

CCGS MARTHA L. BLACK

**GENERAL, MECHANICAL AND WELDING  
WORK SPECIFICATIONS**

REF.: F3012-14INB203

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**LIST OF ACRONYMS**

Table 1 - List of Acronyms

CA Contract Authority (PWGSC)

CBW Canadian Bureau of Welding

CCG Canadian Coast Guard

CE Chief Engineer

CLC Canada Labour Code

CSM Contractor Supplied Material

CSA Canadian Standards Association

DFO Department of Fisheries and Oceans

FSM Fleet Safety Manual (CCG)

FSR Field Service Representative

GSM Government Supplied Materials

HC Health Canada

IA Inspection Authority – Technical Inspector CE Chief Engineer

IEEE Institute of Electrical and Electronic Engineers

MSDS Material Safety Data Sheet

PWGSC Public Works and Government Services Canada

SMS Safety Management System

TBS Treasury Board of Canada Secretariat

TCMS Transport Canada Marine Safety

TA Technical Authority (CCG) Jean-François Thibault

WCB Work Safe BC

WHMIS Workplace Hazardous Material Information System

**PART 1: SCOPE****1.1 General**

- 1.1.1 This document describes Canadian Coast Guard (CCG) requirements applicable to all accompanying Technical Specifications.

**PART 2: HEALTH AND SAFETY RELATED REQUIREMENTS****2.1 General**

- 2.1.1 The Contractor must appoint a Health & Safety Manager or Supervisor responsible for ensuring compliance with the Health and Safety requirements listed herein. This includes monitoring of all work by Contractor employees and Sub-Contractor employees.
- 2.1.2 During the execution of Work, the Contractor must comply with:
- Applicable Provincial Health and Safety Regulations,
  - Canada Labour Code Part II,
  - Marine Occupational Health and Safety Regulations (MOSH),
  - The Gas Hazard Control Standard (TP3177),
  - Applicable CCG region specific Health and Safety requirements
  - DFO/5672 Welding Health and Safety Technical Program,
  - TBS “Smoking in the Workplace” Policy,
  - The following sections of DFO/5737- CCG Fleet Safety and Security Manual
    - o Fall Protection (section 7B2),
    - o Confined Space Entry (section 7B3),
    - o Hot Work (Section 7B4),
    - o Lock-Out - Tag-Out (Section 7B5).

**2.2 Hot Work**

- 2.2.1 When executing Hot Work, the Contractor must:
- inform the TA & IA prior to commencing work and upon completion of work,
  - supply sufficient and suitable fire extinguishers in support of the Hot Work,
  - not use the Ship’s fire extinguishers except in the case of emergency. Should the ship’s extinguishers be used, the Contractor must ensure they are recharged and certified by a certified facility at no cost to Canada,
  - maintain a competent and properly equipped Fire Watch while Hot Work is underway and for one hour following the completion of Hot Work. The Fire Watch must be situated such that all sides of the surfaces undergoing work are visible and accessible,
  - ensure that all dust, debris, gas and smoke generated is evacuated from the vessel by the most direct method,
  - provide suitable fire retardant coverings to protect wire ways, cables, equipment and structure from welding slag, splatter etc,
  - comply with the specific Hot Work requirements listed in section 2.1 herein.

- 2.2.2 When executing Hot Work, the Contractor must define a surrounding zone that is to be kept sealed off from the rest of the vessel during the work period that involves the generation of welding gases, smoke, and grinding dust etc. All unscheduled work arising during the refit period involving Hot Work must have a similar zone isolated from the remainder of the vessel. The zone must be limited to the space(s) where the Hot Work is conducted, boundary areas where Fire Watches are required, and the access routes between the zone and the exterior of the vessel for workers, welding and cutting equipment and ventilation ductwork.
- 2.2.3 In areas where occupied accommodations and or workplaces cannot be completely isolated a double sealed door (air lock) arrangement must be erected to minimize ingress of contaminants into the occupied areas. A ventilation extraction point must be located as near as practical to the inside door on the worksite side to reduce the egress into the air lock and subsequently the accommodations and/or workspaces.
- 2.2.4 All doorways within the affected area that are not required for access to the work or for Fire Watch activities must be sealed off to prevent contaminants from entering. Passageway branches that connect to the zone are to be sealed off as well. The Contractor must clean all surfaces and fabrics within the zone and in surrounding areas, which have become contaminated, upon completion of work.

### **2.3 Confined Space Entry**

- 2.3.1 In the execution of Confined Space Entry, the Contractor must comply with the requirements listed in section 2.1 herein. The following is a non-exhaustive list of Confined Spaces on CCG Vessels: Bilge Areas; Machinery Compartments; all storage compartments accessed by manhole covers including fuel tanks; water tanks; cofferdams; chain lockers; thruster compartments.

