CCGS Harp

Storage & Refit

January 8, 2019 – April 1, 2019

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VESSEL CHARACTERISTICS

SHIP PARTICULARS:

Gross Registered Tonnage	179.2 Tonnes
Net Registered Tonnage	69.2 Tonnes
Displacement at design waterline	225 Tonnes
Length Overall	24.5 meters (80.4 Feet)
Length Between Perpendiculars	21.5 meters (70.5 Feet)
Breadth Moulded	7.5 meters (24.6 Feet)
Depth moulded at midships	3.4 meters (11.2 Feet)
Draft at design waterline	2.4 meters (7.9 Feet)
Frame spacing	0.5 meters (1.64 Feet)

REQUIREMENTS
INTENT

The intent of this specification is to describe the necessary work and services involved in carrying out a long-term lay-up for the ship. All work specified herein and services shall be carried out to the satisfaction of the Project Engineer, Small Vessels.

RESPONSIBLE INDIVIDUAL

The individual responsible for the vessel during the lay-up period is
Craig Norman, Project Officer
Office #:772-5336 Cell. #: 697-5422. Terry Hunt 772-5829.

PERIOD OF LAY-UP

1) The Contractor shall provide layup and storage for the vessel.

2) The vessel will arrive at contractor's facilities on January 8- 2019 to be docked. Shore power services to be supplied and connected at this time.

3) The dates may change due to operational requirements of the vessel. Dates will only change in case of an emergency situation and rates quoted for storage should be on a per day basis.

4) Contractor shall supply the shore power cable from shore power connection on dock to shore power connection on aft deck of the vessel. Note Ships shore power cable shall not be used.

5) Contractor shall submit quote for each individual spec item, storage and security etc.

6) Layup will commence when vessel out of the water.

7) Ship will be handed over to contractor for layup and security at January 8 -2019 at 1000 hours.

8) Contractor shall provide layup and security of the ship from January 8, 2019 to April 1 - 2019. Total days in storage & refit is 83 days. These dates may change due to ships operational requirements.

9) Contractor shall provide quote per additional day for storage /security. This shall be adjusted up or down by 1379 action.

10) Security shall be as per Public Works and Government Services Contract Annex I – Vessel Custody Security watches.

11) Contractor shall take and record temperature inside vessel two (2) times daily, morning and evening, at select locations on the ship. Locations are Bridge, steering compartment, engine room compartment, galley, alleyway on main deck, dry stores room.

12) In the event of loss of shore power to ship and if power can be restored in one hour the Person responsible for the vessel shall be informed.

13) Refit work period shall commence on February 22 -2019 and be completed by April 1-2019. These dates may change due to operational requirements.

14) The above mentioned dates are tentative and may change due to operational requirements.

15) Contractor shall supply all material, equipment and parts required to perform this work unless otherwise stated.

16) Contractor shall be responsible to dock the vessel and undock the vessel using a certified docking master or other qualified person approved by the owner's representative.

17) Contractor shall reference the docking plan from the Chief Engineer on board the vessel.

18) Contractor shall prepare the blocks and necessary shoring to maintain true alignment of the vessels hull and machinery throughout the dry docking layup period.

19) Contractor shall have support posts on the stern overhung section of the vessel and left in position until the ship is undocked.

20) The owner shall provide the contractor in writing of the desire to remove the vessel from storage.

21) Contractor shall dock the vessel so that all docking plugs, transducers, anodes and sea inlet grids are clear and accessible. If any hull fittings are covered, contractor shall be responsible for all Labour and materials required to make the alternative arrangements to drain the tanks as required and or move blocks to gain access to the area of the specified work.

22) Contractor shall be responsible for the safe transfer of the ship from its pre docking berth or location onto its docking blocks. During docking radio contact is to be maintained between the vessels Commanding Officer and the Contractors Docking officer. The contract is to include in its bid, tug and or pilotage services as required.

23) Prior to docking, all tanks on vessel to be sounded and contents recorded in Chief Engineer's log. Copy of the soundings to be signed by Commanding Officer, Chief Engineer and contractors Docking Master. Contractor shall receive a copy of the tank soundings.

24) Contractor shall water blast the hull within two hours after the vessel comes out of the water at a minimum pressure of 2000 pounds per square inch. (psi.) to remove marine growth and allow for preliminary inspection.

25) Contractor shall remove the sea grid chests on the port and starboard side. Contractor shall water blast inside and the Chief Engineer to carry out an inspection. After cleaning and inspection is carried out contractor shall reinstall the sea grids and secure as per removal.

26) Contractor shall drain three water ballast tanks and one potable water tank by removing the docking plugs .Contractor shall get the docking plug drawing from the Chief Engineer on board the vessel. .After the tanks are drained contractor shall install the docking plug in each tank with new contractor supplied approved gasket and sealant. Chief Engineer to witness the installation of the docking plug.

27) Contractor shall not remove or transfer any contents of the vessel without first checking with the Chief Engineer.

28) Prior to flooding /undocking contractor shall re-check the security of the keel / blocks and docking plugs in the presence of the owners representative.

29) The condition of the vessel shall be the same as the condition at time of docking.

30) At undocking, all tanks to be refilled to obtain the same draft and trim as the time of docking and the conditions agreed by Contractors Docking Master, Commanding Officer and the Chief Engineer.

EXPOSURE AND PROTECTION OF EQUIPMENT

The contractor shall ensure that the ship and equipment are protected from damage due to 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.

LIGHTING AND VENTILATION

The Contractor shall ensure that the area around the vessel is illuminated.

CLEANLINESS

a) The Contractor shall ensure that the area around the ship will be kept in a neat condition and parts, lumber, cradles etc. shall not be stored in close proximity to the vessel.

b) The area to be kept clear of stored items shall be an area that is 5 feet away from any vertical line dropped from the widest point of the ship, both Port and Stbd.; The furthest point Aft and the furthest point Fwd. on the vessel.

RESTRICTED ACCESS

a) The Contractor shall ensure that the vessel is stored in a secure fenced location.

b) Access on board the vessel during the lay-up is strictly prohibited unless authorized by the Project Officer for the CCGS Harp. This includes contractor personnel, Coast Guard and Department of Fisheries personnel and any other personnel.

STAGING

a) Contractor shall supply one gangway to provide safe access to the vessel throughout the layup and storage period. Gangway is to have sufficient lighting and rigged with safety net.

ELECTRICAL REQUIREMENTS

a) Contractor shall supply shore power 575 volts, 3 phase and 100 amps .

b) Harp has a shore power meter installed on ship that shall be used to calculate shore power consumption.

SECURITY

a) Layup and storage of the vessel shall include contractor doing 24 hour a day and 7 days a week security on the vessel.

b) In the event of an alarm goes off on board the vessel contractors personal will be available so they can go onboard to investigate. The types of alarms that are

incorporated into the alarm system are fire detection, bilge alarm system temperature sensing, etc.

c) Dry store room area and the wheelhouse. .A copy of the temperature readings are to be kept on board the vessel during the layup storage period.

d) In the event the temperature goes down below 7 degree Celsius or above 40 degree Celsius contractor shall notify the vessels owner contact person.

e) Contact Person.
Craig Norman.
Project Officer
Office # 772 - 5336
Cell # 697-5422
E-Mail craig.norman@dfo-mpo.gc.ca

f) Contractor personal shall be familiarized with the vessel.

REFIT PRE-AMBLE

1) INTENT

The intent of this specification is to describe the necessary work involved in carrying out the ships Annual refit. All work specified herein and all repairs, inspections and renewals are to be carried out to the satisfaction of the owners representative and, where applicable, the attending TC Marine Safety Inspector. Unless otherwise specifically stated, the Owners representative is the Chief Engineer.

