSHA Hoisting and Rigging – 1926.753 with the following adhered to:

- Vessel equipment is not to be used by Contractor without prior agreement and approval from Owner's Representative. Contractor is to assume all responsibility and liability for suitability and condition of any Vessel equipment used.

Hazards from failure of the rigging and/or collision are identified and addressed. A hazard evaluation should be performed to identify and eliminate these potential hazards. Hazards associated with lifting over personnel and congested areas should be eliminated by either controlling access to the area or by changing the path of the lifting operation.

A qualified designated leader of the Contractor's rigging crew is to be appointed. This leader may be a Foreman or subcontractor specifically designated to perform the leadership functions needed by the rigging crew including:

- The equipment is operated by qualified personnel.
- The equipment is operated safely.
- Preplanned and approved hoisting and rigging instructions are used when necessary and always for critical lifts.
- The equipment found to be unsafe or requiring restrictive use is properly tagged and the equipment custodian is notified of equipment problems.
- A designated leader shall be assigned to all lifts (including forklift operations) that require more than one person.

For critical lifts, the Contractor must provide the Owner's Representative with a rigging and lift plan in advance. The Owner's Representative must agree to the lift plan in advance of the critical lift. However, the Owner's Representative's agreement to the lifting plan does not absolve the Contractor of its full responsibility and liability.

5.37. Inspections, Tests and Trials

All work under this Contract will be subject to the inspection and approval of the Owner's Representative, ABS, and the applicable regulatory bodies.

The Contractor is responsible for properly presenting all work for acceptance inspection, and for giving adequate notice to the Owner's Representative and the applicable regulatory bodies that the work in question is at the proper level of completion and is ready for inspection (Chapter 5.44 " call outs"). Final acceptance may only be determined by the Owner's Representative. Failure of the Owner's Representative to identify materials and work not in accordance with the Contract shall not be deemed as acceptance of such work or materials, nor as a waiver of the provisions of the Contract.

The Contractor shall arrange for the attendance of the Owner's Representative, ABS, and USCG to witness tests and inspections, as required. The Contractor shall provide copies of the tests and inspections results to the Owner's Representative upon completion of each test or inspection.

Boundary welds are to be tested by air pressure not less than 15 kPa (0.15 bar) measured by a manometer or calibrated gauge. Where vacuum box testing is employed, a vacuum of 20–30 kPa is to be maintained during examination. No leakage is permitted.

Dock Trials and Sea Trials, any and all systems opened for inspection or repair, or removed and reinstalled as interferences for other work, shall be tested for proper operation as soon as practicable following completion of all work involving each individual system. Dock Trials and Sea Trials shall prove the operational capability of all systems and equipment affected by the contractual specification items. Dock Trials shall be a minimum of an 8-hour during daytime, during which time operational tests of systems, equipment and components affected by the

contractual specification items will be observed and verified by Contractor and Owner's Representative. Equipment will be run for a time satisfactory to the Owner's Representative, not to exceed 8 hours for any individual system, equipment or component. Any such tests which can be safely performed with the ship drydocked shall be completed prior to re-floating.

Dock Trials will also be accomplished to the satisfaction of the Owner's Representative for any work associated with Critical Systems, which includes, but are not limited to:

- Radars and Radios (both handheld and bridge mounted)
- Vessel Alarm Systems
- Fire Fighting Equipment (Semi portable and fixed)
- Bilge Pumps and alarms
- Main Engines and Propulsion System
- Engine Control System
- Steering System and controls
- Generators and electrical busses and panels
- Fuel oil & Lube oil systems (pumps, purifiers, filters, line & fittings)
- Tow Winch & Tow Pins (if so equipped)

Sea Trials can only commence after satisfaction of Dock Trials. Approximately two (2) days before the end of the Contract period, CONTRACTOR to conduct a one-day Sea Trial. The date for Sea Trials must be approved by the Owner's Representative. Sea Trials will be accomplished to the satisfaction of the Owner's Representative for any work associated with the safe operation and navigation of the Vessel, which includes:

- Radars, lights, and complete navigation equipment package.
- Main Engines and Propulsion System
- Engine Control System
- Steering System and Controls
- Bow thruster
- Automation System
- Scientific Instruments

The Contractor shall submit to the Owner's Representative, no later than one (1) week before Sea Trials, a schedule for testing all equipment the Contractor has worked on. The Contractor must also at the same time submit a list of the Contractor's personnel who will be onboard the Vessel during Sea Trials. The list must include Name, Citizenship, Address and a point of contact to be notified in case of emergency. The Contractor shall provide at least one supervisor for Sea Trials to coordinate testing, adjustment and repair or discrepancies. A technical representative from all subcontractors that performed work on equipment during the shipyard period must be present during Sea Trials and testing equipment specific to their equipment. The Contractor shall bear all costs associated with the shipyard's personnel and technical representative from subcontractors for the Sea Trials.

Contractor shall have sufficient staffing available on-board vessel to correct all contractual work deficiencies found. Sea Trials shall be considered complete and successful upon correction of all deficiencies found during the Sea Trials. The Vessel's personnel will take active part in testing all equipment during the Sea Trials. Contractor will make best attempt to perform all testing during normal working hours; however, it may be necessary to depart early and/or return late.

No Contractor work will be allowed during Sea Trials except as approved by the Owner's Representative.

5.38. Defect Correction

"Defects" shall mean any deficiency, imperfection, fault, or inferiority in the workmanship or materials of work under the Contract that fail to meet the terms of the Contract. "Defect" shall include, but not be limited to, any unsatisfactory vibrations and noise or temperature levels. The "Correction Period" shall begin on the date of redelivery/acceptance and continue for a maximum of two (2) years. If a warranty repair is performed on a specific item during the Correction Period, a new correction period of one (1) year shall apply to that repaired item beginning on the date the warranty repair is completed. If the Vessel is removed from service to repair a warranty defect, the Correction Period shall be extended by the number of days (or partial days) the Vessel is out of service due to such repair. Notwithstanding any action or inaction by the Owner or authorized Regulatory Agencies in connection with Contract, if at any time within the Correction Period any Defect appears, arises, exists, or occurs, the Contractor shall promptly correct the Defect at the Contractor's sole expense to bring the work into compliance with the Contract. The Contractor, however, shall not be responsible for the cost of correcting any Defect to the extent that such Defect is due to ordinary wear and tear. Owner's rights to self-help, back-charge, withholding/set-off, and continued performance during disputes remain in full force as set forth in this RFP and General Conditions for Services Agreements, Attachment B, Clause 13.

The Owner shall notify the Contractor in writing of any Defect for which the Contractor is liable under to this section within thirty (30) calendar days after its discovery. When the Owner discovers a Defect and chooses to pursue correction, the Owner shall promptly give the Contractor written notice. Whenever practical (considering the necessity of keeping the Vessel performing its usual service), the Contractor shall be given an opportunity to inspect and correct the Defect unless the Owner determines that immediate correction by another source is essential for health, safety, environmental, or operational reasons.

The Contractor's Defect correction obligation for OFE or OFM, if any, shall be limited to installation in accordance with the manufacturer's specifications and the Contract.

5.39. Disposition of Removed Equipment and Scrap

Unless otherwise provided, any equipment removed from the Vessel shall be, and become, the property of the Contractor and shall be disposed of as directed by the Owner's Representative. Any equipment removed from the Vessel shall be stored by the Contractor without additional charge. Scrap and/or salvage to be removed from the Vessel during the period of work shall be and become the property of the Contractor unless provided otherwise herein. The value of such scrap shall be taken into consideration by the Contractor in submitting its bid under this Contract. It is the responsibility of the Contractor to dispose of all scrap and waste generated by these repairs in a manner consistent with Federal, State, and Local Regulations.

5.40. Removals of Vessel Components

Should the Contractor require the removal of any parts of the Vessel, including fittings, machinery, or any components, such removal shall be carried out by the Contractor and is subject to both a pre and post-test. All removed components must be replaced by the Contractor to the satisfaction of the Owner's Representative. Any damage resulting from the removal process shall be rectified at the Contractor's expense.

5.40.1. Safeguarding

The Contractor shall be responsible for the removal and reinstallation of any interference that may arise during the performance of the Work Items. Additionally, the Contractor shall ensure the proper safeguarding and storage of all removed interferences to prevent any potential damage.

5.41. Weight Estimate and Weight Control

It is the intent of this Contract that the Vessel shall be re-delivered to the Owner in a stable and upright condition. Maintaining the RV Kilo Moana's cargo-carrying capacity (fuel, scientists, equipment, and consumables) is of paramount importance to the Owner. The Owner expects the Contractor to update the weight control log of all weights added and removed of 50 kg or more, including center of gravity (LCG, TCG and VCG) shift of the Vessel so as not to adversely affect the Vessel's cargo-carrying capacity and so as to prevent the development of excessive permanent list and/or trim. Additionally, the Owner will consider alternative materials and construction techniques that minimize weight growth including, where appropriate, change orders.

5.42. Vessel Condition Video and Clean Up

Upon the Vessel's arrival into the Contractor's Facility, the Vessel shall be toured by the Contractor's Shipyard Superintendent/Project Manager, the Owner's Representative, and the Vessel's Staff. The purpose of the tour is to determine the state of cleanliness to be expected of the Vessel at the completion of the Performance Period. The Contractor shall prepare a videotape showing the existing interior and exterior condition of the Vessel and in all intended work areas prior to conduct of work, except for work intended in tanks and voids. A copy of the tape shall be provided to the Owner within two (2) days after receipt of the Vessel from the Owner.

The Contractor shall, at all times, keep the entire Vessel free of accumulation of waste material generated during the performance of the Contract work. All work sites shall be maintained " broom clean."

The contractor will install and maintain adequate deck, bulkhead, and overhead protection in all affected spaces. At the completion of the repair period, any remaining rubbish generated during the Contract shall be removed from the Vessel. The Vessel shall be redelivered to the Owner in the same state of cleanliness as when the Vessel arrived at the Contractor's Facility, unless otherwise specified by the Owner's Representative.

5.43. Certification and Acceptance - Fees and Rules

The Vessel shall be repaired or modified under survey of ABS and the USCG. All fees entailed in securing and certification, including associated inspection fees and expenses of Regulatory Agency Inspectors will be paid for by the Owner. Should a certification of any part of a Work Item be failed by a Regulatory Agency or Classification Society due to fault of the Contractor and subsequent certification is required by a Regulatory Agency or Classification Society, the cost of any additional certification will be borne by the Contractor alone. The Owner will be responsible for submitting required plans and calculations to ABS. These plans will include an estimate of the weight change, calculations of resultant longitudinal strength, and plans showing the final configuration of the Vessel. Unless otherwise indicated by these General Specifications, the Contractor is to comply with the following rules and regulations:

The Vessel is classed ABS: ✠A1, ✠AMS, Load Line, Ice Class D0, ✠ACCU UWLD by the American Bureau of Shipping, holds a certificate of admeasurement for 3060 gross tons, and complies with USCG 46 CFR Subchapter U, USCG 33 CFR, SOLAS, and MARPOL. All work performed by the Contractor shall be such that these documents may remain in force. To this end, the Rules of the American Bureau of Shipping for Steel Vessels and the U.S. Coast Guard Regulations for Inspected Vessels shall apply. All materials furnished by the Contractor shall be in accordance with the rules of the American Bureau of Shipping and the U.S. Coast Guard. All work performed on the Vessel shall be in compliance with the requirements of the various regulatory bodies, rules, and standards listed below in force at the time of contract signing insofar as they may have jurisdiction:

- American Bureau of Shipping (ABS).
- United States Coast Guard (USCG).
- United States Public Health Service (USPHS), Publication No. 393.
- Department of Health and Human Services, Vessel Sanitation Program, Construction Guidelines.

- Department of Health and Human Services, Vessel Sanitation Program, 2011 Operations Manual.
- Underwriters Laboratories, Applicable Standards for Electrical Equipment (UL).
- IEEE Standard 45, Recommended Practices for Electrical Installations.
- Department of Labor, Safety and Health Regulations for Longshoring.
- World Health Organization, Guide to Ship Sanitation
- American National Standards Institute (ANSI).
- Steel Structures Painting Council (SSPC).
- Applicable local/state regulations having jurisdiction.
- Occupational Safety and Health Administration (OSHA).

Where the standards described in these specifications and drawings are less than the standards of any of the above Regulatory Agencies, the requirements of the regulatory body shall be met.

Where the standards described in these specifications and drawings exceed the standards of the above Regulatory Agencies, the standards of these specifications and drawings shall apply.

All necessary certificates and/or documents covering the approval and indicating compliance as a result of the contracted work shall be obtained by the Contractor and provided to the Owner in electronic (PDF) format and two (2) paper copies.

The Contractor shall promptly furnish to the Owner a copy of all correspondence to and from any Regulatory Agencies.

5.44. Scheduling "Call Outs" and Check point

The Contractor is responsible for timely scheduling Call Outs with a minimum forty-eight (48) hours advance notice to the Owner's Representative and appropriate Regulatory Agencies and/or surveyor(s). All scrap, scale, and debris generated by the Contractor shall be removed prior to any Call Out checkpoint inspection. A complete visual inspection of the subject area for the Call Out shall be carried out by the Contractor's Quality Assurance (QA) personnel prior to the official Call Out, including all butt and fillet welds. All shell welds shall be thoroughly cleaned and staging shall be provided for full access thereto.

The Contractor's QA personnel shall complete and sign a written pre-inspection checklist for each Call Out, identifying the date, time, scope, and personnel performing the inspection. The signed pre-inspection checklist shall be included as part of the Call Outs/checkpoint log and made available to the Owner's Representative.

When the Contractor schedules a Call Out, it is expected that the Owner's Representative and/or Regulatory Agencies will find no deficiencies. All staging shall be included and maintained until completion of the work for inspections by the Owner's Representative and Regulatory Agencies. Upon completion of all work in the tank and after inspection by the Owner's Representative, the Contractor shall immediately close up the tank manhole lid(s) using all new Contractor-furnished grommets and gaskets.

Note: Formal written checkpoint reports shall be provided to the Owner's Representative no later than forty-eight (48) hours after completion of the test or inspection (Call Out).

The Contractor shall maintain a detailed chronological " Call Out/checkpoint" log, which shall include at a minimum:

- Subject
- Date and time call out was issued
- Date and time of actual inspection
- Attendees
- Findings

- Signed QA pre-inspection checklist

The Call Out/checkpoint log shall be included in the weekly updated GANTT Chart schedule.

The Contractor is prohibited from scheduling Call Outs or checkpoints during the weekly progress meeting or daily toolbox talk. If a checkpoint is not accepted or attended by the Owner's Representative or a designated representative by the Owner's Representative in their absence, the Contractor is required to and shall record and track the checkpoint as a non-conformity.

5.45. Compartment Close-outs

After all work on the Vessel is substantially complete, each compartment in the Vessel affected by the contracted work shall be inspected with an Owner's Representative present to check fixtures, lighting, HVAC controls, cable penetrations, labeling, coatings, joiner doors, outfitting, and other miscellaneous items in the compartment. A preliminary inspection shall take place prior to installing or replacing the overhead panels or false bulkhead.
When a compartment has been proven satisfactory to the Owner's Representative, the compartment shall be "closed-out" by locking or otherwise preventing general access to the space. Completion of all compartment close-out inspections shall be a prerequisite to acceptance of the vessel by the Owner for re-delivery.
The status of compartment close-outs shall remain and be an item of discussion at the weekly progress meetings.

5.46. Joint Condition Survey

Upon completion of the contract, a final Joint Condition Survey (JCS) of those areas of the Vessel impacted by the contracted work will be conducted by the Owner's Representative and the Contractor. The purpose of this preliminary survey is to establish an understanding between the Owner and Contractor, of the extent of work required to complete the Contract on time and develop an initial punch list of deficiencies requiring correction or cleaning (primarily in areas where the Contractor has completed work) prior to the Owner taking acceptance. Areas where the amount of work required to complete the Contract is excessive will not be listed on the preliminary survey. The Contractor shall prepare a report of this preliminary survey and provide a copy to the Owner within (12) hours. The report shall also be prepared and part of the following GANTT Chart Schedule and shall have an estimated completion date for each item listed.
The Owner and the Contractor will continually monitor and revise the punch list to determine what items have been completed, and will add items to the punch list in those areas where work was not completed. Based upon the JCS and the punch list, an agreement shall be reached between the Owner's Representative and Contractor, prior to acceptance of the Vessel, as to the extent of correction of deficiencies and completion of cleaning required.
Any major uncorrected contract-related deficiency affecting the safety, navigation, or the immediate efficient use of the Vessel for its intended service will be cause to reject acceptance of the Vessel. The existence of a large number of uncorrected minor deficiencies will likewise be cause for rejection until their number has been reduced to a level acceptable by the Owner's Representative. The cost of such delay shall be at the Contractor's expense.

5.47. Acceptance

Before work in accordance with this Contract and these General Specifications will be accepted and considered complete, the Contractor shall remove all gear and equipment from Vessel, together with all scrap, waste material and litter, and shall leave the Vessel thoroughly cleaned, dry, and cleared of debris throughout to the Owner's Representative's acceptance.

5.48. Completion of Work

The Contractor shall complete all contracted work by 1800 hours on the work completion date with the Vessel clean and free of defects and deficiencies and the final JCS punch list work completed. The Vessel shall be complete and ready for service, afloat pier side, with all its areas (related to contract work) thoroughly cleaned and free of all dunnage and dirt. Potable water tanks shall be filled to capacity (accomplished by the Owner's crew) and any

diesel oil or similar fluids removed from the vessel to accomplish the contracted work, which would otherwise have been retained by the Owner, shall have been replaced by the Contractor.
A timetable for completion of work on a revised final Joint Condition Survey punch list will be agreed to between the Owner and Contractor.
The Contractor shall provide, prior to acceptance, the Vessel with new Coast Guard COI certificate and ABS special survey document stamped and signed. Approved stability guidance necessary for the Vessel to commence an operational schedule.

5.49. Project Close-Out Package

Upon completion of all work, the Contractor shall provide the Owner's Representative with a detailed Project Close-Out Package, which will include, but is not limited to, the following items:

- Title page with performance dates.
- Table of Contents.
- Detailed invoice in accordance with the Owner-Furnished Repair Specification and any subsequent change orders. (Note: UHMC will redact all pricing information on the copy retained onboard the vessel.)
- Final Production Schedule, all-inclusive GANTT Chart, also including RCC and damage repair work.
- Detailed descriptions of the work completed, and internal Work Orders.
- All engineered Drawings related to work accomplished and performed by the Contractor.
- Steel plate certificate with heat numbers and location of where the steel was inserted to the Vessel.
- All signed RCC including request date, Issue date, start day and completion date.
- All HSEQ documentation, including logs from the availability period. Delivered in a well-organized format, including but not limited to Job Safety Analyses, Accident, Near Miss, Fires, Damage reports.
- All Condition Found Reports (CFRs), Inspection Reports, QA checks and sing-offs, pre/post measurements and performance characteristics, material certificates, and environmental conditions (ambient temperature, dew point, and weather) during coating work.
- Test and trial results and findings.
- Photos of pre/post work for significant items.
- Weight Moment Report
- Sewer, water, electricity usage Log
- Ballast water and Oily waste water documents
- Any report or documentation requested in the specific work items, shall also be part of the Project Close-Out Package.
- Lifting and Rigging planes
- Warranty documentation
- All Ultrasonic Testing (UT), Non-Destructive Testing (NDT), and other inspection reports, test results, certifications, and supporting documentation, shall also be part of the Project Close-Out Package.

The Project Close-Out Package must be provided to the Owner's Representative in both printed format (two copies) and electronic format. (ref 5.20 Documentation)

6. General Shipyard Services Requirements

6.1. General Services

The Contractor shall provide and maintain all general support services necessary to accomplish the work defined in this Contract line item, as well as all other dry-dock critical work. These services include, but are not limited to, the erection of staging, furnishing of portable lift equipment, provision of temporary lighting and ventilation, and crane and rigger support. All services specified in this section shall be made available within eight (8) hours of the Vessel's arrival at the Contractor's facility. The Contractor to make up connections and provide this service and services shall be disconnected only as required to shift or reposition the Vessel and shall be restored within one (1) hour after completion of such operations. The Owner's Representative shall be notified a minimum of (24) hours in advance of any scheduled service disruption. Temporary services shall be maintained continuously throughout the entire Availability, including any authorized extensions not resulting from Contract modification. Offerors to appraise the Vessel's connections during pre-proposal ship check to preclude any problems and to estimate for any foreseen or unforeseen problems accordingly. The Contractor shall be responsible for all disconnections and reconnections necessary to support specific work items. The Vessel's crew will identify the applicable connection points for all services.

The Contractor shall provide the following utility services, at a minimum:

- Sea Water (4 bar, and 600 L/min) for refrigeration, air conditioning, and sanitary purposes – available while Vessel is in Contractor's facility.
- Pressurized water supply to fire main, minimum of two locations, (minimum 7 bar).
- Potable fresh water hookup to ship (max 4 bar).
- Use Contractor's mooring lines for the duration of the period in the Contractor's facility.
- Line handlers to and from its lay berth, dry dock/graving dock, and maintain lines during the period in the Contractor's facility.
- Crane and forklift services, including qualified operators, when requested by the Owner's Representative, to support the Vessel's crew and the Owner's personnel, contractors, vendors, and technical representatives throughout the Availability. Such services shall be provided in a timely manner so as not to delay the Work or Owner-directed activities and shall be included in the Offeror's proposal, unless otherwise specified.

These services shall remain fully operational and accessible while the Vessel is in drydock, during any periods when the Vessel is temporarily re-floated, and while moored pier-side at the Contractor's facility. Temporary disruption of services shall occur only when authorized by the Owner's Representative and shall be restored promptly upon completion of the affected operation.

6.2. Gangways

Contractor shall provide a safe and convenient means for boarding the Vessel at all times. Gangways without completely enclosed sides shall have a safety net installed below in accordance with the IMO Guidelines for Construction, Installation, Maintenance and Inspection of means of Embarkation and Disembarkation in conjunction with the Safety of Life at Sea (SOLAS) regulation (Means of Embarkation on and Disembarkation from Ships).

A minimum of two (2) gangways shall be provided throughout the duration of the drydock, preferably one on the port side and one on the starboard side, and if possible one to be located on the forward part of the vessel and the other on the aft section, but specific locations to be discussed with Owner's Representative prior to installation. Gangways shall have a nonskid coating on the walking surface and landings shall have adequate protection for coatings where sitting on the vessel.

6.3. Furnish Pumping equipment

The Contractor shall furnish all necessary pumping equipment, including pumps, hoses, fittings, and associated accessories, as well as all labor required to support dewatering operations. This equipment shall be used to pump out and maintain dry the following spaces and tanks, as required throughout the Availability:

- All machinery spaces
- Any spaces in which access openings have been created
- Oily waste tank (Port)
- Waste Oil tank (Port)
- Ballast tanks

Pumping shall be performed as necessary to support ongoing industrial work and to maintain safe and compliant conditions aboard the Vessel. Equipment shall be maintained in a fully operational state and be readily available at all times while the Vessel is at the Contractor's facility.

6.3.1. Docking Plugs

The Contractor may drain the ballast tanks using the appropriate docking plugs. The Contractor shall maintain a log of the removed docking plugs, including their unique identification number, for each plug's location. The Contractor shall ensure the safe custody of these plugs until their reinstallation and testing.

6.4. Drain and Overboard Discharge Control During Availability

The Contractor shall extend all drain and overboard discharge pipes as soon as possible after the Vessel is drydocked and prior to completion of Work Item 2027-02 (48 hours) to ensure that water and other discharges do not run down the Vessel's side during the entire Availability. Pipe extensions shall be of the same or greater internal diameter as the existing piping and shall not introduce any restriction to flow. All temporary extensions shall be maintained in effective condition throughout the availability period and removed upon completion of the work unless otherwise directed by the Owner's Representative.

Failure to comply with this requirement shall constitute a breach of contract, and may result in corrective actions, including but not limited to withholding of amounts otherwise payable until cure and, if not cured within the stated response window, Owner's performance of the service at Contractor's expense with reimbursement through setoff/back-charge, as specified elsewhere in this contract.

6.5. Bilge Water and Slops Disposal

The Contractor shall pump, remove, transport, and lawfully dispose of all bilge water, oily mixtures, slops, waste oil, and other liquid wastes from all Vessel bilges, drain wells, machinery spaces, tanks, and other collection areas as necessary throughout the period in the Contractor's facility. This includes all liquids present upon the Vessel's arrival, as well as those generated by non-contractor activities during the Availability. Estimated quantities include approximately 3,500 liters (~900 gallons) from the Waste Oil Tank (4-84-0), 4,000 liters (~1,000 gallons) from the Oily Waste Tank (4-87-0), and 2,000 liters (~500 gallons) of oily waste from the port and starboard steering gear room bilges.

The Contractor shall be solely responsible for the collection, handling, storage, transportation, and disposal of all waste generated by its own operations. Bilges and drain wells shall be maintained free of water, oil, and other contaminants throughout the Availability. All waste handling and disposal shall comply with applicable federal, state, and local environmental regulations, including MARPOL Annex I. Signed and stamped disposal manifests or other documentation shall be provided to the Owner's Representative no later than within 24 hours of removal from the Vessel.

6.6. Oil Retention Booms

The Contractor shall deploy and maintain oil retention booms as necessary during any transfer operations involving oily liquids, fuel, or bilge slops. The Contractor shall ensure that all oily liquids, bilge water, and slops are properly contained and disposed of in compliance with MARPOL, USCG and Environmental Protection Agency (EPA) and all applicable local, state, and federal regulations.

The boom shall be of sufficient length to totally enclose the Vessel and anchored to permit clean up, whether moored or drydocked. Drydocks or graving docks fitted with an USCG approved oil containment systems may be accepted in lieu of an oil boom, as allowed by local, state, and federal authority.

6.7. Hydro Carbons and Ballast Condition Report

The Contractor shall submit a CFR on a weekly basis to the Owner's Representative to include attached receipts identifying the source, quantity, contents, and final disposal activity of all oily liquids and ballast disposed of during the Availability.

The Contractor will furnish the Vessel and the Owner's Representative with a signed and stamped certificate of received liquids from the Vessel for the Oil Record Book and Ballast Log. Contractor to provide one certificate for Oil/Hydro Carbons and a separate certificate for Ballast water. The certificates will describe location/tank, quantities, date, and time and the Contractor's treatment or disposal of the liquids. The Contractor's treatment or disposal shall comply with MARPOL regulations.

At the conclusion of the Vessel's stay, all bilges shall be left free of water, oil, grease, and debris, and maintained in a clean, dry condition upon departure from the Contractor's facility.

6.8. Sewage Collection

The Contractor shall provide sanitary and sewage disposal services with a capacity of approximately 12 m^3 (3,000 gallons) per day. The disposal system shall be of sufficient capacity to allow the Vessel to operate all of its sanitary facilities continuously, 24 hours per day, while the sewage collection system is inoperable. It is likely that there will be a need for pumping sewage at around 12 m^3 per week. Regardless, Contractor should be prepared for a higher volume.

The Contractor shall provide a cost per gallon for the collection and disposal of sewage waste.

Under no circumstances are the Contractor or Shipyard personnel to use Vessel-installed sanitary systems, including sinks, toilets, and associated plumbing, unless expressly authorized by the Owner's Representative. Failure to uphold these conditions may result in corrective actions, including but not limited to withholding of amounts otherwise payable until cure and, if not cured within the stated response window, Owner's performance of the service at Contractor's expense with reimbursement through setoff/back-charge, as specified elsewhere in this contract.

6.9. Portable Toilet Facilities

The Contractor shall provide at least four (4) portable toilet units and washing stations for Vessel personnel and Shipyard workers throughout the Availability. These units shall be positioned at locations on or preferably next to the Vessel, convenient to the ship's berthing and main deck areas and shall be accessible by crane for servicing.

The Contractor shall perform pumping out, cleaning, and resupply services at least twice weekly as a minimum, with daily cleaning of the units. However, the Contractor is responsible for monitoring usage, environmental conditions, and maintaining sanitary, odor-free conditions at all times. Service frequency shall be increased as necessary to ensure cleanliness and occupant comfort, at no additional cost to the Owner.

The Contractor shall respond promptly to any requests for additional servicing from the Vessel's crew or the Owner's Representative.

Failure to maintain sanitary conditions or to provide adequate servicing frequency may result in corrective actions, including but not limited to withholding of amounts otherwise payable until cure and, if not cured within the stated response window, Owner's performance of the service at Contractor's expense with reimbursement through setoff/back-charge, as specified elsewhere in this contract.

6.10. Garbage and Trash Disposal

The Contractor shall provide a trash and garbage container situated on the fantail for the disposal of garbage and debris generated by the Vessel's crew. The container shall be emptied as frequently as necessary to prevent overflow and shall be maintained in a clean condition to prevent health hazards.

All garbage and debris shall be disposed of in accordance with applicable federal, state, and local laws and regulations.

This requirement is in addition to the removal and proper disposal of trash and debris generated by the Contractor during the Availability.

All trash containers on board the Vessel must be emptied at least every Friday before the conclusion of dayshifts.

6.11. Fire Protection and Fire Watch

The Contractor shall provide qualified fire watches whenever burning, cutting, welding, or other hot work operations are being performed. Fire watches shall be assigned in accordance with applicable safety regulations and remain on station for the full duration of the hot work, including post-work monitoring as required.

Fire watch personnel on fire watch duty will have no other duties other than to watch for fire hazards.

The Contractor shall ensure that fire watch personnel are equipped with suitable fire extinguishing equipment, including a charged fire line or portable fire extinguishers, appropriate for the type of fire that may arise.

Fire watch personnel shall be trained in the proper use of this equipment and familiarized with emergency and evacuation procedures.

If the Vessel's fire main is undergoing repairs or does not have a charged fire main system, the Contractor shall provide a separate charged water hose (at least 1-1/2 inches in diameter) with an all-purpose nozzle. This hose can be supplied by a shore-based water source or portable pump. Fire watch personnel shall remain on site for a minimum of 30 minutes after completing hot work, during break periods, or when work is disrupted to ensure no fire hazard exists.

In addition to task-specific fire watches, the Contractor shall maintain a continuous 24-hour fire watch throughout the duration of the Vessel's Availability, including non-working hours and weekends. This watch will be responsible for monitoring all active and recently completed work areas for fire hazards and ensuring general fire safety aboard the Vessel.

6.12. Shore Power

The Contractor shall provide the Vessel with two (2) 400-amp, 480-volt, 60 Hz, 3-phase shore power sources for the entire duration of the Vessel's stay at the Contractor's facility. Shore power shall be available upon the Vessel's arrival and shall remain continuously available throughout the Availability, including during dry-docking, shifting,

and pier-side periods. Contractor to provide appropriate grounding cables to port and starboard hull included with shore power connection.

6.13. *Optional Service – Housing

The Contractor shall provide the Owner's Representative with a fully furnished, clean apartment for the duration of the drydock period including one (1) week before and one (1) week after. The apartment is to be within close range to the Contractor's shipyard, and amenities such as grocery stores, restaurants, etc. The apartment is required to have, but not limited, to the following:

- Kitchen with full-size fridge and means of cooking
- King size bed
- Washer and dryer for clothes
- Free Wi-Fi
- Free Parking
- Quiet room
- Exercise room
- Safe and Secure neighborhood

The Contractor shall also provide housing for up to (6) of the Vessel's officers and crew for the duration of the drydock. The crew's housing can be shared housing for several crew members as long as they have individual bedrooms. For shared crew housing, the housing/apartment is required to have more than one full bathroom.

6.14. Shipyard Parking

The Contractor shall provide up to six (6) designated, secure parking spaces located in close proximity to the Vessel for the duration of the Availability. These parking spaces shall be easily accessible, well lit, adequately secured, and free from hazards. The parking area shall be clearly marked and suitable for use by the Vessel's crew and the Owner's personnel.

The Contractor shall inform the Vessel's crew of the parking location and any access instructions prior to the Vessel's arrival at the Contractor's facility. The parking spaces shall be available for the exclusive use of the Vessel's crew and the Owner's personnel and must be kept clear of grit-blasting or painting work to avoid damage to any of the vehicles.

The Contractor shall also provide car covers for the Vessel's crew's and the Owner's personnel's vehicles on a loan basis, when necessary. If the Contractor fails to provide car covers, Contractor shall be responsible for the repair(s) (e.g., re-painting) of any damage caused by grit-blast or paint from the Contractor's shipyard. The Owner shall have the right to select the repair facility, and the Contractor will be liable for the repair costs. If the Contractor does not directly pay for repairs, the Owner may deduct the costs from the Contractor's progress payments without liability.

The parking facilities shall be available no later than the delivery of the Vessel to the Contractor and remain accessible for up to two (2) days after redelivery of the Vessel to the Owner.

6.14.1. *Optional Service – Personnel Transportation

The Contractor shall provide, as an optional service, daily transportation between the Owner-designated lodging accommodations and the shipyard for Vessel's crew, the Owner's personnel, and the Owner's subcontractors and technical representatives. Daily transportation shall include a minimum of two (2) round trips per day at times coordinated with the Owner's Representative.

The Offeror shall provide separate pricing for this service as follows:

- Lot Price: Daily transportation service providing two (2) round trips per day.

- Unit Price: For each additional one-way trip requested by the Owner's Representative outside of the two (2) scheduled daily round trips.

The Owner reserves the right to accept or decline this service, in whole or in part, and to order additional trips as required during the availability. Payment for additional trips shall be based on the quoted unit price.

6.15. Internet Access for Ship

The Contractor shall provide a high-speed internet connection for the Vessel for the full duration of the Availability. The internet connection shall be stable, secure, and sufficient to support the Vessel's operational needs.

The shipboard termination point for internet access shall be either copper with 1Gbit connectivity, or armored single-mode fiber terminated with an LC connector with 1Gbit connectivity locally and internet speeds of at least 100Mbit up/down installed at a location amidships on the 01 Deck.

The Contractor is responsible for ensuring that the internet connection is reliable and secure, with sufficient bandwidth to meet the operational requirements of the Vessel throughout the Availability.

6.16. Owner's Representative Shore-side Office, Equipment, and Amenities

The Contractor shall provide a shore-side office or trailer for the Owner's Representative and the Owner's personnel to use throughout the Vessel's stay at the Contractor's facility. The office or trailer shall be located in close proximity to the Vessel and shall be equipped with the following amenities to support the Availability:

- Physical separation from the Contractor's office space.
- Equipped with a minimum 3 large-size desks, desk chair, side chair, electrical outlets, trash cans.
- High speed internet connections with Wi-Fi, following the same requirements as Section 6.15.
- One (1) all-in-one printer, color print, fax and scanner, inclusive of providing toner, paper and necessary maintenance. Printer shall be capable of copying up to 11" x 17" paper, and includes reduction and enlargement modes and sorting and grouping features.
- A lockable filing storage for paperwork.
- Lighting, heating, and cooling for a comfortable working environment.
- Running water for drinking and handwashing.
- Restroom facilities (head).
- Kitchenette with basic appliances (e.g., microwave, refrigerator, coffee maker).
- Daily janitorial services (cleaning, trash removal, and sanitary supplies).

The office or trailer shall be available for the full duration of the Availability, including after-hours or non-working shifts, and ensuring continuous access to necessary resources. The office must be locked and secure, with unrestricted access for the Owner's Representative and other authorized personnel. The Contractor shall ensure the office space remains clean and well-maintained throughout the duration of the Availability.

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Work Items 2027-01, Haul and Undock Vessel

1. General Scope

Contractor to safely drydock the Vessel for the period of time sufficient to complete all Work Items requiring underwater work and safely undock the Vessel when required to do so. The Vessel's beam is 26.8 m. The Vessel will have an approximate draft of 7 m (~23 feet) at the time of arrival. The actual draft will vary depending on the amount of fuel and ballast in the Vessel's tanks. The Contractor is to schedule a Survey Planning Meeting with the local ABS Surveyor and the Owner's Representative as soon as practical after the Vessel arrives at the Contractor's facility and to provide at least 24 hours notice to the Owner's Representative . The Vessel will plan on arriving at the Contractor's facility with minimum fuel, however, Contractor should anticipate that there will be at least 15,000 gallons of diesel #2 in the fuel tanks that will need to be removed or transferred to another storage tank to accommodate tank inspections. If the Contractor intends to perform all work in a dry dock, with no part of the work scheduled for any lay berths, the Contractor must state so in their proposal.

Prior to departure from a lay berth, and after taking on fuel, lubricating oil, and potable water, the draft will likely be around 8 m (~26 feet).

A lay berth must accommodate at least an 8.5 m (~28-foot) draft at the Lowest Astronomical Tide (LAT) with our under-keel clearance requirements for the sonar systems. The Contractor shall ensure that the ABS Surveyor provides a Dry Dock Inspection Report to the Owner's Representative prior to re-floating.

2. Reference

2.1. 07084-07-004 DOCKING PLAN

2.2. See also work item # 2027-10 Bow Thruster Maintenance & Shaft Replacement

2.3. ABS Requirements - Drydocking Survey

2.4. ABS Requirements -Special Periodical Survey

2.5. GPA 00199-111 Series of drawings

3. Performance Criteria/Deliverables

The Contractor shall:

1. Review the completed dry dock build with the Owner's Representative prior to drydocking the Vessel.
2. Hold both a Survey Planning Meeting with a local ABS Surveyor and Owner's Representative and a Planning meeting with the Contractor's Shipyard Project Manager, Dock Master, Dive Supervisor, and Owner's Representative prior to drydocking and prior to re-floating the Vessel.
3. Provide a Weekly Status Report for Oily Waste/Waste Oil Disposal to the Owner's Representative.
4. Complete a Dry Dock Inspection Report.

4. Requirements

The Contractor shall:

- Provide tugs, lines, Docking Master, line handlers, warping machinery, positioning crews and devices as required for safely docking and undocking the Vessel.
- Provide a certified dive team trained and well experienced in dry-docking of vessels. Divers are to be used for dry-docking and for re-floating of the Vessel.
- Disconnect and reconnect temporary services (e.g., shore power, water, air, sewage) as needed.
- Install and remove interim hull closures, where required.
- Provide a stable working platform to ensure the entire underwater hull is accessible for inspection, cleaning, painting, and repair.

- All surveys, cleaning, painting, and underwater repairs specified in this Contract shall be initiated as soon as possible following the Vessel's arrival in dry dock.
- The Contractor shall regularly clean the drydock area and properly dispose of all trash, scrap, debris, dirt, and garbage generated during the dry-docking period in accordance with all applicable laws and regulations.

5. Outline Of Work

5.1. Contractor shall conduct a pre-docking inspection of the underwater hulls to assure divers employed are familiar with the layout of transducers and other sensitive areas which may be subject to damage during the docking and undocking of the Vessel.

5.2. The Vessel will be docked in the "Secondary" block position (as noted in the Docking Plan, Reference 2.1) for the 2027-yard period.

5.3. While landing the Vessel on the blocks, the Contractor's divers are to ensure that in addition to good keel contact, that the blocks do not impinge or rest on any sonar faces, transducers, or on any other sensitive structure. There is a considerable financial investment in these components that would be damaged by sitting on the blocks. Blocks shall not block entry to or rest upon any sea chest.

5.4. Upon completion of all work requiring the Vessel to be drydocked, including adequate dry times for all exterior coatings applied, safely undock the Vessel.

5.5. As soon as practical, following completion of required drydock work, the Vessel is to be refloated and provided lay berthing as required. Flooding of the dock shall be secured just prior to the Vessel lifting off the blocks, long enough for an inspection of sea valves, shaft packing, transducers, and bow thruster to occur. When the Contractor's shipyard Project Manager and the Owner's Representative are satisfied the hull is tight, continue the undocking of the Vessel. The Contractor's divers are to assure hull and all transducers are clear of obstructions prior to and while leaving drydock.