### **2.4 Monitoring Atmosphere for Confined Space Entry or Hot Work**

- 2.4.1 Prior to Confined Space Entry and Hot Work within a Confined Space, including machinery compartments, the Contractor must:
- have the space gas freed and tested in accordance with TP3177,
  - ensure the Permit states the type of work, the time period for which the Permit is valid and also indicates "Safe for Persons" or "Safe for Hot Work" as required,
  - post the Permit in a conspicuous location and provide the TA and IA with the signed and dated Marine Chemist's or Contractor qualified persons Certificate,
  - renew the Confined Space Entry or Hot Work Permit as required by Regulations.

### **2.5 Work At Heights and Fall Protection**

- 2.5.1 In the execution of Work at Heights, the Contractor must:
- erect staging as required to safely carry-out work and remove it upon completion,
  - ensure walkways, gangways, scaffolding, ladders, guard-rails and similar apparatus are maintained in proper and safe condition. Daily inspections are to be conducted and recorded by the Contractor,
  - comply with requirements listed in 2.1 herein when conducting work aloft,
  - must do so in accordance with the Contractor's standard operating procedures.

### **2.6 Lock-Out / Tag-Out**

- 2.6.1 The Contractor must comply with requirements listed in 2.1 herein for Lock-Out and Tagout.

### **2.7 Workplace Hazardous Materials Information System (W.H.M.I.S)**

- 2.7.1 CCG shall provide the Contractor with access to M.S.D.S. for all controlled products located on the vessel. The Contractor must provide M.S.D.S for all Contractor supplied WHMIS controlled products.

### **2.8 Smoking**

- 2.8.1 The Contractor must obtain written approval prior to smoking in designated areas.

### **2.9 Temporary Lighting and Ventillation**

- 2.9.1 The Contractor must ensure temporary lighting and/or ventilation is supplied, installed and maintained in proper and safe condition and removed upon completion.
- 2.9.2 The Contractor must ensure temporary lighting incorporates shields/guards to protect against breakage.

### **2.10 Sign-in / Sign-out**

- 2.10.1 When the vessel remains in Care and Custody of the Crown, the Contractor must ensure employees and Sub-Contractors sign-in and sign-out of the Vessel Register located at the Quartermasters Station, or in a convenient location to the gangway, whenever they enter or leave the vessel. Alternatively, the Crown may provide an electronic system whereby passes are issued to those requiring access to the vessel. Individuals violating this requirement may be denied access to the vessel for the duration of the work period upon advice from the TA to the CA.

**2.11 Lead Based Paints and Paint Approvals**

- 2.11.1 The Contractor must provide Health Canada product approval for underwater hull surface paints controlled by Health Canada and the Pest Management Regulatory Agency,
- 2.11.2 The Contractor must identify and take precautionary measures to ensure the application of paints complies with Federal, Provincial and Municipal regulations,
- 2.11.3 The Contractor must not use lead-based paints.

**2.12 Clean and Hazard Free Site**

- 2.12.1 The Contractor must maintain all spaces, compartments, work areas and areas used by Shipyard personnel as transit routes in a clean and sanitary condition and free from debris,
- 2.12.2 The Contractor must return the vessel to the CCG at least as clean as when work began. This includes both internal and external areas of work, as well as any affected adjacent spaces outside the principle areas of work,
- 2.12.3 The Contractor must supply own refuse containers to be emptied daily and removed upon completion of work. All rags, debris, and associated refuse are to be removed to refuse container(s) daily,
- 2.12.4 When working at CCG facilities, the Contractor must clean-up dock areas used by Contractor personnel and/or equipment. This includes but is not limited to the removal of all dirt, grit, debris, staging, containers and equipment as well as the immediate cleanup and proper disposal of leaked oil, solvent or any other hazardous materials,
- 2.12.5 If work will be conducted in the vicinity, the Contractor must supply and install for the duration of the work period a suitable material approved by the TA and IA at all main entries and over surfaces of the main, upper, flight and navigation officers decks to protect alleyways from dirt,
- 2.12.6 The Contractor must ensure safe access to the work area as required by applicable Health and Safety Regulations,
- 2.12.7 The Contractor must prevent rat and vermin harbourage onboard the vessel for the duration of the work period. The Contractor must remove any rats or vermin from the vessel if they do come onboard during the work period.

