

# CCGS Harp

## Storage & Refit

Dec 31, 2016 – April 1, 2017

Rev1



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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 December 21- 2016 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.
- 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, security ect.
- 6) The ship's crew has 10 days to prepare for lay- up ship. December 21- 2016 to December 31- 2016.
- 7) Ship will be handed over to contractor for layup and security at December 31 -2016 at 1000 hours.
- 8) Contractor shall provide layup and security of the ship from December 31 -2016 to March 22 - 2017 .Total days in storage & refit is 82 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 G – Vessel Custody Security watches .
- 11) Contractor shall take and record temperature inside vessel two ( 2 ) times daily at 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 cannot be restored in one hour the person responsible for the vessel shall be informed.
- 13) Contractor shall arrange to have Caterpillar FSR on board for overhaul of Port Main Engine during the lay up period. Engine overhaul shall be carried out Starting January 23-2017 and to be completed by February 20-2017 . Chief Engineer will supervise the Engine overhaul . See refit specification E-9.
- 14) Contractor shall isolate and remove existing Power Take Off ( PTO ) from the Port Main Engine at time of engine overhaul. Contractor shall install rebuilt Power take off unit on Port main Engine after engine overhaul is completed. Contractor shall supply and install approved hydraulic fittings to cap off all openings during the PTO is removed.
- 15) Refit work period shall commence on February 22 -2016 and be completed by March 22--2017 .These dates may change due to operational requirements.
- 16) Contractor shall quote on refit work that is required prior to ship leaving dry dock. The contractor shall provide a quote on each individual work specification. The date of this work to be later determined by owner.

- 17) Contractor shall quote the cost per additional day for security and storage, and shall be adjusted up or down by 1379 action.
- 18) Contractor shall quote on removal and 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 retain if necessary, the services of a qualified disposal agent who shall comply with all Provincial Laws and provide evidence of proper disposal.. This shall be included in the cost..
- 19) The above mentioned dates are tentative and may change due to operational requirements.
- 20) Contractor shall supply all material, equipment and parts required to perform this work unless otherwise stated.
- 21) 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.
- 22) Contractor shall reference the docking plan from the Chief Engineer on board the vessel.
- 23) Contractor shall have an individual cost breakdown of the individual service.  
(Example Docking and undocking the ship., an.)
- 24) Contractor shall prepare the blocks and necessary shoring to maintain true alignment of the vessels hull and machinery throughout the dry docking layup period.
- 25) Contractor shall have support posts on the stern overhung section of the vessel and left in position until the ship is undocked.
- 26) The owner shall provide the contractor in writing of the desire to remove the vessel from storage.
- 27) 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.
- 28) 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.
- 29) 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.

- 30) Prior to commencing hydro blasting contractor shall protect all hull mounted equipment and openings.
- 31) 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.
- 32) 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.
- 33) 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.
- 34) Contractor shall not remove or transfer any contents of the vessel without first checking with the Chief Engineer.
- 35) 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.
- 36) Prior to flooding /undocking contractor shall re-check the security of the keel / blocks and docking plugs in the presence of the owners representative.
- 37) The condition of the vessel shall be the same as the condition at time of docking.
- 38) 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.

## REMOVALS

Contractor shall quote on removing one thousand litres ( 1000 ) of oily water removal by vacuum truck from the bilges and waste oil tank.

Contractor shall quote on additional per 100 litres of waste oil/water to be removed by vacuum truck that can be adjusted up or down by 1379 action..

## **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 and connect shore power to the vessel upon arriving at dock.
- b) Contractor shall supply shore power cable from the shore power connection on the dock to the shore power connection box on the after deck on the vessel.
- c) The shore power cable from the vessel shall not be used.
- d) Contractor shall supply shore power 575 volts, 3 phase and 100 amps .
- e) Contractor shall quote on supplying 50,000 KWH of power and quote on additional per KWH that can be adjusted up or down by 1379 action.
- f) 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, ect.
- c) Temperature readings are to be taken and recorded twice daily in the steering gear compartment, engine room, forward cabin area, and wheelhouse.
- d) 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.
- e) In the event the temperature goes down below 7 degree Celsius or above 40 degree Celsius contractor shall notify the vessels owner contact person..
- f) Contact Person.  
Craig Norman.  
Project Officer  
Office # 772 - 5336  
Cell # 697-5422  
E-Mail [craig.norman@dfo-mpo.gc.ca](mailto:craig.norman@dfo-mpo.gc.ca)
- g) 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 type written 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 linehandling.

#### 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 ect 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 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) PAINING

All new and disturbed steelwork that will not be on the underwater wetted surfaces of the ships 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 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.

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 reproducibles 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.

Spec item #: H -1	<b>SPECIFICATION</b>	TCMSB Field #:
H-1 Production Chart		

## **H -1 PRODUCTION CHART**

### **Part: 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.

### **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 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..

Spec item #: H -1	<b>SPECIFICATION</b>	TCMSB Field #:
<b>H-1 Production Chart</b>		

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.

## **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**

N/A

## **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 #: H-2	<b>SPECIFICATION</b>	TCMSB Field #:
H-2	Services	

## **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 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 kilowatt hour. The 50,000 KWH will be adjusted up or down at the end of the refit using PWGSC 1379 action. ( as stated in the 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.

Spec item #: H-2	<b>SPECIFICATION</b>	TCMSB Field #:
H-2 Services		

- 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.
- 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. Water to be metered and readings witnessed by chief or owners representative.
- 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. Water to be metered and readings witnessed by chief or owners representative.
- 3.1.7.** Two separate Contractor supplied boarding gangways to be supplied and rigged complete with safety nets 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.** As stated in Period of lay- up section item # 16: 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.
- 3.1.9** The interior decks of the vessel are to be covered for protection using

Spec item #: H-2	<b>SPECIFICATION</b>	TCMSB Field #:
H-2	Services	

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. This flooring 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**

Spec item #: H-2	<b>SPECIFICATION</b>	TCMSB Field #:
H-2	Services	

N/A

Spec item #: H -3	<b>SPECIFICATION</b>	TCMSB Field #:
H -3 Hull Cleaning and Painting		

## **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 from the keel to the main deck and to install new underwater hull coating and coating from the water line to the main deck, including the complete bow area above the waterline.

