

## CANADIAN COAST GUARD CCGS VAKTA



# APPENDIX A

## REFIT SPECIFICATION



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CCGS Vakta  
Refit 2018

Specification No: F1782-18C727

# APPENDIX A

## 1.0 REFIT

Prepared for:  
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## **1.1 Vessel Refit**

### **1.1.A Identification**

- A.1.1 Structural refit refers to all aluminum repairs and modifications.
- A.1.2 The main intent of the refit is to increase the fuel capacity by extending the existing fuel tanks and adding an additional two berths to accommodate extra crew.

### **1.1.B References**

#### **B.1 Drawings**

- B.1.1 All Drawings are listed in the General Notes. The following Drawings are to be considered as Guidance Drawings as defined in the Drawings section of the General Notes.

| <b>Drawing Number</b> | <b>DRAWING TITLE</b>                     | <b>Number of Sheets</b> |
|-----------------------|--|-------------------------|
| 1178                  | General Arrangement R1                   | 3                       |
| 1178                  | Refit Overview R2                        | 4                       |
| 1178                  | Refit Structural R0                      | 5                       |
| 1178-2                | Fresh Water R0                           | 1                       |
| 1178-2                | Grey and Black Water R0                  | 1                       |
| 1178-2                | Refit Electrical AC R0                   | 1                       |
| 1178-2                | Refit Electrical DC R0                   | 5                       |
| 1178-2                | Refit Electrical Layout R1               | 2                       |
| 1178                  | Refit HVAC Systems R2                    | 2                       |
| 1178                  | Interior Refit (includes cabinet detail) | 25                      |
| 1178-600              | General Arrangement                      | 1                       |
| 1178-601              | Reflected Ceiling Plan                   | 1                       |
| 1178-602              | Elevations                               | 3                       |
| 1178-603              | Finishing Schedule                       | 3                       |

## B.2 Regulations and Standards

B.2.1 The following Standards and Regulations apply to the work carried out in this section; The Contractor must ensure all work completed in this section meets these Standards and Regulations as well as any other pertinent Federal/Territorial Regulation or Standard:

| <b>FSSM Procedures</b>    | <b>Title</b>  | <b>Included<br/>Yes/No</b> |
|---------------------------|---|----------------------------|
| 7.E.3                     | Handling and Discharge of Black and Grey Water  | Yes                        |
| 7.E.5                     | Handling, Storage, and Disposal of Hazardous Materials  | Yes                        |
| 7.B.5                     | Lockout and Tagout  | Yes                        |
| 7.B.6                     | Electrical Safety - Energized Circuits  | Yes                        |
|                           |   |                            |
|                           |   |                            |
| <b>Publications</b>       |   |                            |
|                           | Guidelines for Canadian Drinking Water Quality - Summary Table (2014)                         | No                         |
| TP 14231                  | Marine Occupational Health and Safety Program   | No                         |
| ISSN 1497-2956            | Safe Work Practices for Handling Asbestos, WorkSafe BC, 2012 Edition.                         | No                         |
|                           |   |                            |
| <b>Standards</b>          |   |                            |
|                           | Colour Coding Standard for Piping Systems   | Yes                        |
| CSA W59.2-91              | Welded Aluminum Construction  | Yes                        |
|                           | Paint and Coatings for Ships/Boats, Standard  | Yes                        |
| IEEE 45                   | Recommended Practice for Electrical Installations on Shipboard                                | No                         |
| IMO Resolution A.468(XII) | Code on Noise Levels on Board Ships   | No                         |
| ISO 9712:2005             | International Standards for NDT   | No                         |
| IESNA RP-12-97            | (Illumination Engineering Society of North America)– Recommended Practice for Marine Lighting | No                         |
| ISO 8501-1:2007           | Preparation of steel substrates before application of paints and related products             | No                         |
|                           |   |                            |
| <b>Regulations</b>        |   |                            |
| TP 127 E                  | Ships Electrical Standards  | Yes                        |
| C.R.C., c.1418            | Crew Accommodation Regulations  | Yes                        |
| TP 11469                  | Guide to Structural Fire Protection   | Yes                        |

|                  |   |    |
|------------------|---|----|
| TP 14231         | Marine Occupational Health and Safety Program   | No |
| SOR/86-304       | Canada Occupational Health and Safety Regulation  | No |
| SOR/2010-120     | Maritime Occupational Health and Safety Regulations                                     | No |
| B.C. Reg. 296/97 | Occupational Health and Safety Regulation, WorkSafe BC                                  | No |
| SOR/2008-34      | Transportation of Dangerous Goods Regulations,<br>Transportation of Dangerous Goods Act | No |



