ORDER FOR SUPPLIES OR SERVICES

PAGE 1 OF 3 PAGES

IMPORTANT: Mark all packages and papers with contract and/or order numbers.

1. DATE OF ORDER: 10/21/2008

2. CONTRACT NO. *(If any)*: DTMA8C05007

3. ORDER NO.: KEY07C09001

4. REQUISITION/REFERENCE NO.: PRCR0800269

5. ISSUING OFFICE *(Address correspondence to)*

DOT/Maritime Administration, DGO Acquisition
500 Poydras Street, Room 1223

New Orleans LA 70130-3394

6. SHIP TO:

a. NAME OF CONSIGNEE: No Shipping Information

b. STREET ADDRESS

c. CITY | d. STATE | e. ZIP CODE

7. TO:

a. NAME OF CONTRACTOR

b. COMPANY NAME: **KEYSTONE SHIPPING SERVICES INC**

c. STREET ADDRESS: **SUITE 600, ONE BALA PLAZA EAST**

d. CITY: **BALA CYNWYD** | e. STATE: **PA** | f. ZIP CODE: **19004-1496**

f. SHIP VIA

8. TYPE OF ORDER

☐ a. PURCHASE

REFERENCE YOUR:

Please furnish the following on the terms and conditions specified on both sides of this order and on the attached sheet, if any, including delivery as indicated.

☐ b. DELIVERY - Except for billing instructions on the reverse, this delivery order is subject to instructions contained on this side only of this form and is issued subject to the terms and conditions of the above-numbered contract.

9. ACCOUNTING AND APPROPRIATION DATA

No Funding Information

10. REQUISITIONING OFFICE

DOT/Maritime Administration, Central Region

11. BUSINESS CLASSIFICATION *(Check appropriate box(es))*

☐ a. SMALL ☑ b. OTHER THAN SMALL ☐ c. DISADVANTAGED ☐ g. SERVICE-DISABLED VETERAN-OWNED

☐ d. WOMEN-OWNED ☐ e. HUBZone ☐ f. EMERGING SMALL BUSINESS

12. F.O.B. POINT: Destination

13. PLACE OF		14. GOVERNMENT B/L NO.	15. DELIVER TO F.O.B. POINT ON OR BEFORE *(Date)*	16. DISCOUNT TERMS
a. INSPECTION	b. ACCEPTANCE			
Destination	Destination			

17. SCHEDULE *(See reverse for Rejections)*

ITEM NO. (a)	SUPPLIES OR SERVICES (b)	QUANTITY ORDERED (c)	UNIT (d)	UNIT PRICE (e)	AMOUNT (f)	QUANTITY ACCEPTED (g)
	SEE LINE ITEM DETAIL					

SEE BILLING INSTRUCTIONS ON REVERSE

18. SHIPPING POINT | 19. GROSS SHIPPING WEIGHT | 20. INVOICE NO.

17(h) TOT. *(Cont. pages)*

21. MAIL INVOICE TO: No Contacts Identified

a. NAME: DOT/ Enterprise Services Center (ESC) OFO/FAA, Oklahoma City

b. STREET ADDRESS *(or P.O. Box)*: MARAD A/P CR Invoices Branch, AMZ-150 PO Box 25710

c. CITY: Oklahoma City | d. STATE: OK | e. ZIP CODE: 73125

$0.00

17(i) GRAND TOTAL

22. UNITED STATES OF AMERICA BY *(Signature)*: Marie Casse

23. NAME *(Typed)*: Marie Casse

TITLE: CONTRACTING/ORDERING OFFICER

AUTHORIZED FOR LOCAL REPRODUCTION
Previous edition not usable

OPTIONAL FORM 347 (REV. 3/2005)
Prescribed by GSA/FAR 48 CFR 53.213(e)

If desired, this order (or a copy thereof) may be used by the Contractor as the Contractor's invoice, instead of a separate invoice, provided the following statement, (signed and dated) is on (or attached to) the order: "Payment is requested in the amount of $_____. No other invoice will be submitted." However, if the Contractor wishes to submit an invoice, the following information must be provided; contract number (if any), order number, item number(s), description of supplies or service, sizes, quantities, unit prices, and extended totals. Prepaid shipping costs will be indicated as a separate item on the invoice. Where shipping costs exceed $10 (except for parcel post), the billing must be supported by a bill of lading or receipt. When several orders are invoiced to an ordering activity during the same billing period, consolidated periodic billings are encouraged.

RECEIVING REPORT

Quantity in the "Quantity Accepted" column on the face of this order has been: ☐ inspected, ☐ accepted, ☐ received by me and conforms to contract. Items listed below have been rejected for the reasons indicated.

SHIPMENT NUMBER	PARTIAL FINAL		DATE RECEIVED	SIGNATURE OF AUTHORIZED U.S. GOV'T REP.	DATE
TOTAL CONTAINERS		GROSS WEIGHT	RECEIVED AT	TITLE	

REPORT OF REJECTIONS

ITEM NO.	SUPPLIES OR SERVICES	UNIT	QUANTITY REJECTED	REASON FOR REJECTION

IMPORTANT: Mark all packages and papers with contract and/or order numbers.

DATE OF ORDER	CONTRACT NO.	ORDER NO.
10/21/2008	DTMA8C05007	KEY07C09001

ITEM NO. (a)	SUPPLIES OR SERVICES (b)	QUANTITY ORDERED (c)	UNIT (d)	UNIT PRICE (e)	AMOUNT (f)	QUANTITY ACCEPTED (g)
0001	CLIN 0301AE - Cost reimbursable items (see Attachment J-9) individually funded via task order Base year 3, Ship group 7, Ship 1 (CAPE KENNEDY) FY08 M&R DRYDOCK PROJECT NO. KEN-FY08-1006 ACCOUNT NO. 010-006 The purpose of this project is to accomplish all work related to a drydocking or large project on the approved ship's business plan. All general services and work items required to be done in drydock, such as inspection and maintenance of the hull, sea valves, propeller, tailshaft, rudder, anchors and chains are included. All completed work shall be in compliance with applicable standards as set forth in the Ship Manager contract at C.6.3, Compliance Documents, and subparagraphs thereto, at the time of acceptance. The Ship Manager is hereby authorized to solicit proposals only for this requirement. Funds for the project are currently unavailable. Award will be subject to consent to subcontract and availability of funds. (Work Item List to contain a descriptive title and summary description of the requirement similar to repairs for work items intended to be in the shipyard contract - not required for vessel transit). *Start Date* 01/15/2009 *End Date* 02/28/2009 Reference Requisition: PRCR0800269	1.00	LOT	0.000	0.00	

TOTAL CARRIED FORWARD TO 1ST PAGE (ITEM 17i) ⇒ $0.00

M/V CAPE KENNEDY

2009 DRYDOCK AND GENERAL REPAIRS

July 2008

TABLE OF CONTENTS

GENERAL REQUIREMENTS

DRYDOCKINGAND GENERAL REPAIRS

Item # 000: DEFINITION AND GENERAL REQUIREMENTS

1.0 ABSTRACT

1.1 This item describes the intent, scope, general requirements and definitions that apply to this work package.

2.0 REFERENCES/ENCLOSURES

2.1 MARAD Coating Guidelines through Rev. 04 dated 01 November 1993 including Attachments 2 and 3 Revised 25 October 1993 Attached.

2.2 American Bureau of Shipping (ABS) “Rules for Building and Classing of Steel Vessels” (latest version.

2.3 U.S. Coast Guard Regulations, including all applicable CFR’s and NVIC’s, for inspection of vessels.

2.4 International Load Line Convention, 1966.

2.5 Institute of Electrical and Electronics Engineers, Inc. (IEEE) Standard No. 45, “Recommended Practice for Electrical Installation on Shipboard” as amended, except in cases of IEEE Standard No. 45 conflict with U.S. Coast Guard regulations, of which the latter shall govern.

3.0 SCOPE

3.1 This Work Package, accompanying contract, and Contract Guidance Drawings define the scope of work to be performed. This vessel is owned by the United States of America acting through the Department of Transportation, Maritime Administration (hereinafter called MARAD)

Keystone Shipping Co. (hereinafter called KSC) has been designated by MARAD as Managing Agents. It should be clearly understood that all work and services specified and/or ordered throughout the repair period shall be for and on behalf of KSC.

KSC will employ a site manager (hereinafter called Port Engineer) for the duration of this contract, who shall be identified in writing at the time of the award of this contract. The Port Engineer, and/or his designated representative will oversee and inspect the work required by these specifications and repair activities on behalf of KSC.

The Port Engineer shall be sole authority to act on behalf of KSC with regard to administration of this contract, the specifications, pricing and any changes to these documents.

3.2 The Contractor shall assume responsibility for the care, custody and security of the ship when it is released to the Contractor by KSC from the layberth at the Poland Street Wharf in New Orleans, LA and shall retain such responsibility until the vessel is delivered back to and is accepted by KSC in the person of the Port Engineer at the Contractor's facility upon completion of all work and vessel activation. Vessel's departure from its present location shall be coordinated with the KSC on site Port Engineer, by signing an acceptance form.

3.3 The Contractor shall receive a dead ship with no crewmembers aboard. The Contractor shall provide all qualified labor, technical and professional personnel to perform all specified work, inspections and testing for the duration of the contract.

3.4 Services and/or facilities not specifically stated in the Specifications but required by appropriate authorities and/or the Contractor to properly, effectively and timely execute these Specifications shall be included in the Contractor's bid price.

3.5 Provide all labor, materials, equipment, engineering, etc. necessary to complete all work items in the Specification. Rig and unrig, connect and disconnect, stage and unstage, and remove, replace and relocate any interference's necessary to accomplish as described in each work item. Unless specifically identified as OFE/OFM, all equipment, material, labor, supplies and services shall be Contractor furnished.

3.6 The contract shall commence on a mutually agreed date and shall be diligently executed under the direction of the Contractor's capable and competent supervision. A supervisor shall be on-site during any and all periods that the Specifications are being actively pursued to insure that all work is executed and completed in the most expeditious manner on a "no delay basis". Provide a weekly progress report to Port Engineer relating progress on all items.

3.7 Throughout the vessel, all insulation, lagging, and materials generally manufactured with an asbestos content at the time the vessel was built shall be suspect of containing asbestos and handled accordingly until proven asbestos free. This shall constitute full and adequate warning relevant to asbestos and KSC et al. Shall be held harmless in any and all handling of such material and/or determining asbestos free

condition. In spite of this warning, all items are to be priced assuming non-asbestos material. Should testing prove the existence of asbestos, its abatement and disposal is to be the subject of a Change Order.

3.8 Any and all dimensions, measurements, sizes, shapes, quantities, etc., provided, stated, listed, etc., in the Specifications, including drawings, sketches, etc., contained there, are for information only and not to be considered accurate or actual. KSC does not guarantee the correctness of the dimensions, sizes and shapes given in any sketches, drawings, plans and specifications prepared or furnished by KSC. The Contractor shall be responsible for taking, determining, ascertaining any and all dimensions, measurements, etc., prior to commencing any work. Significant differences shall be brought to the attention of the Port Engineer, and may be subject to a Change Order.

3.9 In case of a difference or conflict between the referenced contract guidance drawings and the work items, the work item shall govern. ANY OMISSIONS FROM THE DRAWINGS, OR FROM THIS WORK PACKAGE, OF DETAILS OF WORK THAT ARE NECESSARY TO FULLFILL THE INTENT OF THIS WORK PACKAGE OR THAT ARE CUSTOMARILILY PERFORMED IN THE INDUSTRY, DOES NOT RELIEVE THE CONTRACTOR FROM HIS/HER OBLIGATION TO PERFORM SUCH WORK.

3.10 Prepare all working drawings, submit them to the Port Engineer and the Regulatory Bodies for approval and accomplish all work in accordance with the working drawings as approved. Working drawings shall be approved prior to commencement of any work requiring such drawings. Submit a working drawings schedule of changes.

3.11 All material, equipment, etc., used in the execution of the Specifications shall be at least equal to that of the original, be certified by an established industry-wide recognized firm for marine application and in full compliance with the rules, regulations and requirements of the American Bureau of Shipping and the U.S. Coast Guard (USCG), where applicable.

3.12 Any and all equipment, machinery, systems, tankage, etc., opened in the execution of the Specifications, including any and all interference’s, removals etc., in way of work shall be closed-up, re-installed, replaced, etc., as original with new gaskets, packing, fasteners, etc., including caulking and washers to studs of manholes, access covers, etc.. Anti-seize of proper temperature range shall be

utilized on all threaded fasteners upon installation. Said equipment, machinery, systems, tankage, etc., shall be tested in accordance with accepted practices to prove tightness and proper operations upon completion of work. Contractor shall maintain a list of loosened, opened, altered fasteners and/or closures and demonstrate tightness of same upon completion of work to the Port Engineer. Contractor shall maintain a list of all blanking, plugging, etc., installed for testing purposes and demonstrate removal of same to the Port Engineer.

3.13 All new, disturbed and/or soiled materials, surfaces, equipment, etc., affected by the accomplishment of these Specifications shall be properly cleaned, prepared, coated/re-coated, re-lagged/re-insulated, etc., as applicable and original.

3.14 Perform all inspections, tests, and trials in the presence of the Port Engineer or his representative and all interested parties to demonstrate total compliance with the Specification requirements and regulatory bodies.

3.15 All spaces, equipment, machinery, tanks, cargo holds, accommodations affected by repairs shall be left in a clean and orderly condition and ready to serve their intended purposes. Prior to redelivery of the vessel, all compartments of the vessel, including but not limited to cargo holds shall be swept broom clean unless otherwise stated herein. The vessel shall be delivered in a clean and stowed condition. A mutual inspection of the entire vessel by the Port Engineer and Contractor shall be conducted prior to commencement and upon completion of the contract. A document listing any deficiencies shall be signed by each party prior to delivery of the vessel to the Contractor.

3.16 Except when Specifically specified in writing from the Port Engineer, Contractor shall not use any of the vessel's spare parts, equipage, material, equipment in the execution of the Specification, including but not limited to, mooring lines, air compressors, cranes, etc.

3.17 KSC Representative and ABS Surveyors are not to be used as Contractor's quality control. Production supervisors and/or Contractor's QA Department are to pretest and preinspect all work prior to presentation to Keystone or Regulatory Bodies.

4.0 DEFINITIONS

4.1 Definitions. The following terms in alphabetical order shall have meanings as indicated below:

4.1.1 *"ARTICLE"* - means a separate lettered part of a work item of the Specification. Articles in different items may bear the same number; hence, to identify an article completely, the item of which it is a part must be specified.

4.1.2 *"AS ORIGINAL"* - means a condition meeting the original system and manufacturer's design.

4.1.3 *"AS APPROVED"* or *"TO THE APPROVAL", "FOR APPROVAL", "AS DIRECTED",* are used without further Qualifications, the decision of the Port Engineer is required. Where an item is required to be submitted for approval, work shall not proceed until notification of approval is received. In the event the item is not approved, rationale will be provided and work shall not proceed until a satisfactory and mutually agreeable resolution has been resubmitted and approved.

4.1.4 *"CFE"* and *"CFM"* identify Contractor Furnished Equipment and Material and are used interchangeably.

4.1.5 *"CONTRACTOR"* identifies the company holding the prime contract for the work specified in this Specification.

4.1.6 *"DETACH"* or *"DISCONNECT"* means to disconnect all attachments to the unit to enable the unit to be moved. All attachment points shall be tagged, identified, blanked, and protected to facilitate reinstallation.

4.1.7 *"GOOD MARINE PRACTICE"* means construction to soundly conceive and engineer detailed working plans, prepared by the Contractor, incorporating the specified components and utilizing recognized shipbuilding construction and testing methods to ensure that the completed ship conforms to the specification requirements. Inspection by the Port Engineer is for the purpose of verifying the proper function of the Contractor's Quality Assurance measures and is not considered a substitute for in-process control of quality by the Contractor.

4.1.8 *"GROUP"* means a major part of the work package and shall include an assortment of related items.

4.1.9 *"INSTALL"," FURNISH", "PROVIDE", "FIT", "EXTEND",* and *"MODIFY"* means that the Contractor shall provide the piece of equipment, material, or system to be installed and shall provide

the materials structural supports, and labor to attach, connect, and test the equipment or system to effect a finished fully operational installation complete in all aspects.

4.1.9.1 When new material or equipment is not specified by type, the material or equipment shall be identified to the existing. When “install” is used with reference to OFE, all conditions of the above definition except the requirement to provide the piece of equipment are applicable.

4.1.9.2 Work items shall identify interferences. The Contractor is responsible for the identification and resolution of interferences affecting the installation by temporarily removing, reinstalling, or relocating interferences. The Contractor shall temporarily remove, permanently relocate, alter and reroute all interferences including but not limited to ductwork, piping, wireways, fixtures, insulation, joiner linings, equipment, furniture and etc. to facilitate fully operational installations and modifications covered by this work package. In the event that piping, ductwork, equipment linings and etc., must be temporarily removed to facilitate installation of new or modified work, the Contractor shall subsequently reinstall same in an “as original” condition.

4.1.10 *“INTERFERENCE”* means that a pipe system, ductwork, equipment, joiner bulkhead or lining, wireway, structural member, access opening, or other objects(s), equipment, system, or components must be temporarily removed and reinstalled, relocated, modified or designed around to facilitate the installation of new or modified equipment or systems.

4.1.11 *“LABOR AND MATERIALS”* means labor, material, plant facilities, supervision, services, equipment, and all other resources required to accomplish the specified work.

4.1.12 *“MANIFESTS”* are the official shipping document forms originated and signed by the generators, transporters, and operations of the hazardous waste disposal facility as required by Federal, State and Local Regulations.

4.1.13 *“MARAD”* identifies the United States Maritime Administration.

4.1.14 *"MODIFY"* means to provide materials, services, and labor to change or alter the item or system resulting in a finished and fully operational modified installation complete in all respects. The term *"MODIFY"* implicitly includes all requirements of *"REMOVE AND INSTALL"*.