**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.

**2.4.2** Owner will price NACE Inspector for Hull and Seabay coatings.

Spec item #: H -3	<b>SPECIFICATION</b>	TCMSB Field #:
<b>H -3 Hull Cleaning and Painting</b>		

### **Part: 3 TECHNICAL DESCRIPTION**

#### **3.1 General**

- 3.1.1** Contractor shall inform Chief Engineer prior to commencement of work.
- 3.1.2** The area of the hull from the keel to the waterline including appendages is 264 m<sup>2</sup>. The area from the waterline to the main deck, including the complete bow area above the waterline is 93 m<sup>2</sup>. shall bid on cleaning and coating the hull. The contractor shall submit with the bid, a unit cost for cleaning and coating per m<sup>2</sup> of additional area which can be adjusted up or down by using PWGSC 1379 action.
- 3.1.3** 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.
- 3.1.4** 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 m<sup>2</sup> of bare area and shall include a unit cost to blast any additional area. The actual area will be adjusted using PWGSC 1379 action.
- 3.1.5** 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.
- 3.1.6** 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.
- 3.1.7** 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.

Spec item #: H -3	<b>SPECIFICATION</b>	TCMSB Field #:
<b>H -3 Hull Cleaning and Painting</b>		

- 3.1.8** Contractor shall supply and apply the following to the underwater portion:
- a) One coat of International Paints Intershield ENA 300 Series Epoxy (Aluminum) at 5-6 mils DFT to all bare areas.
  - b) One complete coat of International Paints Intershield ENA Series (Bronze) at 5-6 mils DFT.
  - c) One complete coat of International Paints Intershield BRA 640 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.
- 3.1.9** 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 198 (CPA099 Red) at 2-3 mils DFT per coat.
  - b) Two complete coat of International Paints Interlac 665 Marine Enamel (Interlac CLC 287 Signal red) at 1.5 -2 mils DFT per coat.
- 3.1.10** 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 665 Marine Enamel.

**3.1.11** 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

Spec item #: H -3	<b>SPECIFICATION</b>	TCMSB Field #:
H -3 Hull Cleaning and Painting		

**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

Spec item #: H -4	<b>SPECIFICATION</b>	TCMSB Field #:
H -4 Sea Bay Cleaning & Painting		

## **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.

Spec item #: H -4	<b>SPECIFICATION</b>	TCMSB Field #:
<b>H -4 Sea Bay Cleaning &amp; Painting</b>		

- 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 22m<sup>2</sup> allowing for 2.2m<sup>2</sup> 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.

Spec item #: H -4	<b>SPECIFICATION</b>	TCMSB Field #:
H -4 Sea Bay Cleaning & Painting		

**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

Spec item #: H -5	<b>SPECIFICATION</b>	TCMSB Field #:
H-5 Anodes		

## **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 .

Spec item #: H -5	<b>SPECIFICATION</b>	TCMSB Field #:
<b>H-5 Anodes</b>		

**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**

<b>3.2.1 ANODES</b>	<b>LOCATION</b>	<b>TYPE</b>
<b>10</b>	<b>Hull</b>	<b>24 lb</b>
<b>4</b>	<b>Rudders</b>	<b>24 lb</b>
<b>4</b>	<b>Kort Nozzles</b>	<b>24 lb</b>
<b>1</b>	<b>Sea Bay Cover</b>	<b>24 lb</b>
<b>5</b>	<b>Sea Chests</b>	<b>24 lb</b>
<b>8</b>	<b>Stern tubes</b>	<b>12 lb</b>

**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**

Spec item #: H -5	<b>SPECIFICATION</b>	TCMSB Field #:
H-5 Anodes		

**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

Spec item #: H -7	<b>SPECIFICATION</b>	TCMSB Field #:
H-6 Davit Annual Inspection		

## **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.

Spec item #: H -7	<b>SPECIFICATION</b>	TCMSB Field #:
<b>H-6 Davit Annual Inspection</b>		

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 etc. An allowance of \$1000.00 for replacement parts to be included in bid.

**3.1.5 An allowance of \$1000.00 for replacement parts to be included in bid.**

### 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 -7	<b>SPECIFICATION</b>	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

Spec item #: H-7	<b>SPECIFICATION</b>	TCMSB Field #:
<b>H-7 Life Rafts Service</b>		

## **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**

Spec item #: H -7	<b>SPECIFICATION</b>	TCMSB Field #:
<b>H-7 Life Rafts Service</b>		

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 included 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, ect.

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.

Spec item #: H-7	<b>SPECIFICATION</b>	TCMSB Field #:
<b>H-7 Life Rafts Service</b>		

**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

Spec item #: H -18	<b>SPECIFICATION</b>	TCMSB Field #:
<b>H- 8 FM 200 Inspection</b>		

## **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 centre 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.

Spec item #: H -18	<b>SPECIFICATION</b>	TCMSB Field #:
<b>H- 8 FM 200 Inspection</b>		

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.

Spec item #: H -18	<b>SPECIFICATION</b>	TCMSB Field #:
H- 8 FM 200 Inspection		

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

Spec item #: H -9	<b>SPECIFICATION</b>	TCMSB Field #:
<b>H-9 CO 2 Inspection</b>		

## **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.

Spec item #: H -9	<b>SPECIFICATION</b>	TCMSB Field #:
<b>H-9 CO 2 Inspection</b>		

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

Spec item #: H -9	<b>SPECIFICATION</b>	TCMSB Field #:
<b>H-9 CO 2 Inspection</b>		

**5.3 Training**

5.3.1 N/A

**5.4 Manuals**

5.4.1 N/A

Spec item #: H-10	<b>SPECIFICATION</b>	TCMSB Field #:
<b>H- 10 Portable Fire Extinguishers</b>		

## **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

Spec item #: H -10	<b>SPECIFICATION</b>	TCMSB Field #:
<b>H- 10 Portable Fire Extinguishers</b>		

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 Contractor to provide pricing on suitable replacement fire extinguishers of equivalent size to existing.

