



CCGS W. George

REFIT 2019

May 13th to June 10th



Spec item #:	SPECIFICATION	TCMSB Field #:
REFIT PREAMBLE		

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REFIT PREAMBLE**1. INTENT**

The intent of this specification is to describe the necessary work involved in carrying out the ship's Annual Refit beginning May 13th and ending June 10th. All work specified herein and all repairs, inspections and renewals are to be carried out to the satisfaction of the Chief Engineer 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 and one electronic copy shall be presented to the Owner's Representative and attending surveyors.

4. WORKMANSHIP

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

5. FACILITIES

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

6. MATERIALS AND SUBSTITUTIONS

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

7. REMOVALS

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.

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

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13. HOTWORK

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

14. WELDING

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

15. SMOKING

The Public Service Smoking Policy forbids smoking in all Government ships in areas inside the ship where shipyard personnel will be working. The contractor shall inform shipyard workers of this policy and ensure that it is 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. All other spaces metal tie-wrap to be used.

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

18. TRANSDUCERS

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

19. OWNER'S REPRESENTATIVE

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

20. SEA TRIALS

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

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VESSEL CHARACTERISTICS:**SHIP PARTICULARS:****DISPLACEMENT 27.5 Tonnes****LENGTH OVERALL..... 15.77M (51' 9")****BEAM..... 5.18M (17'.)****FRAME SPACING..... Frame 0-3. 535mm (21")****Frame 3-7. 575mm (23")****Frame 7-23 650mm (25-1/2")****Engines:****Caterpillar 3408****Port: Arrangement # 7W7583 (530HP@ 2100RPM)****Stbd.: Arrangement # 7W7583 (530HP@ 2100RPM)**

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

HD-01 SERVICES**Part 1: SCOPE:**

- 1.1** The intent of this specification shall be to have the contractor provide services to the vessel while in dry-dock and afloat during the complete refit period and disconnected on termination of refit. Contractor shall supply all material to the point of onboard connection
- 1.2** This work shall be carried out in Conjunction with the following: Dry-docking

Part 2: REFERENCES:**2.1 Guidance Drawings/Nameplate Data****2.1.1** N/A**2.2 Standards****2.2.1** N/A**2.3 Regulations****2.3.1** N/A**2.4 Owner Furnished Equipment**

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

Part 3: TECHNICAL DESCRIPTION:**3.1 General**

- 3.1.1** Contractor shall provide all the labor and material for the rigging of two contractor supplied boarding gangway complete with safety net and two handrails. The gangway shall be illuminated for safe use at night and shall be fitted to the satisfaction of the Commanding Officer.
- 3.1.2** Contractor shall provide electrical shore power of 240 volts ac single phase 100 amp. Contractor shall supply the power to the ship and connect from single-phase isolation transformer to 240/120 volt panel via the shore power plug. Contractor shall quote on supplying 2000 kilowatt hours and provide quote per additional kilowatt hour. Total kilowatt hours will be adjusted up or down by 1379 action at the conclusion of the refit. Meter readings shall be witnessed by owner rep. and contractor prior to connection and upon disconnection of the service. Contractor shall supply and install electrical meter for the ship during the refit period.