## **1.1.C Materials and Workmanship**

### **C.1 General**

- C.1.1 All materials, equipment, and outfit is to be CFM unless otherwise noted.
- C.1.2 All materials, equipment, and outfit must be as shown in the drawing package. It must be of commercial marine quality, in full compliance with the specifications and suitable for the intended use. Unless explicitly stated otherwise, all machinery and equipment must be new and unused (except for factory testing), of current manufacture and currently be supported by readily available spare parts. Where specific class society material specifications are required, the requirements must be clearly indicated on purchase orders.
- C.1.3 All materials must be free from imperfections of manufacture and from defects that adversely affect appearance and/or serviceability.
- C.1.4 Nuts, bolts, fasteners and fittings used in exterior locations must be type 316 stainless steel, unless otherwise approved by CCG.
- C.1.5 All materials and equipment must be stored, installed and tested in accordance with the manufacturer's guidelines, recommendations and requirements.
- C.1.6 All equipment must be accessible for use, inspection, cleaning and maintenance. The Contractor must ensure there is an adequate maintenance envelope for access for maintenance behind toilets and other plumbing fixtures. There must be enough room to remove valves and components without requiring cutting tools to remove interference items. All valves must be able to be opened and closed in place.
- C.1.7 Equipment subject to freezing must be kept drained. Equipment must be kept clean and protected from the environment.
- C.1.8 The contractor is to assume the drawing package is correct for pricing purpose any changes required after strip out will be thru PSPC 1379 action.
- C.1.9 All materials must be corrosion resistant and suitable for use in a marine environment. All materials normally subjected to sunlight must resist degradation caused by ultraviolet radiation.
- C.1.10 Where nuts can become inaccessible after assembly, nuts must be captured to allow reassembly and prevent backing off. Unless otherwise specified, self-locking nut must be installed to prevent loosening of fasteners due to shock and vibration.
- C.1.11 Instruments, equipment, fittings, paint, insulation, adhesives, or other items containing material or components that would produce or generate noxious fumes at

its operating temperature or at any temperature below 90 degrees C must not be installed or applied. For paint and adhesives, this requirement must apply after drying or curing is complete.

- C.1.12 Any dissimilar metals must be insulated from each other.
- C.1.13 Stainless steel type 316L or 316 must be used for all stainless-steel applications.
- C.1.14 Aluminum alloy types 5083, H116 must be used for plate; aluminum alloy 6061-T6 (anodized grade), suitable for type 5356 filler alloy, must be used for extruded shapes and welded tubing and pipe.
- C.1.15 Magnesium and its alloys must not be used.
- C.1.16 Lead must not be used without prior written approval.
- C.1.17 All copper pipe used in the hot and cold-water piping system must be of seamless copper and certified as lead free. Lead bearing solder is not acceptable for domestic water systems.
- C.1.18 The Contractor must maintain the existing fire rating and watertight integrity of all decks and bulkheads. Including the watertight bulkhead at frame 17/18 and the watertight integrity of the deck above.
- C.1.19 All dust from grinding and any material that becomes airborne during strip-out and cleaning must be kept contained.
- C.1.20 Removal and disposal of all hazardous wastes must be in accordance with local and provincial environmental regulations.
- C.1.21 The Contractor is responsible for all disposal arrangements and associated costs.

## **C.2 Cables**

- C.2.1 Cable sizes must be determined by the Contractor and be suitable for the intended service as per TP127e.
- C.2.2 All cables for existing equipment that is to be installed must re used if possible. Any new cabling found required due to size, length or condition is to be actioned thru PSPC 1379 action.
- C.2.3 Cables for all power and lighting must be complaint with TP127e.
- C.2.4 Cables must be grouped into wiring harnesses where possible.

