



**CCGC Cape Norman and
CCGC Cape Fox.
REFIT and Winter Storage
2012/2013**

Rev 2

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REFIT PRE-AMBLE Cape Fox, Cape Norman 2012-2013

1. INTENT

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

2. MANUFACTURER'S RECOMMENDATIONS

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

3. TESTING AND RECORDS

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

4. WORKMANSHIP

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

5. FACILITIES

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

6. MATERIALS AND SUBSTITUTIONS

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

8. EXPOSURE AND PROTECTION OF EQUIPMENT

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

9. LIGHTING AND VENTILATION

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

10. CLEANLINESS

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

11. ASBESTOS

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

12. ENTRY INTO ENCLOSED SPACES

The contractor shall abide by an accepted certified enclosed entry plan. Entry certificates shall clearly state the type of work permitted and shall renewed as required by the regulations.

13. HOTWORK

Any item of work involving the use of heat in its execution requires that the contractor advise the owner's representative prior to starting such heating and upon its completion. The contractor shall be responsible for maintaining a competent and properly equipped fire watch during and for one full hour after all 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 suitable fire extinguishers and a fire watch during any such heating and until the work has cooled.

14. WELDING

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

15. SMOKING

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

16. ELECTRICAL STANDARDS

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

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

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

17. DRAWINGS

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

18. TRANSDUCERS

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

19. OWNER'S REPRESENTATIVE

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

20. DOCK AND SEA TRIALS

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

Cape Fox – Cape Norman Machinery Information

Port	Stbd
Model: Caterpillar 3196 450 hp @ 2100 rpm Arrangement # 178-8083	Model: Caterpillar 3196 450 hp @ 2100 rpm Arrangement # 178-8083

Gearboxes:

Port	Stbd
Twin Disc: Model # MG-5114RV BOM #: S-11068 Ratio: 1.92:1	Twin Disc: Model # MG-5114RV BOM #: S-11068 Ratio: 1.92:1

VESSEL CHARACTERISTICS:

DISPLACEMENT 25.3 Tonnes
LENGTH OVERALL.....14.6M (47' 11")
BEAM.....4.27M (14'.)
HULL MATERIAL Aluminum 5456 H-116

Spec item #: E-1	Port and Starboard Gearboxes	

E-1 PORT AND STBD GEARBOX SERVICE:

Scope:

The Contractor shall provide the services of an Authorized Service Technician to perform maintenance procedures on the two Twin Disc Gear boxes of the vessel.

Technical Description:

1. This spec item shall be completed immediately before the vessel is returned to the water in the spring of 2013. The actual dates will be provided when the operational season for the vessels has been determined.
The contractor's bid shall include the cost of providing an Authorized Service Technician.
2. Gear boxes are Twin Disc model # MG-5114RV BOM # S-11068
3. For the vessel, the service technician shall:
 - a. Overall Control Valves as recommended in Transmission Field Report
Control Valves to be provided by Service Technician if required.
 - b. Change Gearbox Oil and Oil Filters, the Oil and Oil Filters for Gearboxes will be supplied by Coast Guard.
 - c. Remove any spilled fluid from the bilge area..
 - d. Provide a written report of the maintenance carried out for each gear box to Vessel's Owner and Representative.
 - e. During sea-trials a service Tech. should be available to ensure Gear Boxes are working correctly.

Spec item #: E-2	Maine Engine Strainers	
Salt Water Strainers		

E-2 SALT WATER STRAINERS

Scope:

The Contractor shall clean both sea water strainers for each main engine on the vessel.

Technical Description:

1. The strainers are Groco brand, model VD-2500 - 2 ½” diameter Bronze duplex units.
2. The Contractor shall open-up and clean both main engine salt water strainers on the vessel. Each unit is a duplex configuration so there are four strainer canisters.
3. The Contractor shall remove any sediment from the strainer housings and shall clean each strainer screen.
4. The Contractor shall reinstall the cleaned strainers with new gaskets.

Spec item #: E-3	Main Engines
Port and Starboard Main Engine Service	

E-3 Port and Starboard Main Engine Service:

Scope:

The Contractor shall provide the services of an Authorized Caterpillar Service Technician to perform basic service time related maintenance procedures on the two Caterpillar Main Engines on the vessels.