### 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

Spec item #: H -10	<b>SPECIFICATION</b>	TCMSB Field #:
H- 10 Portable Fire Extinguishers		

**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 -11	<b>SPECIFICATION</b>	TCMSB Field #:
<b>H- 11 Fire Detection System Inspection</b>		

## **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.

Spec item #: H -11	<b>SPECIFICATION</b>	TCMSB Field #:
<b>H- 11 Fire Detection System Inspection</b>		

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.

Spec item #: H -11	<b>SPECIFICATION</b>	TCMSB Field #:
<b>H- 11 Fire Detection System Inspection</b>		

**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 -12	<b>SPECIFICATION</b>	TCMSB Field #:
<b>H- 12 Galley Karboly System Inspection</b>		

## **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.

Spec item #: H -12	<b>SPECIFICATION</b>	TCMSB Field #:
<b>H- 12 Galley Karboly System Inspection</b>		

- 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.

Spec item #: H -12	<b>SPECIFICATION</b>	TCMSB Field #:
<b>H- 12 Galley Karboly System Inspection</b>		

**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-13	<b>SPECIFICATION</b>	TCMSB Field #:
<b>H- 13 Anchor, Anchor Chain &amp; Cable Inspection</b>		

## **H -13 ANCHOR ,ANCHOR CHAIN & CABLE INSPECTION**

### **Part: 1 SCOPE:**

**1.1** The intent of this specification shall be contractor shall remove, ship anchor, anchor chain and cable for 5 year inspection for Transport Canada as per Division 3 report.

**1.2** n/a

### **Part: 2 REFERENCES:**

#### **2.1 Guidance Drawings/Nameplate Data**

**2.1.1** Anchor : Pool T.W 225 kg  
Anchor Chain 50 feet with 7/8 link  
Cable is ¾ inch and 540 foot long.

**2.1.2** 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 ensure with Chief Engineer that all affected systems are isolated, locked out and tagged as required. Prior to starting work.

**3.1.3** Contractor shall inform and arrange Transport Canada Marine Safety Inspector to arrange time for 5 year inspection to be carried out as per Division 3 report.

Spec item #: H-13	<b>SPECIFICATION</b>	TCMSB Field #:
<b>H- 13 Anchor, Anchor Chain &amp; Cable Inspection</b>		

**3.1.4** Contractor shall remove anchor, anchor chain and cable from ship and spread it on the dock.

**3.1.5** Contractor shall water blast anchor and chain and to HB2 for 5 year inspection by Transport Canada Marine Safety Inspector and Chief Engineer.

**3.1.6** After inspection is carried out by Transport Canada marine Safety Inspector and the Chief Engineer the contractor shall paint the anchor and anchor chain with:

- a) One ( 1) complete coat of Primer Inter-shield ENA 300 Aluminum 5-6 mills DFT.
- b) One (1) complete coat of paint Inter-seal 670 HS low temperature cure black.

**3.1.7** Contractor shall reinstall the anchor, anchor chain and cable when work is completed and inspected by Transport Canada Marine Safety Inspector and Chief Engineer.

**3.1.8** Na

### **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.

## **Part: 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 As required By transport Canada Marine Safety Inspector.

### **4.3 Certification**

**4.3.1** n/a

Spec item #: H-13	<b>SPECIFICATION</b>	TCMSB Field #:
H- 13 Anchor, Anchor Chain & Cable Inspection		

**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

Spec item #: H-14	<b>SPECIFICATION</b>	TCMSB Field #:
<b>H- 14 Replace Back Plate ON Deck Crane Control Box</b>		

## **H-14 REPLACE BACK PLATE ON DECK CRANE CONTROL BOX**

### **Part: 1 SCOPE:**

**1.1** The intent of this specification shall be contractor shall remove rusted back plate from Deck Crane Control Box located on upper deck. Contractor shall fabricate and install new backing plate.

### **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 ensure with Chief Engineer that all affected systems are isolated, locked out and tagged prior to starting work.
- 3.1.3 Contractor shall disconnect twelve (12 ) hydraulic hoses in deck crane control box. Hoses and all openings shall be capped of with correct approved fittings for the duration of the work to prevent dirt and debree from entering the openings.
- 3.1.4 Contractor shall mark each hose on both ends with the correct fittings that the hose is being removed from.
- 3.1.5 Contractor shall disconnect and remove deck crane control box on upper deck, and remove rusted out backing plate.
- 3.1.6 Contractor shall fabricate and install new backing plate. The size of the backing plate is approximately 23 inches x 12 inches and 3/8 inch thick.

Spec item #: H -14	<b>SPECIFICATION</b>	TCMSB Field #:
<b>H- 14 Replace Back Plate ON Deck Crane Control Box</b>		

- 3.1.7 The Contractor shall apply two coats of contractor supplied marine grade primer to all new and disturbed metal.
- 3.1.8 Contractor shall weld new backing plate to support post and deck as per installation of existing backing plate. Contractor shall drill four holes in backing plate to attach the deck crane control box with contractor supplied 3/8 inch stainless steel bolts, nuts and washers.
- 3.1.9 Contractor shall install deck crane control box and reconnect all hoses in correct location.
- 3.1.10 When Harp is undocked, the hydraulics shall be run up to check for leaks.
- 3.1.11 Deck crane is to be run up and operated in all positions to be proven operational correctly.
- 3.1.12 n/a.