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HD - 01 SERVICES		

- 3.1.3.** Contractor shall provide fire protection for the vessel in the form of one hose 1 ½ inches in diameter, complete with approved fire nozzle, connected to a fully operable fire hydrant. The hose shall be long enough to reach all parts of the vessel. The hydrant shall have a wrench fitted at all times during the refit period.
- 3.1.4.** Contractor shall provide a suitable garbage container and empty it when it reaches 75% full. The contractor shall remove all refuse daily from the ship including all scale and sludge from tanks.
- 3.1.5.** Contractor shall quote on the disposal of 200 litres of oily water mixture from tanks and bilges. The contractor shall quote cost per each additional 50 litre to be adjusted by 1379. The contractor shall retain the services of a qualified disposal agent that shall comply with all provincial regulations and provide certification of proper disposal.
- 3.1.6.** Contractor shall supply and install deck protection Flooring Mask or equivalent to protect interior decks for the duration of the refit. The deck area is approximately 7.5 square meters.
- 3.1.7.** Contractor shall provide access for the vessels crew to washroom facilities including flush toilets and washbasins with hot and cold running water
- 3.1.8.** Contractor shall provide a location for use as an office by the Chief Engineer. The office shall be equipped with a desk and office style chair. The office shall be equipped with a phone. The office shall be equipped with a computer with internet and a printer (Windows 7 or higher). Contractor shall provide access to a fax machine.
- 3.1.9.** The successful bidder shall prepare and present a plan which outlines what action(s) will be taken in the event of a fire or unauthorized access
- 3.1.10.** At the end of the refit the contractor shall clean the vessel (bilge, decks, deck heads, bulkheads and all equipment) to the satisfaction of the owner's representative.
- 3.2 Location**
- 3.2.1** N/A
- 3.3 Interferences**
- 3.3.1** Contractor is responsible for the identification of interference items, their temporary removal, storage and refitting to vessel.

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

Part 4: PROOF OF PERFORMANCE:**4.1 Inspection**

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

4.2 Testing

4.2.1 N/A

4.3 Certification

4.3.1 N/A

Part 5: DELIVERABLES:**5.1 Drawings/Reports**

5.1.1 N/A

5.2 Spares

5.2.1 N/A

5.3 Training

5.3.1 N/A

5.4 Manuals

5.4.1 N/A

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

HD-02 PRODUCTION CHART**Part 1 - SCOPE**

- 3.1.1** The successful contractor shall supply three hard copies to Chief Engineer and forward one electronic copy to the vessel's Senior Vessel Maintenance Manager Craig.Norman@dfo-mpo.gc.ca and to the PWGSC Contracting Officer that is assigned to this vessel.
- 3.1.2** The chart shall show for each specification item, the start date, the manpower loading, the duration, and the completion date. 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.
- 3.1.3** A critical path of work shall be identified, which shows critical tasks that may delay the completion of the refit if they are not completed within the estimated time frame. The critical path may exist due to labor constraints or tasks that cannot be completed concurrently with other tasks.
- 3.1.4** If work arises that affects critical path, it shall be immediately brought to the attention of the Chief Engineer, VMM and PWGSC Contracting Officer. Every effort shall be made to prevent completion delay.

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**

3.2.1 The successful contractor shall supply three copies of a detailed bar chart showing the planned work schedule for the ships refit. These Microsoft Project charts shall be presented to the Chief Engineer upon the ships arrival at the Contractors premises. The bar charts shall show for each specific item, the start date, the manpower loading, the

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

duration and the completion date. The contractor shall email a detailed bar chart to the Vessel Maintenance Manager Craig Norman (Craig.Norman@dfo-mpo.gc.ca) upon arrival at Contractors premises.

3.2.2 The production 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.

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

3.2.4 Contractor shall include on the updates to the production chart any work arising from PWGSC 1379 action.

3.2.5 Contractor must immediately notify Chief Engineer if there is a potential for a delay because of unknown work arising.

3.2 Location

3.2.1 N/A

3.3 Interferences

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

Part 4: PROOF OF PERFORMANCE:

4.1 Inspection

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

4.2 Testing

4.2.1 N/A

4.3 Certification

4.3.1 N/A

Part 5: DELIVERABLES:

5.1 Drawings/Reports

5.1.1 N/A

5.2 Spares

5.2.1 N/A

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

5.3 Training**5.3.1** N/A**5.4 Manuals****5.4.1** N/A

Spec item #: HD-03	SPECIFICATION	TCMSB Field #:
HD - 03 HULL INSPECTION & PAINTING		

HD-03 HULL INSPECTION AND PAINTING**Part 1: SCOPE:**

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

Part 2: REFERENCES:**2.1 Guidance Drawings/Nameplate Data****2.1.1** Contractor supplied stencils:

- a) 2 Coast Guard 150 mm letters
- b) 2 Garde cotiere 150mm letters
- c) 2 Fisheries and Oceans 75mm
- d) 2 Peches et Oceans 75mm
- e) 4 Canada
- f) 2 of 150mm Maple Leafs

2.2 Standards

- 2.2.1** All coatings to be applied according to manufacturer's specifications.