6. Blocking and Docking

Prepare the block arrangement and drydock and undock the Vessel in accordance with the Docking Plan (reference 2.1), Secondary block position. This drawing reflects the required blocking arrangement for docking, accounting for the bow thruster and transducer penetrations.

Transducer Protection and Special Handling

Special precautions must be taken to protect scientific and navigational transducer faces, ensuring ample working space around these areas. Diver(s) shall be provided during docking and undocking/re-floating to ensure the multibeam domes and transducer faces remain clear of the blocking.

Extreme care shall be taken to prevent hull damage during the docking process. This includes using soft wood caps and confirming with divers that blocks are contacting the hull simultaneously.

Blocks shall be fabricated from reinforced concrete with sound hardwood caps. Blocks must be in good condition without excessive checking. Hardwood portions of blocks shall be capped with new or usable soft caps. All block components shall be securely dogged or lagged together. Block height shall be a minimum of 1.5 meters to accommodate work items and must allow for all removals, installations, and repairs specified in these specifications. For information only, the Vessel was docked in the Primary block position in 2025.

CHECK POINT - Examination of Dry-dock Build

Prior to docking the Vessel, the Contractor shall inspect the completed drydock build with Owner's Representative to confirm that it has been completed in accordance with the specifications outlined in this section.

7. Documentation

The contractor shall provide certification for the dry dock, demonstrating the capacity to dock the RV Kilo Moana.

8. Hull Inspection

Within 24 hours of dry-docking and once the dry-dock floor is dry, the Contractor shall provide a man-lift and labor assistance to allow ABS and the Owner's Representative to visually inspect, mark, and record shell plate welding from keel to the Fishplate. This inspection shall include any eroded plating, castings, and welds, as well as any voids or spaces that are only accessible when the Vessel is dry-docked.

- All findings must be reported to the Owner's Representative with a CFR in writing within 48 hours of the Vessel's dry-docking.
- The Contractor shall prepare and provide clean copies of the referenced Shell Expansion Drawing.

CHECK POINT - Inspection of shell plating

9. Undocking/Re-floating

The Contractor shall undock the Vessel upon completion of all repairs, ensuring all work is inspected and approved by ABS or Owner's Representative. All temporary supports, blocking, and equipment used during dry-docking shall be removed prior to undocking. The Contractor shall coordinate undocking operations to ensure safe and efficient removal from dry dock. All skin valves shall be inspected before re-floating and again checked prior to shifting from dry dock. Any re-dry docking will be at the sole cost of the Contractor. The drain valve for the 38 kHz transducer foundation should be opened prior to the vessel being raised. The valve may be closed prior to the undocking if the head tank is to be filled at that time. Operation of the valve is to be coordinated with the Owner's Representative.

Provide a certified dive team trained and well experienced in dry-docking of vessels.

9.1. **Checklist for flooding drydock:**

9.1.1. Check Bow Thruster space:

a. Inspect BT Packing. Recheck packing when operating BT on way to lay berth.

b. Check Uncontaminated SW lines, exercise butterfly (1) leave in open position.

9.1.2. Check Port Canard room (check for leakage from Canard).

9.1.3. Inspect Port Sonar Rm (Underneath Sewage Flat). Exercise motorized butterfly sound velocity pump (2), leave in closed position.

9.1.4. Inspect STARBOARD Sonar Rm (Underneath Chill Box Dry Stores). Check 38 kHz system drain valve. Must be in closed position.

9.1.5. Inspect both Port and STARBOARD Pump Rooms.

a. Exercise fire main suction (9 & 12), leave in open position.

b. Open sea suction vent (7 & 10).

c. Exercise main sea suction (5 & 6), leave open.

d. Port Side - Open HPR 418 drain valve and check for water coming out, then close valve.

e. Check speed log valve.

9.1.6. Inspect Port and STARBOARD Shaft Alleys

a. Check stern tube seals.

b. Open Stern Tube Supply (11 & 14).

c. Open Stern Tube Vent (13 & 16).

d. Stern Tube Drain Valve (15 & 18) closed.

Numbers in parentheses above, represent physical valve tags.

10. Dry Docking Report

Complete the Dry-Docking Report and provide four (4) copies to the Owner's Representative within 72 hours of the Vessel being undocked or prior to leaving the Contractor's facility, whichever is earlier.

CHECK POINT - Dry-Docking Report

11. Miscellaneous

A. Contractor will be responsible for arranging for the ABS and/or U.S. Coast Guard inspections as required, along with notification to Owner's Representative. (see "Call Out" Chapter 5.44)

B. The Contractor may be required to transfer or discharge ballast and/or fuel prior to docking in order to trim the Vessel. The Vessel is fitted with 2 operational Ballast Water Treatment Systems (BWTS) that must be used during all ballasting operations, one system per hull. The Vessel's officers will be the primary operators of this system. It is the sole responsibility of the Contractor to manage the timing of the docking and undocking evolutions given the constraints of the BWTSs.

C. All parts of Chapter 4, 5 and 6 applies to all work items.

D. Work Item 2027-02 Clean Hulls and Propeller, to be seen in correspondence of this work item.

Work Items 2027-02, Clean Hulls and Propeller

1. General Scope

This Work Item to occur immediately following the successful drydocking under Work Item 2027-01 and the removal of wasted anodes under Work Item 2027-03.

The Contractor to thoroughly high pressure wash with freshwater, the entire exterior hull of the Vessel, from the keel to the rail, including appendages, sea chests, and other components.

The pressure washing of the entire hull shall to begin as soon as practical after the Vessel has been hauled out and all protections are in place.

2. Reference

- 07084-07-004 DOCKING PLAN
- GPA 00199-256-10 rev. B SEA CHEST A&D
- GPA 00199-801-05- Booklet of General Drawings
- GPA 00199-461-01 rev. A Sonar installation A&D
- GPA 00199-182-04 rev. A Bow Thruster Grating A&D
- GPA 00199-182-02 rev. B Structural Arrangements Bow Thruster Foundation

3. Requirements

The Contractor to thoroughly high-pressure wash with freshwater, the entire exterior hull of the Vessel, from the keel to the rail, including appendages, sea chests, and other components. This Work Item must be completed in no more than (48) hours from commencement of haul-out.

A. Ensure that adequate protection is given to all electronic transducer heads, sonar faces, or any other sensitive equipment on the bottom of the hull. Note: There is a considerable financial investment in these components that could be damaged by pressure washing or sandblasting.

B. No pressure washing on these components is allowed. Wash and clean transducer faces with clean, low-pressure (city water pressure) freshwater only. Hand scrape any growth with a plastic scraper. Very light hand sanding (no air/power tools!) with 220 grit wet-dry sandpaper is allowed under the guidance of the Owner's Representative or a Technical Representative.

C. Protect and preclude the entry of foreign material into or on electrical equipment, bushings, bearings, wire ropes, rotating equipment, interior spaces, galley, or any other equipment or areas that would be adversely affected by water, sandblast grit and/or paint. All protection measures are to be approved by the Owner's Representative prior to commencement of surface preparation or painting.

D. High-pressure washing with freshwater, at no less than 200 bar (~2900 psi) but not to exceed 350 bar (~5000 psi), shall be accomplished while the underwater body is still wet to remove all surface contaminants and marine growth. All marine growth and living organisms shall be completely removed. Submit CFR(s) to the Owner's Representative.

E. As part of the water wash, the Contractor shall open and clean the sea chests and strainer plates, as well as open the bow thruster inlets to clean the bow thruster.

    i. Replace covers prior to undocking.

F. Polish both Port and Starboard propeller wheels and hubs to Rupert scale B or better. The wheels are 5 blade, 11 feet in diameter.

G. The propeller shall be visually inspected by the Contractor, Owner's Representative and the attending ABS Surveyor, as applicable, in accordance with the latest ABS Rules and survey requirements. All propeller blades, hub surfaces, fillets, and other areas designated by the ABS Surveyor shall be examined for cracks, damage, deformation, cavitation erosion, and other defects. Surface crack detection testing utilizing dye Penetrant Testing ("PT") or other ABS-approved non-destructive examination method shall be performed on all accessible blade and hub surfaces, including all repaired or suspect areas. Any indications shall be evaluated and reported to the Owner's Representative and ABS Surveyor prior to commencement of repairs.

CHECK POINT - Propeller Inspection

H. Any fairing compound applied to the gondola to reduce turbulence shall be repaired if damaged.

I. Care shall be taken not to direct high pressure wash water into shaft seals and steering seals.

J. During cleaning and blasting of sea chests and associated plates, ensure all openings are adequately protected to prevent ingress of blast grit or debris.

K. After hull cleaning is completed, the Contractor to extend all hull drains to protect the hull from water run-off from deck drains and etc. The drain extenuation to be without any flow reduction.

CHECK POINT - Dry-Dock Hull Cleanliness

4. Miscellaneous

A. Submit CFR(s) to the Owner's Representative and ABS Surveyor when required.

B. All parts of Chapter 4, 5 and 6 applies to all work items.

C. Work Item 2027-03 Anodes, need to be seen in correspondence of this work item.

Work Items 2027-03, Replace Zinc Anodes

1. General Scope

Replace Zinc and Aluminum Anodes throughout exterior of hull, bow thruster, and interior of ballast tanks and compartments as needed.

2. Reference

- 07084-07-004 DOCKING PLAN
- O&M Manual for ELLIOTT WHITE GILL THRUSTER UNIT TYPE 40 T3S
- Drawing 07084-07-03 EM710 multibeam construction drawings
- GPA 00199-256-10 rev. B SEA CHEST A&D
- GPA 00199-801-05- Booklet of General Drawings
- GPA 00199-461-01 rev. A Sonar installation A&D
- GPA 00199-182-04 rev. A Bow Thruster Grating A&D
- GPA 00199-182-02 rev. B Structural Arrangements Bow Thruster Foundation
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3. Work Description

A. Upon the successful drydocking to occur under Work Item 2027-01, the Contractor shall immediately perform a visual inspection of all hull-mounted anodes, including those on the bilge keel, sea chests, skeg, stabilizer (Canard), bow thruster, rudders and gondola. All hull mounted anodes, including those on the bilge keel, sea chests, skeg, stabilizer (Canard), bow thruster, rudders and gondola will be replaced.

CHECKPOINT – Owner's Representative to review and approve the plan for quantity, type, and placement of replacement anodes prior to installation.

The following procedures and requirements shall apply:

- All underwater anodes shall be replaced.
- Replacement anodes shall be installed within twelve (12) inches of the original anode's location.
- Wasted anodes shall be removed and ground flush or unbolted on Day 1 in drydock, prior to high-pressure washing.
- Anodes shall be welded or bolted in place only after final bottom coatings have been applied and fully cured.
    - All welds and affected coating areas shall be hand-touched with minimum tree (3) coats primer and finally two (2) coats of black anti-foul paint. Anodes shall not be painted.
    - All fasteners and attachments shall be renewed as required and included in the unit cost.

B. Replace any missing anodes on hulls, rudders, bow thruster inlet, sea chest, ballast tanks, canard flaps, and arrays. This task requires removal and re-installation of cover plates over array zincs and the screens over sea chests and bow thruster inlet. The anodes shall be replaced in accordance with the locations depicted on the referenced drawings, and/or as found existing on hull.

C. The interior compartments of all of the transducer arrays will need to be flushed out with clean, low pressure (city water pressure) freshwater once the cover plates are removed. Anticipate that there will be a fair

amount of mud/silt inside the compartments to be disposed of. Hull painting shall not commence until the interior compartments have been flushed and are completely dry.

D. While removing the existing nuts, use extreme care not to wring off the hull mounted studs. The same care to be used in removing bolts. If any nuts seem particularly difficult to loosen, it should be brought to the attention of the Owner's Representative for further instructions.

E. When a new bolt/stud for anodes is installed, use new stainless-steel self-locking nuts of the same pitch, size, material, and grade. Replace any missing bolts, locks, and washers with proper size, pitch, material, and grade as part of bid.

F. Repair of broken bolts or studs to be accomplished only with the permission of the Owner's Representative.

G. Welded on anodes to be cut off and new anodes welded in their place only after verification from the Contractor's Shipyard Representative that it is safe to do so and that the Owner's Representative has been informed.

H. Continuity test to be conducted by ship's crew for any zincs replaced. Contractor to provide access to zincs by vessel's crew and notify Owner's Representative once zincs have been replaced.

4. Pricing

The Contractor shall provide the following unit pricing (see table in Section 5, below):

1. Unit price per weld-on anode for removal and installation (labor only).
2. Unit price per bolt-on anode for removal and installation (labor only).
3. Unit price per anode for supply of new anodes (material only).

Kilo Moana will be arriving at the Contractor's facility with a box of new anodes with quantities reflected in the Kilo Moana Anode Table below as Owner Furnished Material ("OFM"). Contractor to use the OFM anodes first before any Contractor Furnished Material ("CFM") to be ordered for replacement.

Final payment shall be based on the actual quantity of CFM anodes replaced, as verified by the Owner's Representative during the drydock inspection and documented in the final report. The price shall cover any discrepancies in the table below and be based on the as-found condition during the survey.

5. Kilo Moana Anode Table

To be confirmed and revised at dry docking. (see Docking plan)

Location	Type	Size	Quantity In Use	Remarks	OFM Inventory
Hull	TearDrop 20 lbs (Zn)	13-¼" x 2-½" x 10"	116 -124	Bolt-On	150
EM 122 RX Array	TearDrop 20 lbs (Zn)	16" x 6" x 2"	6 -18	Bolt-On	40
EM 710 Array	TearDrop 20 lbs (Zn)	13-¾" x 2-¾" x 1-¼"	2	Bolt-On	6
FWD stabilizer Fins	TearDrop WT unknown (Zn)		8 (2 on each fin)	Weld-On 2 Tab	
Bow Thruster Inlet	Rectangular, 20 lbs (Al)	11-¾" x 5-¾" x 1-¼"	12	Bolt-On	53
N/A	Thicker Rectangular, 16 lbs (Zn)	12" x 6" x 2-1/2"	7	Bolt-On	7

N/A	long rectangular, 11 lbs (Zn)	16" x3" x 1"	Unknown	BOLT ON, 6"from bolt hole center to bolt hole center	2
N/A	long rectangular, 21 lbs (Zn)	16" x 3" x 2-3/8"	Unknown	BOLT ON, 6"from bolt holecenter to bolthole center	5

6. Performance Criteria/Deliverables

- Submit CFR(s) documenting the location, condition, and percentage of wastage of all inspected anodes.
- CFR to include an Anode Replacement Plan to be approved by the Owner's Representative prior to installation.
- Contractor to provide an update Kilo Moana Anode Table with updated and corrected details in all columns and rows after completion and provide an electronic copy to the Owner's Representative at the final verification of anode installation and also as part of the Project Close Out package.
- Final verification of anode installation to be completed with the Owner's Representative.

CHECKPOINT – Owner's Representative to review anodes installation.

- Completion report indicating the total number and type of anodes removed, installed, and any deviations from the original anode layout. Include data from the continuity check of all anodes, to be presented electronically to Owner's Representative and part of the Project Close Out package.

7. Notes

- All studs and nuts (Locknut) to be ½", 316 stainless steel.
- From the 2025 drydock - a majority of anodes on the outboard side of STARBOARD hull was wasted away to nothing. Contractor to pay special attention to extensive wastage, whether it is uniformed or un-even.
- Inside WBT 7 and 8, there are (2) more anodes installed than found in the drawings, one (1) at the lower level of the WBT's at the forward part and one (1) in the aft section of the tanks. An additional four (4) anodes to be included in the pricing and scope of this Work Item.

8. Miscellaneous

A. Submit CFR(s) to the Owner's Representative.

B. Update the Kilo Moana Anode Table with correct data after completion and present to the Owner's Representative via CFR as well as part of the Project Close Out package.

C. Contractor to include removal and proper disposal of used zinc anodes and related materials as part of their bid.

D. All parts of Chapter 4, 5 and 6 applies to all Work Items.

Work Items 2027-04, Void Inspection & Testing

1. General Scope

The intent of this Work Item is to carry out a borescope inspection and air test of the inaccessible voids to sufficiently demonstrate water tightness of the Vessel's Aft voids, rudders and stabilizer fins / Canard to the satisfaction of the Owner's Representative, USCG, and ABS.

2. Reference

- GPA 00199-801-05- Booklet of General Drawings
- GPA 00199-111-04F WET DECK, LAUNCH & SIDE PLATING & FRAMING
- GPA 00199-117-02G-1 HULL/CROSS STRUCTURE FRAMES & BULKHEADS; REV G
- GPA 00199-117-02G-2 HULL/CROSS STRUCTURE FRAMES & BULKHEADS; REV G
- GPA 00199-117-02G-3 HULL/CROSS STRUCTURE FRAMES & BULKHEADS; REV G
- GPA 00199-117-03F HULL/CROSS STRUCTURE LONG'L SECTIONS; REV F

3. Work Description

A. Preparation:

- Remove the upper and lower plugs from the Port and Starboard Aft voids, Port and Starboard Rudders and all 4 stabilators fins/ canards. The Contractor is responsible for securely storing each plug to ensure accurate tracking and marking of their removal locations.
  - Drain any liquids from the interior. Contractor to expect to find float coat in the compartments.
  - Safely dispose / recycle of the liquid find in the compartment.

CHECK POINT – ABS and USCG to witness opening of the plugs.

B. The Contractor will provide borescope inspection services, including video recordings of the internals of voids, rudders and stabilators.

- Present the Owner's Representative with a CFR and copy of the video.

C. Air Test:

- Reinstall the top plug in each compartment.
- Set up a compressed air test rig at the lower openings.
- Pressurize the system to a maximum of 2 psig.
- If pressure loss is observed, use soap or a similar medium to check for leaks.
- Mark all detected leaks for repairs and report the conditions found to the Owner's Representative.

D. Post-Repair Testing:

- After repairs are made, re-pressurize to 2 psig.
- Maintain the pressure for at least 10 minutes.
- Notify the Owner's Representative, USCG, and ABS for inspection and approval.
- Upon approval, de-pressurize and remove the test rig.
- Reinstall the plugs in the presence of the Owner's Representative.

CHECK POINT – ABS and USCG to witness leak test.

E. Float Coat

- Provide suitable float coat for all the compartments.

- Reinstall the plugs in the presence of the Owner's Representative.

4. Performance Criteria/Deliverables

- Submit CFR(s) of Port and Starboard Aft voids, Port and Starboard Rudders and all (4) stabilators fins/ canards. Include borescope inspection video of the internals as-found condition.
- Complete any change order(s) for additional repairs required by ABS and approved by Owner's Representative.

5. Pricing

The Contractor shall provide pricing for work described in this Work Item including:

1. Unit price per Liter use of new float coat (material only).
2. Unit price per Meter weld repair (labor only).

Final payment shall be based on the actual quantity of new vs recycled float coat replaced in the voids. Quantities to be verified by the Owner's Representative during the drydock inspections and documented in the final report.

6. Notes

Discuss float coat options with Owner's Representative.

CHECK POINT – ABS and USCG to witness vacuum box test of all the plugs after reinstallation.

7. Miscellaneous

A. Submit CFR(s) to the Owner's Representative.

B. All parts of Chapter 4, 5 and 6 applies to all work items.

Work Items 2027-05, Steel Renewal Wet Deck/center void

1. General Scope

The Contractor to carry out steel repair (condition of class) in the center void between the two hulls. The wet deck and Haunch constitute a total of nine (9) Void Spaces, midship from Frame #13 to 86. This Work Item is a deferral from the 2025 drydock and needs to be repaired in accordance to the 2002 ABS-minimum wastage document requirements.

Naval Architect Glosten developed a repair plan as well as VAS in 2025 to comply with the new ABS requirement for skin plates and stiffness to be renewed and recoated in the void on Kilo Moana. Contractor to evaluate if changing out larger section of steel then the minimum required for class will be more cost effective for all parties. The goal for this Work Item is to accomplish all necessary steel repair work in the center void to last for the Vessel's intended life cycle. The objective is to avoid steel preservation work in the center void during the future 2030 and 2032 Availability for the Vessel. After changing out and repairing the rusted steel, the Contractor to preserve the void.

2. Reference

- ABS-Minimum wastage document 2002
- VAS Kilo Moana - WetDk-Haunch Plating_ABS Min Thickness
- Glosten RV Kilo Moana Wet Deck Repair Plan Deferment_Rev(-)
- SLEP Report KILO MOANA Rev -
- GPA 00199-111-04F WET DECK, LAUNCH & SIDE PLATING & FRAMING
- GPA 00199-117-02G-1 HULL/CROSS STRUCTURE FRAMES & BULKHEADS; REV G
- GPA 00199-117-02G-2 HULL/CROSS STRUCTURE FRAMES & BULKHEADS; REV G
- GPA 00199-117-02G-3 HULL/CROSS STRUCTURE FRAMES & BULKHEADS; REV G
- GPA 00199-117-03F HULL/CROSS STRUCTURE LONG'L SECTIONS; REV F
- OFM STEEL – INVENTORY AND MATERIAL CERTIFICATIONS

3. Work Description

A. The Contractor to develop a repair plan based on the Ultrasonic Thickness ("UT") shots and the reference documents under Section 2. The repair plan is to evaluate cost efficiency of changing out larger sections of steel versus the minimum requirement called for by the ABS wastage document (ABS SED Houston, " Minimum Thicknesses for Plate Renewals", May-16-02). The Contractor to present their own repair plan to the Owner's Representative and ABS prior to drydocking.

B. The center void has three (3) manhole entrances. One (1) Starboard side in mess room, One (1) in the Switchgear room, and one (1) in the Aft deck staging bay.

(1) All three (3) access point to be kept open for the whole duration of this Work Item if not directed otherwise by the Owner's Representative.

(2) The void to be maintained Gas Free and Ventilated, along with sufficient lighting to allow Owner's Representative and ABS to inspect the void, for the whole duration of this Work Item if not directed otherwise by the Owner's Representative.

(3) Protect the manholes' opening for inessential fall and water ingress by installing stanchions and necessary combing.

C. The Contractor to protect all wiring and interferences from any damage including overspray.

D. The Contractor to remove wasted steel and prepare areas that can be clad welded for repair in accordance with ABS requirement and guidance.

E. Contractor to renew steel that is average to below excessive limits and or close to excessive limits. Sections of substantial corrosion to be evaluated and solutions incorporated into the repair plan.

F. Contractor to specify areas where it is more cost effective to incorporate a section into the larger plate, instead of inserting smaller sections.

(1) Contractor's repair plan to be presented to Owners' Representative, ABS, and USCG for approval prior to start work.

G. Any disturbed paint to prepared and cleaned surfaces to a minimum standard of SSPC-SP 11 (Power Tool Cleaning to Bare Metal) in accordance with coating spec and apply coatings per Section 5.35, or as directed by Owner's Representative.

H. Any disturbed or damaged insulation to be reinstalled and insulated according to ABS and USCG requirements.

I. The whole void to be cleaned and fresh water washed and dried out prior to close up. This requirement can be done early when sections of steel is out removed. All accumulated saline solution / salt to be removed.

4. Performance Criteria/Deliverables

- Submit CFR(s) to the Owner's Representative.
- Complete any change order(s) for additional repairs that were required by ABS and approved by Owner's Representative.

5. Notes

- Due to Vessel design and per reference VAS Kilo Moana, Minimum Thickness for Plate Renewals, the Vessel has minimal scantlings.

6. Miscellaneous

A. All parts of Chapter 4, 5 and 6 applies to all Work Items.

Work Items 2027-06, Anchor and Chain, Gauge and Coat

1. General Scope

The Contractor to provide the labor, material, and equipment as required to accomplish the following to the anchors and chains. With optional pricing for Open Port and Starboard chain locker, clean for inspection and Non-Destructive Testing ("NDT") gauging. Contractor to provide labor, material, and equipment as required to accomplish required steel preservation in the chain lockers.

Note that the chains will be inspected in the ABS Special Survey.

2. Reference

2.1 GPA 00199-581.01 rev. D ANCHOR HANDLING A&D

2.2 Shipboard Certificates.

3. Work Description

After the Vessel is safely drydocked, and as soon as practical, lower and lay out anchors and chains for measurement, cleaning, and inspection with assistance from the Vessel's crew operating windlass. Contractor to provide labor, materials, and equipment to accomplish the following for the anchors and chains:

A. Remove from Vessel and arrange port and starboard anchor chains in the drydock. The chains are 1-1/2 inch diameter flash butt-welded extra high strength grade 3a stud link chain. The length of each chain is 8 shots on Starboard and 9 shots on Port.

B. End-for-end each chain and reinstall per drawing (Reference drawing 2.1) : 9 shots port, 8 shots starboard.

C. High-pressure waterblast the anchor chains, excluding the anchor and the adjacent ~5 meter of chain, to remove dirt, loose paint, and old shot markings. Contractor to roll the chain during water blasting to get to every part of the chain.

D. Grit blast (Commercial SPC-SP6) the port and starboard anchors and the first ~5 meter of chain. Contractor to roll the chain during blasting to get to every part of the chain.

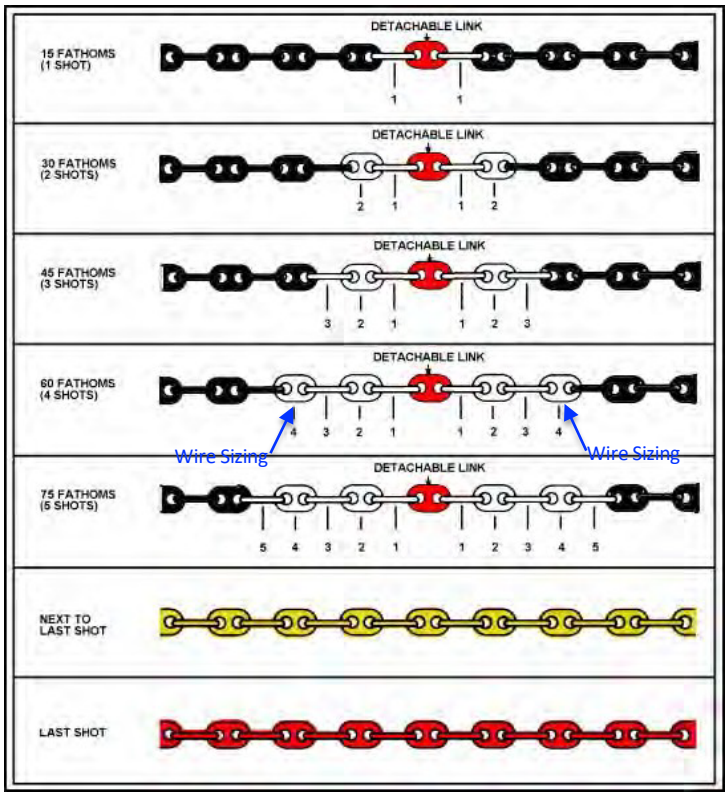
E. Gauge the anchor links and chain to the satisfaction of the ABS and Owner's representative. Provide a CFR of the results.

CHECK POINT - Gauge inspection of chain (provide report in Metric and Imperial).

F. Free-up all swivels, shackles, and fittings, renew the wire for shot markings as required, and repaint the shot marks with red/white paint on the port and starboard chains.

G. Paint the anchors/chain as per Exhibit A, #6, Next to Last Shot. Markings to be made according to the image and to Owner's Representative satisfaction. Wire Sizing band to be securely fasten around the chain link stud on the last white marking for each shot on each side of the detachable link, as per Exhibit A, #4, 60 Fathoms (4 Shots).

Exhibit A:



3.1. *OPTIONAL Item – Chain Locker Cleaning and Inspection*

A. Open port and starboard chain lockers, provide safe for entry certificates. Rig chain locker access ladders from manhole to the bottom of the chain lockers, (the Vessel's chain lockers do not have internal steps). Thoroughly clean Port and Starboard chain lockers to eliminate accumulated sediments and any potential accompanying invasive species or pollutants.

CHECK POINT – Owner's Representative inspection of chain lockers.

B. Provide Owner's Representative with an Inspection Report that verifies this item.

C. Remove chain locker "dewatering drain/ bilge valve" from Port and Starboard chain locker and hydro test the valve according to ABS requirements, as part of Work Item # 2027-07. Reinstall valves, with new gaskets and hardware, after hydro test is passed. Contractor to ensure pipe is open and free of foreign objects and obstacles before valves are reinstalled.

CHECK POINT - Inspection of valve hydro test, and that the drain pipe is clear.

D. Wash, scrape, and clean the chain lockers and rose boxes, free of sediments and/or living organisms.

E. Paint the chain lockers, rose boxes, and chain with Contractor provided " Fluid Film" Liquid A (Eureka Chemical).

F. Reconnect the anchor chains to the bitter ends, store the chain, and house the anchors. Fake out the chain in the locker to ensure it will run free when released.

4. Pricing Option

A. If conditions are found that certain shots of chain require replacement, after written approval from Owner's Representative, Contractor to purchase correct size and type chain and required links with supplied ABS Certifications and replace. Offeror to bid this as Option Lot Price, listing cost per shot, including new connecting links, including installation and paint according to specification.

B. The Contractor shall price No. 3.1 as a separate Optional item, which may be activated only upon written approval by the Owner's Representative.

C. The Contractor shall provide a separate price for grid blasting of the port and starboard chain lockers to a Commercial Blast standard (SSPC-SP6) prior to coating application. Pricing shall include all labor, equipment, containment, surface preparation, cleaning, disposal, and associated work required to complete the blasting and preparation in accordance with the specified standard.

5. Performance Criteria/Deliverables

- Submit CFR(s), including Anchor Chain Gauge Results, to the Owner's Representative.

6. Notes

- Contractor shall supply all paints/primers.
- Contractor shall supply lead for securing links pin.
- Contractor shall supply seizing wire for marking.

7. Anchor and Chain Paint Spec:

Anchor Chain:

A. Grid blast (Commercial SSPC-SP6) the first 20 feet of chain.

B. High-pressure wash with fresh water, the remaining chain using Prep #88 cleaner. Dilute 3 to 1 (3 parts water/1 part #88), allow to stand on surface for 10 minutes. Fully rinse off all traces of #88.

C. Apply 1 full coat Amerlock 2 epoxy black 125-180 microns MDFT. Amerlock 2 red/white shall be used for markings per existing.

D. Paint the last shot red and the previous shot yellow. Paint to be Amerlock 2.

Anchor:

A. Grid blast (Commercial SSPC-SP6) the port and starboard anchors.

B. Apply 302H zinc as primer 75-100 microns MDFT.

C. Apply 1 full coat PSX 700 100-125 microns MDFT

8. Miscellaneous

A. Removal and disposal of any wastes generated by Work Item to be included with part of the bid.

B. Assure bitter ends of chain are properly attached to the Vessel upon completion.

C. Contractor to assure all connecting links is secure with correct size led pin in place.

D. All parts of Chapter 4, 5 and 6 applies to all work items.

Work Items 2027-07, Critical Valve Inspection and Repair

1. General Scope

The Contractor to provide the labor, material, and equipment as required to accomplish the following to remove, overhaul/renew, pressure test, and reinstall all overboard suction and discharge valves from the upper waterline down. The Contractor to examine shell openings and provide a detailed CFR. Testing to be witnessed by the Owner's Representative, USCG, and ABS. Reinstall the valves to the satisfaction of the Owner's Representative and ABS, using all new gaskets and new hardware. All remote-operated valves to be tested prior to removal with the Contractor's representative and Owner's assigned representative present. Operational test to be carried out again after reinstallation with the Contractor's representative and the Owner's assigned representative present. The Contractor to provide qualified technical expertise to adjust remote-operated valves to have the correct indication on the valve locally and on the control panels/remotely.

Prior to commencing disassembly, follow the required "Lock Out / Tag Out" of the associated circuit breakers for all electrically controlled valve operators.

2. Reference

- GPA 00199-529-01 BILGE & BALLAST SYSTEM SCHEMATIC; Rev E
- 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
- GPA 00199-801-05 rev. - BOOKLET OF GENERAL DRAWINGS

3. Location of Work:

Service	Valve ID	Valve #	Type	Remote operated	Pipe Size	BOLTS #	Job / Notes
Pump Room # 1 Starboard, 3rd platform							
Fire Main	Suction		Motorized Butterfly	1	4"	8	Remove/Inspect/Test
Main Supply			Motorized Butterfly	1	8"	8	Remove/Inspect/Test
Sea Chest Vent			Globe		1 1/2"	4	Remove/Inspect/Test Option Renew Valve
Speed Log			Ball		125 mm		Remove/Inspect/Test Option Renew Valve
Bilge	To Oily Waste Tank	5 ref photo?	Globe - Threaded		3"		Renew/ weld in flanges
Pump Room # 2 Port, 3rd platform							
Fire Main	Suction		Motorized Butterfly	1	4"	8	Remove/Inspect/Test
Main Supply			Motorized Butterfly	1	8"	8	Remove/Inspect/Test
Sea Chest Vent			Gate		1 1/2"	4	Renew
Return			Butterfly		6"	8	Remove/Inspect/Test
Science gondola	DIN 3202		Gate		350 mm	16	Remove/Overhaul Inspect/Test. Option Renew Valve
Canard RM # 1 Starboard, 3rd platform							

	Scientific Seawater		Teflon Lined Butterfly		2"	4	Remove/Inspect/Test
Sonar Room # 1 Starboard, 3rd platform							
	Drain		Gate		1"	4	Renew
	Vent		Globe		1"	4	Renew
Sonar Room # 2 Port, 3rd platform							
	Motorized Butterfly		Motorized Butterfly	1	2"	4	Remove/Inspect/Test Option Renew Valve
	Sea Chest Vent		Gate		1"	4	Remove/Inspect/Test Option Renew Valve
MCHY # 3 Starboard, 1st platform							
	EMC Bilge overboard		Butterfly		3"	4	?? ABS SAN
	OWS-Bilge Ballast shell valve		Motorized Butterfly	1	4"	8	Remove/Inspect/Test
MCHY # 4 Port, 1st platform							
	EMC Bilge overboard		Butterfly		3"	4	?? ABS SAN
	Sea Chest Vent Overboard		Globe		1.5"		Renew
	OWS-Bilge Ballast shell valve		Motorized Butterfly	1	4"	8	Remove/Inspect/Test
Canard RM # 1 Access Starboard, 2nd platform							
	Chain locker Drain				2"	4	Remove/Inspect/Test
	Bow Thruster Cooling OVBD		Butterfly		2.5"?	4	Remove/Inspect/Test
Canard RM # 2 Access Port, 2nd platform							
	Chain locker Drain				2"	4	Remove/Inspect/Test

4. Work Description:

A. All sea valves listed in the table under Section 3., or as directed by ABS survey requirements, U.S. Coast Guard, or the Owner's Representative, shall be removed, disassembled, cleaned, and inspected. All components shall be tagged and match-marked to ensure proper reassembly. Inspections and reports must be completed within the first 30% of the Contract period.

B. Assure sea chest and transducer vent and drain lines are operational. Clear vent and/or drain line(s) if required. Provide staging or other safe/suitable method of access to examine shell openings as required by surveyors.

C. Completely disassemble, clean, and examine all valve parts for defects in the presence of Owner's Representative. Submit a CFR to the Owner's Representative listing all parts requiring repair that are beyond the scope of this item and those parts that require replacement.

CHECK POINT - Sea valve inspection for defects.

D. Valve seats shall be machined, lapped, or ground to achieve full 360-degree contact. Contact shall be verified using the bluing method or hydrostatic testing in accordance with attending surveyor and Owner's Representative. If bluing method is used for gate valves, the transfer line must not exceed 4.5 mm in width and must be within the lower 75 percent of the gate surface. For globe valves, the line must not exceed 1.5

mm. In both cases, the blue line must be 100% continuous around the entire circumference. Even a tiny break in that 1.5 mm or 4.5 mm line is a "fail".

E. Contractor's option for valve renewal. The Contractor may, at no additional cost to the Owner, 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 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, it will be at no additional cost to Owner. All new Contractor provided valves to be installed onto the vessel are required to have an ABS certificate and completed ABS pressure testing. Contractor to provided Owner's Representative and ABS with copy of the certificates prior to installation. 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.

F. Valves which fail inspection to be repaired or replaced with new, whichever is more cost effective.

G. Valve stems shall be freed, cleaned, repacked, and lubricated with all-purpose grease. Valve body interiors shall be coated with a surface-tolerant epoxy. Seating surfaces must be protected with grease prior to coating to prevent epoxy adhesion.

H. Hammer test and examine all fasteners securing the various valves to the hull and adjoining piping, and associated parts such as pads, nipples, spuds, spool pieces, studs and flanges.

I. Upon inspection and acceptance of the above work, reassemble all valves with new fasteners and gasket materials. Monel fasteners shall be used on bronze valves and CRES fasteners shall be used on steel valves. Apply appropriate anti-seize compound to all threaded surfaces.

J. The Contractor must install valve label plates on all new valves.

- Tags should be made of durable materials like brass, stainless steel.
- Tags to attach by use of stainless-steel wire or chain to the valve body or bonnet, never the handle, as handles can be removed or replaced.
- Letter Size; Minimum 5 mm high
- Identifying at a minimum; Valve Function/Identity, Space Served, Valve Number, Date of installation.
  - Remote operated valves to also include operational direction for closing.

K. Prior to undocking, all sea valves shall be closed. After the vessel is waterborne, but before it becomes fully afloat, all serviced sea valves shall be cycled. Valve packing, flanges, bonnets, and bodies shall be checked for leaks. Any deficiencies must be corrected. The Vessel's Chief Engineer or Owner's Representative must witness the actuation of all valves. If re-docking is necessary due to defective work, the cost shall be borne by the Contractor.

CHECK POINT - Actuation of all sea valves with Owner's Representative or Chief Engineer.

All work is subject to acceptance by the Owner's Representative, ABS Surveyor, and USCG Inspector.

Pricing shall reflect full replacement of all valves 2 inches and smaller.

5. *Performance Criteria/Deliverables:*

- Submit CFR of shell openings.
- Submit CFR of valves in as-found condition
- Complete any change order(s) for additional repairs required by ABS and approved by Owner's Representative.

- Replacement valves to be delivered with ABS approved certificate. New valve certificate to be handed over to the Owner's Representative prior to installation with specification of the valve location and valve number.

6. Note:

- Substitution of body material or valve configuration is not authorized.
- The Contractor shall ensure that replacement valves are sourced from manufacturer's approved vendor in accordance with the Availability requirements and ABS class standards. Valves manufactured in the People's Republic of China are not acceptable for this Availability. The Contractor shall submit the proposed manufacturer's details, country of origin, and all relevant certification for review and approval prior to procurement. Any materials not meeting these approval requirements shall be rejected.
- Additional valves outside of this Work Item's valve list might be included for replacement in other specific Work Items. If so, the same requirement for valves and valve installation as this Work Item will apply to those valves as well.

7. Pricing Option

The Contractor shall provide a separate optional price for the replacement of the existing 350 mm gate valve serving HPR 418, located in the No. 2 Pump Room.

This optional price shall be submitted in addition to the base proposal and shall only be exercised, with the Owner's Representative's written approval, in the event that overhaul of the existing valve is determined to be unsuccessful or not feasible.

The removal and reinstallation of the existing 350mm valve are included in the base scope of work for this Work Item and shall not be included in the optional price.

The optional replacement scope shall therefore be limited to the supply of a new 350 mm gate valve of equivalent ABS approved type, including all associated certification, documentation and commissioning.

8. Miscellaneous

A. Contractor will be responsible for arranging the ABS and U.S. Coast Guard inspections, as required, for ALL valves to be renewed, refurbished, tested or installed.

B. Renew all missing or damaged valve label plates.

C. Contractor to supply replacement butterfly valves approved by Owner's Representative.

D. Contractor shall provide adequate personnel to correct valve leakage, if present, while vessel is being launched.

E. As part of the Dock Trial and Sea Trials towards the end of Availability, Contractor must test the effected seawater system's operation using the system fluid at normal operating pressure. Ensure that there is no visible leakage or deformation of mechanical parts by repairing all leaks and discrepancies.