**2.13 Fire Protection**

- 2.13.1 The Contractor must ensure the isolation, removal and installation of fire detection and suppression systems or its components is performed by certified technicians familiar with the systems,
- 2.13.2 The Contractor must notify the TA and IA and obtain written approval from the TA prior to disturbing, removing, isolating, deactivating/disabling or locking-out any part of the fire detection or suppression system including heat and smoke sensors. The Contractor must also notify the TA and the IA once the system has been reactivated,
- 2.13.3 The Contractor must ensure protection against fire at all times including when working on the ship's fire detection or suppression system. This may be accomplished as suggested below and requires the written approval from the TA:
  - disabling only one portion of the system at a time,
  - by maintaining system function using spares while work is in progress,
  - other means acceptable to the TA.
- 2.13.4 The Contractor must note that failure to take necessary precautions while performing work on fire suppression systems may result in malfunction and discharge of CO<sub>2</sub>, Halon or other fire suppression agents. The Contractor must recharge and certify at their cost, containers that are discharged as a result of their work.

**2.14 Hydrostatic / Pneumatic Tank Testing**

- 2.14.1 The Contractor must verify that all necessary openings are closed prior to hydrostatic or pneumatic testing of tanks. The Contractor must blank all suction and discharge lines, vents and sounding pipes. The Contractor is responsible for supplying, fitting and the subsequent removal of blanks.
- 2.14.2 The Contractor must drain the tanks upon completion of testing and wipe clean and dry the fuel tanks.
- 2.14.3 The Contractor must hydrostatically test tanks as specified with a 2.44m head of water. Where the Contractor wishes to perform a pneumatic test in lieu of the hydrostatic test, written approval must be obtained by the IA and TA.
- 2.14.4 The Contractor must provide the IA and TA with the Contractor's standard operating procedures for conducting pneumatic tank tests.

**2.15 Contractor Supplied Potable Water**

- 2.15.1 The Contractor must provide water quality test results to the IA to demonstrate the potable water supplied meets the current Health Canada Guidelines for Canadian Drinking Water Quality ([http://www.hc-sc.gc.ca/ewh-semt/pubs/water-eau/guidelines\\_sixth-rec-eng.php](http://www.hc-sc.gc.ca/ewh-semt/pubs/water-eau/guidelines_sixth-rec-eng.php)).
- 2.15.2 The Contractor must ensure lines are flushed prior to connecting the water supply to the vessel.

## PART 3: GENERAL REQUIREMENTS

### 3.1 Electrical Work / Electronics

- 3.1.1 The Contractor must carry-out all electrical and electronic installations, renewals and repairs in accordance with the latest editions of:
- TP127 - "Ship Safety Electrical Standards",
  - IEEE Standard 45 – 2002 "Recommended Practice for Electrical Installations on Shipboard 2002",
  - CGTS-3 - "General Specifications for the Installation of Shipboard Electronic Equipment".
- 3.1.2 The Contractor must replace, at no charge, the entire length of point to point cable if damaged as a result of installation.
- 3.1.3 The Contractor must not use plastic tie-wraps to secure wiring except in panels and junction boxes.

### 3.2 Paint Application

- 3.2.1 The Contractor must ensure new and/or disturbed steel work is painted in accordance with the specification.
- 3.2.2 The Contractor must power clean all new and disturbed steelwork prior to painting.
- 3.2.3 The Contractor must notify the IA to inspect after the surface preparation and the first coat of paint has cured and prior to application of the second coat.
- 3.2.4 N/A
- 3.2.5 The Contractor must ensure new and/or disturbed steelwork receives application of at least two (2) coats of marine primer immediately upon completion of work, unless specified otherwise.

### 3.3 Changes to Vessel Stability, Carrying Capacity or Structure

- 3.3.1 The Contractor must discuss with the TA any comments, concerns or observations they may have regarding the effect of work on the vessel's stability or carrying capacity. Additionally, any work item that, in the opinion of the Contractor may pose a vessel structural integrity problem is to be brought to the attention of the TA.
- 3.3.2 The Contractor must advise the IA and TA of the details of any major changes in the distribution of weights on the vessel while the vessel is in dry-dock.

### 3.4 CCG Employees and others on the Vessel

- 3.4.1 Canadian Coast Guard employees and other personnel such as Manufacturer's Representatives and TCMS Inspectors may carry-out other work, including work items not included in this Statement of Work, on board the vessel during this work period. Every effort will be made by Canada to ensure this work and the associated inspections do not interfere with the Contractor's work. The Contractor is not responsible for coordinating the related inspections or payment of inspection fees for this work.

### 3.5 Regulatory Inspections

- 3.5.1 The Contractor must ensure all work identified as requiring regulatory inspection is inspected by the applicable authority such as TCMS, Health Canada, Environment Canada etc., and that the required documentation is received to prove the inspections were conducted. The Contractor must not substitute inspection by the TA or IA for required regulatory inspections.
- 3.5.2 The Contractor must provide original Certificates issued by inspectors to the TA and a Copy to the IA.
- 3.5.3 The Contractor must coordinate all regulatory related inspections required for this Statement of Work.
- 3.5.4 The Contractor must provide timely advance notification of scheduled regulatory inspections to the TA and IA so they may attend the inspection.

