CCGS W.G. George

REFIT 2016

May 18 - June 15, 2016

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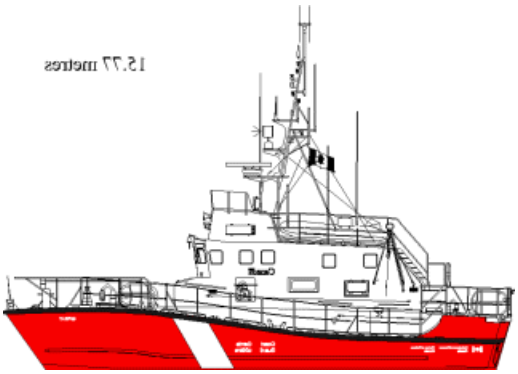

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REFIT PREAMBLE

1. INTENT

The intent of this specification is to describe the necessary work involved in carrying out the ship's Annual Refit. All work specified herein and all repairs, inspections and renewals are to be carried out to the satisfaction of the Owner's Representative and, where applicable, the attending TC Marine Safety Inspector.

2. MANUFACTURER'S RECOMMENDATIONS

The overhaul and installation of all machinery and equipment specified herein shall be in accordance with the manufacturer's applicable instructions, drawings and specifications**.**

3. TESTING AND RECORDS

All test results, calibrations, measurements and readings shall be properly tabulated, compiled and two typewritten copies shall be presented to the Owner's Representative and attending surveyors.

4. WORKMANSHIP

The contractor shall use fully qualified, certified and competent tradesmen and supervision to ensure a uniform high level of workmanship. All work shall be subject to inspection by the Owner's Representative.

5. FACILITIES

Quotation shall include all of the necessary labor and equipment required for the erection of access staging, rigging, lighting, tugs, pilot service, necessary cranes and line handling.

6. MATERIALS AND SUBSTITUTIONS

Unless otherwise specified, all material is to be supplied by the contractor and all materials are to be new and unused. All replacement material in the form of jointing, packing, insulation, small hardware, oils, lubricants, cleaning solvents, preservatives, paints, coatings, etc., shall be in accordance with the equipment manufacturer's drawings, manuals or instructions. Where no particular item is specified, the Owner's representative must approve all material offered.

7. REMOVALS

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Any items of equipment to be removed and subsequently reinstalled in order to carry out work specified or for access to carry out the work specified, shall be jointly inspected for damages prior to removal by both the contractor and Owner's representative.

8. EXPOSURE AND PROTECTION OF EQUIPMENT

The contractor shall provide temporary protection for any equipment or areas affected by this refit. The contractor shall take proper precautions to maintain in a proper state of preservation any machinery, equipment, fittings, stores or items of outfit which might become damaged by exposure, movement of materials, sand grit or shot blasting, airborne particles from sand, grit or shot blasting, welding grinding, burning, gouging, painting or airborne particles of paint. Any damage shall be the responsibility of the contractor. Government furnished equipment and materials shall be received by the contractor and stored in a secure warehouse or storeroom having a controlled environment appropriate to the equipment in accordance with the manufacturer's instructions.

9. LIGHTING AND VENTILATION

Temporary lighting and/or temporary ventilation required by the contractor to carry out any item of this specification shall be supplied, installed and maintained in a safe working condition by the contractor and removed upon the completion of work.

10. CLEANLINESS

The contractor shall at all times maintain the work areas in which his personnel have access in a clean condition and free from debris. Upon completion of this refit, the contractor shall ensure that the vessel is in a clean condition, free from all foreign material in any system or location placed there as a result of this refit. The contractor shall provide adequate temporary protection for any equipment or areas affected by this refit. The contractor shall dispose of any oil and water residue, which accumulates in the machinery space bilge as a result of any refit work detailed in this specification.

11. ASBESTOS

Any and all insulation materials shall be asbestos free and approved for the required application.

12. ENTRY INTO ENCLOSED SPACES

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The contractor shall abide by the Coast Guard Enclosed Space Entry Policy. The policy is listed in the attached Safety Annex as section 7.D.9 and section 7.D.9 (N). Entry certificates shall clearly state the type of work permitted and shall renewed as required by the regulations.

13. HOTWORK

Any item of work involving the use of heat in its execution requires that the contractor advise the owner's representative prior to starting such heating and upon its completion. The contractor shall be responsible for maintaining a competent and properly equipped fire watch during and for one full hour after all hotwork. The fire watch shall be arranged such that all sides of surfaces being worked on are visible and accessible. The contractor shall provide sufficient suitable fire extinguishers and a fire watch during any such heating and until the work has cooled. Ship's extinguishers shall not be used except in an emergency. The Contractor shall abide by the Coast Guard Hotwork Policy. The policy is listed in the attached Safety Annex as section 7.D.11 and section 7.D.11 (N). The contractor shall be responsible to ensure the contractor's personnel including any subcontractors shall follow the policy.

14. WELDING

The primary contractor or subcontractor shall be certified by the Canadian Welding Bureau (CWB) to standard CSA W47.2M 1987, Division I, II or III - Certification of Companies for Fusion Welding of Aluminum. All welding shall be completed using Canadian Welding Bureau (CWB) Certified personnel and equipment. The required CWB certification must be in place for the appropriate material, personnel and process that is associated with this work.

15. SMOKING

The Public Service Smoking Policy forbids smoking in all Government ships in areas inside the ship where shipyard personnel will be working. The contractor shall inform shipyard workers of this policy and ensure that it is compiled with.

16. ELECTRICAL STANDARDS

Any electrical installations or renewals shall be in accordance with the latest editions of the following marine standards:

(a) TP 127E-TC Marine Safety Electrical Standards.

(b) IEEE Standard 45 - Recommended Practice for Electrical Installation on Shipboard.

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If any cable installed within this contract is found to be damaged, shorted or opened as a result of the manner of installation, the entire length of cable shall be replaced and installed at no cost to the Department. Plastic tie-wraps may be used to secure wiring in panels or junction boxes only.

17. DRAWINGS

All drawings and drawing revisions that the contractor is requested to do in the execution of this contract shall be of a quality equal to that of the drawings that are requested to be

updated. For example, drawings that have been lettered and dimensioned in a professional manner shall not to be updated using freehand. Prints and copies that a contractor is required to provide shall be made on one piece of paper.

18. TRANSDUCERS

The contractor shall not paint the transducers and all transducers shall be afforded the necessary protection during hull cleaning, blasting, burning, welding and coating operations.

19. OWNER'S REPRESENTATIVE

Throughout this document, there is made reference to the Owner's Representative. For the purpose of this document, the Owner's representative is defined as the Chief Engineer of the Vessel, or in lieu of his/her presence, the Project Engineer, Small Vessels can be assumed to be the Owner's representative.

