Fisheries and Oceans Canada
Canadian Coast Guard

Pêches et Océans Canada
Garde côtière canadienne

CANADIAN COAST GUARD

REFIT SPECIFICATION
CCGC CLARKS HARBOUR

SPECIFICATION NO. 14-C050-011-1

January 5, 2015

CLARKS HARBOUR, NOVA SCOTIA

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CCGS Clark's Harbour
January, 2014 Drydocking

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General Notes

1. Vessel Particulars:

The **CCGS CLARK'S HARBOUR** is a 52' "Arun Class" Coast Guard Search & Rescue (S.A.R.) lifeboat.

Vessel Location	West Head, Nova Scotia
Year Built	1996
Yard	Hike Metal Products Wheatley, Ont. (Hull # 107)
Length Overall	15.77 Metres
Breadth Molded	5.20 Metres
Draft	2.04 Metres
Engines	3408 Caterpillar 8RG00229 & 8RG00226
Plates 5mm and over	Aluminium 5086-H32 or 5083-
Plates under 5mm	Aluminium 5052-H32
Pipes and Extrusions	Aluminium 6061-T6 or 6351-T6
Stainless Steel (SS)	316

2. Mast:

With the mast lowered, the vessel will have a height of 8.25 meters from the bottom of its keel to the highest point. Contractor shall be responsible for identifying a suitable lifting point, on the mast, which is capable of supporting its weight, while it is being lowered and raised. Contractor shall be responsible for any damages caused during the lifting and lowering of the mast.

3. Bidder's Conference:

Contractor shall take note that items in this specification are not detailed (i.e. piping, electrical, metal work, etc.) and require viewing in order to bid. It is strongly recommended that Contractor arrange a site visit to examine CCGS CLARK'S HARBOUR, located at the Canadian Coast Guard (CCG) SAR Station in West Head, Nova Scotia prior to submitting a bid. Bidders who do not view the vessel in order to determine the scope of work will be evaluated as if they had attended the site visit and are fully aware of the vessels existing condition prior to the refit.

4. On-Site Coast Guard Technical Authority (CGTA):

All the specified work, as well as all work arising, shall be completed to the satisfaction of On-site CGTA. Unless otherwise advised, this will be the Vessel Maintenance Manager (VMM) of the vessel, or his 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 Branch (TCMS), Public Works and Government Services Canada (PWGSC) or Health Canada (HC).

5. 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.

6. Safety:

There is a safety annex attached to this specification entitled "FLEET SAFETY MANUAL REQUIREMENTS". In addition to the detailed requirements within the specification, this annex contains excerpts from the "FLEET SAFETY MANUAL", Edition 4, version 1 that are applicable to contracted refit and dry-docking situations. If Contractors do not already have copies of this reference, they will be made available upon request.

It is noted in the annex, that all contracted work shall be conducted in compliance with the requirements of the Canada Labour Code, Part 2. Potential Contractors shall include with their bids the name of their Safety Manager or Supervisor who will ensure that these requirements for workplace safety are met.

7. 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 and PWGSC Contracting Authority whenever the schedule is revised.

8. Daily Service Fee:

Contractor shall allow sufficient time to complete all the 'known' work described in this specification. Contractors shall bid the total price of their estimated daily service fees, plus a unit price for adjustment purposes. Contractor shall provide sufficient personnel, materiel, and equipment resources to complete the specified work, including the allowance for arisings, within the period of the contract. Extra effort required due to Contractor's failure to maintain his production schedule will not be paid for by CCG.

9. Access:

The vessel's washroom is out of bounds to Contractor's personnel except to perform work as required by the specifications. Contractor shall ensure that no workers bring meals onboard the ship.

10. 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.

11. Confined Space Entry:

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 the 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 must make use of a qualified rescue team. This team is to 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 the contractor.

12. Chemist's Certificates:

Contractor shall supply CGTA with Marine Chemist's Certificates in accordance with TCMS TP 3177E before any cleaning, painting or hot work is commenced in confined spaces or machinery compartments. Certificates shall clearly state the type of work permitted, duration of certificate and the following air test information: toxic gas level in PPM, % LEL (percentage lower explosive limit) and % 02 (percentage oxygen). Each certificate must be signed and dated by the marine chemist or qualified person carrying out the test. All certificates 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 Canada Labour Code (CLC) and relevant provincial legislation must fully comply with all provisions therein.

Contractor and his sub-contractors are advised that any work carried out in confined and / or enclosed spaces as defined by the Canadian Labour Code Part II (CLC), the Marine Occupational Health & Safety Regulations (MOSH) and the relevant provincial legislation shall be fully complied with.

http://www.tc.gc.ca/media/documents/marinesafety/tp3177e.pdf
Canadian Labour Code http://laws.justice.gc.ca/en/L-2/index.html
MOSH http://laws.justice.gc.ca/en/L-2/SOR-87-183/index.html

13. Welding:

Where any hot work is required, Contractor is responsible for meeting all requirements specified in the Canadian Coast Guard Welding Specification, included with the reference materials.