- C.2.5 Cable runs must be run in a neat and orderly manner presenting a tight, straight run. The runs must be tightly fitted close to the overhead or bulkhead. Whenever cables are concealed behind panels, sheathing or other surface material, access panels to cable connections must be provided. Access panels must be labeled to identify the concealed cable connections. Accesses must be large enough to accommodate service to the cable's connections. Cables must not be installed behind nor embedded in insulation.
- C.2.6 Cabling/conductors passing through structures without watertight glands, must be protected against chafing using abrasive resistant grommets.
- C.2.7 Cables and conductors are to be installed in wire races of a sufficient size to pass 4 other 14/2 wires without obstruction. The wires that are to be run through a wireways if possible or with stainless steel clamps and straps spaced at least every 18 inches on horizontal runs and every 14 inches on vertical runs. Tie wraps are not acceptable.
- C.2.8 All terminations must be made using solderless crimped type lugs. Control conductors and communication conductors shall have crimp on ferrules. Twist on connections must not be used. Coast Guard does not the require the crimping tool.
- C.2.9 Identify every control conductor with shrink-on type cable markers with numbers corresponding to wire numbers on the equipment certified drawings. Provide clearly marked terminal strips inside panels and similar equipment.
- C.2.10 All cables must be marked at each termination and on either side of a transit as per general notes.
- C.2.11 Terminate conductors in terminals with no more than two conductors connected to the input or output of any terminal.

### **C.3 Locks, Keys, and Tags**

- C.3.1 The Contractor must provide two keys for every cylinder lockset and padlock installed on the vessel. All cylinder locksets must be keyed alike. Padlocks must be keyed to a master key system. Keys must be identified with the name of the space served or padlock number inscribed on a metal or plastic tag attached to the key. The master key system must be block type rather than individual.

### **C.4 Painting**

- C.4.1 All hardware, windows, light fixtures, placards and signs, and adjacent equipment and structure must be properly masked off when the surrounding areas are being painted. Items and surfaces to be protected may be removed, moved, or otherwise

protected, at the preference of the Contractor, but must be restored to their pre-removal form, appearance, and function at completion of the paintwork.

- C.4.2 All plates and shapes used in construction and all areas in way of new paint must have surface preparation performed according to the paint manufacturer's specifications to completely remove scale, rust, and other surface contaminants.
- C.4.3 All surfaces must be coated in accordance with Interspec paint specifications. The Contractor must not thin or alter coatings without approval by CCG and the manufacturer.
- C.4.4 The colour scheme for all painted components must be as per the finishing schedule.

## **C.5 Outfit and Furnishings**

- C.5.1 All new cabinets, consoles, and furniture that are shown in the drawing package must be fabricated or purchased and installed by the Contractor. All surfaces are to be finished as shown on the drawing package and according to the finishing schedule.
- C.5.2 The Contractor must use ProNautic of Victoria at (250) 655-6388 or equivalent for manufacture of all cabinets.
- C.5.3 The new furniture is designed to have square bases that must sit level on a base or plinth as shown in the design drawings. The plinths are to be supplied and adapted by the Contractor to follow the contour of the deck and must provide level surfaces at even keel contractor to allow 8 hours for this additional time required thru PSPC 1379 Action.
- C.5.4 Drawers must be full extension. Drawers must have slides or glides and stops to prevent drawers from tipping when pulled out and from sliding out all the way.
- C.5.5 Drawers and cupboard doors must be latched to prevent opening in rough weather.
- C.5.6 Items such as light switches must located between 46 and 50 inches of the deck in the locations noted on the drawings.
- C.5.7 All outfit and furnishings are to be as per the drawing package. No alternate equipment or materials are acceptable without consultation with the TI/TA.