### **3.2 Location**

- 3.2.1 Crane Control Box located on upper 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 Visually inspection shall be carried out by Chief Engineer.

### **4.2 Testing**

- 4.2.1 When Harp is undocked hydraulics shall be run up and system checked for leaks and proven operational.
- 4.2.2 Deck Crane shall be operated in all positions and from both locations to prove operational correctly.

### **4.3 Certification**

- 4.3.1 n/a

## **Part: 5 DELIVERABLES:**

### **5.1 Drawings/Reports**

Spec item #: H -14	<b>SPECIFICATION</b>	TCMSB Field #:
H- 14 Replace Back Plate ON Deck Crane Control Box		

**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**

Spec item #: H -15	<b>SPECIFICATION</b>	TCMSB Field #:
<b>H- 15 Galley Deck Rep[airs</b>		

## **H-15 GALLEY DECK REPAIRS**

### **Part: 1 SCOPE:**

**1.1** The intent of this specification shall be contractor crop out section of deck in Galley, deck and replace with new Dex –A Tex decking .

### **Part: 2 REFERENCES:**

#### **2.1 Guidance Drawings/Nameplate Data**

**2.1.1** Galley deck area requires 8 square feet replacement.

**2.1.2** Total Deck Area Require Painting :  
Galley Deck total area is approximately 90 square feet.

2.1.3 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 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 Dex A Tex Deck in the Galley 2 foot x 4 foot. When removing section of dex a Tex deck, the cut shall be a clean

Spec item #: H -15	<b>SPECIFICATION</b>	TCMSB Field #:
<b>H- 15 Galley Deck Rep[airs</b>		

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 Dex A Tex Deck. Contractor shall prepare and clean the under laying deck surface with the approved bonding agent for the installation of the new Dex A Tex deck in the damaged area.
- 3.1.5 Chief Engineer must inspect the deck area when the damaged dex a tex decking is removed and when the new decking is installed prior to installing finish coat.
- 3.1.6 Contractor shall replace decking with new contractor supplied Dex a Tex decking as per manufactures specifications.
- 3.1.7 Contractor shall install new dex a tex deck to the same height as the existing decking.
- 3.1.8 Contractor shall include in quote the cost to remove existing deck , prepare deck and install contractor supplied Tex A Tex deck 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 paint the complete galley deck area with contractor supplied approved epoxy paint 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 shall determine the color of the approved epoxy paint to be used on the decks and the degree of the non - skid surface.
- 3.1.12 Contractor shall ensure that the repaired Dex A Tex and epoxy coat shall allow for removal of deck drain screens with - out damage to the floor covering.
- 3.1.13 N/A

### **3.2 Location**

- 3.2.1 Galley.

### **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 Decking shall be inspected by Chief Engineer and Commanding Officer.

### **4.2 Testing**

Spec item #: H -15	<b>SPECIFICATION</b>	TCMSB Field #:
H- 15 Galley Deck Rep[airs		

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

Spec item #: H-17	<b>SPECIFICATION</b>	TCMSB Field #:
H- 16 Duct Work Cleaning		

## **H-16 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.

Spec item #: H -17	<b>SPECIFICATION</b>	TCMSB Field #:
<b>H- 16 Duct Work Cleaning</b>		

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

Spec item #: H -17	<b>SPECIFICATION</b>	TCMSB Field #:
H- 16 Duct Work Cleaning		

Spec item #: H-17	<b>SPECIFICATION</b>	TCMSB Field #:
H- 17 Potable Water Tank Cleaning		

## **H-17 POTABLE WATER TANK CLEANING**

### **Part: 1 SCOPE:**

**1.1** The intent of this specification shall be contractor to open the potable water tank for cleaning and 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** Fleet safety Manual Section 7.F.12 Potable Water Quality.

**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.

**2.3.3** 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**

Spec item #: H -17	<b>SPECIFICATION</b>	TCMSB Field #:
<b>H- 17 Potable Water Tank Cleaning</b>		

### 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 the fresh water tank is isolated, locked out and tagged prior to starting work.
- 3.1.3 Contractor shall drain the fresh water tank and open up for cleaning and inspection. The volume of the fresh water tank is 10 m<sup>3</sup>.
- 3.1.4 The fresh water tank is to gas freed by certified personnel before entry into the tank.
- 3.1.5 Contractor shall wash the entire tank inside and wipe dry.
- 3.1.6 Contractor shall ensure that the tank is inspected by the attending Commanding Officer prior to cleaning the tank and when tank cleaning is completed.
- 3.1.7 Commanding Officer shall inspect tank just prior to being closed up.
- 3.1.8 The contractor shall close up the tank using new contractor supplied gaskets approved for substance it is being used on.
- 3.1.9 Contractor shall fill the tank with fresh water and super chlorinate in accordance with the directions in the Fleet safety Manual 7.F. 12 Potable water Quality. The total volume of the tank is 10m<sup>3</sup>. The contractor shall remove and dispose of the chlorinated water in accordance with all Provincial and Federal regulations. The cost of disposal shall be included in the contractors bid.
- 3.1.10 Contractor shall fill and flush fresh water tank two additional times as per Fleet Safety Manual 7.F.12
- 3.1.11** After completion of all work, samples of fresh water are to be taken from the tank and the water source, they are to be sent to an accredited laboratory for analysis. Laboratory to be approved by owner's representative. The Chief Engineer or his delegate shall witness the taking of a water sample from the sample points as required. The testing completed on the water shall be as set out in the Coast Guard Fleet Safety Manual Section 7.F.12 Potable Water Quality, paragraph 3.6.7. (28 parameter test) A copy of the test certificate shall be delivered to the Captain or Chief Engineer. The contractor shall make arrangements to have the samples taken and reports sent to the ship. The contractors bid shall include the cost of arranging the water testing and delivery of samples to the laboratory.