4.1.15 *"OR EQUAL"* means that components or equipment shall be equivalent in terms of performance, services required, compatibility with interrelated systems and arrangements and support ability over the service life of the components or equipment. In the case of component or equipment substitution for those components or equipment on the Contract Guidance Drawings or Work Package, the Contractor shall submit a written request delineating the design and performance data on both the specified and substituted piece of equipment for Owner approval, and if approved, the Contractor shall take full contractual responsibility for enduring installation of components or equipment or both and comparability with interrelated systems.

4.1.15 *"OFE"* or *"OFM"* identify Owner Furnished Equipment and Materials and are used interchangeably.

4.1.16 *"OWNER"* means Keystone Shipping Co. as Managing Agents for the U.S. Department of Transportation Maritime Administration.

4.1.17 *"REFURBISH"* means to detach., temporarily remove, disassemble, clean, reassemble the unit, equipment or system using new screws, bolts, gaskets, and replacement parts, and to reinstall and test the unit, equipment or system to demonstrate proper function to the manufacturer's tolerances. The reinstalled refurbished unit, equipment or system shall be fully operational and complete in all aspects.

4.1.18 *"REGULATORY BODY"* or *"REGULATORY BODY REQUIREMENTS"* means the American Bureau of Shipping or U.S. Coast Guard.

4.1.19 *"REINSTALL"* means that the Contractor shall provide all material and labor, to install as original a piece of equipment, material or system after the equipment, material or system was temporarily removed, relocated, modified, or refurbished.

4.1.20 *"RELOCATE"* means to provide all labor and materials to detach the unit, equipment, or system and to reinstall the same unit, equipment, or system after the equipment, at a new or modified location.

4.1.21 *"REMOVE"* or *"RIPOUT"* means to provide all labor and materials to disconnect, detach, and transfer the unit, equipment, materials, or system in its entirety off the ship. All removed materials shall be disposed of in accordance with the Port Engineer direction. Part of the removal process is to blank openings, remove brackets, hangers, foundations, etc. and to restore all removed items including re-insulation and paint touch up to "as original" condition.

4.1.22 *"REMOVE AND REPLACE INTERFERENCES"* shall be construed to mean that the Contractor shall provide all labor, materials and equipment necessary to remove, modify if specified, material and equipment that cause interference in way of the intended installation, or removal path of an equipment, and replace or reinstall in "as original" condition. <u>All open ends left as a result of these removals shall be suitably protected to prevent any and all contaminants from entering the system or piece of equipment.</u>

4.1.23 *"REPLACE"* means to remove the unit, equipment, or systems, including all interferences and to install a new unit, equipment, or system which is either identical or equal to that which was removed; the installation shall include at a minimum all hook-up, supports, and adapters which are required to effect a fully operational installation complete in all respects.

4.1.24 *"SECTION"* means a major part of the Specification and shall include a group of related work items.

4.1.25 *"TAG OUT"* means a procedure to both notify personnel that tagged-out equipment, components, or systems are either isolated or not in a normal operating condition and to prevent injury to personnel, improper operation, or damage to the tagged out equipment, components, or systems.

4.1.26 *"TEMPORARY REMOVAL"* or *"TEMPORARILY REMOVE"* means to provide all labor and materials to disconnect and move the unit, equipment, or system from its initial location and to reinstall the same unit, equipment, or system wither in the

same location or elsewhere on the ship as described in the Specification .

4.1.27 *"UPGRADE"* means to increase the capability to the current state of practice at the time of work is accomplished.

4.1.28 *"WORK ITEM"* or *"ITEM"* means a separately numbered part of the Specification describing a discrete portion of the work to be accomplished.

4.1.29 *"WORK PACKAGE"* means the entire written portion of the contract including contract provisions and all work items.

5.0 GENERAL CONDITIONS

5.1. The following conditions apply to all work items of this Work Package and are intended to outline the minimum acceptable quality of material, workmanship, and practice.

5.1.1. Where laws, regulation, requirements, or commercial standards are referred to herein, the latest revision that is in effect on the date of solicitation shall be applicable.

5.1.2. The Contractor shall be held responsible for the protection of all existing and newly installed equipment and materials. Any equipment that is damaged by the Contractor shall be repaired, replaced, or restored at the Contractor's expense as directed by the Port Engineer.

5.1.3. All materials and workmanship shall be subject to inspection and approval of the Port Engineer at all times. Workmanship and materials found to be defective or not in conformity with good marine practice, regulatory requirements, or this Specification and its associated approved drawings shall be cause for rejection and removal at the Contractor's expense.

5.1.4. All equipment, furnishing, and materials removed, including scrap, except for those specified for relocation or otherwise designated by the Port Engineer are to be disposed of by the Contractor, except for material requiring disposal as a hazardous waste, which shall be disposed of as described elsewhere in this specification.

5.1.5 The Contractor will be held to have carefully surveyed the ship during bidder's inspection and the associated

ship/equipment specifications and drawings prior to bidding and to be satisfied as to conditions, nature, the character, quality and quantity of work required to complete the ship as described herein. No warranties, express or implied, are made as to the accuracy of any reference drawings for the ships. Should the Contractor require the removal or shifting of any parts of the ship's fittings, stores, fuel, water outfit, equipment or piping for carrying out the work specified or implied, the same shall be done by him and all such removals shall be subsequently replaced in a satisfactory manner.

5.1.6 Install suitable protective devices on all equipment which presents a hazard to personnel. These may be carrier guards or other approved devices and shall preclude personnel injury. Examples of equipment which require protective devices are those which contain exposed rotating parts, fan blades, belts, pulleys, flywheels, and etc.

5.1.7 The costs of ABS surveys will be borne by KSC. The cost of all other regulatory service expenses shall be borne by the Contractor. Scheduling ABS attendance for inspection shall be handled jointly by the Contractor and KSC.

5.1.8 Names of manufacturers and trade designations of items are mentioned in the specifications merely as a means of describing the general character of the design, quality and construction of the various articles or materials required by KSC; Contractor can, however, submit alternate manufacturer or trade designations for consideration under the "or equal" clause of this contract.

5.1.9 Care has been taken in the preparation of the Specifications to make them complete and accurate. The Specifications are, however, not intended to cover in detail each system, component and part thereof nor are they intended to preclude the possibility of modifications to equipment/system characteristics being required during the detail design development and actual accomplishment of the required modification. Any inadvertent omission or inclusion in the Specifications which is inconsistent with the general intent of the Specifications shall promptly be brought to the attention of the Port Engineer with the view of reconciling the requirements with the intent of the Specifications.

5.1.10 The Contractor shall be responsible for maintaining the stability, strength and trim of the vessel in a satisfactory condition throughout the contract period.

The Contractor will not be financially responsible for defects which are inherent in the material, apparatus or equipment supplied by the Owner or the expense of the reinstallation or modification incident thereto. However, this shall not relieve the Contractor of his responsibility in the event of faulty or incorrect installation and securing on the vessel.

The Contractor shall sign for each drawing, tech manual or other documentation and be responsible for returning each article back to the vessel in an as provided condition. Any lost or destroyed article shall be reproduced by the Contractor at their expense.

For clarification purposes, most manufacturer instruction books and shipboard construction drawings referenced within the specifications are listed as reference only and will not be provided with this repair package. All instruction books and drawings will be made available to the Contractor on an as-needed basis throughout the availability. Where a reference is noted as “attached,” it shall be attached within these Specifications in the Appendices.

5.1.11 Certain items of material are specified herein to be reused during the contract period or held for the Owner’s disposition. All such materials shall be carefully removed, stored and protected by the Contractor and remain the property of the Owner.

5.1.12 All transportation of materials, machinery parts, tools, steel, etc. and stowage of new equipment and/or spare parts shall be carried out as necessary by the Contractor. The Contractor shall at his expense receive, transport, inspect, store, protect and place aboard the vessel all material and equipment furnished by the Owner to the vessel for this contract. The Owner shall submit all pertinent information on Owner Furnished equipment that is required by the Contractor for engineering and installation of equipment in sufficient time to meet the engineering production schedule. All materials, equipment, etc. intended for the vessel in any form shall be adequately stowed and protected by the Contractor while in his possession. Generally, all material,

equipment, etc. other than structural, shall be warehoused or otherwise protected from the weather.

5.1.13 At no time shall ship's equipment be used to carry out any part of this scope of work or for flushing systems or moving liquids or weights unless otherwise specified in the work item or alternately, unless express consent has been given by the Port Engineer. When ship's equipment needs to be used, requests to the Port Engineer shall be made at least 24 hours prior to the use of the equipment.

5.1.14 Install new gaskets, seals, wicking, and fasteners when closing up manholes, bolted inspection plates and flanges. All gaskets, seals, wicking and fasteners shall comply with the design service requirements (i.e. pressure and temperature) of the systems or components for which they are installed. All new fasteners installed on exterior systems and components or systems and components below the floor plates shall be stainless steel, except where stainless steel would not be appropriate for certain design requirements. No spaces, tanks or machinery opened shall be closed up until such item or opening has been inspected and accepted by the Port Engineer or his appointed representative.

5.1.15 Electrical cable specified for installation by this Specification shall be low smoke (LS) cable in accordance with MIL-C-24643. Conduct megger insulation resistance test (phase to phase to ground) on all new power cable installations and cable penetrations following completion of the cable installation. Bond or ground all equipment which is modified or installed by this Specification.

5.1.16 All new and disturbed areas for each work item carried out by the Contractor shall be prepared and coated in accordance with the MARAD Coating Guidelines as amended, unless otherwise specified in these Specifications.

5.2 Hazardous Materials:

5.2.1. <u>ALL MATERIALS SHALL BE ASBESTOS AND PCB FREE.</u> If material which contains asbestos or PCB is inadvertently specified on a Contract Guidance Drawing or other document, the Contractor shall substitute an equivalent non-asbestos or non PCB material and notify the Port Engineer without any adjustment to the Contract.

5.2.2. All hazardous material removed as part of this specification shall be disposed in accordance with all state, federal and local laws and regulations.

5.3 Equipment Safety Tag Out:

5.3.1. Upon arrival at the Contractors facility or prior to the start of the availability, contact the Port Engineer and the Ship's Chief Engineer to coordinate the implementation of the tag out program for the entire contract period.

5.3.2. Follow all tag out procedures. Under no circumstance is any piece of mechanical, electrical, electronic equipment, circuit, or system to be worked on until that equipment, circuit, or system has been isolated from its energy source and tagged out properly and all Safety Program Procedures are understood. Additionally, lock out devices may be used in accordance with 29CFR1910.147. Under no circumstance is any component of tagged out equipment to be operated until the tag has been cleared.

5.3.3. Failure to comply with the Tag Out program and all Safety Program Procedures will result in a work stoppage until all discrepancies are resolved to the approval of Port Engineer. The Contractor is responsible for any and all subcontractor compliance with the tag out program.

6.0. NOTES

6.1. None.

Item # 001: SAFETY

1.0 ABSTRACT

1.1 This item describes the monitoring of Shipboard Safety by Keystone's Safety Officer and the Contractors Competent Person / Safety representative.

2.0 REFERENCES

2.1 None.

3.0 ITEM LOCATION / DESCRIPTION

3.1 All shipboard safety practices by Owners and Contractor's personnel are to be monitored.

4.0 OWNER FURNISHED EQUIPMENT AND MATERIAL

4.1 A ships Officer will be the designated Keystone Safety Officer for the duration of the repairs.

5.0 STATEMENT OF WORK

5.1 Safety is to be paramount during the performance of this contract. Keystone's Safety Officer will monitor all aspects of shipboard working practices on a full time basis, without collateral duties. S/he serves as the Owners Point of Contact for all safety related matters with the Contractor, and reports directly to the Keystone Port Engineer.

5.2 The Contractor shall designate a full time shipyard safety person is to patrol the entire vessel throughout the duration of repairs. Duties will include attending the beginning of daily shipboard production meetings to discuss current safety concerns of the Owner and Contractor's representatives. S/he may establish a routine of shipboard inspections and report sharing with the Keystone Safety Officer.

5.3 The shipyard's safety person will ensure that fire hoses / manifolds / jumpers are fully charged at all times, and ensure that portable CO2 fire extinguishers placed in various locations are maintained fully charged and operational. Testing and inspection of the Fire Protection readiness is to be carried out in accordance with the Fire Protection work item No.009

5.4 The designated safety person will work with the Owners Safety Officer to monitor production activities, ensure safe working practices and enforce the Contractors safety rules and procedures in order to maintain a safe and clean working environment.

5.5 The safety person also will attend to the condition of the water hoses to prevent flooding, and to the condition of welding leads to ensure they are properly insulated. Leaking hoses, used extinguishers, and faulty welding leads are to be removed from the vessel immediately. Hoses, welding leads, and the like are to be lead clear (over head or under ramps) of pathways in order to minimize tripping hazards.

5.6 The Contractor shall supply, install and maintain temporary lighting to provide adequate lighting levels to insure safe working environment in tanks, voids and other poorly illuminated or unlighted spaces as required to properly complete all work items within the specifications. Upon completion of work, all temporary lighting shall be removed from the vessel.

6.0 NOTES

6.1 The Contractor is to hold a shipboard “Safety Kick-off” meeting as soon as practical but no later than 72 hours after the vessel arrives at the Contractor’s facility. The Contractors Safety Manager, Safety Person, Repair Manager / Superintendent, and others as appropriate will address the entire Keystone team of Officers, crew, and Project Office staff. At a minimum, the Contractor’s safety program, work rules, facility access, and emergency response will be addressed. Thereafter, daily production and safety meetings will be held with similar attendees.

6.2 Contractor is to include the cost of fire watches, competent person inspections, or any other safety related requirements, in the bid price for each work item of the specification.

6.3 The Contractor’s safety representative shall attend all production meeting and relate any safety concerns to the shipyard management and to Keystone’s representative.

Item # 002 TOW TO CONTRACTOR'S FACILITY

1.0 ABSTRACT

1.1 The Contractor shall tow the dead ship from her ROS berth at the Poland Street Wharf in New Orleans, LA to the Contractor's facility.

2.0 REFERENCES/ENCLOSURES

2.1. General Arrangement (1 Sheet) (Attached).

2.2 Current Vessel Soundings, to be provided upon Award.

3.0 ITEM LOCATION/DESCRIPTION

3.1. The vessel shall be towed to the Contractor's facility from the vessel's ROS berth at the Poland Street Wharf in New Orleans, LA.

4.0 OWNER FURNISHED MATERIAL/EQUIPMENT/SERVICE

4.1. None

5.0 STATEMENT OF WORK

5.1. The Contractor shall accept the vessel at the layberth at the Poland Street Wharf in New Orleans, Louisiana and tow the ship to the Contractor's facility, securing it safely alongside as covered elsewhere in this specification.

5.1.1. For purposes of the tow, the vessel is to be considered a completely "DEAD SHIP" at all times.

5.2. Contractor shall install the vessel's shaft locks and rudder locks to meet the requirements of the towing underwriter.

5.3. Provide sufficient number of tugs of adequate size and horsepower, all Pilots and towing equipment (chain bridle, shackles, cables, emergency towing cable, battery powered navigation lights, safety and boarding equipment, etc.) necessary to conduct a safe tow.

5.3.1. Provide all line handling and riding crews required onboard the vessel and ashore to adequately handle lines, gangway, navigation and safety responsibilities during departure, while in transit and upon arrival at the Contractor's facility.

5.3.1.1. Riding crew shall be of sufficient size to ensure all requirements of the towing surveyor, pilots and regulatory agencies are met.

5.3.1.2. Line handling and riding crew to be outfitted with all equipment and tools deemed necessary in accordance with USCG, ABS and KSC Regulations as well as personal safety equipment to include, at a minimum, safety shoes, hard hat, life preserver, flashlight and gloves suitable for handling wire rope and mooring lines.

5.3.1.3. Provide sufficient food, water and portable sanitary facilities for all of the riding crew and pilot. All rubbish, trash and garbage generated during the tow, as well as the sanitary facilities shall be removed from the vessel within twenty-four (24) hours of arrival at Contractor's facility.

5.3.1.4. Riding crew onboard to be available for immediate action at all times to perform all duties in support of the Pilot and tugboats.

5.4. Towing Surveyor: Provide the services of a qualified Marine Surveyor, approved by the towing underwriters to survey the vessel and to certify the adequacy of the vessel condition for tow, the towing arrangement and all tugboats utilized for the tow. A survey report attesting to the suitability of the above shall be submitted to the Port Engineer not less than forty-eight (48) hours prior to the commencement of tow. Properly completed towing calculations in support of this statement of suitability must be included in this survey report.

5.5. Provide all services required to prepare the vessel for tow in compliance with the recommendation of the above mentioned Marine Surveyor. Any measures necessary to prepare the ship for safe towage shall be the Contractor's responsibility and shall be accomplished at his expense.

5.6. Contractor shall furnish total insurance coverage specifically for all liabilities of hull and machinery protection and indemnities (towing liability insurance) in the amount of $5 million.

5.7. Contractor to obtain all certificates for all tows, towing certificates, permits, loadline exemptions, equipment testing, proof of insurance

and supply copies to the Port Engineer forty-eight (48) hours prior to tow.

6.0 NOTES

6.1. If an emergency situation arises the below parties are to be notified directly via telephone with a follow-up mail detailing the situation.

Mitch Koslow	KSC	Office: 610-617-6848 Fax: 610-617-6846
Christopher Keefe	KSC	Office: 504-944-6300 Fax: 504-944-6315 Cellular: 504 453-5841
Grady Byrd	MARAD	Office: 504-589-2000 250 Fax: 504-589-6593
Robert Babin	MARAD	Office: 504-589-6565 Fax: 504-589-6593

Towing Contractor shall transmit via fax or email to the above listed MARAD and Keystone Shipping Co. numbers notification of departure and ETA within one (1) hour of vessel leaving layberth. A position report and updated ETA every twenty-four hours while in transit and arrival details within one (1) hour of arrival at the Contractor's facility.