2.3 Regulations

N/A

2.4 Owner Furnished Equipment

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

Part 3: TECHNICAL DESCRIPTION:**3.1 General**

- 3.1.1** Contractor shall inform Chief Engineer prior to starting work.

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

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

Spec item #: HD-03	SPECIFICATION	TCMSB Field #:
HD - 03 HULL INSPECTION & PAINTING		

3.1.4 Contractor shall include in bid repairs to 112 m² of Hull coating. Contractor shall quote on unit cost per additional m². Any repair or application of damaged hull coating will be adjusted up or down by 1379 action.

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

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

3.1.7. Contractor shall supply and apply the following coatings as per manufactures specifications:

3.1.7.1 As per supplied spec from paint manufacturer

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

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

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

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, and storage and refitting to vessel.

Part 4: PROOF OF PERFORMANCE:

4.1 Inspection

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

4.2 Testing

4.2.1 N/A

4.3 Certification

4.3.1 N/A

Part 5: DELIVERABLES:

Spec item #: HD-03	SPECIFICATION	TCMSB Field #:
HD - 03 HULL INSPECTION & PAINTING		

5.1 Drawings/Reports

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

5.2 Spares

5.2.1 N/A

5.3 Training

5.3.1 N/A

5.4 Manuals

5.4.1 N/A

Spec item #: HD-04	SPECIFICATION	TCMSB Field #:
HD - 04 DRYDOCKING		

HD-04 DRY DOCKING**Part 1: SCOPE:**

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

Part 2: REFERENCES:**2.1 Guidance Drawings/Nameplate Data**

2.1.1 N/A

2.2 Standards

2.2.1 N/A

2.3 Regulations

2.3.1 N/A

2.4 Owner Furnished Equipment

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

Part 3: Technical Description**3.1 General**

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

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

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

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

3.1.5 N/A.

3.2 Location

3.2.1 N/A

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HD - 04 DRYDOCKING		

3.3 Interferences

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

Part 4: PROOF OF PERFORMANCE:**4.1 Inspection**

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

4.2 Testing

4.2.1 N/A

4.3 Certification

4.3 N/A

Part 5: DELIVERABLES:**5.1 Drawings/Reports**

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

5.2 Spares

5.2.1 N/A

5.3 Training

5.3.1 N/A

5.4 Manuals

5.4.1 N/A

Spec item #: HD-05	SPECIFICATION	TCMSB Field #:
HD - 05 TRIM TAB CYLINDER OVERHAUL & CABLE REPLACEMENT		

HD-05 TRIM TAB CYLINDER OVERHAUL & CABLE REPLACEMENT

Part 1: SCOPE:

- 1.1 The intent of this specification shall be to have the contractor remove trim tab cylinders, have them refurbished with new seals and reinstall cylinders. Also install new indicator push-pull cables
- 1.2 This work shall be carried out in Conjunction with the following: Drydocking

Part 2: REFERENCES:

- 2.1 **Guidance Drawings/Nameplate Data**
- 2.2 **Standards**
- 2.3 **Regulations**
- 2.4 **Owner Furnished Equipment**

- 3.4.11 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 both port and starboard trim tab hydraulic rams.
- 3.1.2 The contractor shall have the hydraulic rams refurbished by a certified hydraulic shop to the satisfaction of the owner's rep and reinstall. Materials to be provided by rebuilder.
- 3.1.3 The contractor shall ensure that the trim tab hydraulic circuit is fully operational and ensure trim tabs operate correctly before and during sea trials.
- 3.1.4 The contractor shall remove fitted push-pull cables for trim tab position indicators and install owner supplied cables.
- 3.1.5 The contractor will have to remove fitted cable stay tab from the hull and reposition on the hull to accommodate the new cables. The tabs to be of new materials and welded to the hull.