20. SEA TRIALS

Prior to the completion of the refit, the vessel shall proceed on a one–hour sea trail with the Contractor's Representative on board. Results of the sea trail shall be documented by the Chief Engineer. Any noted deficiencies during the trial will be addressed.

VESSEL CHARACTERISTICS:

SHIP PARTICULARS:

DISPLACEMENT .....…… 27.5 Tonnes

LENGTH OVERALL…… 15.77M (51' 9")

BEAM.....…… 5.18M (17'.)

FRAME SPACING…… Frame 0-3. 535mm (21")

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Frame Spacing: **Frame 3-7. 575mm (23")**

Frame 7-23 650mm (25-1/2")

Spec item #: HD-01	**SPECIFICATION**	TCMSB Field #:
HD-01 SERVICES		

HD-01 SERVICES
Part 1: SCOPE:

1.1 The intent of this specification shall be to have the contractor provide services to the vessel while in dry-dock and afloat during the complete refit period and disconnected on termination of refit. Contractor shall supply all material to the point of onboard connection

1.2 This work shall be carried out in Conjunction with the following: Dry-docking

Part 2: REFERENCES:

2.1 Guidance Drawings/Nameplate Data

2.1.1 N/A

2.2 Standards

2.2.1 N/A

2.3 Regulations

2.3.1 N/A

2.4 Owner Furnished Equipment

2.4.1 The contractor shall supply all materials, equipment, and parts required to perform the specified work unless otherwise stated.

Part 3: TECHNICAL DESCRIPTION:

3.1 General

3.1.1 Contractor shall provide all the labor and material for the rigging of one contractor supplied boarding gangway complete with safety net and two handrails The gangway shall be illuminated for safe use at night and shall be fitted to the satisfaction of the Commanding Officer.

3.1.2 Contractor shall provide electrical shore power of 240 volts ac single phase100 amp. Contractor shall supply the power to the ship and connect from single-phase isolation transformer to 240/120 volt panel via the shore power plug. Contractor shall quote on supplying 2000 kilowatt hours and provide quote per additional kilowatt hour. Contractor shall include in quote to supply and install shore power meter for ships only use during the refit period .Total kilowatt hours will be adjusted up or down by 1379 action at the conclusion of the refit. Meter readings shall be witnessed by owner rep. and contractor prior to connection and upon disconnection of the service

3.1.3. Contractor shall provide fire protection for the vessel in the form of one hose 1 ½ inches in diameter, complete with approved fire nozzle, connected to a fully operable fire hydrant. The hose shall be long enough to reach all parts of the vessel. The hydrant shall have a wrench fitted at all times during the refit period.

3.1.4. Contractor shall provide a suitable garbage container and empty it when it reaches 75% full. The contractor shall remove all refuse daily from the ship including all scale and sludge from tanks.

3.1.5. Contractor shall quote on the disposal of 200 litres of oily water mixture from tanks and bilges. The contractor shall quote cost per each additional 50 litre. The contractor shall retain the services of a qualified disposal agent that shall comply with all provincial laws and provide certification of proper disposal.

3.1.6. Contractor shall supply and install deck protection Flooring Mask or equivalent to protect interior decks for the duration of the refit. The deck area is approximately 7.5 square meters.

3.1.7. Contractor shall provide access for the vessels crew to washroom facilities including flush toilets and washbasins with hot and cold running water

3.1.8. Contractor shall provide a location for use as an office by the Chief Engineer. The office shall be equipped with a desk and office style chair. The office shall be equipped with a phone. The office shall be equipped with a computer with internet and a printer (Windows 98 or higher). Contractor shall provide access to a fax machine.

3.1.9. The successful bidder shall prepare and present a plan which outlines what action(s) will be taken in the event of a fire or unauthorized access. Contractor shall present this plan to Public Works Contracting Officer and Chief Engineer prior to start of refit period. Contractor shall include all costs for providing this plan in price.

3.1.10. At the end of the refit the contractor shall clean the vessel (bilge, decks, deck heads, bulkheads and all equipment) to the satisfaction of the owner's rep.

3.2 Location

3.2.1 N/A

3.3 Interferences

3.3.1 Contractor is responsible for the identification of interference items, their temporary removal, storage and refitting to vessel.

Spec item #: HD-01	**SPECIFICATION**	TCMSB Field #:
HD-01 SERVICES		

Part 4: PROOF OF PERFORMANCE:

4.1 Inspection

4.1.1 All work shall be completed to the satisfaction of the Chief Engineer.

4.2 Testing

4.2.1 N/A

4.3 Certification

4.3.1 N/A

Part 5: DELIVERABLES:

5.1 Drawings/Reports

5.1.1 N/A

5.2 Spares

5.2.1 N/A

5.3 Training

5.3.1 N/A

5.4 Manuals

5.4.1 N/A

Spec item #: HD-02	**SPECIFICATION**	TCMSB Field #:
HD-02 PRODUCTION CHART		

HD-02 PRODUCTION CHART

Part 1 - SCOPE

1.1 The intent of this specification shall be to have contractor provide a bar chart showing the start and completion dates for each item of work.

1.2 This work shall be carried out in Conjunction with the following:

Part 2: REFERENCES:

2.1 Guidance Drawings/Nameplate Data

2.1.1 N/A

2.2 Standards

2.2.1 N/A

2.3 Regulations

2.3.1 N/A

2.4 Owner Furnished Equipment

2.4.1 The contractor shall supply all materials, equipment, and parts required to perform the specified work unless otherwise stated.

Part 3: TECHNICAL DESCRIPTION:

3.1 General

3.1.1. The successful contractor shall supply a detailed bar chart showing the planned work schedule for the ships refit. These bar charts shall be provided to Public Works contracting Officer and Vessel Maintenance Manager 48 hours after the successful contractor is notified. The bar charts shall show for each specific item, the start date, the manpower loading, the duration and the completion date.

3.1.2. The bar charts shall be updated weekly to reflect the actual production on the refit and changes to the anticipated completion dates of each individual specification item.

3.1.3. Three copies of each weekly update shall be given to the Chief Engineer prior to each weekly production meeting. A copy shall be emailed to the VMM weekly.

3.1.4. Contractor shall include on the updates to the production chart any work arising from PWGSC 1379 action and indicate how the additional work will impact the completion schedule for the vessel.

3.2 Location

3.2.1 N/A

3.3 Interferences

3.2.1. Contractor is responsible for the identification of interference items, their temporary removal, and storage and refitting to vessel.

