

CANADIAN COAST GUARD ATLANTIC REGION

CCGS CORPORAL MCLAREN MMV



DRY DOCKING AND REFIT SPECIFICATION

**SPECIFICATION NO.: 16-C184-006-1
REVISION 0**

REQUISITION NUMBER: F5561-160914

November 14 – December 12, 2016

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GENERAL NOTES

1. **ON-SITE PROJECT OFFICER:** All the specified work, as well as all work arisings, shall be completed to the satisfaction of the **Coast Guard Technical Authority (CGTA)** who, unless otherwise advised, shall be the **Chief Engineer** of the ship, or their designated representative. Upon completion of each item of the specification, the CGTA shall be notified so that he/she may inspect the work prior to the complete closing up of any work. Failure to give notification does not absolve Contractor of the responsibility of providing CGTA the opportunity to inspect any item. Inspection of any item by the CGTA does not substitute for any required inspection by Transport Canada Marine Safety and Security (TCMSS), Public Works and Government Services Canada (PWGSC) or Health Canada (HC).
2. **SAFETY:** Vessel shall be under Contractor's Safety Management program while under their Care & Custody. Potential Contractor's shall include with their bids the name of their Safety Manager or Supervisor who will ensure that these requirements for workplace safety are met. When under Canadian Coast Guard (CCG) Care & Custody the ISM Safety annex shall apply.
3. **SUB-CONTRACTORS:** All conditions, stipulations etc. listed in the General Notes apply to any Sub-Contractors employed by the Main Contractor to carry out work on any Specification item.
4. **SCHEDULE:** At the Pre-Refit Meeting, the successful Contractor shall provide a Production Bar Chart or Schedule showing commencement and completion dates for each item in this specification. This document shall highlight any critical dates and be capable of showing the effects of late completion date of the work package. Contractor shall provide updated Production Schedules to the CGTA, Senior Vessel Maintenance Manager and PWGSC whenever the schedule is revised.
5. **SAFE WORK CERTIFICATES:**
Before any cleaning, painting or hot work is commenced in confined spaces or machinery compartments, Contractor and subcontractor personnel issuing these certificates shall be fully trained, qualified and certified in accordance with Canada Labour Code (CLC) requirements and all relevant provincial legislation. Certificates shall clearly state the type of work permitted and shall be renewed as required by the regulations. Contractor and his sub-Contractors are advised that any work carried out in confined spaces as defined by the CLC and relevant provincial legislation shall fully comply with all provisions therein.

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6. **CONFINED SPACE:**

For all work requiring entering or working in confined spaces; Contractor shall note that Canadian Coast Guard ships are presently working under the ISM CODE and that each ship has a FLEET SAFETY MANUAL onboard. This manual is also available in soft copy and can be distributed upon request. As a minimum, Contractor shall comply with the WORK REQUIREMENTS as outlined in the FLEET SAFETY MANUAL during the contracted work period. In accordance with the CCG Fleet Safety and Security manual, all work involving the entering of confined spaces shall make use of a qualified rescue team. This team shall be used at all times when tanks or confined spaces are to be entered. The costs associated with all known work requiring the services of a confined space rescue team shall be the responsibility of Contractor.

7. **WELDING:** All welding work shall be performed in accordance with all of the requirements of the Canadian Coast Guard Welding Specification CT-043-EQ-EG-001, March 2014, EKME#3049715v3A.

7.1 **CONTRACTOR REQUIREMENTS**

7.1.1. **Steel Structures**

All welding contractors shall be certified by the CWB to CSA Standard W47.1 Division 1 or 2 for new construction and work packages other than new construction.

7.1.2. **Aluminum Structures**

All welding contractors shall be certified by the CWB to CSA Standard W47.2 Division 1 or 2 for new construction and work packages other than new construction.

7.1.3. **Stainless Steel**

All welding contractors shall be certified by the CWB to the requirements of CSA Standard W47.1 Division 1 or 2. Welders, welding operators and welding procedures shall meet the requirements of CSA Standard W47.1, and of AWS D1.6 as permitted by CSA Standard W47.1.

7.1.4. **Welding Procedures**

All welding procedure specifications and/or welding procedure data sheets shall be reviewed and approved by the CWB prior to use.

7.1.5. **Welding Personnel**

All welding personnel shall be approved by the CWB prior to their commencing any welding work.

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7.1.6. Performance and Qualification Testing

All performance and procedure qualification testing shall be fully witnessed and documented by the CWB

7.1.7. Limitations Prior to Commencing Welding Work

All Contractors shall submit their welding personnel qualification records and approved welding procedures to the Delegated Representative prior to commencing any welding work.

All welding procedures, including welding procedure specifications and welding procedure data sheets, shall include an indication of acceptance by Contractor (by signature, seal or other appropriate means) and a stamp of acceptance by the CWB.

7.1.8. Governing Standards for Welding

For structural steels > 3 mm in thickness, welding shall meet the requirements of CSA Standards W47.1 and W59, except as modified by the Canadian Coast Guard Welding Specification CT-043-EQ-EG-001, March 2014, EKME#3049715v3A.

For structural aluminum > 3 mm in thickness, welding shall meet the requirements of CSA Standards W47.2 and W59.2, except as modified by the Canadian Coast Guard Welding Specification CT-043-EQ-EG-001, March 2014, EKME#3049715v3A.

For structural stainless steels and stainless steel pipes > 3 mm in thickness, welding shall meet the requirements of CSA Standards W47.1 and AWS D1.6, except as modified by the Canadian Coast Guard Welding Specification CT-043-EQ-EG-001, March 2014, EKME#3049715v3A.

7.2 INSPECTION OF WELDS

The methods of inspection, extent, acceptance criterion and inspection personnel qualifications shall be in accordance with all of the requirements of the Canadian Coast Guard Welding Specification CT-043-EQ-EG-001, March 2014, EKME#3049715v3A and this specification.

8. **HOTWORK VENTILATION AND CONTAINMENT:** During all known work and work arisings, that involve hotwork, Contractor shall ensure that all dust, debris, gas and smoke generated by the work is evacuated from the vessel by the most direct method.

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Each item that involves hotwork shall have a defined zone which shall be kept sealed off from the rest of the vessel during the complete work period that involves the generation of welding gases, smoke, and grinding dust etc. These zones shall be indicated in the items contained within the known work package. All extra work arisings that involve hotwork shall have a zone determined using the same logic. The zone shall be limited to the space(s) where the hotwork is being done, 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.

In areas where accommodations and or workplaces cannot be completely isolated from personal access a double sealed door (air lock) arrangement shall be erected to minimize ingress of the contaminants into occupied areas. A ventilation extraction point shall 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.

All doorways within the affected area that are not being worked or require access for fire watch activities shall be sealed off to prevent all containments from getting in. Passageway branches that connect to the zone shall be sealed off. Contractor shall completely clean all surfaces and fabrics within a compartment that are not suitably protected.

9. **ENCLOSURES AND HEATING:** Contractor shall provide all enclosures and heating required to carry out all the scheduled work, taking into account the nature of the work, the time of year the refit is, and the weather conditions for that time of year in Contractor's geographic area. Examples of where heating and enclosures could be required include but are not limited to painting, Potable Water coating, and tank cleaning.

10. **SERVICE CONDITIONS:** Unless specified otherwise, all components, materials and installations supplied by or carried out by Contractor shall be adequate to meet the following service conditions:

In areas that are exposed to the elements:

- outside air temperature of minus (-) 40⁰ C to plus (+) 35⁰ C;
- wind velocity of 50 knots;
- water temperature of minus (-) 2⁰ C to plus (+) 30⁰ C;
- shock loading of 2.5g horizontal, 1.5g vertical.

All new components, materials and installations within the ship shall be adequate to withstand the specified shock loading accelerations.

11. **HOTWORK & FIRE WATCHES:** Contractor shall abide by their Safety Management Program when performing Hot-work. Contractor shall provide sufficient suitable fire extinguishers and a fire watch during any such heating and until the work has cooled. Ship's extinguishers are **not** shall be used except in an emergency. Should Contractor

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have to use ship's extinguishers in an emergency they shall be recharged and re-certified by a local facility, of CCG's choice, at Contractor's cost.

12. **RELOCATIONS:** Any piping, manholes, parts and/or equipment requiring temporary relocation to carry out specified work, or to gain access, shall be refitted upon completion with new jointing, anti-seize compound, clamps and brackets as applicable (Contractor supply). All equipment and systems, so disturbed, shall be tested to prove correct function and fluid integrity upon completion. Defects shall be corrected at Contractor's cost. **NOTE:** It is Contractor's responsibility to identify equipment and systems that shall be tested to verify correct function, prior shall being disturbed for required work.

13. **LIGHTING:** Temporary lighting and/or temporary ventilation required by Contractor to carry out any item of this specification shall be supplied, installed and maintained in safe working condition by Contractor and removed on completion of the related work. Naked light bulbs or tubes shall not be used as temporary lighting inside the vessel. All lights used in the vessel shall be supplied with approved guards.

14. **CLEANUP:** Contractor to ensure that all spaces, compartments, and areas where work has been carried out, or Shipyard staff has used for transit routes, are left in "**as clean a condition as found**" when the vessel commenced refit. All rags, debris, and associated garbage generated by the shipyard staff while on board shall be removed to the garbage container(s) each day. The costs associated with the removal of dirt, debris, and garbage shall be included in the quote.

15. **INSPECTION:** Contractor shall be responsible for calling in the services of TCMSS, Lloyds and HC Inspectors when and as required for survey and inspection items. All TCMSS surveyors called in by Contractor shall sign-off the CGTA's Inspection Log Book for all items surveyed. These inspection services will be billed directly to CCG.

16. **CORRESPONDANCE & REPORTS:** Unless otherwise agreed upon, all type written correspondence, reports, certificates and drawings presented to the CGTA shall be in English. All reports shall be computer generated and provided in **English**. Additional copies may be submitted in French.

All reports shall be completed in a timely manner and provided to the CGTA immediately following their completion, and shall continue as required throughout each specification item.

Upon delivery of the vessel, a compilation of all reports, drawings and correspondence shall be provided on a CD or DVD to CGTA

GENERAL NOTES

17. **PAINTING**: Unless specified otherwise, replacement and/or disturbed steelwork shall be given a minimum of two (2) coats of Intershield 300 bronze Epoxy; each coat shall be of contrasting colour. **Lead-based paints shall not be used.** Prior to painting, all new and disturbed steelwork shall be power tool cleaned as a minimum standard of surface preparation. Contractor shall notify the CGTA after the first coat of paint is fully cured so that it may be inspected prior to the application of the second coat. Failure to do so shall result in another coat being applied at Contractor's expense.
18. **MATERIALS & TOOLS**: All materials, unless otherwise specified, shall be supplied by Contractor. Contractor to supply all necessary tools and equipment to perform the specified work. Also referred to as Contractor Furnished Material (CFM). Special, ship-specific tools, as required, will be issued by and returned to CGTA. Contractor shall be responsible for removing the tools from their stored location aboard the vessel, and returning them and securing them in place when finished. Otherwise, ship's tools and equipment will not be available for Contractor's use.
19. **MEASUREMENTS**: All dimensional measurements shall be taken and recorded in inches. Unless otherwise specified, the dimensions shall be taken and reported in thousandths of an inch (0.000 inch). All measuring devices shall be described on the submitted reporting sheets. All reported dimensions shall be either typed or printed in a neat legible manner, and shall include the name of the person who took the readings.
20. **CO-OPERATION**: During the period that the ship is in refit, members of the ship's complement, Coast Guard technical staff, and service specialists may be carrying out repairs to, maintenance of, or modifications of various ships' equipment not covered in this specification. Contractor shall not deny access to the vessel to these persons. Every effort will be taken to ensure that this Coast Guard controlled work will not interfere or conflict with that being carried out by Contractor.
21. **SMOKING**: The Public Service Smoking Policy forbids smoking in Government ships in all areas inside the ship where shipyard personnel will be working. Contractor shall inform workers of this policy and ensure that it is complied with in all cases.
22. **ACCESS**: The following areas are out of bounds to Contractor's personnel except to perform work as required by the specifications: all cabins, offices, workshops, Wheelhouse, Control Room, public washrooms, Officers' and Crew's Messes and Lounges. Contractor shall ensure that no workers bring meals onboard the ship.
23. **INSPECTION & GUIDANCE**: During this contract, Ship's Crew and Regional Staff will be onboard conducting inspections and providing guidance to Contractor personnel.
24. **ASBESTOS**: There are no locations having asbestos containing materials (ACM).

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25. **LOCKING OUT/TAGGING**: Contractor is responsible, with the assistance of the ship's crew, for mechanically/electrically locking out and tagging any equipment directly or indirectly involved in each specification item. After the work is complete to the satisfaction of the CGTA, Contractor will remove all lock outs and associated tags.

1 - SERVICES

GENERAL: The following services shall be supplied, fitted and/or connected upon arrival at Contractor's facility, maintained throughout the docking / contract period, and removed from the vessel on completion of the work. Contractor shall be responsible for any additional connections required when ship is moved between dock/slipway and alongside berth at Contractor's premises.

MANNED REFIT: During the contract period, the CCGS Corporal McLaren MMV shall be manned. As a result, the ship shall remain in the care and custody of the Canadian Coast Guard. Every effort shall be taken to ensure that the vessel's crew shall not interfere or conflict with Contractor's work.

GENERAL (MANNED): The services as described in 1 - Services shall be supplied, fitted and/or connected whenever ship's crew are living aboard the ship. The services shall also be provided until signing of the acceptance document and departure of the ship from Contractor's facilities. Contractor shall be responsible for any additional disconnections and re-connections required when the ship is moved between dock / slipway and any berth at Contractor's premises.

DOCKING: Contractor shall be responsible to coordinate a safe transfer of the ship between its pre/post-docking berth and its docking blocks. During docking and undocking of the ship, radio contact shall be maintained between the vessel's Commanding Officer and Contractor's Docking Officer.

PRICES: Contractor shall quote a global price and daily or unit cost rates for all services supplied to the vessel during the refit period.

GANGWAYS: Contractor shall supply and install two (2) gangways complete with safety net, while the ship is on the dock or slipway or at berth. Gangways, complete with safety nets, one of the two gangways shall be installed in such a manner that they provide separate routes for escape in the event of fire. CGTA shall advise of specific locations.

Safety nets shall be in compliance with the Canada Labour Code. Gangways shall be safe, well-lit and structurally suitable for the passage of shipyard personnel and the ship's crew. Contractor shall maintain gangways in a safe condition throughout the duration of the refit while the ship is out of the water.

Initial installation and later removal of gangways shall be included in quote, as well as maintenance and upkeep while vessel is in Contractor's yard. Any movement of gangway(s) required by Contractor shall be at his cost.

1 - SERVICES

ELECTRIC POWER: Contractor shall connect and quote on supplying electrical power at 600 Volt Alternating Current, 3 Phase, 4 wire with floating neutral, 60 Hz at 200 Ampere rating upon ship's arrival at Contractor's facilities.

Contractor shall bid on the supply of 3000 kWh per day for refit period. The actual consumption shall be pro-rated up or down as per power used as indicated by vessel's kWh meter. The power meter shall be read and recorded by CGTA and Contractor's Representative together at the start and end of contracted period. The kWh unit price shall be quoted for PWGSC 1379 adjustment purposes. Cost of connection and disconnection shall be included in the quote.

If no kW consumption meter is available, a daily consumption (amps) shall be negotiated and power requirement determined by the following formula:

$$\mathbf{KWH = I \times E \times P.F. \times 1.73 \times 24/1000.}$$

A ground cable shall be attached to the ship's hull. Contractor shall ensure compliance as per the Transport Canada Marine Safety Bulletin – “Grounding Safety in Dry dock”.

Note: Problems have been experienced in the past with the loss of one phase with Contractor supplied shore power, due to a fuse blowing. Contractor shall ensure the electrical service provided has protection system fitted such that loss of a single phase at Contractor's end of the cable results in immediate opening of the remaining phases.