### 3.6 Welding

- 3.6.1 The Contractor must ensure welding is completed in accordance with DFO/5672 – "Welding Health and Safety Technical Program".
- 3.6.2 The Contractor must obtain written permission of TA prior to commencing welding.
- 3.6.3 The Contractor must not locally ground welding equipment near bearings or electronic equipment.
- 3.6.4 The Contractor must ensure all steel welding is in accordance with 18-080-000-SG-001 Welding of Ferrous Materials and the Canadian Coast Guard Welding Specifications for Ferrous Materials, Revision 4. (TP6151)
- 3.6.5 The Contractor must comply with CCG specification for ALUMINIUM WELDING (TP9415)
- 3.6.6 The Contractor must ensure that when welding of any item requires the application of fusion welding for stainless steel structures, the Contractor or his Sub-Contractors is certified in accordance with the Canadian Welding Bureau, CSA\ACNOR AWS; Division 1.6 certification – latest revision copies of which must be submitted to the IA/TA prior to the start of welding

### 3.7 Requirements imposed on Contractor when Equipment must be disturbed

- 3.7.1 The Contractor must coordinate an inspection of the condition of items (i.e.: piping,



manholes, parts, equipment etc) to be removed, prior to carrying-out or to gain access to carry-out specified work. The inspection must be conducted jointly by the Contractor, the IA and the TA.

- 3.7.2 The Contractor must repair or replace any item that is damaged in this process. Any piping, manholes, parts, equipment etc. requiring installation after removal, must be refitted using new Contractor supplied materials such as jointing, packing, anti-seize compound, clamps, brackets, fasteners, oils, lubricants, cleaning solvents, preservatives and insulation. Materials must be in accordance with equipment manufacturers' drawings, manuals or instructions. Where a substitution must be made, the IA and TA must approve in writing the materials used.
- 3.7.3 The Contractor must provide a test plan and test to prove operation of disturbed items after completion of work.

### **3.8 Test Results**

- 3.8.1 The Contractor must ensure tests and trials are performed to the satisfaction of the IA, TA, and TCMS. All tests, measurements, calibrations and readings must be recorded and provided in a report to the IA, TA and TCMS. The reports must be bound and typewritten, double-spaced on 8 1/2" X 11" and indexed by specification number. The reports must also be provided in Adobe pdf format.
- 3.8.2 The Contractor must ensure all dimensions are measured and recorded. All measuring devices must be described in the report and the name of the person taking the readings must be recorded.
- 3.8.3 The Contractor must ensure all testing and measurement equipment (mechanical or electronic) are calibrated and that calibration certificates are provided to the IA prior to final inspection or witnessing of tests.

### **3.9 Contractor Supplied Materials and Tools**

- 3.9.1 The Contractor must unless otherwise specified, supply all materials.
- 3.9.2 The Contractor must ensure materials are new.
- 3.9.3 The Contractor must ensure material such as jointing, packing, insulation, small hardware, oils, lubricants, cleaning solvents, preservatives, paints, coatings, etc., are in accordance with the equipment manufacturer's drawings, manuals or instructions. Where no particular item is specified or where substitution must be made, the IA and TA must approve in writing the materials used. The Contractor must provide certificates of grade and quality for various materials, as requested to the TA and IA.
- 3.9.4 The Contractor must obtain CCG ship specific special tools from the TA and return them to the TA upon completion of work.

### **3.10 Machinery and Overhaul Installation**

- 3.10.1 The Contractor must overhaul and install machinery and equipment as per the manufacturer's instructions, drawings and specifications.

### **3.11 Restricted Areas**

- 3.11.1 The Contractor must not enter the following areas except to perform work as required by the specifications: all cabins, offices, workshops, engineer's office, wheelhouse, control room, public washrooms, galley, mess rooms and lounge areas.

### **3.12 Protecting Equipment/Areas from Damage**

- 3.12.1 The Contractor must protect equipment/areas (example: machinery, equipment, fittings stores or items of outfit) from damage by exposure, weather, movement of materials, sand, grit, or shot blasting, welding, grinding, burning, gouging, painting or airborne particles of paint etc.
- 3.12.2 The Contractor must provide the IA and TA the opportunity to inspect any protection installed prior to the work commencing.

### **3.13 Verification of Information Provided by CCG**

- 3.13.1 The Contractor must verify, prior to bid submission, all drawings, pictures, dimensions, descriptions, locations, measurements, engineering values, materials, etc. listed or implied. Information such as engineering drawings, pictures, etc may have been provided with the accompanying technical specifications.