Item # 003 OFFICE FACILITIES

1.0 ABSTRACT

1.1. The Contractor shall provide a private office facility and equipment and supplies for use by the management team during the overhaul period.

2.0 REFERENCES/ENCLOSURES

2.1. None.

3.0 ITEM LOCATION/DESCRIPTION

3.1. Location/Quantity

3.1.1. Location: Near ship and separate from shipyard management personnel.

3.1.2. Quantity: One (1)-ten foot by forty foot (10ft. x 40 ft.) office trailer or equal land based offices.

3.2. Description

3.2.1. Suitable for use by one (1) Port Engineer, three (3) additional KSC personnel and one (1) administrative assistant .

3.2.2. Ten foot by forty foot (10 ft. x 40 ft.) private office trailer, equipped with a private toilet facility.

4.0 OWNER FURNISHED EQUIPMENT/MATERIAL/SERVICES

4.1. None.

5.0 STATEMENT OF WORK REQUIRED

5.1. Provide a ten feet wide by forty feet long private trailer office or equivalent size office space for the exclusive use of the KSC management team separate from Contractor personnel.

5.1.1. Office shall be outfitted for the duration of the contract with the following:

5.1.1.1 Five (5) desks with chairs.

5.1.1.2 Four (4) side chairs

5.1.1.3 One (1) Table (Eight feet by three feet) (8’ x 3’)

5.1.1.4 One (1) Refrigerator (Nine cubic feet capacity-minimum)

5.1.1.5 One (1) Coffee Maker w/supplies (coffee, sugar, creamer)

5.1.1.6 One (1) Office copying machine capable of copying legal size, letter size and 11 in. x 17 in. paper with reduction and enlargement modes, sort, document feeder and duplex modes.

5.1.1.7 One (1) Electronic desk calculator with tape printout.

5.1.1.8 Operating climate control system(s) sufficient to maintain temperature between seventy (70) and seventy-five (75) degrees throughout the trailer.

5.1.1.9 Office supplies and equipment for five persons.

5.1.1.10 One (1) Wall Clock (with batteries if required).

5.1.1.11 One (1) Electronic Date/Time stamper.

5.1.1.12 Reserved parking spaces for ten cars in the immediate vicinity of the office facility.

5.1.1.13 Private toilet facilities integral to or in the immediate vicinity of the office facility for use only by the KSC staff.

5.1.1.14 Janitorial services on a nightly basis to clean office and toilet facilities.

5.1.1.15 Sufficient electrical outlets placed conveniently to the desks for connecting desk equipment, copy machine, calculators, etc. Six (6) seven-outlet strip surge protectors with 4 ft. power cords.

5.1.1.16 One (1) Plain paper facsimile machine with dedicated phone line capable of a minimum of fifteen (15) auto document feeder.

5.1.1.17 Sufficient lighting for accomplishment of normal office work.

5.1.1.18 Clean towels and soap on a daily basis.

5.1.1.19 Four (4) Legal File cabinets (four drawer with locks and keys).

5.1.1.20 Five (5) Sets of keys for all access door locks on trailer or office spaces.

5.1.1.21 One (1) Cold bottle water dispenser with a minimum of twenty gallons of bottled water supply per week.

5.1.1.22 Five (5) Two (2) line telephones including two (2) activated phone lines with unlimited local and long distance service for office use. Telephones shall be equipped with speakers for conference calls. Service shall be on a twenty-four (24) hour-a-day basis. One (1) phone shall be equipped with an answering machine. For bidding purposes, allow one-thousand dollars ($1,000.00) in long distance charges.

5.1.1.23 One (1) land-based telephone line with local-only service for use on the ship, to be located in the Chief Engineer's Office. Phone line to be connected at the junction box on the starboard side of the poop deck.

5.1.1.24 One (1) land-based telephone line with local-only service in a protected enclosure at or near the gangway of the vessel.

5.1.1.25 All KSC office and vessel telephones shall be equipped with instructions in English for effecting emergency procedures. These instructions shall include day and night telephone numbers of the Contractor's Senior Officials, Ship Supervisor, Gate house, Security Office, Safety Office, Ambulance,

Fire Fighting Departments, Local Police Departments and KSC personnel.

5.1.2 Contractor shall provide unobstructed access to the KSC office facility and vessel on a twenty-four (24) hour, seven (7) day week basis for the duration of the contract.

5.1.3 The Contractor shall provide and install signs mounted to office facilities and parking spaces which effectively reads:

“KEYSTONE SHIPPING COMPANY Personnel Only ”

5.1.4 Contractor shall provide the services of a full time (forty (40) hours per week) administrative assistant and all required equipment and expendables to perform clerical duties. The administrative assistant shall not be an employee of the Contractor, and will preferably have experience working in a ship repair environment. She shall be skilled in typing and filing required by the Port Engineer and other KSC representatives. Service shall be for the duration of the contract. Individual shall also be capable of operating a computer and shall be able to use Microsoft WORD, PROJECT, ACCESS, EXCEL.

5.1.5 Contractor shall provide the following computer system as described below. Computer system to become the property of the Owner at completion of work at the contractors facility.

Qty. Description
2 Premium quality (Dell, HP, Sony) Desk top computers, with monitors,
keyboards and mouse. Computers for electronic filing.

2 Printer copier- scanner – Hp Office Pro L7689 All in One
1 Printer - EPSON STYLUS COLOR 800.
4 Printer cables.
2 Data Switches to serve two printers on one computer.
4 UPS - APC 700

6.0 NOTES

6.1. None

Item # 004: SHORE POWER

1.0 ABSTRACT

1.1. This item describes shore power requirements for the vessel during the duration of the availability at the Contractor's facility.

2.0 REFERENCES/ENCLOSURES

2.1. None.

3.0 ITEM LOCATION/DESCRIPTION

3.1. The shore power connection box is located on the starboard side of the poop deck.

4.0 OWNER FURNISHED EQUIPMENT/MATERIAL/SERVICES

4.1. None.

5.0 STATEMENT OF WORK REQUIRED

5.1. Upon Arrival, the Contractor shall provide a reliable source of power at a minimum capacity of 700 amperes of electrical power at 460 volts AC, 3 phase, 60 Hz. The Contractor's personnel shall connect the electrical power at the shore connection box. The Contractor's shore power breaker shall be equipped with single phase and low voltage protection device(s).

5.1.1. Electrical shore power shall be supplied to the ship through Contractor provided circuit breakers, of the appropriate capacity, installed on the pier between the ship and the pier side connection.

5.1.2. The Contractor shall maintain AC power continuously at a maximum of 460 volts and a minimum of 440 volts during the entire availability the ship is on shore power.

5.1.3. Allow for mobilization and two connections of shore power cables and equipment upon commencement of drydocking. Allow for two disconnects and removal of shore power cables and equipment upon completion of drydocking.

5.1.4. The Contractor shall disconnect the shore power prior to departure when the Chief engineer notifies the Contractor that the vessel is on ship's power. The contractor is responsible for the connections and disconnects on all vessel movement at the Contractor's facility for Contractor's convenience.

5.1.5. Once shore power is connected, the Chief Engineer will advise the Contractor when to energize the lines. The Chief Engineer will close the main shore power breaker on the main switchboard and all other breakers as required to put all necessary machinery, equipment and lighting on line.

5.1.6. Each time shore power is connected or reconnected to the vessel, the Chief Engineer will check for proper phase sequence at the breaker box in the shore power room on the Poop Deck. Once the shore power breaker on the main switchboard is energized, the Chief Engineer will confirm proper rotation of machinery.

5.1.7. For bidding purposes, allow for approx. 80,000 kwh usage Actual price shall be based on actual power usage from readings on the shore power meter.

6.0 NOTES

6.1. Shore power failures shall be minimized to the maximum extent possible. When shore power fails, immediate action shall be taken to restore power. The Port Engineer and/or Chief Engineer shall be notified after any shore power failures, particularly during non-working hours, so they can respond and help restore power to the vessel.

6.2 It is unsafe practice to leave the vessel dark while personnel are working onboard. Work shall be stopped when shore power fails in order to prevent accidents.

6.3 Provide with bid, a price per kwh for electrical power usage to be the basis for determining the final price.

Item # 005 MOORING LINES AND VESSEL ACCESS

1.0 ABSTRACT

1.1. The Contractor shall provide adequate mooring lines to secure the vessel at the Contractor's facility and shall provide a safe suitable gangway for access to the vessel for the duration of the repair period.

2.0 REFERENCES/ENCLOSURES

2.1. General Arrangement (1 Sheet)(attached).

3.0 ITEM LOCATION/DESCRIPTION

3.1. None.

4.0. OWNER FURNISHED EQUIPMENT/MATERIAL/SERVICES

4.1. None.

5.0 STATEMENT OF WORK REQUIRED

5.1. Mooring Lines

5.1.1 The Contractor shall provide adequate and suitable mooring lines and/or wires to safely and securely tie up the ship at the Contractor's facility. The vessel's mooring lines and wires shall not be used.

5.1.2 In the event the vessel is towed the Contractor shall stow the vessel mooring lines in the vessel rope locker. The Contractor shall secure the vessel mooring lines/wires to the respective mooring winch.

5.2. Gangway

5.2.1 The Contractor shall provide a safe gangway for regular access to the vessel during the entire availability at the Contractor's facility. The Contractor's gangway shall be fitted with handrails and adequate lighting and a safety net. The vessel's gangway ladders shall not be used.

5.2.2 The Contractor shall remove and replace the gangway as required during shifting of the vessel and other vessel movements at the Contractor's facility.

6.0 NOTES

6.1. None.

Item # 006: <u>FIRE PROTECTION</u>

1.0 ABSTRACT

1.1. The Contractor shall provide adequate fire protection to insure safety of the vessel during the entire availability at the Contractor's facility.

2.0 REFERENCES/ENCLOSURES

2.1. None.

3.0 ITEM LOCATION/DESCRIPTION

3.1. None.

4.0 OWNER FURNISHED EQUIPMENT/MATERIAL/SERVICES

4.1. None.

5.0 STATEMENT OF WORK REQUIRED

5.1 Contractor shall comply with the National Fire Protection Association, Standard for Fire Protection of Vessels During Construction, Repair and Lay-up, NFPA 312.

5.2 The contractor shall provide manifolds, pumps, hoses and nozzles for adequate fire protection to the entire ship during the entire period of availability. A minimum output capacity of 400 GPM is required at all nozzles. Ship's fire pumps and associated equipment shall not be used for this purpose. Allow for two disconnects and reconnects of fire protection hoses and equipment to shift fleet the vessel.

5.3 Contractor shall provide suitable quantity and type of fire extinguishers at all locations where hot work is performed throughout the vessel. Contractor shall not rely upon and use the vessel's fire extinguishers. In the event of an emergency in which the vessel's fire extinguishers are used, the Contractor shall have the fire extinguishers recharged by a reputable fire protection service facility. Contractor shall mark their extinguishers so as not to confuse with ship's equipment.

5.4 Contractor shall provide competent fire watch in areas adjacent to burning and welding operations while same are in progress.

6.0 NOTES

6.1. None.

Item # 007: COMPRESSED AIR

1.0 ABSTRACT

1.1. This item describes compressed air requirements for the vessel during the entire availability at the Contractor's facility.

2.0 REFERENCES/ENCLOSURES

2.1. None.

3.0 ITEM LOCATION/DESCRIPTION

3.1. Clean, dry filtered compressed air at a minimum of 100 psig and 200 CFM.

4.0 OWNER FURNISHED EQUIPMENT/MATERIAL/SERVICES

4.1. None.

5.0 STATEMENT OF WORK REQUIRED

5.1 Provide clean, dry and filtered compressed air at a minimum of 100 psig and 200 CFM for ship's use on a daily basis. The Contractor's personnel shall furnish, connect and disconnect all valves, fittings and hoses as required.

5.2 Allow for mobilization and two connect/disconnects of hoses and compressed air equipment .

6.0 NOTES

6.1 Connection to the vessel's compressed air piping systems shall have particulate and desiccant filters installed in line.

Item # 008: HOUSEKEEPING AND HABITABILITY

1.0 ABSTRACT

1.1. The Contractor shall maintain cleanliness of the vessel throughout the availability at the Contractor's facility.

2.0 REFERENCES/ENCLOSURES

2.1. None.

3.0 ITEM LOCATION/DESCRIPTION

3.1. None.

4.0 OWNER FURNISHED EQUIPMENT/MATERIAL/SERVICES

4.1. None.

5.0 STATEMENT OF WORK REQUIRED

5.1 Housekeeping

5.1.1 Vessel will be delivered to the Contractor's facility in a clean and orderly condition in way of living spaces, machinery spaces and cargo holds. A joint inspection of all spaces will be carried out upon arrival of the vessel at Contractor's facility and the condition of same shall be noted in writing by the Contractor and the Port Engineer. It will be the Contractor's responsibility to maintain cleanliness of all areas on a daily basis throughout the repair period, conducting cleaning as well as the removal and disposal of all debris generated as a result of work contained herein. Upon completion of all work under this contract, a final joint inspection of these spaces will be carried out to insure KSC satisfaction of cleanliness of the vessel at the time of delivery from the Contractor. Any discrepancies noted in this final survey are to be corrected by Contractor at the Contractor's expense.

5.1.2 The Contractor shall place garbage containers in strategic areas on board the vessel to receive and retain all waste material generated by Contractor's and Owner's activities throughout the contract period. Containers are to be

checked on a daily basis and emptied as necessary so garbage does not accumulate.

5.2 Deck Protection

5.2.1 It shall be understood that all accommodation spaces, including but not limited to the personnel elevator, passageways, staterooms, lounges and dining rooms, are off limits to Contractor personnel unless access is necessary to conduct business or work.

5.2.2 Upon arrival at contractors facility, Contractor is to provide and install industrial plastic floor coverings from the upper tween deck entrance to the machinery spaces and any other areas throughout the house subject to heavy traffic during the course of this contract. Assume 2,000 sq. feet areas to be designated by the Port Engineer to be dealt with.

5.3 Sanitary Facilities

5.3.1 It shall be understood that all shipboard toilet and shower spaces are off limits to Contractor personnel. The Contractor shall provide and install signs to this effect.

5.3.2 Any contamination of shipboard facilities by Contractor personnel shall be cleaned and restored at the Contractor's expense.

5.3.3 The Contractor shall provide portable toilet facilities on the vessel and portable or land-based facilities adjacent to the ship for use by shipboard and Contractor personnel. The Contractor shall also provide janitorial services to maintain cleanliness of toilet facilities on a daily basis.

6.0 NOTES

6.1. None.

Item # 009: SHIPBOARD ACCESS AND SECURITY

1.0 ABSTRACT

1.1. The Contractor shall provide shipboard access security and a roving patrol to insure safety and integrity of the vessel throughout the availability at the Contractor's facility.

2.0 REFERENCES/ENCLOSURES

2.1. None.

3.0 ITEM LOCATION/QUANTITY

3.1 One security guard shall be present at the gangway at all times to monitor access to the vessel and to notify proper authorities in case of emergencies on or around the vessel.

3.2 One roving patrol shall be provided to make routine tours of the vessel to insure safety and integrity of the vessel.

4.0 OWNER FURNISHED EQUIPMENT/MATERIAL/SERVICES

4.1. None.

5.0 STATEMENT OF WORK

5.1. Shipboard Access and Security

5.1.1. Contractor shall furnish the services of bonded, uniformed security guards to be stationed at the vessel's gangway on a twenty-four (24) hour per day/seven (7) days per week basis, assigned in three (3) shifts of eight (8) hours each. Guards should have radio and phones with emergency contact numbers. The guards shall be other than full time production workers assigned for this task on a temporary basis. Security services shall commence upon the vessel's arrival at Contractor's facility and shall continue through the complete contract period. Guards shall be instructed that Contractor's personnel are forbidden access to any part of the vessel unnecessary to complete Items, except under emergency conditions (such as fire, storm, etc.).

5.1.2. KSC shall furnish to the Contractor a list of all known visitors for each day. This list shall be the basis for KSC access to the ship.

5.1.3 The guards shall insure only authorized persons are allowed onboard, including the Port Engineer and other KSC representatives, MARAD Representatives, contractor workers, subcontractor workers, Contractor and Owner Furnished Technical Reps, and visitors (when prior authorizations are issued by the Port Engineer). Contractor shall provide to the security guard, prior to the start, of each shift, a list of all workers and other known persons allowed onboard. ONLY these persons listed shall be allowed access to the ship.

5.1.4 A daily log shall be maintained to sign in all personnel. ALL persons shall be logged in and out. The log shall contain blocks for the printed name, organization represented, employee number, time onboard, time departed, and signature of visitor. The log book shall also be used to record information about all significant security related activity and incidents. A new page shall be started for each new day starting at 0000 hours. At the end of the availability, the log shall become the property of KSC.

5.1.5 The guard shall inspect all **suspect** packages, suitcases, briefcases, boxes, tool bags going onboard or ashore for suspicious looking devices, weapons, explosives, vessel property and property of the crew, or material not related to the work in progress.

5.1.6 The security guard shall have access to telephone communications at all times as covered elsewhere in these specifications. Additionally, the security guard shall be provided with a transceiver radio in order to maintain communications with the roving patrolman.

5.2 Roving Patrol of Vessel

5.2.1 A roving patrol shall be provided on the ship during non-working hours. This is to be a separate and distinct individual from the gangway guard. The roving patrol can be full time production workers assigned for this task on a temporary basis or another uniformed bonded security guard.

5.2.2 The roving patrol shall conduct shipboard inspections every two hours. A Detex or equal clock and key system shall be used to clock in all spaces that are inspected by the roving patrol. Twelve Detex keys shall be provided and fixed in locations designated by the Port Engineer. Spaces to be inspected may include but are not limited to the following:

5.2.2.1 The lowest level of all machinery spaces including but not limited to the following areas: Engine Room, Auxiliary machinery room(s), pump room(s), shaft alley, generator room(s), boiler / fire room(s), steering gear room(s) and all other machinery spaces.