Technical Description:

1. This spec item shall be completed immediately before the vessel is returned to the water in the spring of 2013. The actual dates will be provided when the operational season for the vessels has been determined.
2. The contractor's bid shall include the cost of providing an Authorized Caterpillar Service Technician. For stated work as well as for Sea Trials.
3. Engines are Caterpillar model 3196 Arrangement # 178-8083
Cape Fox: Port: 2XR03918 and Stbd 2XR03917
4. For the vessel, the Caterpillar technician shall:
 - a. Change water temp regulator on each engine.
 - b. Inspect crankcase vibration damper on each engine.
 - c. Check engine mounts.
 - d. Check, clean and calibrate engine speed / timing sensors on each engine.
 - e. Provide a written report of the maintenance carried out for each engine and gear box. To Vessel's Owner and Representative.
 - f. Remove any spilled fluid from the bilge area.
 - g. Inspect the condition of the Turbocharger.
 - h. Operate each main engine for 1 hour when the vessel is back in the water to ensure that the fuel systems are operating correctly and are completely purged of Air.
 - i. During sea-trials adjust full torque setting and full load setting on both engines...to ensure that engines are not losing RPM at any setting and carry the same load on both port and stbd sides.

Spec item #: E-4	Steering Gear Coolers	
Steering Gear Cooler - Inspection / Maintenance		

Part 1: Scope:

1.1

The Contractor shall remove Steering Gear Cooler, located between Frames 3 and 4 on Starboard side of Vessel.

Part 2: REFERENCES:

2.1

Guidance Drawings/Nameplate Data

2.2

Standards

2.3

Regulations

2.4

Owner Furnished Equipment

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

Part 3: Technical Description:

3.1.1

Contractor shall remove the Hydraulic Oil from System – Pressure Tank, Hydraulic Filter and Piping so the Oil will not drain into Engine room Bilge.

3.1.2

Contract shall remove both end caps on cooler and clean the core tubes

3.1.3

Contractor shall remove cooler by disconnecting a 1” union, at each end

3.1.4

Contractor shall remove 4 - ½” bolts complete with washers and locking nuts which attach coolers to mounting plates. The mounting plate is also connected to Steering Gear Pressure tank and Filter housing.

3.1.5

Contractor shall reassemble cooler complete with new gaskets which will be provided by contractor.

Spec item #: E-4	Steering Gear Coolers	
Steering Gear Cooler - Inspection / Maintenance		

3.1.6

Contractor shall replace zinc anode on end caps of cooler, which will be provided by Coast Guard.

3.1.7

Contractor shall pressure test Steering Gear cooler with 15 p.s.i. air pressure and check for leaks using soapy water.

3.1.8

Contractor shall provide written report to vessel's rep with results.

3.1.9

Contractor shall re-install Steering Gear, Top up system with Hydraulic Oil and Hydraulic Oil Filter.

3.1.10

Hydraulic Oil and Filter will be provided by Coast Guard.

3.1.11

During Sea Trials Steering Gear to be checked, if oil leaks or defects are found, they are to be corrected by contractor.

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 vessels.

Part 4: PROOF OF PERFORMANCE:

4.1

Inspection

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

4.2

Testing

N/A

4.3 Certification

N/A

Spec item #: E-4	Steering Gear Coolers	
Steering Gear Cooler - Inspection / Maintenance		

Part 5: DELIVERABLES:

5.1

Drawings/Reports

5.2

Spare

N/A

5.3

Training

N/A

5.4

Manuals

N/A

Spec item #: HD-1	SPECIFICATION	TCMSB Field #: N/A
Services		

Part 1: SCOPE:

1.1

The Contractor shall provide the following services to both vessels, while in refit, during the storage period and shall be disconnected after the storage period.

Storage period Dec 12, 2012 – April 15, 2013 Refit period January 30 2013 to February 13, 2013. These dates may be adjusted to accommodate CCG operations.

1.2

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

Part 2: REFERENCES:

2.1

Guidance Drawings/Nameplate Data

2.2

Standards

2.3

Regulations

2.4

Owner Furnished Equipment

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

Part 3: TECHNICAL DESCRIPTION:

3.1.1 The Contractor shall supply and install boarding steps for the vessels

3.1.2 The Contractor shall provide electrical Shore Power of 120 VAC, Single Phase @100 amps to the vessels . The Contractor shall quote on supplying 1000-kilowatt hours and provide quote per additional kilowatt- hours. The total kilowatt-hours will be adjusted at the conclusion of the refit and storage period. The CG will supply the appropriate shore power plugs for the vessels and the contractor shall supply and connect the shore power cable to the plug.