## **C.6 Deck Covering**

- C.6.1 Decks must be prepped prior to coating as per manufacturer's recommendations. Deck coverings (carpet) must be installed in accordance with the manufacturer's recommendations. Colours and pattern of interior deck carpeting must be as shown on the drawing package and finishing schedule.
- C.6.2 Carpet underlay must be provided. The underlay shall be a class-approved product recognized by TC compatible with the rest of the flooring system.
- C.6.3 Deck covering must be laid under furniture except where the furniture is built-in to the vessel structure. Cove base must be installed around boundaries, including built-in furniture as shown on the drawing package.

## **C.7 Insulation**

- C.7.1 The Contractor must maintain all structural fire insulation in accordance with Transport Canada Marine Safety – Structural Fire Protection Regulations.

- C.7.2 Surfaces must be prepared per manufacturer's recommendations before the installation of thermal insulation.

## **C.8 Sheathing & Lining**

- C.8.1 The Contractor must lay out and install new linings in the bridge and lower accommodations as per the drawing package for all exposed interior bulkheads and shell plating on the main deck and the hull deck area. All ducts, pipes, etc. must be installed behind linings except as agreed to by the TA.
- C.8.2 Bulkhead linings must be as per the drawing package and finishing schedule. They must integrate mechanically and aesthetically with the joiner and partition system. The Contractor must fully compartmentalize and arrange the accommodation with a joiner and partition panel system.
- C.8.3 The Contractor must finish the interior of the vessel, with each compartment trimmed, finished and furnished to suit its function. Ceilings must have vibration dampers fitted.
- C.8.4 New deckhead and linings must be installed as per the Design Drawings and according to manufactures instructions.
- C.8.5 Linings in way of stiffeners and ceilings must be supported by a system of metal furring.
- C.8.6 Contractor must ensure openings are installed and labelled to access any controls such as valves or power supplies located behind the linings.

## **C.9 Crane and Tow Reel**

- C.9.1 Contractor must purchase for installation a CFM FASSI M4OA.1.14 or equivalent davit crane with local control station and handy remote control.
- C.9.2 The Contractor must supply hold down fasteners as specified by FASSI or equivalent.
- C.9.3 The Contractor must purchase for installation a new J.K Fabrication 18 -20 Series AL Anchor Winch (Ref. 11. JK FAB AL Anchor Winch Catalog) or equivalent aluminum tow reel with 200 meter of 30mm double Samson braided nylon rope.

## **1.1.D Statement of Work**

### **D.1 General**

- D.1.1 The Contractor must make a written record of all weights on and weights off.
- D.1.2 The Contractor must lock out electrical power, domestic water, and sewage during construction and then must re-establish operational power, water, and sewage upon completion of the work.
- D.1.3 The Contractor must remove up to 1000 litres of diesel fuel from the vessel. Canada does not wish this fuel back and it is up to the contractor to dispose of in accordance with local regulations.

### **D.2 The Contractor must strip-out the following -**

- D.2.1 The towline reel and associated wiring mounted in the aft cabin bulkhead.
- D.2.2 The lights on the aft cabin bulkhead, these are to be retained and relocated.
- D.2.3 The Heila HLM 2-2S marine crane and associated crane base seating, crane base is to be cropped at deck level, all associated hydraulic fittings are to be retained and relocated. Crane to be disposed off by contractor. Disposal certificate to be provided.
- D.2.4 The windlass located on the fore deck, this item is to be retained and relocated 800mm forward.
- D.2.5 The HVAC controller system, this item is to be retained and relocated.
- D.2.6 The fore deck hatch and rope locker, these items are to be retained and relocated.
- D.2.7 The existing cabin heaters.
- D.2.8 All machinery, equipment, and insulation IWO of the fuel tank extension, these items are to be removed for hot work purposes and reinstalled when hot work is complete.
- D.2.9 The aft cabin window, door, and all associated mounting hardware.
- D.2.10 All existing interior outfit in the main deck accommodation and hull deck accommodation spaces is to be stripped out. This includes joiner bulkheads, doors, linings, bunks, cabinetry, flooring, and insulation. While on site the Contractor will determine exactly what is required be stripped out to complete the work.
- D.2.11 The existing main deck accommodation and galley electrical circuits.
- D.2.12 Anchors supports on the fore deck.