Contractor shall be currently certified by the Canadian Welding Bureau in accordance with Standard W47.1-1983 "Certification of Companies for Fusion Welding of Steel Structures," Division 1, 2.1 or 2.2. Where welding is required on aluminium superstructure, Contractor shall be qualified to CWB 47.2 for aluminium welding. All personnel performing welding shall be approved by the Canadian Welding Bureau. All sub-contractors shall be currently certified by CWB as above + Division 3. When a sub-contractor is certified to Division 3, then the primary Contractor shall have a certified Quality Assurance Program in place that introduces and maintains proper control of the sub-contractor's performance. Any welding near bearings or electronic equipment shall have its work locally grounded. No welding shall be undertaken on the vessel without the direct permission of the CGTA.

14. Electrical:

All electrical installations or renewals shall be in accordance with the latest editions of the following Marine electrical standards:

TP 127E - Ship Safety Electrical Standards
http://www.tc.gc.ca/eng/marinesafety/tp-tp127-menu-263.htm
IEEE Standard 45 - Recommended Practice for Electrical Installation on Shipboard.
http://standards.ieee.org/develop/wg/45_WG.html

15. Hotwork: Ventilation, Containment and Fire Watches:

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.

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 occupied 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.

Any item of work involving the use of heat in its execution requires that Contractor advises the CGTA prior to starting such heating and upon its completion. Contractor shall provide sufficient suitable fire extinguishers and a fire watch during any such heating and until the work has cooled. The fire watch shall be arranged such that all sides of surfaces being worked on are visible and accessible. Ship's extinguishers are not to be used except in an emergency. Should Contractor have to use ship's extinguishers in an emergency they are to be recharged and re-certified by a local facility, of CCG's choice, at Contractor's cost. Contractor shall provide suitable fire retardant coverings to protect wire ways, cables, equipment and structure from welding slag, splatter etc.

16. Protection:

Contractor shall provide adequate temporary protection for any equipment or areas affected by his work. Contractor shall take proper precautions to maintain in a proper state of preservation any machinery, equipment, fittings, stores or items of outfit (furnishings, linings, deck coverings, etc.) which might become damaged by exposure, movement of materials, paint, sand, grit or shot blasting, airborne particles from sand, grit or shot blasting, welding, grinding, burning, gouging and painting. Any damage shall be the responsibility of Contractor to repair or renew.

17. Auxiliary Services:

Contractor shall include in quotation the costs of any and all transportation, rigging, staging, slinging, cranage, removals, and installations of parts and equipment such as may be required to carry out work.

18. 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, shaft withdrawal, and tank cleaning.

19. 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 -40°C to +35°C;
- Wind velocity of 50 knots (90Km/h);
- Water temperature of -10°C to +30°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.

20. 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 - CFM). 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 shall be Contractor's responsibility to identify, to the CGTA, equipment and systems that are to be tested to verify correct function, prior to being disturbed for required work.

21. 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 to be used as temporary lighting inside the vessel. All lights used in the vessel shall be supplied with approved guards.

22. Cleanup:

Contractor shall ensure that all spaces, compartments, and areas where work has been carried out, or Shipyard staff and Sub-Contractors has used for transit routes, are left in "as clean a condition as found" when the vessel commenced refit. This includes both internal and external areas of work, as well as any affected adjacent spaces outside the principle areas of work. All rags, debris, and associated garbage generated by the shipyard staff and Sub-Contractors while on board shall be removed to the garbage container(s) each day. Costs associated with the removal of dirt, debris, and garbage shall be included in Contractor's quote.

23. Inspection:

Contractor shall be responsible for calling in the services of TCMS, and Health Canada Surveyors when and as required for survey and inspection items. All TCMS surveyors called in by Contractor shall be asked to sign-off the CGTA's Inspection Log Book for all items surveyed. Where the approval of Environment Canada (EC) or any other authority is required by law or by work contained in this specification, Contractor shall be responsible for obtaining and keeping a record of these approvals. Two (2) copies of all approvals and records shall be given to the CGTA.

24. Painting:

Unless specified otherwise, replacement and/or disturbed steelwork shall be given a minimum of two (2) coats of marine primer immediately upon completion of work. Contractor shall inform the CGTA of the area to be primed so the CGTA can advise Contractor of the suitable primer to be used. 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 arrange for the PWGSC Contracting Authority to be notified 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.

25. Materials & Tools:

All materials, unless otherwise specified, shall be supplied by Contractor. Contractor is to supply all necessary tools and equipment to perform the specified work. Special ship-specific tools, as required, will be issued by and returned to the 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.

New or disturbed joints (i.e. flanged) shall be secured using new Stainless Steel (SS) bolts and new SS locking nuts. All SS flanges are to be electrically bonded through their bolting arrangement. Dissimilar metal flanges, piping, or valves shall be fully isolated from each other using a non-conducting gasket material. When adding a dissimilar metal attachment between two similar metal flanges/piping, a bonding strip shall be attached between the two similar metals (do not

bond to dissimilar metal). Bonding straps shall be made from the similar metal to which they are bonding to.