5.2.2.2 All engineering, dry, general material, refrigerated and frozen, paint and flammable, boatswain's, and all other storerooms.

5.2.2.3 All galley(s), pantry(s), mess room(s), lounge(s), hospital(s), ship's exchange(s), berthing area(s), toilets and showers, and other spaces.

5.2.2.4 Cargo holds

5.2.3 The roving patrol shall be required to enter all unlocked spaces and traverse same in a manner that necessitates using an exit other than the one used for entry, except in those cases where only one entry/exit route/door exists. All doors to spaces not requiring entry by contractor workers in performance of the repair work set forth in the other items of the specifications shall be checked to insure they are locked. All such spaces will be locked by the Port Engineer or other KSC personnel upon arrival at the Contractor's facility. Doors found unlocked shall be reported IMMEDIATELY to the Port Engineer or other KSC personnel and to the head of the shipyard security department and to the shipyard project manager.

5.2.4 The roving patrol shall be aware of and on the alert to the signs and conditions which indicate any of the following.

5.2.4.1 Flooding and rising water levels in the machinery spaces and holds.

5.2.4.2 Fire.

5.2.4.3 Water/oil damage (from leaking or broken steam, water or oil piping).

5.2.4.4 Explosion dangers (from escaping welding, burning and sewage gases).

5.2.4.5 Live disconnected electrical lines or welding leads.

5.2.4.6 Loose and unsecured equipment or machinery which can fall/drop from heights.

5.2.4.7 Unauthorized persons onboard the ship during non work hours. It shall be the Contractor's responsibility to provide the required training to the roving patrol on how to identify these conditions in a shipyard work environment.

5.2.5 The roving patrol shall work in coordination with the gangway guard. Each round made by the roving patrol shall be logged in the gangway guard's log book. Additionally, anything that is suspect should be noted in the log book and reported to the proper personnel or authorities. For safety, the roving patrolman shall be provided with a transceiver radio in order to maintain communication with the guard during each patrol.

6.0 NOTES

6.1. None

Item # 010: MARINE CHEMIST CERTIFICATES

1.0 ABSTRACT

1.1. The Contractor shall obtain gas free certificates for “safe for workers” and “safe for hot work” from a certified Marine Chemist for all confined spaces where entry and/or hot work shall be required and a competent person shall maintain the certificates daily until such entry and hot work is completed.

2.0 REFERENCES/ENCLOSURES

2.1. None.

3.0 ITEM LOCATION/DESCRIPTION

3.1. None.

4.0 OWNER FURNISHED EQUIPMENT/MATERIAL/SERVICES

4.1. None.

5.0 STATEMENT OF WORK REQUIRED

5.1 The Contractor shall furnish the services of a Certified Marine Chemist to inspect the confined or suspect areas of the vessel, including all tanks, compartments and void spaces that are opened to be entered as a result of work and regulatory inspections of repairs specified herein. As a minimum, all tanks, compartments and void spaces to be entered must be certified “Safe for Men/Safe for Entry.” Additionally, any spaces requiring hot work shall be certified “Safe for Hotwork.”

5.2 Certificates shall be issued only by a certified Marine Chemist and shall be maintained by a “Competent Person” as defined by the USCG Regulations.

5.3 Contractor shall provide and maintain portable blowers and ducting for ventilation of confined spaces as required by Chemist Certificate to insure the safety of personnel during work and inspections of confined spaces.

6.0 NOTES

GENERAL REQUIREMENTS

6.1. None.

Item # 011: WET BERTH FOR SEA TRIAL PREPARATIONS

1.0 ABSTRACT

1.1. This item describes wet berth requirements for activation of the vessel after completion of the drydocking (5 DAYS). The vessel will sail out of the contractor's facility and a sea trial will be conducted while en route back to the ROS lay berth in New Orleans, LA.

2.0 REFERENCES/ENCLOSURES

2.1 None

3.0 ITEM LOCATION/DESCRIPTION

3.1. None

4.0 OWNER FURNISHED EQUIPMENT/MATERIAL/SERVICES

4.1. None.

5.0 STATEMENT OF WORK REQUIRED

5.1 Shift from the Drydock to the Wet Berth

5.1.1 Provide tugs, pilot and personnel (linehandlers, riders, etc.) to shift the vessel from the drydock to a wet berth.

5.1.2 Provide wet berth space for the vessel for the entire activation period. The wet berth shall be safe and suitable for the length and draft of the vessel and shall have a safe and suitable pier to facilitate loading and unloading of personnel, gear, stores and provisions.

5.1.3 Tugs, pilot and personnel shall be held long enough after vessel is alongside the wet berth until shipboard engineers get a generator running and on line and the vessel adequately secured alongside.

5.2 Departure for Sea Trials

5.2.1 Tugs and pilot(s) necessary for departure of the vessel at the end of the activation period will be arranged separately

by the Owner. The Contractor need not provide tugs and pilot(s) for departure.

5.2.2 The Contractor shall provide linehandlers on the dock to let go of the ship's lines at the end of the activation period at the time of departure for sea trials.

6.0 NOTES

6.1 For bidding purposes, the Contractor shall assume five days at the wet berth for activation and sea trial preparations.

6.2 The vessel will be placed on ship's power at the wet berth throughout the entire activation period. No shore power will be necessary.

6.3 The vessel's mooring wires will be used to secure the vessel at the wet berth. The Contractor need not provide any additional mooring lines or wires.

6.4 The vessel's gangway ladder will be used for shipboard access during the activation period at the wet berth. The Contractor need not provide any temporary access ladders or platforms.

6.5 The vessel's provision crane will be used to take on provisions and stores for the activation and sea trials. The Contractor need not provide any crane assistance.

6.6 The Contractor shall allow vehicular access to the vessel for chandler delivery trucks.

Item # 100: RUDDER EXAMINATION & TESTING

1.0 ABSTRACT

1.1. This item describes the requirements for a rudder inspection.

2.0 REFERENCES/ENCLOSURES

2.1 None

3.0 ITEM LOCATION/DESCRIPTION

3.1. None

4.0 OWNER FURNISHED EQUIPMENT/MATERIAL/SERVICES

4.1. None

5.0 STATEMENT OF WORK REQUIRED

5.1 Open the manhole cover in the steering gear room to the void space around the upper rudder stock. Provide ventilation and obtain and maintain a gas free certificate “Safe for Entry” .

5.2 Thoroughly clean the void space for inspection. Note: The void space is full of grease. Dispose of old grease in accordance with all federal, state and local regulations.

5.3 Schedule and coordinate an inspection of the void space with the Port Engineer and attending ABS Surveyor. Measure and record upper rudder stock bearing readings. Submit a Condition Report to the Port Engineer.

5.4 The manhole is fitted with a threaded plug to facilitate an air test of the void. Clean gasket surfaces and replace the manhole cover in good order with new gasket and grommets. Air test the void to 2 psi to the satisfaction of the Port Engineer and attending ABS Surveyor. After air test, remove hoses and re-install plug in the manhole cover.

5.5 Pull threaded plug on the top and bottom of the rudder. Drain any liquid and gas-free the interior.

5.6 Crop access openings on the upper rudder to gain access to the rudder stock nut. Remove the rudder stock nut cover and keepers to inspect the rudder nut and verify that it is intact and secure. Rig rudder stock nut wrench from its stowage location and tighten nut to the satisfaction of the ABS. Measure and record the lower rudder stock bearing clearances and provide a condition report to the Port Engineer. Provide for inspection of the rudder stock and nut by the Port Engineer and attending ABS Surveyor. Renew keeper plates. After inspections, replace the rudder nut cover in good order and insert the openings as original.

5.7 Crop lower access plate to pintle pin nut compartment. Remove pintle pin nut cover and keeper. Measure and record lower rudder pintle bearing clearances and provide a condition report to the Port Engineer. Provide for inspection of the lower pintle and nut by the Port Engineer and attending ABS Surveyor. After inspections, replace keeper, pin cover and access as original.

5.8 Air test the rudder to 2 psi to the satisfaction of the Port Engineer and attending ABS Surveyor.

5.9 After completion of all hot work, reinstall bottom plus and install float coat prior to installing top plug.

6.0 NOTES

6.1 None

Item # 101: DRYDOCKING AND UNDOCKING

1.0 ABSTRACT

1.1. The Contractor shall drydock and undock the vessel as required to accomplish all work with these specifications.

2.0 REFERENCES/ENCLOSURES

2.1 NEDLLOYD Dwg No. C-10712, Docking Plan, plus arrangement of docking blocks.

2.2 NEDLLOYD Dwg. No. C-10212, Capacity Plan

2.3 NEDLLOYD Dwg No. C-10311, Trim and Stability Booklet

2.4 Special Fore & Aft Blocking Arrangement

3.0 ITEM LOCATION/DESCRIPTION

3.1. Ship's Characteristics:

Length, Overall	-	695.85 FT
Beam, Extreme	-	105.77 FT
Depth Molded to Main Deck at CL	-	67.25 FT

3.2 Estimated Arrival Draft:

Forward	-	8.0 meters
Aft	-	5.0 meters

3.3 Estimated arrival displacement tonnage:

21,144 Long Tons

4.0 OWNER FURNISHED EQUIPMENT/MATERIAL/SERVICES

4.1. None.

5.0 STATEMENT OF WORK REQUIRED

5.1 Provide all labor, material, equipment and services to drydock and subsequently undock the vessel.

5.2 Provide tugs, pilots, personnel, and qualified dockmaster acceptable to Keystone Shipping Co. for the complete transfer, drydocking and undocking of the ship. The number of tugs shall agreed to by the ship's master at the drydocking conference.

5.2.1 Contractor shall determine sea water ballast requirement to drydock the ship with acceptable, trim and stability conditions. The Contractor shall notify Keystone Shipping Co. in sufficient time to allow for ballasting of sea water ballast prior to drydocking.

5.3 Provide labor, material and equipment to erect, set and align the docking blocks in accordance with 2.1 and 2.4. Position blocking so that the propeller, rudder, fin stabilizers and other equipment on the surface of or protruding from the hull will not be damaged and will be accessible for removal and repairs. The minimum height of the keel blocks shall be five feet.

5.4 Blocking shall permit examination of all peak and double bottom tank drain plugs, fathometer diaphragms, and underwater appurtenances by the Port Engineer and ABS and USCG representatives. Prior to flooding, Contractor and Port Engineer to inspect blocking to insure it is done in accordance with Contractor’s blocking diagram.

5.5 Before undocking verify that sea valves, shaft seals, and other hull penetrations below full load draft are tested watertight.

5.5.1 Immediately after hull penetrations are submerged but before the ship lifts off the blocks stop flooding the drydock and open sea valves to insure watertight integrity of Contractor work affecting water tightness of the hull and hull penetrations below the water level in company with the Chief Engineer. Continue flooding of the dock only when directed by the Port Engineer.

5.6 The Contractor shall prepare and submit to the Keystone Shipping Co. five completed typewritten copies of a MarAd Drydock Report, MA-57 (Attached) and MA-362 (Attached).

6.0 NOTES

6.1. The dry-dock facility length overall shall be equal to or greater than the length of the vessel overall.

6.2 The dry-dock wing wall distance shall be of sufficient width to fully extend the port and starboard fin stabilizers, approximately 130 feet between wing walls required.

Item # 102: PROPELLER & TAILSHAFT EXAMINATIONS

1.0 ABSTRACT

1.1. This item describes requirements for propeller and tailshaft inspections.

2.0 REFERENCES/ENCLOSURES

2.1 Nedlloyd Dwg. Nos. M-12001, M-32201, “Tube, Details, Seals and Bearing Install, and Rope Guard Details”

2.2 Nedlloyd Dwg. No. M-42201, “Coupling Bolts and Nuts”

2.3 Nedlloyd Dwg. Nos. M-32501, M-324502, M-37201, “Propeller”, “Drawing Keyless Propeller & Seal Assembly”, “Propeller Shaft Withdrawal”

2.4 Nedlloyd Dwg. No. C-750001 (Kobe Steel, Kure), “Simplex Seals and Liners”

3.0 ITEM LOCATION/DESCRIPTION

3.1. Oil lubricated single screw stern tube shaft; diameter 700 mm.

3.2 Keyless propeller (LIPPS); right hand; diameter 6500 mm; weight 2610 kg.

3.3 Seals are Simplex Compact Seal 750 mm, Dwg. C-750001 (Aft Seal) and Dwg. C-750002 Fwd Seal).

4.0 OWNER FURNISHED EQUIPMENT/MATERIAL/SERVICES

4.1 Aft Seal:

4.1.1 Aft seal liner with finished machined OD, rough machined ID (available if necessary).

4.1.2 Set of aft seal rings (3 pcs) plain Viton.

4.1.3 Aft seal “o” ring.

4.1.4 Aft seal flange gaskets.

4.2 Forward Seal:

4.2.1 Set of forward seal rings (2 pieces) plain Viton.

4.2.2 Forward seal “o” ring.

4.3 Simplex Technical Representative.

5.0 STATEMENT OF WORK REQUIRED

5.1 Remove plug a d drain the stern tube of oil. 530 gallons need to be disposed of.

5.2 Remove the propeller rope guard assembly and attachment welds.

5.3 Chip out cement, dismantle and remove the propeller nut fairwater cap and rig away.

5.4 Remove seal box housing plugs and drain seal oil to an adequately sized container. Dispose of oil in accordance with all local, state and federal regulations. Fit vessel’s seal depth gauge into the threaded plug openings, top and bottom, and take and record depth readings in the presence of the Port Engineer, and ABS Surveyor. Submit a condition report to the Port Engineer. Report shall include previous readings for comparison, available from the Port Engineer.

5.5 Disconnect and remove shaft locking devices and set aside for re-installation.

5.6 Measure and record the position of keyless propeller on shaft. Unbolt the flange of the shaft seal liner from the propeller. Remove the propeller nut and keyless propeller, noting hydraulic pressures observed while jumping the propeller free.

5.7 While propeller is rigged aside, the propeller and fairwater cap shall be inspected, scraped clean and polished. Port Engineer will provide standard MARAD propeller inspection form. Contractor to fill out MARAD propeller inspection report and submit to Port Engineer. (also see item 5.14)

5.8 Remove the aft seal assembly and dray to shop for inspection and repairs. Inner and outer seal assemblies shall be completely dismantled. Chromium liner shall be measured, sized, skimmed and polished. Seal ring is to be removed.

5.9 After cleaning and repairs, reassemble and reinstall the aft seal assemblies in good order with new Owner furnished seals, o-rings, flange gaskets. Provide and install new mounting hardware and anodes for the aft seal liner.

5.10 Unbolt, disassemble and drift forward, the forward seal assembly for inspection by the Owner furnished tech rep. Reassemble with new seal rings vulcanized in place.

5.11 Clean up tailshaft in way of propeller taper for inspection by Port Engineer and ABS Surveyor. Perform magnetic particle test in way of the tailshaft taper to the satisfaction of the ABS Surveyor.

5.12 Reinstall the forward and aft seal assemblies as original.

5.13 Open and clean the stern tube lube oil system head tank and drain tank for examination by the Port Engineer and ABS Surveyor. After inspection and when directed by the Port Engineer, close tanks in good order.

5.14 While the propeller is removed from the tailshaft, perform a dye penetrant test on the outer third of each of the four (4) propeller blades and provide a condition report with a Marad propeller inspection report (MA-362) and submit the report to the port engineer. The MA-362 will be provided by the port engineer.

5.15 Polish propeller blades to Rupert “B” finish. Grind smooth any rough edges on blade surfaces concentrating on the leading edge.

5.16 Rig propeller back to tailshaft taper. Drive propeller in place to its original position on the shaft. Note and record hydraulic pressures. Reinstall locking nut. Grease propeller with biodegradable grease.

5.17 Re-install fairwater cap and fill recessed areas with tallow. Fasteners to be refilled with cement.

5.18 Take new seal depth readings in the presence of the Chief Engineer and submit Condition Report to the Port Engineer.

5.19 Replace seal box housing plugs. Fill the stern tube and stern tube lube oil system with new owner furnished oil. Check seal assemblies for leaks.

5.20 Reposition and re-install rope guards in place by welding.

6.0 NOTES

6.1. All stages of the tailshaft and rudder inspections shall be presented for inspection or witness by the Port Engineer as well as the attending ABS Surveyor.

Item # 103: PROPELLER REPAIR SUPPORT

1.0 ABSTRACT

1.1. This item describes requirements for assisting with the repair of the Cape Kennedys 4 bladed skewed propeller. Keystone will independently contract out the repair of the repair of the propeller. Contractor will remove the propeller from the dry-dock, transport it both to and from the repair facility.

2.0 REFERENCES/ENCLOSURES

2.1 Nedlloyd Dwg. Nos. M-12001, M-32201, “Tube, Details, Seals and Bearing Install, and Rope Guard Details”

2.2 Nedlloyd Dwg. No. M-42201, “Coupling Bolts and Nuts”

2.3 Nedlloyd Dwg. Nos. M-32501, M-324502, M-37201, “Propeller”, “Drawing Keyless Propeller & Seal Assembly”, “Propeller Shaft Withdrawal”

2.4 Nedlloyd Dwg. No. C-750001 (Kobe Steel, Kure), “Simplex Seals and Liners”

3.0 ITEM LOCATION/DESCRIPTION

3.1. Oil lubricated single screw stern tube shaft; diameter 700 mm.

3.2 Keyless propeller (LIPPS); right hand; diameter 6500 mm; weight 2610 kg. 4 bladed skewered

4.0 OWNER FURNISHED EQUIPMENT/MATERIAL/SERVICES

4.1 Keystone Shipping Co. will furnish repair services to repair the 2 cropped blades on the propeller. Presently it is expected the propeller will be repaired at the Pagett & Swann Facility in Tampa Florida.