### **3.14 Drawing Revisions**

- 3.14.1 The Contractor must revise drawings as required to a quality at least equal to those being updated. For example, drawings that have been lettered and dimensioned in a professional manner are not to be updated by hand. Updated hard copy drawings must be provided to the IA and TA in an acceptable format and if electronic format drawings have been provided for updating, these must be returned using the same version of software as originally used.

**3.15 Service Conditions**

- 3.15.1 The Contractor must provide ice-clearing services if so required for ship movements.
- 3.15.2 The Contractor must provide all enclosures and heating required to carry out work, taking into account the nature of the work, time of year and weather conditions. Examples of work items where heating and enclosures may be required include but are not limited to painting, shaft withdrawal, and tank cleaning.
- 3.15.3 Unless otherwise specified, all components, materials and installations supplied by or carried-out by the Contractor must be adequate to meet the following service conditions:
  - In areas that are exposed to the elements:
    - o outside air temperature of minus 40°C to plus +35°C;
    - o wind velocity up to 50 knots;
    - o water temperature of minus 2°C to plus +30°C;
  - shock loading of 2.5g horizontal, 1.5g vertical. All new components, materials and installations within the ship must be adequate to withstand the specified shock loading accelerations.

**3.16 Recording of Work in Progress**

- 3.16.1 The IA and TA may record work in progress using various means including but not limited to photography and video, digital or film

**3.17 Washrooms and Working Hours**

- 3.17.1 No washroom on board will be made available for the Contractor
- 3.17.2 Hours of work for CCG personnel working on board the vessel are from 0800 hours to 2000 hours, seven (7) days a week, excluding statutory holidays. Permission to work on the vessel outside these hours must be obtained from the TA.



## ITEM 1 INSTALLATION OF PIPE TRANSITS IN THE MAIN DECK ACCOMMODATION ROOMS

- 1.0 Référence; ProGland TUBE, information attached.
- 1.1 Vessel water tightness – 15 compression fittings in 15 rooms  
Plans of the vessel with the cabin positions and the spaces under the cabins are attached.
- 1.2 For the purpose of protecting the rooms and void spaces, Only saws are permitted—no torches. The contractor is responsible for all precautions required during work in enclosed spaces.  
The contractor is to provide for opening and closing access to the spaces under the cabins.
- 1.3 Cut the shelves in the vanity in rooms on the main deck and remove the 1¼" sink drain pipe (access for the lower Victaulic is through the empty spaces under the rooms). Remove the sink cabinets to facilitate the work.
- 1.4 Remove the existing 1½" compression fitting welded on the floor. Drill an appropriate hole to install a new bolted-type compression fitting (no welding required or allowed). The drain pipes are to be reinstalled by the contractor. Check the attached drawing for details of the floor. (About 5/16" of cement, 2" of mineral wool, and another ½" coat of cement between two sheets of masonite.)
- 1.5 Fabricate shelves in 1/8" thick sheet steel, in two sections, to allow future access to the compression fittings. The average dimensions are 30" by 20", 2 per sink. On completion of the work, conduct a sealing test with air from the empty space and a water column equivalent to 2.50 psi for 20 minutes on the drain, with stable pressure for the last 10 minutes.
- 1.6 The bolted compression fittings will be supplied by the vessel. (Technical information attached)
- 1.7 The disconnection of floats will be needed in certain places (alarm electrical wiring will be done by the ship's electrician). The floats are used to monitor the level in the empty spaces. No displacement of the floats is required.

## ITEM 2 WHEELHOUSE WINDOW (Supplied by vessel)

- 2.1 Replace a heated pane in a forward window of the wheelhouse. Here are the main characteristics of the window:
  - Laminated glass for heated window has
  - Dimensions: 1130 mm x 830 mm
  - Electrical connections at the top centre of the window: 1500 W/ft<sup>2</sup>, 220 V/1ph/60Hz
  - Thickness: 19 mm laminated 6 mm exterior and 13 mm interior, 4 rounded corners
  - Window position indicated on plan H-2860, # W001
- 2.2 Electrical disconnection and connection is to be done by the contractor.
- 2.3 Electrical element to be tested by the contractor before installation.
- 2.4 Remove the aluminum mouldings, clean all corrosion from surfaces, clean the threads of the moulding retention setscrews, apply primer (one coat) and paint (one coat) (supplied by the vessel) to the surfaces.
- 2.5 Install the panes with the appropriate sealant (Tremtape). Panes must not come in contact with the frame or any metal part; use shims.
- 2.6 Install the mouldings, replace damaged stainless steel screws (1379) and put copper anti-seize compound on the threads.
- 2.7.1 Apply sealant (Sikaflex 295 UV) following the application procedure. Activate and degrease with Sika Cleaner 205, and prime with additional Sika Primer 209 on the exterior.
- 2.8 Test watertightness with a water hose on the window to the Chief Engineer's and MSTC's satisfaction.

