



## **CCGS Ann Harvey**

### **Alongside Refit 2014**

### **Coast Guard Base, St. John's, NL**

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## **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 Owner's Representative and, where applicable, the attending TC Marine Safety Inspector. Unless otherwise specifically stated, the 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. All tests are to be witnessed by the Inspection Authority, 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 Marine Safety arrives onsite for inspection of vessel's equipments or structure. The recorded test results, calibrations, measurements and readings from the entire refit specification shall be provided in 3 typewritten binded reports on 8.5" X 11" paper. The binded reports shall be tabbed as per table of contents in the refit specification. The binded reports shall be provided to the Chief Engineer prior to the end of refit. 3 copies on CD-ROM shall be provided as well. The Contractor shall also provide reports/measurements/readings per individual specification item within the timeline indicated to the Chief Engineer.

### **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 crange 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.

## **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, 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 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. 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 Coast Guard's Safety Management System, section 7.D.9 and section 7.D.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.

#### **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 Coast Guard's Safety Management System, 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.

## **15. LOCKOUT AND TAGOUT PROCEDURES**

1. The Contractor shall be responsible to protect persons working onboard 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 NQA262/NQA026 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.

## **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.

## **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 Owner's Representative. Inspection of any item by the Owner's Representative does not substitute for any required inspection by Transport Canada Marine Safety (TC-MS) or by the Inspection Authority.

## **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 and Dry-docking.

An electronic copy of the Fleet Safety Manual (Adobe Acrobat .PDF version) can be found at [http://142.130.14.20/fleet-flotte/Safety/main\\_e.htm](http://142.130.14.20/fleet-flotte/Safety/main_e.htm)

**SHIP'S PARTICULARS**

Length O.A. -----	83.0 Metres
Breadth Mld. -----	16.2 Metres
Depth Mld. -----	7.75 Metres
Deep Draft -----	6.06 Metres
Displacement -----	5146 MT
Gross Tonnage -----	3853 Tonnes
Year built -----	1987

**Rigging Weights**

- Tailshaft 24280 kg, Length 14.448 meters
- Propeller 7200 kg
- Stern tube 12,185 kg
- Anchor (Complete) 2028 kg
- Anchor Shank 549 kg
- Rudder 17381 lbs
- Rudder Stock 16958 lbs

Spec item #: H-01	<b>SPECIFICATION</b>	TCMSB Field # N/A
<b>Production Chart &amp; Subcontractor Allowances</b>		

**Part 1: Scope**

1.1 The intent is to provide a means for tracking the progress of the refit.

**Part 2: References**

N/A

**Part 3: Technical Description**

**Production Chart**

3.1 The successful Contractor shall supply three copies of a detailed bar chart showing the planned work schedule for the ship's refit. This bar chart shall show, for each spec. item, the start date, the duration of work and the completion date. The chart is also to highlight any critical paths.

3.2 The production chart shall be updated weekly or for each production meeting to reflect the actual production on the refit and changes to the anticipated completion dates of each individual item.

3.3 The production chart shall clearly indicate the arrival/departure dates of any Subcontractors/Field Service Representatives.

3.4 The production chart shall include the status and production on each 1379 arising.

3.5 Three copies of the production chart shall be given to the Chief Engineer **the day prior** to each Production Meeting. A copy shall be emailed to the Project Authority, [Phillip.Bingley@dfm-mpo.gc.ca](mailto:Phillip.Bingley@dfm-mpo.gc.ca) the day prior as well.

3.6 A copy of the original bar chart shall be provided via email to the PWGSC contracting Officer and Project Authority before the close of business on the day on the start date of the refit.

**Subcontractors with Allowances**

3.7 The Contractor shall provide a weekly update of the hours billed by the subcontractors along with their hourly rates.

3.8 The results shall be tabulated in an excel spreadsheet clearly indicating the Subcontractor, date(s), hours worked and hourly rate for the hours worked.

3.9 The update is to be emailed to Technical Authority, Contracting Officer and Project Authority the day prior to the weekly scheduled Progress Meeting.

**Part 4: Proof of Performance**

N/A

**Part 5: Deliverables**

5.1 Contractor shall provide a weekly production chart and excel spreadsheet for subcontractor allowances every week on the timelines indicated.

Spec item #: H-02	<b>SPECIFICATION</b>	TCMS Field #: N/A
<b>DECK UNDERLAY AND COVERING REPAIR</b>		

**Part 1: SCOPE:**

- 1.1 The intent of this specification is to repair damaged sections of deck underlay and covering in the below specified locations.
- 1.2 Work shall be completed in-conjunction with H-08.

**Part 2: REFERENCES:**

Areas of repair:

- 2.1 Boat Deck, Officers Lounge  
Area of underlay repair: 70 ft<sup>2</sup>  
Area of deck covering to be repaired: 300 ft<sup>2</sup>  
Type of deck covering to be installed: Vinyl
- 2.2 Boat Deck, Alleyway, Entrance stbd side, just outside Officers Lounge  
Area of underlay repair: 25 ft<sup>2</sup>  
Area of deck covering to be repaired: 36 ft<sup>2</sup>  
Type of deck covering to be installed: Tile
- 2.3 Main Deck, Alleyway, Ports side aft, over port fresh water tank.  
Area of underlay repair: 50 ft<sup>2</sup>  
Area of deck covering to be repaired: 50 ft<sup>2</sup>  
Type of deck covering to be installed: Tile

**Part 3: TECHNICAL DESCRIPTION:**

- 3.1 Boat Deck, Officers Lounge, Contractor to remove existing floor covering and damaged area of 10 mm layer Dex-o-Tex underlay to the steel deck by hand tooling to reduce the production of dust. A new 10 mm layer of Dex-o-Tex shall be applied according to the manufacturer's specifications. When it has properly cured the Contractor shall supply and apply good quality seamless vinyl flooring; pre-approved by Owners Rep. Note: In the Officers Lounge there are 2 hold down anchors for the oval table.
- 3.2 The outboard and aft bulkhead insulation in the Officers Lounge is to be renewed as well. Area outboard is 16' X 8' and area aft is 15' X 8'. Contractor shall have an allowance of \$2000 for Rockwool marine insulation. Actual amount shall be adjusted up or down via 1379 action upon proof of invoice. Contractor shall remove bulkhead panels and lower tracks in-way of areas noted. Contractor shall fit new owner supplied bulkhead tracks. Contractor shall fit new securing pins for insulation as required. Contractor shall power tool rusted steel deck outboard of bulkhead tracks prior to fitting insulation and new bulkhead track.
- 3.3 Contractor shall power tool clean steel deck outboard of corroded bulkhead panel lower tracks in-way of outboard and aft bulkhead insulation renewals in Officers Lounge. Area to be power tool cleaned is 10.5" X 16' outboard and 7" X 15' aft. Contractor shall apply 2 coats of marine primer upon completion of power tooling rusted steel deck.

Spec item #: H-02	<b>SPECIFICATION</b>	TCMS Field #: N/A
<b>DECK UNDERLAY AND COVERING REPAIR</b>		

- 3.4** Contractor shall fit removed bulkhead panels upon completion of insulation renewal and deck preparation in Officer Lounge.
- 3.5** Boat Deck, Entrance stbd side, just outside Officers Lounge, Contractor to remove existing floor covering and damaged area 10 mm layer Dex-o-Tex underlay to the steel deck by hand tooling to reduce the production of dust. A new 10 mm layer of Dex-o-Tex shall be applied according to the manufacturer's specifications. When it has properly cured the Contractor shall supply and apply good quality tile flooring, to match surrounding tiles; pre-approved by Owners Rep. Note: In the Officers Mess there are 3 tables with a total of 8 round legs that require the flooring to be fitted around, also there are 16 chair hold down anchors fitted to the deck.
- 3.6** Main Deck, Alleyway, Port side aft, Contractor to remove existing floor covering and damaged area 10 mm layer Dex-o-Tex underlay to the steel deck by hand tooling to reduce the production of dust. A new 10 mm layer of Dex-o-Tex shall be applied according to the manufacturer's specifications. When it has properly cured the Contractor shall supply and apply good quality tile flooring, to match surrounding tiles; pre-approved by Owners Rep. This spec item shall be done in conjunction with the Fresh Water Tank Repair and Cabin 609 and 612 refurbishments.
- 3.7** The Contractor shall provide efficient dust extraction to the exterior of the ship prior to removal of the deck covering and deck underlay (Dex-o-tex) for the duration of dust generation and subsequently until the dust has cleared for all areas listed above.
- 3.8** The Contractor shall remove all furniture necessary to carry out flooring repairs. Contractor shall re-install all furniture that was removed from cabins after flooring repairs are complete.
- 3.9** The Contractor shall remove all debris arising from all the flooring repair work from the vessel and dispose of ashore.
- 3.10** Contractor shall, upon completion of work, clean and wipe down cabins to satisfaction of Owners Rep.
- 3.11** The vinyl tiles and vinyl floor coverings shall be selected by the Owner's representative. The Contractor shall provide a selection of colours, similar to the existing, readily available in the local area that meet the requirements of TP439 "Structural Fire Protection Standards, Testing and Approval Procedures". The Contractor is to allow \$1000.00 for tiles and \$2000.00 for vinyl flooring, to be adjusted by 1379 action on proof on invoice.
- 3.12** The new flooring shall be applied and sealed with high quality workmanship in accordance with good Marine Practice. All materials to be contractor supplied.