FIRE MAIN: Contractor shall connect a one and a half (1 ½) inch diameter fresh water line to the ship's fire main, with an isolation valve placed onboard. **Fire main shall be charged and maintained at 50 psig.**

POTABLE & SANITARY WATER: Potable fresh and sanitary water at 415 kPa (60 PSI) constant pressure shall be connected to ship's systems, complete with pressure regulator and shut-off valves. Approximately 20 cubic meters shall be supplied for duration of the contract. Contractor shall supply and connected a water meter to the ship's inlet line. Contractor shall quote a unit rate for PWGSC 1379 adjustments, and include all connection / disconnection costs in bid price. Contractor shall make arrangements to prevent the potable water supply piping/hoses are protected against freezing. Contractor shall provide to CGTA at the Pre-Refit Meeting a certificate of potable water quality before water service is connected to the vessel.

This potable water supply shall be connected to a one and a half (1 ½) inch camlock on the Foredeck.

1 - SERVICES

HULL DISCHARGE CONNECTIONS:

Connections shall be made to the following and directed to suitable drains:

- Sewage Treatment Tank Overboard: Contractor shall include a cost in their overall bid for the connection (including hardware and hoses required), storage tank if required and disposal of 20 cubic meters of sewage during the refit period. Contractor shall include a cost for all disconnections upon completion of work and provide a unit cost per cubic meter of disposal for adjustment purposes.
- Drain connection to the Port main engine exhaust for refrigeration drain.

These connections shall be maintained for the duration of the vessel's docking period. Arrangements shall be made to prevent the freeze up of these drains. Contractor shall include the cost of all connections and disconnections in their quotations, and quote a daily rate for PWGSC 1379 adjustment purposes.

GARBAGE: A garbage container, 6 m³ (215 Ft.³) minimum capacity, strictly for ship's use shall be placed in a convenient location as close as possible to the ship's gangway. Contractor shall provide this service for the duration of the refit. The bin shall be empty on a regular base to negate the problems of odors.

CRANAGE: Contractor shall bid on supplying general services of a dockside crane, driver and rigger for twenty (15) hours during the dry-docking period as and when required by the CGTA, plus an hourly rate for PWGSC 1379 adjustment purposes.

WASTE OIL: Contractor shall bid on removal and disposal of 5,000 liters of waste oil / water mixture from the vessel during the refit period, and quote a unit rate for PWGSC 1379 adjustment purposes. Removal and disposal shall be performed by an identified licensed waste oil disposal company in full compliance with regulatory requirements.

Copies of all dirty water and oily water removal invoices with quantities shall be given to the CGTA. Copies of invoices detailing disposal of the liquids shall be given to the CGTA.

CLEANING: Contractor shall ensure that all spaces, compartments and areas of the ship where work has been carried out, or Shipyard staff has used for transit routes, are "as clean as found" when work is completed. Video of interior of vessel will be taken upon arrival at Contractors facility as record of cleanliness standard required. The cost of clean-up work shall be included in the quote for each specification item.

PARKING: Sufficient parking for DFO/CCG and PWGSC representatives shall be provided conveniently close to the berthed or docked vessel. Contractor shall provide five (5) clearly designated for "DFO/CCG and PWGSC use only" parking spaces for the duration of the docking period.

1 - SERVICES

TELEPHONES: Two (2) private telephone lines shall be provided to the vessel on arrival at Contractor's facilities, and shall be maintained for the refit's duration. Both telephone lines shall be direct lines to the vessel's telephone system. All telephones shall be active 24 hours a day for the duration of the contract. Contractor shall be responsible for giving

notice for connection/disconnection times to the Telephone Company as required for any ship movements during the contract period.

Contractor shall supply a listing of shipyard contacts, fire, police and emergency telephone numbers to CGTA when vessel arrives at Contractor's facilities. Contractor shall ensure that the CGTA is notified of any "on call personnel" and their contacts during non-working hours and days.

Long distance charges shall be billed directly to:

Fisheries and Oceans Canada
Canadian Coast Guard – Accounts Payable
Coast Guard Maritimes Regional Headquarters Building
50 Discovery Drive
Dartmouth, Nova Scotia
B2Y 3Z8
Attn: Diane McNair

INTERNET:

Contractor shall supply two dedicated hard wired high speed internet supplies and an additional wireless access to the vessel.

Internet charges shall be billed directly to:

Fisheries and Oceans Canada
Canadian Coast Guard – Accounts Payable
Coast Guard Maritimes Regional Headquarters Building
50 Discovery Drive
Dartmouth, Nova Scotia
B2Y 3Z8
Attn: Diane McNair

ALLEYWAY AND BULKHEAD PROTECTION: Alleyways and area that shall be used by Contractor's personnel on a regular basis for access to required work areas shall be suitably protected from damage, soil, etc. All affected alleyways shall have deck surfaces covered by Masonite 1/4 inch thick extending to the full extremities of the areas dealt with. All seams, butts, and edges of the applied Masonite shall be taped to discourage ingress of soil beneath, as well as to stop any migration of the applied sections. Contractor shall quote on supplying and installing 150 square meters of heavy construction paper rough one side and installed rough side up. Upon completion of refit, Contractor shall lift all Masonite. The area shall be swept and mopped on completion of the refit and any tape residue shall be removed. Contractor to quote separately a price per square foot for cost of supply, installation and removal of any additional Masonite as may be required.

1 - SERVICES

All internal bulkhead panels in the above-noted areas shall be suitably protected with application of heavy construction paper extending to a minimum 1.5 m height above the deck level and all corners shall be covered and taped. Again, all butts, seams and edges shall be taped. Contractor shall quote on supplying and installing 100 square meters of heavy construction paper. Upon completion of refit Contractor shall remove all Masonite/paper and dispose. The areas shall be wiped clean on completion of the refit and any tape residue shall be removed. Contractor to quote separately a price per square foot for cost of supply, installation and removal of any Masonite/paper that may be required. Total cost shall be adjusted up or down by PWGSC 1379 action

SCAFFOLDING: Contractor shall supply the necessary manpower and equipment to erect, as necessary, scaffolding and staging to facilitate the inspection of the ship's hull as necessary by TCMSS Surveyor and Ship's personnel. This will include scaffolding and equipment to access propellers, shafting, rudder, thruster and renewal of anodes, etc. The scaffolding shall be removed when the work is complete, at Contractor's expense.

2 – PRODUCTION CHART & SUBCONTRACTORS ALLOWANCES

1: SCOPE:

The intent of this specification shall be to provide a means for tracking the overall progress of the refit.

2: TECHNICAL DESCRIPTION:

2.1 General

1. Contractor shall supply three copies of a detailed gantt chart showing the planned work schedule for the ship's refit. All copies shall be in colour as per the originals.
2. This bar chart shall show, for each specification item, the start date, the manpower loading, the duration and the completion date. The chart shall also highlight any critical paths.
3. The production chart shall be updated weekly and for each production meeting to reflect the actual production on the refit and changes to the anticipated completion dates of each individual item.
4. The production chart shall clearly indicate the arrival/departure dates of any Subcontractors/Field Service Representatives.
5. The production chart shall include the status and production on each PWGSC 1379 arising.
6. 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 Vessel Maintenance Manager (VMM), Jeff Mercier (Jeffrey.mercier@dfm-mpo.gc.caca) the day prior as well.
7. A copy of the original bar chart shall be provided via email to the PWGSC contracting Officer and SVMM before the close of business on the day of the ships arrival at the Contractors premises.
8. The update shall be emailed to, PWGSC Contracting Officer and SVMM the day prior to the weekly scheduled Progress Meeting.

2.2 Location

1. N/A

2.3 Interferences

1. N/A

2 – PRODUCTION CHART & SUBCONTRACTORS ALLOWANCES

3: REFERENCES:

3.1 Guidance Drawings/Nameplate Data

1. N/A

3.2 Standards and Regulations

1. N/A

3.3 Production Chart & Subcontractors Allowances

1. N/A

3.4 Owner Furnished Equipment

1. N/A

4: PROOF OF PERFORMANCE:

4.1 Inspection

1. N/A

4.2 Testing

1. N/A

4.3 Certification

1. N/A

5: DELIVERABLES:

5.1 Reports, Drawings, and Manuals

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

5.2 Spares

1. N/A

5.3 Training

1. N/A

**CCGS CORPORAL MCLAREN MMV
DRYDOCKING AND REFIT 2016**

HD-01 DRYDOCKING

1: SCOPE:

Contractor shall quote on docking and undocking the ship during the time of Nov 14- Dec 12 (2016) allowing sufficient service days to carry out the specified work, with a reasonable time allowance for arising new work. A vessel docking plan (Dwg # AF6099-10000-14_AF Dry-Docking Plan-1_2 (Rev AF1) and AF6099-10000-14_AF Dry-Docking Plan-2_2 (Rev AF1)) onboard the vessel shall be made available to Contractor.

2: TECHNICAL DESCRIPTION:

2.1 General

1. Dry docking shall be under the direct supervision of a Certified Docking Master. Prior to docking the vessel, Contractor shall present to Canadian Coast Guard their plan to effect a safe docking. This will include, but not be limited to, an explanation of block loading, dock preparation, tide wind- tug issues, manpower arrangements and communications. Contractor shall provide reasonable notice to CCG prior to undocking the vessel and make similar presentations regarding safe undocking and for the vessel's on dock period. Vessel's crew will be present for docking and undocking.
2. Contractor shall supply the services of divers to confirm that the vessel is setting evenly on the bilge and keel blocks.
3. Contractor shall quote a unit daily service cost on the drydock. The contractor shall bid on providing the daily services for the duration of the drydock Nov 14- Dec 12
4. The overall quote shall include any tug and/or pilotage service cost.
5. Docking shall be undertaken during the first two days of refit. If necessary, Contractor shall prepare the dock in advance of the ship's arrival and the official start date of the contract period. If premium time is required for evening shifts or weekend work to meet this objective, Contractor shall identify this and include all costs in the quotation.
6. The vessel shall not be placed in the same dock with any other ship for any part of the contract period.
7. Ship's personnel will be responsible for all line handling onboard the vessel only during the docking and undocking operations. Contractor shall supply personnel on the dock walls and ashore for all line handling.
8. Contractor shall ensure that docking blocks are clear of transducer faces and sea bay access covers.
9. The Contractor shall make sure enough room between the blocking to allow access to and safely clear the speed log and the echo sounder.
10. Two gangways shall be supplied and set up by Contractor while the vessel is drydocked. These gangways shall be set up and rigged from the wharf onto the buoy deck, complete with safety net. Gangways shall be safe, well-lit and structurally sufficient to support passage of Contractor's workmen and ship's crew.

HD-01 DRYDOCKING

11. During undocking Contractor shall ensure that sufficient personnel are in attendance throughout the ship's spaces to monitor for leakage around the numerous sea connections, stern tubes, sea chests, and any other areas in communication with the underwater area of the vessel that were disturbed during dry docking, and to correct any deficiencies that may arise.
12. In addition, Contractor's bid shall include cost for one additional and separate dry docking. This quote shall include the connection and disconnection for services as outlined in 1 - Services Specification Item as well as daily unit cost. This quotation shall be included in Contractor's price and form part of the evaluated bid price.
13. Contractor shall quote a unit cost on the removal of keel blocks as well as a unit cost on the insertion of keel blocks. This quote shall be included in the overall bid.

2.2 Location

1. N/A

2.3 Interferences

1. N/A

3: REFERENCES:

3.1 Guidance Drawings/Nameplate Data

1. Vessel Docking Plan;
AF6099-10000-14_AF Dry-Docking Plan-1_2 (Rev AF1)
AF6099-10000-14_AF Dry-Docking Plan-2_2 (Rev AF1)

3.2 Standards and Regulations

1. N/A

3.3 Subcontractors Allowances

1. N/A

3.4 Owner Furnished Equipment

1. N/A

4: PROOF OF PERFORMANCE:

4.1 Inspection

1. N/A

4.2 Testing

1. N/A

4.3 Certification

1. N/A

5: DELIVERABLES:

5.1 Reports, Drawings, and Manuals

1. N/A

5.2 Spares

1. N/A

5.3 Training

1. N/A

HD-02 HULL INSPECTION & WELDING (SURVEY)

1: SCOPE:

In conjunction with the specification item for Drydocking, and for the Underwater Hull Cleaning and Painting, the entire hull will be given an inspection by the CGTA and attending Lloyd's Registry Surveyor (LRS).

2: TECHNICAL DESCRIPTION:

2.1 General

1. Contractor shall arrange for Lloyd's Registry Class inspection of the underwater hull area shell plating and paint system condition.
2. The underwater hull survey inspection shall be carried out in accordance with the Classification Society's survey requirements for a vessel of this type.
3. The underwater Hull Inspection shall identify areas of the hull that need to be grit blasted and recoated to the paint manufacturer's requirements. This inspection shall be completed within 48 hours of docking the vessel.
4. Contractor shall carry out all Lloyd's Registry Class prescribed repairs. Cost of repairs shall be negotiated under PWGSC 1379 action.
5. Underwater Hull Area \approx 320 m²
6. Contractor shall hydro-blast the underwater hull area of the vessel to the deep load line within 24 hours of docking. Hydro-blasting shall be done with a minimum of 5,000 PSI pressure.
7. Contractor shall remove all the sea-chest grates and clean the sea-chest. Contractor shall perform this work in conjunction with HD-06 Hull Cleaning and Painting.
8. Once clean, Contractor shall schedule the Lloyd's inspection of the underwater hull structure and condition for the earliest opportunity following vessel dry-docking but within the 48 hours of docking. Contractor shall perform this work in conjunction with HD-06 Hull Cleaning and Painting.
9. Contractor shall supply all necessary staging and man lifts for the work on this specification item, including inspection by Surveyors and CGTA.
10. During the vessel underwater hull inspection up to the deep load line all areas with poor coating adhesion or lack of coating shall be recorded on a copy of the shell expansion plan by Contractor and verified by the CGTA. These areas shall be recoated as per Paint Manufacturer specification.
11. The inspection includes the inside of the bow thruster tunnel.

HD-02 HULL INSPECTION & WELDING (SURVEY)

12. Contractor shall carry out all Lloyd's Surveyor prescribed repairs in accordance with all applicable standards and regulations including those identified in 3.2. Prior to commencing repair Contractor shall inform the CGTA and provide a copy of their welding procedure.
13. Contractor shall quote on 20 linear meters of welding. Actual welding services shall be adjusted through PWGSC 1379 action.
14. The bid shall include gouging and back gouging for 20 linear metres as well as the cost of magnetic particle testing on all new welds. Bid shall include all necessary staging, materials, and equipment required to perform the repairs. This work shall be carried out in conjunction with Specification Item HD-06 Hull Cleaning and Painting. The quote shall form part of the overall bid. Actual work carried out shall be adjusted up or down (credit), through PWGSC 1379 action.
15. Contractor is responsible for any cleaning in this area to prepare for hot work. Contractor is responsible for arranging for a certified Marine Chemist to visit the vessel and to carry out the necessary testing to obtain safe entry and safe for hot work certificates. A copy of a gas free/safe for hot work certificate shall be given to the CGTA prior to personnel entering the tank and a copy of each certificate shall be posted in a conspicuous location in close proximity to the manhole cover for each tank. Spaces shall be tested each day that personnel are required entry in the tanks. All precautions shall be taken to protect all areas from hot work damage. Contractor is responsible for maintaining an adequate fire watch during the course of all hot work. This shall include providing various applicable extinguishers and extinguishing mediums as necessary. This shall also include any necessary preparations and cleaning in the vicinity of the work area to obtain a gas-free permit.
16. All materials used for the prescribed repairs shall meet or exceed original specifications and shall be in compliance with applicable regulations and standards.
17. Contractor shall schedule the Lloyd's Surveyor of all prescribed repairs following their completion and prior to the coating application.
18. All new and disturbed steel resulting from the prescribed repairs shall be prepared and coated in accordance with Coating Manufacturer's Specification.
19. Where ambient air temperatures may become a problem, Contractor shall take steps to ensure that the painting and curing of the underwater hull coating system will be completed before the completion date of the contract.
20. All existing coatings on all surfaces identified for recoating, shall be completely removed, contained and disposed of in accordance with applicable territorial and federal environmental regulations.
21. All underwater areas, not requiring grit blasting, shall be protected from damage and contamination during surface preparation and recoating. These areas include all ship side valves, port and starboard propellers, all rudder bearings and its cover, bow thruster blades, all anodes, speed log and all depth sounding appliances, etc.