Spec item #: H-17	<b>SPECIFICATION</b>	TCMSB Field #:
<b>H- 17 Potable Water Tank Cleaning</b>		

3.1.12 N/A.

### **3.2 Location**

3.2.1 Dry Stores 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 and Commanding Officer

4.1.2 N/A

### **4.2 Testing**

4.2.1 As per Technical Description

4.2.2 N/A

### **4.3 Certification**

**4.3.1** As per Technical Description

## **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**

Spec item #: H -17	<b>SPECIFICATION</b>	TCMSB Field #:
<b>H- 17 Potable Water Tank Cleaning</b>		

**5.3.1 N/A**

**5.4 Manuals**

**5.4.1 N/A**

Spec item #: H-18	<b>SPECIFICATION</b>	TCMSB Field #:
<b>H-18 Fore Peak Hatch Pockets</b>		

## **H-18 FORE PEAK HATCH POCKETS**

### **Part 1:SCOPE:**

- 1.3** The intent of this specification shall be crop out two pockets from the fore peak hatch and install two new pockets on forepeak coaming.
- 1.4** This work shall be carried out in Conjunction with the following:

### **Part 2: REFERENCES:**

#### **2.5 Guidance Drawings/Nameplate Data**

**2.2.1** n/a.

#### **2.6 Standards**

**2.2.1** n/a.

#### **2.7 Regulations**

**2.3.1** n/a

#### **2.8 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:**

#### **3.3 General**

- 3.1.1.** Contractor shall inform Chief Engineer prior to starting work.
- 3.1.2.** Contractor shall cover the area in the fore peak with approved fire blanket material when work is being carried out on the hatch.
- 3.1.3.** Contractor shall remove the Dog Pocket on the forward side and Port side of the hatch coaming.
- 3.1.4.** Contractor shall fabricate and install new Dog Pockets in location that the old pockets were removed from.
- 3.1.5.** Pockets are approximately 5 ¼ inches long, 2 ½ inches high and 1 ½ inches deep x ¼ inches thick.

Spec item #: H-18	<b>SPECIFICATION</b>	TCMSB Field #:
<b>H-18 Fore Peak Hatch Pockets</b>		

**3.1.6.** The new dog pockets and surrounding must receive two coats of a marine grade primer when the welding is completed.

**3.1.7.** n/a.

### **3.6 Location**

**3.2.1.** Forward on the Fore deck.

### **3.7 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:**

### **4.3 Inspection**

**4.1.3.** 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:**

### **5.9 Drawings/Reports**

**5.1.1** Contractor shall provide Chief Engineer two type written reports and one electronic copy of what work was carried out when the work is completed.

### **5.10 Spares** N/A

### **5.11 Training** N/A

### **5.12 Manuals**

Spec item #: H -18	<b>SPECIFICATION</b>	TCMSB Field #:
<b>H-18 Fore Peak Hatch Pockets</b>		

N/A

Spec item #: E-21	<b>SPECIFICATION</b>	TCMSB Field #:
E-1 Air Receiver Safety Valves		

## **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 New Valve 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 New Valve to be tested and certified as per manufactures specifications. Contractor shall reinstall the safety valves when testing is complete.

Spec item #: E-21	<b>SPECIFICATION</b>	TCMSB Field #:
E-1 Air Receiver Safety Valves		

3.1.4 Contractor shall provide to Chief Engineer Safety valve certification from New Valve 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 new valve 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.

Spec item #: E-21	<b>SPECIFICATION</b>	TCMSB Field #:
E-1      Air Receiver Safety Valves		

**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 #: E-2	<b>SPECIFICATION</b>	TCMSB Field #:
E-2 Port & Starboard Propeller Shaft Hub Replacements		

## E-2 PORT & STARBOARD PROPELLER SHAFT HUBS REPLACEMENT

### Part: 1 SCOPE:

- 1.1** The intent of this specification shall be contractor to remove Port and Starboard Propellers, Propeller shafts and remove propeller hubs from shafts and install new owner supplied Propeller Hubs for Transport Canada 5 year 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.

### 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 as per Division 3 Report.
- 3.1.4** Contractors shall include in cost the services of providing an Rolls Royce Field Service Representative (FSR ) for the removal, disassembly, rebuilding and reinstallation of the Port & Starboard Propeller, Propeller Shaft and propeller hubs . (Contact- Craig Giles Rolls Royce Canada Ltd. (709) 748-7650. An

Spec item #: E-2	<b>SPECIFICATION</b>	TCMSB Field #:
E-2 Port & Starboard Propeller Shaft Hub Replacements		

allowance of \$250.00 per day is to be included for travel and living for 10 days and will be adjusted up or down using PWGSC 1379 action upon proof of invoices.

- 3.1.5** The contractor shall include an allowance of \$15,000.00 for the provision of the Rolls Royce FSR. The actual amount will be adjusted up or down using PWGSC 1379 action upon proof of invoices.
- 3.1.6** Contractor shall remove the Port and Starboard rope guard to measure and record the amount of Tail Shaft Bearing wear down for the Port and Starboard shafts 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 shafts.
- 3.1.7** . Contractor shall remove the Port and Starboard Rudder to facilitate removal of the propeller shafts 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.
- 3.1.8** Contractor is to remove the Port & Starboard propeller shaft to gearbox coupling and disconnect the pitch actuator rod and all other items in order for Propeller shaft removal. Measurements shall be taken prior to disconnection.
- 3.1.9** Contractor shall remove the Port and Starboard propeller aft cap, propeller hub, blades, and complete tail shaft assembly.
- 3.1.10** When the shafts are removed, contractor shall include in quote that both stern tubes shall be high pressure cleaned to have the rust and debris removed from the stern tubes.
- 3.1.11** Contractor shall take and record the bearing measurements vertical and horizontal in three positions on the inboard and outboard bearings for the Port & Starboard shaft bearings. Two Type written copies and one electronic copy to be provided to Chief Engineer prior to work proceeding.
- 3.1.12** Contractor shall take and record measurements on the Port and Starboard shaft in three positions vertical and horizontal at the location on the shafts where the shaft is rotating on the thordon bearings.
- 3.1.13** Contractor shall give Chief Engineer a copy of the Port and Starboard Shaft Bearings measurements when the measurements are taken..
- 3.1.14** Contractor shall include in quote the cost to remove the existing shaft thordon bearing on the port and starboard side and install new contractor supplied propeller shaft thordon bearings.  
Contractor shall break down quote per side.
- 3.1.15** . Contractor shall include all cost for the machining of the new bearings.  
Contractor shall quote per side for credited purpose if work is not required.
- 3.1.16** Contractor shall include in quote an allowance of \$4000.00 for supply new Thordon bearings. This cost shall be adjusted up or down by 1379 action upon proof of invoice.