All disturbed gaskets are to be replaced with a new gasket made of equivalent material.

26. Reference Material:

CGTA may have provided information in this specification and attachments (engineering drawings, pictures, etc.) as guidance information only. All drawings, pictures, dimensions, descriptions, locations, measurements, engineering values, materials, etc. listed or implied shall be verified by Contractor, prior to any work or fabrication commencing. All discrepancies shall be recorded and reported to the CGTA and Vessel Engineer as soon as possible. Any changes to the specified work, due to the above, shall be resolved between Contractor and CGTA prior to work starting.

The overhaul and installation of all machinery and equipment specified herein shall be as per the manufacturers' applicable instructions, drawings and specifications.

27. 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 (0.001"). 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. Contractor shall be responsible to ensure all testing and measurement equipment (mechanical or electronic) required to complete the specified work is calibrated and that calibration certificates for said devices shall be submitted to PWGSC Contracting Authority prior to final inspection or witnessing of tests.

All tests results, calibrations, measurements, trials and readings shall be properly tabulated, compiled and three (3) typewritten copies shall be provided; two copies to CCG Technical Services and one copy to the PWGSC Contracting Authority. All test and trials shall be performed to the satisfaction of the CGTA and TCMS Surveyor.

28. 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.

29. Fire Safety Systems:

Whenever any work is being carried out involving the ship's firefighting or fire detecting system, it shall be done in such a way as to leave the vessel and all persons aboard with adequate protection against fire at all times. This may be accomplished by removal or disarming of only a portion of the system at a time, by replacement with spares while work is in progress, or by other reasonable means acceptable to CGTA.

General Notes

Note: Contractor shall notify CGTA prior to deactivation and upon reactivation of fire fighting and/or fire detecting systems.

H-01– Services

1. General

1.1 Contractor is responsible for additional connections required when moving the vessel between dry-dock and alongside berth at their premises. Services are required for the full refit/dry-dock period.

1.2 Contractor shall quote a global price and daily rates for all services supplied to the vessel during the dry-docking period for adjustment purposes.

2. Electrical Power

2.1 Shore power facilities shall be supplied and installed on the vessel using a single 100 amp source with CFM cables and fittings. The vessel requires one (1): 100 amp, 240 VAC, 60 hz connection. Contractor shall quote a 1000 Kilowatt hour (KWH) flat rate for power connection for the refit period. Contractor shall provide a unit cost per day for power connection for prorated adjustments.

2.2 A ground cable shall be attached to the vessel's hull and Contractor shall ensure compliance as per the Transport Canada Marine Safety Bulletin – "Grounding Safety in Drydock".
http://www.tc.gc.ca/eng/marinesafety/bulletins-1989-06-eng.htm

3. Gangways

3.1 Contractor shall supply and erect a gangway, complete with safety nets and guard rails as per Provincial regulations. Gangway to land on main deck aft and shall be illuminated during the dark hours when work is being conducted.
Reference web site;
http://www.gov.ns.ca/lwd/healthandsafety/docs/FishSafe.pdf

3.2 Any movement of the gangway for the convenience of Contractor shall be at the expense of Contractor.

4. Garbage Removal

4.1 All garbage containers (vessel's waste baskets or Contractor supplied containers) shall be emptied out on a daily basis. Contractor shalll remove their own daily garbage from work areas of the vessel. Cost shall be included in quote.

4.2 Contractor to ensure all spaces, compartments and areas of the vessel, external and internal, are left in as clean a condition as found. Removing dirt, debris, and associated materials to be included in their bid.

5. Sea Trial

5.1 Bidders shall include a 4 hour sea trial in their bid price. The vessel will be operated by CCG personnel under Contractor's direction. The aim of the sea trial shall be to prove the safe and correct function of all systems and equipment that have been worked on, added or disturbed as part of the refit.

6. Berthing

6.1 Berthing and mooring facilities shall be provided in accordance to the Fleet Safety Manual as provided in the attached safety annex.

6.2 During refit, while not dry-docked; vessel shall be berthed at Contractor's wharf. There shall be sufficient water beneath the vessel that it shall not touch bottom at any time (upright and afloat).

6.3 Shipyard is responsible for all movements of the vessel during the refit period; including arrangements and costs of linehandlers, tugs, pilots, initial tying up, any movement of the vessel during refit and letting go of lines from Contractor's wharf on vessel departure from yard upon completion of refit.

7. Shelter / Enclosure

7.1 Contractor shall provide a protective shelter around the vessel prior to any work commencing. The shelter shall remain in place for the entire refit period. The shelter shall be heated such that the temperature at keel level shall not drop below 15°C at any point during the refit period. The shelter shall enclose all external work areas around the entire vessel including the superstructure and mast.

