

INTEGRATED TECHNICAL SERVICES MARINE ENGINEERING



CCGS Terry Fox
Dry-dock
F6855-170126
May 28 – June 1 2017



Contents

PREAMBLE	3
H-01 Services	10
HD-01 Drydocking	15
HD-02 Port and Starboard Shaft Seal Repairs	18

PREAMBLE

1. INTENT

The intent of this specification shall describe the necessary work involved in carrying out the ship's Annual Refit. All work specified herein and all repairs, inspections and renewals shall be carried out to the satisfaction of the Technical Authority/Owner's Representative and where applicable the attending TC Marine Safety Inspector. Unless otherwise specifically stated, the Technical Authority/ Owner's Representative is the Chief Engineer.

2. MANUFACTURER'S RECOMMENDATIONS

The overhaul and installation of all machinery and equipment specified herein shall be as per the manufacturer's applicable instructions, drawings and specifications. The surface preparation, ambient limitations and coating applications shall be as per the manufacturer's instructions and specifications.

3. TESTING AND RECORDS

All test results, calibrations, measurements and readings are to be recorded. Three typewritten copies, in English, are to be presented to the Technical Authority and one copy to the Project Authority within three days following the completion of the applicable work item. All tests are to be witnessed by the Technical Authority and where required, Transport Canada Marine Safety. The Contractor is responsible for contacting TC-MS when their presence is required for inspections or testing. The Contractor shall advise the Technical Authority in every case when TCMS arrives onsite for inspection of vessel's equipment or structure.

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 Owner's satisfaction.

5. FACILITIES

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

6. MATERIALS AND SUBSTITUTIONS

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

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 Owner's representative.

8. EXPOSURE AND PROTECTION OF EQUIPMENT

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

9. LIGHTING AND VENTILATION

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

10. CLEANLINESS

The contractor shall at all times, maintain the work areas in which his personnel have access in a clean condition and free from debris. Dirt & debris generated by the spec items shall be cleaned up and removed from the vessel daily. 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. ASBESTOS

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

12. ENTRY INTO ENCLOSED SPACES

The contractor shall abide by the Coast Guard Enclosed Space Entry Policy. The policy is listed in the attached Safety Annex as section 7.0.9 and section 7.0.9 (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.

A fire zone shall be established and naked lights shall not be used within this zone until "gas-free" certification has been issued.

The Contractor is to ensure that any work carried out in confined spaces as defined by the Canada Labor Code complies fully with all provisions of the code.

A number of spaces onboard the vessel are designated as Enclosed Spaces; these spaces are to be entered only under safe and controlled circumstances. The Contractor shall have in place an Enclosed Space Entry Permit system, equal to or better than the procedure contained in the Coast Guard's Safety Management System, section 7.D.9. Ship's breathing apparatus and EEBD's are not to be used except in an emergency.

The Contractor will maintain a log denoting the date, persons in the tank and times in and out. All forms and permits shall be completed in English.

13. Suspension Of Work

The Technical Authority reserves the right to suspend work immediately when that work is being performed in contravention of the Coast Guard's Safety Management System.

Work shall be allowed to resume when the Technical Authority, in consultation with the Contractor and PWGSC, is satisfied that the agreed-upon procedures are in place and being adhered to.

14. HOTWORK

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

15. LOCKOUT AND TAGOUT PROCEDURES

1. The Contractor shall be responsible to protect persons working on board the vessel while working on or near shipboard systems and equipment from accidental exposure to:

- electrical currents
- hydraulic
- pneumatic
- gas or steam pressure and vacuum
- high temperatures
- cryogenic temperatures
- radio frequency emissions
- potentially reactive chemicals
- stored mechanical energy
- equipment actuation

2. The contractor, under the supervision of the Chief Engineer and or the Electrical Officer, shall be responsible for the Lockout and Tagout of equipment and systems listed in the specification.

3. The Contractor shall supply and install all locks and tags and shall complete the Lockout Tagout Log sheet provided by the Vessel.