Spec item #: E-2	<b>SPECIFICATION</b>	TCMSB Field #:
E-2 Port & Starboard Propeller Shaft Hub Replacements		

- 3.1.17** Contractor shall transport the Port & Starboard propeller shaft to machine shop to remove existing propeller hub and install new owner supplied propeller hub as per manufactures specifications. 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.
- 3.1.18** Propeller seals and new hubs will be owner supplied. The FSR shall install all components of the propeller and tail shaft using owner supplied seals.
- 3.1.19** Contractor shall include in quote an allowance of \$3000.00 for all machine shop work required to remove existing propeller hubs from the propeller shafts and install new owner supplied Propeller Hub as per manufactures specifications. Rolls Royce FSR shall supervise this work being carried out. This allowance shall be adjusted up or down by 1379 action upon proof of machine shop invoice.
- 3.1.20** Contractor shall machine Port Propeller Shaft on the aft bearing surface as per Rolls Royce FSR measurements to remove scored bearing surface..
- 3.1.21** Contractor shall return the old propeller hubs and all hub related parts that was removed from the shaft to the Vessel Maintenance Manager.
- 3.1.22** Propeller seals will be owner supplied.
- 3.1.23** Contractor shall remove the inside bulkhead mounted sealing flange for the Port and Starboard Shaft and check the flange for damage and reinstall the flange using a new manufactures approved contractor supplied gasket.
- 3.1.24** Contractor shall include in cost an allowance of 5000.00 the Services of Wartsilla FSR to install new owner supplied shaft bulk head seals for the Port and Starboard shafts. Contractor shall arrange Wartsilla FSR in advance.
- 3.1.25** 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 and starboard Stern Tube and witnessed by Chief Engineer.
- 3.1.26** Contractor shall test steering in conjunction with Bridge, steering gear compartment and looking at rudders for correct operation prior to ship undocked..
- 3.1.27** When propeller shafts are installed prior to coupling up rolls Contractor / Rolls Royce FSR shall take and record measurements to confirm shafts are aligned with Gearbox coupling are as per manufactures specifications.
- 3.1.28** When the vessel has been refloated and settled in the water shaft alignment measurements shall be taken by the Rolls Royce FSR to determine if shaft alignment procedure is required. Contractor shall include in quote an allowance of \$ 3000 for the alignment of the propeller shaft to the Gearbox and an allowance of \$3000 to align gearbox to engine.
- 3.1.29** 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.
- 3.1.30** 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

Spec item #: E-2	<b>SPECIFICATION</b>	TCMSB Field #:
<b>E-2 Port &amp; Starboard Propeller Shaft Hub Replacements</b>		

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.

- 3.1.31** All work shall be in accordance with the manufacturer's recommendations and to the satisfaction of TCMS Inspector and the Chief Engineer.
- 3.1.32** Contractor shall include in quote an allowance of \$ 5000.00 for Services Of Madsen FSR to set up pitch on Port and Starboard side .Madsen FSR shall be on board for the one hour dock trial and 4 hour sea trial .
- 3.1.33** If realignment is not required the cost will be adjusted for credit.
- 3.1.34** Contractor shall include in cost to carry out one hour dock trial and four hour sea trial .
- 3.1.35** n/a

### **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 get items credited on 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

Spec item #: E-2	<b>SPECIFICATION</b>	TCMSB Field #:
E-2	Port & Starboard Propeller Shaft Hub Replacements	

**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

Spec item #: E-3	<b>SPECIFICATION</b>	TCMSB Field #:
E-3 Replace PTO on Port Main Engine		

## **E-3 REPLACE PTO ON PORT MAIN ENGINE**

### **Part: 1 SCOPE:**

**1.1** The intent of this specification shall be contractor to remove the Hydraulic pump and PTO from the Port Main Engine so the engine can be overhauled and install owner supplied overhauled PTO from fleet stores and existing hydraulic pump that was removed when engine overhaul is completed.

**1.2** This work shall be carried out in conjunction with the Port Main Engine overhaul that shall be carried out by contractor in the lay- up period.

### **Part: 2 REFERENCES:**

#### **2.1 Guidance Drawings/Nameplate Data**

**2.1.1** Twin Disc Clutch

#### **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 ensure with Chief Engineer that hydraulics are isolated, locked out and tagged prior to starting work.

Spec item #: E-3	<b>SPECIFICATION</b>	TCMSB Field #:
E-3      Replace PTO on Port Main Engine		

**3.1.3** Contractor and Chief Engineer shall confirm amount of Hydraulic oil in tank prior to starting work. When this work is completed contractor shall supply the correct hydraulic oil and top up tank to the same level prior to starting work.

**3.1.4** Contractor shall remove the Hydraulic Pump and the PTO from the Port Main Engine so the Main Engine can be overhauled can be carried out by the Caterpillar FSR. When engine overhaul is completed contractor shall install the owner supplied PTO and the existing Hydraulic Pump that was removed when engine.