3.1.3 The Contractor shall supply and fit cardboard paper or equivalent to protect interior decks for the duration of the refit, as directed by the Engineering Officer. The Contractor shall bid on supplying 4 m² per vessel and provide unit cost per m² for additional material. The contractor shall include the cleaning of the interior of the vessels on completion of the refit.

Spec item #: HD-1	SPECIFICATION	TCMSB Field #: N/A
Services		

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 vessels.

Part 4: PROOF OF PERFORMANCE:

4.1

Inspection

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

4.2

Testing

N/A

4.3 Certification

N/A

Part 5: DELIVERABLES:

5.1

Drawings/Reports

5.2

Spare

N/A

5.3

Training

N/A

5.4

Manuals

N/A

Spec item #: HD-2	SPECIFICATION	TCMSB Field #: N/A
Vessel Lifting and Dry-docking		

Part 1: SCOPE:

1.1

The intent of this specification shall be to remove the CCGS Cape Fox & Cape Norman from the water, store vessel during winter refit and undock vessel.

1.2

This work shall be carried out in conjunction with the following:

Part 2: REFERENCES:

2.1

Guidance Drawings/Nameplate Data

2.2

Standards

2.3

Regulations

2.4

Owner Furnished Equipment

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 provide all equipment necessary to dock and undock the vessels.
- 3.1.2 The contractor shall store vessels in Coast Guard supplied steel cradle.
- 3.1.3 The contractor shall ensure that lifting of vessels is in accordance with the provided drawings attached to the appendix and titled 47" MLB lifting instructions.
- 3.1.4 The contractor shall use wooden blocks and shims to support the vessels in their cradles.
- 3.1.5 The contractor shall quote on the total lay day as well as the unit day cost.
- 3.1.6 The contractor shall be responsible for handling all vessels' lines.

3.2 Location N/A

Spec item #: HD-2	SPECIFICATION	TCMSB Field #: N/A
Vessel Lifting and Dry-docking		

3.3

Interferences

3.3.1 Contractor is responsible for the identification of interference items, their temporary removal, storage & 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

N/A

4.3 Certification

N/A

Part 5: DELIVERABLES:

5.1

Drawings/Reports

5.1.1 47' MLB lifting Instructions

5.2

Spare

N/A

5.3

Training

N/A

5.4

Manuals

N/A

Spec item #: HD-3	SPECIFICATION	TCMSB Field #: N/A
Hull inspection, and painting		

Part 1: SCOPE:

1.1

The Contractor shall water wash the hull from the keel to the main deck, including both rudders and shaft bearing struts and complete any required touch ups to underwater hull coatings.

1.2

This work shall be carried out in conjunction with the following:

Part 2: REFERENCES:

2.1

Guidance Drawings/Nameplate Data

2.2

Standards

2.3

Regulations

2.4

Owner Furnished Equipment

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 water wash the total underwater hull area (approx. 34 m²) of the vessel from the keel up to the main deck, including both rudders and shaft bearing struts. Reference International Marine Coatings Application Procedure for the *Trilux II Black* Coating System. The contractor shall bid per m² for touch up of any damaged areas(b) – Dry Dock Cleaning.

3.1.2

The aluminum hull is 5456-H116 aluminum alloy, the rudders are 3/16” stainless steel plate and the propeller shaft struts are 3/16” cast stainless steel.

3.1.3

The Contractor shall note that the vessels have a soft foam fender around the hulls. The contractor shall protect the fender from mechanical damage caused by water blasting, or hull painting.

Spec item #: HD-3	SPECIFICATION	TCMSB Field #: N/A
Hull inspection, and painting		

3.1.4

If the hull visual inspections indicate that either of the two hulls require repair, the repair will be dealt with using PWGSC 1379 action and the repair procedure will be presented and approved by the Owners representative prior to any repairs. Note: The caterpillar 3196 Electronic Engine Control Module must be disconnected for each engine before any welding is carried out.

3.1.5

The contractor shall repair the underwater hull coating in accordance with the International Marine Coatings Application Procedure for the **Trilux II Black** Coating system– Minor Repairs (ensure required paint is available on site prior to refit).