5.0 STATEMENT OF WORK REQUIRED

5.1 Propeller removal and reinstallation requirements are described under a separate item.

5.2 Vendor will be required to remove propeller from dry-dock and transport to repair facility.

5.3 Transport propeller to and from repair facility in accordance with all local, state and federal regulations.

5.4 Vendor to provide transport vehicle and escorts for transport as required by State and local laws.

5.5 Repair facility will assume responsibility for propeller while at their facility

6.0 NOTES

6.1 None.

Item # 104: SEA VALVES

1.0 ABSTRACT

1.1. This item describes the requirements to open and inspect all sea valves as required for ABS.

2.0 REFERENCES / ENCLOSURES

2.1. None

3.0 ITEM LOCATION / DESCRIPTION

NO.	IDENTIFICATION	SIZE/TYPE	Location
1	Main Sea CW Suction	10k400 JIS FLG BFV	Fr 63 P
2	Auxiliary Sea CW Suction	10k250 JIS FLG BFV	Fr 64 S
3	A/C CW Suction	10k200 JIS FLG BFV	Fr 64 P
4	Reefer CW Suction	10k80 JIS CS Globe	Fr 64 P *
5	Main Engine CW Overboard	10k400 JIS FLG BFV	Fr 61 P
6	A/C CW Overboard	10k200 JIS LUG BFV	Fr 43 P
7	Reefer CW Overboard	10k50 JIS CS Globe	Fr 43 P *
8	Aux Sea CW Overboard	10k250 JIS FLG BFV	Fr 43 S
9	Line Shaft Bearing CW Overboard	16k40 JIS BRZ Globe	Fr 28 P *
10	Bilge & Ballast Pump Suction	10k300 JIS FLG BFV	Fr 64 C
11	No. 2 Main Fire Pump Suction	10k150 JIS CS Angle	Fr 64 P
12	No. 1 Fire & Deck Wash Pump Suction	16k125 JIS Angle	Fr 64 P
13	Evaporator Ejector Pump Suction	10k100 JIS FLG BFV	Fr 63 P *
14	Bilge & Ballast Pump Overboard	10k300 JIS Angle	Fr 61 P
15	Emergency Bilge Eductor Overboard	10k150 JIS FLG BFV	Fr 59 P
16	Evaporator Ejector Overboard	10k65 JIS CS Globe	Fr 50 P *
17	Port Sea Chest Vent	10k100 JIS LUG BFV	Fr 63 P *
18	Stbd Sea Chest Vent	10k100 JIS LUG BFV	Fr 63 S *
19	Auxiliary Sea CW Suction	10k200 JIS FLG BFV	Fr 64 S
20	Port Sea Chest Steam Out	16k40 JIS BRZ Globe	Fr 63 P *
21	Stbd Sea Chest Steam Out	16k40 JIS BRZ Globe	Fr 63 S *
22	Stbd Overboard Chest Steam Out	16k40 JIS BRZ Globe	Fr 61 S *
23	Auxiliary Boiler Blow	DN40 PN-40 Non-Return	Fr 31 S *
24	Oily Water Separator (OWS) Overboard	10k40 JIS BRZ Globe	Fr 45 S *
25	Auxiliary Bilge Pump Sea Suction	10k50 JIS CS Angle	Fr 64 S *
26	Black Water (Sewage) Overboard Port	10k150 NRS Gate	Fr 29 P
27	Black Water (Sewage) Overboard Stbd	10k150 NRS Gate	Fr 29 S
28	Control Room A/C CW Overboard	10k40 JIS BRZ	Fr 45 S *

		Globe	
29	Stbd Rampway Drain Overboard	5k80 Scupper	Fr 55 S *
30	Steering Gear Room Bilge Overboard	5k50 JIS CS Globe	Fr 8 P *
31	Port Rampway Drain Overboard	5k80 Scupper	Fr 12 P *
32	Aft Deck Machinery CW Overboard	10k100 JIS CS Globe	Fr 10 P
33	Emergency Fire Pump Suction	10k150 JIS FLG BFV	Fr 245 P
34	Emergency Fire Pump Air Out	5k15 JIS BRZ Globe	Fr 245 P *
35	Forward Deck CW Overboard	10k65 JIS CS Globe	Fr 245 P *
36	Port Stabilizer CW Suction	5k40 JIS BRZ Angle	Fr 108 P *
37	Port Stabilizer CW Overboard	5k40 JIS BRZ Globe	Fr 108 P *
38	Port Stabilizer CW Sea Chest Air Out	16k15 BRZ Globe	Fr 108 P *
39	Stbd Stabilizer CW Suction	5k40 JIS BRZ Angle	Fr 108 S *
40	Stbd Stabilizer CW Overboard	5k40 JIS BRZ Globe	Fr 108 S *
41	Stbd Stabilizer CW Sea chest Air Out	16k15 BRZ Globe	Fr 108 S *
42	Bos'n Store Bilge Eductor Overboard	N50 Globe w/offset flanges	Fr 240 P *
43	Tally Office Bathroom Grey Water Overboard	5k50 Scupper	Fr 5 P *
44	Threshold/Flaps Drain Overboard	5k50 Scupper	Fr 5 P *
45	Threshold/Flaps Drain Overboard	5k50 mm Scupper	Fr 15 S *

4.0 OWNER FURNISHED MATERIAL / EQUIPMENT / SERVICE

4.1. Replacement valves under 100mm in size (Yellow highlight)

5.0 STATEMENT OF WORK REQUIRED

5.1 Shell fastenings securing all sea valves and associated parts such as pads, nipples, spuds, spool pieces, studs and flanges shall be hammer tested and examined.

5.2 Remove and review all valves of 100mm or smaller in size, marked with an asterisk in Para. 3.0, with new Owner-furnished valves and new Contractor-furnished gaskets and fasteners. Prior to installation of the new valves, all new valves shall be air-tested and proven tight to the satisfaction of the Port Engineer. A total of twenty-nine valves to be renewed.

5.3 For all globe valves and angle globe valves (Globe or Angle in table 3.1) larger than 100mm, Remove valves from piping and transport to shop for inspection and servicing. Open up the valve bonnets. Clean inside of valves. Grind disc to seat in place. Transfer line shall be of uniform width covering one third of the seating surface within the center fifty percent of disc seating surface and at the bottom edge of the conical seat. All valves are to be repacked with Owner furnished packing. Hydrostatically test tight to 150 psi.

Verify contact to the satisfaction of the Port Engineer and attending ABS Surveyor using the bluing method.

5.4 For all butterfly valves (BFV in table 3.1), disconnect and remove the valves for inspection of the disks and rubber boots by the Port Engineer and ABS Surveyor.

5.5 For all scupper valves (Scupper in table 3.1), open the valves and clean inside. Insure proper operation. Present open valves for inspection by the Port Engineer and ABS Surveyor.

5.6 For all suction and overboard valves, coat all valve body interiors with two coats of Apexior #3 or equal.

5.7 After inspections and repairs, assemble all valves in good order. Assemble existing globe valves with new stem packing. Re-install all removed valves in good order with new gaskets and stainless steel metric fasteners. All fasteners shall be liberally coated with anti-seize compound prior to installation.

5.8 Free up, lubricate and prove all valve reach rods, where fitted.

6.0 NOTES

6.1 Final test of integrity of all skin valves shall be accomplished during undocking the ship, prior to floating, as specified in the Drydocking & Undocking item elsewhere in these specifications.

Item # 105: <u>SUPPORT SERVICES FOR SUBCONTRACTOR FOR ULTRASONIC THICKNESS MEASUREMENTS</u>

1.0 ABSTRACT

1.1. This item describes the support service requirements to assist an owner-furnished subcontractor for taking ultrasonic thickness measurements.

2.0 REFERENCES/ENCLOSURES

2.1 General Arrangement.

3.0 ITEM LOCATION/DESCRIPTION

3.1. None Additional

4.0 OWNER FURNISHED EQUIPMENT/MATERIAL/SERVICES

4.1. Owner-furnished subcontractor for taking ultrasonic thickness measurements.

5.0. STATEMENT OF WORK REQUIRED

5.1 Provide a telescopic manlift with driver to take the UT subcontractor around the exterior hull for the purposes of measuring the vessel's shell plating. As a rule of thumb, at least two representative locations will be gauged on each plate along three girth belts and on all plates in the two wind-and-water strakes (port and starboard) along the full length of the vessel. If widely differing thickness readings are found on one plate, a third, or as many as necessary, readings will be taken elsewhere on the plate to obtain a representative thickness. (for estimate purposes expect 40 man hours)

5.2 Provide personnel support accompany the UT subcontractor and provide temporary lighting while the UT subcontractor is gauging the underwater hull bottom plating, deck and bulkhead plating inside the pipe tunnels, sea chests.

6.0 NOTES

6.1. None additional.

Item # 106: <u>ANODES</u>

1.0 ABSTRACT

1.1. This item describes the requirements to replace all anodes and anode clips for all sea chests, cross duct sea chest, thruster tunnels (bow/stern), fin stabilizers housings (port/stbd), rudder and stern frame.

2.0 REFERENCES/ENCLOSURES

2.1 Nippon Kokan K.K. Dwg. No. V-10006 (Available Onboard). Note: Details of the original anodes as shown in the reference drawing book are described below. Size, shape and weight of new anodes may vary from the originals just so long as the same sacrificial protection is provided. Unusual variances are subject to the approval of the port engineer.

3.0 ITEM LOCATION/DESCRIPTION

3.1. Sea Chests. Note: Zinc anodes for the sea chests are shown in reference 2.1 (page 19) as being approx. 150 mm wide x 300 mm long x 30 mm thick. Polyester coating on the base or side that fits against the hull. Net weight 9.18 kg; gross weight 9.7 kg each anode. All dimensions and weights are nominal. Composition (max. %) includes 0.005 Fe; 0.05 Cd; 0.006 Pb; 0.005 Cu; 0.1-0.5 Al; 0.125 Si; and remainder Zn. Capacity 1.59 A-Yr. Assumed resistivity of sea water in calculation is 23 ohm-cm at 18 deg. C. Two (2) approx. 32 mm wide x 4 mm thick x 250 mm long galvanized steel flat bars run transversely through each end of the anode. The ends of the flat bars protrude out on each side of the anode to make four tabs with which to weld mount the anode to the hull. The center of each flat bar tab is located approx. 75 mm from the adjacent end of the anode.

3.1.1 Frames 63-65 (P/S) - three (3) anodes on each side (port/stbd) for the sea suction sea chests.

3.1.2 Frames 61-62 (Port) - two (2) anodes for overboard sea chest.

3.1.3 Frames 95-96 (P/S) - one (1) anode each side for each of the two stabilizer cooling water sea chests (port/stbd).

3.1.4 Frames 245-1/2 (Port) - one (1) anode for emergency fire pump suction sea chest.

3.2 Fin Stabilizer Housings (Port/Stbd). Note: Zinc anodes for the stabilizer housings are shown on drawing SA-100277 in reference 2.1 as approx. 300 mm long x 200 mm wide at the base and 286 mm long x 186 mm wide at the surface with a 5 mm radius around the periphery and 35 mm thick. Polyester coating on the base or side that fits against the hull. Net weight 15 kg; gross weight 15.6 kg each. All dimensions and weights are nominal. Composition (max. %) includes 0.005 Fe; 0.05 Cd; 0.006 Pb; 0.005 Cu; 0.1-0.5 Al; 0.125 Si; and remainder Zn. Capacity 1.59 A-Yr. Assumed resistivity of seawater in calculation is 23 ohm-cm at 18 deg. C. Two (2) approx. 32 mm wide x 4 mm thick x 300 mm long galvanized steel flat bars run transversely through each end of the anode. The ends of the flat bars protrude out on each side of the anode to make four tabs with which to weld mount the anode to the hull. The center of each flat bar tab is located approx. 75 mm from the adjacent end of the anode.

3.2.1 Frames 97-108 (P/S) - ten (10) type 15FS zinc anodes for each of the two stabilizer housings (port/stbd).

3.3 Thruster Tunnels (Bow and Stern). Note: Weld on type zinc anodes for the thruster tunnels are shown on drawing SA-100274 in reference 2.1 as approx. 400 mm long x 130 mm wide at the base and 380 mm long x 120 mm wide at the surface with a 10 mm radius along the long edges and a 65 mm radius at the ends and 60 mm thick. Polyester coating on the base or side that fits against the hull. Net weight 17.8 kg; gross weight 18.9 kg each. All dimensions and weights are nominal. Composition (max. %) includes 0.005 Fe; 0.05 Cd; 0.006 Pb; 0.005 Cu; 0.1-0.5 Al; 0.125 Si; and remainder Zn. Capacity 1.59 A-Yr. Assumed resistivity of sea water in calculation is 23 ohm-cm at 18 deg. C. One (1) approx. 50 mm wide x 6 mm thick x approx. 480 mm long galvanized steel flat bar runs longitudinally through the anode. The ends of the flat bar protrude out on each end of the anode to make two tabs with which to weld mount the anode to the hull.

3.3.1 Frames 240-245 - fourteen (14) type 19FSL zinc anodes for bow thruster tunnel.

3.3.2 Frames 22-27 - fourteen (14) type 19FSL zinc anodes for stern thruster tunnel.

3.4 Rudder and Stern Frame. Note: Zinc anodes for the rudder and propeller are shown in reference 2.1 (page 16) as egg-shaped with dimensions approx. 230 mm wide x 370 mm long x 45 mm thick. Polyester coating on the base or side that fits against the hull. Net weight 23.1 kg; gross weight 24 kg each anode. All dimensions and weights are nominal. Composition (max. %) includes 0.005 Fe; 0.05 Cd; 0.006 Pb; 0.005 Cu; 0.1-0.5 Al; 0.125 Si; and remainder Zn. Capacity 1.59 A-Yr. Assumed resistivity of sea water in calculation is 23 ohm-cm at 18 deg. C. One (1) approx. 32 mm wide x 4 mm thick T-shaped galvanized steel flat bar running inside the anode. The top of the T is approx. 300 mm long and the ends protrude out on each side of the narrow end of the egg-shaped anode to make two tabs with which to weld mount the anode to the hull. The vertical line in the T is approx. 350 mm long and protudes out at the wide end of the egg-shaped anode to make one tab with which to weld mount the anode to the hull. Total of three tabs.

3.4.1 Nine (9) anodes each side (port/stbd) of rudder and one (1) anode on the bottom of the rudder.

3.4.2 Twelve (12) anodes each side (port/stbd) of the stern frame for the propeller.

4.0 OWNER FURNISHED EQUIPMENT/MATERIAL/SERVICES

4.1 None.

5.0 STATEMENT OF WORK REQUIRED

5.1 Using reference 2.1 for guidance, remove all existing anodes from the sea chests, stabilizer housings, thruster tunnels, rudder and propeller and grind all existing steel anode clips flush to the hull.

5.2 Using reference 2.1 for guidance, furnish and install new zinc anodes with galvanized steel clips in all sea chests, fin stabilizer housings (port/stbd), thruster (bow/stern) tunnels and on the rudder and stern frame.

6.0 NOTES

6.1 All welding operations in way of new anodes shall be completed prior to underwater hull coating.

6.2 Eight (8) of the anodes on the stern frame for the propeller are to be mounted adjacent to the aft peak tanks as per the reference

drawing. The aft peak tanks (port/stbd) shall be opened and certified safe for hot work as already covered under a separate item prior to welding these anodes to the hull.

Item # 107: ANCHORS & ANCHOR CHAINS

1.0 ABSTRACT

1.1. This item describes the requirements to remove and range the anchor chains and anchors for abrasive-blasting, inspection, gauging and painting.

2.0 REFERENCES/ENCLOSURES

2.2 NEDLLOYD Drawing (OSAKA Chain - Machinery Co.) Drawing #B1761 (drawing onboard the vessel)

3.0 ITEM LOCATION/DESCRIPTION

3.1. Location: Forecastle

3.2 Quantity: Two anchors with 303 meters chain per anchor. Each anchor weighs 23,248.0 lb. Four chain stoppers with pelican hooks, two per chain.

4.0 OWNER FURNISHED EQUIPMENT/MATERIAL/SERVICES

4.1. None.

5.0 STATEMENT OF WORK REQUIRED

5.1 Carefully lower the port and stbd anchors down to the drydock floor and pay out all of the anchor chain until the chains are hanging on their bitter ends. Use crane service as necessary to help walk out the chains.

5.2 Open the bolted access plates on the port and starboard chain locker. Provide, install and maintain temporary ventilation and lighting inside the chain lockers. Obtain and maintain a gas-free certificate “safe for entry”. Enter the spaces and disconnect the bitter ends of the chains.

5.3 Range the chains on the drydock floor for cleaning, gauging, inspection and painting. Disconnect the master connecting links from the anchors.

5.4 Commercially blast both sides of the anchors and chains in accordance with SSPC-SP-6 to remove all rust, scale and mud. Pick up and move the chains as necessary to get to both sides.

5.5 After blasting the chains, wash the chains with fresh water to remove all scale, dirt and dust from blasting.

5.6 Gauge the anchor chain links as required by the ABS Surveyor. At a minimum, each end link and at least one representative middle link on each shot shall be gauged. Measure the average wire diameter of the links in the area where the links join, recording two measurements per link. Prepare a neat and organized report detailing the gauging survey and provide five (5) hard copies and one electronic copy to the Port Engineer. Gauging report shall include all measurements and percentage of wastage at each point of measurement.

5.7 Upon completion of gauging, repairs and inspection of both anchors chains by the KSC Representative and ABS Surveyor, disconnect the first three shots on each chain and move them to the bitter ends. Provide four (4) new connecting links suitable for 78 mm anchor chain to be used for reconnecting the chains after moving the last three shots.