4. The Contractor shall remove all locks and tags and complete the Lockout Tagout Log sheet provided by the Vessel.

16. PAINTING

All new and disturbed steelwork that will not be on the underwater wetted surface of the ship's hull is to be protected with two coats of Contractor supplied primer. Unless otherwise stated in the individual specification item, the primer is to be International Paints Interplate Zinc Silicate *NQA262INQA026* red. The paint is to be applied as per the manufacturer's instructions on their respective product data sheets. Finish coats are described in individual specification items. Finish coats are to be applied as per the manufacturer's instructions on their respective product data sheets.

17. WELDING

Welding shall be in accordance with the Canadian Coast Guard Welding Specifications for Ferrous Materials, Revision 4. (TP6151 E)

The Contractor shall be currently certified by the Canadian Welding Bureau (CWB) in accordance with CWB 47.1 latest revision Division I, II or III at the time of bid closing. The Contractor shall provide a current letter of validation from the CWB indicating compliance with standard CSA W47.1, Division I, II or III. (latest revision)

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 refit.

The Contractor may be required to supply a current Welders Ticket for each individual welder that will be involved in this refit.

18. SMOKING

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

19. RESTRICTED AREAS

The following areas are out of bounds to shipyard personnel except to perform work as required by the specifications: all cabins, offices, Wheelhouse, Control Room, Engineer's office, public washrooms, cafeteria, dining room and lounge areas.

20. ELECTRICAL STANDARDS

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

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

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

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

21. DRAWINGS

All drawings and drawing revisions that the contractor is requested to do in the execution of this contract shall be of a quality equal to that of the drawings that are requested to be updated. For example, drawings that have been lettered and dimensioned in a professional manner shall not be updated using freehand. Prints and reproductions that a contractor is required to provide shall be made on one piece of paper.

Sign off and acceptance of jobs will not occur until any and all drawings are updated to the satisfaction of the Owner's representative. All revisions shall be noted in English.

22. TRANSDUCERS

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

23. OWNER'S REPRESENTATIVE

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

24. Regulatory Authority Inspections

The Contractor shall confirm a schedule of inspections with the regulatory authority (TCMS) for all work described in this specification and shall be responsible for calling them when inspections are required and for ensuring the work is credited by the regulatory authority in the Chief Engineer's 'Hull and Machinery Survey Book' .

The contractor shall ensure the Chief Engineer is informed when the regulating authority is onsite such that the Chief Engineer can witness the inspections by the regulating authority.

Notwithstanding any errors, omissions, discrepancies, duplication or lack of clarity in these project requirements, it shall be the responsibility of the Contractor to ensure that the execution of the work specified herein is to the satisfaction of the Technical Authority.

Inspection of any item by the Technical Authority does not substitute for any required inspection by Transport Canada Marine Safety (TC-MS).

25. Waste Oil Products

Disposal of waste oil products shall be carried out by the Contractor, or subcontractor, who has been licensed by provincial authorities for the disposal of petroleum products. Copies of certificates must be produced upon request. This must be in accordance with the Coast Guard Policy for Handling Fuel, Oil, and Waste Oil Products, which is part of the Fleet Safety Manual, section 7.C.3. a copy of which is in the attached safety annex.

26. WHMIS

The contractor shall provide current MSDS sheets for any WHMIS-controlled products used onboard or around the vessel at the start of the work period before the products are used. This includes at the minimum MSDS sheets for any solvents, cleaners, chemicals, coatings and blasting grits to be used. Any neutralizing chemicals or specialized protective equipment required shall be provided by the Contractor at all times these WHMIS-controlled products are onboard the vessel.

27. 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, Contractor Safety & Security (10.A.7 FSM) and Drydocking.

An electronic copy of the Fleet Safety Manual (Adobe Acrobat .PDF version) can be found at

<http://142.130.14.20/fleet-flotte/Safety/maine.htm>

Contractor Safety & Security

A valid minimum security screening at the Reliability Status level is required for any contractor to be granted unescorted access to a workplace controlled by the CCG. DFO Departmental Policy requires that a Security Requirement Check List (SRCL) be completed.