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HD - 05 TRIM TAB CYLINDER OVERHAUL & CABLE REPLACEMENT		

3.1.6 The tab to be of the same dimensions of the removed tab. (5cm x 14 cm x .635cm) marine grade aluminium

3.1.7 The contractor shall repaint the finished work to the same guidelines as hull painting spec HD- 3

3.2 Location

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

3.3 Interferences

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

Part 4: PROOF OF PERFORMANCE:

4.1 Inspection

4.1.1. All work shall be completed to the satisfaction of the Chief Engineer.
Contractor shall inspect the operation of trim tabs before and during sea trials.

4.2 Testing

N/A

4.3 Certification

N/A

Part 5: DELIVERABLES:

5.1 **Drawings/Reports** Supply 2 written and 1 electronic copy of report of all work carried out including hydraulic company reconditioning of the rams.

5.2 Spares

N/A

5.3 Training

N/A

5.4 Manuals

N/A

Spec item #:HD-06	SPECIFICATION	TCMSB Field #:
HD - 06 PROPELLER SERVICE		

HD-06 PROPELLER SERVICE**Part 1: SCOPE**

1.1 The intent of this specification shall be to have the contractor remove, service and install vessel propellers

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

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 both propellers (Hawboldt Mega Four – four bladed propellers)

3.1.2. The contractor shall remove if required after inspection by C/E both propellers from the vessel and shall transport the propellers to/from Atlantic Propeller Repair, 12 Kyle Avenue, Donovan's Industrial Park Mount Pearl. Contact: Earl Latham. Ph. 7479200

3.1.3The contractors bid shall include an allowance of \$1500.00 for the refurbishment and shipping of 2 propellers. The actual amount will be increased or decreased using PWGSC-1379 after the propellers are repaired.

3.1.4 The Contractor shall re-install the propellers using 2 new 3/8 stainless steel bolts and wire on the Propeller cone.

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HD - 06 PROPELLER SERVICE		

3.1.5 Vessel to have dock and sea trials to ensure props installed properly.

3.2 Location

3.2.1. Fitted on tailshafts.

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

4.1.2. 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-07	SPECIFICATION	TCMSB Field #:
HD - 07 SEA BAY CLEANING AND PAINTING		

HD-07 SEA BAY CLEANING AND PAINTING**Part 1: SCOPE:**

- 1.1** The intent of this specification shall be contractor open up, clean and paint the three sea bays. Contractor shall bid on a total area of 1 sq. meter and provide the unit cost per 0.5m².
- 1.2** This work shall be carried out in Conjunction with the following: HD-04 Dry-docking & HD-03 Hull Inspection & Painting

Part 2: REFERENCES:

- 2.1 Guidance Drawings/Nameplate Data**
N/A
- 2.2 Standards**
2.2.1 All coatings to be applied according to manufacturers' specs
- 2.3 Regulations**
2.3.1 N/A
- 2.4 Owner Furnished Equipment**
2.4.1 Contractor shall supply all materials, equipment, and parts required to perform the specified work unless otherwise stated.

Part 3: TECHNICAL DESCRIPTION:

- 3.1 General**
3.1.1 Contractor shall inform Chief Engineer prior to starting work.
- 3.1.2** Contractor shall remove the sea bay grids and water blast the sea boxes and grids.
- 3.1.3** Contractor shall ensure that the slotted holes in the grids are punched clean.
- 3.1.4** Contractor shall have Chief Engineer and NACE inspector, inspect sea bays prior to applying coating.
- 3.1.5** Contractor shall supply and apply the same paint coatings as outlined for the underwater hull, 1 coat of Amercoat ABC # 4 Antifouling Red @3-4 mils DFT.as per manufactures specifications.
- 3.1.6** Contractor shall replace the sea bay grids using new Contractor supplied 316 stainless steel fasteners and locking wire.

Spec item #: HD-07	SPECIFICATION	TCMSB Field #:
HD - 07 SEA BAY CLEANING AND PAINTING		

3.2 Location

3.2.1 Port main suction @ Frames 12 – 13

3.2.2 Stbd. Main suction @ Frames 12 – 13

3.2.3 Fire Pump suction @ Frames 8 – 9

3.3 Interferences

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

Part 4: PROOF OF PERFORMANCE:

4.1 Inspection

4.1.1 All paint prep and coating shall be completed to the satisfaction of the Chief Engineer and attending owner supplied NACE inspector.