Spec item #: H-02	<b>SPECIFICATION</b>	TCMS Field #: N/A
<b>DECK UNDERLAY AND COVERING REPAIR</b>		

**Part 4: PROOF OF PERFORMANCE**

**Inspection, Testing & Certification**

4.1 Contractor shall provide flooring spec sheet indicating compliance with TP439.

**Part 5: Deliverables**

**Reports, Drawings, Manuals, Spares & Training**

NA

Spec item #: H-03	SPECIFICATION	TCMSB Field #
<b>Welding Repairs / Fabrication</b>		

**Part 1: Scope**

- 1.1 The Contractor is to provide the services of a CWB-certified welder and an assistant/fire watch to perform a number of miscellaneous welding repairs onboard the vessel.
- A. Well Deck Pad Eye Lashings
  - B. Auxiliary Fan Room, Port Intake Vent Louvers
  - C. Helicopter Landing Deck – Stbd aft corner

**Part 2: Reference**

**Guidance Drawings/Nameplate data**

- 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.
- Canadian Coast Guard Fleet Safety Manual (DFO 5737)

**Owner Furnished Equipment**

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

**Part 3: Technical Description**

- 3.1 Contractor to quote on removal and renewal of three (3) rings total. Contractor shall crop off 3 ring hold down arrangements. The hold down arrangement consists of 1” round stock which shall be cropped and ground smooth. Contractor shall supply 3 new weld-on D-ring tie downs with a 50 tonne breaking strength to be fitted on the existing pad. Contractor shall perform NDT testing of all welds with this item. **Note: Before Contractor starts this work they shall contact the Chief Engineer to identify the locations to ensure that there is no hot work being performed on the tank top of fuel tanks.**



Spec item #: H-03	SPECIFICATION	TCMSB Field #
<b>Welding Repairs / Fabrication</b>		

3.2 Contractor shall remove screen installed on outside louvers to gain access to the louvers. Contractor shall re-install screen on outside of louvers upon completion of work. Contractor shall crop wasted louvers (8 total) on the Auxiliary Fan Room intake vent (Port Side Boat Deck). The louvers are approximately 4" x 3/16" x 32" long. Contractor shall fabricate and install 8 new louver as per originals removed. See picture below. Note: before starting this item, Contractor shall ensure that the intake fans located in the Auxiliary Fan Room are Locked Out.



3.3 Contractor shall remove 2 damaged helicopter net stations and renew with 2 new CG supplied stanchions. Stanchions are bolted in place. Contractor will be responsible for removing helicopter safety net in-order to complete renewals. In addition Contractor shall crop and renew section of bulkhead/coaming set-in as seen below. Contractor shall bid on cropping and renewing a section approximately 36" X 12" of 3/8" plate to be fitted to existing structure maintaining current radius. Contractor shall complete NDT on welds upon completion of renewal. Contractor shall let cable/brackets go in-way of steel renewals and return upon completion. See picture below.

Spec item #: H-03	SPECIFICATION	TCMSB Field #
<b>Welding Repairs / Fabrication</b>		



3.4 All new and disturbed metal shall receive two coats of primer and one topcoat of Amercoat 5450.

3.5 Contractor shall be responsible for the disposal of waste material associated with this spec.

**Part 4: Proof of Performance**

4.1 Contractor shall perform Non Destructive Testing of all welds where specified in technical description above.

4.2 Contractor shall provide certification with supplied weld-on D-Rings.

**Part 5: Deliverables**

N/A

<b>Spec item #: H-04</b>	<b>SPECIFICATION</b>	<b>TCMSB Field #</b>
<b>Vent Trunking Repair</b>		

**Part 1: Scope**

1.1 The intent of this specification is to remove and renew the corroded intake trunking, louver frame, louvers and louver covers for the Fwd Winch Room and Paint Locker Supply Fans.

**Part 2: Reference**

**Guidance Drawings/Nameplate data**

- 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.
- Canadian Coast Guard Fleet Safety Manual (DFO 5737)
- 2.2 The Contractor shall supply all materials, equipment and parts required to perform the specified work unless otherwise stated.

**Part 3: Technical Description**

- 3.1 Contractor shall lock out Paint Locker and Fwd Winch Room Fan Motors at MCC 5, located in engine room, at MCR door. Vessels EO shall direct contractor in location of lock-outs. Contractor shall gas free areas in-way of hotwork.
- 3.2 Both the Paint Locker and Fwd Winch Room supply fan trunking material is galvanized sheeting. The end of the galvanized trunking that bolts to the intake louvers is rectangular, approx dimensions are 13.5" x 12". The rectangular section tapers to a round section that is connect to the fan inlet, approx diameter is 6". It is connected with a canvas flex piece to the fan inlet. The rectangular end of the galvanized trunking has a 1/4 fitted steel flange to allow bolting to the steel louver flange. The Fwd Winch Room galvanized trunking is approximately 2 feet in length. The Paint Locker galvanized trunking is approximately 4 feet in length.
- 3.3 Contractor shall remove the existing Fwd Winch Room supply fan and the paint locker supply fan trunking from the louver to the fan intakes. Contractor shall fabricate and install new galvanized trunking as per originals removed for both units using 12 guage thickness.
- 3.4 Contractor shall crop both the existing 13.5" x 12" steel intake louver and frame from the aft foscle bulkhead.
- 3.5 Contractor shall fabricate 2 new 5/16" x 4" steel frame and louvers (3 per frame) re-using the existing covers as per originals. The inside end shall have a 1/4" x 1 1/2" steel flange to accept the flanges on the new galvanized trunking. Flanges shall be drilled and tapped for 12 - 5/16" NC bolt to accept the flange of the galvanized trunking as per original. Contractor shall weld new frames and louvers to the aft foscle bulk head as per originals.

Spec item #: H-04	SPECIFICATION	TCMSB Field #
<b>Vent Trunking Repair</b>		

- 3.6 Contractor shall supply and install new rubber gaskets between flanges. Contractor shall supply 24 stainless steel – 5/16” x 1 ¼” NC bolts and lock washers to complete this work.
- 3.7 All new and disturbed metal shall receive two coats of primer and one topcoat of Amercoat 5450.
- 3.8 Contractor shall remove all surrounding insulation to facilitate removal and installation of steel louvers and frames and reinstallation of insulation after completing of hot work.

**Part 4: Proof of Performance**

N/A

**Part 5: Deliverables**

N/A

<b>Spec item #: H-05</b>	<b>SPECIFICATION</b>	<b>TCMSB Field #</b>
<b>Stbd and Aft Searchlights Replacement</b>		

**Part 1: Scope**

- 1.1 The intent of this spec item is to remove the existing Carlisle & Finch Searchlights (2 of), including starter panels (3 of), controls, and associated wiring. Install two new Owner supplied ColorLight Searchlights, controls and associated wiring. Remove existing port searchlight starter panel from present location and re-install in Wheelhouse Locker, room 104.

**Part 2: References**

- 2.1 The stbd searchlight is located on the Wheelhouse top and the Aft Searchlight is mounted on a small platform approx 6 treads up from Stack Flat on the Aft Mast
- 2.2 Color Light CL35 Searchlight System by ColorLight, Users Manual

**Standards**

- 2.3 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.

- Canadian Coast Fleet Safety Manual (DFO 5737)
- TP127EE Marine Electrical Standards to latest revision

Contractor to note that the Wheelhouse crawlspace under contains asbestos-generating telegraph clutches. Note: Latest asbestos survey by Pinchin Leblanc shows no contamination. Contractor shall take precautions with PPE in this space.

**Part 3: Technical Description**

- 3.1 Contractor with Electrical Officer shall isolate and lockout/tagout the following circuits:
  - a) Emergency Switchboard 600 Volt supply Breaker EP-606 to Stbd & Aft Searchlights.
  - b) Base Heater 120 Volt, for Stbd EP101-2, Located in Wheelhouse.
  - c) Base Heater 120 Volt, for Aft L106-17, Located in Wheelhouse.
  - d) Port searchlight power supply EP-101-1.

Note: Circuits EP101-2 and L106-17 will be used as the power supplies to the New Color Light CL35 searchlights.
- 3.2 Contractor will be required to removed deckhead panels and bulkhead panels to facilitate the removal and installation of the searchlights and associated components.
- 3.3 Contractor shall disconnect and dismount Existing Carlisle and Finch Searchlights from their mounted positions on the Wheelhouse Top Stbd and the Aft Mast Platform. These redundant searchlights shall be disposed of by the contractor. Shock absorbing bases to be altered and used for the installation of new ColorLight searchlights.
- 3.4 Contractor shall disconnect and dismount the three redundant Carlisle and Finch searchlight starters located in the Auxiliary Electrical Room on the Officers Deck Stbd and dispose of. Contractor shall remove all wiring and controls associated with the Carlisle and Finch Searchlights, with the exception of Base Heater for Aft Searchlight, circuit L-106 17.