2) MANUFACTURES RECOMMENDATIONS.

The overhaul and installation of all machinery and equipment specified herein shall be as per the manufactures applicable instructions, drawings and specifications.

3) TESTING AND RECORDS

All test results, calibrations, measurements and readings are to be properly tabulated, compiled and two typed copies shall be presented to the Owners 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 as judged by normally accepted shipbuilding standards and to the Owners satisfaction.

5) FACILITIES

Quotation shall include all of the necessary Labour and equipment required for the erection of access staging, rigging, lighting .tugs, pilotage, necessary cranage and line handling.

6) MATERIALS AND SUBSTITUTIONS

All material shall be supplied by the contractor and all material shall be new and unused unless otherwise specified. 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 manufactures_drawings, manuals or instructions. Where no particular item is specified, or where substitution must be made, the owners representative must approve all material offered.

7) REMOVALS

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 the Owners representative.

8) EXPOSURE AND PROTECTION OF EQUIPMENT

The contractor shall provide adequate temporary protection for any equipment or area 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, welding, grinding, burning, gouging, painting or airborne particles from 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 as per the manufactures 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 the work.

10) CLEANINESS

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 and all oil and water residue, which accumulates in the machinery space bilges as a result of any refit work detailed in this specification.

11) ABSESTOS

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

12) ENTRY INTO ENCLOSED SPACES

The contractor shall abide by the Coast Guard Enclosed Space Entry Policy. The policy is listed in the Safety Annex as section 7.D.9 and section D9 (N). Entry certificates shall clearly state the type of work permitted and shall be renewed as required by the regulations. Additional copies of these certificates shall be posted in conspicuous locations for the information of ship and contractor personnel. (See preamble item # 22.)

13) HOTWORK

Any item of work involving the use of heat in its execution requires that the contractor advise the owners' representatives 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 hot work. The fire watch shall be arranged such that all sides of surfaces being worked on are visible and accessible. The contractor shall provide sufficient fire extinguishers and a fire watch during any such heating and until work has cooled. Ships fire extinguishers shall not be used except in an emergency. The contractor shall abide by the Coast Guard Hot Work Policy. The policy is listed in the Safety Annex as section 7.D.11 and section 7.D.11(N).The contractor shall be responsible to ensure the contractors personnel including any subcontractors shall follow the policy.(See Preamble item # 22)

14) PAINTING

All new and disturbed steelwork that will not be on the underwater wetted surfaces of the ship hull shall be protected with one coat of marine primer (Contractor supplied) unless otherwise specified in specification.

15) WELDING

Welding shall be in accordance with the Canadian Coast Guard Welding Specifications for ferrous Materials, Revision 4. The Contractor shall be currently certified by the Canadian Welding Bureau (CWB) in accordance with CWB 47.1 latest revision division I ,II, III, at the time of bid closing. The contractor may be required to provide approved procedure data sheets for each type of joint and welding position that will be involved in this construction.
The contractor may be required to supply a current Welders Certificate for each individual welder that will be involved in this construction.

16) SMOKING

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

17) RESTRICTED AREAS

The following areas are out of bounds to shipyard personnel except to perform work as required by the specification, all cabins, offices, wheelhouse, Control Room, Engineers office, public washrooms, cafeteria, dining room and lounge area.

18) ELECTRICAL STANDARDS

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

(a) TP 127E-TC Marine Safety Electrical Standards.
(b) IEEE Standard 45- Recommended Practice for Electrical Installation on Shipboard.

If any cable installed within this contract is found to be damaged, shorted, or opened as a result of the manner of the 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 wires in panels or junction boxes only.

19) DRAWINGS

All drawings and drawings 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 matter shall not be updated using freehand. Prints and reproducible that a contractor is required to provide shall be made on one piece of paper.

20) TRANSDUCERS

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

21) OWNERS REPRESENTATIVE

Throughout this document, there is made reference to the Owners Representative. For the purpose of this document, the Owners Representative is defined as the Chief Engineer of the Vessel.

22) Safety ANNEX

The contractor shall follow the Coast Guard Policies as outlined in the attached Safety Annex. This Annex contains excerpts from the Fisheries and Oceans Canada, Canadian Coast Guard Fleet Safety Manual (DFO 5737) and deals with contractor responsibilities for items such as hot work, Confined Space Entry, Diving, Diving operations, and Dry Docking.
An electronic copy of the Fleet Safety Manual (Adobe Acrobat PDF version) can be found at http://142.130.14.20/fleet-flotte/Safety/main ehtm.

H - 1 PRODUCTION CHART

1. SCOPE:

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

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.

3. TECHNICAL DESCRIPTION

3.1 General

3.1.1 The successful contractor shall supply three copies of a detailed bar chart showing the planned work schedule for the ships refit. These bar charts shall be presented to the Public Works Contracting Authority Officer 48 hours prior to the ships arrival at the Contractors premises. 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 Contractor shall provide three copies of each weekly update to the Chief Engineer prior to each weekly production meeting..

3.1.4 The 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

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

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

N/A

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

H - 2 SERVICES

Part 1: SCOPE:

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

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

Part 2: REFERENCES:

2.1 Guidance Drawings/Nameplate Data

2.4.1.

2.2 Standards

2.4.1.

2.3 Regulations

2.4.1.

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. The Contractor shall supply Shore Power of 575 VAC, 3 Phase, 100 Amp complete with cable and fittings. The Contractor shall quote on supplying 50,000 KWH and unit cost per additional kilowatt hour. The 50,000 KWH will be adjusted up or down at the end of the refit using PWGSC 1379 action. (see electrical requirement section) .Meter readings shall be taken and witnessed by the Contractor and Owners Representative prior to connection and upon disconnection of the service.

3.1.2. A copy of meter reading shall be given to dockyard and Chief Engineer upon connection of shore power. Reading shall be recorded in Chief Engineers log book.

3.1.3. Contractor shall include in quote the services of certified electrician to connect shore power to ship at start of refit and disconnect shore power from ship when refit is completed.

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3.1.4. Contractor shall supply the required approved shore power cable from connection ashore to the shore power connection box on after deck on ship. .NOTE: Ships shore power cable shall not be used for refit period..

3.1.5. Water connection to the ships fire main at 60 psi, 1 ½ inch diameter fire hose with water pressure being maintained at all times. Drain to be provided to prevent freezing. Contractor to quote on 10m^3 per day and to provide a rate per m^3 for additional water to be adjusted up or down by 1379 action.

3.1.6. Potable water connection at 45 psi, 1 inch diameter to be connected to the ships potable water system, with drain to prevent freezing.

3.1.7. Contractor supplied boarding gangway to be supplied and rigged complete with safety net handrails and lighting. Gangways shall be rigged to the satisfaction of the Commanding Officer.

3.1.8. A Contractor supplied garbage container shall be placed on the ground close to the vessel. Refuse shall be removed daily from the vessel. The garbage container shall be emptied when 75 % full.

3.1.7. Disposal of 1000 liters of oily water mixture from tanks and bilges as required. Contractor shall quote cost per each additional 100 liters. The Contractor shall retain if necessary, the services of a qualified disposal agent who shall comply with all Provincial Laws and provide evidence of proper disposal.

3.1.8. One 3 inch diameter black water sewage discharge line and one 2 inch line connect to black water sewage tank discharge connection on deck.
Two of 2 inch diameter grey water discharge lines to the vessels over board discharge points. These connections are to be in place for the duration of the dry docking period.

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3.1.9 **T**he interior decks of the vessel are to be covered for protection using "Deck Protection Flooring Mask" or equivalent. This covering is to be installed at the beginning of refit and maintained in good condition throughout the entire refit, The protective floor covering shall be removed at the end of the refit.

