

**APPENDIX A – TECHNICAL SPECIFICATIONS**  
**CCGS CAP AUPALUK (C176)**  
**47MLB Search and Rescue Vessel**

**Dry Dock – Hull Painting  
and Fender Replacement**

**Specification no.: F3772-18G012**

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## 1. SUMMARY

The purpose of this specification is to obtain labour, equipment and parts for blocking, painting of the underside of the hull, the hull from the water line up to the bridge, the survivors' compartment wells, completely replacing the fenders, and refloating the CCGS CAP AUPALUK, as described in section 2 and in accordance with CCG Specification called "CCGS CAP AUPALUK (C176). "

The fenders and coating system will be provided by the Canadian Coast Guard.

For more information about the coating system manufacturer's recommendations (paint), please contact their authorized representative.

## 2. TOWAGE, BLOCKING AND REFLOATING

### 2.1. REFERENCE: PLANS

**List of plans included in these specifications:**

Federal markings, port and starboard	09023-SF
Draft Marks	611-030
General arrangement	801-010
Fender system plans	611-020
Cradle drawing and lifting position	691-010
General vessel specifications	47 ft. const. spec.

Note that the cradle shown on drawing 691-010 is not supplied by the Canadian Coast Guard (CCG).

### 2.2. VESSEL DIMENSIONS

Overall length:	48.27'
Length between perpendiculars	47'-11 7/8"
Width:	14'-0"

Full load displacement	38,398 LBS
Air draft with mast lowered	20'-7.9"
Total air draft	31'-0.25 "

- 2.2.1. The shipyard is responsible for mooring the vessel at the dock adjacent to the carenage facilities that will serve for dry-docking, including installation and removal of a gangway provided by the shipyard. The shipyard is also responsible for moving the vessel from the dock adjacent to the carenage facilities and returning the vessel to the same dock following completion of the work in dry dock.
- 2.2.2. The shipyard shall provide the labour, materials and equipment needed for blocking, towage, moving and undocking, and throughout the dry dock period, in order to accomplish the work described below.
- 2.2.3. Avoid placing acoustic sensor transducer plates on the keel blocks between frames 7 and 8 and frames 9 and 10. Also, avoid placing them on seawater inlets between frames 4 and 5 and frames 9 and 10.
- 2.2.4. As the shipyard will have the docking plan upon contract award, the shipyard shall move any misplaced keel blocks at its own expense.

### 2.3. SERVICES

- 2.3.1. The following services shall be provided to the ship throughout the entire dry docking period, for which a overall price shall be submitted.
- 2.3.2. During the vessel's stay in the shipyard, supply material and labour to connect and disconnect one (1) electrical cable running from the vessel to a 110-volt AC power supply with a 100-amp capacity.
- 2.3.3. The selected shipyard shall make the necessary provisions to ensure that the work described in these specifications is completed according to the contract schedule.
- 2.3.4. Upon completion of the work, the Contractor shall ensure that the vessel is delivered to the DFO/CCG representative in a clean and dust-free condition, both inside and outside.
- 2.3.5. The Contractor shall provide a parking space to the CCG Representative during the work inspection visits.

### 3. SCOPE OF WORK, INSPECTION AND ADDITIONAL WORK

- 3.1. The scope of the work includes stripping the hull's underside, including the rudders and propeller shaft supports. Preparation of hull surface, survivors' compartment wells and under the fenders. In addition,

the Contractor shall completely replace the fenders (supplied by the CCG) following the specifications specific to each area described below.

- 3.2. Preparatory work shall be performed and inspected to the complete satisfaction of the Canadian Coast Guard Technical Services representative and shall be done in accordance with the coating manufacturer's specifications.
- 3.3. Painting work shall be performed and inspected to the complete satisfaction of the Canadian Coast Guard Technical Services representative and shall be done in accordance with the coating manufacturer's specifications. See Appendix 3.7
- 3.4. Failure to notify the CCG representative does not relieve the shipyard of its responsibility to provide the representative with the opportunity to inspect any completed item.
- 3.5. The inspection of any item by the DFO/CCG representative is not a substitute for any inspection required by the Marine Safety Board (MSB) or by Public Works and Government Services Canada (PWGSC).
- 3.6. All additional work not described in these specifications shall be negotiated on form PSPC 1379. The description of the work to be done will be prepared by the Coast Guard representative and negotiations will then be undertaken by the contracting authority from Public Works and Government Services Canada in order to obtain a reasonably firm price, prior to the work starting.
- 3.7. The shipyard shall apply the coating system provided by the CCG, using the appropriate equipment and in accordance with the chosen coating manufacturer's recommendations.
  - a) **International Intershield 300** – Part A / part B: PRIMER (1st coat)
    - Bronze
  - b) **International Intergard 263** – Part A / part B FPA 327: PRIMER (2nd coat)
    - Light Grey (FAJ034-Light grey)
  - c) **International Interthane 990** – Part A / part B: FINISHING
    - White (RAL 9003)
    - Red (RAL3000)
    - Black (RAL9004)
  - d) **Interlux Trilux II: ANTIFOULING PAINT.**
    - Black (Q493-Black) (3rd and 5th coats)
    - Red (Q491-Red) (4th coat)