- D.2.13 The existing deck screed IWO the fore deck hatch.
- D.2.14 Fuel cut-off switches, these switches are to be retained and relocated.
- D.2.15 The existing black water outlet valve, this item shall be retained and relocated.
- D.2.16 The DC panel board in the machinery space, this item is to be retained and relocated.
- D.2.17 The bilge pipe IWO the new fuel tank cross over valves, this item is to be retained and relocated.
- D.2.18 The hot water tank in the forward machinery space, this item is to be retained and relocated.
- D.2.19 Controllers and electrical components located in the forward machinery space, these items are to be retained and relocated.
- D.2.20 Structure IWO the bump out in the forward machinery space bulkhead (located on frame 12).
- D.2.21 Structure IWO the bump out in the collision bulkhead (located on frame 17).
- D.2.22 All plumbing in the head.
- D.2.23 Air conditioning compressors, these items are to be retained and relocated.

### **D.3 Hot Work**

- D.3.1 The Contractor is to fabricate a new seat and enclosure for the new towline reel. Exact size is to be determined on site by the Contractor. New tow reel to be installed as per manufactures recommendations. (see ref. drawing 1178-Structure Sheet #1)
- D.3.2 Contractor must fabricate a new crane foundation to suit the FASSI M40A.1.14 or equivalent marine crane. (see ref. drawing 1178-Structure Sheet #5)
- D.3.3 The Contractor must fabricate a new cabin extension with an integrated wet locker to the starboard side. (see ref. drawing 1178-Structure Sheet #1)
- D.3.4 Contractor must relocate the existing rope locker 800mm forward of its current position.
- D.3.5 The Contractor is to modify and extend the existing fuel tanks two frame spaces (~1.4m) on both the port and starboard sides of the vessel. (see ref. drawing 1178-Structure Sheet #3)
- D.3.6 The Contractor is to move the existing aft cabin door cut-out 188mm to starboard and plate over the old door cut-out (see ref. drawing 1178-Structure Sheet #1)



- D.3.7 The Contractor is to fabricate new anchor supports.
- D.3.8 The Contractor is to bump out the structure of the watertight bulkhead located on frame 12. The bump out will extend 286mm aft and 1138 mm in the transverse direction. (see ref. drawing 1178-Structure Sheets 1 & 2)
- D.3.9 Contractor is to cut a new hatch opening on the starboard side between frames 18 and 19, frame with new structure as needed. Install the existing hatch in location of new opening. (see ref. drawing 1178-Structure Sheet #2)
- D.3.10 The Contractor must plate over the old hatch opening between frames 17 and 18, replace stiffening as required.
- D.3.11 The Contractor is to bump out the structure of the collision bulkhead on frame 17. The bump out will move the existing structure 800mm forward and extend 2400 mm in the transverse direction. (see ref. drawing 1178-Structure Sheets 1 & 2)
- D.3.12 The Contractor must plate over the existing window and tow line reel opening in the aft bulkhead.

#### **D.4 Insulation**

- D.4.1 The Contractor must inspect existing insulation once the vessel has been striped out. Any areas found to be damaged or not properly insulated will be repaired by PSC 1379 action.

#### **D.5 Piping**

- D.5.1 Contractor is to install a new aft hatch gutter drain on the port side, the gutter drain must match the existing on the starboard side.
- D.5.2 The Contractor is to relocate the black water outlet valve aft of the wet locker. (see ref. drawing 11782- Grey / Black Water System and 1178- Refit Overview Sheet 3) and to be clarified at viewing.
- D.5.3 The Contractor is to tee a new fuel oil tank vent into the existing fuel oil tank vent line (both port and starboard tanks).
- D.5.4 Relocate the existing bilge water piping IWO of the new fuel tank cross over valve.
- D.5.5 The Contractor is to remove the hot water tank and reconnect all associated piping upon completion of hot work.