<b>Spec item #: H-05</b>	<b>SPECIFICATION</b>	<b>TCMSB Field #</b>
<b>Stbd and Aft Searchlights Replacement</b>		

- 3.5 Contractor shall fabricate a foundation arrangement for each new searchlight that will mount the new ColorLight searchlight to the shock absorbing base removed from the original searchlights. The foundation arrangement will consist of two ¼ inch steel plates welded to each end of a 7-¾ inch long, piece of schedule 80, 6 inch outside diameter pipe. The top plate, which will have the new ColorLight searchlight attached, will be approximately 13 inches by 13 inches square and have appropriately sized and spaced holes drilled to accept the new searchlight. The bottom plate will be approximately 17 inches by 17 inches square and have appropriately sized and spaced holes to mount to the shock absorbing base removed from the original searchlights. A rubber gasket will be fitted between the foundation arrangement and the shock absorbing base. Contractor shall use existing fwd port searchlight base already fitted for example.
- 3.6 The Contractor shall modify the railing around the forward starboard searchlight to allow for 360 degree rotation of the new ColorLight searchlight. Existing railing forms a 3 x 3 foot half square perimeter around the inboard and aft sides of the original searchlight. Railing shall be cropped back to form a 4 x 4 foot half square perimeter around the inboard and aft sides of the new searchlight. See port searchlight railing arrangement for reference.
- 3.7 For Aft Searchlight, Contractor shall fabricate a 3/8” steel base plate and welded it to the aft mast to accept the searchlight foundation plate. The 3/8” steel base plate shall be supported with four ¼” gussets from bottom of plate to mast. Note: this new 3/8” steel base plate shall be approximately 900 mm by 400 mm, to allow 360 degree rotation of the new searchlight. New base plate shall receive two coats of primer and one topcoat of Amercoat 5450.
- 3.8 Contractor shall install new Owner supplied searchlights to the new foundation plates.
- 3.9 Contractor shall removing existing port searchlight starter box from the current location, Forward Wheelhouse, Port side. Contractor shall also remove the two cables that run from the starter panel to the port searchlight. Contractor shall remove power cable from port searchlight starter panel back to electrical panel EP-101-1.
- 3.10 Contractor shall install new Owner supplied starter panel for the starboard searchlight, and the starter panel for the port searchlight, previously removed from the forward Wheelhouse, on the aft bulkhead of the Wheelhouse Locker, room #104.
- 3.11 Contractor shall run two Owner supplied control cables from the port and starboard starter panels to the corresponding searchlight on port and starboard sides. These cables shall be run from each starter panel, through the aft Wheelhouse bulkhead, along existing cable trays above the Wheelhouse deckhead panels, through kick pipes and to the corresponding searchlight. Cable length from starter panel to each searchlight is approximately 25 meters, for a total of 100 meters.

<b>Spec item #: H-05</b>	<b>SPECIFICATION</b>	<b>TCMSB Field #</b>
<b>Stbd and Aft Searchlights Replacement</b>		

- 3.12 Contractor shall run one Owner supplied control cable from the port and starboard starter panels to the corresponding searchlight controller which will be mounted on the port and starboard Bridge Wing window ledge. Port searchlight controller is presently installed in proper location. These cables shall be run from each starter panel, through the aft Wheelhouse bulkhead, along existing cable trays above the Wheelhouse deckhead panels, and to the corresponding searchlight controller. Cable length from starter panel to each controller is approximately 25 meters, for a total of 50 meters.
  
- 3.13 Contractor shall supply and install 14/3 marine cable from port searchlight starter panel to electrical panel EP-101-1. Cable shall be run through the aft Wheelhouse bulkhead, down existing cable trays inside the bulkhead, in existing cable trays in the crawl space under the Wheelhouse, through existing collars in the Wheelhouse deck and to electrical panel EP-101-1. Cable length from starter to electrical panel is approximately 25 meters.
  
- 3.14 Contractor shall supply and install 14/3 marine cable from starboard searchlight starter panel to electrical panel EP-101-2. Cable shall be run through the aft Wheelhouse bulkhead, down existing cable trays inside the bulkhead, in existing cable trays the crawl space under the Wheelhouse, through existing collars in the Wheelhouse deck and to electrical panel EP-101-2. Cable length from starter to electrical panel is approximately 25 meters.
  
- 3.15 Contractor shall install new Owner supplied starter panel for the aft searchlight on the aft bulkhead, located in Auxiliary Electrical Room, Officers Deck.
  
- 3.16 Contractor shall install two Owner supplied control cables from the aft searchlight starter panel, along existing cable trays, through kick pipes in the aft bulkhead of the Auxiliary Electrical Room, along the deckhead of the Auxiliary Fan Room, through kick pipes in the Auxiliary Fan Room deckhead, up the aft mast and to the aft searchlight. Cables shall be run in existing cable trays. Cable length from aft searchlight starter to aft searchlight is approximately 12 meters, for a total length of 24 meters.
  
- 3.17 Contractor shall install one Owner supplied control cable from the aft searchlight starter panel to the searchlight controller which will be mounted in the forward Wheelhouse port side. Cable will run forward along the Auxiliary Electrical Room deckhead, through a penetration in the forward bulkhead, in a cable tray along the deckhead in the FM 200 Room, through a penetration in the forward bulkhead of FM 200 Room, in the cable tray along the deckhead of the Deck Locker, through a collar in the forward bulkhead of the Deck Locker, in the cable tray above the alleyway deckhead panels, up the vertical cable trunk at the stairwell, to the crawlspace under the Wheelhouse, forward along existing cable trays. Controller will be mounted on window ledge forward Wheelhouse, port side. Cable length is approximately 65 meters.
  
- 3.18 Contractor shall use existing aft searchlight base heater cable, circuit # L-106-17, as power source for new aft searchlight starter panel. Existing Cable to be pulled back from aft searchlight and run to new aft searchlight starter panel located on aft bulkhead in Auxiliary Electrical Room.

<b>Spec item #: H-05</b>	<b>SPECIFICATION</b>	<b>TCMSB Field #</b>
<b>Stbd and Aft Searchlights Replacement</b>		

- 3.19 Contractor shall connect all wiring as per manufactures diagrams and instructions.
- 3.20 Contractor shall fit all associated cables with metal cable identification tags at each end and on each side of all bulkhead and deckhead penetrations. Cable identification numbers to be approved by Ship’s Electrical Officer before tags are installed.
- 3.21 Contractors shall supply all cable and hardware necessary to run cable, mount starter panels, mount lights and control units, unless otherwise specified.
- 3.22 All new and disturbed metal shall receive two coats of primer and one topcoat of Amercoat 5450.
- 3.23 Contractor shall have an allowance of \$1500 for the service of the manufacturer REP to commission the searchlights and synchronize their functions.

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**Part 4: PROOF OF PERFORMANCE**

**4.1 Inspection**

- 4.1.1 The Contractor shall perform a functionality test on all three searchlights in the presence of the Chief Engineer.
- 4.1.2 All work to be completed by certified trades’ people.
- 4.1.3 All work to be performed to the satisfaction of the Chief Engineer.

**Part 5: Deliverables**

5.1 N/A

<b>Spec item #: H-06</b>	<b>SPECIFICATION</b>	<b>TCMSB Field #</b>
<b>Cabin 609 and 612 Refurbishment</b>		

**Part 1: SCOPE**

- 1.1 The intent of this specification is to renew Cabins 609 and 612 to original condition before damage from port fresh water tank rupture. This will include removing of furniture and furnishings along with damaged flooring, deckhead and bulkhead paneling including tracks and replace with new flooring, deckhead, bulkhead paneling and refitting furniture and furnishings.

**Part 2: REFERENCES**

- 2.1 Canadian Coast Guard Fleet Safety Manual (DFO 5737)
- 2.2 This spec item will be done in conjunction with the Port Fresh Water Tank repair.
- 2.3 All replacement material to be Owner supplied unless otherwise stated.

Areas of repair:

Cabins 609 and 612 - Port side Main Deck

Area of repair: approximately 210 ft<sup>2</sup>.