3.2 Location

3.2.1. Throughout ship.

3.3 Interferences

3.2.1. 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

N/A

4.3 Certification

N/A

Part 5: DELIVERABLES:

5.1 Drawings/Reports

5.1.1 N/A.

5.2 Spares

N/A

5.3 Training

N/A

5.4 Manuals

N/A

H - 3 HULL CLEANING AND PAINTING

Part: 1 SCOPE:

1.1 The intent of this specification shall be contractor shall remove all marine growth and completely hydro blast the hull using a minimum pressure of 2000 pounds per square inch (psi) from the keel to the main deck. New underwater hull coating and coating from the water line to the main deck, including the complete bow area above the waterline shall be applied.

1.2 N/A.

Part: 2 REFERENCES:

2.1 Guidance Drawings/Nameplate Data

2.1.1 N/A.

2.2 Standards

2.2.1 All coatings shall be applied according to manufacturer's specifications**.**
2.2.2 N/A.

2.3 Regulations

2.3.1 Contractor shall comply with Fleet Safety Manual.
2.3.2 Contractor shall comply with all Provincial Regulations and the Canada Labour Code.

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 commencement of work.

3.1.2 Coast Guard to provide NACE Inspector. All coating to be applied und his supervision.

3.1.3 The area of the hull from the keel to the waterline including appendages is 264 m2. The area from the waterline to the main deck, including the complete bow area above the waterline is 93 m2. shall bid on cleaning and coating the hull. The contractor shall submit with the bid, a unit cost for cleaning and coating per m2 of additional area which can be adjusted up or down by using PWGSC 1379 action.

3.1.4 Contractor shall hydro blast the entire hull portion of the ship including rudders, nozzles and skegs. Contractor shall ensure that all marine growth is removed. Contractor shall water wash the hull to remove any soluble salts.

3.1.5 Contractor shall ensure that all bare steel areas are sandblasted to SA-2.5 Near White surface with existing edges feathered. The contractor shall bid on 40 m2 of bare area and shall include a unit cost to blast any additional area. The actual area will be adjusted using PWGSC 1379 action.

3.1.6 Contractor shall mechanical clean to SSPC-SP-3 the hull from the keel to the main deck, including rudders, nozzles, skegs, and the complete hull above the waterline, to provide a suitable surface for new paint application as per manufactures specifications.

3.1.7 If sand sweeping is carried out contractor shall ensure that every opening into the vessel where grit can gain entry is suitably covered. All traces of grit used for sweep and sand blasting shall be removed by the contractor. The contractor shall be responsible for ensuring that the hull is clear and clean prior to, during and immediately after the coating application**.**

3.1.8 Contractor shall plug deck scuppers and discharges as well as take other measures necessary to prevent liquids from contaminating areas being prepared or coated. The contractor shall also take measures to ensure that no damage, unnecessary cleaning or any repairs result from either the hull preparation process or the coating application. Measures shall also be taken to ensure that surfaces and equipment other than those specified are not coated and that inlets or discharges in the shell will not be blocked by the coating. Deck machinery and other gear susceptible to damage by grit or coating material shall also be protected as necessary.

3.1.9 Contractor shall supply and apply the following to the underwater portion:
a) One complete coat of International Paints Intershield ENA Series (Bronze) at 5-6 mils DFT.

b) One coat of International Paints Intershield ENA 300 Series Epoxy (Aluminum) at 5-6 mils DFT to all bare areas.

c) One complete coat of International Paints Intershield BRA 642 Antifouling (Black) at 4 mils DFT up to the waterline. The antifouling paint shall be applied at a maximum of 24 hours prior to the vessel being placed in the water.

3.1.10 Contractor shall draw and mark off the waterline which runs across the stern and forward from the 2.9 meter draft aft to the 2.3 meter draft forward. The contractor shall supply and apply from the waterline up to the main deck level, including the complete bow portion above the waterline, the following:

a) Two complete coats of International Paints Interprime 665(CPA099 Red) at 2-3 mils DFT per coat.
b) Two complete coast of International Paints Interlac Red CLA162 at 1.5 -2 mils DFT per coat.

3.1.11 Contractor shall reapply the CG white stripe complete with black outline on both sides of the vessel and shall reapply all markings using International Paints Interlac CLA163665 Marine Enamel(white) and CLA164 for black.

3.1.12 N/A.

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

Part: 5 DELIVERABLES:

5.1 Drawings/Reports

5.1.1 Contractor shall supply Chief Engineer with 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

H - 4 SEA BAY CLEANING AND PAINTING

Part 1: SCOPE:

1.1 The intent of this specification shall be contractor to open the sea bay and sea chests for cleaning , inspection and painting.

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:

3.2 General

3.1.1. Contractor shall inform Chief Engineer prior to commencement of work.

3.1.2. The contractor shall remove the sea bay grids and thoroughly clean the sea inlets using hydro blasting and shall remove all loose or damaged coatings.

3.1.3. The contractor shall remove the docking plug and allow the sea bay to drain. The docking plug shall remain in the custody of the Chief Engineer.

3.1.4. The contractor shall remove the cover from the sea bay and clean internally, also remove any loose or damaged coatings using hand power tools only.

3.1.5. The contractor shall bid on cleaning, and coating a total area of 22m² allowing for 2.2m² of bare areas. The contractor shall submit with the bid a unit cost for the cleaning, blasting and coating of any additional area. The actual area completed will be increased or decreased using PWGSC 1379 action.

3.1.6. The contractor shall sandblast all bare areas in the sea inlets to SA 2.5 Near White surface with the existing edges feathered back.

3.1.7. The contractor shall use hand power tools only to prepare any bare areas inside the sea bay.

3.1.8. The contractor shall apply:

24 One coat of International Paints Intershield ENA Series (bronze) at 5-6 mils DFT to all bare areas
25 One complete coat of International Paints Intershield ENA Series (bronze) 5-6 mils DFT
26 One complete coat International Paints Intershield BRA 640 Antifouling (black) at 4 mils DFT.

3.1.8 The contractor shall reinstall the docking plugs and manhole cover using contractor supplied gaskets and locking arrangements.

3.4 Location

3.2.1. Sea Bay Frames 25-26 Entrance at engine room fwd
Sea Chests Frames 20-22 Under water hull

3.5 Interferences

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

Part 4: PROOF OF PERFORMANCE:

4.2 Inspection

4.1.2. All work shall be completed to the satisfaction of the Chief Engineer. All work to be inspected by Chief Engineer and Transport Canada Marine Safety Inspector before sea bays and sea chests closed up.

4.2 Testing

4.2.1 Final coating thickness to be recorded

4.3 Certification

4.3.1

Part 5: DELIVERABLES:

5.5 Drawings/Reports

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

5.6 Spares
N/A

5.7 Training
N/A

5.8 Manuals
N/A

H - 5 ANODES

Part: 1 SCOPE:

1.1 The intent of this specification shall be contractor to remove existing anodes and install all new zinc Anodes on hull.

1.2 This work shall be carried out in Conjunction with the 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 Contractor shall comply with Fleet Safety Manual.
2.3.2 Contractor shall comply with all Provincial Regulations and the Canada Labour Code.

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 commencement of work.

3.1.2 Contractor shall quote on remove existing anodes and supply /install all new zinc anodes. There are 32 anodes in total:
24 anodes 24 lb each
8 anodes that are 12 lb .

3.1.3 Contractor shall quote per additional 12 lb and 24 lb anode to supply and install which can be adjusted up or down by 1379 action.

3.1.4 Contractor shall ensure that the area around each anode is properly coated in accordance with the requirements with the hull coating section.