## ITEM 3 FLOOR DRAIN REPAIRS (16)

- 3.1 Remove the 16 drain grids.
- 3.2 Mechanically clean the drains indicated to enable proper evaluation of their condition.
- 3.3 Provide a price for application of a ceramic Belzona product to rebuild and cover the surfaces of one (1) scupper.
- 3.4 See PDF photos and list.

**ITEM 4 REPLACEMENT OF INSULATION IN 7 CABINS**

4.0 Reference; Insulation Plan 108-H-4410

4.1 The work consists of removing the walls on the hull side, all insulation and any mould and rust on the hull and surrounding area.

Cabin furniture is to be dismantled by the contractor at the beginning of the work and put back in place at the end. The contractor shall protect surrounding surfaces from damage. The contractor shall take responsibility for disposal of all waste in accordance with the standards in force.

4.2 Retain the services of a laboratory specializing in industrial hygiene to take samples for mould testing in each space of each cabin and analyze them. When the result is negative, clean the surfaces by hand with the product recommended by the laboratory (Coast Guard will supply the product).

In places where the hull metal is bare (calculate 20% of surfaces, 95 ft<sup>2</sup>), plan to supply International Interseal HS670 aluminum colour paint and apply one coat in accordance with the manufacturer's recommendations.

4.3 Then modify the piping supports, etc., so that there is a weatherstrip between the hull and the support, or move the support to a surface that will not be in direct contact with the outside. Photos for this item attached. Provide a price to modify 6 brackets of both models shown, allowing for at least ¼" of insulation between the bracket and pipes, for each of the following dimensions, ½", 1" and 2" in diameter.

4.4 Insulate the surfaces in contact with the outside with insulation approved by Transport Canada of a grade equivalent to those removed and then cover with a waterproof vapour barrier.(Insulation Plan 108-H-4410)

4.5 Remove rust from all the wall panel support rails and cover with a coat of primer (supplied by the contractor). If the rails are too damaged and must be replaced, this must be negotiated by the PWGSC representative using form GSC 1379. Replacement of wall panels that are non-repairable (soaked, rusted, mouldy) or have holes must be negotiated with the PWGSC representative using form GSC 1379.

o Foresee 72 linear feet for cleaning and painting of rails

o Foresee 42 linear feet for rail replacement

o Foresee 21 replacement panels

4.6 Room #208: Wall 11' (width) x 7' (height) = 77 ft<sup>2</sup>

Room #212: Wall 11' (width) x 7' (height) = 77 ft<sup>2</sup>

Common Bathroom Wall 5' (width) x 7' (height) = 35ft<sup>2</sup>

Room #216: Wall 11' (width) x 7' (height) = 77 ft<sup>2</sup>

Room #222: Wall 11' (width) x 7' (height) = 77 ft<sup>2</sup>

Common Bathroom Wall 5' (width) x 7' (height) = 35ft<sup>2</sup>

Room #228: Wall 11' (width) x 7' (height) = 77 ft<sup>2</sup>

Room #234: Wall 11' (width) x 7' (height) = 77 ft<sup>2</sup>

Common Bathroom Wall 5' (width) x 7' (height) = 35ft<sup>2</sup>

Room #129 Wall 12' (width) x 7' (height) = 84 ft<sup>2</sup>

Total of 651 ft<sup>2</sup> + framing.

Note: Wall sections are partition wall panels, B-15 rated, 50 mm x 600 mm x 2250 mm, PVC finish both sides beige E34:

4.7 Dimensions are for reference only; the contractor must come on site and confirm the measurements personally. Following contract award, the contractor shall confirm the measurements before beginning work. The price may then be adjusted up or down using form 1379 if necessary.

4.8 Joiner system wall panels in the bathrooms are to be cut horizontally 1' from the deck to permit work behind paneling (Preventing damage to dex-O-Tex flooring.). Upon re-installation, an H bracket will be inserted between the upper and lower panels to hold them together.

NOTE: Work at the same time as the floor drains.

**ITEM 5 WORK IN THE OFFICER'S GALLEY**

- 5.1 Remove the entire counter. The counter will be reinstalled approximately 1" higher. Remove the Hobart dishwasher. Repair the damaged floor. Modify the location/installation of the dishwasher to allow for maintenance by moving the assembly forward.
- 5.2 Install a drip pan (removable or not) to prevent water and/or soap getting on the floor.
- 5.3 Remove all the tiles and replace the cement floor. Area of 150 ft<sup>2</sup>.
- 5.4 Replace the tiles with Armstrong linoleum, Duality Premium # G6210, with a 15-year commercial warranty in a colour to be determined with the logistics officer. Area of 150 ft<sup>2</sup>. Foresee work on 100% of this surface.
- 5.5 Remove the current floor covering, prepare 100% of the steel deck surface by removing all traces of corrosion with mechanical tools (grinder with abrasive disc), and recoat with anti-corrosion paint compatible with the Dex-O-Tex system.
- 5.6 Supply and apply the Dex-O-Tex cement system about 2" thick to coat the bottom of the galley area and skirtings; provide a slope for water to flow to the drain.
- 5.7 Supply and install the Dex-O-Tex Terrazzo system in the same colour as the current floor covering.
- 5.8 The contractor is responsible for installing the necessary protection to prevent damage to the surrounding surfaces.
- 5.9 Dimensions are for reference only; the contractor must come on site and confirm the measurements personally. Following contract award, the contractor shall confirm the measurements before beginning work. The price may then be adjusted up or down using form 1379 if necessary.