F. All parts of Chapter 4, 5 and 6 applies to all work items.

Work Items 2027-08, Bow Thruster Maintenance

1. General Scope

Contractor is to subcontract the services of a Tees White Gill ("TWG") Technical Representative. The purpose of this Work Item is to perform service, repair, and inspections on the 40T3S Tees White Gill bow thruster. The thruster unit is driven by a direct coupled electric motor via twin Zurn tandem internal tooth coupling/spacer shaft assemblies, with a spacer thrust bearing plumber block assembly at nominal mid span.

Contractor to accomplish inspection and repair of bow thruster unit as required, outlined below, under the direction of the TWG Technical Representative. Part of this Work Item will be in the water prior to drydocking, during dry docking and after the vessel is refloated.

2. References

- OPERATING AND INSTRUCTION Manual for Elliott White Gill Thruster Unit Type 40 T3S
- GPA 00199-182-02-B, Structural Arrangements Bow Thruster Foundation
- GPA 00199-182-03-E, Foundations Bow Thruster Motor
- GPA 00199-182-04-A, Bow Thruster Grating A & D
- GPA 00199-184-06C Structural Arrangements Fdn - Aft Fin Stabilizer
- GPA 00199-111-02, Rev. F, Hull Bottom Plating and Framing
- GPA 00199-801-05 rev. - BOOKLET OF GENERAL DRAWING
- ABS-Minimum thicknesses for plate renewals, document 2002 (ABS PID:39330)

3. Location of Work:

Canard room #1, Canard room #1 Access, Thruster motor room, STARBOARD side.

4. Work Description

4.1 While the Vessel is still afloat and on the Vessel's power

A. Take an oil sample after a period of operation to allow system to reach operating temperature. The propeller running is the preferred during taking of the sample. If not possible, take sample within 30 minutes after propeller stops.

B. For the lubrication system, fill approximately 80% of a sampling bottle.

C. Oil samples to be sent to an ABS certified oil analyze center for full data analyzation. Result of the oil samples to be received back to and presented in a CFR to the Owner's Representative and to a TWG Technical Representative no later than 7 days after the oil sample is taken.

4.2 Vessel dry docked

A. Coordinate with the Vessel's crew to have associated equipment locked and/or tagged out per lock out/tag procedures.

B. Items that may interfere with or may be damaged by the repairs to the bow thruster shall be protected or removed and reinstalled. These items may include, but are not limited to, insulation, light fixtures, ventilation ducting, and wire ways.

C. All existing rotor shaft gland to be stripped and area thoroughly cleaned. Removed material to be properly discarded.

D. Rotor shaft upper bearing assembly to be stripped and overhauled. The TWG Technical Representative is to advise on new bearings, gasket, and seals.

E. Drain oil, clean, and inspect inside of the oil tank. Inspect the inside for signs of damage, corrosion, dirt, or buildup. Document the results. Contractor to properly discharge of the oil.

(1) If any foreign objects is found in the oil sample, or the bearing found to be worn, Contractor to provide the Owner's Representative access to tank inspection and cleaning procedure prior to refilling the tank with new fresh oil.

F. Rotor shaft and steering shaft to be pulled and inspected including spark test of the fiberglass.

CHECK POINT - Shafts spark tests, to be witnessed by Owner's Representative and ABS surveyor.

G. Rotor shaft lower cutlass bearing inspection and Contractor to provide CFR with guidance from TWG Technical Representative.

H. Steering shaft bearing assembly to be stripped, cleaned and reassembled with new parts and grease as found needed by TWG Technical Representative.

I. Inspection of all elements of the bow thruster including but not limited to packing housing, bearing housing, sensors, deflector ring gear, sleeves, and associated hardware. Also including Shafts alignment inspection.

J. Inspect for signs of corrosion and pitting and cavitation damages on painted areas and bare metal surfaces of the shafts. Check nozzle surfaces, locking materials (strips, welds, wire), propeller gearbox surface, and propeller surface.

CHECK POINT - Bow thruster examination to include Owner's Representative and ABS surveyor.

K. Reassemble the bow truster in accordance with manufacturer's requirement and torque specification, and fill oil tank with new fresh oil according to the Vessel's oil specification.

L. Packing is to be repacked with 4 rings of GFO packing material (OFM), cut and installed with TWG Technical Representative present to oversee the process.

M. Replace Anodes in accordance to Work Item 2027-03.

4.3 Bow thruster overboard cooling pipe renewal

Contractor to crop and renew the bow thruster cooling over board pipe from the valve flange to past the shell plating. This is to remove the threaded stub and valve outside of the flange. The new pipe to be installed including full pass-through sleeve/bushing as it passes the shell plating, or as directed by attending surveyor. Outside of the hull, the pipe to extend at least 60 mm or as required by USCG and ABS attending surveyor.



A. Contractor to remove the overboard valve and coordinate pipe fit up and alignment work with ABS and USCG attending surveyor. As the valve is removed, Contractor to hydro test the valve in accordance with ABS and USCG requirements. Contractor may elect to replace the valve with a new ABS certified valve vs hydro testing if it is found more cost beneficial.

CHECK POINT - Fit up inspection.

B. Full weld the new flange and pipe through the hull.

C. Water test the pipe, and reinstall the valve with all new hardware.

CHECK POINT - Final weld inspection.

D. After successful completion of weld inspection, contractor to repair paint, and complete cleanup.

4.4 Dock trail and Sea Trials

TWG Technical Representative to be present during all parts of the Dock Trial and the Sea Trial.

A. Test Steering functionality locally and remotely at all station, check and make sure all indications are allied and showing the same direction.

B. Check oil system for leaks, also record oil pressure and temperatures at versus loads.

C. Run in the gland packing according to TWG run in schedule and adjust the gland to allow for appropriate water seepage. Run-in of the gland packing is done twice, starting at 50rpm for 10 min, increase by 50rpm at the time with 10 min intervals until limit reaches on available generator power. (Run-in has to reach at least 500rpm for 10 minutes to be sufficient. Record oil pressure and temperature at the beginning and end of each rpm step. Temperature to be taken on upper and lower bearing housing, shaft upper and lower section, Gland sleeve and gland follower. Adjust the gland follower to maintain small amount of waterfall.

   i. At completion of first run-in sequence, allow temperatures to get back to normal to the same as before the first run-in started. Prior to starting second run-in, procedure should be carried out and recorded indexical as the first run-in.

D. Contractor to provide Owner's Representative with a CFR including TWG's Technical Representative's service reports at the completion of this work item and also as part of the Project Close out package.

5. Notes

- All temporarily removed items shall be reinstalled to their previous location. Items damaged in the process shall be repaired, replaced, or restored to original condition.
- All disturbed/damaged paint caused by Contractor's work to be painted according to Vessel's paint specification and in accordance with paint inspector and the Owner's Representative's requirements. Feather edges smoothly so repaired areas don t show through final coat. Provide DFT and environmental results during and where coating has been repaired. All work to be completed to Owner's Representative's satisfaction.

6. Miscellaneous

A. Submit CFR(s) to the Owner's Representative.

B. Cost of removal and proper disposal of oil and materials to be included as part of the bid.

C. All work on the bow thruster maintenance requires a TWG Technical Representative to be present and to be included with the cost of the bid.

D. The scheduling and execution of this Work Item shall be coordinated by the Contractor and performed concurrently, where practicable, with for example Work Item 2027-12 & 31 or any other related work item.

The Contractor shall be responsible for planning and sequencing the work to avoid interference with, duplication of effort, or damage to completed or ongoing work. Any damage caused by the Contractor, its subcontractors, employees, or agents to previously completed work, whether under this Contract or other related work items, shall be repaired at the Contractor's sole expense to the satisfaction of the Owner's Representative. Failure to properly coordinate the work or the occurrence of such damage shall constitute a Contractor performance deficiency and may be grounds for corrective actions, including but not limited to withholding of amounts otherwise payable until cure and, if not cured within the stated response window, Owner's performance of the service at Contractor's expense with reimbursement through setoff/back-charge, or other remedies available under the Contract.

E. All work to be tested and verified during Dock Trial and Sea Trials with a TWG Technical Representative present.

F. All parts of Chapter 4, 5 and 6 applies to all work items.

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Work Items 2027-09, Hull and Pipe thickness reading NDT

1. General Scope

During the first ten days of dry docking, the Contractor shall provide certified technicians to carry out thickness measurements of hull structure and selected piping systems as required for the ABS 5-Year Special Survey in attendance of ABS.

2. References

2.1 ABS-Minimum thicknesses for plate renewals, document 2002 (ABS PID:39330)

2.2 GPA 00199-801-05 rev. - BOOKLET OF GENERAL DRAWINGS

2.3 GPA 00199-111-02 rev F - HULL BOTTOM PLATING & FRAMING

2.4 GPA 00199-111-03 rev G - HULL STRUT PLATING & FRAMING

2.5 GPA 00199-111-04 rev F - WET DECK, LAUNCH & SIDE PLATING & FRAMING

2.6 GPA 00199-117-01 rev F - STRUCTURAL ARRANGEMENTS MIDSHIP SECTION

2.7 GPA 00199-117-02-1 rev G - HULL/CROSS STRUCTURE FRAMES & BULKHEAD

2.8 GPA 00199-117-02-2 rev G - HULL/CROSS STRUCTURE FRAMES & BULKHEAD

2.9 GPA 00199-117-02-3 rev G - HULL/CROSS STRUCTURE FRAMES & BULKHEAD

2.10 GPA 00199-117-03 rev F - HULL/CROSS STRUCTURE LONG'L SECTIONS

3. Location of Work:

Various, throughout the Vessel, with access required both from interior and exterior of Vessel.

4. Work Description:

A. For the first ten days during drydocking, , the Contractor shall carry out all thickness measurements required for the 5-Year Special Survey in accordance with the latest applicable rules and requirements of ABS, including attendance by the ABS Surveyor throughout the survey process. All gauging shall be performed by an ABS-certified thickness measurement company using qualified technicians and calibrated Ultrasonic Thickness Measurement ("UTM") equipment in compliance with ABS-approved procedures and the Kilo Moana ABS-Minimum thicknesses for plate renewals, document 2002 (ABS PID:39330) (Reference 2.1)

B. The scope of work shall include thickness measurements of hull structure and piping systems as identified in the ABS gauging program and as directed by the attending ABS Surveyor. Structural gauging shall include, but not be limited to, bottom shell plating, side shell, sheer strakes, weather decks, inner bottom, tank tops, hopper and topside tanks, longitudinal and transverse bulkheads, web frames, floors, girders, brackets, stiffeners, and other primary and secondary structural members within ballast tanks, void spaces, cofferdams, cargo spaces, and other accessible compartments.

C. Piping thickness measurements shall include selected ballast, bilge, fire main, sounding, air, vent, cargo, and seawater piping systems, including valves, bends, reducers, spool pieces, and areas subject to corrosion, erosion, or wastage, as required by ABS Surveyor.

D. Contractor shall provide all necessary staging, lifting arrangements, lighting, ventilation, certified safe access, and tank preparation including cleaning and gas-free certification required for close-up survey and

thickness gauging. Local surface preparation including coating removal, scaling, and cleaning shall be carried out where necessary to obtain accurate readings acceptable to ABS.

E. Any areas exhibiting excessive diminution, pitting, buckling, cracking, grooving corrosion, fractures, or structural deformation exceeding allowable ABS limits shall be immediately reported to Owner's Representative and ABS for further examination and repair determination. Additional gauging required by ABS due to suspect findings shall be included within the scope.

F. Upon completion, Contractor shall submit comprehensive ABS-formatted thickness measurement reports including gauging records, structural sketches, piping identification, original scantlings, diminution calculations, suspect area documentation, calibration records, and repair recommendations where applicable. Final reports shall be submitted to ABS and Owner's Representative for review and acceptance within (15) days after the Vessel was dry docked.

5. *Notes*

- All temporarily removed items shall be reinstalled to their previous location. Items damaged in the process shall be repaired, replaced, or restored to original condition.
- All disturbed/damaged paint caused by the UTM/NDT, to be painted according to Vessel's paint specification and in accordance with paint inspector and the Owner's Representative's requirements. Feather edges smoothly so repaired areas don t show through final coat. Provide Dry Film Thickness ("DFT") and environmental results during and where coating has been repaired. All work to be completed to the Owner's Representative's satisfaction.
- All cost related to reinstallation and damage repair to be borne by the Contractor.

6. *Miscellaneous*

A. Submit CFR(s) to the Owner's Representative.

B. All parts of Chapter 4, 5 and 6 applies to all work items.

Work Items 2027-10, Tail Shafts, Rudders, Bearing Readings

1. General Scope

The Contractor to provide the labor, material and equipment as required to accomplish the ABS 5-Year Special Survey and tail shaft and rudder clearances on both Port and Starboard Tail Shaft and rudders.

2. Reference

- GLOSTEN 07084-07-004 DOCKING PLAN
- GPA 00199-243-01 rev. B STERN TUBE & SHAFT DETAILS
- GPA 00199-562-01 rev. D RUDDERS A&D
- D. AGOR 26 FIXED PROPELLER SYSTEM ROLLS-ROYCE NAVAL MARINE MANUAL (On Vessel)
- Installation manual for Kobelco {Kemel} Eagle EVK2RV 350 seal assemblies PDF)
- GPA 00199-801-05 rev. - BOOKLET OF GENERAL DRAWINGS

3. Work Description:

A. After vessel is safely drydocked, and as soon as practical, take tail shaft and rudder bearing readings on both shafts and both rudders.

B. Contractor to remove the rope guard on Port and Starboard shaft. Using a feeler gauge or wedge, to be inserted directly between the propeller shaft and the lower part of the bearing bush for measuring the clearance.

C. Document findings and provide CFR to the Owner's Representative. These readings to be labeled " As-found Readings".

CHECK POINT - ABS 5-Year Port and Starboard Propeller Examination.

D. Contractor to remove rudder access plugs/plates.

E. Contractor to measure rudder clearances on Port and Starboard rudders, with guidance from the manufacturer Neuver Maritime's Technical Representative and from attending ABS surveyor. Contractor to either preform a Rudder Bump test or feeler Gauges or Jacking test to achieve appropriate rudder bearing clearance readings. The cost of Neuver Maritime's Technical Representative will be the responsibility of the Contractor as part of the base scope.

F. Document findings and provide CFR including method used to the Owner's Representative. These readings to be labeled " As-found Readings".

G. In the presence of ABS and USCG surveyor and Owner's Representative, perform any and all tests requested by inspector(s). These may include, but not be limited to, visual, NDT, magnetic particle tests, dye checking propellers and rudder, and so on. The Steering Gear system including rudder pintle is be part of this 5-year Special Survey.

CHECK POINT – ABS and USCG Examination.

H. Upon completion of examination, Contractor to reinstall and modify Port & Starboard rope guards to allow their removal for future bearing readings.

4. Notes

- A Contractor Shipyard Representative, Neuver Maritime Technical Representative, and an Owner's Representative shall also make a joint inspection of the mechanical shaft seals at undocking prior to the Vessel lifting off of the keel blocks to assure there are no leaks or other problems that would prohibit undocking at that time.

- All temporarily removed items shall be reinstalled to their previous location. Items damaged in the process shall be repaired, replaced, or restored to original condition.
- All disturbed/damaged paint caused by the Contractor, to be painted according to Vessel's paint specification and in accordance with paint inspector and the Owner's Representative's requirements. Feather edges smoothly so repaired areas don t show through final coat. Provide DFT and environmental results during and where coating has been repaired. All work to be completed to the Owner's Representative's satisfaction.
    - All cost related to reinstallation and damage repair to be borne by the Contractor.

5. Miscellaneous

A. Submit CFR to the Owner's Representative.

B. All parts of Chapter 4, 5 and 6 applies to all Work Items.

Work Items 2027-11, Paint Underwater Hulls from Keel To Waterline

1. General Scope

Full underwater hull abrasive blasting and full coat underwater hulls from keel to waterline. This work includes all markings shown in drawing GPA 00199-801-02 rev. E OUTBOARD PROFILE (Reference 2.3) and to include all hull designations and markings below waterline to the acceptability standard for UWILD Inspection. Contractor to bid all preparation down to Near White Blast Cleaning SSPC-SP 10 / Sa 2.5.

Paint Representative and Owner's Representative will approve surface preparation, and Paint Representative shall be present to monitor the correct application and wet micron thickness of all paints. Contractor will provide a written report of the DFT microns applied, temperature and humidity readings to the Owner's Representative.

2. References

2.1 GLOSTEN 07084-07-004 DOCKING PLAN

2.2 GPA 00199-602.01 rev. A HULL DESIGNATION AND MARKING

2.3 GPA 00199-801-02 rev. E OUTBOARD PROFILE

3. Outline of Work

A. SURFACE PREPARATION. Ensure that adequate protection is given to all electronic transducer heads, arrays, electronic equipment, zinc anodes, bow thruster and propellers. Blasting and painting must occur only when the substrate temperature is at least 3°C (5°F) above the dew point to prevent flash rusting. Substrate and ambient temperature during application and curing should be between 10°C - 40°C. Humidity must be below 85%. All drying times shall be in accordance with the Owner supplied paint specifications and as directed by the paint inspector and/or Owner's Representative.

(1) Pre-Cleaning:

a) High-Pressure Water Washing: Minimum 350 bar (~5,000 psi) to remove salts, marine growth, and loose paint.

b) Degreasing: Solvent cleaning per SSPC-SP 1 to remove all oils and greases.

c) Chloride Testing: Surface salt levels must not exceed 5 µg/cm² (ISO 8502-6/9).

(2) Abrasive Blasting:

Abrasive blasting will not be allowed on the propellers, bow thruster turbine, arrays, transducers, or any electronic equipment. Contractor to make sure proper masking and hard surface protection is installed prior to blasting commences. Areas to be blasted to be approved by the Owner's Representative prior to blasting, after adequate protective coverings that will prevent any damage have been installed.

CHECK POINT - Masking and covering inspection.

a) Standard: Blast to SSPC-SP 10 / ISO 8501-1 Sa 2.5 (Near-White Metal).

b) Anchor Profile: Achieve a sharp angular profile of 50–100 microns (2–4 mils).

c) Dust Removal: Vacuum or compressed air cleaning to ISO 8502-3 Class 2 or better.

d) 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.

CHECK POINT - Blasting inspection.

B. COATING APPLICATION (ANTICORROSIVE)

Environmental Condition. Follow directions from the paint manufacture and paint manufacturer's representative's requirements at all time. Contractor to follow the paint manufacture's requirements regarding overcoating window drying time.

CHECK POINT - Environmental conditions inspection/monitoring.

(1) First Primer Coat (Primer)

a) Material: High-build, two-component Epoxy.

b) Application: Airless spray to specified DFT (minimum 150 microns).

(2) Stripe Coating

a) Manual brush application to all welds, edges, corners, and rudders. To ensure minimum DFT on areas where spray-on paint typically thins out.

(3) Second Primer / Tie-Coat (color swap to make sure coverage is better seen by painters)

a) Material: High-build, two-component Epoxy.

b) Application: Airless spray to specified DFT (minimum 300 microns).

CHECK POINT - Final Primer Inspection. Continuing environmental monitoring.

C. ANTIFOULING (AF) SYSTEM

AF must be applied within the "tack-free" or "overcoating" window of the tie-coat (per the AF manufacturer's Technical Data Sheet ("TDS")).

Contractor to apply AF per the Vessel's paint specification. Minimum two full coats of with minimum 150 microns DFT per coat. with a stripe coat in between the two full coats.

- Color Coding: Use different shades for the first and second AF coats to monitor wear during service. Last full AF coat to be Black color.
- Transducers to be painted with one coat of Kongsberg approved AF, in accordance with Owner's Representative's direction. This WILL NOT include 38 kHz acoustic window. Contractor to seek approval from Owner's Representative before any work is done on the transducers.

4. *Auxiliary Work*

A. After the final full coat of AF paint is applied, repaint the white hull marking including stripe around sensitive areas and transponders using a small paint roller and white paint acceptable to the AF in accordance with the paint manufacturer's representative and the Owner's Representative to verify locations.

B. Cathodic Protection;

- Anodes: Install new zinc or aluminum sacrificial anodes to sea chests, rudder, and hull.
- Masking: Ensure no paint is applied to the surface of the anodes or ICCP reference electrodes.
- ONLY WITH guidance from the Owner's Representative, shall paint be applied to any electronic transducer head, array probe or any other electronic sensing surfaces, propellers.

C. Sea Chests & Grates

- Internal coating of sea chests to match hull specifications.
- Secure all grates with stainless steel fasteners and safety wire.

5. Inspection & Quality Assurance

A. Measurement & Testing

- DFT Gauging: Record 20 readings per 100 m² (SSPC-PA 2).
- Holiday Testing: Spark test for pinholes in critical areas.

B. Documentation

- Final report including batch numbers, ambient conditions, and signed-off DFT maps.
- Contractor to ensure that ABS provide current and valid anti-fouling certificate.

CHECK POINT - Final Inspection.

6. 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 and include its costs as part of the bid.

B. The scheduling and execution of this Work Item shall be coordinated by the Contractor and performed concurrently, where practicable, with for example Work Item Steel Repair, Sonar room Maintenance and others. The Contractor shall be responsible for planning and sequencing the work to avoid interference with, duplication of effort, or damage to completed or ongoing work. Any damage caused by the Contractor, its subcontractors, employees, or agents to previously completed work, whether under this Contract or other related work items, shall be repaired at the Contractor's sole expense to the satisfaction of the Owner's Representative. Failure to properly coordinate the work or the occurrence of such damage shall constitute a Contractor performance deficiency and may be grounds for corrective actions, including but not limited to withholding of amounts otherwise payable until cure and, if not cured within the stated response window, Owner's performance of the service at Contractor's expense with reimbursement through setoff/back-charge, or other remedies available under the Contract.

C. Contractor shall approve proper protection to areas not to be painted prior to application of any paint, thinner, or solvent, to be approved by the Owner's Representative.

D. The temporary rerouting (and removal of same) to redirect any runoff of water away from hull to is considered as part of bid. See Chapter 6.4.

E. All parts of Chapter 4, 5 and 6 applies to all Work Items.

* Optional Work Items 2027-12, Port and Starboard Main Propulsion Motor Maintenance

1. General Scope

Contractor shall arrange for complete inspection, cleaning, testing, and repairs as described and necessary for the 5-Year Special Survey of the Port and Starboard TECO-Westinghouse propulsion motors, (Model Frame DD547.5). The scope of work to include, but not limited to, inspection and servicing of the Forward Motor Thrust Bearings, Aft Motor Radial Bearings (drive-end motor bearings), and associated Line Shaft Bearings for each propulsion motor, together with any additional work identified during inspection or required by ABS Surveyor and the OEM Technical Representative's service recommendations.

Contractor shall provide qualified and OEM-certified TECO-Westinghouse service technicians to perform and supervise all work under this Work Item. Prior to commencement of work, Contractor shall submit to Owner's Representative the curriculum vitae (CV), qualifications, and OEM certification documentation of the assigned lead technician for review and acceptance. All work shall be carried out in accordance with OEM procedures, ABS requirements, and recognized marine industry standards. Contractor shall:

- Demonstrate prior experience with large sleeve-bearing propulsion motors
- Provide qualified bearing technicians
- Provide calibrated measuring instruments
- Maintain OEM cleanliness standards

2. References

- Table 1-1 Propulsion Motor Basic Data
- GPA 00199-184-14A Rev A FOUNDATION SHAFT BEARING
- GPA 00199-243-01B STERN TUBE & SHAFT BEARING DETAILS
- 00199-243-02A STERN TUBE STRUCTURAL DETAILS
- GPA 00199-801-05 rev. - BOOKLET OF GENERAL DRAWINGS

3. Location of Work:

- Starboard side hull, third platform level, Motor Room #1
- Starboard side Shaft Alley #1
- Port side hull, third platform level, Motor Room #2
- Port side Shaft Alley #2

4. Work Description

4.1. Propulsion Motor:

A. This work item shall commence as soon as possible during drydocking. Contractor shall provide all labor and materials to support this Work Item.

B. Contractor is responsible for following the LOTO requirement for all affected equipment per the Vessel's policy in conjunction with Vessel's crew, to secure and de-energize the Propulsion Motors.

C. Remove all access covers (top and bottom, including covers to access blower housing) and filters.

D. Unbolt and lower the lower half of the aft end cover, which is located below the deck plates, to allow for better inspection and cleaning access. Perform full inspection of both motors.

E. Cleaning shall be accomplished using vacuums, dry, low-pressure air, and lint free rags.

F. Temporarily disconnect all armature and field leads and perform megger readings on all of the fields and winding within each motor. Tag and mark all cabling prior to removal.

G. Take insulation resistance readings for each motor PRIOR to cleaning.

H. Take and record air gap readings on each motor from Drive End and Non-Drive End.

I. Prior to cleaning, furnish borescope and conduct a thorough borescope examination of each stator, taking care to inspect all suspect areas between main poles and interpoles. The objective is to check for any possible foreign objects, insulation deterioration, carbon, or dirt deposits.

J. Photos shall be taken that identify and define locations on each motor.

K. Similar photos AFTER cleaning shall be taken.

L. Inspect motor armatures and commutators for any signs of damage. Inspect brush rigging for cracks, chips, worn areas and distortion. These areas should be noted and documented for ascertaining the condition of the motor and foreseeable failure areas.

M. Inspect brush rigging and check for evidence of chattering and brush lead chafing. Check each brush to confirm free movement in their holders.

N. Dismantle and inspect each brush for wear. All those found to be within ½" of the wear line are to be replaced with OFM spares. All new brushes shall be properly seated.

O. While brushes are removed, check each commutator for eccentricity and depth of undercut. NOTE: The commutator eccentricity can only be checked by rotating equipment. Owner will provide jacking bar and Contractor to provide physical labor for turning shaft.

P. Check and confirm that the brush box height above the commutator is in accordance with recommendations. Adjust as required to restore to proper height, if necessary. Check each brush holder retainer for proper fit.

Q. Check each brush shunt wire for proper shaping so that it does not contact the holder sides, springs, or adjacent shunt wires. Replace those that cannot be corrected with OFM spare brushes.

R. Inspect the brush springs/wear indicators for any play or wear. Remove all spring/wear indicators that exhibit wear.

S. Any brush holders that are replaced for whatever reason shall be replaced as an assembly, with new spring/wear indicator retainers.

T. Clean each motor housing internals, including the commutator, field poles, interpoles, blower housing and interconnecting cable that was removed for testing. Clean each brush stud and yoke.

CHECK POINT - Cleanliness inspection with Owner's Representative, USCG and ABS surveyor.

U. At completion of cleaning, take and record insulation readings and provide in side-by-side comparison with original insulation readings taken above in final report to Owner's Representative.

V. Confirm that the bearing and winding Resistance Temperature Detectors (RTD) operate as designed. This shall be tested locally and confirmed at the Main Controller Center (MCC) via alarm/data logger.

CHECK POINT – Verification of RTD readings by the Owner's Representative, USCG and ABS surveyor.

W. Confirm that all heaters for each motor are operational. Submit CFR with a list of defective parts found to Owner's Representative.

X. Submit CFR to the Owner's Representative in MS Word or .pdf format containing the following details:

(1) Insulation resistance readings – Before and After.

(2) Photos of the main motors taken before and after cleaning using a Contractor furnished borescope. Photos shall state location on motors where photos were taken and be date stamped.

(3) Air Gap Readings.

(4) # of brushes replaced per motor.

(5) # of brush holders replaced per motor.

(6) List of materials required to repair/restore any broken components found.

(7) Future repair recommendations.

4.2. *Propulsion Motor Water Cooler:*

4.2.1. *Port Cooler:*

Contractor shall supply and install one (1) new OEM motor cooler for the Port propulsion motor. Contractor shall carefully disconnect and remove the existing cooler from the ventilation trunk, ensuring all components, fasteners, and loose items are accounted for and no foreign objects remain within the work area. New cooler shall be installed, aligned, connected, tested, and commissioned in accordance with OEM requirements and the Vessel's operating standards.

- This work may be carried out prior to completion of Section 4.1.

4.2.2. *Starboard Cooler:*

Open, inspect and clean interior of Starboard water cooler. All tubes to be inspected and cleaned, using appropriate tube brush to thoroughly clean tubes from one end to the other. At completion, Contractor responsible for replacing all gaskets with new and ensuring housing is watertight and not leaking.

4.3. *Bearings*

Where bearing removal requires rotor unloading, the Contractor shall:

a. Provide approved lifting arrangements

b. Prevent shaft distortion

c. Prevent journal scoring

d. Maintain rotor centerline support

4.3.1. *Forward Motor Thrust Bearings:*

The Contractor shall as part of this scope, inspect and overhaul the complete forward thrust bearing assembly including:

a. Thrust shoes/pads

b. Equalizing assemblies

c. Thrust collar

d. Bearing housing

e. Oil distribution components

f. Temperature detectors

g. Oil seals

h. Instrumentation fittings

4.3.1.1 DISASSEMBLY, the Contractor shall:

a. Drain bearing oil reservoir.

b. Remove bearing housing cover.

c. Match-mark all components prior to removal.

d. Remove thrust shoes sequentially and record location.

e. Protect thrust collar surfaces from mechanical damage.

f. Store removed components in contamination-free containers.

g. No steel tools shall contact babbitt surfaces directly.

4.3.1.2 CLEANING, the Contractor shall clean:

a. Bearing housing interiors

b. Oil passages

c. Oil nozzles

d. Bearing shoes

e. Equalizing plates

f. Temperature wells

Cleaning solvents shall be non-chlorinated and approved for electrical machinery service.

4.3.1.3 Inspection:

INSPECTION and Record: -2-1

Thrust Shoes	Thrust Collar	Equalizing Mechanism
◦ Babbitt wiping ◦ Surface fatigue ◦ Heat distress ◦ Cracking ◦ Oil starvation ◦ Uneven contact ◦ Edge loading Dye penetrant testing shall be performed where cracking is suspected.	◦ Surface finish condition ◦ Contact pattern ◦ Runout ◦ Axial movement ◦ Scoring ◦ Heat checking	◦ Pivot freedom ◦ Pivot wear ◦ Leveling plate condition ◦ Contact surfaces ◦ Fastener integrity

4.3.1.4 MEASUREMENTS, the Contractor shall measure and record:

a. Axial float
b. Thrust collar runout
c. Pad clearances
d. Shaft centerline elevation
e. Bearing contact pattern
f. Oil film clearances

All measurements shall be documented before and after overhaul.

4.3.1.5 RECONDITIONING:

The following corrective actions may be performed subject to Owner's Representatives written approval:

a. Re-babbitting of thrust shoes
b. Surface polishing
c. Minor journal refinishing
d. Seal replacement
e. Pivot replacement
f. Fastener renewal

Replacement components shall meet OEM material specifications.

4.3.1.6 REASSEMBLY, the Contractor shall:

a. Install components in original orientation unless renewed.
b. Verify free movement of equalizing assemblies.
c. Lubricate components with approved lubricant.
d. Torque fasteners in accordance with OEM values.
e. Verify unrestricted oil flow.

4.3.1.7 POST-ASSEMBLY TESTING, the Contractor shall:

a. Perform shaft turning checks
b. Verify axial movement
c. Verify bearing lubrication
d. Record bearing temperatures during operation
e. Record vibration readings

Any abnormal temperature rise or vibration shall require immediate shutdown and investigation.

4.3.2. Aft Motor Radial Bearings (drive-end motor bearings):

The Contractor shall overhaul the drive-end radial bearing assembly including:

a. Upper and lower bearing shells
b. Bearing housing
c. Oil rings/discs

d. Insulated bearing components where fitted
e. Oil seals
f. RTDs and instrumentation

4.3.2.1. DISASSEMBLY, the Contractor shall:

a. Drain oil reservoir.
b. Remove bearing cap.
c. Remove oil rings carefully to prevent distortion.
d. Lift rotor as required using approved lifting methods.
e. Remove upper and lower bearing shells.

Rotor journals shall not contact bearing shell edges during removal.

4.3.2.2. Inspection:

Bearing Shells	Oil Rings	Shaft Journal
◦ Wiping	◦ Roundness	◦ Surface finish
◦ Corrosion	◦ Surface wear	◦ Diameter
◦ Badditt fatigue	◦ Freedom of movement	◦ Taper
◦ Embedded containment	◦ Groove wear	◦ Ovality
◦ Electrical fluting		◦ Heat discoloration
◦ Uneven wear		

4.3.2.3. MEASUREMENTS, the Contractor shall measure and record:

a. Radial bearing clearance
b. Shaft journal diameter
c. Rotor lift
d. Shaft runout
e. Endplay indication
f. Oil ring dimensions
g. Measurements shall be compared to OEM tolerances.

4.3.2.4. RECONDITIONING:

The following corrective actions may be performed subject to Owner's Representatives written approval:

a. Replace bearing shells
b. Re-babbitt bearing surfaces
c. Polish journals
d. Renew oil rings
e. Replace seals and gaskets

Replacement components shall meet OEM material specifications.

4.3.2.5. REASSEMBLY, the Contractor shall:

a. Verify bearing seating
b. Verify oil ring free rotation
c. Lubricate bearing surfaces prior to closure
d. Verify bearing insulation integrity where applicable
e. Verify shaft free rotation

4.3.2.6. POST-ASSEMBLY TESTING, the Contractor shall monitor:

a. Bearing metal temperature
b. Oil temperature
c. Oil flow
d. Vibration
e. Shaft stability

Testing shall be conducted through all operating ranges directed by Owner's Representative.

4.3.3. Line Shaft Bearings:

The Contractor shall inspect and overhaul the two propulsion line shaft bearings associated with the propulsion train.

4.3.3.1. DISASSEMBLY, the Contractor shall:

a. Remove bearing caps
b. Inspect bearing shells in place prior to removal
c. Record bearing wear patterns
d. Remove shells carefully to prevent damage

4.3.3.2. Inspection

a. Bearing shell condition
b. White metal integrity
c. Shaft journal condition
d. Oil system cleanliness
e. Bearing seating condition
f. Foundation fasteners
g. Bearing contact areas

4.3.3.3. MEASUREMENTS, the Contractor shall measure and record:

a. Bearing clearances
b. Shaft sag
c. Shaft offsets
d. Bearing wear-down
e. Jack-up readings
f. Shaft alignment readings

4.3.3.4. LUBRICATION SYSTEM, the Contractor shall:

g. Flush oil systems

h. Clean reservoirs

i. Replace filters

j. Verify oil flow paths

k. Inspect cooling arrangements

4.3.3.5. SHAFT ALIGNMENT, the Contractor shall:

a. Verify shaft alignment after reassembly

b. Compare alignment data with historical records

c. Identify deviations exceeding allowable tolerances

Final alignment acceptance shall comply with OEM and Classification Society requirements.

4.3.3.6. TESTING, following completion the Contractor shall:

a. Conduct slow-roll testing

b. Conduct operational testing

c. Record vibration and temperatures

d. Verify stable lubrication condition

5. Documentation

The Contractor shall submit:

1. Bearing inspection report
2. Dimensional report
3. Clearance report
4. Shaft alignment report
5. NDT report
6. Vibration report
7. Temperature trend report
8. Oil analysis results
9. Final overhaul report
10. Recommended corrective actions

All reports shall include:

- Date
- Equipment identification
- Technician identification
- Measuring instrument identification
- Calibration status

6. Check Points

The following CHECK POINT - shall require the Owner's Representative attendance.

Check Point	Description
CP-1	Bearing opening
CP-2	Completion of cleaning
CP-3	Completion of inspection
CP-4	Clearance measurements
CP-5	Alignment verification
CP-6	Final assembly
CP-7	Operational testing

No work shall proceed beyond Check Points without the Owner's Representative's authorization.

7. Acceptance Criteria

Acceptance shall require

- Compliance with OEM tolerances
- Acceptable bearing contact patterns
- Stable operating temperatures
- Acceptable vibration levels
- Proper lubrication flow
- No abnormal wear indications
- Successful operational testing

Any bearing exhibiting abnormal heating, wiping, vibration, or oil contamination following overhaul shall be subject to immediate investigation and corrective action.

8. Notes

- Conduct Dock Trials on both propulsion motors as soon as practical once the ship is back in the water. Testing is to occur one motor at a time with each motor running for a minimum of 1 hour and for as long as it takes to satisfy operation to the Owner's Representative, but not to exceed 8 hours.
- CAUTION: Any washers, screws, tools or other debris dropped internal of the machine must be located and removed. Every caution should be taken to prevent hardware and debris from falling into the machine.
- All temporarily removed items shall be reinstalled to their previous location. Items damaged in the process shall be repaired, replaced, or restored to original condition.
- All disturbed /damaged paint caused by the Contractor, to be painted according to Vessel's paint specification and in accordance with paint inspector and the Owner's Representative's requirements. Feather edges smoothly so repaired areas don t show through final coat. Provide DFT and environmental results during and where coating has been repaired. All work to be completed to the Owner's Representative's satisfaction.
- All cost related to reinstallation and damage repair to be borne by the Contractor.

9. *Miscellaneous*

A. Submit CFR to the Owner's Representative.

B. All parts of Chapter 4, 5 and 6 applies to all work items.

* Optional Work Items 2027-13, Open, Clean and Inspect Ballast Tanks

1. General Scope

The Contractor to provide the labor, material, and equipment as required to accomplish the following: to open, clean, and inspect all ballast tanks outlined below under Section 3. Tanks are to be sufficiently cleaned and free from water, scale, dirt, oil residues, etc., to reveal corrosion, deformation, fractures, damages, detachment of the structure from the plating, or other structural deterioration to the satisfaction of the attending ABS surveyor and Owner's Representative.

To maintain stability, several of the ballast tanks may still contain salt water from different locations around the world.

Prior to drydocking the Vessel's crew will provide a tank condition report for all the Vessel's tanks.

2. Reference

- GPA 00199-506-01 VENTS & SOUNDING TUBES SCHEMATIC; Rev F
- GPA 00199-529-01 BILGE & BALLAST SYSTEM SCHEMATIC; Rev E
- GPA 00199-801-05 rev. - BOOKLET OF GENERAL DRAWINGS

3. Tanks included:

Locations	Full capacity ~m^2	sq ft	m^3	gallons
Ballast Tank #1 S	218	2,351	65	17,202
Ballast Tank #2 P	218	2,351	65	17,202
Ballast Tank #3 S	232	2,500	59	15,583
Ballast Tank #4 P	232	2,500	59	15,583
Ballast Tank #5 S	236	2,540	87	23,015
Ballast Tank #6 P	236	2,540	86	22,776
Ballast Tank #7 S	102	1,100	63	16,563
Ballast Tank #8 P	102	1,100	63	16,563

4. Work Description

After the Vessel is safely drydocked, and as soon as practical, each ballast tank shall be pumped or drained. Ballast water from the Vessel should be treated and handled by the Contractor in accordance with MARPOL regulations. All tanks are to be opened, drained, mucked out, cleaned (pressure washed), ventilated and suitable lighting provided for ABS Surveyor and the Owner's Representative to accomplish the structural survey. Cleanliness of tanks to be approved by the Owner's Representative.

A. All spaces opened for this Work Item shall be tested by a certified Marine Chemist and require "Safe for Entry" and “Safe for Hot Work” (if hot work is required) permits.

B. Contractor shall maintain forced air ventilation at all times and temporary lighting as needed until spaces are closed. Maintain these spaces in the "Safe for Entry" condition as long as these spaces are open. Contractor to bid the installation, maintenance, and removal of lighting on a per-tank basis, as directed by the Owner’s Representative. The cost of the set-up of lighting shall be included in the individual specification items where lighting is required.

C. Contractor to clean all tanks in its entirety from top to bottom with fresh water pressure washer, not to exceed 100 bar (~1,500 psi).