3.1.5 N/A

3.2 Location

3.2.1

ANODES	LOCATION	TYPE
10	Hull	24 lb
4	Rudders	24 lb
4	Kort Nozzles	24 lb
1	Sea Bay Cover	24 lb
5	Sea Chests	24 lb
8	Stern tubes	12 lb

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 All work shall be completed to the satisfaction of the Chief Engineer.
4.1.2 N/A.

4.2 Testing

4.2.1 N/A.

4.3

4.4 Certification

N/A

Part: 5 DELIVERABLES:

5.1 Drawings/Reports

5.1.1 Contractor shall supply Chief Engineer with 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

H - 6 DAVIT ANNUAL INSPECTION

Part: 1 SCOPE

1.1 The intent of this specification shall be contractor to arrange annual inspection to be carried out on Global Davit by OEM Nord Marine Services Limited.

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 Contractor shall comply with Fleet Safety Manual.

2.3.2 Contractor shall comply with all Provincial Regulations and the Canada Labour Code.

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 The Contractor shall quote to have annual inspection carried out on the Global Davit by (Nord Marine) Authorized Service Dealer as per manufactures specifications.

a) Change oil in winch
b) Brake gear and brake control mechanism to be tested for correct operation.
c) Brake linings to be checked .

3.1.3 Davit testing to be witnessed by Chief Engineer.

3.1.4 Contractor shall include in quote all costs related to Authorized dealer to carry out this work include meals, travel and hotels and ect.

3.1.5 N/A.

3.2 Location

3.2.1 Main Deck.

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.

4.1.2 N/A.

4.2 Testing

4.2.1 Davit to be tested and proven operational.

4.2.2 Davit testing to be witnessed by Chief Engineer.

4.3 Certification

4.3.1 Service Technician to provide annual certification and a report of what work was carried out.

Part: 5 DELIVERABLES:

Spec item #: H -6	**SPECIFICATION**	TCMSB Field #:
H-6 Davit Annual Inspection		

5.1 Drawings/Reports

5.1.1 Contractor shall supply Chief Engineer with 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

H - 7 LIFE RAFTS INSPECTION

Part: 1 SCOPE:

1.1 The intent of this specification shall be Contractor shall remove from the ship and transport 3 life rafts and hydrostatic release mechanisms to and from the authorized service center for servicing and certification.

1.2 N/A.

Part: 2 REFERENCES:

2.1 Guidance Drawings/Nameplate Data

2.1.1 Viking Lift Raft: Serial # 10802606
Viking Life Raft: Serial # 10802605
Life Raft Serial # 7485-6FT

2.1.2 N/A

2.2 Standards

2.2.1 N/A.

2.3 Regulations

2.3.1 Contractor shall comply with Fleet Safety Manual.

2.3.2 Contractor shall comply with all Provincial Regulations and the Canada Labour Code

2.3.3 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 is to remove from the vessel three inflatable liferafts and the hydrostatic release mechanisms for each raft. Contractor shall send the rafts and hydrostatic release mechanisms to the respective OEM service centers for annual inspection of the rafts and replacement of the Hydrostatic release mechanisms for each raft with new releases.

3.1.3 Upon return of the rafts and hydrostatic release mechanisms contractor shall replaced the rafts and hydrostatic release mechanisms onboard the vessel in their respective locations and secured. Commanding Officer shall witness the installation in correct location.

3.1.4 Contractor shall include in cost all transportation charges for the rafts to and from ship to the authorized service center and crane if required for removal and installation of the rafts to and from the ship.

3.1.5 Contractor shall allow $1500. allowance for each raft service. Total invoice of raft service shall be adjusted up or down by 1379 action as per invoices.
(Note) Allowances are for life raft service only.
Contractor shall include in quote all other costs .Transportation charges and crane rental, etc.

3.1.6 N/A

3.2 Location

3.2.1 Two 12 person rafts is located foc'sle deck aft.
One 6 person raft is located fwd. of wheelhouse.

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 All work shall be completed to the satisfaction of the Chief Engineer and Transport Canada Ship Safety Inspector.

4.1.2 N/A.

4.2 Testing

4.2.1

4.3 Certification

4.3.1 Copies of service certificates to be provided to the Chief Engineer upon arrival of Servicing of rafts.

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

H - 8 FM -200 INSPECTION

Part: 1 SCOPE

1.1 The intent of this specification shall be to have an annual inspection carried out on the FM 200 system by the authorized service center Certified FM 200 technician.

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 Contractor shall comply with Fleet Safety Manual.

2.3.2 Contractor shall comply with all Provincial Regulations and the Canada Labour Code.

2.3.3 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 commencement.

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

3.1.3 FM 200 System shall have annual inspection carried and tested by a certified FM 200 Technician.

3.1.4 FM 200 System shall have annual inspection carried and tested by a certified FM 200 technician.

3.1.5 The cylinders are to be disconnected and the piping, lines, sirens, time delays and shut downs to be proven operational.

3.1.6 FM 200 system is to be thoroughly examined and tested as required by TCMS.

3.1.7 All hand controls, wires and pulleys are to be inspected and proven operational. The FM 200 Cylinder is to be weighed and recorded.

3.1.8 Upon completion of all inspections and tests the system is to be reconnected to the satisfaction of the Chief Engineer and TCMS Inspector.

3.1.9 N/A.

3.2 Location

3.2.1 Cargo Hold.

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 All work shall be completed to the satisfaction of the Chief Engineer and Transport Canada marine Safety Inspector.

4.1.2 N/A.

4.2 Testing

4.2.1 F M 200 System testing to be witnessed by The Chief Engineer and TCMS inspector.

4.2.2 N/A.

4.3 Certification

4.3.1 Contractor shall provide Certification for FM 200 System.

Part: 5 DELIVERABLES:

5.1 Drawings/Reports

5.1.1 Contractor shall supply Chief Engineer with 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

H - 9 CO2 INSPECTION

Part: 1 SCOPE:

1.1 The intent of this specification shall be to carry out annual inspection on the CO2 System by a certified technician.

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

2.3.1.1 Contractor shall comply with Fleet Safety Manual**.**

2.3.2 Contractor shall comply with all Provincial Regulations and the Canada Labour Code.

2.3.3 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 The CO2 System shall have annual inspection carried out and tested by a qualified certified service representative as required by TCMS.

3.1.3 The bottle is to be disconnected and the piping, lines, sirens, time delays and shut downs are to be proven operational.

3.1.4 All Hand controls, wires, and pulleys are to be inspected and proven operational.

The CO2 Cylinder is to be weighed and recorded.

3.1.5 Upon completion of all tests and inspections, the system is to be reconnected to the satisfaction of the Chief Engineer and TCMS Inspector.

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 Testing to be witnessed by the Chief Engineer and TCMS Inspector.

4.3 Certification

4.3.1 A copy of the work report and certificate to be provided to the Chief Engineer**.**

Part: 5 DELIVERABLES:

5.1 Drawings/Reports

5.1.1 Contractor shall supply Chief Engineer with 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

H - 10 PORTABLE FIRE EXTINGUISHERS INSPECTION

Part: 1 SCOPE:

1.1 The intent of this specification shall be to have annual inspection carried out on the portable fire extinguishers.

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 Contractor shall comply with Fleet Safety Manual.
2.3.2 Contractor shall comply with all Provincial Regulations and the Canada Labour Code.

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 have annual inspection carried out on all portable extinguishers by a certified qualified representative.

3.1.3 The Extinguishers to be serviced are as follows:

Dry Chemical	8 of 5 lb each
	3 of 10 lb each

	1 of 2.5 lb each 2 of 8 lb each
CO2	6 of 5 lb each 2 of 10 lb each
AK	1 of 21 lb each

3.1.4 Contractor is to supply a adequate number of suitable extinguishers on the ship in order to maintain the same degree of fire- fighting safety while the vessels extinguishers are being serviced.