4.2 Testing

4.2.1 N/A

4.3 Certification

4.3.1 N/A

Part 5: DELIVERABLES:

5.1 Drawings/Reports

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

5.2 Spares

5.2.1 N/A

5.3 Training

5.3.1 N/A

5.4 Manuals

5.4.1 N/A

Spec item #: HD-08	SPECIFICATION	TCMSB Field #:
HD - 08 PIPELINE INSPECTION		

HD-08 PIPE LINE INSPECTION

Part 1: SCOPE:

- 1.1 The intent of this specification shall be to have the contractor visually inspect the sea water and bilge piping for visual signs of corrosion on the outside.
- 1.2 This work shall be carried out in Conjunction with the following: HD-04 Drydocking

Part 2: REFERENCES:

2.1 Guidance Drawings/Nameplate Data

- 2.1.1 VBBB1_92-100-02 Piping Arrangement Sea Water System
VBBB1_92-100-03 Piping Arrangement Bilge & Fire Systems

2.2 Standards

N/A

2.3 Regulations

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 visually inspect all sea water piping and bilge piping for signs of corrosion and deterioration while piping in existing locations as identified by Chief Engineer.
- 3.1.3 The contractor shall inform Chief Engineer any defects found with piping.
- 3.1.4 Contractor shall include in quote (20) twenty hours for the inspection, removal and installation of pipes. If piping is to be replaced cost of new piping shall be covered by PWGSC 1379 action. Piping for inspection to be identified by Chief Engineer.
- 3.1.5 The contractor shall pressure test new pipes at 20 psi, which must be witness by Chief Engineer.

Spec item #: HD-08	SPECIFICATION	TCMSB Field #:
HD - 08 PIPELINE INSPECTION		

3.1.6 Contractor shall reinstall pipe using new contractor supplied stainless steel bolts and new approved gasket..

3.2 Location

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

3.3 Interferences

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

Part 4: PROOF OF PERFORMANCE:

4.1 Inspection

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

4.2 Testing

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

4.3 Certification

N/A

Part 5: DELIVERABLES:

5.1 Drawings/Reports

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

5.2 Spares

N/A

5.3 Training

N/A

5.4 Manuals

N/A

Spec item #: HD-9	SPECIFICATION	TCMSB Field #:
HD - 9 ZINC ANODES		

HD-09 ZINC ANODES**Part 1: SCOPE:**

- 1.1** The intent of this specification shall be contractor to remove existing anodes and replace with new sacrificial zinc anodes on the hull, the rudders, the trim tabs and the tail shafts. Anodes will not be applied until vessel is ready to be put back in the water.
- 1.2** This work shall be carried out in Conjunction with the following: HD-04 Dry-docking & HD-03 Hull Inspection & Painting

Part 2: REFERENCES:**2.1 Guidance Drawings/Nameplate Data**

N/A

2.2 Standards

N/A

2.3 Regulations

N/A

2.4 Owner Furnished Equipment

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

Part 3: TECHNICAL DESCRIPTION:**3.1 General**

- 3.1.1** Contractor shall inform Chief Engineer prior to starting work.

- 3.1.2** Contractor shall supply and install 12 zinc anodes. Anodes must be protected until put back in the water from paint and grit blast.

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

3.2.1 Location

- 3.2.1**
- a) 2 anodes bolted to the transom 9x6x1 ½ in.
 - b) 2 anodes bolted to the keel teardrop shape 3x9x1 ¼ in.
 - c) 2 anodes installed between frames 7& 13 teardrop shape 3x9x1 ¼ in.
 - d) 1 anode on each trim tab 6 ½ in circ.
 - e) 2 anodes installed on collars on each shaft 2 ¾ in. inside diameter.