D. Contractor shall properly contain and dispose of any, and all debris, dirt, mud, etc. removed from the tanks.

E. As soon as the tanks are cleaned, the Contractor shall conduct a thorough visual inspection of all tanks including, but not limited to, both inboard and outboard areas along the length of the tank and note any abnormalities. Submit CFR noting findings of all inspections as well as for any abnormal conditions which may require repairs (i.e. striker plates).

F. Arrange for complete inspection of the internal structures of the tanks for ABS Load Line certificate.

CHECK POINT - Owner’s Representative and ABS overall survey of all tanks.

G. All inlet/outlet piping into tank shall be plugged. Contractor to ensure plugs are not lost or mixed up with other plugs. Contractor to manage a plug log and it shall be maintained to account for all plugs upon closure, and a copy shall be posted conspicuously outside of space. Submit the plug log to the Owner’s Representative. All plugs must be accounted for prior to tank closure.

H. Contractor shall verify proper operation of all tank sensors, alarms and tank level indicator s prior to closing of tank.

I. Prior to Final tank inspection the contractor will remove any foreign items (e.g., – lighting, staging, rags, paint cans, debris etc.) introduced into the tank during the course of work on the item, the cost of this will be included in the bid price for this work item.

J. Final tank inspections shall be approved by the Owner’s Representative upon completion. Tanks to be closed up immediately after final Check Point.

CHECK POINT - Owner’s Representative’s final inspection upon closing any and all tanks.

K. All tanks shall be closed using new sealing washers and new gaskets.

L. Prior to undocking, refill ballast tanks with salt water to the same level as during docking or in correspondence with Contractor’s weight change log and the Vessel’s stability undocking condition provided by the Vessel’s Captain.

5. *Performance Criteria/Deliverables*

A. Daily Log of Tanks Tested

B. Marine Chemist Certificate

C. Provide Vessel with ballast water received certificate ref: chapter 6.7.

6. *Miscellaneous*

A. Cost of removal and disposal of any wastes generated by Work Item to be part of the bid.

B. The scheduling and execution of this Work Item shall be coordinated by the Contractor and performed concurrently, where practicable, with Work Item 2027-24 Miscellaneous Tanks and Work Item 2027-25 Steel Repair. The Contractor shall be responsible for planning and sequencing the work to avoid interference with, duplication of effort, or damage to completed or ongoing work. Any damage caused by the Contractor, its subcontractors, employees, or agents to previously completed work, whether under this Contract or other related

work items shall be repaired at the Contractor's sole expense to the satisfaction of the Owner's Representative. Failure to properly coordinate the work or the occurrence of such damage shall constitute a Contractor performance deficiency and may be grounds for corrective actions, including but not limited to withholding of amounts otherwise payable until cure and, if not cured within the stated response window, Owner's performance of the service at Contractor's expense with reimbursement through setoff/back-charge, or other remedies available under the Contract.

C. All parts of Chapter 4, 5 and 6 applies to all Work Items.

* Optional Work Items 2027-14, Open, Clean and Inspect Fuel and Miscellaneous Tanks

1. General Scope

The Contractor to provide the labor, material, and equipment as required to accomplish the following: to open, clean, and inspect the Fuel and Miscellaneous tanks outlined below. The tanks are to be sufficiently cleaned and free from water, scale, dirt, oil residues, etc., to reveal corrosion, deformation, fractures, damages, detachment of the structure from the plating, or other structural deterioration. to the satisfaction of the attending ABS surveyor and Owner's Representative.

Prior to drydocking the Vessel's crew will provide a tank condition report for all the Vessel's tanks.

2. Reference

- GPA 00199-506-01 VENTS & SOUNDING TUBES SCHEMATIC; Rev F
- GPA 00199-529-01 BILGE & BALLAST SYSTEM SCHEMATIC; Rev E
- GPA 00199-801-05 rev. - BOOKLET OF GENERAL DRAWINGS

3. Tanks included:

Locations	Full capacity ~m^2	sq ft	m^3	gallons
FO Settling/Day Tank #1S			17	4,608
FO Settling/Day Tank #2P			17	4,608
Oily Waste Port			5	1,239
Sewage Tank			12	3,294

4. Work Description

Prior to commencing work, follow the Vessel's Lock Out/Tag Out ("LOTO") policy and procedures for the fuel system. After the Vessel is safely docked, and as soon as practical, each of the listed tanks shall be pumped, opened, and cleaned (pressure washed), ventilated and suitable lighting provided for ABS Surveyor and the Owner's Representative to accomplish the structural survey. Cleanliness of tanks to be approved by Owner's Representative. Hydrocarbons and other liquids from the Vessel should be treated and handled by the Contractor in accordance with MARPOL regulations.

4.1. Pumping:

- Dispose of oily waste and sludge in accordance with applicable laws.
- Provide documentation of disposal receipts to the Owner's Representative (See chapter 6.7: Bilge Water and Slops Disposal).

  When oils are transferred from the Vessel to dockside storage, the Owner's Representative will inspect all containers prior to introduction of oil from the Vessel. Credit for removed fuel shall be issued to the Owner's Representative based on the volume removed.

4.2 Opening and Cleaning:

A. All spaces opened for this item shall be tested by a certified Marine Chemist and require "Safe for Entry" and "Safe for Hot Work" (if hot work is required) permits.

B. Contractor shall maintain forced air ventilation at all times and temporary lighting as needed until spaces are closed. Maintain these spaces in the "Safe for Entry" condition as long as these spaces are open. Contractor to bid the installation, maintenance, and removal of lighting on a per-tank basis, as directed by the Owner's Representative. The cost of the set-up of lighting shall be included in the individual specification items where lighting is required.

C. Contractor shall properly contain and dispose of any and all oily slops debris, dirt, etc. removed from the tanks.

D. As soon as the tanks are cleaned, the Contractor shall conduct a thorough visual inspection of all tanks including, but not limited to, both inboard and outboard areas along the length of the tank and note any abnormalities. Submit CFR noting findings of all inspections as well as for any abnormal conditions which may require repairs (i.e. striker plates).

E. Arrange for complete inspection of the internal structures of the tanks for ABS Load Line certificate.

CHECK POINT - Owner's Representative and ABS overall survey of all tanks.

F. All inlet/outlet piping into tank shall be plugged. Contractor to ensure plugs are not lost or mixed up with other plugs. Contractor to manage a plug log and it shall be maintained to account for all plugs upon closure and a copy shall be posted conspicuously outside of space. Submit the plug log to Owner's Representative. All plugs must be accounted for prior to tank closure.

G. Contractor shall verify proper operation of all tank sensors, alarms, and tank level indicators prior to closing of tank.

H. Prior to Final tank inspection the contractor will remove any foreign items (ie – lighting, staging, rags, paint cans, debris, etc.) introduced into the tank during the course of work on the item, the cost of this will be included in the bid price for this work item.

I. Final tank inspections shall be approved by the Owner's Representative upon completion. Tanks to be closed up immediately after final Check Point.

CHECK POINT - Owner's Representative's final inspection upon closing any and all tanks.

J. All tanks shall be closed using new sealing washers and new gaskets.

K. Prior to undocking, coordinate with Owner's Representative for fuel transfer or filling of any tanks, to balance Contractor's weight change log and Vessel's stability undocking condition provided by the Vessel's Captain.

5. Performance Criteria/Deliverables

A. Daily Log of Tanks Tested

B. Marine Chemist Certificate

C. Provide vessel with certificate for the Oil Record Book of Oil/ Hydro Carbons received, ref: chapter 6.7

6. Notes

Unit Pricing USD, (to be filled in by Contractor):

- Unit cost per gallon of disposal of oily waste/waste oil: _____
- Unit cost per gallon of disposal of sewage: _____
- Unit cost to perform air test on a tank: _____
- Unit cost for each subsequent air test (per tank): _____

7. Miscellaneous

A. Costs for removal and disposal of any wastes generated by Work Item to be part of the bid.

B. The scheduling and execution of this Work Item shall be coordinated by the Contractor and performed concurrently, where practicable, with for example Work Item Miscellaneous Tanks Steel Repair+. The Contractor shall be responsible for planning and sequencing the work to avoid interference with, duplication of effort, or damage to completed or ongoing work. Any damage caused by the Contractor, its subcontractors, employees, or agents to previously completed work, whether under this Contract or other related work items, shall be repaired at the Contractor's sole expense to the satisfaction of the Owner's Representative. Failure to properly coordinate the work or the occurrence of such damage shall constitute a Contractor performance deficiency and may be grounds for corrective actions, including but not limited to withholding of amounts otherwise payable until cure and, if not cured within the stated response window, Owner's performance of the service at Contractor's expense with reimbursement through setoff/back-charge, or other remedies available under the Contract.

C. All parts of Chapter 4, 5 and 6 applies to all Work Items.

* Optional Work Items 2027-15, Sea Water Piping Cleaning, Repair, & Strainer Overhaul

1. General Scope

The Contractor shall provide all labor, materials, equipment, services, and supervision necessary to inspect, clean, repair, test, and return to service the seawater piping systems and associated strainers located in the port and starboard pump rooms. All work shall be performed in accordance with applicable regulatory requirements and good marine engineering practice.

2. Reference

- GPA 00199-256-10 Rev B - SEA CHEST ARRANGEMENT & DETAILS
- GPA 00199-801-05 rev. - BOOKLET OF GENERAL DRAWINGS
- GPA 00199-524-01H SEAWATER SERVICE SYSTEM SCHEMATIC
- GPA 00199-521-01E FIRE MAIN SYSTEM SCHEMATIC
- GPA 00199-529-01E BILGE & BALLAST SYSTEM SCHEMATIC
- GPA 00199-256-O1E ENGINE COOLING WATER SCHEMATIC GPA

3. Location

- Port Pump Room
- Starboard Pump Room

4. Work Description:

A. The Contractor shall jointly inspect the seawater piping systems and strainers with the Owner's Representative prior to commencing work.

CHECK POINT - Start up Inspection.

B. The Contractor shall isolate, drain, and open all designated seawater strainers in the port and starboard pump rooms.

C. The Contractor shall remove all marine growth, scale, sediment, corrosion products, debris, and foreign material from strainer bodies, baskets, covers, and associated piping components.

D. The Contractor shall inspect strainer baskets, covers, studs, nuts, fasteners, gaskets, and sealing surfaces for wear, corrosion, erosion, cracking, or other deterioration.

E. The Contractor shall renew all damaged or deteriorated gaskets and replace any defective fasteners identified during inspection.

F. The Contractor shall internally inspect all accessible seawater piping in the pump rooms for evidence of corrosion, pitting, erosion, leakage, coating failure, mechanical damage, or excessive wall loss.

G. The Contractor shall mechanically clean accessible seawater piping as required to remove marine growth, scale, corrosion deposits, and accumulated sediment.

H. The Contractor shall identify and repair any leaking piping, flanges, fittings, supports, valves, or associated components discovered during inspection. Repairs shall require the Owner's Representative written approval.

CHECK POINT - CFR inspection.

I. Any piping sections exhibiting excessive wastage, severe pitting, perforation, or structural degradation shall

be reported to the Owner's Representative. Replacement recommendations and repair proposals shall be submitted for the Owner's Representative's review.

J. Upon completion of cleaning and repairs, the Contractor shall reassemble all strainers using new gaskets and reinstall all removed components with all new hardware.

CHECK POINT - Installation inspection.

K. The Contractor shall hydrostatically test or operationally test all repaired piping and strainer assemblies to verify system integrity and absence of leakage. Test pressure and procedure shall be approved by the Owner's Representative.

CHECK POINT - Hydrostatically test

L. Following successful testing, the Contractor shall return all systems to normal operating condition with valves in closed position.

5. *Inspection and Documentation*

A. The Contractor shall provide before-and-after photographs of all opened strainers and any repaired piping sections.

B. The Contractor shall submit a written condition report documenting:

- Strainer condition
- Piping condition
- Areas of corrosion or wastage
- Repairs performed
- Materials renewed
- Test results

All documentation and reports to be presented to the Owner's Representative at completion of this work item as well as in the Project Close Out package.

6. *Unit Rates for Additional Work Scope (Pro-Rata Options)*

The following rates must include all labor, cropping, fit-up, welding, consumables, staging, gas-freeing, fire watch, NDT, preparation, inspections, and painting.

Category	Description	Unit of Measure	Unit Rate (USD)
Plating	Additional Steel Pipe Renewal diameter 1" to 4"	Per Kilogram (kg)	$_____
Plating	Additional Steel Pipe Renewal diameter 5" to 8"	Per Kilogram (kg)	$_____
Plating	Additional Heavy Pipe Renewal diameter 1" to 4"	Per Kilogram (kg)	$_____
Plating	Additional Heavy Pipe Renewal diameter 5" to 8"	Per Kilogram (kg)	$_____
Surface Prep	Additional Rust preservation SSPC-SP 10, Pipe internal and external	Per Linear Meter (m)	$_____

Surface Prep	Additional Rust preservation SSPC-SP 11, Pipe internal and external	Per Linear Meter (m)	$_____
Testing	Additional Dye Penetrant (DP) or Magnetic Particle (MPI)	Per Meter of Weld	$_____

7. Note:

- All work is subject to acceptance by the Owner's Representative, ABS Surveyor, and USCG Inspector.
- If Ultrasonic Thickness ("UT") measurements are required under this Work Item to determine the extent of piping degradation or to support repair recommendations, such work shall be considered part of Work Item 2027-09, Hull and Pipe Thickness Readings (NDT), and shall be priced accordingly under that item. The Contractor shall provide a certified Non-Destructive Test ("NDT") technician to perform and document the required UT measurements. Any additional UT readings associated with this Work Item shall be compensated at the unit rates established under Work Item 2027-09.

8. Miscellaneous

A. Contractor will be responsible for arranging the ABS and U.S. Coast Guard inspections as required.

B. The Contractor shall collect, handle, and dispose of all debris, marine growth, sediment, cleaning residue, and waste materials generated under this Work Item in accordance with applicable environmental and regulatory requirements.

C. All parts of Chapter 4, 5 and 6 applies to all Work Items.

* Optional Work Items 2027-16, Hydraulic Oil system, HPU # 1 - 2

1. General Scope

The Contractor to provide the labor, material, and equipment as required to accomplish all required overhaul/ service of the to the Hydraulic Oil System, HPU #1 and HPU #2, for the ABS 5-year Special Survey, including tank work as listed below. Contractor to dispose of all waste as part of this work item according to regulatory requirements.

2. Reference

- S18I056-01501-Model/ S18I056-05102-Model/ S18I056-05103-Model/ S18I056-05104-Model
- S18I056_05-14-19_113730768
- KBH-05-D206 KILO MOANA HYDRAULIC SCHEMATIC_113753243
- KBH-05-D204 R_A HYDRAULIC PIPING INSTALLATION_113729047_113754773
- KBH-01-D220 R- AUX HPU ASSEMBLY_113753469
- KBH-01-D206 AUX HPU FOUNDATION & CABLE GUARD INSTALLATION_113474632_113753690
- 00199-573-01A-1 DECK MACHINERY LAYOUT; Rev A (Sheets 1-2 of 4)
- 00199-573-01A-2 DECK MACHINERY LAYOUT; Rev A (Sheets 3-4 of 4)
- GPA 00199-556-13 rev.A HYDRAULIC POWER PIPE A&D DECK MACHINERY
- GPA 00199-801-05 rev. - BOOKLET OF GENERAL DRAWINGS

3. Location of Work:

Winch and Wire room, Main Deck and Winch Wire Bay

4. Work Description:

A. Prior to draining the tanks, Contractor to assure that all cylinders are fully retracted, to push as much fluid as possible back into the reservoir.

B. The Contractor to follow the LOTO requirement and protect the space.

C. Drain hydraulic oil tanks on both of the HPU's units inside Winch wire room/bay, Port side main deck. Contractor to dispose of the used oil according to MARPOL Annex 1, Regulations for the Prevention of Pollution by Oil, and consequently provide the Owner's Representative a signed and stamped certificate for the received oil. Prior to draining, Contractor to assure that all cylinders are retracted.

D. Contractor to clean Winch wire room and Winch Wire Bay and HPU's for oil including deck cleaning of same for hydraulic oil, to provide a clean safe surface without oil spill to the Owner's Representative's satisfaction.

E. Open Clean and inspect hydraulic oil tanks on HPU #1 & #2.

CHECK POINT - Cleanliness and tank inspection

F. Contractor to disconnect the valve and hose under the HPU#1 tank. Relocate the valve location to right up under the tank (flexible rubber hose to be under the valve not above).



G. Contractor to provide new ABS certified valve with certificate for reinstallation, including new rubber hose with test certificate. Valve and hose to be marked with labels upon completion, as specified under WI 2027-07 Critical Valve Inspection and Repair.

CHECK POINT - Fit up inspection.

H. Contractor to reinstall valve and hose to the correct location and orientation to Owner's Representatives, ABS and USCG satisfaction.

I. Pressure test oil tank after reinstallation of valve, with a manometer to the satisfaction of attending surveyor and Owner's Representative.

CHECK POINT - Air Manometer pressure test, tank inspection.

J. Contractor to remove all old oil filters and provide and install new pressure and return filters to both HPU's.

CHECK POINT - Final tank cleanliness inspection.

K. Contractor to provide new Chevron Rando ISO 68, Hydraulic oil.

- Refill and Flush: Fill the tanks with fresh oil. Run each system at low pressure and slowly operate the winches and cranes so the fresh oil circulates, pushing residual old oil back to the tanks
- Final Top-off: Drain the tanks one more time, replace filters again, and fill both HPUs to the proper level with fresh oil.

CHECK POINT -ABS 5-year ops test inspection.

CHECK POINT - Final Inspection.

5. Notes

- Conduct dock operational tests on both HPUs as soon as practical. Testing is to occur one motor at a time with each motor running for a minimum of 1 hour and for as long as it takes to satisfy operation to the Owner's Representative, but not to exceed 8 hours.
- All temporarily removed items shall be reinstalled to their previous location. Items damaged in the process shall be repaired, replaced, or restored to original condition.

  All disturbed /damaged paint caused by the Contractor, to be painted according to vessels paint specification and in accordance with paint inspector and Owner's Representative requirements. Feather edges smoothly so repaired areas don t show through final coat. Provide DFT and environmental results during and where coating has been repaired. All work to be completed to Owner's Representative's satisfaction.

  All cost related to reinstallation and damage repair to be borne by the Contractor.

6. *Miscellaneous*

A. Report conditions found to the Owner's Representative.

B. All parts of Chapter 4, 5 and 6 applies to all Work Items.

Section. 5 Non-Standard Work Items (2027-17 – 2027-34)

General Performance Criteria and Deliverables

All work performed under these specifications shall comply with Chapter 4, 5 and 6 and applicable safety regulations and best practices, The work area shall be left in an undisturbed condition upon completion, with all removed materials properly disposed of and any affected areas restored to their original state.

All installations, modifications, and structural work shall meet applicable engineering standards and quality requirements. Critical components, including welds, load-bearing structures, piping, and equipment supports, shall be inspected and tested, including nondestructive testing where required. Functional testing shall be conducted to verify the proper operation of all systems and equipment, and any deficiencies shall be corrected prior to final acceptance.

As-built documentation shall be provided for all work, including drawings, wiring diagrams, piping layouts, structural modifications, and penetrations. Material certifications shall be supplied for key components such as stainless steel, insulation, hardware, and other critical materials. Vibration analysis, modeling, and engineering reviews shall inform any structural or mechanical modifications.

All work shall be completed in accordance with the project schedule and milestones. Specific requirements for individual systems, equipment, or tasks are described in the respective work specifications, and all such work shall adhere to the criteria and deliverables outlined in this section.

1. General Scope

Full hull abrasive blasting and renew paint full coat of the hulls from Waterline to Bulwarks. This work includes all markings shown in reference drawing C (Hull Designation and Markings) and to include all hull designations and markings above the waterline to the acceptability Inspection. Contractor to bid all preparation down to Near White Blast Cleaning SSPC-SP 10 / Sa 2.5 .

The Owner's Representative and paint representative will approve surface preparation, and the paint representative shall be present to monitor the correct application and wet micron thickness of all paint. Contractor will provide a written report of the Dry Film Thickness (DFT) microns applied, temperature and humidity readings to the Owner's Representative.

2. References

GLOSTEN 07084-07-004 DOCKING PLAN

GPA 00199-602.01 rev. A HULL DESIGNATION AND MARKING

GPA 00199-801-02 rev. E OUTBOARD PROFILE

3. Outline of Work

A. SURFACE PREPARATION. Ensure that adequate protection masking is given to all electronic equipment, porthole, deck equipment railings and deck. Contractor to ensure marks as punched in or welded on hull, prior to commencing painting. Blasting and painting must occur only when the substrate temperature is at least 3°C (5°F) above the dew point to prevent flash rusting. Substrate and ambient temperature during application and curing should be between 10°C 40°C. Humidity must be below 85%. All drying times shall be in accordance with the supplied paint specifications and as directed by the paint inspector or the Owner's Representative.

(1) Removal of interferences:

a) Contractor to remove the forward cat walk fiber grid deking in preparation for the cleaning and blasting.

(2) Pre-Cleaning:

a) High-Pressure Water Washing: Minimum 350 bar (~5,000 psi) to remove salts, marine growth, and loose paint.

b) Degreasing: Solvent cleaning per SSPC-SP 1 to remove all oils and greases.

c) Chloride Testing: Surface salt levels must not exceed 5 µg/cm² (ISO 8502-6/9).

(3) Abrasive Blasting

Abrasive blasting will not be allowed on the port hole glass, or any electronic equipment. Areas to be blasted are to be approved by the Owner's Representative prior to blasting, after adequate protective coverings that will prevent any damage have been installed.

a) Blast hull from water line to bulwarks, include forward cat walk framing in the blasting.

CHECK POINT - Masking and covering inspection.

b) Standard: Blast to SSPC-SP 10 / ISO 8501-1 Sa 2.5 (Near-White Metal).

c) Anchor Profile: Achieve a sharp angular profile of 50–100 microns (2–4 mils).

d) Dust Removal: Vacuum or compressed air cleaning to ISO 8502-3 Class 2 or better.

e) 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.

CHECK POINT - Blasting Inspection.

B. COATING APPLICATION (ANTICORROSIVE)

Environmental Conditions, follow paint manufacture and paint representative requirement at all time Relative Humidity (RH): Maximum 85%. Steel Temperature: Minimum 3°C (5°F) above the dew point. Contractor to follow the paint manufacture's requirements regarding overcoating window drying time.

CHECK POINT - Environmental Conditions inspection / monitoring.

(1) First Primer Coat (Primer)

a) Material: High-build, two-component Epoxy.

b) Application: Airless spray to specified DFT (minimum 150 microns).

(2) Stripe Coating

a) Manual brush application to all welds, edges, corners, and rudders. To ensure minimum DFT on areas where spray-on paint typically thins out.

(3) Second Primer / Tie-Coat (color swap to make sure coverage is better seen by the painters)

a) Material: High-build, two-component Epoxy.

b) Application: Airless spray to specified DFT (minimum 300 microns).

CHECK POINT - Final Primer Inspection. Continuing environmental monitoring.

C. GREEN TOP COAT SYSTEM

- The green top coat must be applied within the "tack-free" or "overcoating" window of the tie-coat (per manufacturer TDS).
- Contractor to apply the top coat as per the Vessel's paint specification. Minimum two full coats of with minimum 150 microns DFT per coat and with a stripe coat in between the two full coats.

4. Auxiliary Work

After the final full coat of green hull paint is applied, the Contractor to repaint all the hull markings using a small paint roller and white paint acceptable and in accordance with both the paint representative and the Owner's Representative, to verify locations. The Contractor to paint the hulls withe stripes and name and all additional other hull markings, to include but not limited to:

- International Maritime Organization ("IMO") numbers, Hawaii reg number, plimsoll / load line, deck line, bulb marking bow thruster, draft marks, frame numbers, propeller marks.
- Assure waterline is cut in cleanly and nice between the Antifouling ("AF") and the green hull. AF to green water line transition is about in the middle of "Tropical Fresh water" load line and "Fresh water" Load line draft marks.
- Contractor to reinstall all removed interferences to the Owner's Representatives satisfaction.
  - Forward fiber grid cat walk to be reinstated using all new Stainless-steel hardware.

5. Inspection & Quality Assurance

A. Measurement & Testing

- DFT Gauging: Record 20 readings per 100 m² (SSPC-PA 2).

B. Documentation

- Final report including batch numbers, ambient conditions, and signed-off DFT maps.

CHECK POINT - Final Inspection.

6. *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 and costs included as part of the bid.

B. The scheduling and execution of this Work Item shall be coordinated by the Contractor and performed concurrently, where practicable, with for example Work Item Steel Repair and Window and Porthole Repair. The Contractor shall be responsible for planning and sequencing the work to avoid interference with, duplication of effort, or damage to completed or ongoing work. Any damage caused by the Contractor, its subcontractors, employees, or agents to previously completed work, whether under this Contract or other related work items, shall be repaired at the Contractor's sole expense to the satisfaction of the Owner. Failure to properly coordinate the work or the occurrence of such damage shall constitute a Contractor performance deficiency and may be grounds for corrective actions, including but not limited to withholding of amounts otherwise payable until cure and, if not cured within the stated response window, Owner's performance of the service at Contractor's expense with reimbursement through setoff/back-charge, or other remedies available under the Contract.

C. Contractor shall approve proper protection to areas not to be painted prior to application of any paint, thinner, or solvent, to be approved by the Owner's Representative.

D. The temporary rerouting (and removal of same) to redirect any runoff of water away from area to be painted is considered as part of the bid. See chapter 6.4.

E. All parts of Chapter 4, 5 and 6 applies to all Work Items.

Work Items 2027-18, Port Stack Steel Repair.

1. General Scope

The Contractor to provide the labor, material and equipment as required to accomplish all required steel repair and ducting transition replacement inside the Port stack. Contractor to dispose of all waste as part of this Work Item according to regulatory requirements.

2. Reference

2.1 24068.02-512-01 Exhaust Fan Installation

2.2 WO0214313 DR LC_5804174273. ABS WORK ORDER FOR VENTILATION MODIFICATIONS

2.3 292111831_07084-512-02-Ventilation-Gen Rooms. KILO MOANA GENERATOR ROOM VENTILATION STRUCTURAL MODIFICATIONS

2.4 SY Spec - 2 - Generator Room Ventilation Mods

2.5 9510832 KILO MOANA GENERATOR ROOM VENTILATION STRUCTURAL MODIFICATIONS

2.6 GPA 00199-801-05 rev. - BOOKLET OF GENERAL DRAWINGS

3. Location of Work:

01 Weather deck Port side

4. Work Description:

It is expected that the whole deck steel plate in section 21-D in drawing Kilo Moana Generator DWG[9510832] (Reference 2.5) and the transition section on Elevation 45-C in drawing 292111831_07084-512-02-Ventilation-Gen (Reference 2.3) needs to be cooped and renewed, including smaller sections of the bulkhead into the workshop and DC Locker. Contractor to included preform and price for all mentioned steel duct work in this Work Item, including the cost of steel replacement for a smaller section (~20cm) of deck plating outside on the stack bulkhead on 01 deck. The height of the bulkhead on the stack that needs to be replaced is less then 20cm but due to access, the Owner expects the Contractor to change out about 1m up from the deck plate to allow for room to work. Additionally, the Contractor to overhaul the supply fan for the Generator room at the time the bulkhead is out. Contractor should expect the following:

- Renew drain pipe from inside the stack to down to generator room.
- Disconnect wiring into the stack and reconnect after steel replacement is completed.
- Remove necessary insulation inside the stack to prepare for hot work. After completion of hot work, welding, inspection, and painting, Contractor to re-insulate the space preferably with approved closed cell Spray foam that does not absorb moister and water.
- Crop and renew T-Bar stiffeners as part of the steel work related to the location of work.



Ref Only Starboard side



Ref Only Starboard side



Ref Only Starboard side



Ref Only Starboard side

Contractor to accomplish the following , but not limited to,:

A. Contractor to protect and cover all equipment and ventilation to prevent dust and or water infiltration, including protection in Diesel Generators and Alternators in Gen room #2, Workshop and Computer Lab.

B. Contractor to remove fire dampers on 02 deck Port for MCHRY RM#2 Exh and AMR 1&2 Intake to gain better access to the Port Stack.

C. Contractor to lay out steel cut along 01 deck from frame 34-36 and a section up on the vent stack also to gain access for better inspection of work that needs to be done inside the stack. Contractor to present lay out to Owner's Representative prior to starting steel cuts.

CHECK POINT - Preparation inspection.

D. Contractor to cut access to Port stack for steel repair and remove any necessary insulation and significant corrosion to evaluate the steel condition in preparation for the creation of repair plan.

E. Contractor to coordinate the repair plan with ABS, USCG, and Owner's representative and include Engineering drawings of the agreed work scope. Contractor pricing of this Work Item to include all steel and ducting repair that this Work Item lays out.

CHECK POINT - Completed steel and rust removal as laid out in repair plan, ready for insert.

F. Contractor to continue steel repair and alignment of new inserts.

CHECK POINT - Fit-up inspection.

G. Contractor to welding insert according to repair plan.

CHECK POINT - Weld inspection.

H. Continue repeat of scope under Sections F. and G., including check points, until the Port stack steel repairs are completed. Coordinate steel preservation and paint in between as needed, or as directed by Owner's Representative or either ABS or USCG. Contractor to pay special attention to sequencing and preservation to accomplish high maritime quality standard.

I. Contractor to preserve transition sections of the Vessel's steel in regard to this Work Item to standard of SSPC-SP 11.

CHECK POINT - Preservation inspection.

J. Contractor to repaint any areas damaged by repairs to the specifications as directed by the Owner's Representative. All disturbed sections to be painted according to the Vessel's paint specification and in accordance with paint inspector and Owner's Representative's requirements. Feather edges smoothly so repaired areas don t show through final coat. Provide DFT and environmental results during and where coating has been repaired. All work to be completed to Owner's Representative's satisfaction.

CHECK POINT - Paint inspection.

K. Contractor to reinstall fan and all wiring in accordance with best workmanship and to Owner's Representative's satisfaction and requirement.

CHECK POINT - Operational test / inspection.

L. Re-insulate the space according to regulatory requirements and Owner's Representative's satisfaction. Insulation material shall be non-hygroscopic, resistant to moisture absorption and retention, and suitable for the intended marine service. Contractor to provide Owner's Representative, ABS, and USCG with approval certificate for the materials to be used.

M. Contractor to re-install and operational test the fire dampers on the Port Stack, 02 deck Port for MCHRY RM#2 Exh and AMR 1&2 Intake.

CHECK POINT - Final inspection and Fire Damper Operational test.

5. Unit Rates for Additional or Deletion Work Scope (Pro-Rata Options)

The following rates must include all labor, cropping, fit-up, welding, consumables, staging, gas-freeing, fire watch, NDT, preparation, inspections, and painting.

Category	Description	Unit of Measure	Unit Rate (USD)
Plating	Additional Steel Plate Renewal (up to 15mm thickness), deck and bulkhead	Per Kilogram (kg)	$_____
Plating	Additional Heavy Plate Renewal (>15mm to 25mm thickness), deck and bulkhead	Per Kilogram (kg)	$_____
Stiffener	Additional T-Bar Stiffener Renewal	Per Linear Meter (m)	$_____
Angle Iron	Additional Angle Iron Renewal	Per Linear Meter (m)	$_____
Electrical	Additional Electrical repair and wiring	Per Linear Meter (m)	$_____
Duct	Additional Duct work including new insulation	Per Linear Meter (m)	$_____
Insulation	Additional insulation Renewal/repair	Per Square Meter (m^2)	$_____
Kickpipe	Additional Kick-pipe Renewal (from 19 to 40 mm)	Per Piece (pc)	$_____

Surface Prep	Additional Rust preservation SSPC-SP 11	Per Square Meter (m^2)	$_____

6. *Note:*

- All work is subject to acceptance by the Owner's Representative, ABS Surveyor, and USCG Inspector. If re-work or replacement is necessary due to defective work, the cost shall be borne by the Contractor.
- Contractor to specify as part of the pricing for this job what type of insulation contractor intend to use. Closed Cell spray foam Insulation will be preferred.
- Contractor to dismantle and dispose of all removed material.

7. *Miscellaneous*

A. Contractor will be responsible for arranging the ABS and/or U.S. Coast Guard inspections as required.

B. All parts of Chapter 4, 5 and 6 applies to all Work Items.

* Optional Work Items 2027-19, Starboard Stack Supply Fan overhaul.

1. General Scope

The Contractor to provide the labor, material, and equipment as required to accomplish overhaul of the Starboard Stack supply fan for Generator room # 1.

2. Reference

- 24068.02-512-01 Exhaust Fan Installation
- WO0214313 DR LC_5804174273.pdf
- 292111831_07084-512-02-Ventilation-Gen Rooms.pdf
- SY Spec - 2 - Generator Room Ventilation Mods.pdf
- Kilo Moana Generator DWG[9510832].pdf
- GPA 00199-801-05 rev. - BOOKLET OF GENERAL DRAWINGS

3. Location of Work:

Starboard side inside the stack

4. Work Description:

The following items, but not limited to, are to be completed by the Contractor:

A. Contractor to protect all equipment and ventilation to prevent dust and or water infiltration, including protection in the Diesel Generators and Alternators in Generator room #1. Contractor to follow the LOTO requirement and protect equipment from damage.

B. Contractor to overhaul Generator room # 1 supply fan including bearing replacement. Contractor's Job Safety Analysis ("JSA") and work plan to be presented for approval to Owner's Representative prior to starting.

CHECK POINT - Preparation inspection

C. Contractor to reinstall fan and all wiring in accordance with best workmanship and to the Owner's Representative's satisfaction and requirement.

CHECK POINT - Final inspection and Fire Damper Operational test

5. Note:

- All work is subject to acceptance by the Owner's Representative, ABS Surveyor, and USCG Inspector. If re-work or replacement is necessary due to defective work, the cost shall be borne by the Contractor.
- Contractor to dismantle and dispose of all removed material.

6. Miscellaneous

A. Contractor will be responsible for arranging the ABS and/or U.S. Coast Guard inspections as required.

B. Contractor to repaint any areas damaged by repairs to the specifications as directed by the Owner's Representative. All disturbed sections to be painted according to Vessel's paint specification and in accordance with paint inspector and the Owner's Representative's requirements. Feather edges smoothly so repaired areas do not show through final coat. Provide DFT and environmental results during and where coating has been repaired. All work to be completed to Owner's Representative's satisfaction.

C. All parts of Chapter 4, 5 and 6 applies to all Work Items.

* Optional Work Items 2027-20, Main Mast Replacement

1. General Scope

The Contractor to provide the labor, material, and equipment as required to accomplish the following to renew main mast with replacement. The Contractor to furnish new mast according to Glosten drawing, 23048-171-01 Glosten main mast modification (Reference 2.1). The Work Item involves the removal of the existing mast and its foundation, followed by the fabrication and installation of new Mast and preparation for the new foundation. Once the foundation is in place, anew mast to be installed. The final stage includes the installation and wiring of all mast-mounted equipment, such as sensors, lights, and antennas.

The Contractor to remove the existing main mast and replace with new structure, contractor to seek approval, inspections and certification in accordance with ABS and to the satisfaction of Owner's Representative. Some small antenna modification will likely to be made during the fabrication / renewal process to match actual updated ships equipment at the time of the drydock. Contractor to take measurement of existing antenna bolt pattern and situation, to be incorporated into new design. Contractor to seek guidance and approval from Owner's Representative for changes to the Glosten design.

2. Reference

2.1	23048-171-01	Glosten main Mast modification 2023
2.2	GPA 00199-171-01E-1	MAST ARRANGEMENT AND DETAIL
2.3	GPA 00199-171-01E-2	MAST ARRANGEMENT AND DETAIL
2.4	GPA 00199-801-05 rev.	BOOKLET OF GENERAL DRAWINGS

3. Work Description

Prior to commencing work, follow the Vessel's Lock Out/Tag Out (LOTO) policy and procedures for the Kilo Moana and Contractor's facility. After the Vessel safely arrives at Contractor's facility, and as soon as practically possible, commence replacement process of the main mast.

3.1. Removal:

- Remove the all interferences including radar antennas, other antennas and navigation lights from the main mast. Contractor to safely store and protect all removed equipment that is going to be reinstated after the new mast is in place.
- Contractor to safely dismantle/remove the existing main mast from the Vessel, including removal of interior false bulkhead, dropped ceiling, and insulation to safely cut away the old mast.
    - If Contractor intends to lift off the mast in one piece or in a larger section, Contractor to present to the Owner's Representative with an engineered lifting plan before lift(s) are commenced.
- Prepare 02 deck and 03 deck for new mast foundation.
- Contractor shall properly contain and dispose of any and all parts of the old mast including debris, etc. removed from the Vessel. The old mast to be the property of the Contractor after it is removed.

3.2 Fabrication of new Mast:

- Contractor to furnish or manufacture new main mast in accordance with Glosten drawing 23048-171-01 (Reference 2.1).
- All welds shall be subjected to testing in accordance with ABS requirements. The Contractor shall provide the Owner's Representative with a manufacturing and test log document that specifies the test method, the name

of the inspector, a copy of the certification number, and the certificates.

- The new main mast shall be painted in accordance with the Vessel's paint specification, utilizing a minimum of three coats of epoxy primer and two top coats. The total DFT of the paint shall be a minimum of 800 microns and to the satisfaction of paint inspector and the Owner's Representative.

3.3 Installation:

A. Contractor to provide the Owner's Representative with engineered rigging/lifting plan for the new mast at least (48) hours prior to the mast being lifted on board.

B. New mast to be lifted into place, and welded to the new foundation plates and main leg welded to the existing section over 03 deck. Prior to any lift(s), Contractor to schedule "Call Out" for a Tool box talk/safety meeting with all parties that will be involved during the lift, including the Owner's Representative.

C. Contractor to ensure straight vertical alignment FWD to AFT and Port to Starboard as well as forward orientation of the mast prior to the mast getting welded down. Contractor to weld the mast to deck and existing pipe according to ABS requirement and to the satisfaction of attending surveyor and Owner's Representative.

D. All welds to be examined by ABS and Owner's representative. Before any welds are covered with paint, Contractor to provide X-Ray or MT inspection of all structural welds of the mast and weld connections to the Vessel, to the satisfaction of attending ABS surveyor and Owner's Representative. Contractor to coordinate with attending ABS surveyor if X-ray or MT exam method is to be used. Contractor to "Call Out" inspection for welding exam according to Call Out protocol.

CHECK POINT - ABS Class surveyor welding exam including Owner's Representative.

E. As soon as the new main mast is installed and welds are tested and approved. Weld seams and mast transition is to be painted with the same details as described in 3.2 regarding fabrication of the mast. Feather edges smoothly so repaired areas do not show through final coat. Any damaged paint from welding spatter to be repaired by Contractor to the Owner's Representative's satisfaction.

F. Contractor to reinstall all removed antennas and sensors, in accordance with the manufacture's requirements and recommendations. Contractor to supply and use all new hardware for the reinstallation.

G. The Contractor shall remove all existing electrical cable associated with the specified systems and replace it with new electrical cable installed as continuous end-to-end home runs. Existing electrical cable shall not be reused. Intermediate splices or butt connections are prohibited unless specifically identified on the approved drawings or authorized in writing by the Owner's Representative through the Request for Contract Change ("RCC") process.

    i. All replacement electrical cable shall be new, marine-grade cable of the specified type, conductor size, voltage rating, insulation, shielding (where required), and jacket construction suitable for the intended service. Cable routing shall follow existing approved routing unless otherwise approved by the Owner's Representative. The Contractor shall provide all required cable supports, hangers, stainless steel cable ties, transit systems, glands, terminations, markers, labels, and associated hardware necessary to provide a complete and fully operational installation.