3.1.5 N/A.

3.2 Location

3.2.1 Through - out 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.

Part: 4 PROOF OF PERFORMANCE:

4.1 Inspection

4.1.1 All work shall be completed to the satisfaction of the Commanding Officer.

4.1.2 N/A

4.2 Testing

4.2.1 Testing of all systems to be within TCMS regulations.

4.3 Certification

4.3.1 Two copies of certificates to be provided to the Chief Engineer

Part: 5 DELIVERABLES:

5.1 Drawings/Reports

5.1.1 Contractor shall supply Chief Engineer with 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

H - 11 FIRE DETECTION SYSTEM INSPECTION

Part: 1 SCOPE:

1.1 The intent of this specification shall be contractor have a qualified certified technician to carry out the annual inspection on the Fire Detection System.by authorized Original Equipment manufacturer. .(OEM)

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 Contractor shall comply with Fleet Safety Manual.
2.3.2 The Contractor shall comply with all Provincial Regulations and the Canada Labour Code.
2.3.3 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 commencement.

3.1.2 Contractor shall have qualified certified technician carry out annual inspection and testing on the Fire Detection Notifier NFS -640 System as per manufactures recommendations.

3.1.3 All heat / smoke / and pull stations, general alarms and shut downs devices are to be activated and proven operational. The system shall be proven operational using the back –up batteries with the A/C power supply isolated .

3.1.4 N/A.

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 to be witnessed by the Chief Engineer and Transport Canada Marine Safety Inspector.

4.2 Testing

4.2.1 Chief Engineer and Transport Canada Marine safety Inspector shall be present for the testing.

4.3 Certification

4.3.1 N/A

Part: 5 DELIVERABLES:

5.1 Drawings/Reports

5.1.1 Contractor shall supply Chief Engineer with 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

H - 12 GALLEY KARBOLY

Part: 1 SCOPE ;

1.1 The intent of this specification shall be to have an annual inspection carried out on the Karboly Fire Fighting System as required by Transport Canada Marine Safety Inspector.

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 Contractor shall comply with Fleet Safety Manual.

2.3.2 The Contractor shall comply with all Provincial Regulations and the Canada Labour
Code.

2.3.3 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 commencement of work.

3.1.2 Contractor shall have the Karboly System inspected by a qualified service representative as per manufactures recommendations.

3.1.3 The bottle is to be disconnected and contents level and pressure verified.

3.1.4 All piping is to be blown through with compressed air and all nozzles proven clear.

3.1.5 All release mechanisms and electrical alarms and shut downs to be proven operational and witnessed by the Chief Engineer and TCMS Inspector.

3.1.6 N/A.

3.2 Location

3.2.1 Karboly Cylinder located under Bridge Deck Port Side.

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.

4.1.2 N/A.

4.2 Testing

4.2.1 To be witnessed by the Chief Engineer and TCMS Inspector.

4.3 Certification

N/A

Part: 5 DELIVERABLES:

5.1 Drawings/Reports

5.1.1 Contractor shall supply Chief Engineer with 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.

H -13 ANCHOR WINDLASS SURVEY

1. SCOPE:

1.1 The intent of this specification shall be that the contractor shall prepare the anchor windlass for inspection and survey by TCMS as per the Division 3 report.

1.2

2. REFERENCES:

2.1 Guidance Drawings/Nameplate Data

2.1.1 Drawing #4647-300-7 – Hydraulic System Diagramatic

2.1.2 E-5 Hawboldt Industries Hydraulics Manuals – Craig Norman's Office

2.2 Standards

2.2.1 N/A.

2.3 Regulations

2.3.1 Contractor shall comply with Fleet Safety Manual.

2.3.2 Contractor shall comply with all Provincial Regulations and the Canada Labour Code.

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.

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 as required. Prior to starting work

3.1.3 Anchor and accessories are to be paid out and ranged in the dock

3.1.4 Windlass is to be isolated and disassembled by the contractor. All part locations are to be marked prior to removal to ensure alignment upon reassembly. Work to be completed aboard the vessel.

3.1.5 The parts are to be cleaned for inspection and measurements taken. The measurements are to be recorded.

3.1.6 Contractor is to arrange to have TCMS Inspector survey the windlass while it is disassembled

3.1.7 Contractor shall install a new brake lining on the anchor windlass

3.1.8 Contractor shall drain and dispose of oil from chain case sump and replace with new oil. Allow for 40 Liters of H32 oil.

3.2 Location

3.2.1 Fore Deck

3.3 Interferences

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

4. PROOF OF PERFORMANCE:

4.1 Inspection

4.1.1 Inspection to be carried out by Transport Canada Marine Safety Inspector and Chief Engineer as per Division 3 report 5 year inspection.

4.2 Testing

4.2.1 To be witnessed by the Chief Engineer and TCMS Inspector. Test will consist of:

4.2.1.1 Running windlass in and out from the stored position until all chain is in water at least 3 times

4.2.1.2 Brake is to be tested by ensuring it will hold the weight of anchor and will allow controlled lowering of anchor

4.3 Certification

4.3.1 Contractor shall provide Certification and work report of all measurements taken during survey.

5. DELIVERABLES:

5.1 Drawings/Reports

5.1.1 Contractor shall supply Chief Engineer with 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 #: H -14	SPECIFICATION	TCMSB Field #:
H- 14 Galley Deck Rep[airs		

H -14 GALLEY DECK REPAIRS

1. SCOPE:

1.1 The intent of this specification shall be contractor crop out section of deck in Galley deck covering and replace with new Dex–O-Tex decking and paint.

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 Contractor shall comply with Fleet Safety Manual.
2.3.2 Contractor shall comply with all Provincial Regulations and the Canada Labour Code.

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.

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 refrigerator and any other equipment that requires removal for proper access and cover all equipment, furnishings and all areas with approved coverings for protect from dust during the duration the work is being carried out.
3.1.3 Contractor shall quote on removing a section of the Deck covering in the Galley equal to 36” x 36”. When removing section of deck covering, the cut shall be a clean straight cut. The area replaced shall be approximately 2 inches beyond the ends of the damaged section of deck.
3.1.4 Contractor shall remove the damaged section of deck covering. Contractor shall prepare and clean the under laying deck surface with the approved bonding agent for the installation of the new Dex-O-Tex deck in the damaged area. Preparation to be under the approval of NACE Inspector.

3.1.5 Chief Engineer must inspect the deck area when the damaged decking is removed and when the new deck covering is installed prior to installing finish coat.

3.1.6 Contractor shall replace decking with new contractor supplied Dex-O-Tex decking as per manufactures specifications.

3.1.7 A qualified Dex-o-Tex installer shall install new Dex-O-Tex deck to the same height as the existing decking.

3.1.8 Contractor shall include in quote the cost to remove additional deck covering, prepare deck and install contractor supplied Dex-O-Tex deck covering per additional square foot. This shall be adjusted up or down by 1379 action.

3.1.9 Contractor shall rough up / sand total deck in the galley, to prepare to paint complete deck.

3.1.10 Contractor shall prepare and apply 2 full coats of paint to the complete galley deck area with contractor supplied approved epoxy paint for use in a high traffic area for the application on which it is being used on. Contractor shall apply the epoxy paint as per manufactures instructions.

3.1.11 Commanding Officer or delegate shall determine the color of the approved epoxy paint to be used on the decks and the degree of the non - skid surface. (Note: Matte finishes not to be used on the deck)

3.1.12 Contractor shall ensure that the repaired Dex-O-Tex and epoxy coat shall allow for removal of deck drain screens without damage to the floor covering.