**3.1.5** Contractor shall ensure all openings on the hydraulic pump and hoses are capped off with approved hydraulic fitting to prevent dirt from entering into the openings for the duration the pump and lines are disconnected.

**3.1.6** Hydraulic Pump and PTO removal shall be carried out during the lay-up period prior to the engine overhaul and installed after engine overhaul is completed.

**3.1.7** Contractor shall run up the hydraulics and test for leaks when ship goes in water.

**3.1.8** n/a.

### **3.2 Location**

**3.2.1** 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** N/A.

### **4.2 Testing**

**4.2.1** The Hydraulics shall be run up and tested for leaks when ship goes into the water and proven operational correctly.

### **4.3 Certification**

**4.3.1** N/A

Spec item #: E-3	<b>SPECIFICATION</b>	TCMSB Field #:
E-3 Replace PTO on Port Main Engine		

**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

Spec item #: E-4	<b>SPECIFICATION</b>	TCMSB Field #:
E-4 Port Main Engine Overhaul		

## **E-4 PORT MAIN ENGINE OVERHAUL**

### **Part: 1 SCOPE:**

- 1.1** The intent of this specification shall be contractor to supply services of Caterpillar Field Service Representative (FSR) to carry out complete full overhaul the Port Main Engine as per manufactures specifications.
- 1.2** Engine overhaul to be carried out in conjunction with Hydraulic Pump & PT specification.
- 1.3** Engine overhaul shall be carried out when the vessel is in Lay- up period. Date of engine overhaul shall be carried out January 25- February 22 2017. .Chief Engineer shall be on board the ship during working hours the engine overhaul is being carried out..
- 1.4** Port Main Engine overhaul parts are to be supplied by Caterpillar and included in cost.
- 1.5** N/A.

### **Part: 2 REFERENCES:**

#### **2.1 Guidance Drawings/Nameplate Data**

**2.1.1** Port Main Engine Serial #: 99U04961

#### **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 #: E-4	<b>SPECIFICATION</b>	TCMSB Field #:
E-4 Port Main Engine Overhaul		

### 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 the Port Main Engine is isolated, locked out and tagged prior to starting work.
- 3.1.3 Please note: Port Main Engine Chock Fast do not need to be disturbed for Engine Overhaul. Port main engine can be unbolted at cross member.
- 3.1.4 Chief Engineer shall be on board during the period the period engine overhaul is carried out.
- 3.1.5 Contractor shall arrange for Caterpillar FSR to come on board to carry out complete full overhaul of Port Main Engine as per manufactures specifications. Port Engine overhaul shall be carried out during the lay-up period during normal working hours .( No Overtime )
- 3.1.6 Contractor shall include in quote an allowance of **\$150,000.00** for the services of Caterpillar Field Service Representative to carry out overhaul of the Port main engine. This allowance shall be adjusted up or down by 1379 action upon proof of invoice.
- 3.1.7 Contactor FSR shall replace the Drive Hub on the Port Main where the PTO shaft fits into. This shall be carried out at time of overhaul. Contractor shall include in cost for supply and install the parts.
- 3.1.8 Contractor shall include in quote all costs for the Crankshaft to be removed from engine and sent to certified machine shop for polishing of crank journals and install crankshaft after machine shop work is complete.
- 3.1.9 Machine shop work for polishing the crank shaft will be covered on 1379 action upon proof of machine shop invoice.
- 3.1.10 Contractor shall include in quote allowance of 20 (twenty) hours for 1 person to assist Caterpillar FSR as required.
- 3.1.11 Contractor shall include in quote the services of crane to remove heavy items ex: (crankshaft) to and from ship if required .Contractor shall include in costs ( 6) six crane lifts and quote for each additional crane lift. The crane lifts do not include the 20 hours to assist as required in the item 3.1.8.
- 3.1.12 Contractor shall arrange For Transport Canada Marine Safety Inspector to inspect engine as required and credit on Division 3 Report.
- 3.1.13 Date for the Port Main Engine overhaul shall be During lay up period January 25- February 22 -2017.
- 3.1.14 Engine run up and testing to be carried out by FSR when the ship goes into the water after the refit period is completed.
- 3.1.15 FSR shall be on board for the one hour dock trial and four hour sea trial .
- 3.1.16 n/a.

Spec item #: E-4	<b>SPECIFICATION</b>	TCMSB Field #:
E-4 Port Main Engine Overhaul		

### 3.2 Location

3.2.1 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 Inspection to be carried out by Transport Canada Marine Safety Inspector and Chief Engineer.

### 4.2 Testing

4.2.1 Testing shall be carried out as requested by Transport Canada Marine Safety Inspector.

4.2.2 Port Main Engine run up and testing shall be carried out by FSR as per manufactures specifications when ship goes into the water.

4.2.3 The FSR shall be on board for the 4 ( four ) hour seal trial after the refit period.

### 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** All new parts are to be supplied by Caterpillar Dealer.

### 5.3 Training

5.3.1 N/A

Spec item #: E-4	<b>SPECIFICATION</b>	TCMSB Field #:
E-4 Port Main Engine Overhaul		

**5.4 Manuals**

**5.4.1 N/A**

Spec item #: E-5	<b>SPECIFICATION</b>	TCMSB Field #:
<b>E-5 Port Main Engine Shell &amp; Tube Cooler inspection</b>		

## **E-5 PORT MAIN ENGINE SHELL & TUBE COOLER INSPECTION**

### **Part: 1 SCOPE:**

- 1.1** The intent of this specification shall be contractor to remove the Jacket Water Shell and Tube cooler for the Port Main Engine for cleaning, inspection and testing as per manufactures specifications.
- 1.2** Shell and tube cooler shall be inspected by Transport Canada Marine Safety Inspector and credited on Division 3 Report.
- 1.3** 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 commencement of work.
- 3.1.2** Contractor shall ensure with Chief Engineer that Jacket Water Shell & Tube Cooler for Port Main Engine is isolated, locked out and tagged prior to starting work.
- 3.1.3** Contractor shall inform and arrange Transport Canada Marine Safety Inspector for inspection to be carried out as per Division 3 Report.
- 3.1.4** Contractor shall remove the shell and tube cooler, disassemble, and chemically clean with approved cleaner.
- 3.1.5** Contractor shall rod tubes to prove free and clear.