Materials

Floor Covering - Vinyl flooring –approx 210 square feet - Contractor Supplied

Deck underlay – Dex-o-Tex – approx 210 square feet - Contractor Supplied

Black Vinyl Baseboard – approx 100 feet - Contractor Supplied

Bulkhead Paneling – approx 32 feet

Bulkhead tracking - approx 32 feet top channeling to take deckhead panels and 32 feet of bottom tracking

Cabin doors – 2 doors (one for each cabin) complete with door box and hardware

Deckhead panels – 75 sq feet

Plumbing supplies – 20’ of ½“ Type K cooper and 20’ of ½” pipe insulation – Contractor supplied

**Part 3: TECHNICAL DESCRIPTION**

- 3.1 Contractor shall remove all loose furniture and furnishings from Cabins 609 and 612, located on Port side Main Deck. All removed loose furniture shall be transported with care and moved to nearby cabins and spaces for safe storage as direct by C/E. All the damaged bulkhead paneling, door boxes and bulkhead linings, approximately 32 feet, in the affected area shall be dismantled. The damaged bulkhead panels shall be disposed of by contractor. The undamaged bulkhead lining panels shall be laid aside in safe dry storage.
- 3.2 The Contractor shall tape an impervious dust barrier over the openings to the main deck alleyway prior to removal of the deck covering and deck underlay (Dex-o-tex). The Contractor shall provide efficient dust extraction to the exterior of the ship for the duration of dust generation and subsequently until the dust has cleared.

Spec item #: H-06	SPECIFICATION	TCMSB Field #
<b>Cabin 609 and 612 Refurbishment</b>		

- 3.3 Removals in Cabins 609 and 612 include, but not limited to, the following mattresses, bunk frames, ceiling panels, ceiling panel tracks and supports, light fixtures, receptacles, switches, T.V / Radio box, and ceiling mounted smoke detector and base, PA Speaker and ventilation duct.
- 3.4 Contractor to remove existing floor covering and Dex-o-Tex underlay to the steel deck by hand tooling to reduce the production of dust. A new 10 MM layer of Dex-o-Tex shall be applied according to the manufacturer's specifications. When it has properly cured the Contractor shall supply and apply good quality seamless vinyl flooring; pre-approved by Owners Rep. The new vinyl flooring shall be applied and sealed with high quality workmanship. Contractor shall have an allowance of \$1500 for the new vinyl flooring to be adjusted up or down via 1379 action. Flooring shall meet requirements of TP439. Note: Contractor shall not start flooring renewals until Port FW tank repair welding is work is completed and accepted in-way of cabins.
- 3.5 The new flooring shall be protected from damage while cabins are being refitted.
- 3.6 The contractor shall install the new owner-supplied bulkhead tracking, bulkhead lining panels and joiners. Upon completion of bulkhead installation the Contractor shall supply and install black vinyl baseboard around the periphery of the room.
- 3.7 Contractor shall reinstall cabin medicine cabinets, sinks complete with cabinet and plumbing.
- 3.8 The Contractor shall re-install all other furniture and furnishings previously removed from cabins, including but not limited to, the following mattresses, bunk frames, ceiling panels, ceiling panel tracks and supports, light fixtures, receptacles, switches, T.V / Radio box, and ceiling mounted smoke detector and base, PA Speaker and ventilation duct in good order, as original.
- 3.9 The Contractor shall remove all debris including the temporary protection for the new flooring arising from all the preceding work from the vessel and dispose of ashore.
- 3.10 Contractor shall, upon completion of work, clean and wipe down cabins to satisfaction of Owners Rep.
- 3.11 All work shall be in accordance with good Marine Practice to the Owner's satisfaction.

**Part 4: PROOF OF PERFORMANCE**  
**Inspection, Testing & Certification**

- 4.1 Contractor shall provide flooring spec sheet indicating compliance with TP439.

**Part 5: Deliverables**

**Reports, Drawings, Manuals, Spares & Training**

Spec item #:H-07	<b>SPECIFICATION</b>	TCMSB Field # N/A
<b>Well Deck Dunnage Replacement</b>		

**Part 1: SCOPE**

- 1.1 The intent of this spec is to remove old deck dunnage (wood) from well deck, clean and paint steel deck and renew with owner supplied dunnage.

**Part 2: Reference**

**Guidance Drawings/Nameplate data**

- 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.
  - a. Canadian Coast Guard Fleet Safety Manual (DFO 5737)

**Part 3: TECHNICAL DESCRIPTION**

- 3.1 All material for repairs shall be Contractor supplied unless otherwise stated.
- 3.2 Contractor shall replace one section of dunnage at a time. The area of the deck is approx 550 sq feet. 2 sections are 10 feet x 16 feet and the other section 12 feet, 4 inches x 16 feet. Contractor shall see C/E prior to starting to ensure area is safe for hotwork and not in-way of FO tanks.
- 3.3 Contractor shall crop all angle support brackets and T-bar holding existing dunnage in place. Angle support brackets and T-Bar to be reused upon installation of new dunnage. The T-Bar is about 1/4" and is bolted, there are about 20 liner feet of 1/4" angle that will need to be removed and re-welded after fitting.
- 3.4 Contractor shall remove existing dunnage and remove from ship. Contractor is responsible for disposal of old wood in accordance with Provincial regulations. CG shall supply new dunnage to be fitted. Contractor shall be responsible for cutting to fit.
- 3.5 After wood has been removed the Contractor shall prepare steel deck to a SPF- SP- 10 bare metal. Contractor shall apply two coats of owner supplied Amercoat 5105 – Alkyd Primer (Red Oxide), apply at 2-3 mils DFT per coat and two complete coats of Amercoat 5450 Alkyd Marine Enamel (CG Red 509102), apply at 2 mils DFT per coat. Chief Engineer to inspect deck surface preparation before any new dunnage is fitted.
- 3.6 Contractor to quote the renewal of 10 – ¾” hold down studs and a unit cost for each additional stud.
- 3.7 Contractor shall fit new dunnage sections as per dunnage removed. New dunnage shall have holes drilled and countersunk to fit existing studs. Contractor shall fit new Owner supplied nuts for existing studs. Contractor shall fit wooden plugs to all counter sunk stud holes. New dunnage may have to be milled for correct thickness and straightness. All cut surfaces will require a coat of wood preserver.

<b>Spec item #:H-07</b>	<b>SPECIFICATION</b>	<b>TCMSB Field # N/A</b>
<b>Well Deck Dunnage Replacement</b>		

- 3.8 Contractor shall re-install T-bars and weld in angle securing brackets as per original installation.
- 3.9 All disturbed steel shall be provided 2 coats of marine primer.

**Part 4: PROOF OF PERFORMANCE**

**Inspection, Testing & Certification**

N/A

**Part 5: Deliverables**

**Reports, Drawings, Manuals, Spares & Training**

N/A

<b>Spec item #: H-08</b>	<b>SPECIFICATION</b>	<b>TCMSB Field # N/A</b>
<b>Windows Modification &amp; Bulkhead Insulation Renewal</b>		

**Part 1: SCOPE**

- 1.1 The intent of this item is to convert five welded weathertight vertical sliding windows in the Officers Mess and Officers Lounge Stbd to watertight vertical sliding windows, refurbish windows, re-insulate associated exterior bulkheads and repair corrosion of deck plating under. Owner will supply the periphery clamps (3 per window)
- 1.2 Work shall be completed in conjunction with H-02.

**Part 2: REFERENCES**

Reference Drawing: Window List Drg. No. 72-310 Sheet 9 (Drawings to be provided to successful bidder).

**Standards**

- 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.
  - Canadian Coast Fleet Safety Manual (DFO 5737)

**Owner Furnished Equipment**

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

**Part 3: TECHNICAL DESCRIPTION**

**Location:** Upper Deck Port Fwd Officers Mess – two front-facing and one port facing window.  
Boat Deck Stbd Fwd Officers Lounge – two stbd facing windows

- 3.1 All deck coverings carpets/tiles and contents in the affected spaces shall be suitably protected from dirt debris and damage during the repairs. Exhaust ventilation fan leading to outdoors shall be used in affected areas during all grinding or other hot work operations. Contractor shall advise Owner before dust or smoke generating work is to occur and to confirm with the Owner that the relevant smoke detectors have been dismantled prior to starting the work.
- 3.2 Any items requiring removal to facilitate performance of specified work, as deemed necessary by the Contractor, shall be removed by Contractor and replaced in good order upon completion of specified work. This will include furniture, curtains, bulkhead lining panels, insulation, window boxes, , etc. All insulation that is removed shall be replaced with new approved insulation with moisture-barrier.

<b>Spec item #: H-08</b>	<b>SPECIFICATION</b>	<b>TCMSB Field # N/A</b>
<b>Windows Modification &amp; Bulkhead Insulation Renewal</b>		

3.3 Contractor shall position mark for drilling and tapping six holes per window frame for mounting new periphery clamp brackets (two holes per bracket). Window boxes, keep frames and waist rails shall be dismantled. Contractor shall dismount surrounding bulkhead panels to provide sufficient access to surrounding bulkhead insulation and clearance for drilling and tapping the window frames for installation of the Owner supplied periphery clamp brackets. Window springs shall be disconnected (3 per window) and window glasses with springs shall be laid aside for protection and thorough cleaning. Existing drip trays and drains shall be reused. Contractor shall quote on clearing drain line and proven operational.