H. Electrical cable installation shall comply with the latest applicable editions of the ABS rules, applicable USCG regulations and marine electrical standards, the Vessel's approved drawings, equipment manufacturer's installation requirements, and recognized marine industry best practices. The completed installation shall maintain the Vessel's ABS Classification and USCG Certificate of Inspection.

I. Upon completion of installation, the Contractor shall perform and document cable continuity testing, insulation resistance(megger) testing, point-to-point verification, and functional testing of all affected electrical circuits. Test equipment shall possess current calibration certificates traceable to NIST. Any deficiencies identified during testing shall be corrected and the affected circuits retested at no additional cost to the Owner.

J. The Contractor shall submit cable test reports, updated cable schedules, termination records, calibration certificates for test equipment, and updated redline drawings and as-built documentation to the Owner's Representative for review and acceptance prior to system commissioning and final acceptance. All work shall be subject to inspection by the Owner's Representative, the attending ABS Surveyor, and the USCG, as required, to verify compliance with contract requirements.

K. Contractor to arrange for operational inspection of all equipment that has antennas installed on the mast. Contractor to provide a Furuno Technician Representative to partake in the radar testing to ensure alignment and full operational compliance.

CHECK POINT - Furuno, ABS and Owner's representative present for operational test.

L. Reinstall and repair insulation and lagging up-under deck and on bulkheads.

CHECK POINT - Owner's Representative's insulation and lagging inspection.

M. Reinstall false bulkheads and dropped ceiling back to the same condition as found prior to completion of this Work Item.

N. Final inspections shall be approved by the Owner's Representative upon completion.

CHECK POINT - Owner's Representative's final inspection.

3.1. New Navigation Light Work Description

A. Owner will furnish OFM navigation lights and a new bridge navigation light alarm panel for installation under this Work Item.

B. The Contractor shall include in its bid all labor, materials, equipment, cabling, supports, testing, and incidental work necessary to:

- Install the Owner-furnished navigation lights on the new mast.
- Install the Owner-furnished navigation light alarm panel at the bridge location designated by the Owner's Representative.
- Connect, integrate, and test the navigation lights and alarm panel to ensure proper monitoring, alarm functionality, and system operation.

C. The Contractor shall provide all necessary wiring, terminations, cable supports, penetrations, and associated work required for a complete and operational installation.

D. Upon completion of installation, the Contractor shall test and demonstrate proper operation of all navigation lights and the navigation light alarm panel, including lamp failure indication, alarm functions, and control features, as applicable.

CHECK POINT – ABS, USCG, and Owner's Representative's operational test.

4. Performance Criteria/Deliverables

A. Operational testing of mast and all mast-mounted equipment to verify functionality.

B. Inspection and certification in accordance with ABS and USCG requirements, including all NDT to satisfy ABS, USCG, and the Owner's Representative.

C. Marine Chemist Certificate.

D. Provide DFT and environmental results during and where coating has been applied.

E. Coordination with classification society ABS and USCG as required.

F. Coordination with Furuno Technical Representative.

5. Notes

Unit Pricing USD, (to be filled in by Contractor):

- X-Band radar wiring cost pr meter: _____
- S-Band radar wiring cost pr meter: _____
- Navigation Light cable cost pr meter: _____

Pricing Note: The Contractor shall include all costs associated with the installation of the Owner-furnished bridge navigation light alarm panel and the services of a certified compass adjuster for compass calibration in one (1) mast Work Item only. These costs shall not be duplicated or distributed among the remaining mast Work Items. The Contractor shall clearly identify the Work Item in which these costs are included.

6. Miscellaneous

As part of Sea Trials, the Contractor shall provide the services of a certified compass adjuster to perform magnetic compass adjustment and calibration following completion of the mast and navigation system installation work. The Contractor shall provide all required test reports, calibration records, adjustment documentation, and certification records associated with the compass adjustment and navigation light system installation upon completion of the work.

A. Platform decking grating shall be fiber grate, or approved by the Owner's Representative, of Fiberglass Reinforced Plastic (FRP) construction to minimize corrosion and eliminate rust-related maintenance. All grating materials, supports, fasteners, and associated installation materials shall be suitable for marine service and comply with applicable ABS and USCG requirements. The Contractor shall provide material certifications and documentation demonstrating compliance.

B. Contractor to manage weight control log as part of this Work Item.

C. Removal and disposal of any wastes generated by work item to be part of the bid.

D. All parts of Chapter 4, 5 and 6 applies to all Work Items.

* Optional Work Items 2027-21, Forward 04 deck Navigation Mast Replacement

1. General Scope

The Contractor to provide the labor, material, and equipment as required to accomplish the following: to renew forward mast with replacement. The Contractor to furnish new mast according to GPA_00199-171-01E-1. The project involves the removal of the existing mast and its foundation, followed by the fabrication and installation of new Mast and preparation for the new foundation. Once the foundation is in place, anew mast to be installed. The final stage includes the installation and wiring of all mast-mounted equipment, such as sensors, lights, and antennas.

The Contractor to remove the existing Forward 04 deck navigational mast and replace with new structure, contractor to seek approval, inspections and certification in accordance with ABS and to the satisfaction of Owner's Representative. Some small antenna modification will likely to be made during the fabrication / renewal process to match actual updated ships equipment at the time of the dry dock. Contractor to take measurement of existing antenna bolt pattern and situation, to be incorporated into new design. Contractor to seek guidance and approval from Owner's Representative if any other changes are suggested.

2. Reference

2.1	GPA 00199-171-01E-1	MAST ARRANGEMENT AND DETAIL
2.2	GPA 00199-171-01E-2	MAST ARRANGEMENT AND DETAIL
2.3	GPA 00199-801-05 rev.	BOOKLET OF GENERAL DRAWINGS

3. Work Description

Prior to commencing work, follow the Vessel's Lock Out/Tag Out (LOTO) policy and procedures for the Kilo Moana and the Contractor's facility. After the Vessel safely arrives at Contractor's facility, and as soon as practically possible, commence replacement process of the FWD nav mast.

3.1. Removal:

- Remove the all interferences including antennas, navigation lights, etc. from the FWD nav mast. Contractor to safely store and protect all removed equipment that is going to be reinstated after new mast is in place.
- Contractor to safely dismantle/remove the existing FWD nav mast from the Vessel, including removal of interior insulation and dropped ceiling to safely cut away the old mast.
    - If Contractor intends to lift off the mast in one piece or in a larger section, Contractor to present to the Owner's Representative with an engineered lifting plan before lift(s) are commenced.
- Prepare 04 deck for new mast foundation.
- Contractor shall properly contain and dispose of any and all parts of the old mast including debris, etc. removed from the Vessel. The old mast to be the property of the Contractor after it is removed.

3.2 Fabrication of new mast:

- Contractor to furnish, manufacture new forward navigation mast in accordance with existing, as-built drawing GPA 00199-171-01E-1(Reference 2.1).
- All welds shall be subjected to testing in accordance with ABS requirements. The Contractor shall provide the Owner's Representative with a manufacturing and test log document that specifies the test method, the name of the inspector, a copy of the certification number, and the certificates.
- The new FWD nav mast shall be painted in accordance with the Vessel's paint specification, utilizing a minimum of three coats of epoxy primer and two top coats. The total DFT of the paint shall be a minimum of 800 microns and to the satisfaction of paint inspector and the Owner's Representative.

3.3 Installation:

A. Contractor to provide Owner's Representative with engineered rigging/lifting plan for the new mast at least (48) hours prior to the mast being lifted on board.

B. New mast to be lifted into place, and welded to the new foundation plates. Prior to any lift(s), Contractor to schedule "Call Out" for a tool box talk/safety meeting with all parties that will be involved during the lift(s), including the Owner's Representative.

C. Contractor to ensure straight vertical alignment FWD to AFT and Port to Starboard as well as forward orientation of the mast prior to the mast getting welded down. Contractor to weld the mast to deck according to ABS requirement and to the satisfaction of attending surveyor and the Owner's Representative.

D. All welds to be examined by ABS and Owner's Representative. Before any welds are covered with paint, Contractor to provide X-Ray or MT inspection of all structural welds of the mast and weld connections to the Vessel, to the satisfaction of attending ABS surveyor and Owner's Representative. Contractor to coordinate with attending ABS surveyor if X-ray or MT exam method is to be used. Contractor to "Call Out" inspection for welding exam according to Call Out protocol.

CHECK POINT - ABS Class surveyor welding exam including the Owner's Representative.

E. As soon as the new FWD mast is installed and welds are tested and approved. Weld seams and mast transition is to be painted with the same details as described in 3.2 regarding fabrication of the mast. Feather edges smoothly so repaired areas do not show through final coat. Any damaged paint from welding spatter to be repaired by Contractor to the Owner's Representative's satisfaction.

F. Contractor to reinstall all removed antennas and sensors, in accordance with manufacture's requirements and recommendations. Contractor to supply and use all new hardware for the reinstallation.

G. The Contractor shall remove all existing electrical cable associated with the specified systems and replace it with new electrical cable installed as continuous end-to-end home runs. Existing electrical cable shall not be reused. Intermediate splices or butt connections are prohibited unless specifically identified on the approved drawings or authorized in writing by the Owner's Representative through the Request for Contract Change ("RCC") process.

H. All replacement electrical cable shall be new, marine-grade cable of the specified type, conductor size, voltage rating, insulation, shielding (where required), and jacket construction suitable for the intended service. Cable routing shall follow existing approved routing unless otherwise approved by the Owner's Representative. The Contractor shall provide all required cable supports, hangers, stainless steel cable ties, transit systems, glands, terminations, markers, labels, and associated hardware necessary to provide a complete and fully operational installation. All wires to be securely banded with stainless steel band and rubber protection between the band and the wires, in accordance with best practice and regulation and to the Owner's Representative's satisfaction.

I. Contractor to arrange for operational compliance inspection of all equipment that has antennas installed on the mast.

CHECK POINT - ABS and Owner's Representative for operational test.

J. Reinstall and repair insulation and lagging up-under bridge deck.

CHECK POINT - Owner's Representative insulation and lagging inspection.

K. Reinstall dropped ceiling back to the as found condition prior completion of this Work Item.

L. Final inspections shall be approved by the Owner's Representative upon completion.

CHECK POINT - Owner's Representative final inspection.

3.1. New Navigation Light Work Description

A. Owner will furnish OFM navigation lights and a new bridge navigation light alarm panel for

installation under this specification item.

B. The Contractor shall include in its bid all labor, materials, equipment, cabling, supports, testing, and incidental work necessary to:
   - Install the Owner-furnished navigation lights on the new mast.
   - Install the Owner-furnished navigation light alarm panel at the bridge location designated by the Owner's Representative.
   - Connect, integrate, and test the navigation lights and alarm panel to ensure proper monitoring, alarm functionality, and system operation.

C. The Contractor shall provide all necessary wiring, terminations, cable supports, penetrations, and associated work required for a complete and operational installation.

D. Upon completion of installation, the Contractor shall test and demonstrate proper operation of all navigation lights and the navigation light alarm panel, including lamp failure indication, alarm functions, and control features, as applicable.

CHECK POINT – ABS, USCG, and the Owner's Representative operational test.

4. Performance Criteria/Deliverables

A. Operational testing of mast and all mast-mounted equipment to verify functionality.
B. Inspection and certification in accordance with ABS and USCG requirements, including all NDT to satisfy ABS, USCG, and the Owner's Representative.
C. Marine Chemist Certificate.
D. Provide DFT and environmental results during and where coating has been applied.
E. Coordination with classification society ABS and USCG as required.

5. Notes

Unit Pricing USD, (to be filled in by Contractor):

- Navigation Light cable cost pr meter: _____

Pricing Note: The Contractor shall include all costs associated with the installation of the Owner-furnished bridge navigation light alarm panel and the services of a certified compass adjuster for compass calibration in one (1) mast Work Item only. These costs shall not be duplicated or distributed among the remaining mast Work Items. The Contractor shall clearly identify the Work Item in which these costs are included.

6. Miscellaneous

A. As part of Sea Trials, the Contractor shall provide the services of a certified compass adjuster to perform magnetic compass adjustment and calibration following completion of the mast and navigation system installation work. The Contractor shall provide all required test reports, calibration records, adjustment documentation, and certification records associated with the compass adjustment and navigation light system installation upon completion of the work.

   Platform decking grating shall be fiber grate, or approved by the Owner's Representative, of fiberglass reinforced plastic (FRP) construction to minimize corrosion and eliminate rust-related maintenance. All grating materials, supports, fasteners, and associated installation materials shall be suitable for marine service and comply with applicable ABS and USCG requirements. The Contractor shall provide material certifications and documentation demonstrating compliance.

B. Removal and disposal of any waste generated by work item to be part of the bid.

C. Contractor to manage weight control log as part of this Work Item.

D. All parts of Chapter 4, 5 and 6 applies to all Work Items.

* Optional Work Items 2027-22, Aft Navigation Mast Replacement

1. General Scope

The Contractor to provide the labor, material, and equipment as required to accomplish the following: to renew forward mast with replacement. The Contractor to furnish new mast according to drawings GPA_00199-171-01E-1 (Reference 2.1) and 00199-171-01E-2 (Reference 2.2). This Work Item involves the removal of the existing mast and its foundation, followed by the fabrication and installation of new mast and preparation for the new foundation. Once the foundation is in place, the new mast to be installed. The final stage includes the installation and wiring of all mast-mounted equipment, such as sensors, lights, and antennas.

The Contractor to remove the existing Aft navigational mast and replace with new structure. Contractor to seek approval, inspections, and certification in accordance with ABS and to the satisfaction of the Owner's Representative. Some small antenna modification will likely to be made during the fabrication/renewal process to match actual updated Vessel equipment at the time of the drydock. Contractor to take measurement of existing bolt pattern and situation, to be incorporated into new design. Contractor to seek guidance and approval from Owner's Representative if any other changes are proposed.

2. Reference

2.1	GPA 00199-171-01E-1	MAST ARRANGEMENT AND DETAIL
2.2	GPA 00199-171-01E-2	MAST ARRANGEMENT AND DETAIL
2.3	GPA 00199-801-05 rev.	BOOKLET OF GENERAL DRAWINGS

3. Work Description

Prior to commencing work, follow the Vessel's Lock Out/Tag Out (LOTO) policy and procedures for the Kilo Moana and Contractor's facility. After the Vessel safely arrives at Contractor's facility, and as soon as practically possible, commence replacement process of the Aft nav mast mounted on top of the Doghouse / Aft station.

3.1. Removal:

- Remove all interferences including antennas, navigation lights, etc. from the Aft nav mast. Contractor to safely store and protect all removed equipment that is going to be reinstated after new mast is in place.
- Contractor to safely dismantle/remove the existing Aft nav mast from the Vessel, including removal of interior insulation and dropped ceiling to safely cut away the old mast.
- Prepare top of doghouse for new mast foundation.
- Contractor shall properly contain and dispose of any and all parts of the old mast including debris, etc. removed from the Vessel. The old mast to be the property of the Contractor after it is removed.

3.2 Fabrication of new mast:

- Contractor to furnish/manufacture new forward navigation mast in accordance with existing as-built drawings GPA 00199-171-01E-1 (Reference 2.1) and GPA 00199-171-01E-2 (Reference 2.2).
- All welds shall be subjected to testing in accordance with ABS requirements. The Contractor shall provide the Owner's Representative with a manufacturing and test log document that specifies the test method, the name of the inspector, a copy of the certification number, and the certificates.

  The new Aft nav mast shall be painted in accordance with the vessel paint specification, utilizing a minimum of three coats of epoxy primer and two top coats. The total DFT of the paint shall be a minimum of 800 microns and to the satisfaction of paint inspector and the Owner's Representative.

3.3 Installation:

A. New mast to be lifted into place, and welded to the new foundation plates.

B. Contractor to ensure straight vertical alignment FWD to AFT and Port to STARBOARD as well as AFT orientation of the mast prior to the mast getting welded down. Contractor to weld the mast to deck according to ABS requirement and to the satisfaction of attending surveyor and Owner's Representative.

C. All welds to be examined by ABS and Owner's representative. Before any welds are covered with paint, Contractor to provide X-Ray or MT inspection of all structural welds of the mast and weld connections to the Vessel, to the satisfaction of attending ABS surveyor and Owner's Representative. Contractor to coordinate with attending ABS surveyor if X-ray or MT exam method is to be used. Contractor to "Call Out" inspection for welding exam according to Call Out protocol.

CHECK POINT - ABS Class surveyor welding exam including the Owner's Representative.

D. As soon as the new AFT mast is installed and welds are tested and approved, weld seams and mast transition are to be painted with the same details as described in 3.2 regarding fabrication of the mast. Feather edges smoothly so repaired areas do not show through final coat. Any damaged paint from welding spatter to be repaired by Contractor to the Owner's Representative's satisfaction.

E. Contractor to reinstall all removed lights antennas and sensors, in accordance with manufacture's requirements and recommendations. Contractor to supply and use all new hardware for the reinstallation.

F. The Contractor shall remove all existing electrical cable associated with the specified systems and replace it with new electrical cable installed as continuous end-to-end home runs. Existing electrical cable shall not be reused. Intermediate splices or butt connections are prohibited unless specifically identified on the approved drawings or authorized in writing by the Owner's Representative through the Request for Contract Change ("RCC") process.

G. All replacement electrical cable shall be new, marine-grade cable of the specified type, conductor size, voltage rating, insulation, shielding (where required), and jacket construction suitable for the intended service. Cable routing shall follow existing approved routing unless otherwise approved by the Owner's Representative. The Contractor shall provide all required cable supports, hangers, stainless steel cable ties, transit systems, glands, terminations, markers, labels, and associated hardware necessary to provide a complete and fully operational installation. All wires to be securely banded with stainless steel band and rubber protection between the band and the wires, in accordance with best practice and regulation and to the Owner's Representative's satisfaction.

H. Contractor to arrange for operational compliance inspection of all equipment that has antennas installed on the mast.

CHECK POINT - ABS and Owner's Representative present for operational test.

I. Reinstall and repair insulation and lagging in the dog house.

CHECK POINT - Owner's Representative's insulation and lagging inspection.

J. Final inspections shall be approved by the Owner's Representative upon completion.

CHECK POINT - Owner's Representative's final inspection.

3.1. New Navigation Light Work Description

A. The Owner will furnish OFM navigation lights and a new bridge navigation light alarm panel for installation under this Work Item.

B. The Contractor shall include in its bid all labor, materials, equipment, cabling, supports, testing, and incidental work necessary to:

Install the Owner-furnished navigation lights on the new mast.

Connect, integrate, and test the navigation lights and alarm panel to ensure proper monitoring, alarm functionality, and system operation.

C. The Contractor shall provide all necessary wiring, terminations, cable supports, penetrations, and associated work required for a complete and operational installation.

D. Upon completion of installation, the Contractor shall test and demonstrate proper operation of all navigation lights and the navigation light alarm panel, including lamp failure indication, alarm functions, and control features, as applicable.

CHECK POINT – ABS, USCG, and Owner's Representative's operational test.

4. Performance Criteria/Deliverables

A. Operational testing of mast and all mast-mounted equipment to verify functionality.

B. Inspection and certification in accordance with ABS and USCG requirements, including all NDT to satisfy ABS, USCG, and Owner's Representative.

C. Marine Chemist Certificate.

D. Provide DFT and environmental results during and where coating has been applied.

E. Coordination with classification society ABS and USCG as required.

5. Notes

Unit Pricing USD, (to be filled in by Contractor):

Navigation Light cable cost pr meter: _____

Pricing Note: The Contractor shall include all costs associated with the installation of the Owner-furnished bridge navigation light alarm panel and the services of a certified compass adjuster for compass calibration in one (1) mast work Item Only. These costs shall not be duplicated or distributed among the remaining mast Work Items. The Contractor shall clearly identify the Work Item in which these costs are included.

6. Miscellaneous

A. Removal and disposal of any wastes generated by work item to be part of the bid.

B. Contractor to manage weight control log as part of this Work Item.

C. All parts of Chapter 4, 5 and 6 applies to all Work Items.

* Optional Work Items 2027-23, Canard RM #1 / Bow Thruster room Maintenance

1. General Scope

The Contractor to provide the labor, material and equipment as required to accomplish the following steel and painting repair work in Canard Room #1 /Bow Thruster room. All work is to be compliant with all regulatory requirements and to Owner's Representative's satisfaction.

Contractor to clean out the spaces and bilges for any water or hydrocarbons and gas free the space as needed to perform safe hot work for this Work Item, including a Marine Chemist certificate valid for the duration of the work. Contractor to dispose of the oily waste water as part of this Work Item according to regulatory requirements. Contractor is responsible to provide access to the area with necessary staging.

2. Reference

- ABS-Minimum thicknesses for plate renewals, document 2002 (ABS PID:39330)
- OPERATING AND INSTRUCTION MANUAL FOR ELLIOTT WHITE GILL THRUSTER UNIT TYPE 40 T3S
- Drawing 00199-182-02-B, STRUCTURAL ARRANGEMENTS BOW THRUSTER FOUNDATION
- Drawing 00199-182-03-E, FOUNDATIONS BOW THRUSTER MOTOR
- Drawing 00199-182-04-A, BOW THRUSTER GRATING A & D
- GPA 00199-184-06, Rev C STRUCTURAL ARRANAGEMENTS FDN - AFT FIN STABILIZER
- GPA 00199-111-02, Rev. F, HULL BOTTOM PLATING AND FRAMING
- GPA 00199-320-01, Rev. D, ELECTRICAL ONE-LINE DIAGRAM
- GPA 00199-506-01, Rev. F, VENTS AND SOUNDING TUBES SCHEMATIC
- GPA 00199-256-10, Rev. B, SEA CHEST ARRANGEMENT & DETAILS
- GPA 00199-801-05 rev. - BOOKLET OF GENERAL DRAWINGS

3. Work Description:

A. Contractor is responsible for removal or any interferences and protection of equipment in the area.

B. Contractor is responsible to follow the LOTO requirement for all affected equipment per the Vessel's policy in conjunction with Vessel's crew.

C. Contractor to evaluate locations to be used as Temporary Access Opening (TAO) locations in preparation for steel preservation. TAO locations to be prepared for reinstallation and welding prior to any painting in the space or surroundings.

CHECK POINT - TAO location (mark-out) with the Owner's Representative prior to work starting.

Contractor to provide abrasive grid blasting to SSPC-SP 10 / ISO 8501-1 Sa 2.5 (Near-White Metal) inside the Canard Room #1, from the flat bottom plate to approximately 2 meters up on the side shell, encompassing all frames and stiffeners within that height section.

C. (1) Blasting will not be allowed on any equipment. Areas to be blasted are to be approved by the Owner's Representative prior to blasting, after adequate protective coverings that will prevent any damage have been installed.

D. Transition between blasted sections and the protected parts to be carefully prepared and clean surfaces to a minimum standard of SSPC-SP 11.

E. Contractor to include in the price for this Work Item, steel preservation for rest of the Canard room where rust is present to surfaces standard of SSPC-SP 11 or better.

F. Contractor to include in their bid, the renewal all wasted steel structural stiffer around the Bow Thruster Foundation and angel iron for the floor deck plating.

F.(1) Contractor shall include within this Work Item the renewal of approximately 10 meters of associated T-bar stiffeners, and about 10-meter angle bars as may be found wasted, deformed, or otherwise unsuitable during inspection and steel repair activities. Final extent and locations shall be determined onboard in agreement with Owner's Representative and attending ABS Surveyor. All renewals shall be carried out using approved materials.

F.(2) Contractor to also include renewal of drain pocket on the top of the bow thruster gland compartment.

CHECK POINT - NDT inspection with USCG, ABS, and Owner's Representative.

G. Inspect material condition prior and submit CFR to Owner's Representative.

H. Contractor to crop and replace the wasted steel.

CHECK POINT - Fit up inspection with USCG, ABS, and Owner's Representative.

I. Full weld all replaced stiffness and new steel.

CHECK POINT - Weld inspection with USCG, ABS, and Owner's Representative.

J. Additionally, any disturbed paint to prepared and cleaned surfaces to a minimum standard of SSPC-SP 11 (Power Tool Cleaning to Bare Metal) in accordance with coating spec and apply coatings per Chapter 5.35, or as directed by the Owner's Representative. Feather edges smoothly so repaired areas do not show through final coat.

CHECK POINT - Pre paint inspection with paint inspector and Owner's Representative.

K. Re-Paint Canard room according to the Vessel's paint specification and in accordance with paint inspector and the Owner's Representative's requirements. Provide DFT and environmental results during painting sequences. All work to be completed to Owner's Representative's satisfaction.

Coating application around TAO shall be limited to areas not affected by final closing welds. Contractor shall leave sufficient uncoated margin adjacent to TAO's insert and weld seams to avoid thermal damage during reinstatement welding. Final surface preparation, touch-up, and coating of weld seams and adjacent heat-affected areas shall be completed after TAO installation and completion of all hot work.

CHECK POINT - Between paint coat inspection.

CHECK POINT - Final paint inspection.

L. Contractor to reinstall TAO, and welds to be completed according to Chapter 5.33 and USCG and attending ABS surveyor's requirement.

CHECK POINT - TAO fit-up inspection with USCG, ABS, and Owner's Representative.

CHECK POINT - Final NDT weld inspection of TAO inserts with USCG, ABS, and Owner's Representative.

4. *Quality Assurance*

A. All workmanship shall be first-class marine practice.

B. All disturbed sections to be painted according to Vessel's paint specification and in accordance with paint inspector and the Owner's Representative's requirements. Feather edges smoothly so repaired areas do not show through final coat. Provide DFT and environmental results during and where coating has been repaired.

All work to be completed to Owner's Representative's satisfaction.

C. Contractor shall coordinate inspection requirements with ABS and the Owner's Representative where applicable.

D. Any deviations from this specification shall require prior written approval from Owner's Representative.

5. Performance Criteria/Deliverables:

All interferences removed to be tested after completion as soon as possible, in coordination with the Owner's Representative. Final testing will be during Sea Trials.

6. Unit Rates for Additional and Deletions Work Scope (Pro-Rata Options)

The following rates must include all labor, cropping, fit-up, welding, consumables, staging, gas-freeing, fire watch, NDT, preparation, inspections, and painting.

Category	Description	Unit of Measure	Unit Rate (USD)
Plating	Additional Steel Plate Renewal (up to 15mm thickness)	Per Kilogram (kg)	$_____
Plating	Additional Heavy Plate Renewal (>15mm to 25mm thickness)	Per Kilogram (kg)	$_____
Plating	Clad welding	Per Square DeciMeter (dm^2)	$_____
Frame	Additional Frame Renewal	Per Linear Meter (m)	$_____
Stiffener	Stiffener Renewal	Per Linear Meter (m)	$_____
Angle Iron	Deck plating support angel Renewal	Per Linear Meter (m)	$_____
Surface Prep	Additional Rust preservation SSPC-SP 10	Per Square Meter (m^2)	$_____
Surface Prep	Additional Rust preservation SSPC-SP 11	Per Square Meter (m^2)	$_____
Testing	Additional Weld inspection f.ex (DP) (MPI) (Vacbox)	Per Meter of Weld	$_____

7. Note:

A. All work is subject to acceptance by the Owner's Representative, ABS Surveyor, and USCG Inspector. If re-work or replacement is necessary due to defective work, the cost shall be borne by the Contractor.

B. Contractor is responsible for ABS and USCG acceptance of work plan. Any re-work necessary due to ABS and USCG requirement, the cost shall be borne by the Contractor.

C. Contractor to produce drawings for the repair plan after scoping the work with attending ABS surveyor and the Owner's Representative to the satisfaction of both, if found necessary. Contractor to also present engendered drawings to Owner's Representative and ABS prior to work start for approval.

D. After completion, Contractor to reinstall all interferences to the satisfaction of the Owner's Representative.

8. *Miscellaneous*

A. Contractor will be responsible for arranging the ABS and/or U.S. Coast Guard inspections as required.

B. The scheduling and execution of this Work Item shall be coordinated by the Contractor and performed concurrently, where practicable, with for example Work Item 2027-08 & 31 or any other related work item. The Contractor shall be responsible for planning and sequencing the work to avoid interference with, duplication of effort, or damage to completed or ongoing work. Any damage caused by the Contractor, its subcontractors, employees, or agents to previously completed work, whether under this Contract or other related Work Items, shall be repaired at the Contractor's sole expense to the satisfaction of the Owner's Representative. Failure to properly coordinate the work or the occurrence of such damage shall constitute a Contractor performance deficiency and may be grounds for corrective actions, including but not limited to withholding of amounts otherwise payable until cure and, if not cured within the stated response window, Owner's performance of the service at Contractor's expense with reimbursement through setoff/back-charge, or other remedies available under the Contract.

C. Update as-built drawings to be part of the Project Close Out package as per Chapter 5.49.

D. All parts of Chapter 4, 5 and 6 applies to all Work Items.

* Optional Work Items 2027-24, Ballast tank # 1 & 2 Tanks repair

1. General Scope

The Contractor to provide the labor, material, and equipment as required to accomplish the following: miscellaneous tank repairs. This Work Item to be scheduled together in practical with Work Item 2027-14, 2027-15 or any other related Work Items. Completion of this Work Item to be completed prior to finalizing interfering Work Items.

Prior to commencing work, follow the Vessel's Lock Out/Tag Out (LOTO) policy and procedures for ballast and the fuel system. After the Vessel is safely drydocked, and as soon as practical after the tanks have been pumped, opened, and cleaned (pressure washed), ventilated and suitable lighting in accordance with Work Item 2027-14 and 2027-15, Contractor to repair the tanks in accordance with the individual tank requirement in this Work Item.

Contractor shall maintain forced air ventilation at all times and temporary lighting as needed until spaces are closed. Maintain a valid Marine chemist certificate and ensure spaces remain safe for "Hot Work" and "Safe for Entry" condition as long as these spaces are open.

2. Reference

2.1 GPA 00199-506-01 VENTS & SOUNDING TUBES SCHEMATIC; Rev F

2.2 GPA 00199-529-01 BILGE & BALLAST SYSTEM SCHEMATIC; Rev E

2.3 GPA 00199-801-05 rev. - BOOKLET OF GENERAL DRAWINGS

2.4 GPA 00199-541-01E FUEL OIL SYSTEMS; Rev E (Sheets 1-3 of 3)

3. Location of Work:

- Ballast tank # 1 and 2, Forepeak tanks

4. Work Description:

A. Crop and renew drain line from Bosun Locker #1, passing through Ballast tank #1 top level and overboard. The 2" pipe to be renewed from the tank top on main deck, including the drain cup to the non-return valve flange inside the blast tanks.

B. Crop and renew drain line from Bosun Locker #2, passing through Ballast tank #2 top level and overboard. The 2" pipe to be renewed from the tank top on main deck, including the drain cup to the non-return valve flange inside the blast tanks.

The Contractor to refer to as-built drawings (References 2.1 – 2.4) as reference and verify dimensions and lineup with actual situation on board. Contractor to provide new gasket and hardware for reinstallation.

E. Contractor to repair with crop and replace approximate 1m of the lower section of sounding tube 1.5" inside blast tanks 1 and 2. Exact cut will be determined in accordance with the Owner's Representative.

F. After the sounding tube section is removed, the Contractor to provide UT shots of the shell plating under the sounding tube, with an ABS certified UT technician. Contractor to submit a CFR to the Owner's Representative of the UT readings and if necessary, a suggested repair plan.

G. Contractor to replace new sounding tubes section in ballast tanks 1 and 2, with new angle iron attached according to best practice.

CHECK POINT - Owner's Representative, USCG and ABS fit-up inspection.

CHECK POINT - Owner's Representative, USCG and ABS welding inspection.

1.1. Additional Work Description:

CHECK POINT - Cleanliness inspection prior to paint, DFT, with paint inspector and the Owner's Representative.

- Contractor shall properly contain and dispose of any and all parts including debris, etc. removed from the Vessel.
- Paint all new steel and disturbed sections according to Vessel's paint specification and in accordance with paint inspector and Owner's Representative's requirements. Feather edges smoothly so repaired areas do not show through final coat. Provide DFT and environmental results during and where coating has been repaired. All work to be completed to Owner's Representative's satisfaction.
- The Contractor to refer to as-built drawings (References 2.1 – 2.4) as reference and verify dimensions and lineup with actual situation on board. Contractor to provide new gasket and hardware for reinstallation.

CHECK POINT - Final inspection with Owner's Representatives satisfaction.

5. Performance Criteria/Deliverables

A. Daily Log of Tanks Tested

B. Marine Chemist Certificate

6. Miscellaneous

A. Removal and disposal of any wastes generated by work item to be part of the bid.

B. The scheduling and execution of this Work Item shall be coordinated by the Contractor and performed concurrently, where practicable, with for example Work Item cleaning of tanks, sonar room and steel repair. The Contractor shall be responsible for planning and sequencing the work to avoid interference with, duplication of effort, or damage to completed or ongoing work. Any damage caused by the Contractor, its subcontractors, employees, or agents to previously completed work, whether under this Contract or other related work items, shall be repaired at the Contractor's sole expense to the satisfaction of the Owner's Representative. Failure to properly coordinate the work or the occurrence of such damage shall constitute a Contractor performance deficiency and may be grounds for corrective actions, including but not limited to withholding of amounts otherwise payable until cure and, if not cured within the stated response window, Owner's performance of the service at Contractor's expense with reimbursement through setoff/back-charge, or other remedies available under the Contract.

C. All parts of Chapter 4, 5 and 6 applies to all work items.

* Optional Work Items 2027-25, Ballast Tanks # 8 repair

1. General Scope

The Contractor to provide the labor, material, and equipment as required to accomplish the following: miscellaneous tanks repairs. This Work Item to be scheduled together in practical Work Item 2027-14, 2027-15 or any other related Work Items. Completion of this Work Item to be completed prior to finalizing interfering Work Items.

Prior to commencing work, follow the Vessel's Lock Out/Tag Out (LOTO) policy and procedures for ballast and the fuel system. After the Vessel is safely drydocked, and as soon as practical after the tanks have been pumped, opened, and cleaned (pressure washed), ventilated and suitable lighting in accordance with Work Item 2027-14 and 2027-15, Contractor to repair the tanks in accordance with the individual tank requirement in this Work Item.

Contractor shall maintain forced air ventilation at all times and temporary lighting as needed until spaces are closed. Maintain a valid Marine chemist certificate and ensure spaces remain safe for "Hot Work" and "Safe for Entry" condition as long as these spaces are open.

2. Reference

2.1 GPA 00199-506-01 VENTS & SOUNDING TUBES SCHEMATIC; Rev F

2.2 GPA 00199-529-01 BILGE & BALLAST SYSTEM SCHEMATIC; Rev E

2.3 GPA 00199-801-05 rev. - BOOKLET OF GENERAL DRAWINGS

2.4 GPA 00199-541-01E FUEL OIL SYSTEMS; Rev E (Sheets 1-3 of 3)

3. Location of Work:

- Ballast tank # 8

4. Work Description

Contractor to renew the 4" over board SCH 40 overflow pipe, from the flange of the float check valve with discharge, inside the hazmat locker. Contractor to follow as-built drawings (References 2.1 – 2.4) as reference and verify dimensions and lineup with actual situation on board. The new pipe will pass through the skin of the Vessel with a pipe sleeve and extend 100mm pass the skin of the Vessel. Contractor to provide new gasket and hardware for reinstallation. The overboard pipe is between frame 70 -71 inside the hazmat locker. Interferences shall be reinstalled.

CHECK POINT - Owner's Representative, USCG, and ABS fit-up inspection.

CHECK POINT - Owner's Representative, USCG and ABS leak test and welding survey of all pipe work.

4.1. Additional Work Description:

CHECK POINT - Cleanliness inspection prior to paint, DFT, with paint inspector and the Owner's Representative.

- Contractor shall properly contain and dispose of any and all parts including debris, etc. removed from the Vessel.
- Paint all new steel and disturbed sections according to Vessel's paint specification and in accordance with paint inspector and Owner's Representative's requirements. Feather edges smoothly so repaired areas do not show through final coat. Provide DFT and environmental results during and where coating has been repaired. All work to be completed to Owner's Representative's satisfaction.

- Contractor to refer to as-built drawings (References 2.1 – 2.4) as reference and verify dimensions and lineup with actual situation on board. Contractor to provide new gasket and hardware for reinstallation.

CHECK POINT - Final inspection to the Owners Representative's satisfaction.

5. Performance Criteria/Deliverables

A. Daily Log of Tanks Tested

B. Marine Chemist Certificate

6. Miscellaneous

A. Removal and disposal of any wastes generated by work item to be part of the bid.

B. The scheduling and execution of this Work Item shall be coordinated by the Contractor and performed concurrently, where practicable, with for example Work Item cleaning of tanks, sonar room and steel repair. The Contractor shall be responsible for planning and sequencing the work to avoid interference with, duplication of effort, or damage to completed or ongoing work. Any damage caused by the Contractor, its subcontractors, employees, or agents to previously completed work, whether under this Contract or other related work items, shall be repaired at the Contractor's sole expense to the satisfaction of the Owner's Representative. Failure to properly coordinate the work or the occurrence of such damage shall constitute a Contractor performance deficiency and may be grounds for corrective actions, including but not limited to withholding of amounts otherwise payable until cure and, if not cured within the stated response window, Owner's performance of the service at Contractor's expense with reimbursement through setoff/back-charge, or other remedies available under the Contract.

C. All parts of Chapter 4, 5 and 6 applies to all Work Items.

* Optional Work Items 2027-26, Fuel oil Tanks # 2 & 4 repair

1. General Scope

The Contractor to provide the labor, material, and equipment as required to accomplish the following: miscellaneous tanks repairs. This Work Item to be scheduled together in practical Work Item 2027-14, 2027-15 or any other related Work Items. Completion of this Work Item to be completed prior to finalizing interfering Work Items.

Prior to commencing work, follow Vessel's Lock Out/Tag Out (LOTO) policy and procedures for ballast and the fuel system. After the Vessel is safely drydocked, and as soon as practical after the tanks have been pumped, opened, and cleaned (pressure washed), ventilated and suitable lighting in accordance with Work Item 2027-14 and 2027-15, Contractor to repair the tanks in accordance with the individual tank requirement in this Work Item.

Contractor shall maintain forced air ventilation at all times and temporary lighting as needed until spaces are closed. Maintain a valid Marine chemist certificate and ensure spaces remain safe for "Hot Work" and "Safe for Entry" condition as long as these spaces are open.

2. Reference

2.1 GPA 00199-506-01 VENTS & SOUNDING TUBES SCHEMATIC; Rev F

2.2 GPA 00199-529-01 BILGE & BALLAST SYSTEM SCHEMATIC; Rev E

2.3 GPA 00199-801-05 rev. - BOOKLET OF GENERAL DRAWINGS

2.4 GPA 00199-541-01E FUEL OIL SYSTEMS; Rev E (Sheets 1-3 of 3)

3. Location of Work:

- Fuel oil tank # 2 & 4

4. Work Description

A. Crop and renew drain pipe end to end from fuel oil tank #4 into the Sonar Room #2, including new valve and blind.

B. Crop and renew drain pipe from fuel oil tank #2 into the Sonar Room #2, including new valve and blind. For the fuel oil tank #2 drain, crop the pipe 50cm from aft bulkhead inside fuel oil tank #4 and replace the remaining section of the drain into the sonar room # 2.

- Pipes, valves, and fittings are to be replaced in accordance with as-built drawing 00199-541-01E (Reference 2.4).

CHECK POINT - Owner's Representative, USCG, and ABS fit-up inspection.

CHECK POINT - Owner's Representative, USCG, and ABS leak test and welding survey of all pipe work.

4.1. Additional Work Description

CHECK POINT - Cleanliness inspection prior to paint, DFT, with paint inspector and Owner's Representative.

- Contractor shall properly contain and dispose of any and all parts including debris, etc. removed from the Vessel.