Spec item #: HD-9	SPECIFICATION	TCMSB Field #:
HD - 9 ZINC ANODES		

3.3 Interferences

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

Part 4: PROOF OF PERFORMANCE:**4.1 Inspection**

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

4.2 Testing

4.2.1 N/A

4.3 Certification

4.3.1 N/A

Part 5: DELIVERABLES:**5.1 Drawings/Reports**

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

5.2 Spares

5.2.1 N/A

5.3 Training

5.3.1 N/A

5.4 Manuals

5.4.1 N/A

Spec item #: HD-10	SPECIFICATION	TCMSB Field #:
HD - 10 MAIN ENGINE POST OVERHAUL INSPECTION		

MAIN ENGINE POST OVERHAUL INSPECTION

Part 1: SCOPE:

- 1.1** The intent of this specification shall be to have the contactor inspect various systems of the main engines to assure their properly working. Work to be carried out by certified Toromont CAT representative.
- 1.2** This work shall be carried out in Conjunction with the following: Drydocking

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 have Toromont CAT representative to complete an inspection of both main engines including valve timing and clearances, fuel pump timing. Any noted deficiencies as a result of the overhaul will be consulted with technician and necessary repairs made.
- 3.1.2** All components to be returned to original state after work is completed
- 3.1.3** Main engines to be ran up along side before sea trials to ensure correct operation of engines.
- 3.1.4** Contractor shall deliver report and/or readings related to this work to the Chief Engineer.
- 3.1.5** Contractor shall include in cost an allowance of \$5000.00 the services of Tormont CAT FSR to perform post rebuild overhaul inspection of the port and stbd. Engines. Contractor shall arrange Tormont CAT FSR in advance.

Spec item #: HD-10	SPECIFICATION	TCMSB Field #:
HD - 10 MAIN ENGINE POST OVERHAUL INSPECTION		

3.2 Location

3.2.2. In the engine room, 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.

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**
Caterpillar maintenance and part manuals

Spec item #: HD-11	SPECIFICATION	TCMSB Field #:
HD - 11 LIFE RAFT SERVICING		

HD-11 LIFE RAFT SERVICING

SCOPE:

Part 1: Scope

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

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

Part 2: REFERENCES:

2.1 Guidance Drawings/Nameplate Data

2.1.1 N/A

2.2 Standards

N/A

2.3 Regulations

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;

3.2.5 Contractor shall inform Chief Engineer prior to starting work.

3.2.6 Contractor shall remove (two of) six person life rafts from the vessel and safely transport the life rafts to an O.E.M authorized service center for Transport Canada Annual inspection. Contractor to have liferafts certification dated as close to end refit as possible usually last week of refit.

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

Spec item #: HD-11	SPECIFICATION	TCMSB Field #:
HD - 11 LIFE RAFT SERVICING		

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

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

3.3 Location

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

3.4 Interferences

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

Part 4: PROOF OF PERFORMANCE:

4.1 Inspection

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

4.2 Testing

4.2.1 N/A

4.3 Certification

4.3.1 Provide safety certificates for inspections to be given to Chief Engineer.

Part 5: DELIVERABLES:

5.1 Drawings/Reports

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

5.2 Spares

5.2.1 N/A

5.3 Training

5.3.1 N/A

Spec item #: HD-12	SPECIFICATION	TCMSB Field #:
HD - 12 FLYBRIDGE CONSOLE HATCH INSTALL		

FLYBRIDGE CONSOLE HATCH INSTALL

Part 1: SCOPE:

- 1.1 The intent of this specification shall be to have the contractor remove existing cover for fly bridge console access and install a new owner supplied prefabricated coaming and cover
- 1.2 This work shall be carried out in Conjunction with the following: Drydocking and HD-10

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 fitted cover for access to the flybridge console and fabricate new the opening to the prescribed opening for the new coaming and cover. Existing opening is 17.75 inches by 24 inches. New opening must be fabricated to 24.5 inches by 24.5 inches.
- 3.1.2 The contractor shall remove any debris and paint the bared surfaces before install
- 3.1.3 The Contractor shall install the coaming using all stainless fastener

3.2 Location Flybridge

3.3 Interferences

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

Spec item #: HD-12	SPECIFICATION	TCMSB Field #:
HD - 12 FLYBRIDGE CONSOLE HATCH INSTALL		

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

4.3 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-13	SPECIFICATION	TCMSB Field #:
HD-13 NON SKID APPLICATION TO EXPOSED DECKS		