Safety Familiarization

The Contractors Basic Safety Familiarization shall be completed for all contractors working on CCG vessels. It will verify that a basic safety briefing has been given, understood and acknowledged by the contractor. All contractors shall follow applicable OHS regulations in accordance with CCG safety/security/environmental requirements, fire alarm protocol and conduct to follow in case of fire or other emergency situations, familiarization of restricted areas and spaces, known risks and hazards encountered at the worksite (ie asbestos, fire fighting systems, hazardous materials, flammables etc).

28. Data Book

The Contractor is to produce two Data Books in English which shall list products, supplies and other

purchases by the yard for this refit listing supplier and contact information. This book shall also include the copies of the readings required for the completion of each specification item. The data book shall be 8 X 12" format and binded. The data book shall be indexed and tabbed in the same order as the refit specifications index. Contractor shall also provide 3 CD-ROM's of the data book. The CD ROM's and data books shall

be provided to the Chief Engineer prior to the end of refit.

SHIP'S PARTICULARS

Length O.A. ----- 88.0 Metres
Breadth Mid. ----- 17.1 Metres
Draft ----- 6.06 Metres
Displacement ----- 4234 MT
Power-----17,300 KW
Engines-----Stork -Werkspoor 8TM 410 (x 4)
Propulsion-----Diesel- Reducer Gearbox - CPP
Year built ----- 1983

Spec item #: H-01	SPECIFICATION	TCMSB Field #: N/A
Services		

H-01 Services

Part 1: SCOPE:

- 1.1 The following services shall be supplied, fitted and / or connected upon arrival in the dry-dock, maintained throughout the dry-docking period and removed from the vessel on completion of the work period. The Contractor will be responsible for any additional connections required when the ship is moved between the dry-dock and alongside berth at the Contractor's facilities.
- 1.2 The services are required for the full refit / dry-dock period. Each item is to be priced separately.

Part 2: REFERENCES:

2.1 Guidance Drawings/Nameplate Data

2.2 Standards

- 2.2.1. The following Coast Guard Standards and or Technical Bulletins must be adhered to in the course of executing this specification. Copies of these standards and bulletins can be obtained from the CCG Technical Authority.
- 2.2.2. Canadian Coast Guard Fleet Safety Manual (DFO 5737)
- 2.2.3. Coast Guard ISM Confined Space Entry 7.D.9
- 2.2.4. Coast Guard ISM Hotwork procedures
- 2.2.5. Coast Guard ISM Fall Protection procedures
- 2.2.6. Canadian Coast Guard Welding Specifications for Ferrous Materials, Revision 4. (TP6151 E)
- 2.2.7. CWB CSA 47.1 latest revision Division I, II or III
- 2.2.8. SSPC-SPT

2.3 Regulations

- 2.3.1. Canada Shipping Act

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 is to quote a global price and daily rates for all services supplied to the vessel during the dry-docking period.

Spec item #: H-01	SPECIFICATION	TCMSB Field #: N/A
Services		

READINGS AND REPORTS

- 3.1.2.** Contractor shall collect and bind all readings and reports in a booklet form. Three (3) bound copies shall be delivered to the Chief Engineer at the end of the contracted refit period along with a CD-ROM or memory stick.
- 3.1.3.** The Contractor shall also send an electronic copy (CD-ROM or memory stick) to the Technical Authority prior to the end of the refit period.

ELECTRICAL POWER

- 3.1.4.** Shore power facilities are to be supplied to the ship using a single 400-amp source using the Contractor's cables and fittings. The ship requires 1 x 400 amp x 600 VAC x 60 Hz x 3-phase power source for connection to the ship's shore power transformer. The Contractor will quote on supplying 6000 kW-hours per day. The Contractor will quote per kW hour for adjustment purposes on actual amount consumed.
- 3.1.5.** The meter readings are to be taken from the ship's shore power meter located on the main switchboard. The meter readings will be recorded by the Contractor and the Chief Engineer's designate at the time of connection and disconnection.

FIRE MAIN

- 3.1.6.** Water shall be maintained to the vessel's fire main at a pressure of 550 kPa (80 psi) and be continuous 24 hours per day. The supply line shall be fitted with an isolating valve and a pressure-regulating valve (with pressure gauge) which will be located on the ship connected to the ship's international shore connection. Drains shall be fitted in the event of cold weather.