Paint all new steel and disturbed sections according to Vessel's paint specification and in accordance with paint inspector and Owner's Representative's requirements. Feather edges smoothly so repaired areas do not show through final coat. Provide DFT and environmental results during and where coating has been repaired. All work to be completed to Owner's Representative's satisfaction.

The Contractor to refer to as-built drawings (References 2.1 – 2.4) as reference and verify dimensions and lineup with actual situation on board. Contractor to provide new gasket and hardware for reinstallation.

CHECK POINT - Final inspection to Owner's Representatives satisfaction.

5. Performance Criteria/Deliverables

A. Daily Log of Tanks Tested

B. Marine Chemist Certificate

6. Miscellaneous

A. Removal and disposal of any wastes generated by work item to be part of the bid.

B. The scheduling and execution of this Work Item shall be coordinated by the Contractor and performed concurrently, where practicable, with for example Work Item cleaning of tanks, sonar room and steel repair. The Contractor shall be responsible for planning and sequencing the work to avoid interference with, duplication of effort, or damage to completed or ongoing work. Any damage caused by the Contractor, its subcontractors, employees, or agents to previously completed work, whether under this Contract or other related work items, shall be repaired at the Contractor's sole expense to the satisfaction of the Owner's Representative. Failure to properly coordinate the work or the occurrence of such damage shall constitute a Contractor performance deficiency and may be grounds for corrective actions, including but not limited to withholding of amounts otherwise payable until cure and, if not cured within the stated response window, Owner's performance of the service at Contractor's expense with reimbursement through setoff/back-charge, or other remedies available under the Contract.

C. All parts of Chapter 4, 5 and 6 applies to all Work Items.

* Optional Work Items 2027-27, Steel repair, Fish plate, Deck Drains, Railings & more

1. General Scope

The Contractor to provide the labor, material, and equipment as required to accomplish the following: steel and painting repair work on all decks listed under the locations of Work Item 2027-27 Detailed Work List (Reference 2.11). All work is to be compliant with all regulatory requirements and to the Owner's Representative's satisfaction.

Contractor to clean out the necessary room and bilge for any hydrocarbons and gas free the space as needed to preforming safe hot work for this Work Item, including a Marine Chemist certificate valid for the duration of the work. Contractor to dispose of the oily waste water as part of this Work Item according to regulatory requirements. Contractor to produce drawings for a repair plan after scoping the work out with attending ABS surveyor and Owner's Representative to the satisfaction of both, if found necessary. Contractor will also present engineered drawings for approval to Owner's Representative and ABS prior to work starting. The Contractor is responsible for allowing access to the area with required staging and/or lifts. Contractor to safely remove false bulkheads/ ceilings, insulation, any interferences, and properly protect any equipment in the area to ensure no damages. After completion, Contractor to reinstall all false bulkheads/ceilings and interferences to the satisfaction of Owner's Representative.

2. Reference

2.1	ABS-Minimum thicknesses for plate renewals, document 2002 (ABS PID:39330)	
2.2	GPA 00199-526-01B	WEATHER DECK DRAIN SCHEMATIC
2.3	GPA 00199-624-01G	DOOR SCHEDULE
2.4	GPA 00199-801-05 rev.	BOOKLET OF GENERAL DRAWINGS
2.5	GPA 00199-111-04F	WET DECK, LAUNCH, & SIDE PLATING & FRAMING
2.6	GPA 00199-131-01G	MAIN DECK PLATING AND FRAMING
2.7	GPA 00199-136-01G01	DECK PLATING & FRAMING
2.8	GPA 00199-136-02 F	SUPERSTRUCTURE DECKS PLATING AND FRAMING
2.9	GPA 00199-167-01 D	01 & 02 WATERTIGHT CLOSURES & VERTICAL LADDERS
2.10	GPA 00199-612-01C	RAILS, STANCHIONS, AND ARRANGEMENT DETAILS
2.11		Work Item 2027-27 Detailed Work List

3. Location of Work:

Refer to Work Item 2027-27 Detailed Work List (Reference 2.6) for locations.

4. Work Description:

A. Contractor is responsible for the removal or any interferences and protection of equipment in the area.

B. All affected equipment to be locked out per the Vessel's policy in conjunction with the Vessel's crew.

CHECK POINT - Location (mark-out) of work with Owner's Representative prior to work start.

C. Inspect adjacent material for condition prior to fit up and submit CFR to Owner's Representative with suggested plan if mark out locations showed is inaccurate.

D. Hydro-jet all deck drain(s) and remove rust in the affected section prior to any painting.

E. Any disturbed paint to prepared and surface cleaned to a minimum standard of SSPC-SP 11 (Power Tool

Cleaning to Bare Metal) in accordance with coating specifications and apply coatings per Chapter 5.35, or as directed by Owner's Representative.

CHECK POINT - Fit-up inspection including ABS, USCG, and Owner's Representative.

F. Full welds to be completed according §5.33 and USCG and attending ABS surveyor's requirement.

4.1. *CHECK POINT - Final NDT inspection with USCG, ABS, and Owner's Representative. Fishplate & Structural Stiffeners Renewals:*

Renew wasted face plates, structural stiffeners, or structural fishplates (reinforcement brackets) as described in the locations in the Work Item 2027-27 Detailed Work List (Reference 2.11). Contractor to remove existing damaged steel completely, flush-grind the underlying original plating, and perform NDT to check for laminations or cracks before fitting the new plate. Full welds to be completed according to Chapter 5.33 and USCG and attending ABS surveyor's requirement.

CHECK POINT - NDT inspection with USCG, ABS, and Owner's Representative.

4.2. *Deck Handrails and Guard Rails Renewals:*

Renew damaged, bent, or heavily corroded perimeter stanchions, handrails, 2nd-rail and 3-rail on open decks or walkways according to the location of work list. Handrails must stand at a ship designed standard height from the deck and stanchions are to be constructed of solid flat bar, spaced apart according to original design per drawing GPA 00199-612-01 REV C (Reference 2.10). Top and mid-rails to be Sch 40 steel marine pipe (e.g., DN 32/DN 25), fully seal-welded to prevent internal corrosion.

4.3. *Deck Drain Rails Renewals:*

A number of exterior deck drains have failed and need replacement. Using the Work Item 2027-27 Detailed Work List (Reference 2.10), provide pricing to crop and replace the steel deck collection pieces and piping below. The piping below the cup is to be Sch. 80 PVC using the existing pipe clamps if still usable.





4.4. *Hatch Cover and coaming Overhaul:*

Carry out complete overhaul of hatch covers and coamings including cleaning, inspection, grit blasting off cover to SSPC-SP10 and full paint system restoration, steel renewal as required, repair of deformations/cracks, renewal of rubber packings, landing pads, cleats, wedges, and drainage channels. Restore sealing surfaces, repair corrosion wastage, and verify alignment and operational functionality. Perform hose/chalk testing after completion to confirm weather-tight integrity. All work to be carried out in accordance with USCG/ABS and OEM requirements to the satisfaction of Owner's Representative.

5. Quality Assurance

A. All workmanship shall be first-class marine practice.
All disturbed sections to be painted according to the Vessel's paint specification and in accordance with paint inspector and the Owner's Representative's requirements. Feather edges smoothly so repaired areas do not show through final coat. Provide DFT and environmental results during and where coating has been repaired. All work to be completed to Owner's Representative's satisfaction.

B. Contractor shall coordinate inspection requirements with ABS and Owner's Representative where applicable.

C. Any deviations from this specification shall require prior written approval from Owner's Representative.

6. Performance Criteria/Deliverables:

- All interferences removed to be tested after completion.
- All drains to be tested for full flow and leakage.
- All hatched to be tested according to USCG and ABS standards and to the Owner's Representative's satisfaction.

7. Unit Rates for Additional or Deletion Work Scope (Pro-Rata Options)

The following rates must include all labor, cropping, fit-up, welding, consumables, staging, gas-freeing, fire watch, NDT, preparation, inspections, and painting.

Category	Description	Unit of Measure	Unit Rate (USD)
Plating	Additional Steel Plate Renewal (up to 15mm thickness)	Per Kilogram (kg)	$_____
Plating	Additional Heavy Plate Renewal (>15mm to 25mm thickness)	Per Kilogram (kg)	$_____
Fishplates	Additional Fishplate / Flat Bar Stiffener Renewal	Per Linear Meter (m)	$_____
Fishplates	Additional Fishplate / Half Round Bar Stiffener Renewal	Per Linear Meter (m)	$_____
Stiffener	Additional T-Bar Stiffener Renewal	Per Linear Meter (m)	$_____
Railings	Additional Complete Handrail System (Stanchion + Rails)	Per Linear Meter (m)	$_____
Railings	Top-rail or Mid-rail Pipe Replacement only (No stanchions)	Per Linear Meter (m)	$_____
Railings	Single Stanchion Replacement only	Per Piece (pc)	$_____
Kickpipe	Additional Kick-pipe Renewal (from 19 to 40 mm)	Per Piece (pc)	$_____
Kickpipe	Removal / patch of abandon Kick-pipe and/ or bulkhead wire penetration (0-40mm)	Per Piece (pc)	$_____
Surface Prep	Additional Rust preservation SSPC-SP 11	Per Square Meter (m^2)	$_____

Testing	Additional Dye Penetrant (DP) or Magnetic Particle (MPI)	Per Meter of Weld	$_____

8. Note:

A. All work is subject to acceptance by the Owner's Representative, ABS Surveyor, and USCG Inspector. If re-work or replacement is necessary due to defective work, the cost shall be borne by the Contractor.

B. Contractor is responsible for ABS and USCG acceptance of work plan. Any re-work necessary due to ABS and USCG requirement, the cost shall be borne by the Contractor.

C. All welds must be of full length. Stitch welds (or intermittent welds) will not be accepted under any circumstances.

D. Any disturbed paint to prepared and surfaces cleaned to a minimum standard of SSPC-SP 11 (Power Tool Cleaning to Bare Metal) in accordance with coating spec and apply coatings per Chapter 5.35, or as directed by Owner's Representative.

9. Miscellaneous

A. Contractor will be responsible for arranging the ABS and/or U.S. Coast Guard inspections as required.

B. The scheduling and execution of this Work Item shall be coordinated by the Contractor and performed concurrently where practical, with for example Work Item 2027-17 or any other related Work Item. The Contractor shall be responsible for planning and sequencing the work to avoid interference with, duplication of effort, or damage to completed or ongoing work. Any damage caused by the Contractor, its subcontractors, employees, or agents to previously completed work, whether under this Contract or other related work items, shall be repaired at the Contractor's sole expense to the satisfaction of the Owner's Representative. Failure to properly coordinate the work or the occurrence of such damage shall constitute a Contractor performance deficiency and may be grounds for corrective actions, including but not limited to withholding of amounts otherwise payable until cure and, if not cured within the stated response window, Owner's performance of the service at Contractor's expense with reimbursement through setoff/back-charge, or other remedies available under the Contract.

C. All parts of Chapter 4, 5 and 6 applies to all Work Items.

1. General Scope

The Contractor to provide the labor, material and equipment as required to accomplish the safe removal and reinstallation of the 38 kHz Acoustic Doppler Current Profiler ("ADCP"). If the Contractor does not have recent technical experience (within the past 1-2 years), working with the removal and reinstallation of the same type of equipment for the RDI 38 kHz ADCP, Contractor to provide a Technica Representative from the Original Equipment Manufacturer, RD Instruments ("RDI") of San Diego, CA. (Contact: Mr. Scott Idle, +1 (858) 693-1178, rdifs@rdinstruments.com). If Contractor intends to accomplish this work item without RDI support, Contractor to provide the Owner's Representative with their technician's resume, including work experience on similar work. The ADCP will be removed to allow for work in the Sonar room #1. The work described in this Work Item shall be carried out while the Vessel is in drydock, and in coalition with Work Item 2027-29, Sonar room maintenance. The 38 kHz ADCP is mounted behind a window of (polycarbonate or reinforced plastic). The window will need to be cleaned/polished, or replaced if found to be cracked or broken. Inspect, repair, and preserve the area as necessary.

2. Reference

2.1 GPA S18405 rev. A 38 kHz SONAR FOUNDATION

2.2 GPA 00199-184-03, Rev. E, Foundations, Sonar & Transducer Tube

2.3 GPA 00199-461-01, Rev. C, Sonar Installation

2.4 GPA 00199-111-02, Rev. F, Hull Bottom Plating and Framing

2.5 GPA 00199-320-01, Rev. D, Electrical One-Line Diagram

2.6 GPA 00199-506-01, Rev. F, Vents and Sounding Tubes Schematic

2.7 GPA 00199-256-10, Rev. B, Sea Chest Arrangement & Details

2.8 GPA 00199-801-05 rev. - BOOKLET OF GENERAL DRAWINGS

3. Work Description Window Removal:

A. Prior to starting work on the window and transducer, Contractor to coordinate the cable disconnect with the Owner's Representative. The Vessel's technicians or the RDI representative can and will disconnect the cable. Connector to be protect cable from damage and water by the Owner's Representative's approved method. Pull the connector into the pipe just far enough to keep it out of the well, at the same time be reachable for reinstallation.

B. Contractor to provide a machinist to measure clearance between window and hull at 12 of the 24 ring bolt locations (evenly spaced around perimeter). The machinist to provide draft copy of as-found clearance report to Owner's Representative's prior to removal of the acoustic window. A final copy of the as-found clearance report to be provided via CFR and also to be included as part of the Project Close Out Package as per Chapter 5.49.

C. Contractor to remove acoustic window, cover ring, and flexible sealant from around window without any damages.

D. Contractor, under direction of the Vessel's assigned technician or the Owner's Representative, to remove the acoustic window in a manner that prevents any damage to the acoustic window or its surfaces.

(1) Begin by removing all but four bolts spaced on opposite sides of each other on the window mounting ring (cross pattern). Water will drain out of the holes, wait until the water is mostly drained before continuing.

(2) With four bolts remaining in a cross pattern, Contractor to provide (3) three capable individuals to hold the perimeter of the window, ready to take the full weight. Have a pallet with (3) three pieces of clean wood (dunnage) nearby to place the window on after removal. Remove the last four bolts and gently lower the window and place on the pallet. The dunnage should be supporting the weight along the perimeter of the window.

E. Under direction of the Vessel's assigned technician or Owner's Representative, clean and inspect the acoustic window, transducer surface, and acoustic rubber surface. Contractor to submit a CFR, to include pictures. Complete any repairs or perform basic maintenance to the window as required. Contractor to safeguard the window and materials in accordance with Chapter 5.40.

CHECK POINT – The Owner's Representative to inspect the window after cleaning.

4. *ADCP Removal:*

A. Contractor to open the inspection cover on the cofferdam in Sonar room #1 and prepare for removal of the 38 kHz ADCP. Be advised that the ADCP eye bolt hole is likely inoperable due to a rusted bolt left in the hole.

B. Contractor to safely, and in accordance with RDI's guidelines, mark the orientation of the ADCP before the removal process proceeds. Mark the bolt location of the notch in the transducer. It has a notch to reference as zero and this is used to point the transducer 30 degrees Starboard of forward. Contractor to submit CFR.

C. Contractor to safely remove the 38 kHz ADCP from its cofferdam and the (2) two concentric acoustic rubber rings around the inside of the transducer well. Contractor to seek guidance from RDI on how to safely preform this task knowing that the threaded eye bolt holes on top of the ADCP is likely unusable.

(1) All rigging including shackles and wire/chain must be certified lifting-rated hardware. Design Load min 300 kg, (SF): 5:1 (Minimum), Min. Breaking Strength ~15 kN (1,500 kg).



example ADCP rigging

D. If the eye bolt holes are unusable, the removal of the ADCP can be accomplished by supporting the weight with the bronze ring only on the outside perimeter of the transducer mounting surface prior to removal of the bolts (reference C.(2)), and thereafter slowly pressing the unit out (reference C.(3)) at the same time the bronze support ring is lowered at an equivalent speed to the Transducer until freed. Contractor to take particular care to avoid damaging the unit. The bottom face of the transducer is particularly fragile. Before this option is attempted, Contractor to seek written guidance from RDI on an appropriate removal procedure without the use of eye bolts. Contractor to schedule JCS and JSA with the Owner's Representative prior to starting. During the JSA, Contractor to provide the written RDI correspondence and suggestion to the Owner's Representative.

CHECK POINT – Owner's Representative or the Vessel's assigned technician to be present during removal of the ADCP.

E. After the ADCP is removed, Contractor to clean and protect the unit according to RDI's instruction and to the Owner's Representatives satisfaction, thereafter safely store the ADCP inside with understanding of the sensitivity of this scientific instrument.

5. *ADCP Water Holding tank:*

A. Contractor to remove and renew the ADCP water reservoir on the top level of the sonar room #1 access (2nd platform). Water tank to be of same size and configuration as existing tank.

B. Contractor to install the new tank with a new min 1" lockable stainless steel ball drain valve at the bottom of the tank with a hose barb.

C. Contractor to install a new flange ball valve in the position of the union on the pipe out of the tanks to the ADCP well.



water reservoir and marking of new valves

D. Prior to installation, the tank to be epoxy coated inside and outside according to the Vessel's paint specification. The inside paint thickness after 4 coats to be minimum 800 microns MDFT.

E. Flush out the pipes from the tank after reinstallation and make sure no obstruction or settlements found in the tank or in the pipes.

CHECK POINT – Owner's Representative to witness that pipes from water tank are clear and without obstruction or settlement.

6. *ADCP reinstallation:*

A. Reinstallation to occur only after steel work and steel preservation in Sonar room #1 and surrounding areas is completed (reference Work Item 2027-27).

B. Contractor to reinstall the ADCP in accordance with RDI's instruction, with correct orientation based on marking done during removal. Contractor to provide new gasket and all new hardware, including nylock nuts and nylock isolation bushings.

C. All the studs for the transducer should be cleaned and Contractor to apply fresh appropriate anti-seize compound to all threaded surfaces prior to installation of the transducer.

D. Bring the transducer under the well while still on the pallet or in its box. Rig the lifting bridle to the transducer.

E. Coordinate work with the Owner's Representative so either the Vessel's assigned technician or an RDI

Technical Representative provided by the Contractor (if applicable), will reconnect the cable and perform in air tests.

(1) Be sure to inspect both connectors for debris, fouling, and moisture prior to installation and apply dielectric grease. Ensure that the o-ring seal is visible in the sight hole on the connector once it is tight. Wrap the connector in electrical tape once firmly seated/locked.

(2) Perform a resistance check on the cable from the dry end with a provided sheet from RDI. Contractor to submit CFR with records.

F. Slowly lift the transducer from the pallet or box. Care must be made during reinstallation to ensure that the hole in both rubber rings aligns with the vent piping in the side of the well, also ensure that the notch on the transducer lines up with the mark that was made previously for the 30 degree off-set.

G. Install all new nylock isolation bushings into all the holes on the transducer mount ring. As gently as possible, tap them into the holes with a rubber mallet or equivalent. Avoid significant shock loads to the transducer.

H. Slowly pull the transducer into the cofferdam with the chain fall until it is flush and tight against the hull mounting ring. Contractor to ensure that the transducer is coming straight up and into the cofferdam. Do not overexert the chain fall hoist. The transducer will be secured with the hardware.

I. Install all mounting nylock nuts with fender washers and apply appropriate anti-seize compound to all threaded surfaces seize. All 24 nuts by hand tighten to a "snug-tight" condition (finger-tight plus 1/4 turn) to hold the transducer in place, ensuring the gasket is properly seated.

J. Number the bolt holes 1 through 24 in a clockwise fashion to allow for proper tightening sequence (criss-cross method) to ensure even gasket compression and prevent damage to the transducer housing.

- Pattern Sequence: 1, 13, 7, 19, 3, 15, 9, 21, 5, 17, 11, 23, 2, 14, 8, 20, 4, 16, 10, 22, 6, 18, 12, 24.

K. Torque Steps, the nuts shall be tightened in three stages to reach full torque (55 Nm). Do not tighten bolts fully in one pass. Staged tightening using outlined Pattern Sequence (above) is required to bring the joint together slowly. Contractor to pay strict attention to the nylock isolation bushings during the tightening to avoid deformation.

- Pass 1: 30% of target torque (16.5 Nm). Ensure the transducer is parallel to the mounting surface.
- Pass 2: 60% of target torque (33 Nm). Verify the gap between the housing and the mounting surface is consistent.
- Pass 3: 100% of target torque (55 Nm).
- Final Pass: Perform a final, full-torque circular check (1, 2, 3... 24) to ensure no bolt was missed and that uniform tension is applied, allowing for relaxation of the gasket.
- Post-Installation, Relaxation Time: Pause for 20 minutes to 4 hours after the final pass to allow for structural relaxation. Final Inspection, Re-check all bolts for no movement at 100% torque. (55 Nm)
- Contractor to submit CFR, to include record torque values and inspector initials in the QC report, including Torque Wrench, Calibration certificate (within last 6 months).

CHECK POINT - Installation inspection by Owner's Representative or the Vessel's assigned technician.

L. After final post-installation when the ADCP is installed, Contractor and the Vessel's assigned technician to perform another resistance check on the cable with the RDI provided data sheet at the dry end. Compare the results to the previous test. Contractor to submit CFR with data from the resistance checks.

7. ADCP window reinstallation:

A. Replace acoustic window using a new gasket new hardware or renew window if deemed necessary by the

Owner's Representative in a manner that prevents any damage to same. Contractor to provide at least (4) four capable individuals for this task.

B. Bring the window over to the transducer well on its storage pallet. Lift the window as close as practicable to the transducer well. Three individuals should be dedicated to lifting and supporting the window and the fourth individual will be dedicated to installing the initial four (4) bolts. Have all bolts prepped with lock-tight just prior to lift and ready to install.

   (1) Lift the window with a new gasket and mount ring into place and install four (4) bolts in cross pattern immediately to support the weight.

C. Proceed to install all bolts. Note that there is no torque spec for these bolts, thus making it easy to over-tighten them and crack the window at the bore holes. The window bore holes are not threaded, there are crowns on the hull/well mounting ring.

   (1) The window does not provide hull integrity, only a separator from sea water and freshwater at the transducer face. Therefore, tighten bolts until the window is about flush with the hull and that is all that is necessary.

   (2) Test window seal by turning on the freshwater supply and flood with only a few feet of water. Inspect the window at the wet side and let it sit for at least 12 hours. If everything outside of the window is still dry after 12 hours, then drain and wait to equalize pressure as the Vessel is re-floated.

CHECK POINT - Window installation inspection by the Owner's Representative or the Vessel's assigned technician.

D. Repaint any areas damaged by repairs (if required) to the specifications as dictated by the Owner's Representative or the Vessel's assigned technician. The window seal and the acoustic window are not to be painted.

E. Contractor to provide a machinist to re measure finale clearances between acoustic window and hull at 12 of the 24 ring bolt locations (evenly spaced around perimeter). Machinist to provide draft copy of the clearance report via CFR to the Owner's Representative within (24) hours of completion. A final copy of clearance report to be provided as part of the Project Close Out Package in accordance with Chapter 5.49.

F. Protect the ADCP acoustic window from other work and paint by using plywood.

G. Reinstall the Inspection cover in Sonar room #1.

CHECK POINT - Final Installation inspection by Owner's Representative or the Vessel's assigned technician.

8. *Performance Criteria/Deliverables:*

- Water to be refilled behind the window, to match the actual waterline during re-floating, seek assistance from the Owner's Representative.
- Operational test during Sea Trials.

9. *Note:*

- All work is subject to acceptance by the Owner's Representative, ABS Surveyor, and USCG Inspector.
- All disturbed sections to be painted according to Vessel's paint specification and in accordance with paint inspector and Owner's Representative's requirements. Feather edges smoothly so repaired areas do not show through final coat. Provide DFT and environmental results during and where coating has been repaired. All work to be completed to Owner's Representative's satisfaction.
- Under no circumstances are the acoustic window's surface to be painted.
- SAFE guard all parts and equipment in accordance with Chapter 5.40.

10. Miscellaneous

A. Any and all cleaning methods, painting, paint preparation, or replacement of existing materials and replacement bolts for acoustic windows shall be under the approval and guidance of the Owner's Representative, or the Vessel's assigned technician.

B. The scheduling and execution of this Work Item shall be coordinated by the Contractor and performed concurrently, where practical, with Work Items such as the miscellaneous tanks, sonar room or any other related Work Item. The Contractor shall be responsible for planning and sequencing the work to avoid interference with, duplication of effort, or damage to completed or ongoing work. Any damage caused by the Contractor, its subcontractors, employees, or agents to previously completed work, whether under this Contract or other related work items, shall be repaired at the Contractor's sole expense to the satisfaction of the Owner. Failure to properly coordinate the work or the occurrence of such damage shall constitute a Contractor performance deficiency and may be grounds for corrective actions, including but not limited to withholding of amounts otherwise payable until cure and, if not cured within the stated response window, Owner's performance of the service at Contractor's expense with reimbursement through setoff/back-charge, or other remedies available under the Contract.

C. Contractor will be responsible for arranging the ABS and/or U.S. Coast Guard inspections as required.

D. Drawing GPA S18405 rev. A; 38 kHz SONAR FOUNDATION (Reference 2.1) shall be used as a guide If any replacement materials are required. These materials shall be considered part of the bid.

   (1) Acoustic window and transducer, unless damaged by Contractor shall be excluded.

E. All parts of Chapter 4, 5 and 6 applies to all Work Items.

* Optional Work Items 2027-29, Sonar room #1 Maintenance

1. General Scope

The Contractor to provide the labor, material, and equipment as required to accomplish the following steel and painting repairs in Starboard Sonar room # 1. All work is to be compliant with all regulatory requirements and to the Owner's Representative's satisfaction.

The Contractor to clean out the spaces and bilges for any hydrocarbons and gas free the space as needed to perform safe hot work for this Work Item, including a Marine Chemist certificate valid for the duration of the work. Contractor to dispose of the oily waste water as part of this Work Item according to regulatory requirements. Contractor is responsible with providing access to the area with required staging.

2. Reference

- ABS-Minimum thicknesses for plate renewals, document 2002 (ABS PID:39330)
- GPA S18405 rev. A 38 kHz SONAR FOUNDATION
- GPA 00199-184-03, Rev. E, Foundations, Sonar & Transducer Tube
- GPA 00199-461-01, Rev. C, Sonar Installation
- GPA 00199-111-02, Rev. F, Hull Bottom Plating and Framing
- GPA 00199-320-01, Rev. D, Electrical One-Line Diagram
- GPA 00199-506-01, Rev. F, Vents and Sounding Tubes Schematic
- GPA 00199-256-10, Rev. B, Sea Chest Arrangement & Details
- GPA 00199-801-05 rev. - BOOKLET OF GENERAL DRAWINGS

3. Work Description:

A. Contractor is responsible for the removal of any interferences and the protection of equipment in the area.

B. Contractor is responsible for following LOTO requirements for all affected equipment per the Vessel's policy, in conjunction with the Vessel's crew.

C. Contractor to crop out old abandoned echo-sounder. Contractor to evaluate if the location will stay open as a partial Temporary Access Opening ("TAO"). Prepare opening for new plate insert after the existing echo-sounder is removed. Contractor to find suitable full size TAO location in preparation for steel preservation. The TAO location to be prepared for reinstallation and welding prior to any painting in the space or surrounding area.

(1) Contractor to also remove all wiring related to the existing echo-sounder after removal and include updates to as-built drawings.





CHECK POINT - Location (mark-out) of work with Owner's Representative prior to work start.

D. Contractor to provide abrasive grid blasting to SSPC-SP 10 / ISO 8501-1 Sa 2.5 (Near-White Metal) inside the Sonar room from the flat bottom plate to approximately 1 meter up on the side shell, encompassing all frames and stiffeners within that height section.

(1) Blast steel plate and frames below the ADCP trunk.

(2) Blasting will not be allowed on any electronic equipment. Areas to be blasted are to be approved by the Owner's Representative prior to blasting, and after adequate protective coverings that will prevent any damage have been installed.

E. Transition between blasted sections and the protected parts to carefully prepared and surface cleaned to a minimum standard of SSPC-SP 11.

F. Contractor to include in the bid for this Work Item, steel preservation for rest of the sonar room where rust is present to surfaces standard of SSPC-SP 11 or better.

CHECK POINT - NDT inspection with USCG, ABS, and Owner's Representative.

G. Inspect material condition prior to painting and submit CFR to the Owner's Representative.

H. Additionally, any disturbed paint to be prepared and surface cleaned to a minimum standard of SSPC-SP 11 (Power Tool Cleaning to Bare Metal) in accordance with coating spec and apply coatings in accordance with Chapter 5.35, or as directed by the Owner's Representative. Feather edges smoothly so repaired areas do not show through final coat.

CHECK POINT - Pre paint inspection. with paint inspector and Owner's Representative.

I. Re-Paint Sonar room according to the Vessel's paint specification and in accordance with paint inspector and the Owner's Representative's requirements. Provide DFT and environmental results during painting sequences. All work to be completed to Owner's Representative's satisfaction.

(1) Coating application around TAO shall be limited to areas not affected by final closing welds. Contractor shall leave sufficient uncoated margin adjacent to TAO insert and weld seams to avoid thermal damage during reinstatement welding. Final surface preparation, touch-up, and coating of weld seams and adjacent heat-affected areas shall be completed after TAO installation and completion of all hot work.

CHECK POINT - Between paint coat inspection.

CHECK POINT - Final paint inspection.

J. Contractor to reinstall TAO, and welds to be completed in accordance with Chapter 5.33 and USCG and attending ABS surveyor's requirement.

CHECK POINT - TAO Fit-up inspection with USCG, ABS, and Owner's Representative.

CHECK POINT - Final NDT weld inspection of TAO inserts with USCG, ABS, and Owner's Representative.

4. *Quality Assurance*

A. All workmanship shall be first-class marine practice.

B. All disturbed sections to be painted according to the Vessel's paint specification and in accordance with paint inspector and the Owner's Representative's requirements. Feather edges smoothly so repaired areas do not show through final coat. Provide DFT and environmental results during and where coating has been repaired. All work to be completed to the Owner's Representative's satisfaction.

C. Contractor shall coordinate inspection requirements with ABS and the Owner's Representative where applicable.

D. Any deviations from this specification shall require prior written approval from Owner's Representative.

5. Performance Criteria/Deliverables:

All interferences removed to be tested after completion as soon as possible, in coordination with Owner's Representative. Final testing will be during Sea Trials.

6. Unit Rates for Additional or Deletion Work Scope (Pro-Rata Options)

The following rates must include all labor, cropping, fit-up, welding, consumables, staging, gas-freeing, fire watch, NDT, preparation, inspections, and painting.

Category	Description	Unit of Measure	Unit Rate (USD)
Plating	Additional Steel Plate Renewal (up to 15mm thickness)	Per Kilogram (kg)	$_____
Plating	Additional Heavy Plate Renewal (>15mm to 25mm thickness)	Per Kilogram (kg)	$_____
Plating	Clad welding	Per Square DeciMeter (dm^2)	$_____
Frame	Additional Frame Renewal	Per Linear Meter (m)	$_____
Stiffener	Additional Stiffener Renewal	Per Linear Meter (m)	$_____
Surface Prep	Additional Rust preservation SSPC-SP 10	Per Square Meter (m^2)	$_____
Surface Prep	Additional Rust preservation SSPC-SP 11	Per Square Meter (m^2)	$_____
Testing	Additional Weld inspection f.ex (DP) (MPI) (Vacbox)	Per Meter of Weld	$_____

7. Note:

A. All work is subject to acceptance by the Owner's Representative, ABS Surveyor, and USCG Inspector. If re-work or replacement is necessary due to defective work, the cost shall be borne by the Contractor.

B. Contractor is responsible for ABS and USCG acceptance of work plan. Any re-work necessary due to ABS and USCG requirement, the cost shall be borne by the Contractor.

C. Contractor to make drawings for repair plan after scoping the work out with attending ABS surveyor and Owner's Representative to the satisfaction of both if found necessary. Then Contractor will present engendered drawings to Owner's Representative and ABS prior to work start for approval.

D. After completion Contractor to reinstall all interferences to the satisfaction of Owner's Representative.

8. Miscellaneous

A. Contractor will be responsible for arranging the ABS and/or U.S. Coast Guard inspections as required.

B. The scheduling and execution of this Work Item shall be coordinated by the Contractor and performed concurrently, where practicable, with for example Work Item 2027-12 &17 or any other related Work Item.

The Contractor shall be responsible for planning and sequencing the work to avoid interference with, duplication of effort, or damage to completed or ongoing work. Any damage caused by the Contractor, its subcontractors, employees, or agents to previously completed work, whether under this Contract or other related work items, shall be repaired at the Contractor's sole expense to the satisfaction of the Owner. Failure to properly coordinate the work or the occurrence of such damage shall constitute a Contractor performance deficiency and may be grounds for corrective actions, including but not limited to withholding of amounts otherwise payable until cure and, if not cured within the stated response window, Owner's performance of the service at Contractor's expense with reimbursement through setoff/back-charge, or other remedies available under the Contract.

C. Contractor to update as-built drawings to be part of the Project Close Out package in accordance with Chapter 5.49.

D. All parts of Chapter 4, 5 and 6 applies to all Work Items.

* Optional Work Items 2027-30, Sonar room #2 Maintenance

1. General Scope

The Contractor to provide the labor, material, and equipment as required to accomplish the following steel and painting repair in Port Sonar room # 2. All work is to be compliant with all regulatory requirements and to the Owner's Representative's satisfaction.

Contractor to clean out the spaces and bilges for any hydrocarbons and gas free the space as needed to perform safe hot work for this Work Item, including a Marine Chemist certificate valid for the duration of the work. Contractor to dispose of the oily waste water as part of this Work Item according to regulatory requirements. Contractor is expected to provide access to the area with required staging.

2. Reference

- ABS-Minimum thicknesses for plate renewals, document 2002 (ABS PID:39330)
- GPA S18405 rev. A 38 kHz SONAR FOUNDATION
- GPA 00199-184-03, Rev. E, Foundations, Sonar & Transducer Tube
- GPA 00199-461-01, Rev. C, Sonar Installation
- GPA 00199-111-02, Rev. F, Hull Bottom Plating and Framing
- GPA 00199-320-01, Rev. D, Electrical One-Line Diagram
- GPA 00199-506-01, Rev. F, Vents and Sounding Tubes Schematic
- GPA 00199-256-10, Rev. B, Sea Chest Arrangement & Details
- GPA 00199-801-05 rev. - BOOKLET OF GENERAL DRAWINGS

3. Work Description:

A. Contractor is responsible for removal or any interferences and the protection of equipment in the area.

B. Contractor is responsible with following the LOTO requirement for all affected equipment per the Vessel's policy in conjunction with the Vessel's crew.

C. Contractor to evaluate locations to be used as Temporary Access Opening (TAO) locations in preparation for steel preservation. TAOs to be prepared for reinstallation and welding prior to any painting in the space or surrounding.

CHECK POINT - TAO Location (mark-out) with Owner's Representative prior to work start.

D. Contractor to provide abrasive grid blasting to SSPC-SP 10 / ISO 8501-1 Sa 2.5 (Near-White Metal) inside the Sonar room from the flat bottom plate to approximately 1 meter up on the side shell, encompassing all frames and stiffeners within that height section.

(1) Blasting will not be allowed on any electronic equipment. Areas to be blasted to be approved by the Owner's Representative prior to blasting, and after adequate protective coverings that will prevent any damage have been installed.

E. Transition between blasted sections and the protected parts to carefully be prepared and surface cleaned to a minimum standard of SSPC-SP 11.

F. Contractor to include in the bid for this Work Item, steel preservation for rest of the sonar room where rust is present to surface standard of SSPC-SP 11 or better.

CHECK POINT - NDT inspection with USCG, ABS, and Owner's Representative.

G. Inspect material condition prior to painting and submit CFR to the Owner's Representative.

H. Additionally, any disturbed paint to prepared and surface cleaned to a minimum standard of SSPC-SP 11 (Power Tool Cleaning to Bare Metal) in accordance with coating spec and apply coatings in accordance with Chapter 5.35, or as directed by Owner's Representative. Feather edges smoothly so repaired areas do not show through final coat.

CHECK POINT - Pre paint inspection with paint inspector and Owner's Representative.

I. Re-Paint Sonar room according to the Vessel's paint specification and in accordance with paint inspector and the Owner's Representative's requirements. Provide DFT and environmental results during painting sequences. All work to be completed to Owner's Representative's satisfaction.

J. Coating application around TAO shall be limited to areas not affected by final closing welds. Contractor shall leave sufficient uncoated margin adjacent to TAO insert and weld seams to avoid thermal damage during reinstatement welding. Final surface preparation, touch-up, and coating of weld seams and adjacent heat-affected areas shall be completed after TAO installation and completion of all hot work.

CHECK POINT - Between paint coat inspection.

CHECK POINT - Final paint inspection.

J. Contractor to reinstall TAO, welds to be completed in accordance with Chapter 5.33 and USCG and attending ABS surveyor's requirement.

CHECK POINT - TAO Fit-up inspection with USCG, ABS, and the Owner's Representative.

CHECK POINT - Final NDT weld inspection of TAO inserts with USCG, ABS, and the Owner's Representative.

4. *Quality Assurance*

A. All workmanship shall be first-class marine practice.

B. All disturbed sections to be painted according to Vessel's paint specification and in accordance with paint inspector and the Owner's Representative's requirements. Feather edges smoothly so repaired areas do not show through final coat. Provide DFT and environmental results during and where coating has been repaired. All work to be completed to Owner's Representative's satisfaction.

C. Contractor shall coordinate inspection requirements with ABS and Owner's Representative where applicable.

D. Any deviations from this specification shall require prior written approval from the Owner's Representative.

5. *Performance Criteria/Deliverables:*

- All interferences removed to be tested after completion as soon as possible, in coordination with Owner's Representative. Final testing will be during Sea Trials.

6. *Unit Rates for Additional or Deletion Work Scope (Pro-Rata Options)*

The following rates must include all labor, cropping, fit-up, welding, consumables, staging, gas-freeing, fire watch, NDT, preparation, inspections, and painting.

Category	Description	Unit of Measure	Unit Rate (USD)
Plating	Additional Steel Plate Renewal (up to 15mm thickness)	Per Kilogram (kg)	$_____
Plating	Additional Heavy Plate Renewal (>15mm to 25mm thickness)	Per Kilogram (kg)	$_____
Plating	Clad welding	Per Square DeciMeter (dm^2)	$_____
Frame	Additional Frame Renewal	Per Linear Meter (m)	$_____
Stiffener	Additional Stiffener Renewal	Per Linear Meter (m)	$_____
Surface Prep	Additional Rust preservation SSPC-SP 10	Per Square Meter (m^2)	$_____
Surface Prep	Additional Rust preservation SSPC-SP 11	Per Square Meter (m^2)	$_____
Testing	Additional Weld inspection f.ex (DP) (MPI) (Vacbox)	Per Meter of Weld	$_____

7. *Note:*

A. All work is subject to acceptance by the Owner's Representative, ABS Surveyor, and USCG Inspector. If re-work or replacement is necessary due to defective work, the cost shall be borne by the Contractor.

B. Contractor is responsible for ABS and USCG acceptance of work plan. Any re-work necessary due to ABS and USCG requirement, the cost shall be borne by the Contractor.

C. Contractor to make drawings for repair plan after scoping the work out with attending ABS surveyor and Owner's Representative to the satisfaction of both if found necessary. Then Contractor will present engendered drawings to Owner's Representative and ABS prior to work start for approval.

D. After completion Contractor to reinstall all interferences to the satisfaction of Owner's Representative.

E. If Optional Work Item 2027-34 is turned on, it will affect the work in this Work Item and needs to be worked in parallel with this Work Item.