7.2 The shelter shall provide full protection from the elements while work is performed during inclement weather. The shelter will also prevent unwanted debris, particles and/or materials (i.e. grinding debris, sponge blast, paint chips, etc) from leaving the immediate work area and provide Contractor with the ability to recover the above and dispose of them in an approved manner.

8. Quality Control

8.1 Contractor shall have a proven quality assurance program in place or is presently working on a system that may meet CSA series of Quality assurance program standards. This requirement will provide the CGTA with a concise record of all pertinent information requested during the vessel refit.

8.2 Contractor shall provide a typewritten report of all test, trials, calibrations, measurements, etc. taken, whether identified or implied in this specification. Contractor shall compile the individual readings for each specification item into a report with copies of the workers original notes and provide a copy to the Vessel Maintenance Manager upon completion of the refit.

8.3 VMM for CCGC Clark's Harbour is:

Todd Smith
(902) 497-8732
todd.smith@dfo-mpo.gc.ca

8.4 The final report is not meant to be a formal document, but rather a concise record of all reading taken. If the specification item does not require any readings then a simple note saying so will suffice.

H-02– Cable Rails Replacement

1: SCOPE:

This specification is to outline the renewal of the cable "rail" and replacement of defective stanctions.

2: TECHNICAL DESCRIPTION:

2.1 General

1. The cable "rails" aboard CCGS Clark's Harbour shall be removed from the vessel.
2. CCG shall provide replacement cables to be installed by Contractor.

2.2 Location

The cable rails are located around the perimeter of the main deck.

2.3 Interferences

N/A

3: REFERENCES:

3.1 Guidance Drawings/Nameplate Data

95004-14 - Rails & Stanchions

3.2 Standards and Regulations

N/A

3.4 Owner Furnished Equipment

N/A

4: PROOF OF PERFORMANCE:

4.1 Inspection

N/A

4.2 Testing

N/A

4.3 Certification

N/A

5: DELIVERABLES:

5.1 Reports, Drawings, and Manuals

N/A

5.2 Spares
N/A

5.3Training
N/A

HD-01– Docking and Undocking

1: SCOPE:

The Intent of this specification is to provide guidance for vessel dry docking and undocking.

2: TECHNICAL DESCRIPTION:

2.1 General

1. Contractor shall dock the vessel and allow sufficient lay days to perform both the work described in this specification as well as a margin of time to cover work arising. Contractor shall quote a unit cost per lay day. Contractor shall prepare blocks and necessary shoring to maintain true alignment of the vessel's hull and machinery throughout the dry-docking period. Upon completion of all specified work Contractor shall undock the vessel.
2. The vessel shall be docked so that all docking plugs, transducers, anodes and sea inlet grids are clear and accessible. Contractor shall ensure adequate clearance below the keel for performing work specified and shall advise in their bid, the minimum clearance expected. If any hull fittings are covered, Contractor is responsible for all labour and materials required for making alternative arrangements for draining tanks, removal of docking plugs, blasting/painting of hull and/or moving blocks to gain access to areas of specified work.
3. Contractor is responsible for the transfer of the vessel from its pre-docking berth or location onto its docking blocks. Likewise, Contractor is responsible for safe transfer of the vessel from blocks to berth upon re-floating of the vessel. Vessel's crew will not be available to assist with these operations nor will ships machinery. While at berth there shall be sufficient water beneath the vessel that it shall not touch bottom at any time (upright and afloat).
4. Within four (4) hours of docking, cleaning of the under water hull by high pressure fresh water washing shall commence. A high pressure wash between 3000 and 5000 pounds per square inch (psi) is required to remove all marine growth. Following cleaning, a preliminary visual inspection shall be undertaken in the presence of CGTA. Prior to commencing hydro blasting, all hull mounted equipment and openings (excluding seabays) are to be fully protected. Contractor shall adhere to the Fisheries Protection Act with reference to reclaiming water used to clean the hull.
5. Contractor shall give CGTA a minimum of four (4) hours notice before adding/removing liquids from any vessel tanks. Similarly, CGTA will advise Contractor of any intended onboard fluid transfers.
6. Upon completion of all specified work and a minimum of 24 hours notice to CGTA, the vessel shall be re-floated.
7. Any contamination of the vessel's hull by materials, fluids and debris present on the dock shall be cleaned after the vessel is re-floated and clear of the dock. Cost shall be at Contractor's expense and to the satisfaction of CGTA.

2.2 Location

N/A

2.3 Interferences

N/A

3: REFERENCES:

3.1 Guidance Drawings/Nameplate Data

Vessel Particulars:

Length O.A.	15.77 Metres
Breadth Molded	5.20 Metres
Depth Molded	2.00 Metres
Mean Draft Operating	1.32 Metres
Operating Displacement	35.5 Tonne
Fuel Capacity	3100 Litres
Electrical System	24 VDC, 12 VDC sub system
	240 VAC Shore Connection

95004-18 - Docking Plan.pdf

3.2 Standards and Regulations

All lifting apparatus is to have current inspections and certifications, and operator is to have valid certification appropriate to the equipment used.