3.2 Deckplating in the affected areas shall be power tooled to clean bare steel and inspected for depth and extent of pitting. Contractor shall advise Owner’s Representative when steel deck is prepared for viewing and ready for coating. Contractor shall not prime the prepared deck areas until the Owner has inspected and photographed the areas.

3.3 All new and disturbed steelwork shall be applied with two coats of primer. Contractor shall bid on prepping and coating 20 sq feet deck.

3.4 The contractor shall power tool to clean bare steel the five window frames and advise Owner when window frames are ready for inspection. After satisfactory inspection the window frames shall be coated with primer. When the primer is cured the Contractor shall glue in new effective sliding/sealing gaskets to provide watertight seal. Contractor shall have an allowance of \$500 for sealing material approved by C/E to be adjusted up or down. When the window seals adhesive is thoroughly cured the contractor shall re-install the thoroughly cleaned window glasses with spring assemblies, waist rails and bolt in new keep frames. The new stainless steel fasteners shall be isolated from the aluminium keep frames by nylon washers.

3.5 Contractor shall re-install the bulkhead paneling then re-install the window boxes. Contractor shall include in his bid price an allowance of \$2000 for fabrication of replacement window boxes should any window boxes be found deteriorated. Allowance to be adjusted by invoice.

3.6 All items removed to facilitate of specified work shall be replaced in good order.

3.7 Upon completion, all areas affected by this specification shall be left in a clean condition.

**Part 4: PROOF OF PERFORMANCE**

4.1 Weather tight integrity of each window shall be proven using water spray at a pressure of 50 psi.

**Part 5: Deliverables**

N/A

<b>Spec item #: H-09</b>	<b>SPECIFICATION</b>	<b>TCMSB Field #</b>
<b>Port Fresh Water Tank Repairs</b>		

**Part 1: Scope**

- 1.1 Contractor to complete permanent repairs/renewals of steel structures in way of the port side fresh water tank between frames 30 – 41 as per specification provided from MSI Ltd.

**Part 2: References**

- 2.1 MSI Marine Services International (2008) Ltd, CCGS Ann Harvey Port Side Fresh Water Tank Repairs Specification and Drawing # 2518-01-00, Corey Legrow, Phone:782-2700

**Part 3: Technical Description**

- 3.1 See ‘**CCGS Ann Harvey Port Side Fresh Water Tank Repairs Specification**’ Issued February 2014 by MSI Ltd for repair scope to be completed. Contractor shall have an allowance of \$2000 for MSI to oversee repairs/technical support to be adjusted up or down via 1379 action upon proof of invoice.
- 3.2 Contractor shall start this work immediately on June 25<sup>th</sup> as completion of steel work, TC approval, coating and Potable Water tests are imperative for vessel operations. Contractor shall ensure sufficient resources are placed on this item daily until completed.
- 3.3 Contractor shall remove all sheathing/insulation in-way of steel renewals/repair and return upon completion of repairs. Contractor shall supply and fit fireboard barrier between bulkhead repairs and shore power transformer.
- 3.4 Contractor shall also include in his bid for this item the cost for surface preparation and recoating with approved Potable Water Tank Coating High Build Volatile Organics Free Epoxy in accordance with Manufacturer's requirements for surface preparation, product application and temperature and humidity control for an area of 75 square meters per tank. Contractor shall power tool clean to SSPC-SP3 or hand-tool clean to SSPC-SP2. The Contractor will further quote the unit cost per square meter for the above tank work to be adjusted up or down via 1379 action.
- 3.5 Upon completion of the above work and to the satisfaction of the attending Marine Safety Inspector tank bottoms to be wiped clean. Sounding pipes, suction and fill pipes, sight glass openings and tank vents shall be proven clear prior to sealing up tanks.
- 3.6 Contractor shall fill tanks with fresh water to 4 inches below the manhole cover opening. The contractor shall then provide and introduce into the tanks a chlorine solution (ie liquid form only) such as to produce a concentration of 50 mg/L chlorine solution. Eg. Each tank overflow capacity is 50.1 M3 therefore contractor would require 50.1 litres of 5% unscented Javex (it is highly recommended that the contractor use a much higher concentration of chlorine solution).

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<b>Port Fresh Water Tank Repairs</b>		

- 3.7 Manhole covers shall then be reinstalled using new 1/4" neoprene gaskets. Any studs broken during the removal and replacement of the manhole covers to be renewed at contractor's expense. Contractor shall remove vent pipe vent head bodies from each tank. Each tank is then to be filled flush to the top of vent pipes. Solution to be let sit for minimum 8 hours. Note that during this period Ships Crew will be taking suction from the tanks to run the hyper-chlorine solution through the ship's potable water piping. In the tank contents level will fall quite below the vent pipes. Note: Contractor shall arrange and conduct a hydrostatic pressure test on both fresh water tanks with Transport Canada.
- 3.8 Contractor to neutralize the chlorine solution by introducing through the tank vent pipes a solution of 1.0 kilograms of sodium sulphite per tank, ie total 2.0 kg of sodium sulphite powder dissolved in 10 litres warm water.
- 3.9 The neutralized solution shall be tested for residual chlorine level and the results of the tests shall be recorded clearly. The solution shall not be drained from the tanks to shore until the free chlorine value is 0.1 mg/L or less. The free chlorine level shall be measured and recorded again when tank levels are down to half-glass and again measured and recorded when the tanks are nearly empty. Draining must be interrupted in event of free chlorine value exceeding 0.1 mg/L. Further neutralizing agent shall be introduced to tanks suitably in event same is required. Should the contractor desire to provide alternate neutralization he shall prior provide to the owner written certification of suitability of his chosen product.
- 3.10 Upon completion of draining of neutralized super-chlorine solution each tank shall be flushed (ie filled and drained) twice with clean fresh water and shall then finally be filled with fresh potable water.
- 3.11 Water samples shall then be collected and labelled for laboratory testing. The collection of the potable water samples (one from each tank) for laboratory testing shall be witnessed by Owner's Representative. To maintain the bacteriological validity of the collected samples they shall be immediately transported to the qualified laboratory facility in thermally insulated outer containers.
- 3.12 The contractor shall expeditiously provide to the Owner test certificates of water samples (chemistry and bacteriological) from a Provincially H&W approved laboratory that certifies that the water in the tanks is "fit to drink". The tests shall be carried out for bacteria as per the Canadian Drinking Water Guidelines. The Chemistry Testing shall

Spec item #: H-09	<b>SPECIFICATION</b>	TCMSB Field #
<b>Port Fresh Water Tank Repairs</b>		

examine all parameters as per the Guidelines for Canadian Drinking Water Quality including pH, TDS, Elements and Organic Compounds.

**Part 4: Proof of Performance**

**Inspection, Testing & Certification**

- 4.1 Steel repairs shall be to the satisfaction of TC inspector.
- 4.2 The Fresh Water Tank shall be hydrostatically tested by dismounting the 3" vent head and filling to the top of the vent pipe on the breeze way aft. The test shall be to the satisfaction of the attending TCMS inspector.

**Part 5: Deliverables**

**Reports, Drawings, Manuals, Spares & Training**

- 5.1 TCMS survey credit for Survey Fields 3L026
- 5.2 Satisfactory Potable Water Test Reports
- 5.3 Cleaning and Coating Product Chemicals Specifications and MSDS sheets

Spec item #: H-10	<b>SPECIFICATION</b>	TCMSB Field #
<b>Helicopter Hanger Refurbishment</b>		

**Part 1: Scope**

1.1 The intent of this specification is to refurbish the DAF Telescopic Hangar system fitted on the CCGS Ann Harvey based on the issues noted by CME Ltd Inspection report dated Aug 15, 2012.

**Part 2: REFERENCES**

- 2.1 HANGAR DETAILS, Estimated weight Hangar (15,100lbs), Track (3,500lbs)  
Telescopic aluminum heli hangar  
Manufactured by Daf Indal Ltd.  
3570 Hawkestone Rd.  
Mississauga, Ontario
- 2.2 Inspection Report of CCGS Ann Harvey-DAF Telescopic Hangar, CME Ltd
- 2.3 FSR  
Dean Mitchell  
Canadian Maritime Engineering Ltd  
Head Office: 90 Thornhill Dr, Dartmouth Nova Scotia, Canada B3B 153  
Tel: 902-468-1888 Fax: 902-468-18 90

**Part 3: Technical Description**

- 3.1 Contractor shall have an allowance of \$40, 000 for the services of FSR, CME Ltd to oversee, direct and complete work on Helicopter Hangar.
- 3.2 The helicopter hangar refurbishment shall begin on June 25<sup>th</sup>. Note: The helicopter hangar work scope will take 5 weeks to complete. Contractor shall bid on supplying 2 milrights and 2 laborers for the duration of the refit in-order to ensure the work scope is completed. Contractor shall bid on 8 hour days, Monday-Friday. In addition, the contractor shall ensure the other trades are available as required to complete the work outlined below.
- 3.3 All parts shall be GSM. Contractor shall have an allowance of \$2000 to be adjusted up or down via 1379 action for any parts required beyond the GSM.
- 3.4 Contractor shall with CG lock-out the helicopter hanger to ensure safe for service. Hangar Drive, track heating, lighting, limit switches etc.
- 3.5 All parts shall be GSM.