5.8 Coat the anchor chains as in accordance with the following directions:

5.8.1 Completely coat both anchor chains with two (2) full coats of Amercoat 235 high solids surface tolerant epoxy, or equal, at 3 mils dft per coat first coat shall be gray final coat shall be black.

5.8.2 In addition to the complete coating of both anchor chains with the high solids surface tolerant epoxy, certain links and shots shall be color coated with Amercoat 229 acrylic epoxy, or equal, in accordance with the following directions:

5.8.2.1 Paint all connecting links red.

5.8.2.2 Paint the studded links on each side of the connecting links white. The number of studded links on either side of the connecting links that shall be painted white shall correspond with the number of the shots out from the anchor.

5.8.2.3 Paint the second to last shot with yellow

5.8.2.4 Paint the last shot red.

5.9 Attach a one-half inch (1/2”) or larger stainless steel band around the stud of each studded link on each side of the connecting links that were painted white.

5.10 Prime the anchors with two full coats of Amercoat 235 high solids surface tolerant epoxy, or equal, at 3 mils dft per coat (first coat shall be red; second coat shall be gray). Apply one complete final coat of black Amercoat 229 acrylic epoxy, or equal, at 2 mils dft.

5.11 Reinstall anchors and anchor chains. Return anchors and anchor chains to vessel. Convey the bitter ends aboard and secure them in the chain lockers. Restow the anchors. Reinstall the chain stoppers. Reattach the chain stoppers to the anchor chains. Leave the anchors in housed position. Install chain pipe covers.

5.12 Close up the chain lockers manhole covers in good order with new 3/16” cloth inserted neoprene gaskets.

6.0 NOTES

6.1. Item “Chain Lockers” shall be coordinated with this item while the anchors and chains are removed from ship.

Item # 108: CHAIN LOCKERS

1.0 ABSTRACT

1.1. This item describes the requirements for opening, cleaning, inspection and painting of the chain lockers while the anchor chains are removed.

2.0 REFERENCES/ENCLOSURES

2.1 NEDLLOYD Drawing (OSAKA Chain - Machinery Co.) Drawing (available on the ship).

3.0 ITEM LOCATION/DESCRIPTION

3.1. Location: Bos'n Storeroom under the Foc'sle

3.2 Quantity: Two (2) chain lockers (port/stbd)

4.0 OWNER FURNISHED EQUIPMENT/MATERIAL/SERVICES

4.1. None.

5.0 STATEMENT OF WORK REQUIRED

5.1 Rinse the chain lockers with clean, fresh water. Thoroughly clean the chain lockers, and sumps free of all mud and dirt (allow for approx. 5 tons) and pump out all water from the chain lockers.

5.2 Allow the chain lockers to dry and then remove all loose scale, rust and foreign matter by power tool cleaning to SSPC-SP-3.

5.3 Spot blast all rusty and scaled surfaces inside the chain lockers to SSPC-SP-6 (commercial). After blasting, clean out the chain lockers of all scale and blast debris. Clean all drains and prove them clear to the KSC Port Engineer and attending ABS Surveyor.

5.4 After the cleaning and inspection of the chain lockers, paint the interior surfaces of the chain lockers and sumps in accordance with the schedule below.

5.4.1 Stripe coat all edges and weld seams with one coat of AMERON surface tolerant epoxy.

5.4.2 Apply one (1) spot coat of AMERON surface tolerant epoxy at 2-3 mils dft on blasted areas and apply two (2) full coats of AMERON surface tolerant epoxy at 2-3 mils dft per coat inside the entire chain lockers. The two full coats shall be of opposing colors (first coat shall be gray; second coat shall be red).

5.5 Furnish hoses and fittings and connect temporary shore water to the vessel's firemain and test and prove the effectiveness of the chain locker eductor system in each chain locker to the satisfaction of the Port Engineer and attending ABS surveyor.

6.0 NOTES

6.1. None

Item # 109: <u>UWILD MARKINGS</u>

1.0 ABSTRACT

1.1. This item describes the maintenance of underwater hull markings for the vessel's Underwater In Lieu of Drydocking (UWILD) plan.

2.0 REFERENCES/ENCLOSURES

2.1. Underwater Hull Markings & Fittings Rev 0 (Avondale Shipyards Division)

3.0 ITEM LOCATION/DESCRIPTION

3.1. Draft marks forward, midships and aft, port and stbd.

3.2. Frame markings at FR 20, 24, 27, 35, 38, 40, 63, 67, 106, 121, 141, 161, 181, 201, 221, 240, 246 and 251 (port and stbd).

3.3. The bottom edges of the rudder are marked with P and S for port and stbd and the area in way of the rudder pintle is marked port and stbd with RP.

3.4. The rope guard is marked port and stbd with RG.

3.5. The speed log transducers (2) are marked as follows:

3.5.1	TR1	Fwd Speed Tranducer BOTTOM	(P)	FR	255
3.5.2.	TR2	Fwd Speed Tranducer BOTTOM	(S)	FR	255

3.6. The echo sounder transducers are marked as follows:

3.6.1	TR3	Fwd Echo Sounder Transducer BOTTOM	(P)	FR	256
3.6.2	TR4	Aft Echo Sounder Transducer BOTTOM	(P)	FR	68

3.7. The cathodic protection system electrodes and anodes are marked as follows:

3.7.1	FPE	Fwd Port Electrode (ref cell) 6'0" ABL	(P)	FR	258

3.7.2	FSE	Fwd Stbd Electrode (ref cell) 6'0" ABL	(S)	FR	258
3.7.3	FPA	Fwd Port Anode 4'0" ABL	(P)	FR	240
3.7.4	FSA	Fwd Stbd Anode 4'0" ABL	(S)	FR	240
3.7.5	APE	Aft Port Electrode (ref cell)	(P)	FR 22	14'0" ABL
3.7.6	ASE	Aft Stbd Electrode (ref cell)	(S)	FR 28	14'0" ABL
3.7.7	APA	Aft Port Anode ABL	(P)	FR 49	14'0"
3.7.8	ASA	Aft Stbd Anode ABL	(S)	FR 49	14'0"

3.8. All sea chests and overboard penetrations are marked as follows:

3.8.1	Emergency Fire Pump Suct Sea Chest	SC1	FR 245P
3.8.2	Port Stabilizer CW Sea Chest	SC2	FR 95 P
3.8.3	Port Crossduct Sea Chest	SC3	FR 63 P
3.8.4	Main S.W. Ovbd Sea Chest	SC4	FR 63 P
3.8.5	Stbd Stabilizer S.W. Sea Chest	SC5	FR 95 S
3.8.6	Stbd Crossduct Sea Chest	SC6	FR 63 S
3.8.7	Emergency Fire Pump SeaChest Steam Out	OV1	FR 43P
3.8.8	Port Stabilizer C.W. Overboard	OV2	FR 94 P
3.8.9	Ballast & Stripping Eductor Overboard	OV3	FR 58 P
3.8.10	Evaporator Ejector Pump Overboard	OV4	FR 50 P
3.8.11	Reefer & A/C C.W. Overboards	OV5/6	FR 45 P
3.8.12	Port Accommodation Soil Overboard	OV7	FR 30 P
3.8.13	Stern Tube C.W. Overboard	OV8	FR 26 P
3.8.14	Stbd Stabilizer C.W. Overboard	OV9	FR 94 S
3.8.15	Bilge / OWS Overboard	OV10	FR 46 S
3.8.16	Aux. Engine S.W. C.W. Overboard	OV11	FR 43S
3.8.17	Aux Boiler Blowdown Overboard	OV12	FR 31 S
3.8.18	Stbd Accommodation Soil Overboard	OV13	FR 29 S
3.8.19	Control Room A/C C. W. Overboard	OV14	FR 43 S

3.9. Boundaries for all tanks and compartments on the skin are marked as follows:

3.9.1	Forepeak Tank	FP FR 246 ½PCL
3.9.2	Bow Thruster Room	BTC FR 240½ PCL
3.9.3	Water Ballast Tank # 1 (C)	ST2 FR 221 ½ SCL
3.9.4	F.O. Tank # 2 (P)	ST2 FR 201 ½ P
3.9.5	F.O. Tank # 2 (S)	ST2 FR 201 ½ S
3.9.6	F.O. Tank # 3 (P)	ST3 FR 181 ½ P
3.9.7	Water Ballast Tank # 2B (C)	WB2FR 181 ½ PCL

3.9.8	F.O. Tank # 3 (S)	ST3	FR 181 ½ S
3.9.9	Pipe Tunnel	PP	FR 175 ½ PCL
3.9.10	F.O. Tank # 4 (P)	ST4	FR 161 ½ P
3.9.11	F.O. Tank # 4 (S)	ST4	FR 161 ½ S
3.9.12	F.O. Tank # 5 (P)	ST5	FR 141 ½ P
3.9.13	Water Ballast Tank # 4B (C)	WB4	FR 141 ½ SCL
3.9.14	F.O. Tank # 5 (S)	ST5	FR 141 ½ S
3.9.15	Water Ballast Tank # 6 (P)	ST6	FR 121 ½ P
3.9.16	Water Ballast Tank # 6 (S)	ST6	FR 121 ½ S
3.9.17	Port Stabilizer Room	SR	FR 108 ½ P
3.9.18	Stbd Stabilizer Room	SR	FR 108 ½ S
3.9.19	Water Ballast Tank # 7 (P)	ST7	FR 101 ½ P
3.9.20	Water Ballast Tank # 6B (C)	WB6	FR 101 ½ PCL
3.9.21	Water Ballast Tank # 7 (S)	ST7	FR 101 ½ S
3.9.22	Water Ballast Tank # 8 (P)	ST8	FR 95 ½ P
3.9.23	Water Ballast Tank # 8 (S)	ST8	FR 95 ½ S
3.9.24	Water Ballast Tank # 8B (C)	WB8	FR 69 ½ SCL
3.9.25	Aft Echo Sounder Space	ES	FR 68 ½ C/L
3.9.26	Fresh Water Tank (P)	FWT	FR 67 ½ P
3.9.27	Fresh Water Tank (S)	FWT	FR 67 ½ S
3.9.28	Pipe Tunnel	PP	FR 66 ½ C/L
3.9.29	Dirty Water Tank (P)	BT	FR 61 ½ P
3.9.30	Dirty Water Tank (S)	BT	FR 61 ½ S
3.9.31	Cofferdam Around Main Engine Sump	CD	FR 50 ½ PCL
3.9.32	Aft Peak Port	AP	FR 19 ½ P
3.9.33	Aft Peak Stbd	AP	FR 19 ½ S
3.9.34	Stern Tube C.W. Tank	CWT	FR 19 ½ P
3.9.35	Stern Tube C.W. Tank	CWT	FR 19 ½ P
3.9.36	Rudder Box	RB	FR 0 P

4.0 OWNER FURNISHED EQUIPMENT/MATERIAL/SERVICES

4.1. None.

5.0 STATEMENT OF WORK REQUIRED

5.1 Locate and identify all underwater hull markings in accordance with the reference UWILD drawing. Markings that are permanently marked by weld beads or cut-out steel numbers and letters are satisfactory as is. All marks that were only centerpunched shall be centerpunched again to emphasize the markings.

5.1.1 Recoat all frame locations as shown on the reference UWILD drawing at the turn of the bilge keel (port and starboard) and

on the centerline. Markings shall be one inch (1") wide by twelve inch (12") long strips. The frame numbers shall be marked adjacent to the frame markings.

5.1.2 Recoat all sea chests and overboard penetrations, dock plugs, echosounder speed log transducers and other appendages.

5.1.3 Recoat floatation marks on the bow to stern, port to starboard. Each mark is six inches (6") wide and approximately six feet long. Recoat reference marks approximately two feet above floatation marks. Each mark is six inches wide and approximately six feet long. For clarification, there are one flotation mark and one reference mark on the bow and one flotation mark and one reference mark on the stern.

5.2 After completion of final coat for underwater preservation, all UWILD markings shall be neatly painted (5-6 mils dft) using masking and/or stencils. Underwater markings shall be white; flotation marks shall be yellow.

6.0 NOTES

6.1. Letters, numbers and other symbols shall be constructed with one inch (1") lines and shall be six inches (6") high.

Item # 110: CATHODIC PROTECTION SYSTEM MAINTENANCE/REPAIR

1.0 ABSTRACT

1.1. This item describes support required for inspection and maintenance of the cathodic protection systems.

2.0 REFERENCES/ENCLOSURES

2.1. Wilson Walton (WW) Dwg. No. AA-111 “Recessed Zinc Reference Cell & Cofferdam Assembly.” (Rev. 1)

2.2 WW Dwg. No. AA-110 “Recessed Zinc Reference Electrode & Cofferdam.” (Rev. 1)

2.3 WW Dwg. No. AA-503 “2 Inch Lead/Silver Anode and Cofferdam Arrangement.”

2.4 WW Dwg. No. AA-502/USA “2 Inch Lead/Silver Anode and Cofferdam Arrangement” (Rev. 1)

2.5 WW Dwg. No. AA-507 “Lead/Silver Anode Dielectric Shield Details.” (Rev. 1)

2.6 WW Dwg. No. AA-322 “Elliptical-Titanium Recessed Anode & Cofferdam Assemble-up to 75 Amps.” (Rev. 1)

2.7 WW Dwg,. No. AA-321 “Elliptical-Titanium Recessed Anode and Cofferdam Arrangement (up to 75 amps).”

2.8 WW Dwg. No. AA-323 “Elliptical-Titanium Anode Dielectric Shield Details.”

2.9 WW Dwg. No. AC-303 “Compensating Ring for Recessing EL/TI Anode.”

3.0 ITEM LOCATION / DESCRIPTION

3.1 Forward System

3.1.1 Two recess mounted elliptical iridium anodes each mounted in a reinforced resin holder, including a complete supply of epoxy dielectric shield material sufficient to cover an area measuring 10 feet radius around each anode. Each anode supplied with five feet cable tail and cofferdam/doubler plate assembly. Rated Capacity : 75 amps per anode.

3.1.2 Two high purity zinc recess-mounted reference electrodes complete with insulation sleeve, hull penetration unit, and cofferdam.

3.2 Aft System

3.2.1 Two lead/silver alloy anodes each consisting of a twelve foot and two inch strip having two exposed surfaces and mounted in a reinforced resin holder, including a complete supply of epoxy dielectric shield material sufficient to cover an area measuring twelve and one half feet by twenty-two feet around each anode. Each anode supplied with hull boss, five feet cable tail, and cofferdam.

3.2.2 Two high purity zinc recess mounted reference electrodes, complete with insulation sleeve, hull penetration boss and cofferdam.

4.0 OWNER FURNISHED EQUIPMENT/MATERIAL/SERVICES:

4.1. Wilson Walton Field Service Engineer.

4.2. Two (2) new 75 amp anodes and mounting studs and dielectric shield material for the forward system.

4.3. Two (2) new 200 amp anodes and mounting studs and dielectric shield material for the aft system.

5.0 STATEMENT OF WORK:

5.1 Forward Reference Electrode Inspections

5.1.1 Provide a telescopic manlift and driver to lift the Wilson Walton field service engineer up to inspect the forward reference electrodes at FR 253½ (Port & Starboard), approximately six feet ABL.

5.1.2 Open up the reference electrode cofferdams located in the bilge area under the bow thruster room to provide access inside the cofferdams for inspection by the Wilson Walton field service engineer. After inspections and testing are complete, close up the cofferdams in good order with new gaskets.

5.2. Aft Surface Reference Electrode Inspections

5.2.1 Provide a telescopic manlift and driver to lift the Wilson Walton field service engineer up to inspect the aft reference electrodes at FR 22½ (Port & Starboard), approximately fourteen feet ABL.

5.2.2 Open up the reference electrode cofferdams located in the shaft alley area in the engine room to provide access inside the cofferdams for inspection by the Wilson Walton field service engineer. After inspections and testing are complete, close up the cofferdams in good order with new gaskets.

6.0 NOTES

6.1 None.

Item # 111: MISCELLANEOUS SALT WATER VALVE OVERHAULS

1.0 ABSTRACT

1.1. This item describes the requirements to overhaul of miscellaneous salt water valves.

2.0 REFERENCES / ENCLOSURES

2.1. None.

3.0 ITEM LOCATION / DESCRIPTION

NO.	IDENTIFICATION	SIZE/TYPE	Location
1	#2 Ballast Pump Suction	Butterfly 200 mm	Fwd Engine Rm
2	#1 Ballast Pump Segregation	Butterfly 200 mm	Fwd Engine Rm
3	#1 Ballast Pump Suction	Butterfly 200 mm	Fwd Engine Rm
4	#6 Stbd Ballast Tank	Butterfly 150 mm	Stbd Pipe Tunnel
5	#8 Stbd Ballast Tank	Butterfly 150 mm	Fwd Engine Rm
6	#6c Double Ballast Bottom	Butterfly 150 mm	Stbd Pipe Tunnel
7	Forepeak Tank	Butterfly 150 mm	Fwd Pipe Tunnel
8	Emergency Fire Pump Discharge	Stop Check 250 mm	Fwd Bow Thruster Rm
9	Emergency Bilge Suction	Globe 400 mm	Lower Engine Rm
10	Stbd Healing Pump Discharge	Globe 250 mm	Engine Rm mid-flat
11	Port Healing Pump Discharge	Globe 250 mm	Engine Rm mid-flat
12	Stbd Potable Water Tank Suction	Stop Check 50 mm	
13	Port Potable Water Tank	Stop Check 50 mm	
14	Engine Rm Firm Pump Discharge Manifold Valves (6 Valves)	Gobe 125 mm	Lower Engine Rm

4.0 OWNER FURNISHED MATERIAL / EQUIPMENT / SERVICE

4.1. Seal kits for 9 Nakakita Model NSPIBT 3230 Ballast valves and hydraulic actuators.

5.0 STATEMENT OF WORK REQUIRED

5.9 For all valves identified above, remove valves from piping and transport to shop for inspection and servicing. Disassemble valve to its component parts. Clean all parts for inspection by the Port Engineer.