NON SKID APPLICATION TO EXPOSED DECKS

Part 1: SCOPE:

- 1.1 The intent of this specification shall be to have the contractor remove the existing non-skid application applied to all exposed decks and apply new anti skid system as prescribed by the contractor.
- 1.2 This work shall be carried out in Conjunction with the following: Drydocking

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 mechanically and using a abrasive blasting, remove the applied non skid coating to the aluminum on all exposed decks.
- 3.1.2 The contractors bid shall bid on a main deck area that's 46.5m² and fly bridge deck of 3.4 m² for profiling and application. The contractor shall include the unit costs per m² for additional areas.
- 3.1.3 The Contractor shall abrasive blast the whole deck area to SSPC-SP10, to achieve a profile of 1.5 to 2.0 mils using a 40 mesh size particulate as blast media. Extreme care shall be taken to ensure that the blast pressure does not embed blast medium into deck surface. Any fitted deck fixtures that do not have non skid applied must be protected from blasting and painting. Suitable protection of blast particulate intrusion into the wheelhouse and/or venting must be made and complete clean up of the particulate and removed paint, must be made before new application started
- 3.1.4 The Contractor shall apply.

Spec item #: HD-13	SPECIFICATION	TCMSB Field #:
HD-13 NON SKID APPLICATION TO EXPOSED DECKS		

Paint Products							
#	Purpose	Product	Colour	Code	Mix Ratio	Mix With	Thinner/Cleaner
1	Primer	Intershield 300	Bronze	ENA300/A	2.50:1	ENA303	GTA220
2	Intermediate	Intershield 6GV	Dark Grey	EGA650	3:1	EGA651	GTA220
3	Finish	Interthane 990	Mid-Graphite	PHT806/A	6:1	PHA046	GTA056

3.2 Location

3.2.1. All exposed decks

3.3 Interferences

3.3.1. The Contractor is responsible for the identification of interference items, their temporary removal, storage and refitting to vessel. Pictures to be taken of interference items before removal and after reinstall.

Part 4: PROOF OF PERFORMANCE:

4.1 Inspection

4.1.1. All work shall be completed to the satisfaction of the Chief Engineer. Contractor shall inspect the operation of trim tabs before and during sea trials.

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 #: L-01	SPECIFICATION	TCMSB Field #:
L - 01 INSULATION TESTING		

L-01 INSULATION TESTING**Part 1: SCOPE:**

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

Part 2: REFERENCES:

- 2.1 Guidance Drawings/Nameplate Data**
N/A
- 2.2 Standards**
N/A
- 2.3 Regulations**
N/A
- 2.4 Owner Furnished Equipment**
 - 2.4.1** The contractor shall supply all materials, equipment, and parts required to perform the specified work unless otherwise stated.

Part 3: TECHNICAL DESCRIPTION:**3.1 General**

- 3.1.1** Contractor shall inform Chief Engineer prior to starting work.
- 3.1.2** Insulation testing to be carried out on the following:
 - 3.1.1.1** Main switchboard (33 circuits)
 - 3.1.1.2** 240/120 vac shore power panel (14 circuits)
 - 3.1.1.3** FWD power panel E-5 (10 circuits)
 - 3.1.1.4** WH power panel E-1 (13 circuits)
 - 3.1.1.5** 12 VDC Nav panel E-3 (10 circuits)
 - 3.1.1.6** 24 VDC Nav panel E-2 (10 circuits)
 - 3.1.1.7** 24 VDC HVAC Power panel E-6 (6 circuits)
 - 3.1.1.8** Power panel E-7 (12 circuits)
 - 3.1.1.9** Nav light panel (10 circuits)
- 3.1.3** Contractor shall inform Chief Engineer immediately any readings below 2 Megs. Any repairs required may be corrected using 1379 action.