HD-02 HULL INSPECTION & WELDING (SURVEY)

22. All above water line surfaces, accommodation area, scuttles, port holes, windows, deck machinery, susceptible to damage from surface preparation and coating application overspray shall be protected accordingly.
23. Contractor is responsible for the cleanup of all blasting grit, debris and overspray from the vessel's interior and exterior decks.
24. Contractor shall ensure that all coatings are applied within the allotted dry dock time period in order to allow for the full and proper curing of the coating to the vessel's hull prior to immersion. Any application that results in an unacceptable coating to the coating Field Service Representative (FSR) and CGTA shall be redone (blasting included) at the Contractor's expense.
25. Contractor shall have the attending Lloyd's surveyor inspect the shell plating. A survey credit shall be obtained from Lloyd's for the inspection and certification of the shell plating. Contractor shall present this survey credit to the PWGSC and the CGTA prior to the flooding of the dock to re-float the vessel. Contractor shall notify the PWGSC and the CGTA so that these authorities may witness the shell plating inspection by the Lloyd's Surveyor.

2.2. Location

1. All work shall be conducted on the vessel's outer hull; if hot work is required, tank access will be required to access the interior surfaces of the hull plating.

2.3. Interferences

1. No known interferences. Contractor shall take note of the interference items during the vessel viewing and include the costs associated with dealing with these items, including removals, reinstallations and painting of disturbed metal parts. Refer to General Notes: section 12 and 17

3: REFERENCES:

3.1 Guidance Drawings/Nameplate Data

Drawing Number	Description	Electronic #
AF6099-10000-14	Docking Plan 1-2 and 2-2	
AF6099-10000-01_AF	Midship and Other Sections Plan	
AF6099-10000-03_AF	Shell Expansion	
AF6099-10000-04_AF	Watertight Bulkheads Plans	
6099-61100-01-0	Bottom Plugs Diagram	
AF6099-63100-01_AF	Paint Schedule	
6099-O-63300-01	Anodes Schedule	
AF6099-89940-01_AF	General Arrangement Plan 1-2	
AF6099-89940-01_AF	General Arrangement Plan 2-2	
AF6099-89940-02_AF	Tank Arrangement & Capacity Plan	
AF6099-89940-03_AF	Lines Plan	
AF6099-89940-08_AF	Draft Marks and Load Line Marks Plan	

HD-02 HULL INSPECTION & WELDING (SURVEY)

3.2 Standards and Regulations

1. The following Coast Guard Standards and or Technical Bulletins shall be adhered to in the course of executing this specification. Copies of these standards and bulletins can be obtained from the CGTA.
 - Canadian Coast Fleet Safety Manual (DFO 5737)
 - Coast Guard ISM Lock Out/Tag Out Procedures
 - Canada Shipping Act, 2001 (2001, c. 26) Hull Inspection Regulations (C.R.C., c.1432)
 - Lloyd's Register, Rules & Regulations for the Classification of Special Service Craft
2. All hotwork shall be done in accordance with Canadian Coast Guard Welding Specification CT-043-EQ-EG-001, March 2014, EKME#3049715v3A.
3. CG Fleet Circular FC 08-2007

3.3 Production Chart & Subcontractors Allowances

1. N/A

3.4 Owner Furnished Equipment

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

4: PROOF OF PERFORMANCE:

4.1 Inspection

1. The Contractor shall afford the TA the opportunity to witness the Lloyd's inspection of the underwater hull prior to and following all prescribed repairs.

4.2 Testing

1. Contractor shall include the cost of magnetic particle testing on the new welds, as per item 14 in the technical description; these tests shall be as directed by the attending Lloyd's Surveyor. Contractor shall provide a unit cost per meter for MPI and the cost shall include travel expenses for the NDT testing company.
2. Contractor shall perform and record Wet Film Thickness readings during each application of underwater surface area coating as required by the FSR. The readings and their locations shall be contained in the final report.

4.3 Certification

1. Prior to the close of contract, certification or other documentation shall be submitted to the CGTA attesting to the quality of new materials and components such as shell plating, structural members and welding rods.

HD-02 HULL INSPECTION & WELDING (SURVEY)

5: DELIVERABLES:

5.1 Reports, Drawings, and Manuals

1. A computer generated report shall be provided in digital format to the CGTA. This report shall include a listing of all welds performed, and locations and results of all tests performed.
2. Following the Lloyd's underwater hull inspection and prior to carrying out any identified repairs, Contractor shall submit in PDF format a copy of drawing AF6099-10000-03_AF Shell Expansion outlining in red all proposed plate repairs.
3. For all coating applications refer to HD-06 Hull Cleaning and Painting.
4. Prior to the close of contract, two (2) copies of a comprehensive typewritten and one electronic copy of a report covering all completed work shall be submitted to the CGTA.

5.2 Spares

1. N/A

5.3 Training

1. N/A

HD-03 ANODES

1: SCOPE:

The intent of this specification item is for Contractor to replace all wasted and/or defective hull anodes and corrosion protection on the underwater hull of the vessel.

2: TECHNICAL DESCRIPTION:

2.1 General

Anodes

1. All sacrificial hull anodes shall be visually inspected for defects and findings recorded on a general hull plan. Recommendations for replacement shall be made accordingly.
2. Contractor shall remove all wasted and/or damaged anodes from the vessel and grind smooth all previous anode welded connections. Contractor shall fit new anodes in the same locations as the removed anodes. This shall be done after the hull coating has been applied. All weld areas shall be touched up with the hull coating after the anodes have been fitted.
3. All anode protections / other protections shall be removed after completion of the coating application. Any anodes that are covered with coating shall be renewed at Contractor's expense.
4. Contractor shall quote on supplying and installing 12 of the 20 total anodes on the vessel. Anodes shall be Aluminum Disc Anode MME 28AB and Aluminum Hull Anode MME 26AA anodes type as per drawing AF6099-O63300-01. Contractor shall provide a unit cost per anode (supply and install) for adjustment purposes.

MME 26AA



Weight	Dimensions		
	Gross	Overall	Al anode
Nett	2.9 kg	405 x 150 x 33 mm	270 x 150 x 33 mm
	2.6 kg		40 x 5 mm

MME 28AB



Weight	Dimensions	
	Gross	Zn anode
Nett	2.9 kg	Ø 230 x 25 mm
	2.8 kg	Ø 50 x 3 mm

5. A unit price per anode replacement shall be included in the pricing data sheet.
6. Sea Chest (also referred to as Sea Bay) anodes shall be renewed.
7. Contractor shall remove all wasted and/or damaged sea chest anodes.
8. Contractor shall quote on replacing 7 CFM, type MME26AA hull anodes including removing and installation.

HD-03 ANODES

9. Contractor shall quote on replacing 5 CFM, type MME28AB disc anodes including removing and installation.
10. All anodes shall be protected from the coating material being applied in the sea chest areas during the work execution of paint process. All anode protection shall be removed after completion of the coating application. Any anodes that are covered with coating shall be renewed at Contractor's expense.
11. A unit price per anode replacement is to be included in the pricing data sheet.

Bow thruster Anodes

12. Contractor shall remove and replace all wasted and/or damaged thruster tunnel anodes. There are 2 anodes, Aluminum MME26AA, on each side of the thruster unit totaling 4 within the tunnel. The GSM bow thruster anodes will be provided to the shipyard. The contractor shall bid on replacing 2 anodes and provide a unit cost for replacing one anode.

2.2 Location

1. Hull Area

2.3 Interferences

1. Refer to General Notes: section 12 and 17

3: REFERENCES:

3.1 Guidance Drawings/Nameplate data

Manual:

NO.	Description
1	Hydraulic Thruster (PKK 24 TRAC (24) 75 kw) Installation and Operation
2	24 TRAC ASSY drawing # 29351

Drawings:

Drawing Number	Drawing Title	Electronic File Name
AF6099-O63300-01-AF	Scheme of Cathodic Protection	

3.2 Standard and Regulations

1. Canada Shipping Act, 2001 (2001, c. 26) Hull Inspection Regulations (C.R.C., c.1432)
2. Lloyd's Register, Rules & Regulations for the Classification of Special Service Craft

HD-03 ANODES

3.3 Owner Furnished Equipment

1. 4 bow thruster anodes (Aluminum MME26AA)

4: PROOF OF PERFORMANCE:

4.1 Inspection

1. Contractor shall afford the CGTA an opportunity to witness the Lloyd's inspection of the anodes prior to, and following all prescribed renewing.

4.2 Testing

1. Contractor shall notify CGTA upon completion of this work item to afford them the opportunity to verify the work has been completed as detailed in this Section. Verification of this work shall be performed before the ship undocking.

4.3 Certification

1. Prior to the close of contract, certification or other documentation shall be submitted to the TA attesting to the quality of new materials and components.

5: DELIVERABLES:

5.1 Reports, Drawings and Manuals

1. Prior to the close of contract, a comprehensive report covering all work and replacements shall be submitted to PWGSC and CGTA.

5.2 Spares

1. N/A

5.3 Training

1. N/A

HD-04 STORM VALVES & SEA CONNECTIONS INSPECTION (SURVEY)

1: SCOPE:

The intent of this specification item is for Contractor to remove, disassemble, clean and layout for Lloyd's inspection all storm valves and sea connections

2: TECHNICAL DESCRIPTION

2.1 General

1. Contractor shall ensure all applicable safety precautions including equipment lock outs and tag outs are implemented prior to the start of work.
2. Contractor shall ensure, prior to the start of disassembly, that all precautions are taken to ensure that the reassembly and reinstallation of all system and equipment components shall be as per original and in accordance with manufacturer's specifications.
3. Contractor shall visually inspect all removed valves, record findings and report all deficiencies as they are identified to the CGTA and make recommendations for their repair or replacement. Contractor shall give the CGTA a copy of their hand written record indicating the findings and recommended repairs.
4. Contractor shall remove, disassemble, clean and layout for Lloyd's inspection all sea connections listed below.
5. Prior to reassembly and installation, Contractor shall arrange for a viewing by the attending Lloyd's Surveyor and CGTA, to inspect all valves as listed below.
6. Following inspection, all original valves shall have their seats and discs ground in. Final lapping shall be done to ensure the valve disc makes full contact with the valve seat around their entire circumference. All valves shall be reassembled using new Contractor Furnished Materials (CFM) packing and gaskets.
7. Contractor shall include in their bid 20 hours of machining time for repair of any storm valves or sea connections.
8. Where a valve is beyond serviceable, contractor supplied replacement valves must be installed. The replacement valves must be Lloyd's approved, the same material, class of service and style as the condemned valve.
9. All valves that are deemed to beyond serviceable will be considered unscheduled work and will be replaced by way of PWGSC 1379.
10. All threaded fasteners and valve spindle itself are to be coated with anti-sieze compound during reassembly.
11. All flange gaskets disturbed as a result of the valve servicing process shall be renewed using new CFM gasket material.

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HD-04 STORM VALVES & SEA CONNECTIONS INSPECTION (SURVEY)

2.2 Location

List of Sea Water Valves: (Total 12)

ID #	Description	Location	Size mm
V256001	Main Isolation Valve (P)	Engine Room FWD	250
V256002	Main Isolation Valve (Stbd.)	Engine Room FWD	250
V256003	FWD Sea Chest Isolation Valve	Bow Thruster RM	100
V256007	Port Sea Chest Circulation Valve	Engine Room FWD	100
V256008	Stbd Sea Chest Circulation Valve	Engine Room FWD	100
V256010	Port Sea Chest Vent	Engine Room FWD	150
V256011	Stbd Sea Chest Vent	Engine Room FWD	150
V256012	FWD Sea Chest Vent Valve	Bow Thruster RM	65
V256013	P Sea Strainer outlet	Engine Room FWD	250
V256014	Stbd Sea Strainer outlet	Engine Room FWD	250
V256018	PS Main Engine Supply	Engine Room FWD	200
V256022	SB Main Engine Supply	Engine Room FWD	200
V256042	Fwd Sea strainer outlet	Bow Thruster Rm	100
V256090	Cooling Water Supply Header Vent	Engine Room FWD	50

List of Storm Valves (Total 4)

ID #	Description	Location	Size
V526023	Fuel Oil Spill LCR O/B Discharge	Laundry Rm	50
V526029	HVAC/DK LCR O/B Discharge	BT Rm - Stbd	50
V526031	Wet Gear RM O/B Discharge	Eng Rm Port Aft	50
V593091	Sewage Treatment Plant O/B Disc	Eng Rm Port Aft	50

List of Overboard Valves: (Total 10)

ID #	Description	Location	Size
V256032	P O/B Discharge	Engine Room	150
V256035	Stbd O/B Discharge	Engine Room	150
V256065	ACU O/B Discharge	Engine Room	65
V256114	Stbd ME Gear Box O/B Discharge	Engine Room	40
V256115	P ME Gear Box O/B Discharge	Engine Room	40
V256131	Cyclone Filter O/B Discharge	Engine Room	25
V520018	Bilge O/B	Engine Room	50
V520019	Bilge O/B	Engine Room	50
V520056	Bilge Eductor O/B	Engine Room	80
V593071	O/B Discharge		32
V256043	PS Main Engine Exhaust	Steering Gear	65
V256045	PS Diesel Generator Exhaust	Steering Gear	50
V256047	SB Diesel Generator Exhaust	Steering Gear	50
V256049	SB Main Engine Exhaust	Steering Gear	65

HD-04 STORM VALVES & SEA CONNECTIONS INSPECTION (SURVEY)

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List of Blow down Air Valves (Total 10)

ID #	Description	Location	Size
V551061	Blow down Air Sea Chest (P)	Eng Rm Fwd	25
V551062	Blow down Air Sea Chest (Stbd.)	Eng Rm Fwd Stbd	25
V551070	Blow down Air RO Unit	Bow Thruster Room	15
V551074	Blow down Air FWD Sea Chest	Bow Thruster Room	25
V551075	Blow down Air Bilge O/B valve	Eng Rm P. Aft	15
V551076	Blow down Air HVAC ACU O/B	Bow Thruster Room	15
V551089	Blow down Air Fire Water O/B	Bow Thruster Room	15
V551126	Blow down Air Gear Box P O/B	Eng Rm P Aft	15
V551127	Blow down Air Gear Box Stbd O/B	Eng Rm S Aft	15
V551128	Blow down Air Cyclone Filter O/B	Eng Rm S Aft	15

2.3 Interferences

1. Contractor shall take note of the interference items during the vessel viewing and include the costs associated with dealing with these items, including removals, reinstallations and painting of disturbed metal parts.

Refer to General Notes: section 12 and 17

3: REFERENCES:

3.1 Guidance Drawings/Nameplate data

Drawings

Drawing Number	Description	Electronic #
AF6099-25600-01	As Build Cooling Water System	
AF6099-52000-01	Bilge Drainage & Dewatering System	
AF6099-52600-01	Scuppers and Drains	
AF6099-55100-01	Compressed Air System	
AF6099-59300-02	Black Grey Water & Sanitary System	

3.2 Standard and Regulations

1. Canada Shipping Act 2001, Hull Inspection Regulations (C.R.C., c. 1432)
2. Lloyd's Register, Rules & Regulations for the Classification of Special Service Craft Standard

3.3 Allowances

1. N/A

HD-04 STORM VALVES & SEA CONNECTIONS INSPECTION (SURVEY)

3.4 Owner Furnished Equipment

1. N/A

4: PROOF OF PERFORMANCE:

4.1 Inspection

1. Following all valves servicing and prior to installation, Contractor shall provide the attending Lloyd's Surveyor and CGTA an opportunity to inspect all valves as listed above.

4.2 Testing

1. Following the completion of all valve work, Contractor shall test all valves as listed above for sealing integrity at their respective maximum system operating pressures. All leaks shall be repaired at the Contractor's expense prior to the closing of contract.
2. Contractor shall arrange the attending Lloyd's Surveyor, the TA the opportunity to witness the successful testing of all valves as listed above.