GANGWAYS

- 3.1.7.** The Contractor will supply and erect 2 gangways, complete with safety nets, guardrails and adequate lighting to the satisfaction of the Commanding Officer. The main gangway will land on the aft deck, secondary gangway on the fore deck. The gangways are to be safe, well lit and structurally suitable for the passage of shipyard workers and ship's crew. The Contractor is to maintain the gangways in a safe condition throughout the duration of the dry-docking.
- 3.1.8.** The ship's gangway will not be used during the refit / dry-dock period except with the approval of the Commanding Officer and at no liability to CCG.
- 3.1.9.** Any movement of the gangways required by the Contractor will be at the expense of the Contractor.

INTERNET/PHONE

- 3.1.10.** The Contractor shall provide unlimited high speed internet and phone service to the vessel for the duration of the refit period.
- 3.1.11.** The service will be active 24 hours per day for the duration of the contract.

Spec item #: H-01	SPECIFICATION	TCMSB Field #: N/A
Services		

- 3.1.12.** The Contractor will be responsible for giving notice for connection / disconnection of the telephones as required for any ship movements.
- 3.1.13.** The Contractor will supply a listing of shipyard telephone numbers, fire, police and emergency telephone numbers to the Chief Engineer when the ship arrives in the Contractor's yard.
- 3.1.14.** Long distance Canadian calling shall be included.

POTABLE FRESH WATER

- 3.1.15.** Potable water shall be supplied through a new fresh water filling line (c/w reducing valve and pressure gauge) at the ship's fresh water connection located on the Main Deck (Frame 02) port or starboard side. Contractor to bid on supplying 10 m³ per day of potable fresh water. Contractor shall provide a unit cost per m³ of water to allow for adjustment up or down based on actual consumption.
- 3.1.16.** Contractor shall fit a calibrated potable water meter on the inlet to the ship's fresh water connection. Readings shall be taken and recorded with the CE in attendance at both connection and disconnection for adjustment purposes.

SEWAGE CONNECTION

- 3.1.17.** Contractor to connect a 2.5" diameter connection pipe and hose to the sewage system overboard discharge, located between frames 112 & 113 starboard side. The discharge to be lead away from the ship's side to the Contractor's sewage outlet facilities. The connection to be removed on completion of docking.
- 3.1.18.** Note: this connection to be made within 4 hours of ship dry-docking.

GARBAGE REMOVAL

- 3.1.19.** A suitable garbage container *with cover* is to be provided for the duration of the refit. The garbage container shall be a minimum of 6 m³ and is to be placed on the Main Deck aft in a location agreed upon by the Contractor and the Chief Officer.
- 3.1.20.** The ship's garbage container shall be emptied at a minimum of every 3 to 4 days, more often if required by smell or capacity.
- 3.1.21.** Garbage containers for use of the Contractor for disposal of debris etc. may be located on the Main Deck aft in locations agreed to by the Chief Officer. These containers shall be emptied on a regular basis.

BERTHING

- 3.1.22.** The berthing and mooring facilities are to be suitable for a vessel of this size and are to be to the satisfaction of the Commanding Officer.
- 3.1.23.** During the contract period, if the ship is not in the dry-dock, the ship is to be berthed at the Contractor's wharf at a safe and secure berth with adequate water at extreme low tide to ensure the vessel will not touch bottom.

Spec item #: H-01	SPECIFICATION	TCMSB Field #: N/A
Services		

3.1.24. The Contractor is responsible for all movements of the vessel during the contract period, including arrangements and costs for line handlers, tugs, pilot's etc.

Tugs

3.1.25. Contractor to bid on supplying 10 hours of tug and/or pilot services as requested by vessel. Contractor shall provide a unit cost per hour to allow for adjustment up or down based on actual usage.

Note: This is for usage over and above what is required within the specification.

CLEANING

3.1.26. The Contractor is to ensure all spaces, compartments and areas of the ship, external and internal, are left in an "as clean condition as found".

3.1.27. The cost of removing dirt, debris and cleaning up work areas to the "as clean a condition as found" shall be included in each specification item.