- 3.8. The selected shipyard shall comply with the Canada Labour Code and the ISM Code (International Safety Management Code) applicable to vessels.
- 3.9. The work shall be to the satisfaction of Canadian Coast Guard and PWGSC representatives. The Contractor shall plan an inspection at each step of the process and provide the Coast Guard and PWGSC representatives with sufficient notice to allow them to arrive at the site on time.

#### 4.1 HULL UNDERSIDE PAINTING – PREPARATION

- 4.1.1 The Contractor shall apply stripe coat retouching using a brush to ledges, welds, crevices, boltheads, transitions, backs of stiffeners, holes, ladders, ramps and other irregular surfaces during the application of the primer and of the intermediate coat when the surface is cleaned to bare metal. The brush coat can be applied to surfaces with a spray gun, if the coating is immediately and completely worked into those areas with a brush.
- 4.1.2 Remove the port and starboard sea water intake grates. (Frames 4 and 5) and port (Frames 9 and 10).
- 4.1.3 Clean the boxes and apply the hull underside painting system.
- 4.1.4 Reinstall everything with new 316 stainless steel bolts.
- 4.1.5 The shipyard shall supply and install a temporary shelter covering all parts of the vessel that require painting. It must be heated during painting to fall within the temperature and humidity levels recommended by the paint manufacturer.

#### 4.2 HULL UNDERSIDE

- 4.2.1 The hull from the keel to the waterline, including the port and starboard rudders and propeller shaft supports, are included in the work.
- 4.2.2 Install protective coverings to protect the hull valves, propellers, shafts, acoustic sensor transducer plates, rudder and propeller shaft bearings, and any spot deemed necessary by the Coast Guard representative to prevent any seepage during sanding and painting operations. Take the necessary measures to prevent hull underside painting operations from damaging surfaces that are not to be worked on.
- 4.2.3 Check the smoothing coat of the shaft bracket mounting base to the hull underside. If there are cracks, remove the coating and redo the smoothing with a suitable product approved by the technical authority. This coating will provide hull flow to avoid cavitation and protect against water infiltration at the contour and at support bolts.
- 4.2.4 With fresh water, rinse all areas to be worked on to remove all traces of salt. Dry the surfaces.

- 4.2.5 Every precaution must be taken to minimize aluminum oxidation after cleaning by applying the paint in accordance with application standards. The area that can be prepared within the time period shall therefore be defined so that personnel can work without interruption.
- 4.2.6 Special attention shall be paid during paint application so that the minimum dry thicknesses are obtained over all surfaces. Prevent runs and sags when applying the paint.
- 4.2.7 Allow for manufacturer's recommended drying time before refloating the vessel.
- 4.2.8 100% of the surfaces affected by the work shall be treated by dry sandblasting, aluminum oxide blast (e.g. sponge jet or other). Non-aggressive hull sanding: ideally, one goes down to the metal without damaging the aluminum, in accordance with standard SSPC-SP 7 / NACE no. 4 / ISO SA1 / light sandblasting, to completely remove any existing coatings and to create an adhesion profile of 2 to 3 mils.