5.10 For all butterfly valves, build up by welding valve disc and machine true. Renew boot and shaft seal with Owner Furnished spares.

5.11 For globe valves, lap in disc to seat.

5.12 For gate valves, build up by welding gate and guides. Machine to true surfaces.

5.13 Reassemble valves in good order. Hydrostatically test tight to working pressure.

5.14 Return valves to vessel and reinstall all removed valves in good order with new gaskets and stainless steel metric fasteners. All fasteners shall be liberally coated with anti-seize compound prior to installation.

5.15 Valves marked with an asterisk in para 3.0 are fitted with hydraulic actuators. Remove actuators ashore to shop. Disassemble for inspection of all component parts. After completion of any repairs, reassemble in good order with new Owner Furnished seals and O-rings. Return to vessel and reinstall valve as original. Reconnect hydraulic tubing and prove operation.

5.7.1 After disconnecting hydraulic tubing, blank ends to prevent contamination of piping internals.

6.0. NOTES

6.2 None.

Item # 112: TANK INSPECTIONS

1.0 ABSTRACT

1.1. This item describes requirements for internal tank inspections as required for ABS Special Survey.

2.0 REFERENCES/ENCLOSURES

2.1. Capacity Plan

3.0 ITEM LOCATION/DESCRIPTION

3.1 Ballast Tanks

TANK	QUANTITY OF MANHOLE COVERS	FRAME	CAPACITY
FOREPEAK	2 – both in the storeroom under the foc'sle	246-266	943.2
WB WT 1 P	2 – both on the port bulkhead in the UTD	201-246	941.5
WB WT 1 S	2 – both on the stbd bulkhead in the UTD	201-246	941.5
WB 1 C	2 – both on the deck in the UTD	221-240	942.9
WB 2B C	2 – both on the deck in the Tank Top Hold	181-221	232.7
WB 4B C	2 – both on the deck in the Tank Top Hold	141-175	482.4
WB 6 P	2 – both on the deck in the UTD	121-141	617
WB 6 S	2 – both on the deck in the UTD	121-141	633.2
WB 6B C	3 – all on the deck in the Tank Top Hold	101-141	569
WB 7 P	2 – both on the deck in the UTD	101-121	420.2
WB 7 S	2 – both on the deck in the UTD	101-121	420.2
WB WT 8 P	2 – on in the void, one on the deck in the UTD	67-106	285.3
WB WT 8 S	2 – both on the deck on the UTD	67-106	281.2
WB 8 P	2 – both on the deck on the UTD	78-101	387.1
WB 8 S	2 – both on the deck on the UTD	78-101	347
WB 8B C	3 – all on the deck in the Tank Top Hold	69-101	393.6
APT P	1 – in Storeroom A in the engine room	(-6)-20	395.1
APT S	1 – in the passage to the hyd machy spaces	(-6)-20	397.7

4.0 OWNER FURNISHED EQUIPMENT/MATERIAL/SERVICES

4.1. None.

5.0 STATEMENT OF WORK REQUIRED

5.1 General Tank Inspection Requirements

5.1.1 For each ballast tank listed above, Contractor shall open all manhole covers and save aside all nuts for reinstallation of the covers after completion of inspections and repairs, if any.

5.1.2 For each tank, set up and maintain temporary ventilation and lighting in the manholes to adequately ventilate the tanks prior to obtaining chemist certificates for entry and during inspections by the Port Engineer and attending ABS surveyor.

5.1.3 For each tank, hire the services of a certified marine chemist to inspect, test and certify the tanks safe for entry as already covered under a separate item.

5.1.4 The Contractor shall provide at least one person with a radio to stand by each tank manhole at all times while inspectors are climbing inside the tanks.

5.1.5 After each tank is inspected and its condition is deemed satisfactory, or after any repairs and subsequent inspections, thoroughly scale and clean the gasket surfaces. Paint the gasket surfaces with one coat of Amercoat 235 surface tolerant epoxy, or equal, at 5-6 mils dft. Close up all manhole covers in good order with new grommets and manhole cover gaskets.

5.1.6 Clean up all areas around all tank manholes and remove all debris and equipment.

5.2 Special Ballast Tank Instructions

5.2.1 Remove all ballast tank dock plugs from the dry-dock floor and drain the tanks. Note: Plugs shall be tagged and labeled and stored in a safe and secure location until they are ready for re-installation. Flush out all ballast tanks with fresh water to remove all silt and mud from the bottom plating to expose all bottom plating and connections.

5.2.2 After inspections and repairs (if any), docking plugs shall be replaced in good order and verified by the Port Engineer or other KSC representative. Vacuum box test docking plugs prior to undocking.

5.2.3 Fabricate and install new 12” x 3” x 5/16” steel waster plates of uncoated mild steel coupons in accordance with ABS regulations

regarding modified tank inspections. Waster plates shall be stamped with the plate thickness, ABS Maltese Cross, tank number and date of initial installation. Date shall be stamped in format: Day-Month-Year.

5.2.4 Hang the waster plates with 3/16" stainless steel wire rope from the interior staples, clips or rungs inside the top manhole covers as directed by the Port Engineer. Wire ropes shall be cut to fit so that the plates hang approximately twelve inches (12") from the bottom of the tank. The Port Engineer has details of ABS requirements and guidance sketches for installation of the waster plates.

5.2.5 Fill each ballast tank to capacity with fresh water. After the tanks are nearly full, the contractor shall dose each fresh water filled ballast tank with corrosion and bacteriological inhibitors--Nalfleet Potable Water Stabilizer (or equal) as a corrosion inhibitor and Actiplus (or equal) as a biocide. Contractor shall comply with manufacturer's recommendations for proper dosage of the corrosion and bacteriological inhibitors. Tank capacities are listed in the reference tables above.

5.2.6 Provide the services of a tank cleaning company to diesel wash and gas free these tanks to a "safe for man/safe for hot work" condition.

6.0 NOTES

6.1 Contractor shall not close any tanks until authorized by the Port Engineer.

6.2 The Port Engineer must witness placement of the waster plates and chemicals in the ballast tanks. Authorization to close ballast tanks will not be granted until these items are verified. If the tanks are closed prematurely, the contractor will be asked to open them back up to demonstrate the waster plates and the Contractor will be required to dose the tanks again.

Item # 113 SOUNDING TUBE & PNEUMERICATOR TUBE REPAIR

1.0 ABSTRACT

1.1. This item describes the requirements to replace corroded sounding and pneumericator piping found in Ballast tanks and Fuel tanks.

2.0 REFERENCES/ENCLOSURES

2.1 None

3.0 ITEM LOCATION/DESCRIPTION

3.1. Location: To be determined

3.2 Quantity: For Bid purposes

4.0 OWNER FURNISHED EQUIPMENT/MATERIAL/SERVICES

4.1. None.

5.0 STATEMENT OF WORK REQUIRED

5.1 Survey of all ballast tanks and fuel tanks will have been accomplished prior to the vessel's arrival.

5.2 Crop and renew the sounding tube or pneumericator tube piping in each of four ballast tanks. Each tube is 60 feet of 2" schedule 40 pipe, located inside the tank. Staging from tank bottom will be required. Review 5 pipe support buckets in each tank. All connections to be welded.

5.3 All surrounding coating shall be protected while burning and welding in the tanks. Any coating damaged by the Contractor shall be repaired at the Contractor's expense.

5.4 Blast and coat all new material with two coats of Amercoat 235,or equal.

6.0 NOTES

6.1 None.

Item # 114: STABILIZERS (PORT/STBD) – SEAL CHANGE OUT

1.0 ABSTRACT

1.1. This item describes the support required for inspection and seal replacement to the port and stbd gyro fin stabilizers by a Sperry field service engineer.

2.0. REFERENCES/ENCLOSURES

2.1 Vessel Technical Manual 1-109

3.0. ITEM LOCATION/DESCRIPTION

3.1. Sperry Gyrofin Remote R1
Fin Size – 3R
440V; 60 Hz

4.0. OWNER FURNISHED EQUIPMENT/MATERIAL/SERVICES

4.1. Sperry Field Service Engineer

4.2. Replacement Seals

5.0. STATEMENT OF WORK REQUIRED

5.1 Furnish labor to work under the supervision of the Owner Furnished Sperry Service technician to open out the Port and Starboard fin stabilizers for examination and seal change out.

5.2 Ship's crew will deploy port and stbd fins in support of this work.

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5.3 Provide staging around the underside of each Fin to gain access to the housing area. Provide temp lighting will be needed inside thruster space and a clean-up crew to mop up the existing water/oil before the seals can be changed inside

5.4 With fins opened out, water blast the area around the Fin Housing remove all of the associated sea growth.

5.5 There are seals both Outside the ship and Inside where the same procedure is repeated. The seal is several layers of a V type packing material

5.6 Provide four outside machinists as well as manlifts and/or scaffolding to change out both the inner and outer rubber seals on both port & stbd stabilizers with Owner furnished spare seals. For bidding purposes, assume six 10 hour days will be required to complete this work.

5.7 The close up inspection doors with new Owner Furnished O-rings are to be fitted on the inspection doors 8mm metric. Sperry Rep will fabricate rings in Dry Dock and install.

5.8 As part of this repair, Contractor is to change out the Hydraulic Oil from the Machinery HPU (200 gal) per stabilizer with Owner Furnished Castrol 220 hydraulic oil. Sea Valves removed under a separate item can provide means of draining the old oil and pump the new Hydraulic oil up & in from the dry-dock floor. Renew the Strainers and Filters in each HPU. With Owner Furnished spares.

5.9 After completion of seal change out, renew the oil in the head tanks with Hydrox 550, Contractor Furnished. Approx. 200 gallons total will be required. The old Hydraulic oil will need to be drained off from the Housing outside the ship in the dry-dock. An oil tank with open top shall be provided to drain old oil. PUMP out the remaining Hydraulic oil from the housing into the tank. Allow 2 men per side, 1 day per side

5.10 Open the HPU oil cooler on each stabilizer for cleaning. Disconnect salt water piping (union connection) and unbolt cooler heads. Thoroughly clean by flushing with water all tubes. Reassemble as original and working pressure hydro to prove tight.

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6.0. NOTES

6.1 None

Item # 115: <u>THRUSTERS (BOW/STERN) INSPECTION SUPPORT</u>

1.0 ABSTRACT

1.1. This item describes the support required for inspection of the bow and stern thruster.

2.0 REFERENCES/ENCLOSURES

2.1 None

3.0 ITEM LOCATION/DESCRIPTION

3.1. Type: Mitsubishi-KaMeWa Side Thrusters

3.2 Quantity: 2 (one bow thruster and one stern thruster)

3.2.1 Bow Thruster: FR 241-245 (P/S)

3.2.2 Stern Thruster: FR 23-27 (P/S)

3.3 Propellers: 2400 mm dia; 257 rpm when 1:1190 rpm of motor; 4 blades; stainless steel casting.

4.0 OWNER FURNISHED EQUIPMENT/MATERIAL/SERVICES

4.1. KaMeWa Field Service Engineer

4.2. Seals and O-rings

5.0 STATEMENT OF WORK REQUIRED

5.1 Provide a telescopic manlift and driver to lift the KaMeWa Field Service Engineer, Port Engineer and other interested parties up to the bow and stern thruster tunnels for inspections.

5.2 Provide temporary lighting inside the thruster tunnels as required by the KaMeWa Field Service Engineer so he can carry out his inspections.

5.3 **NEED TEST FROM CHRIS KEEFE.**

5.4 Provide six (6) outside machinists to support the KaMeWa Field Service Engineer in various maintenance and inspections routines, including but not limited to the following:

5.4.1 Remove the cone of the gear casing. Clean and inspect the gearing and bearings.

5.4.2 Lock the propeller blades by driving wooden wedges between the blades and the tunnel. Check driving shaft unit backlash. Provide a Condition Report to the Port Engineer.

5.4.3 Replace thruster seals under direction of KaMeWa Field Service Engineer with Owner Furnished seals

5.4.4 After inspections, close up the gear casing fairing covers in good order. All bolts and fasteners shall be locked by means of locking wire and/or welding as original.

6.0 NOTES

6.1 Allow for six machinists to support the KaMeWa Field Service Engineer for five (5) 10 hour days.

Item # 116: MARINE SANITATION DEVICE (MSD) CLEANING & REPAIRS

1.0 ABSTRACT

1.1. This item describes cleaning and repairs to be accomplished to the marine sanitation device (MSD).

2.0 REFERENCES/ENCLOSURES

2.1 None

3.0 ITEM LOCATION/DESCRIPTION

3.1 Sasakura Hamworthy - Sewerage Treatment Plant: Engine Room Mid Flat Aft

3.2 Model: Super Trident ST- 6 (U.S.C.G. Certificate # 159.15/1035/3/II)

4.0 OWNER FURNISHED EQUIPMENT/MATERIAL/SERVICES

4.1. None

5.0 STATEMENT OF WORK REQUIRED

5.1 Prior to commencement of repairs, ship's crew will isolate piping and open electrical connection observing applicable lockout / tagout procedures.

5.2 Unbolt and remove flanged section of 32mm-fill pipe and set aside for reuse. Furnish suitable hose with flanged connection and connect filling connection to sewage vacuum truck. Individually empty aeration settling and sterilization compartments. With vacuum truck still connected, open the following access plates and hose down MSD internal.

Four (4) each	Manhole Access Plates	23" Diameter
One (1) each	Settling Compartment Access	18" x 24"
Three (3) each	Top Access Covers	6" Diameter
Three (3) each	Top Access Covers	10" Diameter

5.3 Thoroughly clean and disinfect MSD internals including all internal components and piping. Evacuate cleaning slops and dispose of all waste in accordance with all federal, state and local regulations.

5.4 Make sketch or photographic record of placement of internals for replacement as original. Remove available internal components as listed below:

- Four (4) Styrene air diffusers
- Four (4) Diffuser downpipes
- Three (3) Air lift tubes
- Ten (10) Flex hoses with couplings
- One (1) Skimmer assembly
- One (1) Aeration section screen
- One (1) Chlorination section screens

Care to be taken in removal and replacement of internals, as many components are fragile.

5.5 After all accessible internals have been removed, set up and protect all non-removed internals for sandblasting. Furnish and install sandblast containment to prevent grit from being blown outside of immediate area. Sandblast MSD internals and all removable cover internals of all defective coating. After sandblasting, make internals available for inspection by the Chief Engineer.

5.6 Apply two (2) full coats of Amercoat 236, or equal, on all internal and all removal cover internals.

5.7 Reinstall all MSD internals in good order as original.

5.8 Upon approval of the Chief Engineer, close up all access covers in good order with new gaskets and 316 stainless steel metric fasteners. Replace the fill pipe in good order with new gaskets and stainless steel metric fasteners.

5.9 The crew will restore piping lineup and electrical power sources.

6.0 NOTES

6.1 None.

Item # 117: SWITCHBOARD & CONSOLE CLEANING & MAINTENANCE

1.0 ABSTRACT

1.1. This item describes cleaning and maintenance to be accomplished inside the main and emergency switchboards, 220V distribution panel, engine control console and navigation bridge consoles.

2.0 REFERENCES/ENCLOSURES

2.1 None

3.0 ITEM LOCATION/DESCRIPTION

3.1. Main Switchboard: Engine Room Control Room
3.2. 220V distribution panel: Engine Room Control Room
3.3. Engine Room Console: Engine Room Control Room
3.4. Emergency Switchboard: Emergency Generator Room, First Deck Port Side

4.0 OWNER FURNISHED EQUIPMENT/MATERIAL/SERVICES

4.2. None

5.0 STATEMENT OF WORK REQUIRED

5.1 Provide temporary lighting as covered elsewhere in these specifications in transit and escape areas and in work areas to accommodate work requirements while the vessel is in an intentional blackout situation.

5.2 Upon approval of the Port Engineer, open the shore power breakers to kill shore power to the vessel.

5.3 Open all of the front and/or back access panels on the switchboards, distribution panel and consoles as specified in para 3.0.

5.4 Thoroughly dust and vacuum inside the switchboards, distribution panel, and consoles to remove all dust, dirt and debris.

5.5 Check and tighten all electrical components inside the switchboards, distribution panel and consoles, including but not limited to bus bars, breakers, relays, etc.

5.6 After completion of work and upon approval of the Port Engineer, close up all switchboard and console access covers in good order.

5.7 Upon approval of the Port Engineer and shipboard engineers, restore shore power to the vessel.

6.0 NOTES

6.1 Switchboard, distribution panel and console cleaning shall be accomplished during non-regular working hours to avoid delays and disruption to other jobs onboard.

Item # 118: FOREPEAK TANK DAMAGE REPAIRS

1.0 ABSTRACT

1.1. Make steel repairs in way of damaged areas of the forepeak tank on the bulbous bow.

2.0 REFERENCES/ENCLOSURES

2.1 None

3.0 ITEM LOCATION/DESCRIPTION

3.5. Forepeak tank/bulbous bow

4.0 OWNER FURNISHED EQUIPMENT/MATERIAL/SERVICES

4.3. None

5.0 STATEMENT OF WORK REQUIRED

5.1 Open two bolted manhole covers in the bosun's storeroom under the forecastle dock leading to the forepeak tank.

5.4 Provide and maintain adequate ventilation and lighting to provide safe access into the forepeak and bulbous bow.

5.5 Crop and renew a section of 21.5 mm shaped plate on the bulbous bow, approx. 2'-3" x 1'-6" in size, located to the port side of the centerline swash bulkhead between breast hooks Nos. 4 and 5.

5.6 With the shell plating removed, fair the slight distortion in the swash bulkhead.

5.7 Repair will require staging inside the bulbous bow and on the exterior from the dry-dock floor.

5.8 Prove bulbous bow plating tight to Port Engineer and ABS Surveyor. Assume that either soap and water test or vacu7um box will be satisfactory.