Part 4: PROOF OF PERFORMANCE:

4.1 Inspection

4.1.1. All work shall be completed to the satisfaction of the Chief Engineer.

4.2 Testing

4.2.1 N/A

4.3 Certification

4.3.1 N/A

Part 5: DELIVERABLES:

5.1 Drawings/Reports

5.1.1 N/A

5.2 Spares

5.2.1 N/A

5.3 Training

5.3.1 N/A

5.4 Manuals

5.4.1 N/A

Spec item #: HD-03	**SPECIFICATION**	TCMSB Field #:
HD - 03 DRY DOCKING		

HD-03 DRY DOCKING

Part 1: SCOPE:

1.1 The intent of this specification shall be to have contractor provide all equipment and services necessary to safely dock and undock the vessel.

Part 2: REFERENCES:

2.1 Guidance Drawings/Nameplate Data

2.1.1 N/A

2.2 Standards

2.2.1 N/A

2.3 Regulations

2.3.1 N/A

2.4 Owner Furnished Equipment

2.4.1 Contractor shall supply all materials, equipment, and parts required to perform the specified work unless otherwise stated.

Part 3: Technical Description

3.1 General

3.1.1. Contractor shall provide all equipment and services necessary to dock and undock the vessel. Contractor shall be responsible to dock and undock the vessel using a certified Docking Master or other qualified person approved by the owners representative.

3.1.2. Contractor shall quote on the unit cost per day.

3.1.3. Contractor shall be responsible for the handling of all ships lines.

3.1.4. Contractor shall ensure that docking is in accordance with docking plan. Contractor shall reference the Docking Plan from the Chief Engineer on board the vessel.

3.2 Location

3.2.1 N/A

Spec item #: HD-03	**SPECIFICATION**	TCMSB Field #:
HD - 03 DRY DOCKING		

3.3 Interferences

3.3.1 Contractor is responsible for the identification of interference items, their temporary removal, storage and refitting to vessel.

Part 4: PROOF OF PERFORMANCE:

4.1 Inspection

4.1.1 All work shall be completed to the satisfaction of the Chief Engineer.

4.2 Testing

4.2.1 N/A

4.3 Certification

4.3 N/A

Part 5: DELIVERABLES:

5.1 Drawings/Reports

5.1.1 Contractor shall provide Chief Engineer two type written copies in a report of what work was carried out when the work is complete.

5.2 Spares

5.2.1 N/A

5.3 Training

5.3.1 N/A

5.4 Manuals

5.4.1 N/A

Spec item #: HD-04	**SPECIFICATION**	TCMSB Field #:
HD - 04 HULL INSPECTION AND PAINTING		

HD-04 HULL INSPECTION AND PAINTING

Part 1: SCOPE:

1.1 The intent of this specification shall be to have contractor Hydro blast (1500-2000 psi) and completely clean the aluminum hull from the keel to the maindeck, including both rudders and trim tabs. (The contractor shall bid on a total hull area of 112 sq) meters.

Part 2: REFERENCES:

2.1 Guidance Drawings/Nameplate Data

2.1.1 N/A

2.2 Standards

2.2.1 All coatings to be applied according to manufacturer's specs.

2.3 Regulations

2.3.1 N/A

2.4 Owner Furnished Equipment

2.4.1. The contractor shall supply all materials, equipment, and parts required to perform the specified work unless otherwise stated.

Part 3: TECHNICAL DESCRIPTION:

3.1 General

3.1.1 Contractor shall inform Chief Engineer prior to starting work.

3.1.2 All staging , cranes, screens, lighting, shelter, heaters and any other support services, equipment, paint and materials necessary to carry out these specs. Shall be contractor supplied. The entire hull of the ship from the keel to the main deck, including both rudders and trim tabs shall be Hydro blasted and scraped clean of all marine growth and shall be water washed (1500-2000 psi) to remove any soluble salts

3.1.3 The hull shall be inspected by the contractor, Vessel Maintenance Manager and Chief Engineer and any areas of damaged hull coating shall be identified.

3.1.4 Any repair or application of damaged hull coating will be covered by PWGSC 1379 action and raised as an extra to the contract. Contractor to bid on repair of 100 sq. ft. and unit cost for additional sq. foot.

3.1.5 Sea bay grids are to be protected during the application of coating and orifices shall be proved original diameter before undocking

Spec item #: HD-04	**SPECIFICATION**	TCMSB Field #:
HD - 04 HULL INSPECTION AND PAINTING		

3.1.6. Contractor shall Hydro blast (1500-2000 psi) or mechanical buff to SP-3 the entire hull in preparation for the antifouling coating and CG red coating up to the main deck level

3.1.7. Contractor shall supply and apply the following (A) 1 coat of Amercoat ABC #4 Antifouling Red @3-4 mils DFT. Underwater area only including rudders and trim tabs. The contractor shall bid on 72 sq. meters and include unit cost per sq. meter (B) 1 coat of Amershield Polyurethane CG Red @ 3-4 mils DFT. Waterline to main deck. The contractor shall bid on 40 sq. meters and include unit cost per sq. meter. (C) 1 coat of Amershield Polyurethane White & Black @ 3-4 mils. The CG white hull stripe with black outline

3.1.8. Contractor shall reapply all draft markings using contractor supplied white paint (Amershield Polyurethane)

3.1.9. Contractor shall supply and apply new Coast Guard self-adhesive white/Black vinyl lettering for the vessel markings

3.1.10 . Contractor shall reapply the vessel names and port of registry using contractor supplied white paint (Amershield Polyurethane).

3.2 Location

3.2.1 N/A

3.3 Interferences

3.3.1 Contractor is responsible for the identification of interference items, their temporary removal, storage and refitting to vessel.

Part 4: PROOF OF PERFORMANCE:

4.1 Inspection

4.1.1 All work shall be completed to the satisfaction of the Chief Engineer.

4.2 Testing

4.2.1 N/A

4.3 Certification

4.3.1 N/A

Spec item #: HD-04	**SPECIFICATION**	TCMSB Field #:
HD - 04 HULL INSPECTION AND PAINTING		

Part 5: DELIVERABLES:

5.1 Drawings/Reports

5.1.1 Stencils

2 Coast Guard 6 inch letters
2 Garde cotiere 6 inch letters
2 Fisheries and Oceans 3 inch
2 Peches et Oceans 3 inch
4 Canada
2 6 inch Maple Leafs

5.2 Spares

5.2.1 N/A

5.3 Training

5.3.1 N/A

5.4 Manuals

5.4.1 N/A

Spec item #: HD-05	**SPECIFICATION**	TCMSB Field #:
HD - 05 Sea Bay Cleaning and Painting		

HD-05 SEA BAY CLEANING AND PAINTING

Part 1: SCOPE:

1.1 The intent of this specification shall be to have contractor open up, clean and paint the three sea bays and shall bid on a total area of 1 sq. meter and provide the unit cost per 0.5 sq. meter.