3.1.6

The contractor shall include with the bid the cost to repair if required, from Keel to waterline;

- a. one coat of International Paint, Intershield ENA300 Bronze, 5 mils DFT*
- b. one coat of International Paint, Intergard 263 Grey, 3 mils DFT*
- c. one coat of International Paint, Trilux II Black, 2 mils DFT*
- d. one coat of International Paint, Trilux II Black, 2 mils DFT.*

The Contractor shall supply and apply paint coatings as follows from the waterline to the main deck;

- a. one coat of International Paint, Intergard 264 red, 6 mils DFT*
- b. one coat of International Paint, Intergard 263 grey, 4 mils DFT*
- c. one coat of International Paint, Interlac 665 (FIP 509-102) red, 1.5 mils DFT*

3.1.7

The contractor shall visually inspect the rudders of each vessel and each rudder shall be pressure tested (2 psi for 3 minutes) to ensure that the rudders are not leaking. The contractor shall supply and install a new Cres 3/16” stainless steel ½” pipe plug in each rudder.

3.1.8

The contractor shall reference the drawing supplied in the appendix for the exact height of the waterline. The drawing title is “47 ft Motor Lifeboat Hull Identification.”

3.1.9

The contractor shall reapply the hull markings and draft marks as indicated on the supplied 47 ft Motor Lifeboat Hull Identification drawing.

3.2

Location

Spec item #: HD-3	SPECIFICATION	TCMSB Field #: N/A
Hull inspection, and painting		

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

N/A

4.3 Certification

N/A

Part 5: DELIVERABLES:

5.1

Drawings/Reports

5.1.1 47' MLB Hull Identification

5.2

Spare

N/A

5.3

Training

N/A

5.4

Manuals

N/A

Spec item #: HD-4	SPECIFICATION	TCMSB Field #: N/A
Fuel Tanks Cleaning and Inspection		

Part 1: SCOPE:

1.1

The intent of this specification shall be to have the contractor remove the remaining fuel from the fuel tank and dispose of it in an approved way. The tank will then be gas freed, opened up and cleaned out for inspection and testing to be witnessed by a Transport Canada Marine surveyor.

1.2

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

Part 2: REFERENCES:

2.1

Guidance Drawings/Nameplate Data

2.2

Standards

2.3

Regulations

2.4

Owner Furnished Equipment

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

The contractor shall empty the tank and remove the manhole covers. The contractor shall use the services of a chemist to make sure the tanks are safe for entry. The contractor shall clean all sludge from the tank. The contractor shall close up the tanks using contractor supplied gasket material after the Transport Canada Surveyor has it inspected.

Spec item #: HD-4	SPECIFICATION	TCMSB Field #: N/A
Fuel Tanks Cleaning and Inspection		

3.2

Location

Fuel tank (1,500 litres) cover is located in Survivors Compartment, under central deck flooring.

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

N/A

4.3 Certification

N/A

Part 5: DELIVERABLES:

5.1

Drawings/Reports

5.2

Spares

N/A

5.3

Training

N/A

5.4

Manuals

N/A

Spec item #: HD-5	SPECIFICATION	TCMSB Field #: N/A
Fore Peak Tank Inspection		

Part 1: SCOPE:

1.1

The intent of this specification shall be to have the contractor gas freed, open up the fore peak tank and cleaned out for inspection and testing to be witnessed by a Transport Canada, Marine surveyor.

1.2

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

Part 2: REFERENCES:

2.1

Guidance Drawings/Nameplate Data

2.2

Standards

2.3

Regulations

2.4

Owner Furnished Equipment

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

The contractor shall remove the manhole cover. The contractor shall use the services of a Chemist to make sure the tank is safe for entry. The contractor shall clean all sludge from the tank. The contractor shall close up the tank using contractor supplied gasket material after a Transport Canada Surveyor has it inspected.

3.2

Location

Forepeak tank cover is located in Forward Compartment and the tank begins at Frame 15 and extends to the bow.

Spec item #: HD-5	SPECIFICATION	TCMSB Field #: N/A
Fore Peak Tank Inspection		

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

N/A

4.3 Certification

N/A

Part 5: DELIVERABLES:

5.1

Drawings/Reports

5.2

Spares

N/A

5.3

Training

N/A

5.4

Manuals

N/A

Spec item #: HD-6	SPECIFICATION	TCMSB Field #: N/A
Ultrasonic shots on Vessel's Hull		

Part 1: SCOPE:

1.1

The intent of this specification shall be to complete a set of ultra sonic shots on all areas where pitting is persistent. Those shots shall be taken and recorded and a copy of the report made available to the Chief Engineer.