**Hanger Lead Section**

- 3.6 The motor starter panel assembly for the hangar drive and the starter panel for the door drive of the lead section shall be opened for inspection. All connections shall be checked for tightness and a visual inspection of all components is to be carried out.
- 3.7 Contractor shall close up panels once condition is ascertained and checks completed.

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<b>Helicopter Hanger Refurbishment</b>		

3.8 The track guides and wheel mounting assemblies shall be dismantled for inspection. Contractor shall inspect all wheel assemblies on all hangar sections including the bottom mounted and the side roller assemblies and check for flat spots / tapering / damage / corrosion / misalignment as per FSR instructions. Contractor shall check all phenolic wheel bushings and stainless steel pins for wear. On completion of inspection the Contractor shall inform the Chief Engineer of any defects found. Contractor shall re-assemble all wheel assemblies, install and lubricate them.

3.9 The mechanical brake assembly for the travel on the STBD side is seized open and will be required to be disassembled and freed.

3.10 The phenolic wear strips should be replaced in both lead section, intermediate and in trailing section (12 in total).

3.11 The hangar door curtain shall have tension springs at top of the door renewed.

3.12 New lower rubber skirts shall be installed on lead section.

3.13 Limit switch for the travel on the lead section is seized and shall be replaced.

**Trailing Section**

3.14 The trailing section shall have the same work completed as per 3.7, 3.9 and 3.11.

3.15 The bell mouth for the cable take up assembly shall be replaced with FSR approved unit to prevent further cutting the cable on the bent edges of the bell mouth.

**Fixed Section**

3.16 The personnel door assembly shall be lubricated to ensure a smooth operation and seal area checked for contact.

3.17 The light switch for the fixed section shall be replaced with contractor supplied switch.

**Door Section**

3.18 Contractor shall inspect and verify condition of manual drive assembly (upper and lower). Drive assembly shall be checked for wear and lubricated. Keys and keyways shall be checked for condition and all setscrews checked for tightness.

3.19 The hangar traverse drive reduction gearboxes (2 in number) are to be removed for inspection and reassembled as per original.

3.20 The hangar door drive gearbox is to be drained of oil ,and opened for inspection. Unit to be replenished with new oil to proper level.

**Electrical**

3.21 The heat tracing cables (24 in total) should be renewed when the new hangar tracks are installed.

3.22 The following motors are to be tested under load and amp line draw measured and recorded.

- (1.)Disc brake motor 440v, .07 amp,
- (2.)Hangar door motor 440v, 3.2 amps,
- (3.)Hangar traverse drive motor 440v, 3.2 amps.

<b>Spec item #: H-10</b>	<b>SPECIFICATION</b>	<b>TCMSB Field #</b>
<b>Helicopter Hanger Refurbishment</b>		

**Brake Assembly**

3.23 The brake assembly shall be dismantled for inspection and testing. The brake pads are to be checked for any signs of wear or damage. Upon reassembly the units are to be checked for proper operation.

**Aluminum Track**

3.24 The aluminum track is corroded in way of track seating. The tracks need to be removed and replaced. Hanger tracks are approx. 28 ft outside track, 42 fett middle track and 58ft inside track.

3.25 The area of steel deck under the track is corroded significantly and shall be sand blasted and coated with 2 coats marine grade primer and 2 top coats of Amercoat 5450 Alkyd Marine Enamel at 2 mil DFT per application. The hangar sections and track shall be removed to accomplish this work. Contractor shall ensure that lifting brackets / lugs supplied and installed by the Contractor are sufficient in strength and position so that distortion of any section does not happen during the lifting of each section.

3.26 Contractor shall supply the crane, operator and a sufficient number of personnel to safely remove the hangar sections.

3.27 Contractor shall fit the tracks as per direction from FSR including fitting new mounting holes, proper alignment tolerances and levelling.

3.28 Once heaters are properly fitted the hangar tracks shall be reinstalled and aligned, Contractor shall supply 100 litres (per side) of Bee's Wax that has to be heated and poured after tracks are laid to prevent water pooling in the spaces between the pads under the tracks.

**Re-Installation**

3.29 Contractor shall install each hangar section including the bolted door curtain assembly previously removed for repairs ensuring correct alignment. Contractor shall manually test traverse operation of all hangar sections prior to testing electrically.

3.30 Contractor shall re-connect all power supplies locked-out.

3.31 Contractor shall functionally test Telescopic Hangar System including door drive and traverse operation of the hangar sections. Contractor shall adjust all limit switches to provide correct operation of the door and traverse movement of the hangar sections during telescoping in and out to its extreme positions as per FSR direction.

**Parts List for repairs**

- 4 of heater 1209-079-7
- 4 of heater 1209-079-1
- 4ofheater 1209-079-9
- 4 of heater 1209-079-3
- 4of heater 1209-079-11
- 4of heater 1209-079-5
- 1 of track assy 1208-202-1
- 12 of guides1 200-1-73

<b>Spec item #: H-10</b>	<b>SPECIFICATION</b>	<b>TCMSB Field #</b>
<b>Helicopter Hanger Refurbishment</b>		

1 of spring 1205-468-1

1 of spring 1205-468-2

**Part 4: Proof of Performance**

**Inspection, Testing & Certification**

4.1 Contractor shall functionally test Hangar prior to start of work and upon completion of repairs outlined above under direction of FSR.

**Part 5: Deliverables**

**Reports, Drawings, Manuals, Spares & Training**

5.1 Contractor shall provide a detailed survey report including corrective action taken, parts used, readings and results etc.

Spec item #: H-11	<b>SPECIFICATION</b>	TCMSB Field #
<b>Stbd Hiab Seacrane Quinquennial</b>		

**Part 1: Scope**

1.1 The intent of this specification is to obtain TCMS certification for the crane on its 5 yrs survey.

**Part 2: References**

2.1 Hiab 201-2 Seacrane, SN#S201000034

2.2 FSR

Emergency Repairs Ltd  
Mike Fitzpatrick  
71A Blackmarsh Rd, St John's, NL A1E 1S6  
(709) 579-5240

**Part 3: Technical Description**

- 3.1 Contract shall have an allowance of \$20, 000 for the services of the FSR to be adjusted up or down via 1379 action.
- 3.2 Contractor shall supply load cell and weights to complete load test of the crane as per FSR direction. The crane has a SWL of 2160 kg and the load test would be completed at 1.25 X SWL.
- 3.3 Contractor shall arrange FSR to complete, ‘Atlas Polar Inspection for Hiab Cranes’ checklist and complete immediate load testing if inspection is fully satisfactory.
- 3.4 If inspection/load testing is satisfactory to FSR, TC shall be arranged to complete a thorough examination/testing as per section 303 & 304 of the ‘Cargo, Fumigation and Tackle Regulations’.
- 3.5 If TC provides certification of the crane upon inspection/load testing please proceed to ‘Part 4: Proof of Performance’ and ‘Part 5: Deliverables’. Note: If TC requires further manufacturer dismantling of components than FSR shall ensure steps 3.7-3.27 are carried out under allowance provided in 3.1.

<b>Spec item #: H-11</b>	<b>SPECIFICATION</b>	<b>TCMSB Field #</b>
<b>Stbd Hiab Seacrane Quinquennial</b>		

- 3.6 Contractor shall quote a separate unit cost for transporting the crane to and from the vessel to Emergency Repair Ltd if TC requires the crane to be opened for dismantling of the components, measurement of wear to arrive at a reliable conclusion as to safety of the lifting appliance.
- 3.7 The disassembly of the crane via the FSR at Emergency Repair Ltd would be covered under the allowance and would include the following listed below to be completed via the FSR.
- 3.8 Lockout the crane with the assistance of the vessels EO.
- 3.9 FSR shall disconnect/secure hydraulic and electrical connections. Cap or plug as appropriate openings in hydraulic lines/electrical connections to secure against damage and the elements. Note: The control valve and hydraulic power pack would remain on the vessel.
- 3.10 Remove crane from vessel to Emergency Repair Ltd.
- 3.11 All materials and parts required upon inspection shall be added to the FSR allowance and adjusted via 1379 action.
- 3.12 FSR shall complete disassemble crane as per TC direction to provide measurements/wear results where required.
- 3.13 Crane would be completely disassembled including the cylinders and winch.
- 3.14 Contractor's bid shall include separate cost for re-plating cylinder rod should this required upon inspection.
- 3.15 FSR shall install new seal kits with cylinders upon completion of inspection/testing.
- 3.16 FSR shall inspect/measure where required slewing bearings, bushings at boom joints, pins, sliding pads to confirm structural integrity and dimensions. Contractor shall remove column from base and inspect slewing gears, bearings and seals.
- 3.17 FSR shall open and inspect Rotzler Titan TC3 winch and install new seal kit upon completion of inspection.
- 3.18 FSR shall provide new wire rope including test certificate for winch.