1.2 This work shall be carried out in Conjunction with the following: Dry-docking

Part 2: REFERENCES:

2.1 Guidance Drawings/Nameplate Data

2.1.1 N/A

2.2 Standards

2.2.1 All coatings to be applied according to manufacturers' specs

2.3 Regulations

2.3.1 N/A

2.4 Owner Furnished Equipment

2.4.1 Contractor shall supply all materials, equipment, and parts required to perform the specified work unless otherwise stated.

Part 3: TECHNICAL DESCRIPTION:

3.1 General

3.1.1 Contractor shall inform Chief Engineer prior to starting work.

3.1.2 Contractor shall remove the sea bay grids and water blast the sea boxes and grids.

3.1.3 Contractor shall ensure that the slotted holes in the grids are punched clean.

3.1.4 Contractor shall supply and apply the same paint coatings as outlined for the underwater hull.

3.1.5 Contractor shall replace the sea bay grids using new 316 stainless steel fasteners and locking wire

3.2 Location

3.2.1 Port main suction @ Frames 12 – 13

3.2.2 Stbd. Main suction @ Frames 12 – 13

3.2.3 Fire Pump suction @ Frames 8 – 9

3.3 Interferences

3.3.1 Contractor is responsible for the identification of interference items, their temporary removal, storage and refitting to vessel.

Part 4: PROOF OF PERFORMANCE:

4.1 Inspection
4.1.1 All work shall be completed to the satisfaction of the Chief Engineer.

4.2 Testing
4.2.1 N/A

4.3 Certification
4.3.1 N/A

Part 5: DELIVERABLES:

5.1 Drawings/Reports
5.1.1 N/A

5.2 Spares
5.2.1 N/A

5.3 Training
5.3.1 N/A

5.4 Manuals
5.4.1 N/A

Spec item #: HD-06	**SPECIFICATION**	TCMSB Field #:
HD-06 Zinc Anodes		

HD-06 ZINC ANODES
Part 1: SCOPE:

1.1 The intent of this specification shall be contractor to remove existing anodes and replace with new sacrificial zinc anodes on the hull, the rudders, the trim tabs and the tail shafts.

1.2 This work shall be carried out in Conjunction with the following: Dry-docking

Part 2: REFERENCES:

2.1 Guidance Drawings/Nameplate Data
2.1.1 N/A

2.2 Standards
2.2.1 N/A

2.3 Regulations
2.3.1 N/A

2.4 Owner Furnished Equipment
2.4.1 The contractor shall supply all materials, equipment, and parts required to perform the specified work unless otherwise stated.

Part 3: TECHNICAL DESCRIPTION:

3.1 General
3.1.1 Contractor shall inform Chief Engineer prior to starting work.

3.1.2 Contractor shall supply and install 12 zinc anodes.

3.1.3 Contractor shall supply all stainless steel fasteners to secure all anodes.

3.2.1 Location
3.2.1 2 bolted to the transom 9x6x1 ½ in. 2 bolted to the keel teardrop shape 3x9x1 ¼ in. 2 installed between frames 7& 13 teardrop shape 3x9x1 ¼ in. 1 on each trim tab 6 ½ in circ. 2 installed as collars on each shaft 2 ¾ in. inside diameter. There are 12 anodes in total.

3.3 Interferences
3.3.1 Contractor is responsible for the identification of interference items, their temporary removal, storage and refitting to vessel.

Part 4: PROOF OF PERFORMANCE:

Spec item #: HD-06	**SPECIFICATION**	TCMSB Field #:
HD-06 Zinc Anodes		

4.1 Inspection

4.1.1 All work shall be completed to the satisfaction of the Chief Engineer.

4.2 Testing

4.2.1 N/A

4.3 Certification

4.3.1 N/A

Part 5: DELIVERABLES:

5.1 Drawings/Reports

5.1.1 N/A

5.2 Spares

5.2.1 N/A

5.3 Training

5.3.1 N/A

5.4 Manuals

5.4.1 N/A

Spec item #: HD-07	**SPECIFICATION**	TCMSB Field #:
HD-07 STEERING OIL COOLER		

HD-07 STEERING OIL COOLER
Part 1: SCOPE:

1.1 The intent of this specification shall be to have contractor clean the steering oil cooler.
1.2 This work shall be carried out in Conjunction with the following Dry-docking.

Part 2: REFERENCES:

2.1 Guidance Drawings/Nameplate Data
2.1.1 N/A

2.2 Standards
2.2.1 N/A

2.3 Regulations
2.3.1 N/A

2.4 Owner Furnished Equipment
2.4.1 Contractor shall supply all materials, equipment, and parts required to perform the specified work unless otherwise stated.

Part 3: TECHNICAL DESCRIPTION:

3.1 General

3.1.1 Contractor shall inform Chief Engineer prior to starting work.

3.1.2 Contractor shall remove both ends of the steering oil cooler and shall clean the tube stack.

3.1.3 Contractor shall reassemble the cooler ends using new contractor supplied gaskets, anodes and two ½ inch threaded street elbows.

3.1.4 Vessel to have sea trials to ensure cooler and affected piping are no leaks and normal operation.

3.2 Location
3.2.1 Fitted on aft bulkhead engine room.

3.3 Interferences
3.2 Contractor is responsible for the identification of interference items, their temporary removal, storage and refitting to vessel.

Spec item #: HD-07	**SPECIFICATION**	TCMSB Field #:
HD-07 STEERING OIL COOLER		

Part 4: PROOF OF PERFORMANCE:

4.1 Inspection

4.1.1 All work shall be completed to the satisfaction of the Chief Engineer.

4.2 Testing

4.2.1 Sea and dock trials as per specification HD-12..One hour dock trial and four hour sea trial..

4.3 Certification

4.3.1 N/A

Part 5: DELIVERABLES:

5.1 Drawings/Reports

5.1.1 Contractor shall provide Chief Engineer two type written copies of what work was carried out when work is complete..

5.2 Spares

5.2.1 N/A

5.3 Training

5.3.1 N/A

5.4 Manuals

5.4.1 N/A

Spec item #: HD-08	**SPECIFICATION**	TCMSB Field #:
HD-08 Trim Tab Cylinder Servicing and Replace Trim Tab Cables		

HD-08 TRIM TAB CYLINDERS SERVICING AND REPLACE TRIM TAB CABLES

Part 1: SCOPE:

1.1 The intent of this specification shall be to have contractor and Chief Engineer inspect two trim tab cylinders for wear and correct operation, , remove the trim tab cylinders for overhaul. and replace. Contractor shall replace Trim tab Cables for both trim tab cylinders.

1.2 This work shall be carried out in Conjunction with the following: Dry-docking

Part 2: REFERENCES:

2.1 Guidance Drawings/Nameplate Data

2.1.1 N/A

2.2 Standards

2.2.1 N/A

2.3 Regulations

2.3.1 N/A

2.4 Owner Furnished Equipment

2.4.1 Contractor shall supply all materials, equipment, and parts required to perform the specified work unless otherwise stated.