3.4 Owner Furnished Equipment

N/A

4: PROOF OF PERFORMANCE:

4.1 Inspection

N/A

4.2 Testing

N/A

4.3 Certification

N/A

5: DELIVERABLES:

5.1 Reports, Drawings, and Manuals

N/A

5.2 Spares

N/A

5.3Training

N/A

HD-02 – Fairleads

1: SCOPE:

This specification is to repair degraded deck plating surrounding four fairleads aboard the vessel.

2: TECHNICAL DESCRIPTION:

2.1 General

1. Contractor shall remove and store four fairleads; two from mid-ships and two at the stern.
2. Void spaces will be required to be opened and cleared for fire watch, and pressure tested upon completion. Full details listed in HD-04 – Tanks.
3. Contractor shall remove all deck-heads and insulation located under each of the fairleads, in preparation for hot-work.
4. Contractor shall crop out the "insert plate" located under each of the removed fairleads, (Identified in drawing 95004-2AF) and replace with new 3/8" aluminum.
5. All metalwork shall be done in accordance with CCG Drawing 95004-5 – Welding Schedule and CCG Standard Welding Specification (Attached).
6. Contractor shall prepare and paint all new inserts, as per paint specification.
7. The original fairleads shall be secured to the new deck plating, using new Stainless Steel bolts, with thread sealant.

2.2 Location

All fairleads are located on the outer deck of the vessel.

2.3 Interferences

N/A

3: REFERENCES:

3.1 Guidance Drawings/Nameplate Data

95004-2AF - Profile & Decks

95004-5 – Welding Schedule

3.2 Standards and Regulations

CCG Standard Welding Specification

3.4 Owner Furnished Equipment

N/A

4: PROOF OF PERFORMANCE:

4.1 Inspection

Transport Canada will require inspection and testing to confirm watertight integrity.

4.2 Testing

All new welds and mounted fairleads shall be dye tested to confirm watertight integrity.

4.3 Certification

See above.

5: DELIVERABLES:

5.1 Reports, Drawings, and Manuals

N/A

5.2 Spares

N/A

5.3Training

N/A

HD-03 – D-Rubber Support

1: SCOPE:

This specification is to repair a damaged section of D-Rubber mounting channel.

2: TECHNICAL DESCRIPTION:

2.1 General

1. Contractor shall remove the D-Rubber from the vessel, in one continuous piece, and store at their facility for reinstallation at completion of work.
2. Contractor shall repair the 12" defective section of mounting channel located on the stbd. side of the vessel.
3. The remaining mounting channel shall be inspected for corrosion and repaired as necessary. Additional repairs performed under this item shall be covered under PWGSC 1379 action.
4. All metalwork shall be done in accordance with CCG Standard Welding Specification (Attached).
5. Contractor shall prepare and paint all repaired areas, as per paint specification HD-05.
6. The original D-Rubber shall be secured to the vessel, using new Stainless Steel bolts, with thread sealant.

2.2 Location

The D-Rubber wraps around the perimeter of the hull.

2.3 Interferences

N/A

3: REFERENCES:

3.1 Guidance Drawings/Nameplate Data

95004-5 – Welding Schedule

3.2 Standards and Regulations

CCG Standard Welding Specification

3.4 Owner Furnished Equipment

N/A

4: PROOF OF PERFORMANCE:

4.1 Inspection
N/A

4.2 Testing
Any new welds that are against the vessel hull shall be dye tested to confirm watertight integrity.

4.3 Certification
See above.

5: DELIVERABLES:

5.1 Reports, Drawings, and Manuals
N/A

5.2 Spares
N/A

5.3Training
N/A

1: SCOPE:

This specification provides detail on all fuel tanks and void spaces to be opened for work.

2: TECHNICAL DESCRIPTION:

2.1 General

1. All three fuel tanks shall be opened and thoroughly cleaned of all contaminants. There have been reports of "dirty" fuel over the past two years.
2. Contractor shall read the attached "CCG Technical Bulletin – Fuel Tanks", and follow all corrective measures listed. NOTE: The insulation identified in part 2 of "Corrective Measures" has been removed.
3. The void spaces listed shall be opened via existing manholes in order to complete other specifications required during this refit period.
4. While tanks are open, contractor shall clean and contact TC for inspection.