8. *Miscellaneous*

A. Contractor will be responsible for arranging the ABS and/or U.S. Coast Guard inspections as required.

B. The scheduling and execution of this Work Item shall be coordinated by the Contractor and performed concurrently, where practicable, with for example Work Item 2027-12 & 26 or any other related work item. The Contractor shall be responsible for planning and sequencing the work to avoid interference with, duplication of effort, or damage to completed or ongoing work. Any damage caused by the Contractor, its subcontractors, employees, or agents to previously completed work, whether under this Contract or other related work items, shall be repaired at the Contractor's sole expense to the satisfaction of the Owner. Failure to properly coordinate the work or the occurrence of such damage shall constitute a Contractor

performance deficiency and may be grounds for corrective actions, including but not limited to withholding of amounts otherwise payable until cure and, if not cured within the stated response window, Owner's performance of the service at Contractor's expense with reimbursement through setoff/back-charge, or other remedies available under the Contract.

C. Contractor to provide updated as-built drawings to be part of the Project Close Out package in accordance with Chapter 5.49.

D. All parts of Chapter 4, 5 and 6 applies to all Work Items.

* Optional Work Items 2027-31, Insulation repair

1. General Scope

The Contractor to provide the labor, material, and equipment as required to accomplish all required insulation repairs inside the accommodation as listed in this Work Item. Contractor shall survey the accommodation's ceilings and interior spaces as identified by Owner's Representative. Contractor to dispose of all waste as part of this Work Item according to regulatory requirements.

2. Reference

2.1	GPA 00199-801-05 rev.	BOOKLET OF GENERAL DRAWINGS
2.2	GPA 00199-509-01B	PIPE INSULATION SCHEDULE
2.3	GPA 00199-635-01C	INSULATION SCHEDULE

3. Location of Work:

1. Relocate Exit sign outside MCS (forward) 01 deck ~frame 28.
2. i-Met Lab, main deck fwd port. Renew insulation
3. Ship's Stores, main deck fwd Starboard. Renew insulation
4. Hydro Lab, Chemistry Lab and, Renew ceiling and pipe insulation
5. Winch/ Wire Room & Winch/ Wire Bay Renew ceiling and pipe insulation
6. Dry Store # 3, GSM # 3- 5 Renew ceiling and pipe insulation
7. Fan room # 3 Pipe insulation (OFM)

4. Work Description:

A. Contractor to completely remove drop down ceiling from the i-Met lab as well as all aluminum foil insulation above the ceiling tiles in the space.

(1) The Contractor to carefully remove the ceiling tiles. Stack and keep the full-size tiles that are in good shape and hand them over to the Owner's Representative for the Vessel's use in another location.

(2) Remove and dispose all the aluminum foil insulation in the ceiling of the i-Met lab.

(3) Contractor to re-insulate the full ceiling in the i-Met lab using canvas fiber covered insulation to ensure of a well-insulated space that has a clean and aesthetic appearance. The new insulation is to be taped and painted white. Contractor to also include pipe and ducting insulation in the space.

(4) Cables and wiring above the ceiling tiles to be cleaned and organized to provide a pleasing aesthetic appearance.

(5) Contractor to ensure vents, lights, and fire sensors (not limited to) are properly secured and mounted to the satisfaction of Owner's Representative.

CHECK POINT - Insulation inspection.

B. Contractor to completely remove all the aluminum foil insulation under the deck ceiling of the Vessel's Stores (FWD main deck Starboard side).

(1) Remove and dispose all the aluminum foil insulation in the ceiling of the Vessel's Stores.

(2) Contractor to renew the missing vent screen in the ceiling to the Owner Representative's satisfaction.

CHECK POINT - Fit up inspection.

(3) Contractor to re-insulate the full ceiling in the Vessel's Stores using canvas fiber covered insulation to ensure of a well-insulated space that has a clean and aesthetically pleasing appearance. The new insulation to be taped and painted white. Contractor to also include pipe and ducting insulation in the space.

(4) Cables and wiring in the ceiling to be clean and organized to provide an aesthetically pleasing appearance.

(5) Contractor to make sure vents, lights, and fire sensors (not limited to) are properly secured and mounted to the satisfaction of Owner's Representative.

CHECK POINT - Insulation inspection.

CHECK POINT - Completion inspection.

C. Clean up all spaces to Owner's Representative's satisfaction.

5. *Unit Rates for Additional or Deletion Work Scope (Pro-Rata Options) (To Be Used as Required):*

Contractor shall provide unit rates for the following additional work. The following rates must include all labor, cropping, fit-up, welding, consumables, staging, gas-freeing, fire watch, NDT, preparation, inspections, and painting:

Item	Description	Unit	Unit Rate (USD)
A	Repair of ceiling panel finish	Per Square Meter (m^2)	$_____
B	Repair of adjacent ceiling panel finish	Per Square Meter (m^2)	$_____
C	Additional ceiling renewal	Per Square Meter (m^2)	$_____
D	Renewal of duct Insulation	Per Linear Meter (m)	$_____
E	Renewal of Pipe Insulation	Per Linear Meter (m)	$_____
F	Renewal of Ceiling Insulation, white canvas covered	Per Square Meter (m^2)	$_____
G	Renewal of Bulkhead Insulation, white canvas covered	Per Square Meter (m^2)	$_____
H	Additional steel/aluminum fabrication required for installation	Hour	$_____
I	Access/scaffold required beyond normal accommodation access	Day	$_____

6. Note:

A. Any additional quantities identified during survey shall be accomplished at the agreed unit rates under Section 5 and upon the Owner's Representative's approval.

B. All work is subject to acceptance by the Owner's Representative, ABS Surveyor, and USCG Inspector. If re-work or replacement is necessary due to defective work, the cost shall be borne by the Contractor.

C. Contractor to specify in the bid what type of insulation and R-value that will be used including the approval certificate from regulatory agencies.

D. Contractor to dismantle and dispose of all removed material.

7. Miscellaneous

A. All parts of Chapter 4, 5 and 6 applies to all Work Items.

* Optional Work Items 2027-32, Port Top side steel repair

1. General Scope

The Contractor to provide the labor, material, and equipment as required to accomplish all required steel repairs on Port side topside if this Optional Work Item is activated by the Owner. Regardless of activation of this item, Contractor to facilitate lifts and survey availabilities for the Owner's Representative and USCG/ABS, as soon as the Vessel is drydocked to determent the condition of the steel indent and help the Owner determine if this Work Item will be activated.

If the Owner activates this Work Item, either Option 1 (Section 3), Option 2 (Section 4), or both, Contractor is required to complete all related requirements of this Work Item and coordinate this Work Item with all other affected Work Items, including Work Item 2027-17 & 2027-25 or any other related Work Items.

Contractor to clean spaces for any hydrocarbons and gas free the space as needed to perform safe hot work for this Work Item, including a Marine Chemist certificate valid for the duration of the work. Contractor to dispose of all waste related to this Work Item according to regulatory requirements. Contractor to provide drawings of repair plan after scoping the work with attending ABS surveyor and the Owner's Representative, to the satisfaction of both. Contractor to present engendered drawings to the Owner's Representative and ABS prior to work start for approval. Contractor is responsible with providing access to the area with required staging and/or lifts as required. Contractor to remove any interferences and properly protect any equipment in the area to ensure no damage.

2. Reference

- 00199-111-04F.dwg WET DECK, LAUNCH & SIDE PLATING & FRAMING; Rev F
- 00199-117-02G-1.dwg HULL/CROSS STRUCTURE FRAMES & BULKHEAD; Rev G
- 00199-117-02G-2.dwg HULL/CROSS STRUCTURE FRAMES & BULKHEAD; Rev G
- 00199-117-02G-3.dwg HULL/CROSS STRUCTURE FRAMES & BULKHEAD; Rev G
- 00199-117-03F.dwg HULL/CROSS STRUCTURE LONG'L SECTIONS; Rev F
- ABS-Minimum thicknesses for plate renewals, document 2002 (ABS PID:39330)
- GPA 00199-801-05 rev. - BOOKLET OF GENERAL DRAWINGS

3. Work Description

3.1. Option 1, indent Port Side, Main deck, ~frame 17:

Contractor to bid this Option with the intent to crop and replace about one square meter (~1 m^2) of the shell plating, including remove all interferences related to this work. Prepare the spaces for shell plating, crop, and insert according to regulatory requirement and to the best marine ship repair practice, as well as to ABS, USCG, and the Owner's Representative's full satisfaction. The Contractor to provide the labor, material and equipment as required to accomplish all required steel repair on Port side topside.

A. Contractor to remove interference include but not limited to false bulkhead and insulation in Exercise Room in preparation for steel replacement.

B. Based on the survey result, Contractor to lay out a steel repair plan to crop and insert the dent in the shell plating around frame 17 port top side vertical shell plating. Prior to commencement of any shell, frame, stiffeners or plating renewal or insert work, the Contractor shall identify all intended cut-out areas, insert dimensions, weld joint arrangements, and staging sequence, and submit the proposed repair methodology and plate sizing details to ABS and the Owner's Representative for review and

approval. No cropping or renewal work shall begin until written acceptance is obtained from the attending ABS Surveyor. All repairs are to be carried out in accordance with approved drawings, Class requirements, and general shipyard best practices.

CHECK POINT - Layout inspection.

C. Contractor to present to Owner's Representative and ABS with an engineered drawing of the new insert.

D. Contractor to safely crop steel according to the steel repair plan.

E. Contractor to prepare entire area for insert and welding.

F. Fit up the new insert plate and stiffeners as required by the steel repair plan.

CHECK POINT - Fit up inspection.

G. According to regulatory requirement, Contractor to weld in the new steel.

H. NDT to be performed to the satisfaction of the Owner's Representative and attending ABS/USCG surveyor as required.

CHECK POINT - Weld and water tight integrity inspection.

I. After successful completion of weld inspection, Contractor to paint the new insert, inboard and outboard, and disturbed area according to the Vessel's paint specifications and in coordination with the hull painting under Work Item 2027-11 Paint Underwater Hulls From Keel to Waterline.

J. Repaint any areas damaged by repairs to the specifications as directed by the Owner's Representative. All disturbed sections to be painted according to the Vessel's paint specification and in accordance with paint inspector and the Owner's Representative's requirements. Feather edges smoothly so repaired areas do not show through final coat. Provide DFT and environmental results during and where coating has been repaired. All work to be completed to Owner's Representative's satisfaction.

CHECK POINT - Paint inspection.

3.2 Option 2, indent Port Side, Main deck, ~frame 26:

Contractor to bid this Option with the intent to crop and replace about one square meter (~1 m^2) of the shell plating, including remove all interferences related to this work. Prepare the spaces for shell plating crop and insert according to regulatory requirement and to the best marine ship repair practice, as well as to ABS, USCG and Owner's Representative's satisfaction. The Contractor to provide the labor, material, and equipment as required to accomplish all required steel repair on Port side topside.

A. Contractor to remove interference include but not limited to false bulkhead and insulation in Laundry Room and staircase as need in preparation for steel replacement.

B. Based on the survey result contractor to lay out a steel repair plan to crop and insert the dent in the shell plating around frame 26 port top side vertical shell plating. Prior to commencement of any shell, frame, stiffeners or plating renewal or insert work, the Contractor shall identify all intended cut-out areas, insert dimensions, weld joint arrangements, and staging sequence, and submit the proposed repair methodology and plate sizing details to ABS and Owner's representative for review and approval. No cropping or renewal work shall begin until written acceptance is obtained from the attending ABS Surveyor. All repairs are to be carried out in accordance with approved drawings, Class requirements, and shipyard best practices.

CHECK POINT - Layout inspection.

C. Contractor to present to the Owner's Representative and ABS with an engineered drawing of the new insert.

D. Contractor to safely crop steel according to the steel repair plan.

E. Contractor to prepare entire area for insert and welding.

F. Fit up the new insert plate, and stiffeners as required by the steel repair plan.

CHECK POINT - Fit up inspection.

G. According to regulatory requirement, Contractor to weld in the new steel.

H. NDT to be performed to the satisfaction of the Owner's Representative and attending ABS/USCG surveyor as required.

CHECK POINT - Weld and water tight integrity inspection.

I. After successful completion of weld inspection, contractor to paint the new insert inboard and outboard, and disturbed area according to the Vessel's paint specifications and in coordination. with the hull painting work item, 2027-11.

J. Repaint any areas damaged by repairs to the specifications as directed by the Owner's Representative. All disturbed sections to be painted according to the Vessel's paint specification and in accordance with paint inspector and the Owner's Representative's requirements. Feather edges smoothly so repaired areas do not show through final coat. Provide DFT and environmental results during and where coating has been repaired. All work to be completed to Owner's Representative's satisfaction.

CHECK POINT - Paint inspection.

4. *Unit Rates for Additional or Deletion Work Scope (Pro-Rata Options)*

The following rates must include all labor, cropping, fit-up, welding, consumables, staging, gas-freeing, fire watch, NDT, preparation, inspections, and painting.

Category	Description	Unit of Measure	Unit Rate (USD)
Plating	Additional Steel Plate Renewal (up to 15mm thickness)	Per Kilogram (kg)	$_____
Plating	Additional Heavy Plate Renewal (>15mm to 25mm thickness)	Per Kilogram (kg)	$_____
Plating	Clad welding	Per Square DeciMeter (dm^2)	$_____
Stiffener	Additional Stiffener Renewal	Per Linear Meter (m)	$_____
Frame	Additional Frame Renewal	Per Linear Meter (m)	$_____
Surface Prep	Additional Rust preservation SSPC-SP 11	Per Square Meter (m^2)	$_____
Testing	Additional Dye Penetrant (DP) or Magnetic Particle (MPI)	Per Meter of Weld	$_____

5. *Note:*

- All work is subject to acceptance by the Owner's Representative, ABS Surveyor, and USCG Inspector.
- The Owner can activate either Option 1 (Section 3.1) or Option 2 (Section 3.2) separately, or both. Final pricing will be based on which options were activated.

6. *Miscellaneous*

A. Contractor will be responsible for arranging the ABS and/or U.S. Coast Guard inspections as required.

B. The scheduling and execution of this Work Item shall be coordinated by the Contractor and performed concurrently, where practicable, with Work Item 2027-27 Steel Repair. The Contractor shall be responsible for planning and sequencing the work to avoid interference with, duplication of effort, or damage to completed or ongoing work. Any damage caused by the Contractor, its subcontractors, employees, or agents to previously completed work, whether under this Contract or other related work items, shall be repaired at the Contractor's sole expense to the satisfaction of the Owner. Failure to properly coordinate the work or the occurrence of such damage shall constitute a Contractor performance deficiency and may be grounds for corrective actions, including but not limited to withholding of amounts otherwise payable until cure and, if not cured within the stated response window, Owner's performance of the service at Contractor's expense with reimbursement through setoff/back-charge, or other remedies available under the Contract.

C. All parts of Chapter 4, 5 and 6 applies to all Work Items.

* Optional Work Items 2027-33, Stabilizer (Canard) Overhaul

1. General Scope

The purpose of this scope is to have the Original Equipment Manufacturer, Foure Lagadec, refurbish the Canard Stabilizer System. All required material will be furnished by Contractor.

The starboard canard hydraulic ram has visual corrosion and pitting in the rod chrome surface.

2. References

A. GPA 00199-184-06C STRUCTURAL ARRANAGEMENTS FDN - AFT FIN STABILIZER

B. GPA 00199-801-05 rev. - BOOKLET OF GENERAL DRAWINGS

3. Location

A. Port Canard Room

B. STARBOARDD Canard Room

C. Bridge

4. Outline of Work

A. The Contractor will subcontract services of a Foure Lagadec Technical Representative to refurbish the Canard Stabilizer System.

B. Contractor to provide support services, including any required rigging and disassembly for Foure Lagadec.

C. Contractor to overhaul the hydraulic bout cylinder, with new seals, and overhaul starboard ram and re-chromed to ensure reliable leak free operation.

(1) Hydraulic cylinder to be tested by Contractor after overhaul, prior to reinstallation. The Foure Lagadec Technical Representative, ABS, and USCG to witness the test.

D. The Contractor, with the Foure Lagadec Technical Representative, to ensure local control panels and the Bridge control panel are working in accordance with the respective manufacturer's specification and requirement.

CHECK POINT – ABS and USCG to witness test before and after reinstallation.

5. Note

It is expected that the Bridge control panel for the Canards are not functioning correctly. Contractor to price out a new panel from the manufacturer, Foure Lagadec vs an overhaul and repair of existing panel with a Foure Lagadec Technical Representative. Breakdown of both options to be presented in the Contractor's bid. The Owner will determine which option to be executed and share with the Contractor its decision prior to Contract execution. The advised decision will be added as an amendment to this Work Item prior to the availability.

6. Miscellaneous

A. Submit CFR to the Owner's Representative.

B. All parts of Chapter 4, 5 and 6 applies to all Work Items.

* Optional Work Items 2027-34, Replacement of Kongsberg EM122 Multibeam Sonar Array with new EM124 System

1. General Scope

The purpose of this scope DRAFT is to provide the Offeror(s) with an understanding of the Owner's plan. An updated Work Item specification will be provided after details have been finalized with the Owner's subcontractors, Kongsberg and Glosten. The Contractor shall provide all labor, supervision, equipment, rigging, staging, engineering, welding, machining, coatings, testing, and incidental materials necessary to remove the existing Kongsberg EM122 1×2 multibeam transducer array and modify the Vessel's structure to support installation of the Owner-furnished Kongsberg EM124 1x2 multibeam sonar system.

The Contractor shall coordinate all work with the Owner's Representative, Kongsberg's technical representative, and ABS, as required.

2. References

- GPA 00199-801-05 rev. - BOOKLET OF GENERAL DRAWINGS
- ABS-Minimum thicknesses for plate renewals, document 2002 (ABS PID:39330)
- GPA 00199-184-03, Rev. E, Foundations, Sonar & Transducer Tube
- GPA 00199-461-01, Rev. C, Sonar Installation
- GPA 00199-111-02, Rev. F, Hull Bottom Plating and Framing
- GPA 00199-320-01, Rev. D, Electrical One-Line Diagram
- GPA 00199-506-01, Rev. F, Vents and Sounding Tubes Schematic
- GPA 00199-256-10, Rev. B, Sea Chest Arrangement & Details

3. Location

- Port Sonar Room
- Computer lab
- Under the Port hull

4. Outline of Work

4.1 Removal

A. The Contractor shall remove the existing Kongsberg EM122 1×2 multibeam transducer array, fairings, mounting hardware, foundations, supports, cable penetrations, and associated structural attachments as directed by the Owner's Representative.

B. Protect all reusable Owner-furnished equipment during removal.

C. Deliver removed equipment to the Owner designated onboard or dockside storage location(s).

4.2 Steel Modifications

The Contractor shall fabricate and install all structural modifications necessary to accommodate the EM124 transducer arrangement, including but not limited to:

- Foundation modifications.

- Hull insert modifications.
- Mounting plates.
- Reinforcement.
- Brackets.
- Gussets.
- Stiffeners.
- Fairing structure.
- Access arrangements.
- Cable penetration modifications.

Steel modifications shall be performed in accordance with ABS-approved drawings and Kongsberg's installation requirements.

4.3 Welding

All welding shall be performed by qualified welders using approved welding procedures. Where required by ABS or the approved drawings, welds shall be subjected to visual inspection and NDT. The Contractor shall restore all disturbed sections to be painted according to the Vessel's paint specification and in accordance with paint inspector and the Owner's Representative's requirements. Feather edges smoothly so repaired areas do not show through final coat. Provide DFT and environmental results during and where coating has been repaired. All work to be completed to Owner's Representative's satisfaction.

4.4 Hull Preservation

Following completion of steel work, the Contractor shall:

- Blast and prepare modified surfaces.
- Apply the specified coating system.
- Fair all external hull modifications.
- Restore underwater coatings in accordance with the coating manufacturer's requirements.

4.5 Installation Support

The Contractor shall provide all necessary support for installation of the Owner-furnished EM124 system, including:

- Crane services.
- Forklift services.
- Rigging.
- Staging.
- Temporary lighting.
- Confined-space support.
- Hot work.
- Access.
- Hull penetrations.
- Cable pull assistance.

Final mechanical mounting, installation, and commissioning of the equipment may be performed by a Kongsberg Technical Representative or other Owner-furnished technical representative. The Contractor shall provide reasonable access, coordination, and assistance as requested by the Owner's Representative.

5. Testing

Upon completion, the Contractor shall:

- Verify dimensional compliance with approved drawings.
- Perform leak testing of any hull penetrations.
- Perform weld inspections required by ABS.
- Demonstrate watertight integrity.
- Support Dock Trial and Sea Trials as requested by the Owner's Representative.

6. Documentation

The Contractor shall include the following in the Project Closeout Package:

- Material certificates.
- Welding procedures (WPS/PQR), if applicable.
- Welder qualifications.
- NDT reports.
- Coating reports.
- Inspection reports.
- As-built dimensions.
- Photographs before, during, and after the work.
- ABS survey reports applicable to this Work Item.

7. Optional Pricing

The Contractor shall include in their bid, separate pricing for:

1. Structural engineering required to develop fabrication drawings from the Owner's Representative's conceptual design.
2. Additional steel renewal beyond the approved scope (per pound installed).
3. Sea Trials support after the Vessel delivery.

8. Note

- Detailed requirements for this Work Item will be issued via Amendment to the RFP.

9. Miscellaneous

A. Submit CFR to the Owner's Representative.

B. All parts of Chapter 4, 5 and 6 applies to all Work Items.

Section. 6 Pricing and Lot Work:

In accordance with this RFP, the Contractor is required to submit firm lot prices for the work lots listed below. These lot prices should encompass all costs associated with the work, as outlined in the respective lot item. Quantity adjustments will be calculated on a per-unit basis. The Owner will have the flexibility to order additional work performed at the submitted lot price.

Throughout this section, when square meter is mentioned in terms of quantities for items like insulation, painting, steel replacement, etc., the planar square meter dimension should consider all attachments and other structural elements such as stiffeners, deep web frames, and brackets. The Contractor should bid accordingly.

6.(a) Lot Item

6.(a)i. Lot 1 - Coating Repairs

The Contractor shall provide a separate price to renew coatings on steel plate. This price shall include the cost to prepare the plate to a minimum preservation standard of SSPC-SP 11, and cover with a minimum of 4 coats of paint according to the Vessel's paint specification and in accordance with paint inspector and the Owner's Representative's requirements. Feather edges smoothly so repaired areas do not show through final coat. Provide DFT and environmental results during and where coating has been repaired. All work to be completed to Owner's Representative's satisfaction.

Quantity adjustments shall be prorated on a per-square-meter basis.

6.(a)ii. Lot 2 - UT Shots

The Contractor shall provide a separate unit price for additional Ultrasonic Thickness gauging (UT measurements) performed in accordance with applicable ABS. The unit price shall include all labor, equipment, access, reporting, and surface preparation required to obtain accurate and acceptable readings. Pricing shall be submitted in increments (lots) of two hundred (200) UT measurement locations (shots). Thickness measurement reports identifying the location and measured thickness of each reading shall be furnished to the Owner's Representative upon completion of any work.

6.(a)iii. Lot 3 - Piping Insulation

The Contractor shall provide with its bid, a separate unit price for the renewal of piping and installation of Owner-furnished (OFM) K-Flex pipe insulation on piping not included in the baseline scope of work.

The unit price shall include all labor, materials, supports, insulation installation, testing, and incidental work required for a complete installation. Quantity adjustments for additions or deletions shall be prorated on a per-lineal-meter basis for each pipe size and insulation type.

Pricing shall be submitted on a per-lineal-meter basis and shall be used for adjustment of work quantities as directed by the Owner's Representative.

6.(a)iv. Lot 4 A-60 - Cableway Penetration Fire Seal

The Contractor shall provide a separate unit price, per individual cableway penetration, for the sealing and insulation of electrical cableway penetrations through Class "A" fire boundaries.

The firestop system shall be approved for marine service and shall maintain the required A-60 fire rating of the boundary. Insulation/fire protection material shall extend a minimum of 300 mm from the penetration on the insulated side of the bulkhead or deck, as applicable.

The unit price shall include all labor, materials, access, removal and reinstallation of local interferences, surface preparation, installation, testing, and incidental work required to complete the penetration seal installation.

Quantity adjustments for additions or deletions shall be prorated on a per-each cableway penetration basis.

6.(a)v. Lot 5 Marine Chemist Services

The Contractor shall provide a separate fixed price, per attendance/item, for Marine Chemist services when requested by the Owner's Representative for work done by the Vessel's crew to inspect, test, certify, and issue permits for hot work, confined space entry, gas-free conditions, and other activities required during the repair period.

The Marine Chemist service shall be performed by a qualified and certified Marine Chemist using calibrated testing equipment and in accordance with applicable marine safety regulations and shipyard requirements.

The fixed price shall include all labor, travel, testing equipment, gas measurements, inspections, certificates, reports, documentation, re-inspections, and incidental work required to complete the service.

Quantity adjustments for additions or deletions shall be prorated on a per-attendance/item basis.

6.(a)vi. Lot 6 Tradesmen Hourly rate

The hourly labor rates proposed by the Contractor shall be fully burdened and shall include all costs associated with the performance of the Work, including but not limited to direct labor, supervision, foremen, project management, quality assurance and quality control personnel, safety personnel, administrative support, employee benefits, payroll burdens, insurance, overhead, profit, hand tools, consumables customarily provided by the Contractor, and all other indirect labor and support costs necessary to complete the Work.

No separate charges shall be allowed for foremen, supervisors, superintendents, project managers, quality assurance personnel, quality control inspectors, safety representatives, administrative personnel, or other support staff unless specifically requested and authorized in writing by the Owner's Representative.

Trade Classification	Straight Time	Overtime	Double Time
Structural Welder	$_____	$_____	$_____
Pipe Welder	$_____	$_____	$_____
Shipfitter	$_____	$_____	$_____
Pipefitter	$_____	$_____	$_____
Marine Mechanic	$_____	$_____	$_____
Electrician	$_____	$_____	$_____
Electronics Technician	$_____	$_____	$_____
Hydraulic Technician	$_____	$_____	$_____
Machinist	$_____	$_____	$_____

Painter/Blaster	$_____	$_____	$_____
Carpenter	$_____	$_____	$_____
Rigger	$_____	$_____	$_____

No overtime, double-time, weekend, holiday, or premium labor rates shall be incurred prior to without the Owner's Representative' written authorization. The Contractor shall schedule and perform the Work during normal working hours to the maximum extent practicable. Any overtime or premium time deemed necessary by the Contractor shall be submitted to the Owner's Representative in advance, to include the justification and estimated cost impact, and shall not proceed unless expressly approved in writing by the Owner's Representative. Any overtime, double-time, weekend, holiday, or premium labor performed without such prior written approval shall be at the Contractor's sole expense and shall not be reimbursable by the Owner.

Utility expenses from the table below are referenced in "Appendix D Work Items Cost Breakdown – 2027". Total utility costs shall be calculated by bidder based upon bidders' proposed rates, timeframes, and service capabilities to meet the requirements.

Description	Unit	Unit Price
SHORE POWER, CONNECT/DISCONNECT	EA	
SHORE POWER PER DAY (Unlimited kWh) **OR** PER KWH (Sub metered)	Day **OR** kWh	
PORTABLE TOILET INCLUDING PUMP OUT	Day	
SEWAGE PUMP TRUCK	m^3	
POTABLE WATER CONNECT/DISCONNECT	EA	
POTABLE WATER SERVICE PER DAY	m^3	
GARBAGE REMOVAL PER DUMPSTER	EA	
PARKING Spots	EA	
FIELD OFFICE, ALL INCLUDED REQUIREMENTS	Day	
CRANE SERVICE-WINGWALL	h	
CRANE SERVICE-SHORE	h	
FORKLIFT SERVICE	h	
CHERRY PICKER	h	
HVAC COOLING	Day	
HVAC/ Chiller COOLING, CONNECT/DISCONNECT	EA	
CHILLER COOLING	Day	
FIREMAIN (2 LOCATIONS)	Day	
FIREMAIN CONNECT/DISCONNECT	EA	
INTERNET SERVICE	Day	
LINE HANDLERS	Pr shifting	
WHARFAGE	Days	
MOORING LINES	EA	
Oil Boom CONNECT/DISCONNECT	EA	
PROTECT DECKS USING APPROPRIATE MATERIAL	m^2	

GAS FREE INSPECTION	EA	
MARINE CHEMIST	EA	
COMPETENT PERSON	EA/Day	
GANGWAY	EA/Day	
HIGH PRESSURE WASH Hull or deck	m^2	
FRESH WATER RINSE	m^2	
PLYWOOD OVER SENSORS	m^2	
POLISH (RUPERT B OR BETTER	Pr prop	
SURFACE CRACK DETECTION	Pr prop	
STAGING (PER 6'H X 6'WX 8'L)	EA	
PROP MOTOR MAINTENANCE, PLATE REMOVAL FOR ACCESS	EA/MOTOR	
PROP MOTOR MAINTENANCE, GENERAL CLEANING INCLUDING FILTERS	EA/MOTOR	
COOLER CLEANING	EA/MOTOR	
ELECTRICAL CHECKS	EA/MOTOR	
ANODES	EA	
Anodes INSTALLATION	EA	
SEA VALVES <2"	EA	
SEA VALVES 3"	EA	
SEA VALVES 4"	EA	
SEA VALVES 5"	EA	
SEA VALVES 6"	EA	
SEA VALVES 8"	EA	
SEA VALVES 125 mm		
SEA VALVES 350 mm	EA	
HAND SCRAPING Under water hull	m^2	
SPOT COAT EPOXY	m^2	
SPOT COAT A/F	m^2	
CONTAINMENT FOR HULL		
DOCK CLEANING		
GRIT DISPOSAL		
PAINT DISPOSAL INCLUDING CANS		
MARINE GROWTH DISPOSAL		
SPOT BLAST	m^2	
RANGE ANCHOR ON DOCK (INCLUDING DISCONNECT)	EA	
NDT GAUGING Anchor chain	EA/SHOT	
SHOT PAINTING	EA/SHOT	
OPEN CHAIN LOCKER	EA	
CHAIN LOCKER PUMP OUT	EA	
CLEAN CHAIN LOCKER	EA	

RESTOW CHAIN	EA	
UT THICKNESS GAUGING SHOT (UP TO 200)	EA	
UT THICKNESS GAUGING SHOT OVER 200	EA	
MARINE CHEMIST	pr Item	
COMPETENT PERSON	Day	
TEMPORARY LIGHTING-CONNECT/DISCONNECT	EA	
TEMPORARY LIGHTING-SERVICE	STRING/Day	
OPEN AND INSPECT FUEL OIL DAY TANK	EA	
OPEN AND INSPECT WASTE OIL	EA	
OPEN AND INSPECT OILY WASTE	EA	
OPEN AND INSPECT LUBE OIL	EA	
OPENING AND CLOSING OF MANHOLE COVERS	EA	
GASKET REPLACEMENT including gasket material	EA	
FUEL OIL, LUBE OIL, WASTE OIL DISPOSAL	m^3	

Timetable for Project Accomplishment

Table Project milestone timetable

Milestone	Date	Explanation
Vessel arrival in plant	No later than Friday, May 21, 2027	Date Contractor expects the Vessel in the yard in order to begin production the following day. Marks day -1 of the project's schedule
Habitability Milestones		
Crew moves off the vessel		
Crew move on board		The Contractor should anticipate the crew moving items aboard the vessel and living onboard
Reporting Milestones		
Initial Deliverables Submitted		
Joint Condition Survey		
20% Open & Inspect Reports Submitted		As invoked in multiple work packages
Major Production Milestones		
Docking		
Docking 1 Complete		
Final Undocking Complete		
Generator Room/Main Control Station - Complete		
Propulsion Motor Room - Complete		
Switchboard Room - Complete		
Stage 1 Testing Complete		
Stage 2 Testing Complete		
Stage 3 Testing Complete		
Stage 4 Testing Complete		
Ballast/Fire main/Seawater Piping - Completed		
Compartment Closeouts		
25% Complete		25% of affected compartments are sold back to customer.
50% Complete		50% of affected compartments are sold back to customer.
75% Complete		75% of affected compartments are sold back to customer.
100% Complete		All of affected compartments are sold back to customer.
New Kongsberg Multibeam array		
Stage 1 Testing Complete (i.e. fabrication)		
Mounted to Hull		See applicable WP.
Cable Routing Complete		
Stage 2 Testing Complete		
Stage 3 Testing Complete		
Bow Thruster		

Stage 1 Testing Complete		
Stage 2 Testing Complete		
Stage 3 Testing Complete		
Stage 4 Testing Complete		
Stage 5 Testing Complete		
Reassembly Complete		
Stage 3 Testing Complete		
Stage 4 Testing Complete		
Stage 5 Testing Complete		
Topside and Hull Preservation		
Keel to Waterline Complete		
Waterline to Top of Rail Complete		
Exterior Main Deck Complete		
Superstructure, Deckhouse, Decks, Masts and Misc. Outfit Complete		
Tanks Preserved, Inspected and Closed		All tanks are sold back to customer.
Dock Trials Complete (All remaining Stage 4 Testing)		All Stage 4 testing is completed.
Sea Trials Complete (i.e. All remaining Stage 5 Testing)		All Stage 5 testing is completed.

7. Proposal Requirement

7.1. Required Formant

The Offeror's proposal shall be organized in sections in the following order:

1. Executive Summary
2. Technical Proposal
3. Schedule
4. Qualifications and Expertise
5. Price Proposal
6. Appendices
    a. Appendix A – Proposal Letter
    b. Appendix B – Offerors Profile
    c. Appendix C – References Form
    d. Appendix D – Work Items Cost Breakdown – 2027

7.1.1. EXECUTIVE SUMMARY

Offeror shall submit an Executive Summary outlining the key elements of the proposal. Executive summary should not be more than one page.

7.1.2. TECHNICAL PROPOSAL

Illustrate and describe the ability to meet all of, or as many of the requirements outlined in the Technical Specifications. Offeror shall verify if it can meet drydocking requirements in Section 1. If Offeror is unable to fully meet any of the technical requirements, this must be clearly stated in your proposal.

7.1.3. SCHEDULE

The Offeror shall submit a schedule identifying when the Offeror proposes to perform and complete the specific requirements of all Work Items, as described below, within the period of performance specified in this RFP. Items shall be scheduled for earliest possible completion, commensurate with good ship repair practice and availability of materials.

7.1.4. QUALIFICATIONS AND EXPERTISE

The Offeror shall describe the Offeror's qualifications, experience, and size. In addition, the Offeror shall identify the team, including subcontractors, it will use to provide the goods/services. Biographical summaries of the key team members shall be included in the Offeror's proposal (to be included with Appendix B, described below).

7.1.5. PRICE PROPOSAL

Form Appendix D Work Items Cost Breakdown – 2027 must be filled out in its entirety by the Offeror.

7.1.6. APPENDICES

Appendix A – Proposal Letter. The Proposal Letter shown in Appendix A shall be signed and dated by an individual authorized to legally bind the Offeror. Evidence shall be submitted showing the individual's authority to bind the Offeror.

Appendix B – Offeror's Profile. The Offeror's Profile form shown in Appendix B shall be completed in its entirety.

Appendix C – References. Using the form shown in Appendix C, the Offeror must disclose all contracts for similar services performed within the last five (5) years. Points of contact and contact information should be indicated for each contract listed. These will serve as potential references to be contacted by the RCUH as part of the evaluation of the Offeror's proposal.

Appendix D – Work Items Cost Breakdown – 2027. Fixed Price Quotations (in US dollars) and proposed time required, in calendar days, for all Work Items listed.

7.2. Appendix A

PROPOSAL LETTER TO THE RESEARCH CORPORATION OF THE UNIVERSITY OF HAWAII

We propose to provide services for the Research Corporation of the University of Hawaii, for the benefit of the University of Hawaii, Marine Center.

It is understood that this proposal constitutes an offer.

It is understood and agreed that we have read the Research Corporation of the University of Hawaii's specifications described in the RFP and this proposal is made in accordance with the provisions of such specifications. By signing this proposal, we guarantee and certify all items included in this proposal meet or exceed any and all such specifications, and agree to the terms and conditions in all of the documents described in the RFP, including Attachments B., C., E., F., and G.

If selected, we agree to deliver goods and services which meet or exceed the specifications. Respectfully submitted,

Authorized Signature	Date
Printed Name	
Title	
Email Address	Telephone
If contract is awarded, the purchase order/payment should be made to	Federal EIN
Remittance Address	

*Attach to this page: Evidence of authority of the above officer to submit an offer on behalf of the company, giving also, the names and addresses of the other officers of the company.

7.3. Appendix B

OFFEROR PROFILE

(All items must be provided to be considered)

Company Name	Type of Company
Address	Total numbers of Full-time Employees
	Telephone
Email Address	Federal ID #
Company Start Date	State ID #

Project Manager / Principal Contact (Attach Bio)

Assigned Employees (Attach Bio)

Signature	Date

Position / Title

*Attach to this page: Resumes for all project team members.

REFERENCES

Name of Firm

Address

Contact Name | Position

Telephone Number | Email Address

Dates of Service

Description of Services Provided:

7.5. Appendix D Work Items Cost Breakdown – 2027

WORK ITEMS COST BREAKDOWN

Appendix D, the cost sheet for each work item listed in this RFP, will be provided as an Excel spreadsheet, titled "Appendix D Work Items Cost Breakdown - 2027". For the proposal to be considered responsive, each line is required to be completed, including the optional Work Items.

The top section of the cost sheet pertains to each individual Work Item listed in the RFP. The bottom section of the cost sheet should show your price schedule for various jobs and tasks not included in the RFP, and shall be completed and submitted with the proposal. Appendix D will be used to: (1) assist the Offeror in preparing its price proposal, (2) assist RCUH with price evaluation to determine whether the price is fair and reasonable, (3) form the basis of any required modifications during the period of performance of the Contract, (4) provide a basis for invoicing completed work.

All costs are to be in U.S. dollars.

Section. 8 Evaluation:

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8. Evaluation Of Proposals and Basis for Award

Date: (YYYY-MM-DD)

Vessel: RV. Kilo Moana (AGOR 26)

Shipyard:

Owner: United States of America

8.1. Evaluation Of Offeror Proposals

All responsive proposals received by the Closing Date for Receipt of Proposals of 5:00 PM Hawaii Standard Time, September 9, 2026, will be evaluated and scored.

8.2. Evaluation Committee

A committee, comprised of at least three (3) representatives, will evaluate and score each proposal submitted after review of all proposals and completion of oral presentations, if required. The committee will submit its evaluations to the Delegated Procurement Officer, who may also be a representative on the committee. The Delegated Procurement Officer will review the RFP and the evaluations before the selection of a Contractor. The firm with the highest score according to the criteria shown in this section shall be awarded the contract.

8.3. Criteria For Proposal Evaluation and Scoring Method

The scoring and subsequent ranking of each proposal will be based on a scoring method using a weighted formula for schedule (ability to meet scope of work/schedule), qualifications and expertise, price, and site visit attendance. The total score for each proposal will be on a scale of 0 to 100 points. Four general categories will be used to evaluate the proposals:

Category	Maximum Number of Points
Production Schedule	30
Qualifications and Expertise	15
Total Evaluated Price	50
Site Visit Attendance	5
	100

8.3.1. Detailed Evaluation Formula

Within the above general categories, points will be further divided as follows:

Production Schedule	Maximum Number of Points
Start Date	10
Duration	10
Time in Dry Dock vs Lay Berth	5
Availability of all Services	5

Qualifications and Expertise	Maximum Number of Points
References	5
Past Performance	10

Under Qualifications and Expertise, References will be scored by selecting up to Three (3) of the Offeror's previous or current customers, and factoring their responses to standardized questions, into the evaluation. Past Performance evaluates each Offeror's demonstrated ability to deliver a drydock availability within its proposed price, based on documented performance on comparable contracts (research vessel or comparable government/commercial vessel drydock, completed within the last 5 years). Offerors shall submit, for up to three comparable contracts: original contract/award price; final price at completion; number and dollar value of change orders; schedule performance (on-time or days late); and any safety violations or compliance findings documented by a regulatory body or the vessel owner. Past performance will be scored based on average documented cost growth (Final Price − Original Price, divided by Original Price, averaged across submitted contracts).