Part 3: TECHNICAL DESCRIPTION:

3.1 General

3.1.1 Contractor shall inform chief Engineer prior to starting work.

3.1.2 Contractor and Chief Engineer shall check the operation and wear on Trim Tab Cylinders.

3.1.3 Contractor shall remove trim tab cylinders and send to certified Hydraulic service centre for servicing. Contractor shall include in quote all costs required to have trim tab cylinders overhauled . Contractor shall include in quote delivery of Trim Cylinders to Hydraulic service centre and return to ship.

Spec item #: HD-08	**SPECIFICATION**	TCMSB Field #:
HD-08 Trim Tab Cylinder Servicing and Replace Trim Tab Cables		

3.1.5 Contractor shall remove existing trim tab cables and install new contractor supplied trim tab cables. Contractor shall include in quote all costs to supply and install new cables same as per existing .

3.1.6 Contractor shall ensure that the trim tab hydraulic circuit is fully operational and ensure trim tabs operate correctly before and during sea trials.

3.1.7 N/A.

3.2 Location

3.2.1 Trim tabs are located on port and starboard aft of vessel.

3.3 Interferences

3.3.1 Contractor is responsible for the identification of interference items, their temporary removal, storage and refitting to vessel.

Part 4: PROOF OF PERFORMANCE:

4.1 Inspection

4.1.1 All work shall be completed to the satisfaction of the Chief Engineer.

4.2 Testing

4.2.1 Contractor and Chief Engineer shall inspect the operation of trim tabs before and during sea trials.

4.3 Certification

4.3.1 N/A

Part 5: DELIVERABLES:

5.1 Drawings/Reports

5.2.1 Contractor shall provide Chief Engineer with two type written copies of what was carried out when the work is complete.

5.2 Spares

5.2.1 N/A

5.3 Training

5.3.1 N/A

Spec item #: HD-08	**SPECIFICATION**	TCMSB Field #:
HD-08 Trim Tab Cylinder Servicing and Replace Trim Tab Cables		

5.4 Manuals

5.4.1 N/A

Spec item #: HD-09	**SPECIFICATION**	TCMSB Field #:
HD-09	Fuel Tank Cleaning	

HD-09 FUEL TANKS CLEANING

Part: 1 SCOPE:

1.1 The intent of this specification shall be contractor shall remove fuel from three fuel tanks and clean tanks.

1.2 This work shall be carried out in conjunction with dry Docking Specification .

Part: 2 REFERENCES:

2.1 Guidance Drawings/Nameplate Data

2.1.1 N/A.

2.2 Standards

2.2.1 N/A.

2.3 Regulations

2.3.1 N/A

2.4 Owner Furnished Equipment

2.4.1 The contractor shall supply all materials, equipment, and parts required to perform the specified work unless otherwise stated.

Spec item #: HD-09	**SPECIFICATION**	TCMSB Field #:
HD-09	Fuel Tank Cleaning	

Part: 3 TECHNICAL DESCRIPTION

3.1 General

3.1.1 Contractor shall inform Chief Engineer prior to starting work.

3.1.2 Contractor shall ensure with Chief Engineer that all affected systems are isolated, locked out and tagged prior to starting work.

3.1.3 Contractor shall pump the fuel from the fuel oil tanks and dispose of as per provincial regulations.

3.1.4 Contractor shall gas free fuel tanks by certified personnel safe for persons prior to starting work.

3.1.5 Contractor shall pump remaining fuel /sludge from tank and tanks to be wiped clean and dry.

3.1.6 Chief Engineer shall inspect tanks prior to and after tank cleaning is completed before closed up.

3.1.7 Contractor shall close up tanks using new contractor supplied gaskets approved for substance it is being used on .

3.1.8 N/A.

Spec item #: HD-09	**SPECIFICATION**	TCMSB Field #:
HD-09	Fuel Tank Cleaning	

3.2 Location

3.2.1 Port Double Bottom Fuel tank capacity 1220 litres.
Man hole cover located in Forward Cabin.

Starboard Double Bottom Fuel oil tank capacity 1220 litres.

Man hole cover located in Forward Cabin.

Reserve Fuel oil tank capacity 570 litres. Manhole cover located in engine room.

3.2.2 N/A

3.3 Interferences

3.3.1 Contractor is responsible for the identification of interference items, their temporary removal, storage and refitting to vessel.

Part: 4 PROOF OF PERFORMANCE:

4.1 Inspection

4.1.1

4.2 Testing

4.2.1 Man hole doors shall be checked for leaks when fuel is put into tanks.

4.3 Certification

4.3.1 N/A

Spec item #: HD-09	**SPECIFICATION**	TCMSB Field #:
HD-09	Fuel Tank Cleaning	

Part: 5 DELIVERABLES:

5.1 Drawings/Reports

5.1.1 Contractor shall supply Chief Engineer with type written copies of what work was carried out when the work is complete.

5.2 Spares

5.2.1 N/A

5.3 Training

5.3.1 N/A

5.4 Manuals

5.4.1 N/A

Spec item #: HD-10	***SPECIFICATION***	*TCMSB Field #:*
HD-10 Pipe Line Inspection .		

HD-10 PIPELINE INSPECTION

Part 1: SCOPE:

1.1 The intent of this specification shall be to have the contractor visually inspect the sea water and bilge piping for visual signs of corrosion on the outside.

1.2 This work shall be carried out in Conjunction with the following: Drydocking

Part 2: REFERENCES:

2.1 Guidance Drawings/Nameplate Data

2.1.1 N/A

2.2 Standards

2.2.1 N/A

2.3 Regulations

2.3.1 N/A

2.4 Owner Furnished Equipment

2.2.1 The contractor shall supply all materials, equipment, and parts required to perform the specified work unless otherwise stated.

Part 3: TECHNICAL DESCRIPTION:

3.1 General

3.1.1 Contractor shall inform Chief Engineer prior to starting work.

3.1.2 Contractor shall visually inspect all sea water piping and bilge piping for signs of corrosion and deterioration while piping is in existing locations.as identified by Chief Engineer.

3.1.3 The contractor shall inform Chief Engineer any defects found with piping.

3.1.5 The contractor shall pressure test new pipes at 20 psi, which must be witness by Chief Engineer.

Spec item #: HD-10	***SPECIFICATION***	*TCMSB Field #:*
HD-10 Pipe Line Inspection .		

3.2 Location

3.2.1 The piping is located on both sides of engine room and the bilge spaces.

3.3 Interferences

3.3.1 Contractor is responsible for the identification of interference items, their temporary removal, storage and refitting to vessel.