4.3 Certification

1. Prior to the close of contract, certification or other documentation shall be submitted to the CGTA attesting to the quality of new materials and components such as packing, gaskets and valves.

5: DELIVERABLES:

5.1 Reports, Drawings and Manuals

1. Prior to the close of contract, a comprehensive report covering all work and replacements shall be submitted to the CGTA.

5.2 Spares

1. N/A

5.3 Training

1. N/A

HD-05 PROPELLER SHAFT SEALS AND SHAFT CLEARANCES (SURVEY)

1: SCOPE:

The intent of this specification item is for Contractor to open up the Port and Starboard shaft seals, for Lloyd's Surveyor inspection. Port and Starboard propeller shafts clearances, inner, intermediate and outer, shall be measured for Lloyd's Surveyor inspection.

2: Technical Description

2.1 General

1. Contractor shall release the inboard side of both the Port and Starboard shaft seals. Contractor shall protect shaft seal sealing surfaces, both sides. Contractor shall ensure that the sealing surfaces are protected as described in the Simplan Seal Manual.
2. Prior to start the work, the contractor shall ensure all applicable safety precautions including equipment lock outs and tag outs are implemented.
3. All electrical and mechanical lockouts and tag outs shall be carried out to the satisfaction of the CGTA, as per the DFO/5737 Fleet Safety Manual, 7.B.5 - LOCKOUT AND TAGOUT. Contractor shall install /remove locks and tags accordingly during the scope of work. CGTA will assist Contractor in identifying the locations to perform the lock outs, but will not perform the actual lock out. Contractor shall supply and install their own locking devices and retain all keys during the scope of this work. Upon completion of all work the CGTA shall be in attendance when all locks/tags are removed.
4. Contractor shall ensure that prior to the start of disassembly, precautions are taken to ensure the reassembly and reinstallation of all system and equipment are as per original and in accordance with manufacturer's specification. A Simplan tool kit is onboard the vessel and available to the contractor in order to carry out this specification item.
5. Contractor shall take the clearance readings between shaft and forward Sterntube Bearing, four places; top, bottom, Port and Starboard position in the presence of the Lloyd's Surveyor and CGTA.
6. Contractor shall open the Aft Sterntube Bearing covers from Port and Starboard side and take bearing clearance readings. Contractor shall take the clearance reading between shaft and Aft Sterntube Bearing - four locations; top, bottom, Port and Starboard positions in the presence of the Lloyd's Surveyor and CGTA.
7. Contractor shall remove the Rope Guard with Net Cutters from the Port and Starboard side in order to take bearing clearances. Contractor shall take the clearance readings between the shaft and Aft Bracket Bearing, four locations; top, bottom, Port and Starboard position in front of the Lloyd's Surveyor and CGTA.
8. Contractor shall reinstall shaft seals, Port and Starboard, in accordance with the Simplan Manual and shall be tensioned as per the manual.

HD-05 PROPELLER SHAFT SEALS AND SHAFT CLEARANCES (SURVEY)

9. Contractor shall reinstall the Aft Sterntube Bearing covers, previously removed from the Port and Starboard side. Contractor shall lock the screws, to original position as per the original lock style.
10. Contractor shall reinstall the Rope Guard with Net Cutters previously removed from the Port and Starboard side to their original position and as per their original lock style.

2.2 Location

1. N/A

2.3 Interferences

1. Refer to General Notes: section 12 and 17

3: Reference

3.1 Guidance Drawings/Nameplate data

1. Manual

NO.	Description
1	Kamewa CP-A D Installation Manual (10Sooo239/49341-E)

2. Drawing

Drawing Number	Drawing Title	Electronic File Name
6094-24300-01	Shaft Line arrangement	

3.2 Standards and Regulations

1. Canada Shipping Act, 2001: Marine Machinery Regulations (SOR/90-264)
2. Lloyd's Register, Rules & Regulations for the Classification of Special Service Craft Standard

3.3 Allowances

1. N/A

3.4 Owner Furnished Equipment

1. N/A

HD-05 PROPELLER SHAFT SEALS AND SHAFT CLEARANCES (SURVEY)

4: PROOF OF PERFORMANCE:

4.1 Inspection

1. Following the completion of taking the bearing clearances, and prior to reinstall, Contractor shall afford the attending Lloyd's Surveyor and CGTA the opportunity to inspect the condition and witness the taking of the bearing clearance.

4.2 Testing

1. Upon successful completion of the dock trial a 1 hour sea trial up to 100% engine load shall be conducted to verify the normal operation of all systems.
2. If there is a need to delay the trial, due to any weather issue or seaway issue for sea trial, Contractor shall wait for the weather to permit completion of the sea trial.

4.3 Certification

1. Prior to the close of contract, certification or other documentation shall be submitted to the CGTA attesting to the quality of new materials and components.

5: DELIVERABLES:

5.1 Reports, Drawings and Manuals

1. Prior to the close of contract, a comprehensive report covering all measurements and corresponding locations, related work and replacements shall be submitted to the CGTA. Two typewritten copies and one electronic copy of the report shall be provided to the CGTA.

5.2 Spares

1. N/A

5.3 Training

1. N/A

HD-06 HULL CLEANING AND PAINTING

1: SCOPE:

The intent of this specification item is for Contractor to clean the ship's hull, properly prepare the surfaces, and recoat as specified with marine coatings. This work shall be carried out in conjunction with all other dry-docking items

2: TECHNICAL DESCRIPTION:

2.1 General

1. Contractor shall clean the ship's entire hull and appendages by high-pressure fresh water jetting to remove all salt deposits and marine growth (5,000 to 10,000 psi maximum for growth removal). This shall be performed within 48 hours of the vessel leaving the water.
1. Underwater Hull painting shall extend from the underside of the keel to a level line that is visible at approximately the 2.8m draft marks. This area also includes all underwater appendages such as **rudders**, speed log and echo sounder cowlings, sea-chests and associated gratings. The total area to be prepared and painted is estimated to be 330 m².
2. Upon completion of cleaning, the underwater hull area shall be inspected by the Contractor and CGTA for loose paint and bare areas. Contractor shall bid on preparing and coating 10 square meters of bare area.
3. Contractor shall include an allowance of \$10,000 to cover expenses of an International Paint Representative (FSR). The FSR shall be reimbursed by Contractor from this allowance for their services, authorized travel, and living expenses reasonably and properly incurred in the performance of this work. This allowance shall form part of the overall bid and shall be adjusted by PWGSC 1379 action upon proof of final invoice.
4. All hull-mounted equipment such as anodes, echo sounders, speed log, transducers, etc. shall be suitably protected against damage during cleaning of the hull and application of the coatings. Contractor is responsible for repair / renewal of any such damaged items.
5. Contractor shall take measures to ensure that no damage, unnecessary cleaning or repairs accrue from the sand or grit blasting and/or the application of coatings. Grit used for blast cleaning shall not be permitted to enter into any part of the vessel or its equipment. All portholes, hull doors, freeing ports, hull openings, shafts and propellers shall be covered by suitable materials to prevent damage or entry of materials while sandblasting or when painting is in progress. Any cleaning required due to failure to comply will be at Contractor's expense.

HD-06 HULL CLEANING AND PAINTING

6. Measures shall also be taken to ensure that application of coatings does not take place to surfaces or equipment other than those areas specified, and that any inlets or discharges in the shell shall not be blocked by the coating.
7. Contractor shall plug deck scuppers and discharges or take any measures necessary to prevent water or other liquids from contaminating the areas of plating being coated or prepared for coating.
8. All hull areas containing loose paint and/or bared steel shall be abrasive blasted to bare steel (SSPC-SP-10). Edges of intact paint shall be feathered back to a minimum of 10 mm, and blown clean with compressed air. The surface profile shall have a minimum roughness of 3 mils (75 microns).
9. Contractors shall bid on abrasive blasting to bare steel and re-coating 10 square meters of the underwater hull, also referred to as bare areas – refer to subsection 2 above. Contractor shall provide a unit rate for blasting to bare steel and painting underwater hull surfaces for adjustment purposes
10. The contractor shall include in their bid any environmental disposal fees that were a result of the hull cleaning and painting process. Any shelter required during the hull cleaning and painting process shall be included in the contractors bid.
11. The remaining underwater hull area shall be sweep-blasted to SSPC-SP-7 standard to remove existing anti-fouling coating and prepare the surface for acceptance of new coating. For adjustment purposes, Contractor shall provide a unit rate for sweep-blasting and painting underwater hull surfaces.
12. All underwater hull surfaces shall be degreased by solvent cleaning to SSPC-SP-1 standard prior to application of coatings.
13. Upon completion of the specified surface preparations, the affected areas shall be surveyed by the International Paints FSR and CGTA. The surface areas of bared steel and intact coatings shall be agreed upon, recorded by the Contractor and signed-off by all parties with copies of the document for each.
14. All necessary steps shall be taken after blasting to minimize steel oxidation by applying the underwater hull coatings in accordance with International Paints FSR instructions.
15. Contractor shall "cut-in" a straight line of paint at the top of the underwater hull coatings and prevent overspray of these coatings onto the above water hull area.
16. Application of underwater hull coatings are to be as follows:

First coat: Contractor to quote on applying one (1) coat of "INTERSHIELD 300", abrasion resistant epoxy, bronze, at 5 mils D.F.T. to bared steel areas.

HD-06 HULL CLEANING AND PAINTING

Second coat: Contractor to quote on applying one (1) coat of "INTERGARD 263" epoxy tie coat, light gray, at 4 mils D.F.T. to the bared steel areas **and entire hull area.**

Third coat: Contractor to quote on applying one (1) coat of "INTER SPEED 640" TIN-FREE ANTIFOULING, RED, at 4 mils D.F.T. to spot coat the bared steel areas.

Forth coat: Contractor to quote on applying one (1) coat of "INTER SPEED 640" TIN-FREE ANTIFOULING, RED, at 4 mils D.F.T. to the entire underwater hull area as described in this Specification Item.

Fifth coat: Contractor to quote on applying one (1) coat of "INTER SPEED 640" TIN-FREE ANTIFOULING, RED, at 4 mils D.F.T. to the entire underwater hull area as described in this Specification Item.

17. New coatings shall be applied in full compliance with manufacturer's requirements to provide a finished coat of no less than 13 mils D.F.T. overall.
18. Contractor is responsible for providing shelter(s) and heating required to meet the coating manufacturer's specifications and included in the overall bid price.
19. Deck machinery and other exposed equipment susceptible to damage by grit or coating material shall be protected.
20. Contractor shall strictly follow the manufacturer's requirements in relation to storage, preparation, application, etc. of the paint system described in this specification. Any requirement for variance from manufacturer's instructions shall be approved by the CG TA prior to proceeding.
21. Contractor shall remove from the vessel all traces of sand and/or grit used for blast cleaning. Contractor shall be responsible and liable for ensuring that the hull is clear and clean, prior to, during and immediately after the application of coatings.
22. New coatings shall be applied with atmospheric and steel conditions acceptable to paint manufacturer and CGTA. Application conditions shall be recorded by Contractor and/or paint manufacturer's representative for inclusion in the final Report to be submitted to CGTA.
23. In conjunction with any functional Q & A procedure, the following points shall be carried out:
 1. Provide a list of batch numbers with correspondent dates of manufacture.
 2. Record the quantity and type of any solvent added.
 3. Measure and record the ambient conditions.
 4. Record details of spray tips and pressures.
 5. WFT gauge readings shall be taken on a regular basis during application.
 6. Using a calibrated DFT gauge, fifteen (15) measurements per 9.3 square meters shall be taken and recorded. Upon agreement of consistency with the CGTA, fifteen (15) measurements per 93 square meters shall be taken and recorded.

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Draft Markings

24. Contractor shall renew the following draft markings on the vessel by grit blasting clean each draft mark to the bare steel, re-punch the outline of the draft mark if required and applying the Interspeed 640 for under parts. Draft marks that have interspeed 640 coating applied shall have two coats of CFM Trilux 11 white applied. Contractor shall supply and apply 2 coats of International Interthane 990 white paint

(white) to each of the below mentioned markings within the punch outlines marked that are above the waterline, as long as it has not been coated with Interspeed 640.

The renewal of these marks shall be done after the final painting and curing of the underwater hull coating.

25. Forward: Both Port and Starboard side draft markings including the 2.4M and 1.6M meter markings for a total of 10 markings shall be renewed.
26. Aft: Both Port and Starboard side draft markings including the 2.0M and 2.8M meter markings for a total of 10 markings shall be renewed.
27. Transom Center: In addition to the renewal of existing draft marks noted above, an entirely new set of draft marks are to be installed upon the transom at the vessels centerline. Draft markings including the 2.0M and 2.8M meter markings for a total of 10 markings shall be newly punched and painted as specified for the existing draft marks.
28. When renewing/installing the draft markings Contractor shall ensure that the draft markings are the correct height and obliqueness to the hull, representing the true draft of the marking and vessel and are acceptable to the attending Lloyd's Surveyor.
29. Contractor shall renew the Port and Starboard Plimsoll markings at mid-ship including all load lines and mid-ship markings via the same procedure as outlined above for the draft marks.

2.2 Location

1. Vessel 's exterior hull

2.3 Interferences

1. Refer to General Notes: section 12 and 17
2. Refer to HD-? Transom Draft Marks

3: REFERENCES:

3.1 Guidance Drawings/Nameplate data

HD-06 HULL CLEANING AND PAINTING

1. Drawing # AF6099-10000-03_AF Shell Expansion
2. Drawing # AF6099-63100-01_AF Paint schedule
3. Drawing # AF6099-89940-08_AF Draft Marks And Load Line Marks Plan Draft Marks
4. Recommended FSR: Nicole Hart, Technical Sale
AkzoNobel Coatings, Ltd.
(902) 468-1401
nicole.hart@akzonobel.co

3.2 Standards and Regulations

1. Contractor is responsible and liable for ensuring that the hull is clear and clean prior to, during, and immediately after the coating application.
2. Suitable storage facilities shall be provided close to the work site for the material and equipment, to ensure they will be maintained at the recommended temperature of the coating manufacturer for ease of preparation and proper application

3.3 Allowances

1. Refer to section 2.1 General, subsection 3 above.

3.4 Owner Furnished Equipment

1. All staging, crange, screens, lighting and any other support services, equipment, paint and materials necessary to carry out these specifications shall be Contractor supplied. Unless otherwise specified, all labour, materials, and equipment required to complete all tasks required in this specification shall be Contractor supplied

4: PROOF OF PERFORMANCE:

4.1 Inspection

1. Contractor shall follow the inspection regime outlined in General Notes, and provide documentation to support all inspections and tests performed

4.2 Testing

1. Contractor and/or paint manufacturer's representative shall take sixty (60) wet film thickness measurements; thirty (30) per side, in areas where hull has been cleaned to bare steel. The measurements shall be witnessed by the CGTA and recorded with locations referenced to the attached shell expansion drawing. Unwitnessed measurements shall not be accepted.
2. Contractor to perform and record additional DFT testing as detailed in Section 2.1.22

4.3 Certification

HD-06 HULL CLEANING AND PAINTING

1. Contractor shall provide certification for all hull coatings applied

5: DELIVERABLES:

5.1 Reports, Drawings and Manuals

1. Contractor shall maintain a Quality Assurance reporting program, which shall at minimum include the following points:
 - a. Which areas were blasted and indicate the blast media type and air pressure
 - b. Which areas were coated, with what product, and the volume of coating used.
 - c. Provide a list of batch numbers with corresponding dates of manufacture.
 - d. Record the quantity and type of any solvent added.
 - e. Measure and record all ambient conditions (Temperature, Humidity, Barometric pressure).
 - f. Hull temperature
 - g. Record all details of spray tips and pressures.
 - h. All WFT and DFT readings taken as prescribed in section 4.2 of this specification.
2. All information noted above shall be recorded in a typewritten (English) report and two (2) copies and one electronic copy shall be given to the CGTA.
3. Refer to Section 2.1 General, subsection 22

5.2 Spares

1. N/A

5.3 Training

1. N/A

HD-07 SEA CHESTS AND STRAINERS INSPECTION

1: SCOPE:

The intent of this specification item is to open sea chests and sea boxes for cleaning and inspection.