Spec item #: L-01	SPECIFICATION	TCMSB Field #:
L - 01 INSULATION TESTING		

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

3.2 Location

3.2.1 Main switchboard in aft.cabin.

3.2.2 Shore power panel in Lazerette.

3.2.3 1 panel in fwd. cabin.

3.2.4 The others are all in the wheelhouse

3.3 Interferences

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

Part 4: PROOF OF PERFORMANCE:

4.1 Inspection

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

4.2 Testing

N/A

4.3 Certification

N/A

Part 5: DELIVERABLES:

5.1 Drawings/Reports

5.1.1 Contractor shall provide Chief Engineer two type written copies and one electronic copy in a report of what work was carried out.

5.2 Spares

N/A

5.3 Training

N/A

5.4 Manuals

N/A

Spec item #: L-02	SPECIFICATION	TCMSB Field #:
L – 02 FIRE DETECTION, CO SMOOTHING & PORTABLE EXTINGUISHERS		

L-02 FIRE DETECTION, CO SMOOTHING & PORTABLE EXTINGUISHERS

Part 1: SCOPE:

- 1.1 The intent of this specification shall be to have the contractor obtain the services of a certified technician to test and ensure the correct operation of the smothering system and the fire detection system and 11 portable fire extinguishers. Contractor to recertify the above items to have expiry dates correspond with annual refit.
- 1.2 This is a Kidde Fenwal system with 2 cylinders and the fire detection panel is an Edwards System Technologies. This is to be carried out to the satisfaction of a Transport Canada Marine Surveyor and Chief Engineer.
- 1.3 This work shall be carried out in Conjunction with the following:
 - 1.3.1 Drydocking.

Part 2: REFERENCES:

- 2.1 **Guidance Drawings/Nameplate Data**
N/A
- 2.2 **Standards**
N/A
- 2.3 **Regulations**
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 contractor shall test the operation of each signal device, zone indication and alarm bell operation. Chief Engineer and Transport Canada Marine Safety Inspector shall witness all testing on the systems.
 - 3.1.3 Contractor shall have the fire detection system, CO2 system and portable fire extinguishers inspected by certified Original Equipment Manufacturer (OEM) authorized service center.

Spec item #: L-02	SPECIFICATION	TCMSB Field #:
L – 02 FIRE DETECTION, CO SMOOTHERING & PORTABLE EXTINGUISHERS		

3.1.4 Contractor shall have all items in this specification recertified for expiration date to correspond with the later part of the annual refit.

3.1.5 Contractor shall arrange Transport Canada Marine Safety Inspector.

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

3.1.4 All work shall be completed by a certified technician.

3.2 Location

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

3.2.2 Portable Fire Extinguisher

Type	Location	Serial #:
a) Dry Chemical (5 lb – ABC)	Wheelhouse Aft	ZV-711001
b) Dry Chemical (2.5 lb - ABC)	Wheelhouse Fwd.	XC-473039
c) Dry Chemical (10 lb –ABC)	Fwd. Survivors Aft	ZV108900
d) Dry Chemical (5 lb -ABC)	Fwd. Survivors Fwd.	ZV-711251
e) Dry Chemical (5 lb – ABC)	Head	ZV-710981
f) Dry Chemical (5 lb – ABC	Engine Room Fwd.	ZV-710973
g) Dry Chemical (5 lb –ABC)	Engine Room Aft	ZV-710962
h) Dry Chemical (10 lb –ABC)	Aft Survivors Fwd.	ZV-108826
i) Dry Chemical (5 Lb – ABC)	Aft Survivors Aft	XY- 781581
j) Dry Chemical (5 lb -ABC)	Steering Gear	ZV-710949.
k) 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 Inspector.

4.2 Testing

Spec item #: L-02	SPECIFICATION	TCMSB Field #:
L – 02 FIRE DETECTION, C0 SMOOTHING & PORTABLE EXTINGUISHERS		

4.3 Certification

4.3.1 Contractor shall provide certificates of all inspections carried out.

Part 5: DELIVERABLES:**5.1 Drawings/Reports**

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

5.2 Spares

5.2.1 N/A

5.3 Training

5.3.1 N/A

5.3.2 Manuals

5.4.1 N/A