Part 4: PROOF OF PERFORMANCE:

4.1 Inspection

4.1.1 All work shall be completed to the satisfaction of the Chief Engineer.

4.2 Testing

4.2.1 All new piping shall be pressure tested at 20 psi for a 10 minute period prior to installation..

4.3 Certification

4.3.1 N/A

Part 5: DELIVERABLES:

5.1 Drawings/Reports

5.1.1 Contractor shall provide Chief Engineer two type written copies in a report of what work was carried out when work is complete.

5.2 Spares

5.2.1 N/A

5.3 Training

5.3.1 N/A

5.4 Manuals

5.4.1 N/A

Spec item #: HD-11	***SPECIFICATION***	*TCMSB Field #:*
HD-11 Heat Exchanger Cleaning		

HD-11 HEAT EXCHANGER CLEANING

Part 1: SCOPE:

1.1 The intent of this specification shall be to have contractor remove Port & Starboard Main Engine Heat Exchangers, disassemble, clean and pressure test as Per Transport Canada 5 Inspection .

1.2 N/A.

Part 2: REFERENCES:

2.1 Guidance Drawings/Nameplate Data

2.1.1 N/A

2.2 Standards

2.2.1 N/A

2.3 Regulations

2.3.1 N/A.

2.4 Owner Furnished Equipment

2.4.1. The contractor shall supply all materials, equipment, and parts required to perform the specified work unless otherwise stated.

Spec item #: HD-11	***SPECIFICATION***	*TCMSB Field #:*
HD-11 Heat Exchanger Cleaning		

Part 3: TECHNICAL DESCRIPTION:

3.1General

3.1 Contractor shall inform Chief Engineer prior to starting work.

3.2 Contractor shall ensure that all affected systems are isolated, locked out and tagged prior to starting.

3.3 The contractor shall drain and store in clean covered containers, the jacket water coolant from both engines (approximately 350lt) total to allow for disconnection of piping to the heat exchangers. Coolant shall be installed in engines after repairs are completed.

3.4 Contractor shall arrange Transport Canada Marine Safety Inspector for Inspection of Heat Exchangers when removed and cleaned for credit on Division 3 Report 5 year inspection .

3.5 The contractor shall remove Port and Starboard Main Engine Heat Exchangers, disassemble and mechanically clean the Heat Exchangers using manufactures recommended solvent, and rod all tubes for inspection by Transport Canada Marine Safety Inspector and Chief Engineer prior to assambley.

3.6 Contractor shall assemble heat exchangers using new contractor supplied approved seals and gaskets as required.

3.7 Contractor shall prepare and carry out air pressure test on the heat exchangers to the pressure as per manufactures spifications.. This constant pressure shall be maintained for duration of 1 hour and witnessed by Chief Engineer and Transport Canada Marine Safety Inspector.

3.8 Contractor shall re-install the coolers using new contractor supplied approved gaskets in affected piping and new cooler seals and anodes in the end covers. Heat exchangers shall be installed on the same engine it was removed from.

Spec item #: HD-11	***SPECIFICATION***	*TCMSB Field #:*
HD-11 Heat Exchanger Cleaning		

3.9 Contractor shall fill system with stored coolant that was removed from the engines.

3.10 The contractor shall supply and install the required amount of Caterpillar Pre-mix antifreeze #238-8648 to top up both engines as required and have price included in cost..

3.11 N/A.

3.2 Location

3.2.1 In Engine room, outboard of the main engines

3.3 Interferences

3.3.1 The Contractor is responsible for the identification of interference items, their temporary removal, storage and refitting to vessel.

Part 4: PROOF OF PERFORMANCE:

4.1 Inspection

4.1.1 All work shall be completed to the satisfaction of the Chief Engineer and

Transport Canada Marine Safety Inspector

Spec item #: HD-11	***SPECIFICATION***	*TCMSB Field #:*
HD-11 Heat Exchanger Cleaning		

4.2 Testing

4.2.1 Heat Exchangers shall be pressure tested as required by Transport Canada Marine Safety Inspector.

4.3 Certification

4.3.1 Heat Exchangers shall be credited on Transport Canada Division 3 Report.

Part 5: DELIVERABLES:

5.1 Drawings/Reports

5.1.1 Contractor shall provide Chief Engineer two type written copies and one electronic copy of what work was carried out when work is complete.

5.2 Spares

5.2.1 N/A.

5.3 Training

5.3.1 N/A

5.4 Manuals:

5.4.1 N/A

Spec item #: HD-12	***SPECIFICATION***	*TCMSB Field #:*
HD-12 Stern Tubes Replacement		

HD-12 STERN TUBES REPLACEMENT
Part: 1 SCOPE:

1.1 The intent of this specification shall be contractor remove existing Port and Starboard stern tube and replace with new contractor supplied approved stern tubes as per Appendix A Specification Prepared by Poseidon Marine Consultants .

1.2 Please Note : Prior to removal ship from water contractor shall carry out item # 1 in the Proposed Procedure section of the specification prepared by Poseidon Marine . A type written copy of the measurements for this item # 1 shall be provided to Chief Engineer prior to ship removal from water.

Part: 2 REFERENCES:

2.1 Guidance Drawings/Nameplate Data

2.1.1 As per Specification prepared by Poseidon Marine Consultants.
2.1.2 As per reference drawings section stated in Specification Prepared by Poseidon Marine Consultants.
2.1.3 Attached Drawings

a) Drawing # : 1761007
b) Drawing # : 195-101-01 Propeller Shaft
c) Drawing # **:** 175-300-01 General Arrangement (Outboard Profile)
d) Drawing # : 175-300-03 General Arrangement (Anti –Slip)
e) Drawing # : 180-100-01 Profile & Decks (Tank Top Elevation)
f) Drawing # : 180-100-03 Profile & Decks (Elevation at Inbd)
g) Drawing # : 180-100-03 Profile & Decks (Engine Girders)
h) Drawing # : 190-100-01 Machinery Arrangement
i) Drawing # : 190-100-04 Shafting Arrangement
j) Drawing # : 190-100-05 Structural Detail.

Spec item #: HD-12	***SPECIFICATION***	*TCMSB Field #:*
HD-12 Stern Tubes Replacement		

2.2 Standards

2.2.1 N/A.

2.3 Regulations

2.3.1 N/A

2.4 Owner Furnished Equipment

2.4.1 The contractor shall supply all materials, equipment, and parts required to perform the specified work unless otherwise stated.

Part: 3 TECHNICAL DESCRIPTION

3.1 General

3.1.1 Contractor shall inform Chief Engineer prior to work commencing.

3.1.2 Contractor shall ensure all affected systems are isolated, locked out and tagged prior to work commencing.

3.1.3 Contractor shall supply and install blank flanges on any piping that is removed when work is carried out on stern tubes to prevent dirt and debree from entering openings.