2: TECHNICAL DESCRIPTION:

2.1 General

1. Contractor shall open up the three (3) sea chests for cleaning and inspection. In addition, the two (2) main inlet sea strainers shall be opened as well. This work shall be carried out in conjunction with HD-06 Hull Cleaning and Painting and HD-01 Dry Docking.
2. Sea chest grates shall be removed (welded on) so that internal inspection of the Sea Chests can take place.
3. Contractor shall follow the coating manufacturer's recommendations and procedures when applying the coatings outlined below. Contractor shall allow sufficient curing times as outlined by the manufacturer during the application of all coatings. Contractor shall take no less than 4 random thickness readings (mils) per sea chest, between coats with the CGTA in attendance.
4. Contractor shall note that access to the sea chests is only available via removable shell grids (one per chest). Contractor shall note the location of shell grids when planning blocking arrangements for dry docking. Contractor shall identify (mark) each grid being removed for their original location.
5. Contractor shall use hydro-blasting at 5,000 psi minimum and mechanical means (power brushing) for the cleaning the areas identified in this specification item. All debris shall be removed and disposed of ashore by Contractor. Copies of invoices detailing disposal of the debris shall be given to the CGTA.
6. The exact measured area of the sea chests is unknown at this time since it is included in the underwater hull area calculation, but it was estimated to be approximately 10 square meters.
7. For bidding purposes, Contractor shall bid on this area being 100% bare. Contractor shall quote on power tooling this area and prepping it for coating application as per the requirements outlined in HD-06 Hull Cleaning and Painting, Underwater Hull Painting section. The cost shall form part of the overall bid. Actual work carried out shall be adjusted up or down (credit), through PWGSC 1379 action. This area is considered part of the underwater hull area and as such coating applications are covered under HD-06 Underwater Hull Cleaning and Painting.
8. Contractor shall remove all screens from each sea strainer for cleaning and inspection. Zinc Anodes shall be inspected for wastage and renewed as directed by the CGTA. Actual work carried out shall be adjusted up or down (credit), through PWGSC 1379 action.

HD-07 SEA CHESTS AND STRAINERS (SURVEY)

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9. Contractor shall high pressure wash the grids and inlet areas and grid holes shall be mechanically reamed to their original diameter. Actual work carried out shall be adjusted up or down (credit), through PWGSC 1379 action.
10. All grids shall be prepared and coated as per HD-06 Hull Cleaning and Painting, coating shall be applied to both sides. First Coat shall be allowed to dry prior to grid being turned to apply coating to the opposite side. Grating holes shall not be obstructed by coating applications upon completion of this specification item.
11. The grid securing tabs on the hull shall be inspected. Any broken tabs shall be welded back into position. For bidding purposes the Contractor shall bid on replacing 3 tabs. Contractor shall submit cost per unit pricing, to allow adjustment of actual work carried out.
12. Actual work carried out shall be adjusted up or down (credit), through PWGSC 1379 action. Work to be completed in conjunction with HD-02 Section 2.1 General, subsection 7.



Example of a Grid tab (broken off)

2.2 Location

Sea Chests

Tank Name	Location	Manhole Location
Fwd Sea Chest	Fr 31.5 - 32	Access from Exterior
Stbd Sea Chest	Fr 16.5 - 17	Access from Exterior
Center Sea Chest	Fr 16 - 17	Access from Exterior

2.3 Interferences

1. Refer to General Notes: section 12 and 17

3: REFERENCES:

3.1 Guidance Drawings/Nameplate data

1. N/A

HD-07 SEA CHESTS AND STRAINERS (SURVEY)

3.2 Standards and Regulations

1. N/A

3.3 Allowances

1. N/A

3.4 Owner Furnished Equipment

1. Unless otherwise stated all material shall be CFM

4: PROOF OF PERFORMANCE:

4.1 Inspection

1. Contractor must paint grid tabs

4.2 Testing

1. N/A

4.3 Certification

1. N/A

5: DELIVERABLES:

5.1 Reports, Drawings and Manuals

1. N/A

5.2 Spares

1. N/A

5.3 Training

1. N/A

HD-08 ENGINE ROOM LIMBER HOLES

1: SCOPE:

The intent of this specification item is for Contractor to install limber holes in the outboard side main engine girder webs in the Main Mechanical Room to allow for water drainage to the bilge/ centerline area.

2: TECHNICAL DESCRIPTION

1. Contractor shall complete this specification item as per the attached specification prepared by Allswater Consulting Engineer, Appendix A and include cost in their overall bid.
2. Notes:
 - Where the attached specification indicates will be, Contractor shall interpret the expression as shall be.
 - Where the attached specification indicates will need to be, Contractor shall interpret the expression as shall be.
 - Where the specification indicates owner and Technical Authority, Contractor shall interpret that as the CGTA.
 - Where expressed or imply within the specification that something could or will likely need to be addressed, Contractor shall interpret these expressions as being required and price the work accordingly in their bid unless advised otherwise by the CGTA.
3. Contractor shall ensure all piping being removed is drained prior to being cut away to access area in way of engine girder limber hole installations. Contractor shall ensure piping is isolated, where available, prior to cutting section away. All pipes and interference items removed shall be protected and open pipes shall be covered.
4. Contractor is responsible for disposal of all liquids and debris as a result of this work.
5. Contractor is responsible for preparing the removed sections of piping for reinstallation. See attached email from Lloyd's concerning the use of socket welds for reinstallation of the piping sections.
6. Contractor shall socket weld, were applicable, the removed piping back into its original location once the limber hole work has been completed. Contractor shall address each installation as described by the attached Lloyd's recommendations with all work being inspected and approved by Lloyd's prior to acceptance.
7. Contractor shall prepare each pipe (bare areas) upon successful completion of testing describe in section 4.2.2 for coating. Contractor shall apply, interior piping, two (2) coats of "INTERSHIELD 300", abrasion resistant epoxy, bronze.

HD-08 ENGINE ROOM LIMBER HOLES

3: REFERENCES:

3.1 Guidance Drawings/Nameplate data

1. As per specification prepared by Allswater – Appendix A

3.2 Standards and Regulations

1. Canada Shipping Act, 2001: Marine Machinery Regulations (SOR/90-264)
2. Lloyd's Register, Rules & Regulations for the Classification of Special Service Craft Standard

3.3 Allowances

1. N/A

3.4 Owner Furnished Equipment

1. Unless otherwise stated all material shall be CFM.

4: PROOF OF PERFORMANCE:

4.1 Inspection

1. As per specification prepared by Allswater – Appendix A
2. Contractor is responsible for arranging the local Lloyd's Surveyor to conduct inspections upon completion of work, the CGTA shall be informed of the scheduled visit as early as possible prior to the visit so as to be available for the viewing with the Surveyor.

4.2 Testing

1. As per specification prepared by Allswater – Appendix A
2. In addition to the testing identified above in section 1, Contractor shall test all new pipe welds to prove they are acceptable (Lloyd's approved) and provide a report of all findings.
3. Final acceptance for all piping reinstallation work is based on all welds passing Lloyd's approved testing and all completed piping work passing a functional/operational test.
4. Acceptance is based on the satisfaction of the CGTA.

4.3 Certification

1. Contractor shall provide welding procedures for the specified work
2. As per specification prepared by Allswater – Appendix A

HD-08 ENGINE ROOM LIMBER HOLES

5: DELIVERABLES:

5.1 Reports, Drawings and Manuals

1. As per specification prepared by Allswater – Appendix A

5.2 Spares

1. N/A

5.3 Training

1. N/A

H-01 LIFERAFTS ANNUAL INSPECTION

1: SCOPE:

The intent of this specification is to perform annual servicing and certification of the vessel's life rafts and hydrostatic releases.

2: TECHNICAL DESCRIPTION:

2.1 General

1. Contractor shall remove the Life rafts and their hydrostatic releases from their stowed positions on the vessel and transport them via commercial bonded carrier to and from a sub-contractor's premises for servicing / inspection.
2. Contractor shall subcontract the annual inspection and recertification of Life rafts to an Approved Lloyd's Register service facility that currently holds Original Equipment Manufacturer (OEM) certification.
3. An allowance of \$5,000 shall be provided for work completed by the sub-contractor. This allowance shall be adjusted up or down through PWGSC 1379 action upon proof of invoices.
4. Contractor is responsible for ensuring Life rafts are witnessed by Lloyd's Surveyor as required and for providing certificates to CGTA for the life rafts.
5. Contractor shall return Life rafts and their hydrostatic releases to the stowed position on the vessel.

2.2 Location

1. See References section

2.3 Interferences

1. Contractor is responsible for the identification of any interference items, their temporary removal and storage and reinstallation on the vessel.
2. Contractor is responsible for protecting surrounding area and equipment while carrying out this work.

3: REFERENCES:

3.1 Guidance Drawings/Nameplate data

Liferaft	Size	Location	Serial #
Port	16 Pers	Port Side Bridge Deck	XDC 0FC26B111
Stbd	16 Pers	Stbd Side Bridge Deck	XDC 1FC54B111
SAR	4 Pers	Aft Bridge Deck	XDC 1FG79C212

H-01 LIFERAFTS ANNUAL INSPECTION

3.2 Standards and Regulations

1. The following Coast Guard Standards and or Technical Bulletins shall 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)

3.3 Allowances

1. Refer to Section 2.1, subsection 3 above

3.4 Owner Furnished Equipment

1. Unless otherwise specified, all materials, labour, and equipment required to complete all specified work shall be Contractor supplied

4: PROOF OF PERFORMANCE:

4.1 Inspection

1. Contractor and CGTA shall ensure life rafts are stowed and secured properly in their holders, and all required certification is present

4.2 Testing

1. Inspection and testing shall be completed as per Lloyd's Registry requirements.

4.3 Certification

1. Contractor shall provide all test certificates, and endorsement of safe operation required by Lloyd's Register for certification to the CGTA.

5: DELIVERABLES:

5.1 Reports, Drawings and Manuals

1. Contractor shall provide a list of the work that was performed on each life raft.

5.2 Spares

1. N/A

5.3 Training

1. N/A

H-02 #9 FUEL TANK VENT MODIFICATIONS (SURVEY)

1: SCOPE:

The intent of this specification item is for Contractor to modify the existing fuel tank venting system by adding an additional independent vent to fuel tank #9, and inspect the fuel tank for Lloyd's Register credit.

2: TECHNICAL DESCRIPTION:

2.1 General

1. When the vessel arrives at Contractor's facility, the vessel will ensure the fuel tanks are pumped as low as reasonably possible, leaving approximately eight (8) cubic meters (m³) of residue fuel onboard. Fuel shall be removed from tank #9 and disposed of by Contractor, in accordance with Provincial regulations. Contractor shall quote a rate per cubic meter of disposal, for PWGSC 1379 adjustment purposes.
2. There is a number of interference items present in the work area. Contractors are strongly advised to attend the viewing to witness these interferences, as no extra charges for removal or reinstallation of interference items will be authorized.
3. Contractor shall take care to avoid scheduling conflicts with specification item H-10, Transom exhaust renewals which takes place nearby.
4. Contractor shall open up tank #9 by the removing manhole cover(s). The cover(s) are secured with nuts and bolts, and Contractor shall ensure they retain all of the hardware for reinstallation.
5. Tank #9 shall be mechanically ventilated with equipment approved for explosive atmospheres. Tank #9 shall be ventilated to atmosphere and not to areas inside the vessel under any circumstances. Contractor shall supply, operate, and maintain all fans and associated equipment.
6. Contractor shall arrange for and ensure gas-free and safe for "Hot Work" certificates are issued, the space is safe for entry and a sign indicating the space is safe to enter before entry into the tank is allowed. Contractor shall maintain the tank in a gas-free state by maintaining adequate ventilation and re-testing as required by regulations for the duration of the work.
7. Any sludge or residue present in the tank that needs to be removed ashore for disposal in compliance with provincial regulations. All drain holes in the tank structure shall be cleared of any obstruction so as to allow free flow of liquids. Contractor shall ensure that tank outlets, inlets and sounding tubes are free of any dirt, debris, and obstructions.
8. Contractor shall blank off all connection to #9 Tank prior to commencing work. Upon completion of this specification item Contractor shall reinstall all connections using new CFM gaskets (approved for fuel oil applications) and existing fasteners.
9. The tank and affected piping shall be hydro-blasted with hot water to ensure biological contaminants are killed (Minimum Water Temperature Required is 80° C).

H-02 #9 FUEL TANK VENT MODIFICATIONS (SURVEY)

10. Tank #9 shall be thoroughly cleaned to Hand Tool SSPC-SP2 standard. Any rusty areas shall be power tool cleaned to SSPC-SP3 standard. All scale, dirt and debris shall be removed ashore and disposed of by Contractor.

NOTE: The proposed tank vent piping runs are for bidding purposes only. The exact piping diameter and general locations shall be determined by CGTA and Lloyd's Register prior to the vessels arrival. Contractor shall determine the exact piping routes in consultation with CGTA and Lloyd's prior to the work commencing.

11. A new vent line shall be installed at the top aft port side corner of fuel tank #9 and follow proposed piping route in the drawing provided by Concept Naval Engineering (appendix C)
12. Contractor shall cut a hole in the top of fuel tank #9 to allow for the fitting of a CFM 50 mm (2 inch) diameter vent pipe. This new vent pipe shall be fitted to the tank in the same manner as the existing forward vent.
13. Contractor shall fit a 90° elbow to allow the vent to run aft and then follow the proposed piping route. The length and type of piping required is eight (8) meters of 50 mm schedule 40, mild steel pipe.
14. Contractor shall fit the vent pipe with sufficient flange connections to allow the vent pipe to be removed and blanked for tank testing. Contractor shall bid on supplying and installing 9 flanges with stainless steel fasteners. Piping runs shall also be fitted in such a way to allow for removal to access the port ballast tank and clearance for work to be done on the steering gear system.
15. Contractor shall ensure bulkhead penetration is reinforced with a 10 mm thick doubler plate, having an outside diameter of 220 mm.
16. Contractor shall provide a copy of their welding procedures to the CGTA prior to commencing fabrication and installation of #9 fuel tank vent line.
17. Contractor is required to view the fuel tank area, during the site visit, to see where the new pipe installation will be fitted prior to bidding. Site visit is necessary to determine the possible interferences and understand the proposed piping configuration in order to meet the specification requirements.
18. Any insulation or mechanical items which are displaced to allow for the work to be completed shall be reinstalled and secured to the satisfaction of CGTA. Care and storage of these items are the responsibility of the contractor and any repairs required will be at the expense of the contractor.
19. Contractor shall, for all welded areas, provide magnetic particle testing by a certified NDT technician on all welds to ensure there are no defects, while all fabricated piping sections shall be pressure tested prior to installation. Any defects found shall be repaired by Contractor and retested prior to acceptance.

H-02 #9 FUEL TANK VENT MODIFICATIONS

20. After obtaining Lloyd's approval and credit, the vent pipe shall be painted. All interior vent piping shall receive 2 coats of "INTERSHIELD 300", abrasion resistant epoxy, Aluminium.
21. Upon completion of vent installation, Contractor shall flush all piping and remove any water, dirt or debris present in the fuel tank. Tank #9 shall be wiped clean using lint free rags.
22. Tank manhole cover(s) shall be secured using new contractor supplied 1/4" nitrile rubber gaskets, compatible with installation in Fuel Oil tanks. All manhole fasteners shall be secured with anti-seize compound applied.
23. Contractor shall pressure test tank #9 in accordance with the requirements of the attending Lloyd's Surveyor. For bidding purposes, Contractor shall bid on providing a pneumatic test to 2.5 psi as outlined in the testing procedures in section 4.2.
24. All overflow connections; fill, drain, sensor openings, sounding and vent lines shall be blanked (sealed) prior to testing, and opened following completion. All blanks required for pneumatic testing shall be supplied, installed and later removed by Contractor. Contractor shall notify CGTA a minimum of two (2) hours prior to testing the tank.