OILY BILGE WATER

3.1.28. The Contractor shall quote on removing 30 m³ of oily-water from the ship's bilge's and tanks as requested by the CE. The quotation is to include the cost of crantage, pumping, trucking and disposal of oily mixture. The Contractor is to provide the name of the firm contracted for the pumping and disposal of the waste oil.

3.1.29. Contractor shall provide unit cost of disposal of 1 m³ for adjustment purposes up or down based on actual amount of oily bilge water removed from vessel. The Contractor will advise the Chief Engineer when oily bilge water is to be pumped out and a copy of the shipping manifest, indicating the volume of oily-water removed, is to be given to the Chief Engineer.

CRANAGE

3.1.30. Contractor to bid on supplying general services of a dockside crane, driver and rigger for 20 hours during the dry-dock period as and when requested by the Chief Engineer. Contractor to quote an hourly rate for adjustment purposes.

3.2 Location

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

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

4.2 Testing

Spec item #: H-01	SPECIFICATION	TCMSB Field #: N/A
Services		

- N/A
- 4.3 Certification**
 - N/A

Part 5: DELIVERABLES:

- 5.1 Drawings/Reports**
 - 5.1.1**
- 5.2 Spares**
 - N/A
- 5.3 Training**
 - N/A
- 5.4 Manuals**

Spec item #: HD-01	SPECIFICATION	TCMSB Field #: N/A
Drydocking		

HD-01 Drydocking

Part 1: SCOPE:

- 1.1 The intent of this specification shall be to drydock the vessel to allow for repair(s) of the port and starboard shaft seals.
- 1.2 This work shall be carried out in Conjunction with the following:

Part 2: REFERENCES:

2.1 Guidance Drawings/Nameplate Data

- 2.1.1. Docking Plan Drawing # 00-00-08

2.2 Standards

- 2.2.1. The following Coast Guard Standards and or Technical Bulletins must be adhered to in the course of executing this specification. Copies of these standards and bulletins can be obtained from the CCG Technical Authority.
- 2.2.2. Canadian Coast Guard Fleet Safety Manual (DFO 5737)
- 2.2.3. Coast Guard ISM Confined Space Entry 7.D.9
- 2.2.4. Coast Guard ISM Hotwork procedures
- 2.2.5. Coast Guard ISM Fall Protection procedures
- 2.2.6. Canadian Coast Guard Welding Specifications for Ferrous Materials, Revision 4. (TP6151 E)
- 2.2.7. CWB CSA 47.1 latest revision Division I, II or III
- 2.2.8. SSPC-SPT

2.3 Regulations

- 2.3.1. Hull Construction Regulations

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 vessel shall be docked and undocked and a suitable number of Lay Days shall be included to perform the work described herein as well as a margin of time to cover work arising as specified by the contract. Contractor to quote unit cost per Lay Day for adjustment purposes. All manpower, materials, tugs, pilots etc. required to carry out the work shall be supplied by the Contractor and shall be to approval of the Chief Engineer.

Spec item #: HD-01	SPECIFICATION	TCMSB Field #: N/A
Drydocking		

- 3.1.2. A docking plan is available on board the vessel and will be provided to the successful Contractor. Contractor will be responsible to ensure drawing is returned to vessel upon completion of work.
 - 3.1.3. The bow overhang shall be supported by at least 1 bow shore. The bow shore is not to be removed until just before ship is undocked. Contractor to prepare keel and margin blocks and fit the necessary breast and bow shores to maintain the true alignment of the ship's hull and equipment for the dry-docking period.
 - 3.1.4. The vessel shall be dry-docked such that dry-docking plugs, sea bays, inlet grids, anode plates and transducer orifices are clear of the blocks.
 - 3.1.5. Docking shall be undertaken immediately on start of contract. Contractor shall prepare the dock in advance of the ship's arrival and the official start of the dry-docking. The dry docking shall be under the direct supervision of a Certified Docking Master. If premium time is required for evening shifts or weekend work to meet this objective, the Contractor is to identify this and include all costs in his quotation.
 - 3.1.6. Should the vessel share the same dock with any another vessel, the contractor shall ensure the CCGS Terry Fox shall not be delayed on entering or leaving the dry-dock in completing contracted work. A minimum clearance of 5' shall be available below the keel.
 - 3.1.7. Contractor shall be responsible for the safe transfer of the ship from the pre-docking berth or location onto its docking blocks. During docking, radio contact shall be maintained between the vessel's Commanding Officer and the Contractor's docking master.
 - 3.1.8. Adequate and safe access to the vessel shall be provided through a minimum of 2 gangways, complete with safety nets, lights, and rails, throughout the drydocking period.
 - 3.1.9. Any contamination of the vessel's hull by materials (i.e. oil) present in the dock shall be cleaned, after the vessel is re-floated and clear of the dock, at the Contractor's expense and to the satisfaction of the Chief Engineer.
- 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