- D.5.6 The Contractor is to replace all plumbing in the head, all piping is to be replaced with the same material as exiting. (see ref. drawing 1178-2 Fresh Water System Sheet #1) and to be clarified at viewing.
- D.5.7 The Contractor is to install new cross over valves, these valves are to be located under the floor plates in the machinery space.
- D.5.8 The Contractor is to cap the old galley sink drain at the sump, install new piping and sewage tank fitting for the relocated galley sink. Pipe sizing to be the same as existing. (see ref. drawing 1178-2 Grey/Black Water) and to be clarified at viewing.

## **D.6 HVAC**

- D.6.1 The Contractor must fabricate a machinery room exhaust vent; exhaust fan-mounting box and install as per the design drawing. (see ref. drawing 1178-3 HVAC Systems Sheet #1)
- D.6.2 Contractor must install a minimum of two return air vents on the top and bottom of the outboard settee in the main deck accommodation space.
- D.6.3 Contractor must fabricate and install new return air grilles with manual dampers (minimum flow area of 0.15 meters squared). The air grilles shall be integrated into the steps as shown on the design drawings. (see ref. drawing 1178-3 HVAC Systems Sheet #1)
- D.6.4 Contractor must relocate AC duct #1, the grille shall be integrated into the starboard side cupboards. (see ref. drawing 1178-3 HVAC Systems Sheet #1) and clarified at viewing.
- D.6.5 The Contractor must install an extraction duct behind the microwave. It will consist of a 6" duct, EBM Papst 7114N or equal fan and variable speed control duct outlet fitted in the deckhouse side plate and fitted with a damper. (see ref. drawing 1178-3 HVAC Systems Sheet #2)
- D.6.6 The Contractor must relocate the existing air conditioning compressors within the existing space, add new ducting to connect to the existing distribution and extend cooling water pipes and associated piping the new location. (see ref. drawing 11778-HVAC Systems) and to be clarified at viewing.
- D.6.7 Contractor must install a new air plenum that will connect to the existing ductwork of both air-conditioning units (see ref. drawing 11778-HVAC Systems) and to be clarified at viewing .

D.6.8 Contractor must relocate the air conditioning thermostat in the hull deck accommodation area. (see ref. drawing 11778-HVAC Systems Sheet #2)

D.6.9 Line Deleted

D.6.10 The Contractor must construct a cage around the compressors of aluminum angle and expanded metal to protect personnel from contacting the compressors.

## D.7 Electrical

D.7.1 The Contractor is to install a new exhaust fan in the machinery space (EBM Papst 7114N or equal) to be controlled using a local thermostat (see ref. 1178-2 HVAC Systems and Electrical Layout).

D.7.2 Contractor is to remove the existing aft deck lights and reinstall into the aft face of the new structural addition (see ref. drawing 1178 – Structure Sheet #5) and to be clarified at viewing.

D.7.3 The Contractor must move the existing JB that feeds the windlass forward and to the port side to clear the bump out into the collision bulkhead. The existing positive to the windlass is to be relocated into the JB and new wires from the JB to the windlass are to be installed.

D.7.4 Contractor must relocate and rewire the existing thermostat for the air conditioning as per location shown on the design drawing. (see ref. drawing 1178-2 HVAC Systems) and clarified at viewing.

D.7.5 Contractor must integrate three (3) new cabin heaters into the kick of furniture. Two are to be in the hull deck accommodation and one in the galley. (see ref. 1178-2 Electrical Layout Sheet 2)

D.7.6 The Contractor must rewire the main deck accommodation and galley electrical circuits to accommodate the new layout. (see ref. 1178-2 Electrical Layout) to be clarified at viewing.

D.7.7 The Contractor is to retain the mechanical fuel shut off's in the galley. Electrical switches are to be placed above them.

D.7.8 Line deleted

D.7.9 The Contractor must move the DC-1 panel board (see ref. 1178-Refit Overview Sheet #4) , the Contractor must use existing wire. Any wires found too short will be rewired thru PSPC 1379 action. This will be clarified at the viewing.