**The Contractor shall apply the first coat of primer no later than four to six hours after stripping.**

- 4.2.9 Apply a 1st coat of bronze colour primer (see point 3.7 a), at 4 mils dry sheet thickness, on all surfaces, to seal the aluminum sheet.
- 4.2.10 Apply a 2nd coat of primer (light grey) (see point 3.7 b), at 4 mils dry sheet thickness, on all surfaces.
- 4.2.11 For the application of the antifouling paint, make sure to follow the "international" manufacturer's recommendations. (See contact in summary, if necessary)
- 4.2.12 Apply a 3rd, 4th and 5th coat of antifouling paint (see point 3.7 d) at 3 mils dry sheet thickness per coat, black, red and to finish, black, on all surfaces.
- 4.2.13 NOTE 1 – The application and drying time of the selected paints must be according to the manufacturer's specifications.
- 4.2.14 NOTE 2 – Before painting and sandblasting, cover all fairleads, deck gear, accommodation openings and windows with polyethylene.
- 4.2.15 NOTE 3 – The vessel shall be moved onto keel blocks so that the entire hull can be painted.

### 4.3 HULL ABOVE WATERLINE

- 4.3.1 The hull from the waterline to the main deck, as well as the back and sides of the aft storage compartment and the survivor compartment wells, are included in the work.
- 4.3.2 Fully remove the fender and retrieve the aluminium fastening straps from all sections of the fender. Inspect the fender's fastening studs and replace any damaged studs with new ones.
- 4.3.3 Install protective coverings to protect the lifelines and surfaces not requiring painting. Remove the protective coverings upon completion of the work. Take the necessary measures to prevent hull underside painting operations from damaging surfaces that are not to be worked on.

- 4.3.4 Before painting and sandblasting, cover fairleads, deck gear, accommodation openings and windows with polyethylene.
- 4.3.5 With fresh water, rinse all areas to be worked on to remove all traces of salt. Dry the surfaces.
- 4.3.6 On both sides of the vessel, remove decals and lightly sand the surfaces of the following markings:
- Midship: Coast Guard / Garde côtière
- Fore: Vessel name
- Aft: Canadian flags, Fisheries and Oceans Canada / Pêches et Océans Canada
- On transom: Vessel name and home port
- 4.3.7 Supply and apply new white decals after painting is completed.
- 4.3.8 Every precaution must be taken to minimize aluminum oxidation after cleaning by applying the international paint in accordance with application standards. The area that can be prepared within the time period shall therefore be defined so that personnel can work without interruption.
- 4.3.9 100% of the surfaces affected by the work shall be treated by dry sandblasting, aluminum oxide blast (e.g. sponge jet or other). Non-aggressive hull sanding to remove the finishing coat. For the stripped parts, do not damage the aluminum. All in accordance with the standard SSPC-SP 7 / NACE no. 4 / ISO SA1 / light sandblasting to produce an adhesion profile of 2 to 3 mils.
- The Contractor shall apply the first coat of primer no more than four to six hours after stripping.**
- 4.3.10 To make a clear demarcation between the fender system and the hull. The material that attaches the fender system to the hull shall be removed. Surfaces left bare shall be sanded. Once the painting is redone, the Contractor shall reinstall a new joint and seal it with marine grade sealant-adhesive provided by the CCG.
- 4.3.11 Apply a 1st coat of bronze colour Intershield 300 primer (see point 3.7 a), at 4 mils dry sheet thickness, on all unpainted (stripped) surfaces.
- 4.3.12 Apply a 2nd coat of bronze colour Intershield 300 primer (see point 3.7 a), at 4 mils dry sheet thickness, on 100% of the surfaces.
- 4.3.13 Apply two coats of Interthane 990 Coast Guard red RAL 3000 finishing paint, at 2 mils dry. Care must be taken to obtain a clear and distinct separation at the waterline. Paint to be demarcated in a straight line at the waterline.
- 4.3.14 Apply two (2) coats of Interthane 990 (see point 3.7 c) white RAL 9003 and black RAL 9004 finishing paint on the diagonal white stripes and the bordering black stripes on each side of the vessel.

- 4.3.15 Apply two (2) coats of Interthane 990 (see point 3.7 c) white RAL 9003 finishing paint on all draught marks, two sets at the fore and two sets at the aft.
- 4.3.16 The application and drying time of the selected paints must be according to the manufacturer's specifications.

## **5. FENDER INSTALLATION**

- 5.1 According to the manufacturer's instructions included in the documentation, install the new fender system provided by the CCG.
- 5.2 If any studs are damaged or missing, replace them with new ones (provided by the CCG) by grinding the weld, thus removing the stud from its base. Insert the new stud and weld it according to marine welding standards and the fender system manufacturer's instructions. Once the fenders are installed, the Contractor shall install a new joint and seal it with CCG-provided marine grade black sealant-adhesive all around the fender (top and bottom).