<b>Spec item #: H-11</b>	<b>SPECIFICATION</b>	<b>TCMSB Field #</b>
<b>Stbd Hiab Seacrane Quinquennial</b>		

- 3.19 FSR shall inspect load hook for defects.
- 3.20 FSR shall check all booms for structural integrity.
- 3.21 FSR shall replace all hydraulic hoses.
- 3.22 Contractor shall have an allowance of \$2500 for the services of NDT testing on structure/welds to be adjusted up or down via 1379 action as required by the FSR.
- 3.23 FSR shall advise TC and CE when components are ready for inspection.
- 3.24 FSR shall reassemble crane as per manufacturer directions.
- 3.25 All steel components coating damaged shall be cleaned to SA 2.5 and painted with marine primer and 2 part urethane marine paint.
- 3.26 FSR shall dispose of slewing gear oil (30 liters) and hydraulic reservoir oil (100 liters) along with filters. Upon completion of cleaning, contractor shall use CG supplied new oil and filters.
- 3.27 FSR shall flush all crane hydraulic components and provide written proof as per manufacturer recommendations.
- 3.28 Contractor shall blank all hydraulic reservoir openings and transport crane back to vessel.
- 3.29 Contractor shall re-install crane onboard vessel utilizing new fasteners and torqued to manufacturer recommendations. Contractor shall have an allowance of \$500 for fasteners to be adjusted up or down via 1379 action.
- 3.30 FSR shall re-connect hydraulics and electrical connections.

**Part 4: Proof of Performance**  
**Inspection, Testing & Certification**

- 4.1 Contractor/FSR shall complete a full functional test and load test of the crane to 1.25 X SWL prior to inspection checklist. Contractor shall complete 'Atlas Polar Hiab Crane Inspection checklist'.
- 4.2 Contractor shall arrange TC for inspection/load test and determine if internal inspection is required or can load testing be carried out for TC certification.

Spec item #: H-11	<b>SPECIFICATION</b>	TCMSB Field #
<b>Stbd Hiab Seacrane Quinquennial</b>		

**Part 5: Deliverables**

**Reports, Drawings, Manuals, Spares & Training**

5.1 Approval Certificate from TCMS.

5.2 Detailed service report including list of all parts (including part numbers) used on the crane.

5.3 The test certificate for the wire rope.

5.4 Test certificates for the load hook and pulley block

5.5 Written proof of flushing results.

<b>Spec item #: E-1</b>	<b>SPECIFICATION</b>	<b>TCMSB Field #</b>
<b>No 2 Boiler Survey</b>		

**Part 1: Scope**

1.1 The intent of this item shall be to open up the starboard boiler for cleaning, inspection and testing and to obtain a credit from the Transport Canada Marine Safety Inspection Board.

**Part 2: References**

**Starboard Boiler – Located Engine Room Flat**

Clayton Steam Generator

Model EO-100, Serial # 21956

Working Pressure – 100 PSI

Test Pressure - 125 PSI

Safety Valve – 1 1/4”, 125 PSI

**Part 3: Technical Description**

- 3.1 The contractor shall with the Senior Engineer lock out the boiler as required. The Contractor shall use their own locks/tags and the lock-outs shall be entered in the Ship’s Lock-out/Tag-Out Register.
- 3.2 The contractor shall remove or disconnect all wiring, piping, sensors, brackets, pressure gauges, and other associated hardware and appliances to carry out the specified work. All items shall be reassembled and reconnected in good order upon completion of all testing, cleaning, and inspections.
- 3.3 Mountings on both boilers shall be tagged prior to removal for identification purposes and installed back in their respective original locations upon completion of all work.
- 3.4 The contractor shall supply the replacement fittings 2” nom and under as accepted by the C/E for direct replacement. Contractor shall have an allowance of \$1500 to be adjusted up or down via 1379 action.

<u>Item</u>	<u>Location and Size</u>
Safety Relief Valve	1 ¼ inch starboard
Separator Drain Valve	¾ inch angle globe
Burner Control Valve	¼ inch
Feed Water Pump Inlet Valve	2 inch gate
Feed Water Check Valve	2 inch angle check
Feed Water Pump Relief Valve	2 inch angle
Coil Feed Valve	2 inch globe

Spec item #: E-1	SPECIFICATION	TCMSB Field #
<b>No. 2 Boiler Survey</b>		

Coil Drain Valve	2 inch globe
Steam Trap Discharge Valve	1 inch globe
Soot Blowing Valve	1 ¼ Inch port, 1 inch starboard

3.6 The contractor shall remove the following valves for overhaul by a qualified shop.

Main Stop Valve	2 ½ inch starboard
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The valve shall be disassembled and thoroughly clean all parts for inspection. The metal seat shall be lapped and if the valve is not repairable or considered not cost effective to repair, shall be replaced with new valves, owner supply. Valve gland shall be repacked with new packing and all disturbed gaskets shall be replaced with new gaskets supplied by Contractor. All material shall be suitable for use with steam and rated for a minimum of 150 psi operating pressure.

3.7 Contractor shall remove the burner. They are secured via wing nuts. The fuel inlet and return lines will need to be let go.

3.8 The contractor shall thoroughly clean by wire brushing and fresh water flushing the external surfaces of the boiler coil. The internals of the boiler coil shall be thoroughly cleaned with an approved chemical for removing scale. Upon completion of chemical cleaning, the coil internals are then to be thoroughly washed out and neutralized with a suitable alkaline agent followed by a flushing. All cleaning chemicals and fluids used for cleaning and descaling shall be contained and disposed of ashore by the contractor in a manner in keeping with local environmental recommendations. Contractor shall ensure catchall under boilers is plugged to contain all contamination from cleaning. Current MSDS sheets are to be provided to the Chief Engineer before the chemicals are used. The Contractor shall quote on the removal of 500 gallons of water and residue from the internal and external cleaning of the boiler coil.

3.9 Following the cleaning procedures, the boiler coil and the associated steam separator shall be hydrostatically tested at 1.5 times the working pressure. The contractor shall provide all the equipment including blank flanges, valves, gaskets, fittings, pressure gauges, pumps, etc. necessary to perform the hydrostatic test. Provide proof of gauge and pressure relief valve calibration to the C/E before the test.

Spec item #: E-1	<b>SPECIFICATION</b>	TCMSB Field #
<b>No. 2 Boiler Survey</b>		

- 3.10 Testing shall be witnessed by the Marine Safety Inspector and shall be to a pressure and duration to the Inspector's satisfaction. Contractor shall arrange for TCMSB and shall notify Chief Engineer prior to TCMSB attendance.
- 3.11 The combustion chamber shall be thoroughly cleaned. The refractory cement shall be inspected for cracks. Contractor shall quote \$ 5000.00 for repairs to the refractory cement. Final cost shall be adjusted up or down by 1379 action upon proof of invoice. Owners shall supply plastic refractory cement.
- 3.12 The contractor shall remove the combustion air duct and damper assembly from each boiler. Air duct and damper components shall be completely disassembled. All parts shall be cleaned and laid out for inspection by Chief Engineer. Upon completion of inspection, the damper unit and ducting shall be reassembled as per the manufacturer's specifications section 8.12 of the manufacturer's instruction manual which is located onboard the vessel and will be provided to the successful bidder.
- 3.13 The contractor shall remove the safety valve and have it sent ashore to a recognized test facility to have it set and tested. An original test certificate is to be provided to the Chief Engineer and Transport Canada Surveyor upon completion of this test.
- 3.14 Following the completion of the specified work, the boiler shall be suitably drained. All blanks, plugs, gaskets, etc. necessary for testing shall be removed. All piping, fittings, valves, brackets, burner etc. and all items disturbed to perform the cleaning and inspections shall be reconnected in good order. All new gaskets shall be supplied and installed by the contractor in place of gaskets and seals that were disturbed to perform this work. All alarms and controls shall be reconnected and proven operational. This shall be done with the assistance of the Electrical Officer.
- 3.15 **All materials, equipment, chemicals, cleaners, etc. shall be supplied by the contractor to perform the cleaning and testing of both boilers. Current MSDS sheets shall be provided to the Chief Engineer for any and all chemicals used before the chemicals are brought aboard the vessel.**

Spec item #: E-1	<b>SPECIFICATION</b>	TCMSB Field #
<b>No. 2 Boiler Survey</b>		

**Part 4: Proof of Performance**

4.1 Correct boiler operation shall be demonstrated and the contractor shall set the safety valves to lift at the pressure indicated by the attending Marine Safety Inspector and then tested for correct lift pressure.

**Part 5: Deliverables**

5.1 Contractor shall provide 3 typewritten service reports of the work carried out.

Spec item #: E-02	<b>SPECIFICATION</b>	TCMSB Field # N/A
<b>Piping Renewals &amp; Repairs</b>		

**Part 1: SCOPE**

1.1 The intent of this specification is to remove, fabricate new and replace as specified, the following sections of piping.