Dwg Ref	Side	Name	Frame	Content
1	P	Main Fuel Tank	13-16	Fuel
2	S	Main Fuel Tank	13-16	Fuel
3	C/L	Reserve Fuel Tank	10-12	Fuel
18	P	Void Space (Wing)	STERN-3	Polyethelyne
18	S	Void Space (Wing)	STERN-3	Polyethelyne
20	P	Void Space (Wing)	7-13	Polyethelyne
20	S	Void Space (Wing)	7-13	Polyethelyne
21	P	Void Space (Wing)	13-17	Polyethelyne
21	S	Void Space (Wing)	13-17	Polyethelyne

5. Contractor shall remove and dispose of approximately 3,000 litres (total) fuel from all three (3) fuel tanks. Contractor shall provide a unit cost per litre for removal and disposal for PWGSC 1379 adjustment purposes. Contractor shall measure the quantity of fuel removed upon completion of noted work.
6. Contractor shall open the spaces listed and remove strapping, dunnage bags, foam chips and gas free the internal areas. All listed spaces listed shall be certified gas free by a qualified person for entrance and hotwork when required. Three (3) copies of gas free certificate shall be supplied to CGTA before any inspection or repair work is started. Contractor shall remove all debris ashore. All work shall be completed to the satisfaction of the CGTA.
7. Contractor shall remove polystyrene chips and dunnage bags from the listed void spaces. Contractor shall identify on each bag the void spaces from which they were removed and record the total number of bags removed from individual void spaces. These bags are held in place by cargo webbing bolted to the frames of the void spaces. Some of these bags may have opened

and the chips become loose in the space, these shall be recovered and resealed in the dunnage bags belonging to that void space. Contractors shall include with their bid to supply and install 2 new Polyethelyne Dunnage Bags (6 mil plastic- 72 litres) in their bid.

8. Contractor shall contact the local TCMS office and request their inspector view the listed spaces. All spaces shall be inspected by TCMS and viewed by the CGTA upon completion of gas freeing.
9. Contractor shall inspect all manhole covers and renew missing and defective bolts. Contractor shall quote on renewing ten M8 SS bolts 32mm long with SS washers, as well as the installation of 10 CFM helicoil inserts. Blind holes shall be visually examined for damage and repaired (i.e. fill by weld and re-tapped) Final cost shall be adjusted via PWGSC 1379 action.
10. After receiving inspection approval from TCMS, Contractor shall reinstall all dunnage bags in their proper location, as identified above in item number 4. Prior to re-installing the dunnage bags, Contractor shall remove all foreign materials (i.e. debris, metal, welding rods, etc.) from all listed spaces after all inspections have been completed. Contractor shall reinstall manhole covers to their original locations using new gasket material and new SS bolts where required.
11. Contractor shall allow time prior to sea trials for GSM fuel oil to be delivered, and tanks refilled.

2.2 Location

Refer to attached Tank Capacities Plan

2.3 Interferences

At the time of viewing Contractors shall note all interferences (i.e. pipes, brackets, wires, paneling, etc.) impeding access to the manhole covers. Removal and re-installation of all interference items shall be included in quote.

3: REFERENCES:

3.1 Guidance Drawings/Nameplate Data

CCG Technical Bulletin - Fuel Tanks

95004-45 - Tank Capacities Plan

3.2 Standards and Regulations

See General Notes

3.4 Owner Furnished Equipment

N/A

4: PROOF OF PERFORMANCE:

4.1 Inspection

See above.

4.2 Testing

Contractor shall bid on pressure testing each space, and provide a unit cost per space included in the bid package. Normal practice requires pressurizing the spaces to 1 inch of water gauge and held for fifteen minutes. Contractor shall confirm with TCMS regarding system pressure and time required for acceptance. Contractor shall issue a credit if the above work is not required.

4.3 Certification
Acceptance shall be based on TCMS surveyor approval on vessel's division 3 report.

5: DELIVERABLES:

5.1 Reports, Drawings, and Manuals
A pressure test report shall be provided to CGTA

5.2 Spares
N/A

5.3Training
N/A

1: SCOPE:

The Intent of this specification is to repair deficiencies in the vessel's paint coating.

2: TECHNICAL DESCRIPTION:

2.1 General

Contractor shall prepare and apply the coating system in accordance with the manufacturer's manuals and recommendations. As part of Contractor's Q & A process, the following information shall be recorded for all painted areas:

- Provide a list of batch numbers with correspondent dates of manufacture.
- Record the quantity and type of any solvent added.
- Measure and record the ambient conditions.
- Record details of spray tips and pressures.
- WFT gauge readings to be taken on a regular basis during application.
- Using a calibrated DFT gauge, 2 measurements per square metre shall be taken and recorded.
- All recorded information is to be typewritten and three (3) copies are to be given to CGTA.

TOPSIDE/SUPERSTRUCTURE

1. Topside area (above waterline) is to be cleaned of loose scale, salt, grease, etc. All debris recovered and disposed of in an approved manner (i.e. Provincial / Federal Regulations/Acts). Copies of invoices detailing disposal shall be provided to CGTA.
2. Contractor shall quote on repairing $5m^2$ of failed superstructure / flying bridge / mast coating and provide a unit cost/m2 for painting.
3. Priority shall be placed on repairs to mast coating as this is not accessible to ship's crew during normal operations.
4. Spent or flaked coating shall be removed with no undue or excessive damage to the underlying coating. Contractor shall clean and prepare the identified areas for re-coating. These areas will here in after be referred to as "bare areas". The price will be adjusted depending on the actual amount of coating applied.
5. Contractor shall note that all areas painted in black, requiring new paint, shall be coated with flat black marine enamel.
6. Topside coatings are as follows:
   a. Bare area primer - Interprime 198 CPA098
   b. Tie coat - Intersheen 665 LAB000 (White)
   c. Top coat - Intersheen 665 LAB000 (White)
7. Contractor to quote on repairing $10m^2$ of failed waterline to deck coating and provide a unit cost/m2 for painting. Contractor shall clean and prepare the waterline to deck for re-coating. These areas will here in after be referred to as "bare areas". Depending on the actual amount of

coating applied, price will be adjusted via PWGSC 1389 action. Spent and /or flaked Intersheen coating to be removed with no undue or excessive damage to the underlying coating.