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

Spec item #: HD-01	SPECIFICATION	TCMSB Field #: N/A
Drydocking		

4.2 Testing
N/A

4.3 Certification
N/A

Part 5: DELIVERABLES:

5.1 Drawings/Reports

5.1.1

5.2 Spares
N/A

5.3 Training
N/A

5.4 Manuals
N/A

Spec item #: HD-02	SPECIFICATION	TCMSB Field #: N/A
Port and Starboard Shaft Seal Replacements		

HD-02 Port and Starboard Shaft Seal Replacements

Part 1: SCOPE:

- 1.1 The intent of this specification shall be to dismount and repair both port and starboard 840 MOD 800 MA seals.
- 1.2 This work shall be carried out in Conjunction with the following:
 - a. NA

Part 2: REFERENCES:

2.1 Field Service Representative

- 2.1.1. Wartsila
Barry Broderick
Tel +1 709 747 4600
Mob +1 709 699 8126
Barry.broderick@wartsila.com

2.2 Guidance Drawings/Nameplate Data

- 2.1.2 GA of 840 MOD 800 TYPE MA seal, DWG # H30850-01

2.3 Standards

- 2.2.1. The following Coast Guard Standards and or Technical Bulletins must be adhered to in the course of executing this specification. Copies of these standards and bulletins can be obtained from the CCG Technical Authority.
- 2.2.2. Canadian Coast Guard Fleet Safety Manual (DFO 5737)
- 2.2.3. Coast Guard ISM Confined Space Entry 7.D.9
- 2.2.4. Coast Guard ISM Hotwork procedures
- 2.2.5. Coast Guard ISM Fall Protection procedures
- 2.2.6. Canadian Coast Guard Welding Specifications for Ferrous Materials, Revision 4. (TP6151 E)
- 2.2.7. CWB CSA 47.1 latest revision Division I, II or III
- 2.2.8. SSPC-SPT

2.4 Regulations

- 2.3.1. Marine Machinery Regulations CSA

2.5 Owner Furnished Equipment

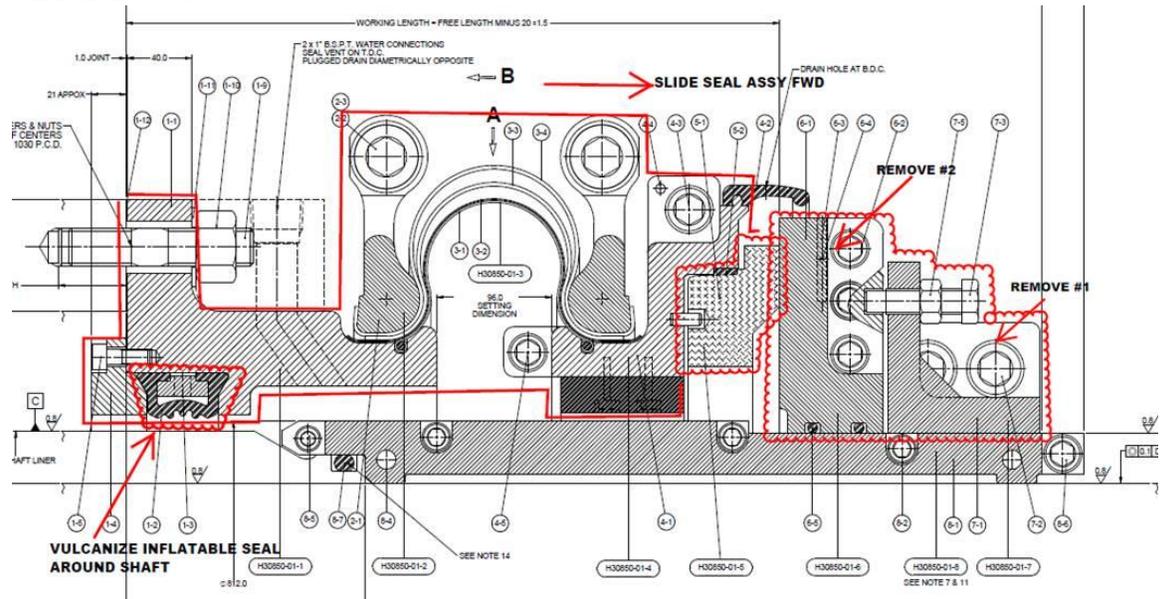
- 2.4.1. The contractor shall supply all materials, equipment, and parts required to perform the specified work unless otherwise stated.