3.1.4 Contractor shall inform and arrange Transport Canada Marine Safety Inspector and approval as per Division 3 Report.

3.1.5 Stern Tubes Replacement Specification shall be carried out in conjunction with the following specifications:

a) Propeller Servicing. Specification # HD-09
b) Rudder Inspection. Specification # HD-11.
c) Propeller Shaft Removal and Inspection. Specification # HD-12.

3.2 Location

3.2.1 N/A.

3.3 Interferences

3.3.1 Contractor is responsible for the identification of interference items, their temporary removal, storage and refitting to vessel.

Part: 4 PROOF OF PERFORMANCE:

4.1 Inspection

4.1.1 As per a specification (Appendix A) prepared by Poseidon Marine Consultants.

4.2 Testing

4.2.1 As Per Appendix A.

4.3 Certification

4.3.1 As per Appendix A.

Spec item #: HD-12	***SPECIFICATION***	*TCMSB Field #:*
HD-12 Stern Tubes Replacement		

Part: 5 DELIVERABLES:

5.1 Drawings/Reports

5.1.1 Contractor shall supply Chief Engineer with two type written copies and one electronic copy of what work was carried out when the work is complete.

5.2 Spares

5.2.1 N/A

5.3 Training

5.3.1 N/A

5.4 Manuals

5.4.1 N/A

Spec item #: HD-13	**SPECIFICATION**	*TCMSB Field #:*
HD-13 Life Raft Inspection		

HD-13 LIFE RAFT INSPECTION

Part 1 : Scope

1.1 The intent of this specification shall be to have contractor remove, (two of) six person life rafts from ship, and transport the rafts to an Original Equipment Manufacturer (OEM) authorized service centre for Transport Canada annual inspection. Contractor shall return Life rafts to ship and install after inspection.

1.2 This work shall be carried out in Conjunction with the following: Drydocking

Part 2: REFERENCES:

2.1 Guidance Drawings/Nameplate Data

2.1.1 N/A

2.2 Standards

N/A

2.3 Regulations

2.3.1

2.4 Owner Furnished Equipment

2.4.1 The contractor shall supply all materials, equipment, and parts required to perform the specified work unless otherwise stated.

Part 3: TECHNICAL DESCRIPTION:

3.1 General;

3.1.1 Contractor shall inform Chief Engineer prior to starting work.

3.1.2 Contractor shall remove (two of) six person life rafts from the vessel and safely transport the life rafts to an O.E.M authorized service centere for Transport Canada Annual inspection.

3.1.3 Contractor shall return life rafts to ship and when complete. Contractor shall include in quote all transportation costs and crane services to remove and install rafts on ship.

3.1.4 Contractor shall install life rafts onboard ship in the respective locations and secure with new Transport Canada Approved Hydrostatic release mechanisms

Spec item #: HD-13	**SPECIFICATION**	*TCMSB Field #:*
HD-13 Life Raft Inspection		

3.1.5 Contractor shall have an allowance of allowance of $ 2500.00 total for the OEM servicing of life rafts and replacement of hydrostatic releases mechanisms. This allowance may be adjusted up or down by 1379 action upon proof of OEM Invoice.

3.2 Location

3.2.1 Fitted in cribbing on the freeboard deck, one forward and one aft.

3.3 Interferences

3.3..1 Contractor is responsible for the identification of interference items, their temporary removal, storage and refitting to vessel.

Part 4: PROOF OF PERFORMANCE:

4.1 Inspection

4.1.1 All work shall be completed to the satisfaction of the Chief Engineer.

4.2 Testing

4.2.1 N/A

4.3 Certification

4.3.1 N/A

Part 5: DELIVERABLES:

5.1 Drawings/Reports

5.1.1 Contractor shall provide Chief Engineer two type written copies of a report what work was carried out when work is complete.

5.2 Spares

N/A

5.3 Training

N/A

Spec item #: L-01	**SPECIFICATION**	TCMSB Field #:
L-01 Insulation Testing		

L-01 INSULATION TESTING
Part 1: SCOPE:

1.1 The intent of this specification shall be to have contractor conduct insulation testing on the main switchboard and on 8 circuit panels. Any readings below 2 Megs to be discussed with the owner's rep.
1.2 This work shall be carried out in Conjunction with the following: Drydocking

Part 2: REFERENCES:

2.1 Guidance Drawings/Nameplate Data
2.1.1 N/A

2.2 Standards
2.2.1 N/A

2.3 Regulations
2.3.1 N/A

2.4 Owner Furnished Equipment
2.4.1 The contractor shall supply all materials, equipment, and parts required to perform the specified work unless otherwise stated.

Part 3: TECHNICAL DESCRIPTION:

3.1 General

3.1.1 Contractor shall inform Chief Engineer prior to starting work.

3.1.2 Insulation testing to be carried out on the following:
3.1.1.1 Main switchboard (33 circuits)
3.1.1.2 240/120 vac shore power panel (14 circuits)
3.1.1.3 FWD power panel E-5 (10 circuits)
3.1.1.4 WH power panel E-1 (13 circuits)
3.1.1.5 12 VDC Nav panel E-3 (10 circuits)
3.1.1.6 24 VDC Nav panel E-2 (10 circuits)
3.1.1.7 24 VDC HVAC Power panel E-6 (6 circuits)
3.1.1.8 Power panel E-7 (12 circuits)
3.1.1.9 Nav light panel (10 circuits)

3.1.3 Contractor shall inform Chief Engineer immediately any readings below 2 Megs. Any repairs required may be corrected using 1379 action.

Spec item #: L-01	**SPECIFICATION**	TCMSB Field #:
L-01 Insulation Testing		

3.2 Location

3.2.1 Main switchboard in aft. cabin.
3.2.2 Shore power panel in Lazerette.
3.2.3 1 panel in fwd. cabin.
3.2.4 The others are all in the wheelhouse

3.3 Interferences

3.3.1 Contractor is responsible for the identification of interference items, their temporary removal, storage and refitting to vessel.

Part 4: PROOF OF PERFORMANCE:

4.1 Inspection

4.1.1 All work shall be completed to the satisfaction of the Chief Engineer.

4.2 Testing

4.2.1 N/A

4.3 Certification

4.3.1 N/A

Part 5: DELIVERABLES:

5.1 Drawings/Reports

5.1.1 Contractor shall provide Chief Engineer with two type written copies of what work was carried out and the Megger Readings report when the work is complete.

5.2 Spares

5.2.1 N/A

5.3 Training

5.3.1 N/A

5.4 Manuals

5.4.1 N/A

Spec item #: L-02	**SPECIFICATION**	TCMSB Field #:
Fire Detection System, CO Smothering System and Portable Extinguishers		

L-02 FIRE DETECTION SYSTEM, CO SMOTHERING SYSTEM AND PORTABLE EXTINGUISHERS

Part 1: SCOPE:

1.1 The intent of this specification shall be to have the contractor obtain the services of a certified technician to test and ensure the correct operation of the smothering system and the fire detection system and 11 portable fire extinguishers. Contractor to recertify the above items to have expiry dates correspond with annual refit.