3.1.13 Contractor shall replace the refrigerator and any removed equipment with due care so as not to damage the new floor coatings. Contractor is responsible to ensure any scuff marks are removed from final coating so as to provide a clean finish.

3.2 Location

3.2.1 Galley – Under Fridge

3.2.1.1 Galley deck area requires 1 m^2 replacement.

3.2.1.2 Total Deck Area Require Painting:

Galley Deck total area is approximately 10 m^2.

3.3 Interferences

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

4. PROOF OF PERFORMANCE:

4.1 Inspection

4.1.1 Decking shall be inspected by Chief Engineer and Commanding Officer.

4.2 Testing

4.2.1 N/A

4.3 Certification

4.3.1 N/A

5. DELIVERABLES:

5.1 Drawings/Reports

5.1.1 Contractor shall supply Chief Engineer with 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

H - 15 DUCT WORK CLEANING

Part: 1 SCOPE:

1.1 The intent of this specification shall be contractor clean the interior of the accommodation HVAC ducting, laundry & galley ducting and clean galley range hood and ducting .

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 inform with Chief Engineer that all affected systems are isolated, locked out and tagged prior to starting work.
3.1.3 Contractor shall disconnect duct work in crawl space under bridge and clean the duct work for the five (5) accommodations, galley survival and triage and reconnect when duct work cleaning is completed.
3.1.4 Contractor shall remove the control heads in each of the location for access cleaning of the ductwork. Contractor shall reinstall control heads when duct work cleaning is complete using new approved contractor supplied gaskets.
3.1.5 Contractor shall clean galley range hood and ducting with approved cleaner.
3.1.6 Contractor shall disconnect dryer vent and clean vent piping from dryer to deck.
3.1.7 Contractor shall confirm with Chief Engineer that all systems are back in normal operation when duct work cleaning is completed.
3.1.8 n/a

3.2 Location

3.2.1 Under Bridge Void Space, accommodations, galley survival and triage area.

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 Chief Engineer shall inspect duct work when disassembled before cleaning
4.1.2 And inspect when duct work cleaning is completed.

4.2 Testing

4.2.1 Chief Engineer shall confirm system is in normal operation status.

4.3 Certification

4.3.1 n/a

Part: 5 DELIVERABLES:

5.1 Drawings/Reports

5.1.1 Contractor shall supply Chief Engineer with 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

H - 16 CLEAN GLASS ON BRIDGE CLEAR VIEWS

1. SCOPE:

1.1 The intent of this specification shall be to have the contractor disassemble the two bridge clear view units and clean the interior glass surfaces. Note full window pane not to be removed.

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 Contractor shall comply with Fleet Safety Manual.
2.3.2 Contractor shall comply with all Provincial Regulations and the Canada Labour Code.

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.

3. TECHNICAL DESCRIPTION

3.1 General

3.1.1 Contractor shall inform Chief Engineer prior to starting work. Start date shall be at the discretion of the Chief Engineer and Contracting Authority in consultation with the Contractor.
3.1.2 Chief Engineer shall perform Lockout/Tagout procedure prior to contractor commencing work. Contractor to verify procedure has been completed.
3.1.3 Contractor shall cover bridge console with protective covering during the period the work is carried out.
3.1.4 Contractor shall disassemble the two bridge clear view units to clean interior glass surfaces as per the manufacturer's specifications. Contractor is responsible to replace any seals that are disturbed during the disassembly and cleaning process.

3.1.5 Contractor shall assemble and test clear views for proper operations when work has been completed

3.2 Location

3.2.1 Bridge

3.3 Interferences

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

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 Clear views shall be run up for a continuous 30 minute period to prove proper operations.

4.3 Certification

4.3.1 N/A.

5. DELIVERABLES:

5.1 Drawings/Reports

5.1.1 Contractor shall supply Chief Engineer with two type written 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 -1	SPECIFICATION	TCMSB Field #:
HD - 1 Ballast Tanks		

HD-1 BALLAST TANK

1. SCOPE:

1.1 The intent of this specification shall be to conduct a 4 year survey on the ballast tanks
1.2 This work shall be carried out in conjunction with the following:
1.2.1 Dry Docking

2. REFERENCES:

2.1 Guidance Drawings/Nameplate Data

2.1.1 Drawing #4647-100-6 – Unit 3 Structural Details Fr. 13-25
2.1.2 Drawing #4647-100-4 – Unit 2 Structural Details Aft – Fr. 13
2.1.3 Drawing #4647-100-4 – Unit 1 Structural Details Fr. 25-FWD
2.1.4 Drawing #4647-300-2 – Bilge and Ballast Diagramatic

2.2 Standards

2.2.1 N/A.

2.3 Regulations

2.3.1 Contractor shall comply with Fleet Safety Manual.
2.3.2 Contractor shall comply with all Provincial Regulations and the Canada Labour Code.

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.

3. TECHNICAL DESCRIPTION

3.1 General

3.1.1 The Contractor shall inform the Chief Engineer prior to starting work
3.1.2 The Chief Engineer shall lockout and Tagout General Service Pump and Fire Pump and ensures all valve arrangements to the tank are secured and closed.
3.1.3 Contractor to provide all necessary equipement and man power to adhere to all safety guidelines regarding entry into confined spaces. This includes but is not limited to watch team, gas detecting equipment and rescue team.
3.1.3 The three tanks listed below are to be drained, opened, ventilated and certified by a chemist for personnel to enter. Tanks are to be well ventilated to the outside

throughout the work period including but not limited to cleaning, surface preparation, painting and drying.

3.1.4 Surface Preparation: Remove all chlorides and dirt by way of high pressure water wash. Once washing has been completed and all surfaces are dry.

3.1.5 The contractor shall ensure they are thoroughly cleaned, all rust, scale and loose paint to be removed. The contractor shall use hand power tools only to prepare any bare areas inside the ballast tanks. They shall be cleaned to SSPC-SP-11

3.1.6 The contractor shall bid on cleaning, and coating a total area of 50m² per tank allowing for 5m² of bare areas. The contractor shall submit with the bid a unit cost per m² for the cleaning, blasting and coating of any additional area. The actual area completed will be increased or decreased using PWGSC 1379 action

3.1.7 Contractor shall supply and apply the following to the tanks:
a) Apply one touch up coat of Interprime 65 at 5 to 7 mil DFT to all bare areas.
b) Apply one full coat of Interprime 65 at 5 to 7 mils DFT to the entire tank Surface.

3.1.8 The contractor shall reinstall the docking plugs and manhole cover using contractor supplied gaskets and locking arrangements.
The contractor shall ensure the tanks are filled to the same level prior to commencing the work.

3.2 Location

3.2.1

TANK	LOCATION	CAPACITY
Port and Starboard Ballast Tanks	Frames 0-5	7500 liters
Fore Peak Ballast Tank	Frames 42-bow	5000 liters

3.3 Interferences

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

4. PROOF OF PERFORMANCE:

4.1 Inspection

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

4.2 Testing

4.2.1 Dry Film Thickness (DFT) testing to be carried out after each coat of paint is applied.

Spec item #: HD -1	SPECIFICATION	TCMSB Field #:
HD - 1 Ballast Tanks		

4.2.2 The contractor shall fill the ballast tanks to check for leaks around manhole cover. These tanks are to undergo a hydrostatic test in the presence of a transport Canada surveyor. The vent is to be removed and then the tank is to be filled with water to the top of the vent. The vent head gasket is to be replaced after testing is completed.