**ITEM 6 RECONDITIONING OF TWO (2) MAIN SUPPLY AIR FANS IN THE ENGINE ROOM****6 Norris Warming Can Fan**

Diameter: 36" Length: 34"

Etaltech Motor

Front Bearing 6312ZZ, Rear Bearing 6313ZZ

Frame # 326T; Serial # ML3790-2; Model # 6930735

- 6.1 The vessel's crew will be responsible for disconnecting the two fans and isolating the electrical circuits.
- 6.2 The contractor shall disconnect the fan with its section of tubing from the rest of the duct, and remove to the outside. The crew will assist, if need be, with the vessel's lifting equipment when the units are accessible in the engine rooms through the chimney (to take it out and put it in with the cargo boom). Report a need 24 hours in advance.
- 6.2.1 The contractor will provide the materials and man-power necessary cut a 4'x4' hole in the forward bulkhead between the fan units. The removed plate shall be fitted with a welded shoulder 2" wide, welded around its periphery. Studs and gasket will be contractor supplied. After cutting the hole to correct dimensions, a buffer will be used to remove burrs, and smoothen the surfaces. Stud holes will be drilled in the bulkhead, tapped, and threads sealed upon assembly using Loctite ® 577™ Thread Sealant or equivalent. At the end of work, all surfaces are to be primed with an International primer and then painted with Intergard 264 or equivalent.
- 6.3 The work will especially include:
  - 6.3.1 Disassembly, and mechanical and electrical inspection. Clean the interior and exterior.
  - 6.3.2 Perform a high frequency 400 hz on the steel core. Verify thermal stability and insulation.
  - 6.3.3 The replacement of insulation with new material will be negotiated with form 1379 if necessary.
  - 6.3.4 Static and dynamic balance of the rotor, with and without the fan.
  - 6.3.5 Replacing ball bearings with new sealed ones.
  - 6.3.6 Assembly.
  - 6.3.7 Complete verification.
  - 6.3.8 Testing.
  - 6.3.9 Reinstallation of fans in position, reassembly of ducts, start-up and testing in place.
- 6.4 The contractor is responsible for transport to and from a workshop.
- 6.5 Insulation of ducting
  - Fibreglass 545 Board with Aluminum vapor barrier
  - Finish – Fibreglass cloth 8oz, Finished with flintguard 120-09 (fire resistive lagging coating)
- 6.6 Install the removable access plate with bolts and gasket. Modify the ramp to permit future access.

**ITEM 7 REPAIR OF THE FLOOR OF 1 ROOM ON THE MAIN DECK**

- 7.1 Remove the carpet, carpet underlay, mineral wool, and sandwiched portion, as seen in photos for drain transits in Item 1..
- 7.2 Make repairs to the floor cement, and add cement if necessary to obtain A-15. •Using Dex-O-Tex marine cement (fine Magnabond) to prepare the surfaces, applying a 1" coating to surface areas, increasing or decreasing it based on the requirements in PWGSC form 1379
- 7.3 Finish rooms with flexible floor covering. The product is to be Armstrong, Duality premium # G6210, with a 10-year commercial warranty in a colour to be determined with the logistics officer.
- 7.4 Room #129: Floor 11.5' x 10' = 115 ft<sup>2</sup>
- 7.5 Dimensions are for reference only; the contractor must come on site and confirm the measurements personally. Following contract award, the contractor shall confirm the measurements before beginning work. The price may then be adjusted up or down using form 1379 if necessary.
- 7.6 Foresee a 4 inch vinyl contour for the complete circumference of each of the rooms
- 7.7 Carpeting installation should take into account that most furniture is permanently fixed and cannot be removed (cabinets, desks, beds, etc.).
- 7.8 Dispose of all residues and waste.
- 7.9 The Contractor shall leave the premises in the same state of cleanliness as that found prior to starting work. This is to be inspected by the Canadian Coast Guard representative at completion of work.

NOTE: Work in the rooms is to be done in conjunction with other insulation and shower drain work as well as the sink plumbing compression fittings in the empty spaces.