Spec item #: HD-02	SPECIFICATION	TCMSB Field #: N/A
Port and Starboard Shaft Seal Replacements		

Part 3: TECHNICAL DESCRIPTION:

3.1 General

- 3.1.1.** Contractor shall have an allowance of \$75, 000 for the services of **two** Wartsila MA Shaft Seal Field Service Representatives. The FSR’s shall complete the shaft seal repairs with contractor assistance to both port and starboard shaft seals simultaneously to minimize the dry-dock period. The actual allowance amount shall be adjusted up or down via 1379 action upon proof of invoice.
- 3.1.2.** Contractor shall have an allowance of 160 hrs to provide assistance to the FSR as requested onboard the vessel only. The actual amount shall be adjusted up or down via 1379 action based on final hours recorded. Contractor shall be responsible to sign on/off the vessel on a timesheet located in the Engine Control Rm as means for tracking FSR assistance for adjustment purposes. Contractor shall provide day or night shifts as required by the FSR.
- 3.1.3.** The repairs noted below shall be completed for both port and starboard MA shaft seals.



- 3.1.4.** The FSR shall remove the clamp ring, seat assembly and face inserts.
- 3.1.5.** The FSR with contractor assistance shall dismount the seal assembly from the sterntube flange and rig fwd on chain falls to allow access to the inflatable seal.
- 3.1.6.** The FSR shall remove the inflatable seal and hot vulcanize a new CG supplied inflatable seal around the shaft.
- 3.1.7.** The FSR with contractor assistance shall remount the seal assembly onto the sterntube bulkhead.

Spec item #: HD-02	SPECIFICATION	TCMSB Field #: N/A
Port and Starboard Shaft Seal Replacements		

- 3.1.8.** The FSR shall reassemble the shaft seal as per OEM directions with CG supplied Minor Overhaul Service Kit A parts. The FSR shall fit new face inserts, seat o-rings, splash guard etc.
- 3.1.9.** The MA Shaft Seal shall be assembled in good order taking care on mounting concentric with the liner. Measurements shall be taken during and after assembly to ensure correctly aligned. Three (3) type written copies of the final measurements shall be given to the Chief Engineer.

3.2 Location

- 3.2.1.** Shaft Tunnels Port and Starboard

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 Wartsila Field Service Rep.

4.2 Testing

- Dockside/Seatrials shall be carried out with the FSR and contractor in attendance upon refloating the vessel for 6 hours.

4.3 Certification

N/A

Part 5: DELIVERABLES:

5.1 Drawings/Reports

- 5.1.1** The Contractor shall provide a written report to the TA and Chief Engineer detailing the work carried out by the FSR, including all measurements in a tabular format.

5.2 Spares

N/A

5.3 Training

N/A

Spec item #: HD-02	SPECIFICATION	TCMSB Field #: N/A
Port and Starboard Shaft Seal Replacements		

5.4 Manuals
N/A