- Steel – stbd sea bay vent line – 6” pipe with flanged couplings
- Steel – stern tube sea water pump discharge line – 2 1/2” socket weld and flanges – 3 leaks in this section of piping shall be repaired.

**Part 2: REFERENCES**

**Standards**

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.

- Canadian Coast Guard Fleet Safety Manual (DFO 5737)

**Owner Furnished Equipment**

2.2 The Contractor shall supply all materials, consumables and equipment required to perform the specified work.

**Part 3: TECHNICAL DESCRIPTION**

- 3.1 Contractor, with ship’s Senior Engineer, shall lockout/tag-out the affected systems when the Contractor is ready to start the related work. The lock-outs shall be entered in the Ship’s Lock-out/Tag-Out Register and the affected piping isolated and drained as appropriate.
- 3.2 Located in Propulsion Motor Room, port side, Contractor shall remove the corroded section of piping on the Stern Tube discharge line from the flanged discharge valves on the pump outlets to the, socket weld, union aft of the inline strainer, approx 15 feet of scheduled 80 2-½ inch steel piping. Contractor shall fabricate replacement piping as per piping removed and install as per original along with new gaskets.



<b>Spec item #: E-02</b>	<b>SPECIFICATION</b>	<b>TCMSB Field # N/A</b>
<b>Piping Renewals &amp; Repairs</b>		

3.3 Located in the Main Engine Room, Stbd side fwd, Contractor shall remove a section of 6 inch piping on the Stbd Sea Bay vent line, approximately 10 feet long. Before starting this work the Senior Engineer will verify the Contractor has closed and locked the stbd vent valves for the sea bay, upper sea chest and lower sea chest before starting this work. Before removing bolts from the flange the Contractor, with Senior Engineer, shall ensure that the valves are holding. The piping is flanged at both ends with 8 -3/4 inch bolt holes. Contractor shall crop out the 45 degree schedule 80 elbow at the top section of the pipe and weld in a new elbow. Internal of new 45 degree elbow shall be coated with a ceramic coating.



- 3.4 The sea water pipes shall be installed using new gaskets, nuts, bolts and washers.
- 3.5 Contractor responsible for the removal of any brackets, deck plating, etc. to facilitate this work.
- 3.6 Contractor responsible to replace all brackets, deck plating, etc. to original condition as found before work commenced.
- 3.7 Contractor shall be responsible for the removal and disposal of waste material ashore associated with this spec.
- 3.8 After completion the piping shall be tested for leaks.
- 3.9 All new and disturbed metal shall receive two coats of primer and one topcoat of Amercoat 5450.

**Part 4: PROOF OF PERFORMANCE**

**Inspection, Testing & Certification**

- 4.1 The Contractor with the Senior Engineer’s assistance shall remove the lock-outs and pipe repairs tested for leaks.
- 4.2 All work shall be completed to the satisfaction of the Chief Engineer of his delegate.

Spec item #: E-02	<b>SPECIFICATION</b>	TCMSB Field # N/A
<b>Piping Renewals &amp; Repairs</b>		

**Part 5: Deliverables**

**Reports, Drawings, Manuals, Spares & Training**

N/A

Spec item #: L-01	<b>SPECIFICATION</b>	TCMSB Fields #
<b>Air Circuit Breaker Testing</b>		

**Part 1: SCOPE**

1.1 The intent of this specification is to have the listed circuit breakers serviced and primary injection testing performed as required by Transport Canada Marine Safety.

**Part 2: REFERENCES**

Guidance Drawings/Nameplate data

Standards

2.1 The Contractor shall adhere to TP127EE latest edition and the Canadian Coast Guard Fleet Safety Manual (DFO 5737)

Owner Furnished Equipment

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

**2.3 Circuit Breaker Listing**

D/G 1, SN 085132522603

Manufacturer : Merlin Gerin

Type : Masterpact Model: NW 50 H1

Catalogue #: YM4LLR9DFFFXCFT

Frame Size: 5000

Interrupt Rating: 85 kA

Sensors: In = 5000 A

D/G 2, SN 085132522605

Manufacturer : Merlin Gerin

Type : Masterpact Model: NW 50 H1

Catalogue #: YM4LLR9DFFFXCFT

Frame Size: 5000

Interrupt Rating: 85 kA

Sensors: In = 5000 A

Spec item #: L-01	<b>SPECIFICATION</b>	TCMSB Fields #
<b>Air Circuit Breaker Testing</b>		

D/G 3, SN 085132522604

Manufacturer : Merlin Gerin

Type : Masterpact    Model: NW 50 H1

Catalogue #: YM4LLR9DFFFXCFXT

Frame Size:    5000

Interrupt Rating: 85 kA

Sensors: In = 5000 A

Port Propulsion, SN 085132522601

Manufacturer : Merlin Gerin

Type : Masterpact    Model: NW 50 H1

Catalogue #: YM4LLR9DFFFXCFXT

Frame Size:    5000

Interrupt Rating: 85 kA

Sensors: In = 5000 A

Stbd Propulsion, SN 085132522602

Manufacturer : Merlin Gerin

Type : Masterpact    Model: NW 50 H1

Catalogue #: YM4LLR9DFFFXCFXT

Frame Size:    5000

Interrupt Rating: 85 kA

Sensors: In = 5000 A

**FSR**

Schneider Electric

Stephen Dalley

**Address:** Unit 3G-110 Chain Lake Dr, Halifax, NS B3S 1A9

**Phone:**(902) 450-0360

Stephen.dalley@schneider-electric.com

Spec item #: L-01	<b>SPECIFICATION</b>	TCMSB Fields #
<b>Air Circuit Breaker Testing</b>		

**Part 3: TECHNICAL DESCRIPTION**

**Location:** Transformer Room

- 3.1 Contractor shall have an allowance of \$20, 000 for the service of the authorized manufacturer REP, Schneider Electric. The actual amount shall be adjusted up or down via 1379 action.
- 3.2 The contractor with the ship's Electrical Officer shall isolate and lockout the electrical system as appropriate during the course of work. The contractor shall complete the ship's lockout/tagout procedure and forms but the contractor must supply their own locks and tags.
- 3.3 FSR shall complete inspection/testing at their facility.
- 3.4 FSR shall remove breaker from the cradle. Contractor is responsible for transporting breaker from Transformer Room to dock for transport.
- 3.5 FSR shall be responsible for providing protection from bus bars in absence in breakers being fitted.
- 3.6 The 5 breakers will be shipped from St. John's, NL to Schneider Electric, 110 Chain Lake Dr, Halifax, NS. The breakers weigh 300 lbs each and are 32"X16"X18" in dimension. Contractor shall be responsible for crating breakers on a pallet and arranging shipping. Breakers shall be crated to prevent movement and protect the breaker from damage. Contractor shall use ¾" plywood, securing straps and ample protective packaging surrounding the breakers.
- 3.7 FSR shall test circuit breakers with primary injection testing and the following servicing performed as per manufacturer recommendations. Contractor shall test instantaneous, short time and long time current level trips from each breaker onboard Micrologic 5.0A control unit. The circuit breakers are to have the primary injection testing performed after the inspection/overhaul and any necessary repairs.
- 3.8 All primary injection testing and inspection shall be witnessed by a Transport Canada Marine Safety surveyor.
- 3.9 The breakers shall be disassembled to a point where all mechanical components can be adequately visually inspected.
- 3.10 Check for signs of overheating and contact deterioration. (Main Stationary and Arcing Contacts) Burnish as necessary.
- 3.11 Prove manual/electric/automatic charging and closing operation. Spring charging mechanism shall be checked for proper operation.
- 3.12 Lubricate of moving parts as per manufacturer's instructions.
- 3.13 FSR shall than have breakers re-crated utilizing crates breakers were shipped in.
- 3.14 Contractor shall arrange for shipping from FSR facility back to St. John's, NL.
- 3.15 Contractor shall transport breakers from shore to Transformer Room.
- 3.16 FSR shall be arranged to re-install breakers and complete functional tests as per manufacturer recommendations.

**Part 4: Proof of Performance**

**Inspection, Testing & Certification**

- 4.1 All disturbed breakers shall be functionally tested when re-installed in their cells upon completion of inspection and service. The contractor will repair any defects found.

Spec item #: L-01	<b>SPECIFICATION</b>	TCMSB Fields #
<b>Air Circuit Breaker Testing</b>		

**Part 5: DELIVERABLES**

**Reports, Drawings, Manuals, Spares & Training**

- 5.1 The contractor is to provide a typewritten report for each circuit breaker including the as found condition, work performed, parts installed, testing performed, as left condition, expected service life remaining and original copy of a test record certificate. The reports will clearly identify the device serial number and application as well as the date(s), equipment used and the name of the individual technician performing the work.
- 5.2 TC certification of the breakers.