4.2.3 NACE inspector to carry out continuous inspection for painting requirements.

4.3 Certification

4.3.1 N/A

5. DELIVERABLES:

5.1 Drawings/Reports

5.1.1 Contractor shall supply copies of DFT reports to Chief Engineer

5.2 Spares

5.2.1 N/A

5.3 Training

5.3.1 N/A

5.4 Manuals

5.4.1 N/A

HD - 2 REPLACEMENT OF DAMAGED SHELL PLATE AND FRAME

1. SCOPE:

1.1 The intent of this specification shall be to replace a bent frame and buckled shell plate.
1.2 Tank will be drained by ship's crew prior to start of work.
1.3 This work shall be carried out in conjunction with the following:
1.3.1 Dry Docking

2. REFERENCES:

2.1 Guidance Drawings/Nameplate Data

2.1.1 Drawing #4647-100-6 – Unit 3 Structural Details Fr. 13-25
2.1.2 Drawing #4647-100-4 – Unit 2 Structural Details Aft – Fr. 13
2.1.3 Drawing #4647-100-4 – Unit 1 Structural Details Fr. 25-FWD
2.1.4 Drawing #4647-300-2 – Bilge and Ballast Diagramatic

2.2 Standards

2.2.1 N/A.

2.3 Regulations

2.3.1 Contractor shall comply with Fleet Safety Manual.

2.3.2 Contractor shall comply with all Provincial Regulations and the Canada Labour Code.

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.

3. TECHNICAL DESCRIPTION

3.1 General

3.1.1. The Contractor shall inform the Chief Engineer prior to starting work.

3.1.2. The Contractor shall cut out and remove 1damaged frame and a section of damaged shell plating on the Stbd. side fwd of the Vessel.

3.1.3. Frames # 36 in the fresh water tank on the Stbd. side shall be cropped out against the shell plate. The size of the frames is ¼ inch thick plate. The length of the frames is approx. 45 inches.

3.1.4. Contractor to quote on replacing 10 sq./ft. of 5/16 inch thick shell plating from. All new plate shall have radius edges.

3.1.5. The Contractor shall cut, fit and weld in 1 new frames and new 5/16 inch shell plating as original. Certificates to be provided for all materials.

3.1.6. Tank to be have coating reapplied after work is completed. Coatings to be Royal Coating and suitable for use in a potable water tank. Coating is to be to the acceptance of the attending NACE inspector.

3.1.7. All welding procedures must be CWB approved. Plate fitting must comply with the Manual Welding Details laid out in the ships Shell Expansion and Body Plan drawing No.108/01B.

3.1.8. All steel is to be ASTM Grade 44W or equivalent. All material is to be contractor supplied.

3.1.9. All steel is to be grit blasted and primed with a weldable primer prior to fabrication.

3.1.10. All steel removed shall be disposed of by the contractor.

3.1.11. The Contractor shall provide fire protection to the tank surface while performing hotwork.

3.1.12. The Contractor shall be responsible for the arrangement and cost of the TCMSB Inspector

3.1.13. All work must be performed to the satisfaction of the Chief Engineer, PWGSC and TCMSB Inspector

3.2 Location

3.2.1	TANK	LOCATION
	Starboard Potable Water Tank	Frames 34-38

3.3 Interferences

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

4. PROOF OF PERFORMANCE:

4.1 Inspection

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

4.2 Testing

4.2.1 The Contractor shall visually inspect all welds for proper size, contour, good appearance and freedom from excessive porosity. In addition, welded joints shall be Contractor-tested by an approved non-destructive test method to the extent required by TCMS. All detected defects shall be cut out, re-welded and re-tested to the satisfaction of the TCMS inspectors.

4.2.2 A plan of the Contractor's proposed NDE test locations and methods shall be submitted in advance to the Chief Engineer and the above-noted inspection authorities for review and approval. The results of the foregoing NDE testing are to be recorded and submitted in report form to the Chief Engineer and TC inspector.

4.2.3 NACE inspector to carry out continuous inspection for painting requirements.

4.3 Certification

4.3.1 N/A

5. DELIVERABLES:

5.1 Drawings/Reports

5.1.1 Contractor shall supply copies of NDT reports to Chief Engineer

5.2 Spares

5.2.1 N/A

5.3 Training

5.3.1 N/A

5.4 Manuals

5.4.1 N/A

E-1 AIR RECEIVER SAFETY VALVES

Part: 1 SCOPE

1.1 The intent of this specification shall be contractor remove the safety valves from the 4 air receivers and send to certified contractor for testing & certification, reinstall valves when work completed.

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 Contractor shall comply with Fleet Safety Manual.
2.3.2 Contractor shall comply with all Provincial Regulations and the Canada Labour Code.

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 and Chief Engineer shall ensure that the compressed air system is Isolated , locked out and tagged prior to starting work.

3.1.3 Contractor shall remove safety valves from 4 air receivers and send to Certified contractor to be tested and certified as per manufactures specifications. Contractor shall reinstall the safety valves when testing is complete.

3.1.4 Contractor shall provide to Chief Engineer Safety valve certification from certified contractor prior to installation of the valves.

3.1.5 Contractor shall include in quote all costs for delivery of the safety valves to and from ship to certified contractor for testing.

3.1.6 N/A.

3.2 Location

3.2.1 Main Engine Room.

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 Air receivers shall be filled with compressed air to normal operating pressure and check for leaks.

4.3 Certification

4.3.1 Contractor shall provide Chief Engineer the Certificate for each safety valve prior to the installation of the safety valves.

Part: 5 DELIVERABLES:

5.1 Drawings/Reports

5.1.1 Contractor shall supply Chief Engineer with 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

E - 2 PORT & STARBOARD STEERING PUMPS

1. SCOPE:

1.1 The intent of this specification shall be to have the Contractor overhaul and inspect the Port and Starboard Steering pumps.

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 Contractor shall comply with Fleet Safety Manual.
2.3.2 Contractor shall comply with all Provincial Regulations and the Canada Labour Code.

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.

3. TECHNICAL DESCRIPTION

3.1 General

3.1.1 Port and Starboard Steering Gear Pumps to be isolated, removed, disassembled and overhauled for Transport Canada 5 year inspection.
3.1.2 The hydraulic lines are to be capped off when removed from pumps to prevent dirt from entering the lines.
3.1.3 Contractor to arrange for inspection of pumps by TCMS prior to reassembly
3.1.4 Contractor to provide new seals and gaskets required for reassembly of pumps.
3.1.5 Pumps to be reinstalled and proven operation after overhaul.
3.1.6 Header tank located on top of bridge deck to be topped up to working level.
3.1.7 Measurements to be taken and recorded during overhaul of pump

3.2 Location

3.2.1 Steering Gear Compartment

3.3 Interferences

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

4. PROOF OF PERFORMANCE:

4.1 Inspection

4.1.1 All work shall be completed to the satisfaction of the Chief Engineer.
4.1.2 TCMS Inspector to be present for inspection prior to pumps being reassembled.

4.2 Testing

4.2.1 Steering Gear to be fully run up after the pumps have been reinstalled. Verification of movement to be tested by 5 full movements of the rudders with each pump working individually and an additional 5 full movements with both pumps working together, steering control shall also be confirmed at each control point on vessel.
4.2.1.1 1 Full movement is considered to be from the mechanical rudder stop position to port to the mechanical rudder stop position to starboard.

4.3 Certification

4.3.1 Contractor shall provide a type written and electronic work report and any certification of the pumps to the Chief Engineer.

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

E - 3 FUEL OIL TRANSFER PUMP

1. SCOPE:

1.1 The intent of this specification shall be that the contractor is to remove the Fuel Oil Transfer Pump, Overhaul, Inspect and Re-install

2. REFERENCES:

2.1 Guidance Drawings/Nameplate Data

2.1.1 Model: Roper 2 A.M. 1 2

2.2 Standards

2.2.1 N/A.

2.3 Regulations

2.3.1 Contractor shall comply with Fleet Safety Manual.
2.3.2 Contractor shall comply with all Provincial Regulations and the Canada Labour Code.