1.2

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

Part 2: REFERENCES:

2.1

Guidance Drawings/Nameplate Data

2.2

Standards

2.2.1 Ultrasonic's are to be taken by an expert in the field.

2.3

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 Ultrasonic shots shall be taken in those particular locations:

- All seawater intakes... 4 in total
- Flanges around both rudder posts
- All seawater over boards... 5 in total
- Various locations throughout hull

A total of 20 ultrasonic shots shall be completed and a written report be provided to the Chief Engineer before any recoating of the hull is to commence.

Any work arising due to readings not up to spec shall be completed using 1379 Public Works Government Services before hull coating is applied.

Spec item #: HD-6	SPECIFICATION	TCMSB Field #: N/A
Ultrasonic shots on Vessel's Hull		

3.2

Location

3.2.1 All locations are on hull of vessel

3.3

Interferences

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

Part 4: PROOF OF PERFORMANCE:

4.1

Inspection

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

4.2

Testing

N/A

4.3 Certification

N/A

Part 5: DELIVERABLES:

5.1

Drawings/Reports

5.2

Spare

N/A

5.3

Training

N/A

5.4

Manuals N/A

Spec item #: HD-7	SPECIFICATION	TCMSB Field #: N/A
Zinc Anodes		

Part 1: SCOPE:

1.1

The intent of this specification shall be to replace the sacrificial zinc anodes located on the transom of vessels.

1.2

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

Part 2: REFERENCES:

2.1

Guidance Drawings/Nameplate Data

2.2

Standards

2.3

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 Contractor shall remove the existing anodes and supply and install two new zinc anodes.

The anodes are Z 26 semi streamlined zinc anodes with cast-in aluminum straps – 26lb.

3.1.2 The Contractor shall supply and install all securing anode hardware, which shall be 316 stainless steel. Anodes and faying surface between brackets and anode bolting straps shall not be painted.

3.1.3 The contractor shall ground vessel to earth using anode secured points along with good conductor.

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.

Spec item #: HD-7	SPECIFICATION	TCMSB Field #: N/A
Zinc Anodes		

Part 4: PROOF OF PERFORMANCE:

4.1

Inspection

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

4.2

Testing

N/A

4.3 Certification

N/A

Part 5: DELIVERABLES:

5.1

Drawings/Reports

5.2

Spare

N/A

5.3

Training

N/A

5.4

Manuals

N/A

Spec item #: HD-8	SPECIFICATION	TCMSB Field #: N/A
Propeller Shaft Rope Cutters		

Part 1: SCOPE:

1.1

The intent of this specification shall be to remove old rope cutters during shaft removal and install Coast Guard supplied spur line cutters to each propeller shaft during shaft assembly if replacement is required after inspection of rope cutters by Chief Engineers.

1.2

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

Part 2: REFERENCES:

2.1

Guidance Drawings/Nameplate Data

2.2

Standards

2.3

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 CG shall supply 2 – Spurs line cutters, 2 ½” diameter, Mold “E” and holding block #3 if required.

3.1.2 The Contractor shall install the line cutters as per the Spurs Installation instructions.

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.

Spec item #: HD-8	SPECIFICATION	TCMSB Field #: N/A
Propeller Shaft Rope Cutters		

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

5.2

Spare

N/A

5.3

Training

N/A

5.4

Manuals

N/A

Spec item #: L-1	Fire Detection and Suppression Systems	

L-1 FIRE SYSTEM

Scope:

The Contractor shall provide the services of an authorized Kidde-Fenwal service representative to inspect and test the onboard fire system and ensure correct operation of both the detection and CO₂ smothering system and all the indication and alarm signal devices.

Technical Description:

1. This spec item shall be completed immediately before the vessel is returned to the water in the Spring of 2013. The actual dates will be provided when the operational season for the vessels has been determined.
2. For the vessel, the Kidde-Fenwal technician shall:
 - a. Inspect and test the operation of the Fire Detection System.
 - b. Test the operation of each signal device, zone indication and alarm bell operation.
 - c. Inspect and service the Kidde-Fenwal CO₂ suppression system for the engine room. The system is comprised of 2 x 50 lb CO₂ cylinders for each vessel.
 - d. Inspect and service the 4 - 10lb dry chemical type B-2 ABC fire extinguishers and 1- 10lb CO₂ type fire extinguisher.
 - e. Provide a certificate of inspection and compliance to Vessels Representative.

Spec item #: L-2	Electrical Systems
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L-2 INSULATION TESTING

Scope:

The Contractor shall conduct electrical Megger testing on four circuit panels.