Spec item #: E-5	<b>SPECIFICATION</b>	TCMSB Field #:
<b>E-5 Port Main Engine Shell &amp; Tube Cooler inspection</b>		

3.1.6 Contractor shall prepare and carry out hydrostatic test as per Transport Canada Marine Safety Inspector request.

**3.1.7** Contractor shall have included all costs the preparation and hydro-static testing of the shell and tube cooler. This includes delivery costs to and from machine shop and crane services if required.

**3.1.8** Contractor shall carry out Hydro static test as per manufacture specifications.

**3.1.9** Contractor shall supply and install all new approved seals and gaskets during assembly and installation of the Shell and Tube Cooler.

**3.1.10** Tube and shell cooler to be inspected by Chief Engineer and Transport Canada Marine Safety Inspector prior to assembly and during the Hydrostatic Test.

3.1.11 Shell and tube cooler to be installed and tested when ship goes into the water.

3.1.12 Contractor shall include in quote the coolant level in the port main engine shall be topped up to the correct level with Caterpillar approved coolant mixture.

**3.1.13** n/a.

### **3.2 Location**

**3.2.1** 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 Shell and Tube Cooler shall be inspected by Chief Engineer and Transport Canada Marine Safety Inspector when opened up for inspection.

### **4.2 Testing**

4.2.1 Transport Canada Marine Safety Inspector and Chief Engineer shall witness the Hydro static test carried out on the cooler.

### **4.3 Certification**

**4.3.1** Shell and Tube cooler to be credited on Division 3 Report.

Spec item #: E-5	<b>SPECIFICATION</b>	TCMSB Field #:
E-5 Port Main Engine Shell & Tube Cooler inspection		

**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

**5.5**

**5.4.1** N/A

Spec item #: E-6	<b>SPECIFICATION</b>	TCMSB Field #:
<b>E-6 Starboard Main Engine Top End Inspection</b>		

## **E-6 STARBOARD MAIN ENGINE TOP END INSPECTION**

### **Part: 1 SCOPE:**

- 1.1** The intent of this specification shall be contractor shall carry out Top End Inspection on Starboard Main Engine by Original Equipment Manufacture Field Service Representative. ( FSR ).
- 1.2** This work shall be carried in conjunction with the Port Main Engine Overhaul that shall be carried out during the storage period.

### **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 ensure with Chief Engineer that all affected systems are isolated, locked out and tagged prior to starting work.
- 3.1.3** Contractor shall arrange and have top end inspection carried out by original manufacture FSR. Remove all valve covers to carry out visually inspection on complete top end assembly. FSR shall check valve clearances and set as per manufactures specifications.
- 3.1.4** Contractor shall run up Starboard Main engine when ship goes into water at the end of refit period. Note: This run up can occur at same time as Run up for Port Main engine after overhaul.

Spec item #: E-6	<b>SPECIFICATION</b>	TCMSB Field #:
E-6 Starboard Main Engine Top End Inspection		

3.1.5 Contractor shall include in quote all costs to carry out this work including, hotel, travel. (No allowances)

3.1.6 n/a.

### **3.2 Location**

3.2.1 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

### **4.2 Testing**

4.2.1 FSR shall carry out run up when ship goes into water.

### **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 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 #: E-6	<b>SPECIFICATION</b>	TCMSB Field #:
E-7 Replace Tow Winch Control Valve		

## **E-7 REPLACE TOW WINCH CONTROL VALVE**

### **Part: 1 SCOPE:**

- 1.1 The intent of this specification shall be contractor shall arrange a certified Hydraulic Contractor to replace defective control valve on tow winch and have tow winch operational from bridge control.
- 1.2 This work shall be carried out when ship goes in water.

### **Part: 2 REFERENCES:**

#### **2.1 Guidance Drawings/Nameplate Data**

- 2.1.1 Winch is Supplied by:  
Hawbolt Industries  
Model #: 1432036.  
Serial #: 0105861

2.1.2 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 include in quote an allowance of \$ 3000.00 for a Certified Hydraulic contractor to carry out this work. This allowance shall be adjusted up or down by 1379 action upon proof of invoice.
- 3.1.3 Contractor shall arrange a Certified Hydraulic Contractor to replace defective control valve on tow winch.
- 3.1.4 Hydraulic service technician shall install new owner supplied Control Valve.

Spec item #: E-6	<b>SPECIFICATION</b>	TCMSB Field #:
E-7 Replace Tow Winch Control Valve		

3.1.5 Contractor shall have tow winch operational from Tow Winch controls on Bridge.

3.1.6 Contractor shall carry out this work when ship is in water, due to hydraulics has to be run up for testing.

3.1.7 An allowance of \$1000.00 for replacement parts to be included in bid.

### 3.2 Location

3.2.1 Tow winch located on aft deck and Remote controls located on Bridge.

### 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 Check Tow Winch Controls and have operational from Bridge location.

### 4.2 Testing

4.2.1 Tow winch to be run up and proven operational from Bridge Location and tow at tow winch as per manufacture specifications.

### 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

Spec item #: E-6	<b>SPECIFICATION</b>	TCMSB Field #:
E-7 Replace Tow Winch Control Valve		

**5.4 Manuals**

**5.4.1 N/A**

Spec item #: L-1	<b>SPECIFICATION</b>	TCMSB Field #:
L-1	Megger Testing	

## **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** An allowance of \$1000.00 for replacement parts/repairs to be included in bid

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### 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

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L-1                  Megger Testing		

**5.4.1 N/A**