1.2 **Note** : If this item is not expired this specification item shall be carried out to have all certificates eprire at same time during refit period.

1.3 This is a Kidde Fenwal system with 2 cylinders and the fire detection panel is an Edwards System Technologies. This is to be carried out to the satisfaction of a Transport Canada Marine Surveyor.

1.4 N/A.

Part 2: REFERENCES:

2.1 Guidance Drawings/Nameplate Data

2.1.1 N/A

2.2 Standards

2.2.1 N/A

2.3 Regulations

2.3.1 N/A

2.4 Owner Furnished Equipment

2.4.1 The contractor shall supply all materials, equipment, and parts required to perform the specified work unless otherwise stated.

Part 3: TECHNICAL DESCRIPTION:

3.1 General

3.1.1 Contractor shall inform Chief Engineer prior to starting work.

3.1.2 Ccontractor shall test the operation of each signal device, zone indication and alarm bell operation. Chief Engineer and Transport Canada Marine Safety Inspector shall witness all testing on the systems.

Spec item #: L-02	**SPECIFICATION**	TCMSB Field #:
Fire Detection System, CO Smothering System and Portable Extinguishers		

3.1.3 Contractor shall have the fire dire detection system, CO2 system and portable fire extinguishers by certified Original Equipment Manufacture (OEM) authorized service center.

3.1.4 If required contractor shall have all items in this specification recertified for expiration date to correspond with the annual refit.

3.1.5 Contractor shall arrange Transport Canada Marine Safety Inspector .

3.1.6 The contractor shall tabulate the results and provide a copy of the results and a certificate of compliance to the Chief Engineer.

3.1.4 All work shall be completed by a certified technician.

3.2 Location

3.2.1 Location of the following :

a) CO2 bottles are on the outside aft deck.
b) Fire detection panel is in the wheelhouse stbd. Side
c) Heat sensors, smoke detectors and portable fire extinguishers are located all through the ship

3.2.2 Portable Fire Extinguishers Location :.

	Type	Location	Serial # :
a)	Dry Chemical (5 lb – ABC)	Wheelhouse Aft	842490
b)	Dry Chemical (2.5 lb - ABC)	Wheelhouse Fwd	969640
c)	Dry Chemical (10 lb –ABC)	Fwd Survivors Aft	969610
d)	Dry Chemical (5 lb -ABC)	Fwd Survivors Fwd	969634
e)	Dry Chemical (5 lb – ABC)	Lavatory Space	969633
f)	Dry Chemical (5 lb – ABC)	Engine Room Fwd	969637
g)	Dry Chemical (5 lb –ABC)	Engine Room Aft	969639
h)	Dry Chemical (10 lb –ABC)	Aft Survivors Fwd	969648
i)	Dry Chemical (5 Lb – ABC)	Aft Survivors Aft	512589
j)	Dry Chemical (5 lb -ABC)	Steering Gear	969659
k)			

3.2.3 Heat sensors, smoke detectors and portable fire extinguishers are located all through the ship

3.3 Interferences

3.3.1 Contractor is responsible for the identification of interference items, their temporary removal, storage and refitting to vessel.

Spec item #: L-02	**SPECIFICATION**	TCMSB Field #:
Fire Detection System, CO Smothering System and Portable Extinguishers		

Part 4: PROOF OF PERFORMANCE:

4.1 Inspection

4.1.1 All work shall be completed to the satisfaction of the Chief Engineer.

4.2 Testing

4.2.1 N/A

4.3 Certification

4.3.1 Contractor shall provide certificates of all inspections carried out.

Part 5: DELIVERABLES:

5.1 Drawings/Reports

5.1.1 Contractor shall provide Chief Engineer two type written copies of what work was carried out when work is complete.

5.2 Spares

5.2.1 N/A

5.3 Training

5.3.1 N/A

5.4 Manuals

5.4.1 N/A

Spec item #: L-3	**SPECIFICATION**	TCMSB Field #:
L-3	Replace Start Batteries	

L-3 REPLACE START BATTERIES

Part: 1 SCOPE:

1.1 The intent of this specification shall be contractor shall remove the existing Four (4) start batteries and replace with 4 new owner supplied start batteries.

1.2 The new batteries are owner supplied.

Part: 2 REFERENCES:

2.1 Guidance Drawings/Nameplate Data

2.1.1 N/A.

2.2 Standards

2.2.1 N/A.

2.3 Regulations

2.3.1 N/A

2.4 Owner Furnished Equipment

2.4.1 The contractor shall supply all materials, equipment, and parts required to perform the specified work unless otherwise stated.

Spec item #: L-3	**SPECIFICATION**	TCMSB Field #:
L-3	Replace Start Batteries	

Part: 3 TECHNICAL DESCRIPTION

3.1 General

3.1.1 Contractor shall inform Chief Engineer prior to starting work.

3.1.2 Contractor shall ensure with Chief Engineer that all systems are isolated, locked out and tagged prior to starting work.

3.1.3 Contractor shall remove existing four (4) batteries and replace with owner supplied . New batteries are same as existing batteries.

3.1.4 Contractor shall check and ensure new batteries are fully charger prior to installation.

3.1.5 Contractor shall check and clean connections on battery cables and battery ternimals prior to connection. Contractor shall cover connections with approved grease as required by Chief Engineer.

3.1.6 Contractor shall return old batteries to Chief Engineer to dispose of as per Provincial Regulations.

3.1.7 Contractor shall load test new batteries and provide Chief Engineer with readings from load test.

3.1.8 N/A.

3.2 Location

3.2.1 Engine Room Starboard Side Aft.

Spec item #: L-3	**SPECIFICATION**	TCMSB Field #:
L-3	Replace Start Batteries	

3.3 Interferences

3.3.1 Contractor is responsible for the identification of interference items, their temporary removal, storage and refitting to vessel.

Part: 4 PROOF OF PERFORMANCE:

4.1 Inspection

4.1.1 N/A

4.2 Testing

4.2.1 N/A

4.3 Certification

N/A

Part: 5 DELIVERABLES:

5.1 Drawings/Reports

5.1.1 Contractor shall supply Chief Engineer with two type written copies and one electronic copy of what work was carried out when the work is complete.

5.2 Spares

5.2.1 N/A

Spec item #: L-3	**SPECIFICATION**	TCMSB Field #:
L-3	Replace Start Batteries	

5.3 Training

5.3.1 N/A

5.4 Manuals

5.4.1 N/A