2.2 Location

1. Tank #9 is located in the steering gear compartment. There are 2 manhole covers, one located in the Auxiliary Mechanical Room (AMR) and one in the Steering Gear Compartment.
2. Tank Plan for tank locations will be made available.

2.3 Interferences

1. Contractor is responsible for the identification of all interference items, their temporary removal and storage and reinstallation on the vessel.
2. Refer to General Notes: section 12
3. H-10 Transom exhaust renewals.
4. Contractor is responsible for protecting surrounding area and equipment while carrying out this work.

3: REFERENCES:

3.1 Guidance Drawings/Nameplate Data

CGTA will provide drawings to contractor

1. Drawing: AF6099-89940-02 Tank Arrangements & Capacity Plan
2. Drawing: c15-49-002-01 Appendix

H-02 #9 FUEL TANK VENT MODIFICATIONS

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<u>Fuel Tank</u>	<u>Access Locations</u>	<u>Capacity (m³)</u>
#9	AMR port side inboard of #1 S/S Generator and Steering Gear Compartment - one manhole in each.	8.5

3.2 Standards and Regulations

1. Contractor is required to abide by the Fleet Safety and Security Manual provisions for Hot Work, Confined Safe Entry and Fall Protection and/or follow an equivalent safety management system. Task Hazard assessments will be performed prior to work commencing each working day.
2. Any necessary welding shall be performed to CWB 47.1 and visually inspected by a qualified welding supervisor.
3. Any item of work involving the use of heat in its execution requires that Contractor advise the CGTA before starting such heating and upon its completion.
 - Contractor shall provide suitable fire retardant coverings to protect wire ways, cables, equipment and structure from welding slag, splatter etc. in all surrounding areas.
 - Contractor shall provide sufficient suitable fire extinguishers and a fire watch during any such heating and until the work has cooled.
 - The Ship's extinguishers shall **not** be used except in an emergency.
 - Contractor shall service and shall refill any ship's extinguisher used under such conditions
4. Contractor is responsible for arranging for a certified Marine Chemist to visit the vessel and to carry out the necessary testing to obtain safe for hot work certificates

3.3 Allowances

1. N/A

3.4 Owner Furnished Equipment

1. Unless otherwise stated all materials should be contractor furnished

4: PROOF OF PERFORMANCE:

4.1 Inspection

1. Contractor is responsible for coordinating all inspections with a Lloyd's Surveyor and producing an inspection schedule prior to commencement of work.

H-02 #9 FUEL TANK VENT MODIFICATIONS

2. Contractor shall provide CGTA a minimum of four hours' notice of each inspection, to allow his/her attendance.
3. Upon completion of all work, repairs and testing, Contractor and CGTA shall conduct a final inspection and ensure tank #9, covers, vents and piping connections have been returned to operating conditions and attending Lloyd's Surveyor has completed all inspections for credit

4.2 Testing

1. Attending Lloyd's Surveyor shall determine the test method. All tests shall be witnessed by attending Lloyd's Surveyor and CGTA.
2. For bidding purposes, Contractor shall bid on pneumatic testing of tank #9 to 2.5 psi. The bid price shall include the installation and removal of blanks for suctions, overflow pipes, vent, etc.

4.3 Certification

1. Contractor is responsible for providing mill certificates for all piping and flanges used.
2. Contractor shall ensure they have Lloyd's approvals prior to all work commencing and approvals upon completion.

5: DELIVERABLES:

5.1 Reports, Drawings and Manuals

1. Contractor shall provide a copy of all test certificates to CGTA

5.2 Spares

2. N/A

5.3 Training

1. N/A

H-03 FIXED FIRE FIGHTING SYSTEMS

1: SCOPE:

The intent of this specification item is for Contractor to complete the annual inspection of the ships fixed fire extinguishing systems.

2: TECHNICAL DESCRIPTION:

2.1 General

1. Contractor shall arrange to have the vessel's fixed fire extinguishing systems (FM-200 and Galley Kiddie-System) inspected, tagged and dated by a service agency certified by Lloyd's Register, and approved by the System Manufacturer.
2. Cylinders shall be individually weighed. All weights, levels, and pressures of cylinders shall be measured and recorded.
3. All rotating beacons and flashing lights shall be tested and proven in good working order.
4. All audible alarms shall be tested and proven in good working order.
5. All wires and cables shall be proven in good working order.
6. The FM-200 Nitrogen Driver shall be proven in good working order.
7. All piping and nozzles shall be proven clear.
8. Any required repairs identified as a result of the inspections shall be brought to the attention of CGTA before commencing any repair work. All repairs shall be negotiated through PWGSC 1379 action.
9. All cylinders shall be properly secured in their original locations after inspection

2.2 Location

1. FM-200 System – MMR and Emergency Generator Room
2. Kiddie System – Galley and Dry Stores.

2.3 Interferences

1. Contractor is responsible for the identification of any interference items, their temporary removal and storage and reinstallation on the vessel.
2. Contractor is responsible for protecting surrounding area and equipment while carrying out this work.

H-03 FIXED FIRE FIGHTING SYSTEMS

3: REFERENCES:

3.1 Guidance Drawings/Nameplate Data

1. N/A

3.2 Standards and Regulations

1. The following Coast Guard Standards and or Technical Bulletins shall be adhered to in the course of executing this specification. Copies of these standards and bulletins can be obtained from the CGTA.
 - Canadian Coast Fleet Safety Manual (DFO 5737)
 - Coast Guard ISM Lock Out/Tag Out Procedures
2. Contractor shall refer to General Notes for any other applicable standards and regulations

3.3 Allowances

1. N/A

3.4 Owner Furnished Equipment

1. Unless otherwise stated, all materials, labour, and equipment required to complete all requirements of this specification shall be CFM.

4: PROOF OF PERFORMANCE:

4.1 Inspection

1. Contractor shall arrange all necessary Lloyd's inspections related to the firefighting and fire detection system inspections.

4.2 Testing

1. Systems shall be inspected to the satisfaction of Lloyd's Surveyor and OEM approved service technician

4.3 Certification

1. Two (2) typewritten and one (1) electronic copies of all inspection reports and certifications shall be provided to CGTA

H-03 FIXED FIRE FIGHTING SYSTEMS

5: DELIVERABLES:

5.1 Reports, Drawings and Manuals

1. A record of all cylinder weights and levels, both before and after servicing, shall be provided in the final report.
2. A list (or drawing) of all audible alarms, rotating beacons, and wiring checked shall be provided in the final report. Any repairs completed shall be listed.

5.2 Spares

1. N/A

5.3 Training

1. N/A

H-04 FIRE DETECTION SYSTEM INSPECTION

1: SCOPE:

The intent of this specification item is for Contractor to complete the annual inspection of vessel's Notifier CAB-4 Series Fire Detection System.

2: TECHNICAL DESCRIPTION:

2.1 General

1. Contractor shall arrange to have the ship's Notifier AFP-200 fire detection and alarm system inspected, tested and certified by a service agency certified by Lloyd's Register, and approved by the System Manufacturer.
2. All components of fire detection system shall be tested for correct function as directed by the service agent. This includes, but is not limited to: primary and secondary control panels, all detectors, audible alarms, rotating beacons, and flashing lights.
3. Any repairs required as a result of the inspections findings shall be brought to attention of CGTA as early as possible. Repair work shall be approved by CGTA, and negotiated through PWGSC 1379 action.
4. Two (2) copies of all inspection and test certificates shall be provided to CGTA.
5. All work shall be completed to satisfaction of CGTA and Lloyd's Surveyor.

2.2 Location

1. The system consists of:
 - Alarm & Monitor Panel located on the Bridge
 - Secondary panel in the MCR
 - Smoke Detectors, Heat Detectors, Pull Stations, Bells, Beacons, Alarm Activation and Fire Door Activation, installed throughout the ship.

2.3 Interferences

1. N/A

3: REFERENCES:

3.1 Guidance Drawings/Nameplate Data

1. N/A

3.2 Standards and Regulations

1. CAN/ULC-S527M Standard for Control Units for Fire Alarm Systems

H-04 FIRE DETECTION SYSTEM INSPECTION

3.3 Allowances

1. N/A

3.4 Owner Furnished Equipment

1. N/A

4: PROOF OF PERFORMANCE:

4.1 Inspection

1. Inspection shall be completed as per Manufacturers recommendations and as stated in Technical Description.

4.2 Testing

1. A functional test of entire system is required, as described in Technical Description. Acceptance is based on the satisfaction of the CGTA.

4.3 Certification

1. Fire Detection System shall be credited by Lloyd's Register
2. Inspection and test certificates from Service Agent upon completion of this specification.

5: DELIVERABLES:

5.1 Reports, Drawings and Manuals

1. Two (2) copies of inspection report shall be provided to CGTA.
2. A list of all defects and replacements shall be provided to CGTA.

5.2 Spares

1. N/A

5.3 Training

1. N/A

H-05 PORTABLE FIRE EXTINGUISHERS

1: SCOPE:

The intent of this specification item is for Contractor to complete the annual inspection of all 31 portable fire extinguishers onboard the vessel. This is also to include 0 hydro tests and 0 six year inspections.

2: TECHNICAL DESCRIPTION:

2.1 General

1. Contractor shall arrange to have all the vessel's portable fire extinguishers inspected, tagged and dated by a locally authorised service agency.
2. The following is a summary listing of extinguishers to be dealt with:

Bridge Deck					
#	Location	Type	Serial #	Hydro Due	6 Year Due
1	Bridge, Comm Ctr Aft	10 lb Dry ABC	121995	09/25	Jan-2019
2	Bridge, Comm Ctr Fwd	15 lb Co2	799997	09/18	
3	Bridge, Comm Ctr Fwd	10 lb Dry ABC	121752	09/25	Jan-2019
4	Outside Fwd FiFi hatch	15 lb Co2	799995	09/18	
5	Outside Fwd FiFi hatch	20 lb Dry ABC	121997	09/25	Jan-2019
6	Outside Fwd FiFi hatch	10 lb Dry ABC	764695	09/25	Jan-2019
7	Outside Fwd Batt hatch	6 L wet	369279	09/18	
8	Outside Fwd Batt hatch	9.4 L Afff	568098	09/18	

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H-05 PORTABLE FIRE EXTINGUISHERS

Main Deck					
#	Location	Type	Serial #	Hydro Due	6 Year Due
9	Fwd alleyway, Port	9.4 L Afff	568144	09/18	
10	Electronic equip rm	15 lb Co2	799964	09/18	
11	Galley	6 L Wet	369278	09/18	
12	Aft alleyway at Dry Store	9.4 L Afff	568152	09/25	
13	S. Breezeway near F.O. Locker	10 lb Dry ABC	121491	09/25	Jan-2019
14	Emerg. Gen. Rm	10 lb Dry ABC	121496	09/25	Jan-2019
15	Emerg. Gen. Rm	15 lb Co2	799998	09/18	
31	Fueling Bay, Aft	20 lb Dry ABC	BS944672	09/25	Jan-2019
Below Main Deck					
#	Location	Type	Serial #	Hydro Due	6 Year Due
16	Bow Thruster Compt	9.4 L Afff	568149	09/18	
17	Fwd Alleyway washroom	9.4 L Afff	568139	09/18	
18	Outside MCR	9.4 L Afff	568146	09/18	
19	MCR	10 lb Dry ABC	121893	09/25	Jan-2019
20	MMR Fwd Ctr	9.4 L Afff	568140	09/18	
21	MMR Fwd Stbd	20 lb Dry ABC	764694	09/18	Jan-2019
22	MMR Midway Stbd	9.4 L Afff	568143	09/18	
23	MMR Midway Port	15 lb Co2	799959	09/18	
24	MMR Aft Ctr	15 lb Co2	799963	09/18	
25	Amr Fwd	15 lb Co2	799957	09/18	
26	AMR Aft	9.4 L Afff	568151	09/18	
27	Steering Gear Compt	9.4 L Afff	568093	09/18	
FRC					
#	Location	Type	Serial #	Hydro Due	6 Year Due
28	RHIB Front Console	5 lb Dry ABC	107764	01/22	Jan-2019
29	RHIB Front Console	5 lb Dry ABC	107706	01/22	Jan-2019
Shepard Boat					
#	Location	Type	Serial #	Hydro Due	6 Year Due
30	Shepard boat	5 lb Dry ABC	BW932128	01/22	Jan-2019

H-05 PORTABLE FIRE EXTINGUISHERS

3. Extinguishers shall be dealt with so that no space will be left without a portable fire extinguisher at any one time. NOTE: Contractor shall provide temporary equivalent units for use if any extinguishers are required to be removed from the ship for servicing.
4. Any cost of transporting the extinguishers from vessel to the place of inspection, and including the return of the extinguishers to the vessel, shall be included in the overall bid.
5. The following fire extinguishers shall be hydro tested:
6. The following Zero **(0)** fire extinguishers shall have a 6 year inspection completed:
7. Any required repairs identified as a result of the inspections shall be negotiated through PWGSC 1379 action.
8. Extinguishers shall be properly secured in their original locations after inspection.

2.2 Location

1. All throughout ship

2.3 Interferences

1. Contractor is responsible for the identification of any interference items, their temporary removal and storage and reinstallation on the vessel.
2. Contractor is responsible for protecting surrounding area and equipment while carrying out this work.

3: REFERENCES:

3.1 Guidance Drawings/Nameplate data

1. N/A

3.2 Standards and Regulations

1. The following Coast Guard Standards and or Technical Bulletins shall 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)
 - Coast Guard ISM Lock Out/Tag Out Procedures
2. Contractor shall refer to General Notes for any other applicable standards and regulations

H-05 PORTABLE FIRE EXTINGUISHERS

3.3 Allowances

1. N/A

3.4 Owner Furnished Equipment

1. Unless otherwise stated, all materials, labour, and equipment required to complete all requirements of this specification shall be CFM.

4: PROOF OF PERFORMANCE:

4.1 Inspection

1. Contractor shall arrange all necessary Lloyd's inspections related to the portable fire extinguishers.

4.2 Testing

1. Systems to be inspected to the satisfaction of Lloyd's Register and OEM.

4.3 Certification

1. Two (2) copies of all inspection reports and certifications shall be provided to CGTA.

5: DELIVERABLES:

5.1 Reports, Drawings and Manuals

1. Contractor shall a report detailing all work completed on extinguishers

5.2 Spares

1. N/A

5.3 Training

1. N/A

H-06 ANNUAL DUCT CLEANING

1: SCOPE:

**CCGS CORPORAL MCLAREN MMV
DRYDOCKING AND REFIT 2016**

The intent of this specification item is for Contractor to access and clean the air ducting for galley exhaust (including the galley range hood) and the inlet and exhaust ducting from the Laundry

2: TECHNICAL DESCRIPTION:

2.1 General

1. Contractor shall provide the services of a qualified HVAC representative to mechanically clean the vessel's ducting. All ducting noted above shall be cleaned thoroughly of dust, dirt, debris, scale, rust, etc. Contractor is responsible for making penetrations for the cleaning equipment and the subsequent sealing of such access points with an approved material for the type of ducting being worked on, upon completion of all work. Plastic plugs shall not be used to seal up access point. Contractor shall co-ordinate the cleaning with the ship's staff in order to minimize interruption of normal work routines.
2. Contractor shall remove ceiling panels in order to access the applicable ventilation trunking, ducting, and tubes. All items shall be reinstalled in good order upon completion of all work. Any wiring, piping, lighting, fixtures, fasteners, metal work, etc. that has been removed or repositioned to carry out this work shall be reinstalled in good order in its original location and condition. All insulation removed shall be reinstalled accordingly and all taped seams shall be re-taped with new approved tape (foil-grip) for HVAC systems (duct tape shall not be used).
3. Prior to commencing any work, Contractor shall tag and lock out each system supply/exhaust fan set. All electrical and mechanical lockouts and tag outs shall be carried out to the satisfaction of the CGTA, as per the DFO/5737 Fleet Safety Manual, 7.B.5 - LOCKOUT AND TAGOUT. Contractor shall install /remove locks and tags accordingly during the scope of work. CGTA will assist Contractor in identifying the locations to perform the lock outs, but will not perform the actual lock out. Contractor shall supply and install their own locking devices and retain all keys during the scope of this work. Upon completion of all work the CGTA shall be in attendance when all locks/tags are removed.
4. Contractor is responsible for all materials, coverings, and equipment required for performing this task. All labor required for completing the cleaning, including that required for removals, reinstallation, opening, and closing up of equipment and ducting is Contractor's responsibility. Contractor shall remove all materials used in the performance of this specification requirement, from the vessel. Ship's waste receptacles will not be used for disposal of any removed materials.
5. Contractor is responsible for the cleaning of all spaces, furniture, equipment, etc. that is contaminated or soiled during this scope of work.