**ITEM 8 5 AND 8 TON DERRICK MOTOR INSPECTION**

8.1 Before the start of the new controls, the electric motors must be removed and sent to the facilities of a specialized firm to perform the following tests:

- Visual inspection of the armature and field windings
- Inspection of brushes and brush holders
- Verify the adjustment of the neutral point
- Verify the spring tension of brushes
- Confirm that the brushes used are of the proper type.
- Inspection of the commutator (wear analysis)
- Deep Cleaning inside the engine
- Measure insulation resistance of all the windings (step voltage)
- Inspection of bearings and their lubrication system
- Verify the rotor balance.
- Loading and thermographic analysis

**5T Aux Hoist (Whip Hoist)****Motor**

- Built: David McClure
- Frame: DD250B
- Type: DC (Shunt)
- HP: 0/56/53
- Volts: 575
- Amps: 82/77
- RPM: 0/1320/2500
- Field Volts: 250
- DC Tachometer: Yes

**8 T Aux Hoist (Auxiliary Hoist)****Motor**

- Built: david McClure
- Frame: DD280B
- Type: DC (Shunt)
- 0/54/54
- Volts: 575
- Amps: 78
- RPM: 0/958/2500
- Field Volts: 250
- DC Tachometer: Yes

Test results should be presented in a report written in French and English.

8.2 In addition to the above testing for the 8T, include the following.

8.2.1 Strip, clean;

8.2.2 Remove old bearings;

8.2.3 Machine a gear shaft with internal spline 'pinion', with 4340 HT steel

8.2.4 Machine a shaft gear with outside spline 'shaft motor', with 4140 HT steel

8.2.5 Provide technical drawing with all dimensions required for the manufacture of its parts.

8.2.6 Fabricate and install insulation notch;

8.2.7 Build and insert coils, make the connections of the coils;

8.2.8 Impregnation / cooking;

8.2.9 Upon receipt of the rotor with the new shaft, perform dynamic balancing of the rotor;

8.2.10 Supply and install new bearings;

8.2.11 Replacement of the heating element;

8.2.12 Replacment of the terminals;

8.2.13 Assembling, testing, painting;

8.2.14 Roundtrip transportation;

**ITEM9 ACCOMMODATION LADDERS**

- 9.1 This item is part of mandatory inspections, Part 3, Item 3.5.  
The ladders are already located on the dock ready to be picked up.
- 9.2 Remove the two (port and starboard) ladders for their five-year inspection by Transport Canada in accordance with the *Cargo, Fumigation and Tackle Regulations* and Standard *ISO 5488 – Shipbuilding — Accommodation ladders*. The contractor is to supply all the material and labour to perform tests and certification.
- 9.3 The contractor is responsible for supplying all equipment and machinery to remove the two accommodation ladders and all components required for operation of the ladders found on board the vessel, and for transporting them to their workshops. The contractor is responsible for transporting and installing on board the vessel all removed equipment. The vessel will supply new steel cables for the winches. A ship's electrician will be on hand to isolate the required circuits.
- 9.4 Work to be done on each ladder especially includes to:
  - 9.4.1 Remove the steel cables.
  - 9.4.2 Remove the latches and pull out the pivot pin from the ladder platform as well as the pivot pin from the davit arm (davit part).
  - 9.4.3 Unbolt the slide tube (torque tube) that connects the platform section to the davit arm section as well as the davit arm and remove for inspection. Remove corrosion with a mechanical tool (grinder with abrasive disk), clean and paint with one coat of metal primer and two coats of red finish (supplied by the vessel).
  - 9.4.4 Note the position and remove all latches, pulleys, rollers and rods for cleaning and inspection.
  - 9.4.6 Take the reading for the pins and bushings, register in the form of a report and submit to the Chief Engineer.
  - 9.4.7 Notify the TCMS and the vessel's representative for inspection before assembly.
  - 9.4.8 Reinstall everything with new 316L stainless steel bolts, taking care to lubricate the pins well and apply copper anti-seize compound on the bolt threads.
  - 9.4.9 Check and clean all grease channels before and after replacing all grease fittings with new ones.
  - 9.4.10 Use the same type of grease as that already in place and apply a quantity of grease on all parts before assembly. Grease will be supplied by the vessel (Prolab AF100). The port and starboard accommodation ladder platforms must be sandblasted and then galvanized.
  - 9.4.11 Reinstall the slide tube (torque tube) on the davit arm and the platform with new 316L stainless steel bolts coated with copper anti-seize compound.
  - 9.4.12 Put the new steel cables back in place. Grease completely and operate all components while greasing. Conduct a test in accordance with Transport Canada requirements in the presence of a Transport Canada inspector.

**NOTE:** The contractor is responsible for providing the weights and the personnel required for handling them.