A pricing formula will be used to allot points based on the Offeror's price and the price of the lowest bidder ("Lowest Evaluated Price"). The Lowest Evaluated Price receives the maximum points; all other proposals receive proportionally fewer points. "Total Evaluated Price" = Base Work Items + Optional Work Items + Housing + Transportation + Utilities + Location Adjustment. The Location Adjustment includes the Owner's estimated cost to transport the Vessel to/from the Offeror's shipyard/facility. All items specified in Appendix D Work Items Cost Breakdown – 2027 (including Base and Optional Work Items, Housing, Transportation, and Utilities) are mandatory and must be priced as instructed.

Post-Selection Scope Adjustments. Following evaluation and ranking, the Owner may enter negotiations with the highest-ranked Offeror to finalize scope and price. The Owner may remove or defer specific Optional Work Items due to funding limitations at its sole discretion, and negotiate corresponding cost reductions and schedule adjustments.

8.4. Basis For Selection and Award of An Agreement for Services

The RCUH will select and attempt to negotiate a mutually acceptable Agreement for Services with the first-ranked Offeror. If this cannot be accomplished within 21 calendar days after initial Selection, the RCUH reserves the right to terminate contract negotiations with the first-ranked Offeror, and may select the second-ranked Offeror for negotiation of a potential award. This process may continue in order of Offeror ranking until a mutually acceptable Agreement for Services is achieved with the RCUH and an award is made to a selected Offeror.

8.5. Oral Presentations

[Reserved]

8.6. Requirements for an Agreement for Services with the RCUH

The selected Offeror must submit the following documentation prior to execution of an Agreement for Services with the Research Corporation of the University of Hawaii:

1. Tax clearance from the Hawaii Department of Taxation and the U.S. Internal Revenue Service. See Attachment B, Section 18, of this RFP.
2. Certification Regarding Debarment, Suspension, Proposed Debarment, and Other Responsibility Matters, if applicable.
3. Certification and Disclosure Regarding Payments to Influence Certain Federal Transactions, if applicable.

Acceptance of an Agreement for Services with the Research Corporation of the University of Hawaii requires acceptance of Attachment B – General Conditions for Services Agreements, Attachment C – Standards of Conduct Declaration, Attachment D – Insurance Requirements, Attachment E – Waiver of Maritime Lien Rights, Attachment F – Additional Requirements, and Attachment G – Terms and Conditions Applicable to Contracts and Purchase Orders (Under Federal Grants) (Attachment 32a). Necessary forms will be provided to the selected Offeror.

Section. Attachments

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Attachment A. Notice of Intent to Submit a Proposal

May be sent by email or fax

Company Name: _____

Address: _____

_____

Telephone Number: _____

Email Address: _____

☐ I acknowledge receipt of Request for Proposal No. _____ and my company intends to submit a proposal prior to the Closing Date for Receipt of Proposals. I acknowledge the requirements for a services agreement with the Research Corporation of the University of Hawaii, including submittal of a price proposal; State of Hawaii Department of Taxation and Internal Revenue Service tax clearances; Certification Regarding Debarment, Suspension, Proposed Debarment, and Other Responsibility Matters; Certification and Disclosure Regarding Payments to Influence Certain Federal Transactions; Standards of Conduct Declaration;
and acceptance of the General Conditions for Services Agreements and the Special Conditions for Services Agreements (Federal Provisions).

☐ I acknowledge receipt of Request for Proposal No. _____ but my company is not submitting a proposal.

Submitted by:

_____
Signature Date

_____
Printed Name

_____
Title

Attachment B. General Condition for Service Agreements

1. Coordination of Services by RCUH. RCUH, or RCUH designee, shall coordinate the services to be provided by CONTRACTOR in order to complete the scope of services. CONTRACTOR shall maintain communications with RCUH or the RCUH designee, at all stages of CONTRACTOR work, and submit to RCUH or the RCUH designee, for resolution, any questions which may arise regarding this Agreement, including but not limited to CONTRACTOR performance of this Agreement.
2. Relationship of Parties; Independent Contractor Status and Responsibilities, Including Tax Responsibilities.
   2.a. In the performance of services required under this Agreement, CONTRACTOR shall be an independent contractor", with the authority and responsibility to control and direct the performance and details of the work and services required under this Agreement; however, RCUH shall have a general right to inspect work-in-progress to determine whether in RCUH opinion, the services are being performed by CONTRACTOR in accordance with the provisions of this Agreement. It is understood that RCUH does not agree to use CONTRACTOR exclusively, and that CONTRACTOR is free to contract to provide services to other individuals or entities while under contract with RCUH.
   2.b. CONTRACTOR, and CONTRACTOR employees and agents, shall not be considered agents or employees of RCUH for any purpose, and CONTRACTOR employees and agents shall not be entitled to claim or receive from RCUH any vacation, sick leave, retirement, workers compensation, unemployment insurance, or other benefits provided to RCUH employees.
   2.c. CONTRACTOR shall be responsible for the accuracy, completeness, and adequacy of its performance under this Agreement. Furthermore, CONTRACTOR intentionally, voluntarily, and knowingly assumes the sole and entire liability (if such liability is determined to exist) to CONTRACTOR employees and agents, and to any individual not a party to this Agreement, for all loss, damage, or injury caused by CONTRACTOR, or CONTRACTOR employees or agents in the course of their employment.
   2.d. CONTRACTOR shall be responsible for payment of all applicable federal, state and county taxes and fees which may become due and owing by CONTRACTOR by reason of this Agreement, including but not limited to (i) income taxes, (ii) employment related fees, assessments and taxes, and (iii) general excise taxes. CONTRACTOR is further responsible for obtaining all licenses, permits, and certificates that may be required by reason of this Agreement, including but not limited to a general excise tax license from the Department of Taxation, State of Hawaii.
   2.e. CONTRACTOR shall be responsible for securing any and all insurance coverage for CONTRACTOR and CONTRACTOR employees and agents which is, or may be, required by law. CONTRACTOR shall further be responsible for payment of all premiums, costs and other liabilities associated with securing said insurance coverage.
3. Personnel Requirements.
   3.a. CONTRACTOR shall secure, at CONTRACTOR own expense, all personnel required to perform the services required by this Agreement.
   3.b. CONTRACTOR shall ensure that CONTRACTOR employees and agents are experienced and fully qualified to engage in the activities and services required under this Agreement, and that all applicable licensing and operating requirements imposed or required under federal, state and county law, and all applicable accreditation and other standards of quality generally accepted in the field of the activities of such employees and agents, are complied with and satisfied.

4. Nondiscrimination. No person performing work under this Agreement, including any subcontractor, employee or agent of CONTRACTOR, shall engage in any discrimination that is prohibited by any applicable federal, state or county law.

5. Subcontracts and Assignments. CONTRACTOR shall not assign or subcontract any of CONTRACTOR duties, obligations, or interests under this Agreement without the prior written consent of RCUH. Additionally, no assignment by CONTRACTOR of CONTRACTOR right to compensation under this Agreement shall be effective unless and until the assignment is approved in writing by RCUH, and a tax clearance is submitted by the assignee. RCUH must also approve, in writing, all other assignment or subcontract agreements entered into by CONTRACTOR assignees and subcontractors, prior to execution.

6. Conflict of Interest. CONTRACTOR represents that neither CONTRACTOR, nor any employee or agent of CONTRACTOR, presently has any interest (and promises that no such interest, direct or indirect, shall be acquired), which would or might conflict in any manner or degree with the performance of CONTRACTOR services under this Agreement.

7. Modifications of Agreement. Any modification, alteration, amendment, change, or extension to any term, provision, or condition of this Agreement shall be made only by written amendment to this Agreement, signed by CONTRACTOR and RCUH. No modification, alteration, amendment, change or extension to any term, provision, or condition of this Agreement, signed by any persons, including the University of Hawaii, shall be binding on RCUH unless signed by an authorized official of RCUH.

8. Suspension of Agreement. RCUH reserves the right at any time and for any reason to suspend all or any part of the performance required by this Agreement for any reasonable period, upon written notice to CONTRACTOR. Upon receipt of said notice, CONTRACTOR shall immediately comply with said notice and suspend all such work under this Agreement at the time stated.

9. Termination of Agreement for Default.

   9.a. If CONTRACTOR breaches this Agreement by failing to satisfactorily fulfill in a timely or proper manner CONTRACTOR obligations under this Agreement, or failing to perform any of the promises, terms, or conditions of this Agreement, RCUH shall have the right to terminate this Agreement in whole or in part, by giving written notice to CONTRACTOR at least seven (7) calendar days (or any longer time as specified by RCUH in writing) before the effective date of termination. The notice shall provide CONTRACTOR with an opportunity to cure its default or take satisfactory corrective action within the seven (7) days (or other longer time as specified by RCUH). In the case of a partial termination, CONTRACTOR shall continue performance of this Agreement to the extent it is not terminated.

   9.b. CONTRACTOR shall, within four (4) weeks of the effective date of such termination (or within four (4) weeks of the scheduled expiration of the time of performance specified in this Agreement, whichever is earlier), compile and submit in an orderly manner to RCUH an accounting of the work performed up to the effective date of termination or expiration. In such event, CONTRACTOR shall be paid for the actual cost of the services rendered, but in no event more than the total compensation payable to CONTRACTOR under this Agreement.

   9.c. As of the date of termination provided in the notice, CONTRACTOR shall incur no further obligations in connection with the terminated performance, and CONTRACTOR shall stop performance to the extent specified. CONTRACTOR shall also terminate outstanding orders and subcontracts as they relate to the terminated performance. CONTRACTOR shall settle the liabilities and claims arising out of the termination of subcontracts and orders connected with the terminated performance, subject to RCUH approval. RCUH may choose to direct CONTRACTOR to assign CONTRACTOR right, title, and interest under terminated orders or subcontracts to RCUH.

9.d. CONTRACTOR shall not be relieved of liability to RCUH for damages sustained because of any breach by CONTRACTOR of this Agreement, including but not limited to RCUH procurement of similar goods and services in a manner and upon terms deemed appropriate by RCUH. In such an event, RCUH may retain any amounts which may be due and owing to CONTRACTOR until such time as the exact amount of damages due to RCUH from CONTRACTOR has been determined. RCUH may also set off any damages so determined against the amounts retained.

9.e. Upon termination of this Agreement (or upon the scheduled expiration of the time of performance specified in this Agreement, whichever is earlier), all finished and unfinished material prepared by CONTRACTOR shall, at RCUH option, become RCUH property and, together with all material, if any, provided to CONTRACTOR by RCUH, shall be delivered and surrendered to RCUH on or before the expiration date or date of termination. For purposes of this Agreement, material" includes but is not limited to any information, data, reports, summaries, tables, maps, charts, photographs, films, graphs, studies, recommendations, program concepts, titles, scripts, working papers, files, models, audiotapes, videotapes, computer tapes, cassettes, diskettes, documents, and records developed, prepared, or conceived by CONTRACTOR in connection with this Agreement, or furnished to CONTRACTOR by RCUH. Additionally, CONTRACTOR shall take timely, reasonable, and necessary action to protect and preserve property and materials in the possession of CONTRACTOR, in which RCUH has an interest.

10. Termination of Agreement for Convenience.

10.a. RCUH may terminate this Agreement without statement of cause at any time, in whole or in part, by giving written notice to CONTRACTOR of such termination at least thirty (30) calendar days before the effective date of such termination. In the event of a partial termination, CONTRACTOR shall continue performance of this Agreement to the extent it is not terminated.

10.b. Upon termination of this Agreement, CONTRACTOR shall, within four (4) weeks of the effective date of such termination, compile and submit in an orderly manner to RCUH an accounting of the work performed up to the effective date of termination. In such event, CONTRACTOR shall be paid for the actual cost of the services rendered, but in no event more than the total compensation payable to CONTRACTOR under this Agreement.

10.c. As of the date of termination provided in the notice, CONTRACTOR shall incur no further obligations in connection with the terminated performance, and CONTRACTOR shall stop performance to the extent specified. CONTRACTOR shall also terminate outstanding orders and subcontracts as they relate to the terminated performance. CONTRACTOR shall settle the liabilities and claims arising out of the termination of subcontracts and orders connected with the terminated performance, subject to RCUH approval. RCUH may choose to direct CONTRACTOR to assign CONTRACTOR right, title, and interest under terminated orders or subcontracts to RCUH.

10.d. All finished and unfinished material prepared by CONTRACTOR shall, at RCUH option, become RCUH property and, together with all material, if any, provided to CONTRACTOR by RCUH, shall be delivered and surrendered to RCUH on or before the date of termination. For purposes of this Agreement, material" includes but is not limited to any information, data, reports, summaries, tables, maps, charts, photographs, films, graphs, studies, recommendations, program concepts, titles, scripts, working papers, files, models, audiotapes, videotapes, computer tapes, cassettes, diskettes, documents, and records developed, prepared, or conceived by CONTRACTOR in connection with this Agreement, or furnished to CONTRACTOR by RCUH. Additionally, CONTRACTOR shall take timely, reasonable, and necessary action to protect and preserve property and materials in the possession of CONTRACTOR, in which RCUH has an interest.

11. Compliance with Laws. CONTRACTOR shall comply with all federal, state, and county laws, ordinances, codes, rules, and regulations, as the same may be amended from time to time, which in any way affect CONTRACTOR performance of this Agreement.

12. Indemnification and Defense. CONTRACTOR shall defend, indemnify, and hold harmless RCUH, the University of Hawaii, the State of Hawaii, and the Project, and their respective officers, employees, and agents from and against all liability, loss, damage, cost, and expense, including all attorney's fees and costs, and all claims, suits, and demands therefore, arising out of or resulting from the acts or omissions of CONTRACTOR or CONTRACTOR employees, officers, agents, or subcontractors, occurring during or in connection with the performance of CONTRACTOR services under this Agreement. The provisions of this paragraph shall remain in full force and effect notwithstanding the expiration or early termination of this Agreement.

13. Disputes. No dispute arising under this Agreement may be sued upon by CONTRACTOR until after CONTRACTOR written request to RCUH to informally resolve the dispute is rejected, or until ninety (90) days after RCUH receipt of CONTRACTOR written request, whichever occurs first. While RCUH considers CONTRACTOR written request, CONTRACTOR agrees to proceed diligently with the provision of services necessary to complete the scope of services described in Attachment 1.

14. Confidentiality of Material.

    14.a. All material given to or made available to CONTRACTOR by virtue of this Agreement, whether oral or written, and which is identified as proprietary or confidential information, will be safeguarded by CONTRACTOR and shall not be disclosed to any individual or organization without the prior written approval of RCUH.

    14.b. All information, data, or other material provided by CONTRACTOR to RCUH, which is identified as proprietary or confidential, shall be kept confidential to the extent permitted by law.

15. Ownership and Intellectual Property Rights.

    15.a. Physical Material. The University of Hawaii shall have complete ownership of all physical material, both finished and unfinished, which is acquired, developed, prepared, or assembled by CONTRACTOR pursuant to this Agreement, unless the provisions of the Project s Prime Award (grant/contract awarded directly by the federal government), if any, requires that title to physical material vest in another party. If determined by RCUH to be necessary, CONTRACTOR and RCUH shall execute any and all documents necessary to establish the University of Hawaii or other required party as the owner of the material, without the need for any additional consideration.

    15.b. Patentable Inventions.

        15.b.(i) Rights to Patentable Inventions. The rights to patentable inventions shall be determined in accordance with the provisions of the Project s Prime Award, if any. If the Prime Award is subject to the applicable regulations governing patents and inventions incorporated in 37 CFR 401, the term subcontractor" shall be substituted for contractor" throughout 37 CFR 401, unless the context of the clause requires otherwise. It is intended that 37 CFR 401 shall apply to CONTRACTOR in such a manner as is necessary to: (1) reflect the position of CONTRACTOR as a subcontractor to RCUH, (2) ensure CONTRACTOR's rights under 37 CFR 401 and its obligations to RCUH, the Project, and the United States government, and (3) enable the Project to meet its obligations under its Prime Award. In the absence of ownership provisions in the Prime Award, or if the Project is supported by other funds, the ownership of patentable inventions developed pursuant to this Agreement will be determined under applicable U.S. law. If determined by RCUH to be necessary, CONTRACTOR and RCUH shall execute any and all documents necessary to establish the rights to the patentable inventions, without the need for any additional consideration.

15.b.(ii) Licensing of Patentable Inventions. CONTRACTOR agrees to grant and hereby does grant to the University of Hawaii an irrevocable, royalty-free, non-transferable, non-exclusive right and license to use, make, have made, and distribute any patentable invention first conceived or reduced to practice in the performance of this Agreement.

15.c. Copyrights. The University of Hawaii shall have complete ownership of all copyright material (including but not limited to any computer software and its documentation and/or databases) that is developed or prepared by CONTRACTOR for RCUH pursuant to this Agreement, and all such material shall be considered works-made-for-hire." All such material shall be delivered to RCUH upon expiration or termination of this Agreement. CONTRACTOR, however, may use thereafter any ideas and techniques that may be embodied in such works. To the extent the material is not recognized as a work-made-for-hire" as a matter of law, CONTRACTOR hereby assigns to the University of Hawaii any and all copyrights in and to the material. If determined by RCUH or the University of Hawaii to be necessary, CONTRACTOR, the University of Hawaii, and RCUH shall execute any and all documents necessary to establish the University of Hawaii as the owner of the material, without the need for any additional consideration.

16. Publicity. CONTRACTOR shall not refer to RCUH, the University of Hawaii, the Project, or any office, agency, or officer thereof, or to the services provided pursuant to this Agreement, in any of CONTRACTOR s brochures, advertisements, or other publicity of CONTRACTOR. All media contacts with CONTRACTOR about this Agreement shall be referred to RCUH.

17. Payment Procedures. All payments under this Agreement shall be made only upon (a) submission by CONTRACTOR to RCUH of original invoices specifying the amount due and certifying that services requested under this Agreement have been performed by CONTRACTOR according to this Agreement, and (b) satisfactory performance as determined by RCUH and as specified in Attachments 1, 2, and 3.

18. Tax Clearance; Final Payment. Pursuant to Section 103-53 of the Hawaii Revised Statutes, CONTRACTOR is required to obtain a tax clearance from the Hawaii Department of Taxation and the U.S. Internal Revenue Service prior to the execution of this Agreement (if $25,000 or more), stating that all delinquent taxes, if any, levied or accrued against CONTRACTOR have been paid. A tax clearance is also required prior to final payment for this Agreement, if this Agreement is $25,000 or more.

19. Governing Law, Jurisdiction and Venue. The validity of this Agreement and any of its terms and/or provisions, as well as the rights and duties of the parties to this Agreement, shall be governed by the laws of the State of Hawaii. Any action at law or in equity to enforce or interpret the provisions of this Agreement shall be brought in a state court of competent jurisdiction in Honolulu, Hawaii.

20. Notices. Any written notice required to be given by a party to this Agreement shall be (a) delivered personally, or (b) sent by United States first class mail, postage prepaid, to RCUH at its address, and to CONTRACTOR at its address, as indicated in this Agreement. A notice shall be deemed to have been received by the recipient three (3) days after mailing or at the time of actual receipt, whichever is earlier.

21. Severability. In the event that any provision of this Agreement is declared invalid or unenforceable by a court of competent jurisdiction, such invalidity or unenforceability shall not affect the validity or enforceability of the remaining terms of this Agreement, provided that the remaining terms and conditions of this Agreement remain legal and enforceable.

22. Waiver. The failure of RCUH to insist upon strict compliance with any term, provision or condition of this Agreement shall not constitute or be deemed to constitute a waiver or relinquishment of RCUH right to enforce the same in accordance with this Agreement.

23. Counterparts. This Agreement may be executed in counterparts, each of which shall be deemed an original, and said counterparts shall together constitute one and the same agreement, binding all the parties hereto. An executed counterpart of this Agreement delivered as an electronic document or image file (e.g., .pdf), or via facsimile or an electronic signature program, shall be deemed an original. If an electronic signature program is used, any such electronic signatures shall be treated, for purposes of validity, enforceability and admissibility, the same as hand-written signatures, provided the party signing electronically may be required to produce sufficient proof that the electronic signature is authentic and affixed by the person whose electronic signature it purports to be (e.g., audit log).

15. Federal Provisions. The following applicable federal provisions, which are a part of this Agreement, will be noted on the accompanying Purchase Order.

    a. Federal funds (under a federal grant) are expended under this Agreement, and CONTRACTOR shall comply with the applicable provisions of RCUH Attachment 32a (Terms and Conditions Applicable to Contracts/Subcontracts/Purchase Orders (Under Federal Grants)).

Attachment C. Standards of Conduct Declaration

For purposes of this declaration:

Controlling interest" means an interest in a business or other undertaking which is sufficient in fact to control, whether the interest is greater or less than fifty percent (50%).

Employee" means any nominated, appointed, or elected officer or employee of the State, including members of boards, commissions, and committees, and employees under contract to the State or of the Constitutional Convention, but excluding legislators, delegates to the constitutional convention, justices and judges. References to Employee", below, includes all State of Hawaii i employees, including RCUH and UH employees. (HRS § 84-3).

On behalf of (CONTRACTOR), the undersigned does declare, under penalty of perjury, as follows:

1. CONTRACTOR (☐ is) (☐ is not) a legislator, an Employee, or a business in which a legislator or employee has a Controlling interest". (HRS § 84-15(a)).
2. CONTRACTOR (☐ is) (☐ is not) a UH or RCUH employee. (2 C.F.R. § 200.459 Professional service costs).
3. CONTRACTOR has not been, and will not be, represented or assisted personally on matters related to this Agreement by an individual who has been an employee of RCUH or UH within the preceding two years, and who participated while so employed in the matter with which this Agreement is directly concerned. (HRS § 84-15(b)).
4. CONTRACTOR has not been assisted or represented by a legislator or Employee for a fee or other compensation to obtain this Agreement, and will not be assisted or represented by a legislator or Employee for a fee or other compensation in the performance of this Agreement, if the legislator or Employee was involved in the development or award of this Agreement. (HRS § 84-14(d)).
5. CONTRACTOR has not been, and will not be, assisted or represented by an employee of RCUH or UH for a fee or other compensation.
6. CONTRACTOR has not been, and will not be, represented on matters related to this Agreement, for a fee or other consideration by an individual who, within the past twelve (12) months, served as a legislator or Employee, and participated while a legislator or Employee on matters related to this Agreement. (HRS §§ 84-18(b) and (c)).
7. CONTRACTOR has not been, and will not be, represented by a former employee of RCUH or UH for a fee or other compensation, where that former employee served as an employee of RCUH or UH within the past twelve (12) months.

CONTRACTOR understands that the Agreement to which this document is attached is voidable on behalf of the RCUH if the Agreement was entered into in violation of any provision of Chapter 84, Hawaii Revised Statutes, commonly referred to as the Code of Ethics, including the provisions which are the source of the above declarations. Additionally, any fee, compensation, gift, or profit received by any person as a result of violating the Code of Ethics may be recovered by RCUH.

CONTRACTOR

Signed By: .....

Printed Name: .....

Title: .....

Date: .....

* Reminder to the Project. If the (is)" in No. 1 and/or 2 above is selected: (a) contact RCUH Procurement prior to executing this Agreement; and (b) if this

Agreement involves goods or services of a value in excess of $10,000, this Agreement must have been awarded by a competitive sealed bid or proposal. Otherwise, the Project may not enter into this Agreement unless it posts a notice of intent to award this Agreement and files a copy of the notice with the Hawaii State Ethics Commission at least 10 days before this Agreement is awarded. (HRS § 84-15(a)).

Attachment D. Insurance Requirements

The vessel owner is: United States of America, Department of the Navy, Office of Naval Research, Arlington, VA 22217-5660 (Vessel Owner").

Contractor shall, during the term of the Agreement, at its own cost and expense, maintain Marine General Liability insurance, including Ship Repairer s Legal Liability and Protection & Indemnity coverage, with a limit of liability of not less than $10,000,000 per policy year, to protect against claims for bodily injury or death, or for damages to property and all contractual liability by Contractor or by any subcontractor or by anyone employed by any of them or by anyone for whose acts any of them may be liable. Said policy shall be deposited with RCUH. Insurance shall be in force the first day of the term of the Agreement.

Contractor shall maintain statutory Workers' Compensation in all applicable jurisdictions, and shall include a U.S. Longshore & Harbor Workers' Compensation Act (USL&H) endorsement when work is performed on or over navigable waters of the United States or in adjoining maritime areas (including piers, docks, terminals, wharves, dry docks, and similar areas). Employers' Liability limits shall be not less than $1,000,000 each accident, $1,000,000 disease (policy limit), and $1,000,000 disease (each employee). If any personnel may work in a capacity that could qualify as "seaman," Contractor shall maintain Maritime Employers' Liability (MEL) covering the Jones Act and general maritime law with limits not less than $1,000,000 per occurrence.

Contractor shall maintain auto liability insurance covering all autos used to provide services under the Agreement, with coverage of not less than $1,000,000 for bodily injury (per person); not less than $1,000,000 for bodily injury (per accident); and not less than $1,000,000 for property damage (per accident); or a combined single limit of at least $1,000,000 per accident for bodily injury and property damage combined. The required limit of insurance may be provided by a single policy or with a combination of primary and excess policies. Only autos with the above auto liability insurance shall be used to provide services under the Agreement.

Each insurance policy and COI required by this Agreement shall:

a. Provide that any insurance maintained by RCUH will apply in excess of, and not contribute with, insurance provided by the Contractor s policy.

b. Name the Vessel Owner, RCUH, the State of Hawaii, and the University of Hawaii as additional insureds with respect to operations performed for the University of Hawaii and RCUH.

c. Waive all rights of subrogation in favor of the Vessel Owner, RCUH, the State of Hawaii, and the University of Hawaii.

d. Name the Vessel Owner as loss payee.

Loss, if any, should be adjusted with the University of Hawaii, and the proceeds, at the election of the Vessel Owner, should be payable to the University of Hawaii; any proceeds not paid to the University of Hawaii shall be payable to the Treasurer of the United States of America.

Any changes to Contractor's insurance policies (or any cancellation of insurance) requires at least 30 days notification prior to the change or cancellation, except 10 days for non-payment.

All insurance described herein shall be primary and cover the insured for all work to be performed under the Agreement, all work performed incidental thereto or directly or indirectly connected therewith.

Contractor agrees to deposit with RCUH, on or before the effective date of the Agreement, certificates of insurance necessary to satisfy RCUH that the insurance provisions of the Agreement have been complied with and to keep such insurance in effect and the certificates therefore on deposit with RCUH during the entire term of the Agreement.

RCUH shall retain the right at any time to review the coverage, form, and amount of the insurance required hereby. If, in the opinion of RCUH, the insurance provisions in the Agreement do not provide adequate protection for RCUH, RCUH may require Contractor to obtain insurance sufficient in coverage, form, and amount to provide adequate protection. RCUH requirements shall be reasonable but shall be designed to assure protection from and against the kind and extent of the risks which exist at the time a change in insurance is required.

RCUH shall notify Contractor in writing of changes in the insurance requirements; and if Contractor does not deposit copies of acceptable insurance policies with RCUH incorporating such changes within TEN (10) days of receipt of such notice, this Agreement shall be in default without further notice to Contractor and RCUH shall be entitled to all legal remedies.

The procuring of such required policy or policies of insurance shall not be construed to limit Contractor s liability hereunder nor to fulfill the indemnification provisions and requirements of the Agreement. Notwithstanding said policy or policies of insurance, Contractor shall be obligated for the full and total amount of any damage, injury, or loss arising from its acts or omissions with respect to the Agreement.

Attachment E. Waiver of Maritime Lien Rights

SHIPYARD ACKNOWLEDGMENT AND WAIVER OF MARITIME LIEN RIGHTS

WHEREAS, the above-referenced Vessel is owned by the United States of America and is operated by the University of Hawaii (Charterer) pursuant to a Bareboat Charter Party; and

WHEREAS, Article 11 of the Bareboat Charter Party provides that the Vessel shall not be subjected to any maritime lien, right in rem, encumbrance, charge, or other claim arising from services, repairs, materials, supplies, labor, equipment, or any other work performed on or for the Vessel.

NOW, THEREFORE, in consideration of being awarded work on the Vessel, the undersigned Shipyard hereby acknowledges, agrees, represents, and warrants as follows:

1. The Shipyard acknowledges that title to the Vessel is vested solely in the United States of America.
2. The Shipyard acknowledges that neither the Charterer, the Master, nor any representative of the Vessel has authority to create, incur, permit, or authorize any maritime lien, right in rem, or other encumbrance against the Vessel.
3. The Shipyard expressly waives and relinquishes any and all rights it may otherwise have to assert, record, enforce, prosecute, or maintain any maritime lien, possessory lien, statutory lien, right in rem, attachment, arrest, detention, encumbrance, or similar claim against the Vessel, her equipment, appurtenances, machinery, stores, or any interest therein.
4. The Shipyard agrees that its sole recourse for payment of invoices, claims, disputes, change orders, extras, or any other sums allegedly due shall be against the Contracting Party (Research Corporation of the University of Hawaii, for the benefit of the University of Hawaii Marine Center) and not against the Vessel, her owners, operators, managers, mortgagees, or the United States of America.
5. The Shipyard shall not initiate, support, assist, or permit any legal proceeding, vessel arrest, attachment, detention, seizure, or similar action against the Vessel based upon work performed, materials supplied, or services rendered under this contract.
6. The Shipyard shall include equivalent no-lien provisions in all agreements entered into with its subcontractors, vendors, suppliers, labor providers, and other parties engaged in connection with the work and shall obtain their signed acknowledgments prior to commencement of work or delivery to ensure that no such party acquires or attempts to assert any lien or right against the Vessel.
7. The Shipyard shall immediately notify the Charterer of any claim, demand, notice, or action that could result in a lien, encumbrance, or right in rem against the Vessel and shall take all necessary actions at its sole expense to withdraw, discharge, remove, satisfy, or otherwise eliminate such claim.
8. The Shipyard agrees to indemnify, defend, and hold harmless the United States of America, the Charterer, the Research Corporation of the University of Hawaii, and their respective affiliates, agents, employees, and representatives from and against any loss, damage, cost, expense, liability, claim, detention, arrest, legal fee, or proceeding arising out of or related to any lien, encumbrance, or right in rem asserted by the Shipyard or any of its subcontractors, suppliers, or agents.
9. This undertaking shall remain in full force and effect notwithstanding completion of the work, termination of the contract, final payment, or departure of the Vessel from the Shipyard.

The undersigned confirms that it has read and understands the foregoing provisions and agrees to be legally bound thereby.

SHIPYARD / CONTRACTOR

Company Name:

Signed By:

Printed Name:

Title:

Date: (YYYY-MM-DD)

Witness, Print and Sign:

Attachment F. Additional Requirements

The following clauses will be included in the selected Offeror's services agreement.

1. Liquidated Damages

In the event of failure on the part of the Contractor to complete the Statement of Work within the time fixed in the Agreement, excluding excusable delays (force majeure, or RCUH-caused delays), the Contractor shall pay to RCUH as liquidated damages the sum of $45,000 US Dollars per calendar day of delay, up to a maximum of 10% of the total Agreement price. Where delays are concurrent, liquidated damages shall be equitably adjusted to reflect the portion of delay attributable to the Contractor. Mutually agreed-upon amendments to the Agreement shall automatically extend the completion date.

The Parties acknowledge and agree that the $45,000/day is in the nature of liquidated damages and not a penalty, and that it represents a reasonable estimate of fair compensation for the losses that may reasonably be anticipated from Contractor s failure to complete the Statement of Work within the time fixed in the Agreement. RCUH may set off undisputed liquidated damages against amounts then due to Contractor under the Agreement.

2. Force Majeure

If a Force Majeure Event (as defined herein) prevents, interferes, or restricts the performance of the Agreement, the affected party shall use reasonable efforts to promptly notify the other party in writing (i) that it is unable to perform, and (ii) the expected duration of such inability. During the duration of a Force Majeure Event, neither party shall be liable for any failure, delay, or interruption in performing its obligations hereunder due to causes or conditions beyond its reasonable control, and not due to any fault or negligence of the party affected. The affected party shall use its reasonable efforts to resume performance as soon as possible. A Force Majeure Event includes, but is not limited to, strikes, boycotts, picketing, slow-downs, work stoppages, or labor disputes; restrictions or requirements imposed by laws or government actions with the force and effect of law; priorities, rationing, curtailment, or shortage of labor or materials; war, revolution, acts of terrorism, or any matter or thing resulting therefrom; embargoes, acts of God, or severe weather or climatic conditions (such as storms, hurricanes, typhoons, earthquakes, tornadoes, volcanic eruptions, earth movements, tsunamis, and floods); acts of the public enemy, acts of superior governmental authority, riots, rebellion, sabotage, fire, or accidents; epidemics, pandemics, quarantines, or regional, national, or international public health emergencies; or any other cause or causes beyond the reasonable control of the affected party or parties.

3. Retainage

RCUH will retain 10% of the total value of the contract as a performance reserve until either the expiration of a one-year warranty period or the acceptance by RCUH of any defects corrected under warranty, whichever is later.

Attachment G. Terms and Conditions Applicable to Contracts and Purchase Orders (Under Federal Grants) (Attachment 32a)

RCUH Research Corporation of the University of Hawai'i

Attachment 32a

TERMS AND CONDITIONS APPLICABLE TO CONTRACTS AND PURCHASE ORDERS (UNDER FEDERAL GRANTS)

The following requirements only apply if they are applicable to the purchase:

1. ANTI-KICKBACK ACT (40 U.S.C. 3145). For construction or repair projects in excess of $2,000, the contractor/subcontractor/vendor shall comply with the Copeland "Anti-Kickback" Act (40 U.S.C. 3145), as supplemented by Department of Labor regulations (29 CFR Part 3, "Contractors and Subcontractors on Public Building or Public Work Financed in Whole or in Part by Loans or Grants from the United States).
2. DAVIS-BACON ACT, AS AMENDED (40 U.S.C. 3141-3148). For construction projects in excess of $2,000, the contractor/subcontractor/vendor shall comply with the Davis-Bacon Act (40 U.S.C. 3141-3144 and 3146-3148), as supplemented by Department of labor regulations (29 CFR Part 5, "Labor Standards Provisions Applicable to Contracts Covering Federally Financed and Assisted Construction").
3. CONTRACT WORK HOURS AND SAFETY STANDARDS ACT (40 U.S.C. 3701-3708). For all projects in excess of $100,000 that involve the employment of mechanics or laborers, the contractor/subcontractor/vendor shall comply with 40 U.S.C. 3702 and 3704, as supplemented by Department of Labor regulations (29 CFR Part 5).
4. RIGHTS TO INVENTIONS. If the Federal award meets the definition of "funding agreement" under 37 CFR § 401.2(a), and the contractor/subcontractor enters into a contract with a small business firm or nonprofit organization regarding the substitution of parties, assignment or performance of experimental, developmental, or research work under that "funding agreement", the contractor/subcontractor must comply with the requirements of 37 CFR Part 401, "Rights to Inventions Made by Nonprofit Organizations and Small Business Firms Under Government Grants, Contracts and Cooperative Agreements", and implementing regulations issued by the awarding agency.
5. ANTI-LOBBYING (31 U.S.C. 1352). If this purchase is more than $100,000, the contractor/subcontractor/vendor (each tier) must certify that it will not or has not used Federal appropriated funds to pay any person or organization for influencing or attempting to influence an officer or employee or any agency, a member of Congress, officer or employee of Congress, or an employee of a member of Congress in connection with obtaining any Federal contract, grant or any other award covered by the Byrd Anti-Lobbying Amendment (31 U.S.C.1352). The contractor/subcontractor/vendor shall also disclose any lobbying with non-Federal funds that takes place in connection with obtaining any Federal award.
6. DEBARMENT AND SUSPENSION. In accordance with Executive Orders (EO) 12549 and 12689, "Debarment and Suspension," a purchase of more than $25,000 must not be made from a contractor/subcontractor/vendor that is debarred, suspended, or proposed for debarment. For purchases of more than $25,000, the contractor/subcontractor/vendor shall certify that it is or is not debarred, suspended, or proposed for debarment by the Federal Government or the project shall check the System for Award management (SAM) at https://www.sam.gov/SAM/. Recipients shall fully comply with the requirements stipulated in Subpart C of 45 CFR 620, entitled "Responsibilities of Participants Regarding Transactions". The recipient is responsible for ensuring that any lower tier covered transaction, as described in Subpart B of 45 CFR 620, entitled "Covered Transactions", includes a term or condition requiring compliance with Subpart C. The recipient is also responsible for further requiring the inclusion of a similar term or condition in any subsequent lower tier covered transaction. The recipient acknowledges that failing to disclose the information required under 45 CFR 620.335 may result in the termination of the award, or pursuance of other available remedies, including suspension and debarment.
7. EQUAL EMPLOYMENT OPPORTUNITY. Except as otherwise provided under 41 CFR Part 60, all contracts that meet the definition of "federally assisted construction contract" in 41 CFR Part 60-1.3 must include the equal opportunity clause provided under 41 CFR 60-1.4(b), in accordance with Executive Order 11246, "Equal Employment Opportunity" (30 FR 12319, 12935, 3 CFR Part, 1964-1965 Comp., p. 339), as amended by Executive Order 11375, "Amending Executive Order 11246 Relating to Equal Employment Opportunity," and implementing regulations at 41 CFR part 60, "Office of Federal Contract Compliance Programs, Equal Employment Opportunity, Department of Labor."
8. CLEAN AIR ACT (42 U.S.C. 7401-7671q) and the FEDERAL WATER POLLUTION CONTROL ACT (33 U.S.C. 1251-1387), AS AMENDED. For contracts and subgrants of amounts in excess of $150,000, the recipient shall agree to comply with all applicable standards, orders or regulations issued pursuant to the Clean Air Act (42 U.S.C. 7401-7671q) and the Federal Water Pollution Control Act as amended (33 U.S.C. 1251-1387). Violations must be reported to the Federal awarding agency and the Regional Office of the Environmental Protection Agency (EPA).
9. RIGHT TO AUDIT. For all negotiated purchases of more than $150,000, the contractor/subcontractor/vendor agrees that RCUH, the Federal awarding agency, the Comptroller General of the United States, or any of their duly authorized representatives, shall have access to and the right to examine any pertinent books, documents, papers and records of such contractor/subcontractor/vendor involving transactions related to this purchase.
10. TRAFFICKING IN PERSONS. For subawards (pursuant to 22 U.S.C. 7104(g)), the subrecipient shall comply with the Trafficking Victims Protection Act of 2000 (22 U.S.C. 7104), as implemented by 2 CFR 175.
11. TERMINATION FOR CAUSE (VIOLATION/BREACH) OR CONVENIENCE OF RCUH. For all purchases in excess of $10,000, if a termination clause indicating RCUH's ability to terminate for cause and convenience is not included as part of the terms or contract associated with the purchase, clause 18 of RCUH Attachment 31 (General Terms and Conditions Applicable to All Purchase Orders) shall apply to the purchase.
12. PROCUREMENT OF RECOVERED MATERIALS. All contractors/subcontractors/vendors must comply with 2 CFR § 200.323.
13. PROHIBITION ON CERTAIN TELECOMMUNICATIONS AND VIDEO SURVEILLANCE SERVICES OR EQUIPMENT. All contractors/subcontractors/vendors must comply with 2 CFR § 200.216.
14. DOMESTIC PREFERENCES FOR PROCUREMENTS. All contractors/subcontractors/vendors must comply with 2 CFR § 200.322.

Revised 1/25/2021