8. The total surface shall be prepared and coated as follows; all bare areas as describe above, after proper preparation (adhere to paint manufacturer's recommendations) as witnessed and approved by CGTA, are to be coated with one coat of INTERPRIME 198 CPA098 (Grey) applied to achieve a dry film thickness (DFT) of 2.0 mils. A subsequent coat of Intersheen 579 Tie Coat LAC287 (Coast Guard Red 509-102) to follow, applied to achieve a DFT of 2.0 mils. Initial Intersheen coating shall have a slight contrast to the final coat. A final coat of Intersheen 579 LAC287 (Coast Guard Red 509-102) at a DFT of 2.0 mils, shall be applied to the entire waterline to deck area. Stripe to be prepared as above and painted with Intersheen 579 LAB000 (White) and Intersheen 579 LAY999 (Black). Name plates to be painted with Intersheen 579 LAB000 (White).
9. CGTA share supply all vessel decals, Contractor shall apply the new decals as per their original location.

UNDERWATER HULL

1. All underwater hull surfaces including rudder, sea suction inlets, overboard outlets and sea bays are to be cleaned of all loose scale, salts, and marine growth. This work is to be carried out immediately on drydocking using a high pressure, fresh water wash. Pressure washing equipment shall be adjusted to not less than 3000 psi, and no greater than 5000 psi operating pressure.
2. Contractor shall assume that the wetted hull area is fouled with shell and weed growth. All such surface contaminants and spent antifoulant coating shall be removed with no undue or excessive damage to the underlying coating. Copies of invoices, detailing disposal, shall be provided to CGTA and PWGSC contracting officer.
3. It is estimated that 25 m2 of the underwater hull-coating system has failed. These areas will here in after be referred to as "bare areas". All bare hull is to be solvent cleaned SSPC-SP-1 and surface to be etched chemically with C-prep B10-degreaser or suitable substitution. Edges to be feathered back (smooth finish) to sound existing coating. CGTA shall witness the point at which sound existing coating is obtained. If satisfactory feathering cannot be achieved by solvent cleaning and /or chemical etching, feathering is to be completed by other suitable means. The end result is to be tight and sound existing coating with no loose or lifting material around periphery of bare areas.
4. All bare areas, after proper preparation as witnessed by CGTA, are to be coated with one coat of Intershield 300ENA300/A (Bronze) applied at 5.9 mils dry (9.8 mils wet). This is to be followed by one coat of Tie Coat Intergard 263 FAJ034/A (Light Grey) applied at 5.0 mils dry (8.8 mils wet) over the entire wetted hull. After coating has properly set ("thumb print soft), two coats of Trilux II (Red) Top Coat shall be applied at 2.0 mils dry (3.9 wet) each, to the wetted hull area. Initial Trilux II coating shall have a slight contrast to the final coat. Contractor shall paint all draft marks white. Dry coat thicknesses are cumulative. Contractor shall adhere to the manufacturer's specifications and recommendations for applying the above coatings.
5. Inside of sea bays (sea wells) and underwater grids are to be treated as per underwater hull.

6. Contractor shall plug all deck openings and discharges as well as taking other measures necessary to prevent any liquids from contaminating areas being prepared or coated. Contractor shall also take measures to ensure no damage, unnecessary cleaning or any repair results from either the hull preparation process or coating applications. Measures are also to be taken to ensure that surfaces and equipment other than those specified are not coated by over spray and that any inlets or discharges in the shell will not be blocked by the coating.
7. Deck machinery and other equipment susceptible to damage by coating material are to be protected. All portholes, hull doors, freeing ports, hull openings, anodes, transducers, propeller and shaft and rudder stocks are to be covered by suitable materials to prevent damage or entry of foreign materials when sandblasting, grinding or painting is in progress.

DECKING

1. Contractor shall quote on renewing 5 m2 of coating with, Contractor supplied, Non-skid Amercoat 138 (formally Devgrip 138). Cost shall include, blasting, priming, cleaning, materials, consumables, etc. Copies of invoices detailing paint disposal shall be provided to CGTA.
2. Contractor shall strictly adhere to the manufactures specification sheets in relation to storage, preparation, application, etc. of the paint system described in this specification. Any requirement for variance from manufacturer's instructions is to be approved by CGTA prior to proceeding. Thinning of the coatings specified is not normally required and/or not recommended. Any requirement to thin these coatings is to be done so, only in the presence of the product manufacturer's representative. Arranging for, and any and all costs associated with having coating manufacturer's representative on sight shall be the responsibility of Contractor.