- D.7.10 The Contractor must remove the Notifier panel in the auxillary machine space for reinstallation after the hot work has been completed. The Contractor must reinstall upon completion of work. If the Notifier panel requires to be move or new wires it will be actioned thru PSPC 1379 action.
- D.7.11 The Contractor must remove the 4 white boxes marked as ZF controls, the Mather control Junction Box and Bilge Void Pump Switch and Search Light Power Supply. After hot work is completed these boxes must be reinstalled into the new bulkhead bump out. Any wire that is found to short is to be actioned thru PSPC 1379 action". The Contractor is cautioned to ensure all wires are labeled and carefully removed as the ZF boxes control the vessels propulsion.

## **D.8 Arrangement and Outfit**

- D.8.1 Contractor must relocate the existing windlass 800mm forward of its current location (ref. drawing 1178-Refit Overview sheet3 and 1178-Structure sheet 2) as necessary, it can be clarified at viewing.
- D.8.2 The Contractor shall construct and install new bunks, cabinetry, linings, joinery panels, deck heads, flooring, bathroom fittings, and other furnishings on the main deck, galley, and in the hull deck accommodation as per the design drawings.
- D.8.3 The Contractor is to finish the passageway and all cabins on the main deck and in the hull deck accommodation space in accordance with the design drawings.
- D.8.4 The Contractor must install a tempered glass divider for the shower.
- D.8.5 The Contractor must install a new CFM Wallas 87 D stove/oven associated wiring, fuel line from main fuel tank, and 28mm exhaust hose per manufacturers recommendations found in attached technical documents

## **D.9 Crane and Tow Reel**

- D.9.1 Contractor must install new CFM FASSI M4OA.1.14 or equivalent davit crane with local control station and handy remote control.
- D.9.2 The Contractor must torqued down the foundation bolts in the presence of the TA.
- D.9.3 The Contractor must hook up existing to the existing hydraulic deck fittings. Any modifications required are to be PSPC 1379 action.
- D.9.4 The Contractor must install the new CFM tow reel on top of extension of deckhouse top (see ref. drawing 1178-Structure) and to be clarified at viewing.

### **1.1.E Proof of Performance**

#### **E.1 Inspection Points**

- E.1.1 Hold before any installation for inspection of structure, bulkheads and decks for corrosion and damage.
- E.1.2 Hold before obstructing vertical wire and pipe transits of all decks.
- E.1.3 Hold before unsealing the accommodations duct work. If the seal is broken before installation is started the Contractor must vacuum out the accommodations duct work.

#### **E.2 Testing/Trials**

- E.2.1 The Contractor must test water supplies, water drains and sewage lines and demonstrate that the piping is functional and there are no signs of leakage. The fresh water lines must be pressurized to 80 psi and pressure held for 1 hour. Drains and sewage lines to be tested by pouring 10 litres of water in each line. Tests to be in the presence of the TA.
- E.2.2 The Contractor must function test the main deck and hull deck public address system for the TA.
- E.2.3 The Contractor must function test the main deck and hull deck fire detection system for the TA.
- E.2.4 Canada will hire a 3rd party contractor and pay them directly. The Contractor must inform the TA upon completion of the tanks, collision and aux machine room completion and Canada will direct the 3rd part inspection. Canada removes line E.2.4
- E.2.5 The Contractor must hydrostatically test the two fuel tanks post modification. The Contractor must extend the sounding pipes by 4 feet and have the water sit in the tanks for a period of 6 hours. 5 days prior to performing this test, the Contractor must ask the TA if the RO is required to be present.
- E.2.6 The Contractor must hydrostatically test the forepeak. The Contractor must put additional keel blocks at frame 17 and 19 prior to the test. The Contractor must remove the vent and fill the forepeak full of fresh water and have the water sit in the forepeak for a period of 6 hours. 5 days prior to performing this test, the Contractor must ask the TA if the RO is required to be present.

**E.3 Documentation**

E.3.1 Upon completion of constructor the Contractor shall produce the following as-built drawings in AutoCad –

- a) General Arrangement
- b) Domestic Fresh Water
- c) Fuel System
- d) Electrical One Line AC
- e) Electrical One Line DC
- f) Safety Pan
- g) Fire Plan

**E.4 Training – Not Used**