H-06 ANNUAL DUCT CLEANING

6. All systems shall be closed up as per their original configuration upon completion of the cleaning process.

GALLEY

7. The 120cm by 90cm range hood is serviced by a single duct approximately 160mm in diameter and approximately 3m in overall length.
8. The Range Hood and trunking shall be chemically and/or steam cleaned. All dirt, grease, debris, and cleaning fluids shall be trapped and shall be removed ashore and disposed of by Contractor.
9. Prior to cleaning, all mechanical and electrical connections to range hood shall be released by Contractor, including piping for fire extinguishing system, associated controls and electrical lighting. All fittings liable to interfere with cleaning of the range hood shall be temporarily relocated and protected.
10. The range hood filter screens shall be removed and steam cleaned.
11. Trunking in way of the exhaust fan shall be opened to allow complete degreasing of fan, fan motor, and its support brackets. Approximately 2m of 25cm by 20cm trunking is involved. Contractor shall remove sections of the stainless steel cladding for access.
12. Trunking and range hood shall be reassembled in good order and adjusted upon completion of cleaning and inspection by Contractor. All items removed or relocated to allow for the work to proceed shall be reassembled in good order and functionally tested to the satisfaction of the CGTA.

Laundry Dryers

13. Laundry Room – Compartment
Laundry/ Linen Locker Door #19
14. Natural supply ducting (approximately 15 cm diameter) and forced exhaust ducting (approximately 10cm by 15cm) shall be accessed, opened and cleaned of dust and debris.

2.2 Locations

Galley

On main deck – bottom of bridge stairwell, turn right into alleyway, look to the right into the alleyway and next door on the left.

Laundry Room

Located below the main deck at the foot of the stair well turn left.

H-06 ANNUAL DUCT CLEANING

HVAC Main Unit

Located on the main deck forward of the wheelhouse; access from outside the vessel.

2.3 Interferences

1. Contractor is responsible for the identification of any interference items, their temporary removal and storage and reinstallation on the vessel.
2. Contractor is responsible for protecting surrounding area and equipment while carrying out this work.

3: REFERENCES:

3.1 Guidance Drawings/Nameplate Data

1. Contractor shall have access to 1:100 scale drawings: A/C System Diagrams which details the location of air handling units, outlets, return air dampers and ducting runs.

DWG: HVAC Single Line DWG AF6099-51000-01

3.2 Standards and Regulations

1. The following Coast Guard Standards and or Technical Bulletins shall 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)
 - Coast Guard ISM Lock Out/Tag Out Procedures
2. National Air Duct Cleaners Association (NADCA), international standard for Assessment, Cleaning and Restoration (ACR) of HVAC Systems, 2013.

3.3 Allowances

1. N/A

3.4 Owner Furnished Equipment

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

H-06 ANNUAL DUCT CLEANING

4: PROOF OF PERFORMANCE:

4.1 Inspection

1. Contractor and CGTA shall inspect all spaces to ensure the specification requirements have been met and all interference, insulation and coverings removed are reinstalled to their original condition.

4.2 Testing

1. Upon completion of work a functional test of the system shall be conducted in the presence of the CGTA to prove the system is operating as per its original condition. All work shall be performed to the satisfaction of the CGTA.

4.3 Certification

1. N/A

5: DELIVERABLES:

5.1 Reports, Drawings and Manuals

1. Upon completion of all work, two (2) type written copies and one (1) electronic copy of the service report shall be provided to CGTA.

5.2 Spares

1. N/A

5.3 Training

1. N/A

H-07 ANNUAL LIFEBOAT DAVIT INSPECTION (SURVEY)

1: SCOPE:

The intent of this specification item is for Contractor to survey the Welin Lambie Life Boat Davit, for Lloyd's Registry annual inspection and testing. In addition, the Lifeboat Davit shall receive its' annual inspection as per Welin Lambie recommendations.

2: TECHNICAL DESCRIPTION

1.1 General

1. Contractor shall obtain the services of a qualified Welin-Lambie Field Service Representative (FSR). Contractor shall provide all equipment, hardware, personnel, etc. to carry out the required work under the direction and guidance of the FSR. Contractor shall obtain certification for the FSR from Welin Lambie.
2. Contractor shall include an allowance of \$20,000 to cover expenses of a Welin Lambie FSR. The FSR shall be reimbursed for any necessary parts, services, authorized travel and living expenses reasonably and properly incurred in the performance of the work. Contractor shall provide the fee schedule from Welin Lambie for the services of the FSR. This info shall be included in the PWGSC data pricing sheet. Final costs for the FSR as well as parts and materials shall be adjusted up/down upon proof of invoices through PWGSC 1379 action. Contact information for the FSR is as follows:

Grahame Baker
Welin Lambie Ltd.
18 Ridgecrest Drive
Bridgewater, Nova Scotia
B4V 3V8

Email: welinlambie@eastlink.ca
Mobile: (902) 543-4337
Fax: (902) 543-9787

2. All manufacturer's procedures and recommendations shall be followed during the scope of work with technical specifications being adhered to as a minimum by Contractor. Contractor shall arrange for scheduling the on-site presence of a Lloyds Surveyor as required for inspections/testing during the course of this work.
3. Contractor shall supply all the necessary staging and crange as required to work on, remove, transport, and install the various components during this inspection and/or repair process if warranted. All personnel working on the davit system shall be suitably trained in fall restraint and all fall restraint equipment shall be certified and current.
4. Contractor shall supply certified weights for the load test as instructed by the FSR. Contractor shall contact Welin Lambie for the specific type of weight and quantity required for this specific lifeboat. The supply, transport, hook up and removal of these weights for the specification shall be included in the overhaul bid.

H-07 ANNUAL LIFEBOAT DAVIT INSPECTION

5. Prior to the commencement of any and all work, Contractor shall lock out the power pack unit, associated condensation heaters, and the oil reservoir immersion heater as per the Coast Guard ISM Safety Lockout Procedure 7.C.1.M S36-01 safety code. All electrical and mechanical lockouts and tag outs shall be carried out to the satisfaction of the CGTA, as per the DFO/5737 Fleet Safety Manual, 7.B.5 - LOCKOUT AND TAGOUT Contractor shall install /remove locks and tags accordingly during the scope of work. CGTA will assist Contractor in identifying the locations to perform the lock outs, but will not perform the actual lock out. Contractor shall supply and install their own locking devices and retain all keys during the scope of this work. Upon completion of all work the CGTA shall be in attendance when all locks/tags are removed. Note that the davit system is fed from multiple sources.
6. The release hooks in the Lifeboat shall be disassembled for inspection. All locks, diaphragms, bushings, hooks, side plates, and releases shall be proven for Lloyd's inspection.
7. On completion of work, survey, and re-assembly, the davit assembly shall be both functionally tested alone, and then load tested using the lifeboat. A proper load test involves fully loading the Lifeboat to its weight capacity and includes hoisting the lifeboat aboard and stowing it in its resting position, lowering it to the water and then returning it to its stowed position. The Lifeboat shall be then lowered to a couple of inches off the water and the hook released to allow the lifeboat to drop into the water. While the Lifeboat is in the water, a buoyancy test shall be conducted. A Lloyd's Surveyor shall be present for all load / functional tests. All limit switches shall be proven functional. All weights shall be removed from the Lifeboat. Lifeboat shall be fully cleaned of any debris, dirt, or water and shall be stowed in its' davit.
8. All documentation shall be provided to demonstrate OEM compliance. No material substitutions shall be undertaken without the expressed written consent of Welin Lambie representative.
9. Contractor shall supply hand written notes, two (2) typewritten and one (1) electronic copy of all reports upon completion of the work, from the FSR prior to leaving the dry-dock. The report shall at a minimum list all work undertaken, repairs, parts used, measurements, readings, etc.

2.2 Location

1. Midship starboard side bridge deck.

2.3 Interference

1. Contractor is responsible for the identification of any interference items, their temporary removal and storage and reinstallation in good order.
2. Contractor is responsible for protecting surrounding area and equipment while carrying out this work.

3: REFERENCES:

3.1 Guidance Drawings / Nameplate Data

Welin Lambie Rescue Boat Davit Type PIV 1.0A
DWG# - AF6099-O1201-1800-17_AF Rescue Boat Davit

Manual: - Welin Lambie Resue Boat Davit

3.2 Standards:

1. The following Coast Guard Standards and or Technical Bulletins shall be adhered to in the course of executing this specification. Copies of these standards and bulletins can be obtained from the CGTA.

- Canadian Coast Fleet Safety Manual (DFO 5737)
- Coast Guard ISM Lock Out/Tag Out Procedures

3.3 Allowances

1. Refer to section 2.1 General, subsection 2 above.

3.4 Owner Furnished Equipment

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

4: PROOF OF PREFORMANCE:

1. All documentation shall be provided to demonstrate OEM compliance.
2. Demonstrate operation to satisfaction of CGTA, FSR and Lloyd's Surveyor.

5: DELIVERABLES:

5.1 Drawings / Reports

1. Typewritten and electronic reports upon completion of all work from the FSR
2. Safety Management System forms and checklists
3. Lloyd's Survey credit.

5.2 Spares

1. N/A

5.3 Training

1. N/A

H-08 FORWARD TANK VENT MODIFICATIONS

1:SCOPE:

The Fuel Oil system aboard the Hero Class vessels consists of three storage tanks, one overflow tank, and one day tank, giving the vessels an overall fuel capacity of 34 m³. There have been and will be instances where individual tank pressure testing is required but the vessels do not currently have this capability. Modifying the as fitted design of the Hero Class fuel system is required so that isolation of each fuel oil tank can be achieved.

Existing configuration:

Fuel oil tank #1 (storage tank), 2 and 3 (service tanks) are vented through a common 3" line which also act as an overflow to tank #9 (storage / overflow). The branches between the tanks connections and the common line are inaccessible due to the accommodation arrangement and the nature of the finish. Furthermore, the lines are permanently assembled with welded sleeves. The 3 lines are accessible above the main deck but no removable spools are fitted. Beyond this point, the 3 separate lines merge to a common vent and isolating a specific tank becomes impossible.

2: TECHNICAL DESCRIPTION

2.1 General

1. Contractor shall bid on cropping the three existing vent lines and installing ANSI class 125/150 flanges to the three vent lines above the main deck between frame 24 and 25. The contractor shall install two flanges on each of the three vent lines as per the picture at the end of this spec item. Each flange shall be installed 30 inches off the deck.
2. Contractor shall adequately protect the surrounding area prior to any hot work.
3. Contractor shall properly dispose of all fuel inside the tanks and associated pumps before undertaking any dismantling. The contractor shall bid on the removal of 5 cubic meters of fuel to be removed and provide a unit cost for the removal of a single cubic meter. Actual work will be adjusted through PWGSC 1379 action.
4. Contractor must ensure all three forward diesel fuel tanks shall be made ready for and certified "Gas Free – safe for hot work" by contractor prior to hot work being performed upon vent piping
5. Contractor shall install a bilingual brass label plate securely attached in accordance with ASTM F992-86 (2006) indicating the tank name upon each vent loop and include this cost in the bid.
6. Contractor shall supply all materials, equipment, and parts required to perform the specified work unless otherwise stated.

2.2 Location

1. Port forward alley-way (outer-deck).

H-08 FORWARD TANK VENT MODIFICATIONS

2.3 Interference

1. Contractor is responsible for the identification of any interference items, their temporary removal and storage and reinstallation on the vessel.
2. Contractor is responsible for protecting surrounding area and equipment while carrying out this work.

3: REFERENCES

3.1 Guidance Drawings/Nameplate data

1. C15-49-002-02.pdf Rev.1
2. C15-49-506-01.pdf Rev.1

3.2 Standards and Regulations

1. Canada Shipping Act, 2001
2. Lloyds SSC 2009 Lloyds Register Special Service Craft;
3. Canadian Coast Guard Welding Specification CT-043-EQ-EG-001, March 2014, EKME#3049715v3A.
4. Canadian Coast Fleet Safety Manual (DFO 5737)
5. Coast Guard ISM Lock Out/Tag Out Procedures
6. Coast Guard Hot-work Procedures & Gas freeing
7. Transport Canada "GUIDE TO STRUCTURAL FIRE PROTECTION" TP 439

Current edition of documents, at time of contract implementation, shall be used.

4: PROOF OF PERFORMANCE

4.1 Inspection

1. All work shall be witnessed by the CGTA or delegate and the attending Lloyd's surveyor.

4.2 Testing

1. The Contractor shall be responsible to perform a pneumatic test to 2.5 psi of all 3 tanks witnessed by the CGTA and the attending Lloyd's surveyor.

Responsibility for scheduling and costs for surveyors visit is the contractors. CGTA to be notified in advance to allow their presence during witnessing of survey.

H-08 FORWARD TANK VENT MODIFICATIONS

5: DELIVERABLES

5.1 Reports, Drawings and Manuals

1. All documentation supplied with the new equipment shall be handed to the Owner's Representative.

5.2 Spares

1. N/A

5.3 Training

1. The Contractor is responsible to give all necessary training to the Chief Engineer and engineering crew to permit them to properly understand the new vent line configuration and limitations if any.



Photo of existing arrangement



Photo of desired end result taken from CCGS Kaeble.

H-09 ALLIED CRANE RAM CHANGE & INSP. (Survey)

1: SCOPE:

The intent of this specification item is to change the existing boom elevation ram to a new shorter style and complete the annual condition survey as per regulatory requirement.

2: TECHNICAL DESCRIPTION:

2.1 General

1. CGTA has arranged for a certified Allied Field Service Representative (FSR) to oversee this spec item. Contractor shall provide all equipment, hardware, personnel, etc. to carry out the required work under the direction and guidance of the FSR. Contractor shall obtain certification for the FSR from Allied. All work carried out for the H-09 spec item shall be under supervision of the certified Allied FSR. Contractor shall not include the cost of this FSR in their bid.
2. Contractor shall carry out annual inspection of crane as per recommendations contained within the maintenance and inspection section of the Allied Crane TB10-23 technical manual edition 80-992 dated Dec 2011.
3. Further the main boom ram is to be removed and a Coast Guard Supplied "shorter" ram is to be fitted in its place as per guidance instructions provided by Allied Crane and listed as follows:
4. Position the boom on the center line of the deck, pointing aft, fully retracted. Raise the boom so that there is approximately an additional 6" of cylinder exposed more than when the boom is at a 0° angle.
5. Using a support rated for a minimum of 3000 lbs. block up the boom, under the end of the main boom section. Lower the boom until the weight is off the cylinder and then remove the lower boom cylinder pin and retract the cylinder completely. Lock and Tag out the hydraulic system for the crane.
6. Disconnect and cap the hydraulic hoses to the boom lift cylinder. Connect a crane with a rated lifting capacity of approximately 1000 lbs. and remove the upper boom cylinder pin. Remove cylinder.
7. Installation of the replacement cylinder is in the reverse order. The bushings in the end of the cylinder ears are self-lubricating, use a small amount of NLGI GB-LB standard lithium complex grease during assembly such as Mobil Unirex EP 2 or equal.
8. Upon completion of the Ram exchange, entire crane to be inspected by contractor following the instructions provided within section 6.3.6 "annual inspection" of the Allied Systems Marine crane model TB10-23 technical manual Edition 80-992 dated Dec 2011
9. Contractor to record measurements and findings as per requirements stated in section 6.3.6 "annual inspection" of the Allied Systems Marine crane model TB10-23 technical manual Edition 80-992 dated Dec 2011 and draft a report on findings for presentation to the attending Surveyor.