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.

3. TECHNICAL DESCRIPTION

3.1 General

3.1.1 The fuel oil transfer pump to be removed, disassembled, overhauled and reinstalled
3.1.2 The pump to be inspected by Chief Engineer and Transport Canada Inspector when disassembled, Inspector to be arranged by Contractor
3.1.3 Measurements to be taken and recorded and type written copy provided to C/E
3.1.4 When pump is rebuilt, Contractor shall supply all necessary seals, gaskets and lubrication for rebuild.

3.2 Location

3.2.1 Main Engine Room

.

3.3 Interferences

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

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 Pump shall be reinstalled, primed and run up. All tests being witnessed by Chief Engineer

4.3 Certification

4.3.1 Contractor shall provide Chief Engineer with a associated certification for the Fuel Oil Transfer Pump

5. DELIVERABLES:

5.1 Drawings/Reports

5.1.1 Contractor shall provide Chief Engineer with a type written and electronic copy of the work report.

5.2 Spares

5.2.1 N/A

5.3 Training

5.3.1 N/A

5.4 Manuals

5.4.1 N/A

E-4 PORT STERN TUBE BUSHING AND THORDON BEARING REPLACEMENT

Part: 1 SCOPE:

1.1 The intent of this specification shall be contractor to remove port propeller, propeller shaft and remove propeller hub from shaft and install new owner supplied stern tube bushings and Thordon bearings.

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.

Part: 3 TECHNICAL DESCRIPTION

3.1 General

3.1.1 Contractor shall inform Chief Engineer prior to starting work.

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

3.1.3 Contractor shall inform and arrange Transport Canada Marine Safety Inspector for inspection of this work.

3.1.4 Contractors shall include in cost the services of providing a Pacific Star Field Service Representative (FSR) for the removal, disassembly, rebuilding and reinstallation of the port propeller, propeller shaft and propeller hubs. (Contact- Mike Butler, Pacific Star Marine Ltd. (604) 462-1188. The contractor shall

include an allowance of $50,000.00 for the provision of the Pacific Star FSR. The actual amount will be adjusted up or down using PWGSC 1379 action upon proof of invoices.

3.1.5 Contractor shall remove the port rope guard to measure and record the amount of Tail Shaft Bearing wear down for the port shaft prior to shaft disassembly. A Type written copy of measurements to be provided to Chief Engineer and vessel maintenance manager prior to removal of the propeller shaft.

3.1.6 . Contractor shall remove the port rudder to facilitate removal of the propeller shaft assemble and reinstall rudders after work is completed. Rudderstock shall be supported in Steering gear compartment when rudder is removed by chain fall to ensure complete weight not on seal and reinstall when work is completed.

3.1.7 Contractor is to remove the port propeller shaft to gearbox coupling and disconnect the pitch actuator rod, blades and all other items in order for propeller shaft removal. Measurements shall be taken prior to disconnection.

3.1.8 Contractor shall remove the port propeller aft cap, propeller hub, blades, and complete tail shaft assembly.

3.1.9 When the shaft are removed, contractor shall include in quote that the stern tube shall be high pressure cleaned to have the rust and debris removed from the stern tube.

3.1.10 Contractor shall give Chief Engineer a copy of the port shaft bearings measurements when the measurements are taken.

3.1.11 Contractor shall include in quote the cost to remove the existing shaft Thordon bearing on the port side and install new owner supplied propeller shaft Thordon bearings and bearing sleeves as per attached drawing as per Thordon FSR. Contractor shall include in quote an allowance of $4000.00 for the services of Thordon FSR

3.1.12 Contractor shall include all cost for the machining of the new bearings

3.1.13 Contractor shall transport the port propeller shaft to machine shop to inspect propeller hub and shaft by FSR. Contractor shall include all transportation and crane charges in quote for propeller shaft to and from Machine shop. Contractor shall include in quote machine shop to rotate the propeller shaft in the lathe to check for trueness.

3.1.14 Propeller seals will be contractor supplied. The FSR shall install all components of the propeller and tail shaft using contractor supplied seals.

3.1.15 Contractor shall remove the inside bulkhead mounted sealing flange for the Port shaft and check the flange for damage and reinstall the flange using a new manufactures approved contractor supplied gasket.

3.1.16 Contractor shall include in cost an allowance of $2500.00 the services of Wartsilla FSR to install new contractor supplied shaft bulk head seals for the port shaft. Contractor shall arrange Wartsilla FSR in advance.

3.1.17 The contractor shall hook up a pressurized water hose to the inside connection of the stern tube from inside the ship to confirm a sufficient water flow at the outside end of the stern tube from the port stern tube and witnessed by Chief Engineer and Thordon FSR.

3.1.18 Contractor shall test steering in conjunction with Bridge, steering gear compartment and looking at rudders for correct operation prior to ship undocked.

3.1.19 When propeller shaft is installed prior to coupling up rolls Contractor / Pacific Star FSR and alignment specialist shall take and record measurements to confirm shaft are aligned with gearbox coupling are as per manufactures specifications.

3.1.20 When the vessel has been refloated and settled in the water shaft alignment measurements shall be taken by the Pacific Star FSR to determine if shaft alignment procedure is required.

3.1.21 If shaft alignment is required, the engine and gearbox are coupled using a flexible coupling, therefore they cannot be aligned to the propeller shaft as a unit. The engine and gearbox must be separated, the old chock-fast broken away, the bed plates are to be cleaned and prepared for new chock-fast.

3.1.22 If alignment is required the gearbox chock-fast shall be removed for the alignment of the propeller shaft to the gear box. The chock-fast installation shall be as per manufactures instructions and the alignment checked, if alignment is within manufactures specifications, the same procedure shall be carried out for the engine alignment to the gearbox.

3.1.23 All work shall be in accordance with the manufacturer's recommendations and to the satisfaction of TCMS Inspector and the Chief Engineer.

3.1.24 Contractor shall include in quote an allowance of $2500.00 for Services of Madsen FSR to set up pitch on port side. Madsen FSR shall be on board for the one hour dock trial and 4 hour sea trial.

3.1.25 Contractor shall include in cost to carry out one hour dock trial and four hour sea trial.

3.2 Location

3.2.1

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 Transport Canada Marine safety Inspector shall carry out inspections as required to acquire credit regarding Division 3 report.

4.1.2 n/a.

4.2 Testing

4.2.1 1 hour dock trial and 4 hour sea trial is to be carried out.
4.2.2 Steering test confirmed via bridge/ steering compartment and outside at rudders to confirm correct operation prior to ship undocking.
4.2.3 Confirm water flow test is carried out on stern tubes prior to undocking.

4.3 Certification
4.3.1 N/A

Part: 5 DELIVERABLES:

5.1 Drawings/Reports

5.1.1 Contractor shall supply Chief Engineer with 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

L - 1 MEGGER TESTING.

Part: 1 SCOPE:

1.1 The intent of this specification shall be to have all electrical systems megger tested.

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 Contractor shall comply with fleet Safety Manual.
2.3.2 Contractor shall comply with all Provincial Regulations and the Canada Labour Code.

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 megger test all electrical systems and circuits.

3.1.3 Coast Guard Electronics Technicians shall disconnect all electronic equipment on bridge prior to megger testing commencing and reconnect after megger testing is completed.

3.1.4 Contractor shall inform any defects observed during the megger testing .

3.1.5 Contractor to allow $1000.00 allowance for any repairs arising due to meggar testing.

3.2 Location

3.2.1

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 and TCMS.

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 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