5.9 After repairs are complete, mechanically clean disturbed areas and coat as per part of hull coating item.

5.10 Close up manhole cover in good order.

6.0 NOTES

6.1 None.

Item # 119: <u>UNDERWATER HULL PRESERVATION</u>

1.0. ABSTRACT

1.1. This item describes the requirements to wash down, blast and paint the entire under water hull from the keel to the deep load line (including the stern shelf over the propeller, sea chests, thruster tunnels (bow/stern), stabilizer housings (port/stbd) and rudder).

2.0. REFERENCES/ENCLOSURES

2.1. MARAD Coating Guidelines through Rev. 04 dated 01 November 1993 including Attachments 2 and 3 Revised 25 October 1993.

2.2. General Arrangement Drawing No. 573-S9-0-1 Rev 3.

2.3. Paint Schedule (existing paint scheme).

3.0. ITEM LOCATION/DESCRIPTION/QUANTITY:

3.1. Underwater hull from the keel to the Deep load line (including the stern shelf over the propeller, sea chests, thruster tunnels (bow/stern), stabilizer housings (port/stbd), and rudder). Approximately 94,500 square feet (78,000 sq. ft. on the bottom plus 16,500 sq. ft. on the boot top).

4.0. OWNER FURNISHED EQUIPMENT/MATERIAL/SERVICES

4.1. The paint representative is owner furnished.
4.2. All coating products will be owner furnished.

5.0. STATEMENT OF WORK REQUIRED

5.1 Provide all labor, material and equipment, remove and replace interferences, rig and unrig, stage and unstage, make all disassemblies and subsequent reassemblies to accomplish complete underwater preservation. Provide, erect and unerect staging and/or provide suitable alternative means (telescopic lifts, scissors lift, etc.) required for proper working conditions and inspections. Provide and maintain adequate lighting throughout the course of all cleaning, blasting, coating and inspection activities.

5.2 Insure that the vessel’s equipment is protected from damage from blasting dust and paint. Plug open ends of pipes, vents and ducts.

Install protective coverings on all fittings and appendages including but not limited to transducers, propeller, exposed shafting, thruster propellers and stabilizer seals.

5.2.1 The forward depth sounder transducer is at FR 256-257 under the bulbous bow.

5.2.2 The aft depth sounder transducer is at FR 66-67 on the port side.

5.2.3 The two (2) speed log transducers are located at FR 255-256 under the bulbous bow.

5.3 Plug all deck scuppers and shell penetrations as required to prevent any water from reaching the freshly coated hull. Overboard discharges for services which cannot be curtailed, such as reefer cooling water overboard, shall be carried off by means of temporary scuppers, hoses, etc., in order to prevent recontamination of the hull after surface preparation.

5.4 Protective covering shall be inspected at regular intervals, but not less than at the start of each work shift. Degraded protective covering shall be repaired prior to the restart of work.

5.5 An inspection team composed of the owner's representative, port engineer and contractor's representatives shall make a joint inspection of the underwater hull to identify areas of bare metal, blistered, cracked, peeling paint or paint which is otherwise deteriorated. In addition, visual inspection of the entire underwater hull shall be carried out jointly to assess the overall condition of the coating system. Square footage of the area thus identified shall be spot abrasive blasted to SSPC-SP-6 as specified in 5.12. Digital still and video pictures shall be taken to depict the condition.

5.6 Record all of the ship's markings, including information, size, color and location.

5.7 Immediately upon drydocking, high-pressure wash the entire hull from the keel to the deep load line with fresh water at a minimum of 8,000 psi (at the nozzle, 20 to 30 degree angle nozzle held at 12 to 18 inches from the surface being blasted), including all appendages including but not limited to sea chests, strainer plates, bilge keels, rudder, thruster tunnels (bow/stern), stabilizers and stabilizer housings (port/stbd) to remove existing marine growth/slime, grass, tube worms, barnacles, sodium chloride deposits, loose and defective paint, anti-foulant related depletion layer and other

surface contaminants. Note: Remove all of the mud from inside the sea chests and stabilizer housings.

5.8 Hand-scrape all areas where high-pressure water will not remove marine growth remnants/residuals. Allow for 1,000 square feet for hand scraping. High-pressure wash all scraped areas with fresh water in accordance with 5.7 above.

5.9 Remove existing oil/grease contamination, utilizing water-borne, biodegradable emulsifier. Allow for 1,000 square feet for chemical cleaning in accordance with the Steel Structures Painting Council Surface Preparation Standard SSPC-SP1, “Chemically Cleaned”, sixth edition dated September 1991. High-pressure wash all chemically cleaned areas with fresh water (minimum 1,200 psi at the nozzle) to adequately remove emulsifier residuals.

5.10 Upon completion of fresh water washing of the hull, all surfaces shall be allowed to dry.

5.11 Assure dry surface conditions.

5.12 Abrasive blast all corrosion affected, film integrity deficient and marine growth remnants related areas in accordance with existing SSPC-SP-6. Lightly ‘feather-edge’ perimeter of adjacent coating system and assure minimum 2.0 mils surface profile. Allow for 4,000 square feet for abrasive blasting.

5.13 Prior to the application of any coating, the area to be painted shall be inspected and approved by the owner’s representatives. This includes not only the initial coat of paint, but all subsequent coats as well.

5.13.1 Paint material shall be stored within the paint manufacturer’s recommended temperature range. When paint material is being applied, ensure that the material’s temperature is within the manufacturer’s recommended range, but in any case, not less than 70 deg. F.

5.13.2 Ensure the following conditions are met prior to painting:

5.13.2.1 Surfaces shall be clean, dry, free of oil, grease or residue from abrasive blasting.

5.13.2.2 Air & metal surface temperatures shall be within the range published by the paint manufacturer.

5.13.2.3 The ambient air and metal temperatures register at least 5 deg. F above the dew point temperature.

5.13.2.4 The relative humidity is no higher than 80 percent without prior written approval of the owner's representative for each case.

5.13.2.5 No coating shall be applied at temperatures below 35 deg. F without prior written approval of the owner's representative for each case.

5.13.2.6 No painting shall be performed between the hours of 1900 and 0800 without prior written approval of the owner's representative for each case.

5.13.2.7 Any overspray shall be removed prior to the application of the next coat of paint in the system.

5.14 No deviations from the coating manufacturer's instructions for coating will be permitted.

5.15 Blow down the entire underwater hull, utilizing clean, dry, high-pressure air supplies. Assure clean and dry surface conditions prior to coatings applications.

5.16 Contractor shall apply all coating systems, as per reference 2.1, to entire underwater surfaces and appendages from the keel to the deep load line with proper curing time adhered to between coats. The boot-top final color is to be Black. Apply the following coatings to the underwater hull as stated below:

5.16.1 Light Load Line to Flat Keel

In way of blasted and abraded areas, apply one touch up coat of red (base red oxide) surface tolerant high solids epoxy, at 4-6 mils dry film thickness and a second touch up coat of gray oxide surface tolerant high solids epoxy, at 4-6 mils dry film thickness over the entire area.

In way blasted and abraded areas, apply one touch up coat of black scrubbable, non TBT, copper base anti-fouling paint, at 2-3 mils dry film thickness.

5.16.1.1

Spray-apply one (1) full coat of black ABC #3 controlled ablative, non-TBT, copper based AF, or equal, at 4-6 mils dry film thickness.

Spray-apply one (1) full coat of red ABC #3 controlled ablative, non-TBT, copper based AF, or equal, at 4-6 mils dry film thickness.

Spray-apply one (1) full coat of black ABC #3 controlled ablative, non-TBT, copper based AF, or equal, at 4-6 mils dry film thickness

5.16.2 Boot-top Area from Light Load Line to Deep Load Line –

5.16.2.1 In way of blasted and abraded areas, spray-apply one (1) coat of red (base red oxide) Amercoat 235 surface tolerant high solids epoxy, or equal, at 4-6 mils dry film thickness and a second coat of coat of gray Amercoat 235 surface tolerant high solids epoxy, or equal, at 4-6 mils dry film thickness.

5.16.2.2 In way of blasted and abraded areas, spray-apply one (1) coat of black Amercoat 214 scrubbable, or equal, non TBT, copper base anti-fouling paint at 2-3 mils dry film thickness.

5.16.2.3 Spray-apply one (1) full coat of black, Amercoat 214 scrubbable or equal, at 4-6 mils dry film thickness to the entire boot top areas,

5.17 In connection with draft marks, plimsol marks, frame identifications and other marking related requirements, brush-apply two (2) coats of white Amercoat 229, or equal. Restore all hull markings. Neatly cut in the deep load line.

5.18 Remove all protective coverings and re-install all interferences. Remove any paint which has adhered to any normally unpainted areas.

5.19 Deliverables.

5.19.1 The contractor shall provide a copy of the report prepared noting the condition of the underwater hull.

Item # 120: <u>UNDERWATER WELDING</u>

1.0 ABSTRACT

1.1 This item describes the re-welding of defective welds on the vessel's hull and corroded areas on the rudder.

2.0 REFERENCES/ENCLOSURES

2.1 None.

3.0 ITEM LOCATION / DESCRIPTION

3.1 Vessel's bottom, bilge keel, side shell and/or rudder butt and seam.

4.0 OWNER FURNISHED EQUIPMENT/MATERIAL/SERVICES:

4.1 None.

5.0 STATEMENT OF WORK REQUIRED

5.1 Contractor shall "vee" out by arc gouging and re-weld approximately 400 linear feet of defective multipass butt welds located on the bottom shell plate, bilge keel, side shell plate and/or rudder butts and seams as directed.

5.2 Sandblast to bare metal and clad weld approximately 10 square feet of corroded metal on the rudder. Port Engineer will designate areas requiring clad welding to restore metal thickness.

Note: Any change in length to be pro-rated.

6.0 NOTES

6.1 Rudder is staged for inspection/repairs under a separate item in these specifications.

6.2 This item shall be accomplished prior to the hull & freeboard coatings' items of these specifications.

6.3 Exact locations of seams requiring welding repairs must be well

defined prior to repairs; Vessel has double bottom fuel tanks.

6.4 Any change in length will be priced pro rata based on the bid price.

Item # 121: FREEBOARD CLEANING AND PAINTING

1.0. ABSTRACT

1.1. This item describes the requirements to high-pressure wash down and paint the entire freeboard of the vessel from the deep load line to the top of the rail (including the stern area (shelf) in way of the stern ramp).

2.0. REFERENCES/ENCLOSURES

2.4. MARAD Coating Guidelines through Rev. 04 dated 01 November 1993 including Attachments 2 and 3 Revised 25 October 1993.

2.5. General Arrangement Drawing No. 573-S9-0-1 Rev 3.

2.6. Paint Schedule (existing paint scheme).

3.0. ITEM LOCATION/DESCRIPTION/QUANTITY:

3.2. Approximately 80,000 square feet to be dealt with.

4.0. OWNER FURNISHED EQUIPMENT/MATERIAL/SERVICES

4.3. The paint representative is owner furnished.
4.4. All coating products will be owner furnished.

5.0. STATEMENT OF WORK REQUIRED

5.20 Provide all labor, material and equipment, remove and replace interferences, rig and unrig, stage and unstage, make all disassemblies and subsequent reassemblies to accomplish complete hull preservation. Provide, erect and unerect staging and/or provide suitable alternative means (telescopic lifts, scissors lift, etc.) required for proper working conditions and inspections. Provide and maintain adequate lighting throughout the course of all cleaning, blasting, coating and inspection activities.

5.21 Plug all deck scuppers and shell penetrations as required to prevent any water from reaching the freshly coated hull. Overboard discharges for services which cannot be curtailed, such as reefer cooling water overboard, shall be carried off by means of temporary

scuppers, hoses, etc., in order to prevent recontamination of the hull after surface preparation.

5.22 Protective covering shall be inspected at regular intervals, but not less than at the start of each work shift. Degraded protective covering shall be repaired prior to the restart of work.

5.23 An inspection team composed of the owner's representative, port engineer and contractor's representatives shall make a joint inspection of the hull to identify areas of bare metal, blistered, cracked, peeling paint or paint which is otherwise deteriorated. In addition, visual inspection of the entire hull shall be carried out jointly to assess the overall condition of the coating system. Square footage of the area thus identified shall be spot abrasive blasted to SSPC-SP-6. Digital still and video pictures shall be taken to depict the condition.

5.24 Record all of the ship's markings, including information, size, color and location.

5.25 High-pressure wash the entire freeboard from the deep load line to the rail (including the stern area (shelf) in way of the stern ramp) with fresh water at a minimum of 8,000 psi (at the nozzle, 20 to 30 degree angle nozzle held at 12 to 18 inches from the surface being blasted), to adequately remove existing slime, sodium chloride deposits, loose and defective paint and chalk formation.

5.26 Remove existing oil/grease contamination, utilizing water-borne, biodegradable emulsifier. Allow for 500 square feet for chemical cleaning in accordance with the Steel Structures Painting Council Surface Preparation Standard SSPC-SP-1, "Chemically Cleaned", sixth edition dated September 1991. High-pressure wash all chemically cleaned areas with fresh water (minimum 3,000 psi at the nozzle) to adequately remove emulsifier residuals.

5.27 Upon completion of fresh water washing of the hull, all surfaces shall be allowed to dry.

5.28 Assure dry surface conditions.

5.29 Abrasive blast all corrosion affected, film integrity deficient and marine growth remnants related areas in accordance with existing SSPC-SP-6 Near-White Metal Standards. Lightly 'feather-edge' perimeter of adjacent coating system and assure minimum 2.0 mils surface profile. On the CAPE KENNEDY, allow for 10,000 square feet for abrasive blasting.

5.30 Prior to the application of any coating, the area to be painted shall be inspected and approved by the owner's representatives. This includes not only the initial coat of paint, but all subsequent coats as well.

5.30.1 Paint material shall be stored within the paint manufacturer's recommended temperature range. When paint material is being applied, ensure that the material's temperature is within the manufacturer's recommended range, but in any case, not less than 70 deg. F.

5.30.2 Ensure the following conditions are met prior to painting:

5.30.2.1 Surfaces shall be clean, dry, free of oil, grease or residue from abrasive blasting.

5.30.2.2 Air & metal surface temperatures shall be within the range published by the paint manufacturer.

5.30.2.3 The ambient air and metal temperatures register at least 5 deg. F above the dew point temperature.

5.30.2.4 The relative humidity is no higher than 80 percent without prior written approval of the owner's representative for each case.

5.30.2.5 No coating shall be applied at temperatures below 35 deg. F without prior written approval of the owner's representative for each case.

5.30.2.6 No painting shall be performed between the hours of 1900 and 0800 without prior written approval of the owner's representative for each case.

5.30.2.7 Any overspray shall be removed prior to the application of the next coat of paint in the system.

5.30.2.8 Complete a Daily Report Form in accordance with reference 2.5 daily and submit to the owner's representative.

5.31 No deviations from the coating manufacturer's instructions for coating will be permitted.

5.32 Blow down the entire hull, utilizing clean, dry, high-pressure air supplies. Assure clean and dry surface conditions prior to coatings applications.

5.33 Contractor shall apply all coating systems, as per reference 2.1, to the entire freeboard surfaces from the deep load line to the rails with proper curing time adhered to between coating applications. Apply the following coatings to the hull as stated below:

5.33.1 In way of blasted and abraded areas, spray-apply two (2) touch-up coats of the two-component, surface tolerant, volatile organic compound compliant, overcoat interval friendly polyamide epoxy, base red oxide and gray, – first coat red, second coat gray, at 5.0 mils dry film thickness each coat.

5.33.2 Spray-apply to entire area one (1) full coat of a two-component overcoat interval friendly haze gray urethane, at 2 mils dry film thickness.

5.34 In connection with vessel name, hailing port, draft numbers, plimsol marks, deck line, frame identifications, flotation marks and other marking related requirements, brush-apply two (2) coats of the two-component, overcoat interval friendly aliphatic urethane gloss enamel black series, or equal. Neatly cut in the freeboard with the deep load line.

5.35 Remove all protective coverings and re-install all interferences. Remove any paint which has adhered to any normally unpainted areas.

5.36 Deliverables.

5.36.1 The inspection report the contractor made for the light load line to the rail.

Item # 122: STACK PAINTING

1.0 ABSTRACT

1.1. This item describes the requirements to recoat the MARAD stack insignia.

2.0 REFERENCES/ENCLOSURES

2.2 None

3.0 ITEM LOCATION/DESCRIPTION

3.1. Location: Exhaust stack, Bridge Deck of Aft house

3.2 Quantity: One

4.0 OWNER FURNISHED EQUIPMENT/MATERIAL/SERVICES

4.1. All paints and thinners to be Owner Furnished Ameron products.

5.0 STATEMENT OF WORK REQUIRED

5.1 Supply lift baskets or scaffolding to safely and completely access the stack “rings” approx 35 to 40 feet above bridge deck. (4 feet below top of stack).

5.2 Rinse and clean the upper stack area (approx 1,000 sq. ft.) with clean, fresh water. Thoroughly clean the stacks free of all soot and dirt

5.3 Allow the stack surface to dry and then remove all areas (spots) of loose scale / paint, rust and foreign matter by power tool cleaning to SSPC-SP-3. Prime all bare metal areas in light gray primer.

5.4 After the cleaning, preparation and inspection of the stacks, paint the three stack rings in accordance with the schedule below. Each ring is approximately 3 feet wide by 80 feet in circumference.

5.5 Tape off each respective ring. Lightly sand all surfaces prior to applying paint so that new paint will adhere to old coating.

5.5.1 Apply one (1) spot coat of AMERON 240 surface tolerant epoxy at 2-3 mils dft on blasted areas and apply two (2) full coats of AMERON 450H urethane at 2-3 mils dft per coat per ring. Rings to be one each red, white and blue in color.

6.0 NOTES

6.1. Remove any dripped paint from lower stack & deck.

6.2 Use current ring configuration as guide for width and color of each of the 3 rings.

M/V CAPE KENNEDY

DRYDOCKING AND GENERAL REPAIRS