H-09 ALLIED CRANE RAM CHANGE & INSP. (Survey)

10. Prior to final load testing, using calibrated weights or a dynamometer contractor to calibrate the Omega weight display. Procedure for this calibration, as provided by Allied Crane is aboard the vessel and can be provided to the contractor.
11. Once the new cylinder is installed a load test must be performed. Use the annual testing procedure as per the applicable governing body requires.
12. Two typewritten copies and one electronic copy of the measurement results shall be given to CGTA upon completion.

2.2 Location

1. Center of open after main deck on vessel

2.3 Interferences

1. Contractor is responsible for the identification of any interference items, their temporary removal and storage and reinstallation on the vessel.
2. Contractor is responsible for protecting surrounding area and equipment while carrying out this work

3: REFERENCES:

3.1 Guidance Drawings/Nameplate data

1. Allied systems marine crane model TB10-23 Technical Manual edition 80-992 dated Dec 2011
2. Guidance Documents for Omega display calibration

3.2 Standards and Regulations

1. Canada Shipping Act 2001 - Machinery Inspection Regulations
2. Lloyds recommendations for Man lift devices.

3.3 Allowances

1. N/A

3.4 Owner Furnished Equipment

1. Hydraulic "boom hoist" Ram of shorter dimensions than existing.

H-09 ALLIED CRANE RAM CHANGE & INSP. (Survey)

4: PROOF OF PERFORMANCE:

4.1 Inspection

1. Contractor shall demonstrate following the replacements and inspections the functionality of crane to the satisfaction of the CGTA and attending Lloyds and/or TCMSB surveyor.
2. Load display unit to accurately reflect loads applied to cranes hook.

4.2 Testing

1. Testing of the equipment shall be performed in the presence of the CGTA.

4.3 Certification

1. Crane performance to satisfy requirements of Lloyd's surveyor for annual certification.

5: DELIVERABLES:

5.1 Reports, Drawings and Manuals

1. The Contractor must provide to the CGTA:
 - Copies of readings taken and crane condition report in electronic format as well as two typewritten copies.
 - Updated reports for any circuits and/or deficiencies corrected with 1379 action.
 - Copy of the survey credit for the inspection of the crane.
2. The Contractor must provide to the Lloyd's Surveyor:
 - Copy of the readings taken and crane Condition Report to obtain Survey Credit.

5.2 Spares

1. Original Ram to be returned to vessel as property of Coast Guard.

5.3 Training

1. N/A

H-10 TRANSOM EXHAUST RENEWALS

1: SCOPE:

The intent of this specification item is for Contractor to remove the existing after most section of the main engine exhaust, along with its adjoining transition piece to the transom and as its penetration piece and install a replacement, as per additional specification appendix as provided by Lengkeek Vessel Engineering.

2: TECHNICAL DESCRIPTION

1. Contractor shall complete this specification item as per the attached specification prepared by Lengkeek Vessel Engineering, Appendix D and include cost in their overall bid.
2. Contractor shall crop and unbolt the existing inserts out of the transom and install the fabricated inserts following the requirements of Appendix D.
3. Contractor shall record the weight of existing materials removed from ship and the weight of new materials fitted to the ship.
4. All materials for the pre-fabrication of the inserts will be supplied to the Contractor.
5. Exhaust piping is to be suitably supported during removal of the aft section.
6. The corroded weld area surrounding the existing hull penetration piece and any corroded transom plating outside of this weld area is to be cut-out. UT thickness measurements are to be carried out in way of the new exhaust opening. Care is to be taken to ensure no additional plating that remains in good condition, is cut away in the process. If the corroded area of transom plating exceeds the area of new penetration plating, then insert plates of the original thickness and grade are to be installed, in accordance with Lloyd's Register.
7. Any insulation removed during the process of replacing the exhaust outlet is to be replaced after completion. New insulation of equivalent rating is to be secured around the new exhaust pipe sections.

Any paint damaged during the removal and installation of the new exhaust outlet is to be repaired to the owner's satisfaction and repainted utilizing a system compatible with the ship's existing paint system.

Temporary attachments to the vessels exterior are to be avoided. Where absolutely necessary kept to a minimum and removed upon completion of work with any affected areas repaired afterward using 1% Nickel welding electrodes and ground flush with the surrounding plating.

H-10 TRANSOM EXHAUST RENEWALS

8. Notes:

- Where the attached specification indicates will be, Contractor shall interpret the expression as shall be.
 - Where the attached specification indicates will need to be, Contractor shall interpret the expression as shall be.
 - Where the specification indicates owner and Technical Authority, Contractor shall interpret that as the CGTA.
 - Where expressed or imply within the specification that something could or will likely need to be addressed, Contractor shall interpret these expressions as being required and price the work accordingly in their bid unless advised otherwise by the CGTA.
9. Contractor shall ensure all piping being removed is drained prior to being cut away to access area in way of transom insert and exhaust piping installations. Contractor shall ensure piping is isolated, prior to cutting section away.
10. Contractor is responsible for disposal of all liquids and debris as a result of this work.
11. Contractor is responsible for preparing the removed sections of piping for reinstallation. See attached email from Lloyd's concerning the use of socket welds for reinstallation of the piping sections.
12. Contractor shall address each installation as described by the attached Lloyd's recommendations with all work being inspected and approved by Lloyd's prior to acceptance.
13. Contractor is responsible for the identification of any interference items, their temporary removal, storage, and refitting to the vessel.
14. Contractor is responsible for protecting surrounding area and equipment while carrying out this work.

3: REFERENCES:

3.1 Guidance Drawings/Nameplate data

1. As per specification prepared by Lengkeek Vessel Engineering – Appendix D

3.2 Standards and Regulations

1. Canada Shipping Act, 2001: Marine Machinery Regulations (SOR/90-264)
2. Lloyd's Register, Rules & Regulations for the Classification of Special Service Craft
3. Canadian Coast Guard Welding Specification, CT-043-eq-eg-001-E, March 2014, EKME#3049715v3A .
4. Canadian Coast Fleet Safety Manual (DFO 5737)
5. Coast Guard ISM Lock Out/Tag Out Procedures

H-10 TRANSOM EXHAUST RENEWALS

6. Coast Guard Hot-work Procedures & Gas freeing
7. Transport Canada "GUIDE TO STRUCTURAL FIRE PROTECTION" TP 439

3.3 Allowances

1. N/A

3.4 Owner Furnished Equipment

1. Unless otherwise stated all material shall be CFM.

4: PROOF OF PERFORMANCE:

4.1 Inspection

1. As per specification prepared by Lengkeek Vessel Engineering – Appendix D
2. Contractor is responsible for arranging the local Lloyd's Surveyor to conduct inspections upon completion of work, the CGTA shall be informed of the scheduled visit as early as possible prior to the visit so as to be available for the viewing with the Surveyor.

4.2 Testing

1. As per specification prepared by Lengkeek Vessel Engineering – Appendix D
2. Contractor's third party inspection organization is to visually inspect and dye penetrant test all new welds to prove they are acceptable (Lloyd's approved) and provide a report of all findings, as described in Appendix D
3. Final acceptance for all piping reinstallation work is based on all welds passing Lloyd's approved testing and all completed piping work passing a functional/operational test.
4. Acceptance is based on the satisfaction of the CGTA.

4.3 Certification

1. As per specification prepared by Lengkeek Vessel Engineering – Appendix D

5: DELIVERABLES:

5.1 Reports, Drawings and Manuals

1. As per specification prepared by Lengkeek Vessel Engineering – Appendix D
2. Weight control report in metric units

5.2 Spares

1. N/A

5.3 Training

1. N/A

H-11 LIFTING LUG INSTALLATION

1: SCOPE:

The intent of this specification item is for Contractor to install lifting lugs in the Main Machinery room as per the specification appendix prepared by Lengkeek Vessel Engineering

2: TECHNICAL DESCRIPTION

2.1 General

1. Contractor shall bid on the fabrication and installation of 11 lifting lugs as per the attached engineering drawing prepared by Lengkeek Vessel Engineering (Appendix E) and include cost in their overall bid.
2. Notes:
 - Where the attached specification indicates will be, Contractor shall interpret the expression as shall be.
 - Where the attached specification indicates will need to be, Contractor shall interpret the expression as shall be.
 - Where the specification indicates owner and Technical Authority, Contractor shall interpret that as the CGTA.
 - Where expressed or imply within the specification that something could or will likely need to be addressed, Contractor shall interpret these expressions as being required and price the work accordingly in their bid unless advised otherwise by the CGTA.
3. Contractor shall provide a copy of their welding procedures to the CGTA prior to commencing fabrication and installation of the lifting lugs.
4. Pre and Post NDT mag particle testing (after load testing the lifting lugs) shall be carried out by certified technician; Contractor shall make arrangements for the certified NDT technician and include the cost for all work in their bid. Any defects found shall be repaired by Contractor and at their expense. Contractor shall arrange for Lloyd's Register Surveyor to view the NDT testing on the lifting lugs. The entire lifting lug and surrounding steel areas being disturbed shall be prepped and recoated as per general notes.
5. Forced portable ventilation with flexible ducting shall be used during any hot work or grinding operations to aid in removing the dirt and debris. Contractor shall ensure the work space is at a negative pressure compared to the adjacent spaces. The discharge from the forced ventilation shall be to outside the ship by temporarily fitting the ducting to the escape hatch in the area.
6. Contractor shall provide a load test of 1.1 X SWL with certified weights for each lifting lug. The SWL for each lug is 500 kg.

H-11 LIFTING LUG INSTALLATION

7. Hot work shall not commence until all areas in the vicinity of the hot work have been certified gas free and safe for hot work. Contractor shall obtain and arrange for the services of a certified Marine Chemist prior to the commencement of any hot work to determine by testing/inspection and proof of certificate that the area is safe for hot work. A copy of the hot work certificate shall be given to the CGTA and a copy posted in a conspicuous location

adjacent to the hot work area. All precautions shall be taken to protect all areas and personnel from hot work damage. Contractor is responsible for maintaining a fire watch during the course of all hot work. This shall include providing various applicable extinguishers and extinguishing mediums as necessary. This shall also include any necessary preparations and cleaning in the vicinity of the work area to obtain a gas-free permit.

8. Upon completion of all work, Contractor shall carry out a cleanup of the work areas. This shall include but not be limited to a wash down of all bulkheads and deck heads as well as the disposal of all refuse, dirt, debris, etc.
9. Removed insulation sections in the main engine room shall be fitted in good order and secured properly. Aluminum foil tape to fit the removed expanded metal sections is not an acceptable method and shall not be used.

2.2 Location

1. Main Machinery Room

2.3 Interference

1. Contractor is responsible for the identification of any interference items, their temporary removal, storage, and refitting to the vessel.
2. Contractor is responsible for protecting surrounding area and equipment while carrying out this work.

3: REFERENCES:

3.1 Guidance Drawings/Nameplate data

1. As per specification prepared by Lengkeek Vessel Engineering – Appendix E

3.2 Standards and Regulations

1. Lloyd's Register, Rules & Regulations for the Classification of Special Service Craft
2. Canadian Coast Guard Welding Specification, CT-043-eq-eg-001-E, March 2014, EKME#3049715v3A .
3. Canadian Coast Fleet Safety Manual (DFO 5737)
4. Coast Guard ISM Lock Out/Tag Out Procedures
5. Coast Guard Hot-work Procedures & Gas freeing
6. Transport Canada "GUIDE TO STRUCTURAL FIRE PROTECTION" TP 439

H-11 LIFTING LUG INSTALLATION

3.3 Allowances

1. N/A

3.4 Owner Furnished Equipment

1. Unless otherwise stated all material shall be CFM.

4: PROOF OF PERFORMANCE:

4.1 Inspection

1. As per specification prepared by Lengkeek Vessel Engineering – Appendix E
2. Contractor is responsible for arranging the local Lloyd's Surveyor to conduct inspections upon completion of work, the CGTA shall be informed of the scheduled visit as early as possible prior to the visit so as to be available for the viewing with the Surveyor.

4.2 Testing

1. Contractor is responsible for arranging a suitable third party for conducting magnetic particle testing of all welds used in the installation of the lugs.
2. Contractor is responsible for performing a 1.1 X SWL load test on each lug to be witnessed by a local Lloyd's surveyor.
3. Acceptance is based on the satisfaction of the CGTA.

4.3 Certification

1. Contractor shall provide welding procedures for the specified work that complies with the requirements stated in specification as provided by Lengkeek Vessel Engineering – Appendix E
2. Mill certificates for steel used in the fabrication of the lifting lugs.
3. Contractor to provide up to date certificates indicating welders performing the work on the lifting lugs are CWB certified.

5: DELIVERABLES:

5.1 Reports, Drawings and Manuals

1. Contractor shall supply detailed report on all welding procedures used, results of the load test, and results of magnetic particle testing for each lifting lug

H-11 LIFTING LUG INSTALLATION

2. Contractor must supply a detailed final report to the CGTA, two (2) typewritten copies and one (1) electronic copy in PDF format of a for all work undertaken. The report will include at a minimum; defects, measurements taken, parts renewed , NDT readings, etc. The report must be provided to the CGTA upon completion of all specified work.

5.2 Spares

1. N/A

5.3 Training

1. N/A

L-01 ANNUAL MEGGAR READINGS

1: SCOPE:

The intent of this specification item is to complete the annual megger survey for the vessel as per regulatory requirement.

2: TECHNICAL DESCRIPTION:

2.1 General

1. Contractor shall carry out annual megger testing of all electrical panels and breakers listed in Appendix "B". Contractor shall not megger test circuits with either navigation equipment or electronic components. The generator breakers shall have their electronic components isolated before they are meggered.
2. Megger Testing shall be carried out within the first week of the vessel arriving at Contractors facility to allow sufficient time for repairs to any electrical system.
3. In regards to megger testing, motor circuits shall be tested in a two-step manner. Firstly, circuit is shall be tested between load side of circuit breaker and line side of motor starter; and secondly, between load side of starter and motor.
4. Any low readings or defects shall be brought to the attention of the CGTA as soon as possible. Repairs shall be carried out under PWGSC 1379 action.
5. Two typewritten copies and one electronic copy of the final results shall be given to CGTA upon completion.

Note: It is important that CGTA receive the report immediately upon completion of this specification item.

2.2 Location

1. Throughout the vessel

2.3 Interferences

1. Contractor is responsible for the identification of any interference items, their temporary removal and storage and reinstallation on the vessel.
2. Contractor is responsible for protecting surrounding area and equipment while carrying out this work

3: REFERENCES:

3.1 Guidance Drawings/Nameplate data

1. See Appendix B

L-01 ANNUAL MEGGAR READINGS

3.2 Standards and Regulations

1. TP127E latest version
2. Canada Shipping Act 2001 - Machinery Inspection Regulations

3.3 Allowances

1. N/A

3.4 Owner Furnished Equipment

1. N/A

4: PROOF OF PERFORMANCE:

4.1 Inspection

1. Contractor shall ensure the functionality of all equipment disassembled for insulation testing following the completion of the vessels electrical system insulation test and prior to the end of the contract period.

4.2 Testing

1. Testing of the equipment shall be performed in the presence of the CGTA.

4.3 Certification

1. N/A

5: DELIVERABLES:

5.1 Reports, Drawings and Manuals

1. The Contractor must provide to the CGTA:
 - Copies of the ship's megger report in electronic format as well as two typewritten copies.
 - Updated reports for any circuits and/or deficiencies corrected with 1379 action.
 - Copies of the survey credit for the inspection and meggering of the vessel's electrical circuits.
2. The Contractor must provide to the Lloyd's Surveyor:
 - Copy of the updated Megger Report to obtain Survey Credit.

L-01 ANNUAL MEGGAR READINGS

3. The Contractor must provide to the CGTA;
 - Copy of the updated Megger report within 24 hours of completion of the work and two weeks prior to completion of the refit.

5.2 Spares

1. N/A

5.3 Training

1. N/A