Technical Description:

1. The Contractor shall conduct electrical Megger testing on four electrical panels as indicated below. Any readings below 2 megs shall be shown to the owner's representative and will be corrected using PWGSC 1379 action and raised as an addition to the contract. Provide a copy of readings to Vessels Representative.

2.

Navigation light panel	
1	Port side light
2	Starboard side light
3	Stern light
4	Masthead light
5	Anchor light
6	Towing light
7	Stern towing light
8	Spare
9	Spare
10	Upper all round red light
11	All round white light
12	Lower all round red light
12 Volt D.C panel	
1	Engine controls port
2	Alarm system & steering control
3	Cellular & autotel telephones
4	12 Volt DC supply to panel 'C'
5	Engine controls stbd.
6	Motor Drive
7	Comnav auto pilot
8	Spare
120 Volt A.C. power panel	
1	VHF Portable radios charger
2	Receptacles engine room
3	HVAC Unit # 2
4	Battery charger
5	Gyro compass
6	Engine heater port
7	Engine heater port
8	HVAC Unit # 1
9	Receptacles bridge & survivor cabin
10	Spare

Spec item #: L-2	Electrical Systems
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24 Volt D.C. Power Panel	
1	Port outboard wiper heater
2	Port outboard wiper motor
3	Port outboard heated window
4	Windshield washer pump
5	Bilge pump engine room aft.
6	Bilge pump forward compartment.
7	Bilge pump engine room fwd
8	Bilge pump aux. machinery space
9	Bilge pump gear space port.
10	Bilge pump gear space stbd.
11	Bilge pump lazarette.
12	General alarm
13	Engine room lights
14	Survivors cabin lights
15	Auxiliary machinery space lights
16	Forward compartment lights
17	Enclosed bridge lights
18	Weather deck lights
19	Navigation light panel alarm
20	Forward spot light
21	Pump bilge holding tank
22	Aft. Spot light
23	Docking lights port & stbd
24	Junction box aft working deck
25	Engine controls port
26	Engine controls stbd
27	Port inboard wiper heater
28	Port inboard heated window
29	Engine controls port
30	Engine controls stbd
31	Cat circuit engine vision system
32	Engine control box stbd
33	Engine control box stbd
34	Fire alarm
35	AMS vent fan
36	Navigation light panel supply (Main)
37	Cat circuit capsizes control
38	Navigation light panel supply (Aux)
39	Fuel Gauge
40	Hot cup # 1
41	Spare
42	Dimmer lights open & enclosed bridge
43	Micro commander port
44	Micro commander stbd
45	Tow line reel control
46	Hand held spot light

Spec item #: L-2	Electrical Systems	

47	Spare
48	Port inboard wiper motor
49	Gyro compass
50	Navtex receiver
51	CO2 system
52	Steering gear alarm
53	Searchlight port
54	Stbd inboard wiper heater
55	Stbd inboard heated window
56	Stbd inboard wiper motor
57	Stbd inboard wiper heater
58	Stbd inboard heated window
59	Stbd outboard wiper motor
60	Spare
61	Micro commander em. Supply port
62	Micro commander em. Supply stbd
63	Flashing blue light
64	Spare
65	Spare
66 & 67	Main Bilge Pump Control Panel
68	Space
69	24 Volt D.C. supply to panel 'D'
70	Converter # 1
71	Converter # 2

Spec item #: L-3	Start and Service Batteries	
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L-3 START AND SERVICE BATTERIES TEST

Scope:

The Contractor shall perform a cell and discharge test on the service batteries and the starting batteries.

Technical Description:

1. The Contractor shall perform a cell and discharge test on the service batteries “2 x 12volts” and starting batteries “2 x 12volts” for each of the vessels.
2. The Contractor shall prepare a report of the readings and provide a report to Owners Representatives.

SEA TRIALS

Prior to the completion of the refit and storage period, the vessels shall proceed on a one-hour sea trial with the Contractor's Representative on board. Results of the sea trial shall be documented by the Chief Engineers. Any noted deficiencies during the trial will be addressed.

The sea trial will take place at the end of the storage period, immediately after the vessels are returned to the water in the spring 2013 – Spec item E-1 Port and Starboard Engine and Gearbox service will require the return of the Authorized Service Technicians during the sea trial.

APPENDIX

1. 47' MLB Lifting instructions
2. 47 ft Motor Lifeboat Hull Identification.
3. International Marine Coatings