NOTE TO CONTRACTOR:

Applicable to all coating systems within this specification:

International paints (existing coatings) shall be used except where Ameron Non Skid coating is addressed in section #16 or approval for an alternative coating is obtained from CGTA in writing. Contractor is to strictly adhere to the manufacturer's instructions in regard to the application of each coating with relation to humidity, temperature, mixing and application.

2.2 Location

As specified above.

2.3 Interferences

N/A

3: REFERENCES:

3.1 Guidance Drawings/Nameplate Data

ARUN Class Vessel Square Areas

Wetted hull	62 m^2
Above water line to deck	65 m^2
Wheel house	43 m^2
Flying bridge	10 m^2
Main deck	42 m^2

3.2 Standards and Regulations

All lifting apparatus is to have current inspections and certifications, and operator is to have valid certification appropriate to the equipment used.

3.4 Owner Furnished Equipment

N/A

4: PROOF OF PERFORMANCE:

4.1 Inspection

N/A

4.2 Testing

N/A

4.3 Certification

N/A

5: DELIVERABLES:

5.1 Reports, Drawings, and Manuals

N/A

5.2 Spares

N/A

5.3Training

N/A

HD-06 – Anodes

1: SCOPE:

The scope of this specification is to define the anodes to be replaced.

2: TECHNICAL DESCRIPTION:

2.1 General

1 Contractor and CGTA shall identify the anodes requiring replacement as soon as possible once the vessel has been removed from the water and washed. Anodes required will be replaced with similar style as existing.

2 Contractor shall remove the required anodes and their securing straps and prepare the backing plates to receive the new anodes. Contractor shall prep and paint the hull and transom areas where the anodes were removed prior to installing the new anodes as per the paint spec HD-03

3 Contractor shall quote separately but include with the overall bid, to supply and install twelve (12) new bolt-on 10kg zinc anodes with aluminum securing straps. Contractor shall install the new anodes as per their existing arrangement on the vessel hull, transom and Trim tabs.

4 Contractor shall supply and install four (4) new 2 ¾" collar type anodes (two per shaft). Contractor shall remove the existing anodes and install the new shaft anodes in the same location.

5 Contractor shall supply and install two (2) new bolt-on 2.25 kg zinc anodes, one per rudder. All areas shall be prepared as identified in paragraph 2 above. Contractor shall cut one (1) 10kg anode in half and install one half on each trim tab as per existing arrangement.

6 <u>Any variance from number of anodes quoted versus number required shall be adjusted through PWGSC 1379 action</u>

2.2 Location

All anodes in this specification are located on the vessel's outer hull.

2.3 Interferences

N/A

3: REFERENCES:

3.1 Guidance Drawings/Nameplate Data

N/A

3.2 Standards and Regulations
N/A

3.4 Owner Furnished Equipment
N/A

4: PROOF OF PERFORMANCE:

4.1 Inspection
N/A

4.2 Testing
N/A

4.3 Certification
N/A

5: DELIVERABLES:

5.1 Reports, Drawings, and Manuals
N/A

5.2 Spares
N/A

5.3Training
N/A

E-01– Main Engine Service

1: SCOPE:

This specification outlines the 3000 hour service interval and a PAR test, to be performed to both main engines aboard CCGS Clark's Harbour.

2: TECHNICAL DESCRIPTION:

2.1 General

Contractor shall subcontract Atlantic CAT to perform the following work on CCGS Clark's Harbour's engines:

- Perform PAR tests on each engine AFTER all other work has been completed
- Replace starboard engine forward RACOR FUEL FILTER PRIMING HEAD assembly (CCG Supplied)
- Inspect engine valve rotators
- Replace engine air cleaner elements – 2 per engine
- Inspect all hoses and clamps – Replace as required
- Clean and test both turbocharger after cooler cores and heat exchangers (lube oil coolers)
- Clean and test both gearbox oil coolers and replace both thermostats in temp regulators.
- Clean and inspect both seawater/freshwater coolers (heat exchangers)
- Check, clean, and calibrate engine speed/timing sensors
- Inspect sea water pumps
- Inspect crankshaft vibration dampers
- Inspect engine mounts
- Inspect turbochargers
- Inspect fresh water pumps

2.2 Location

CCGS Clark's Harbour engine room

2.3 Interferences

Some components of the main engines may be located in cramped or hard to reach areas.

3: REFERENCES:

3.1 Guidance Drawings/Nameplate Data

The two engines to be inspected are both CAT 3408 engines, S/N 8RG00229 & 8RG0226.

3.2 Standards and Regulations

N/A

3.4 Owner Furnished Equipment

N/A

4: PROOF OF PERFORMANCE:

4.1 Inspection

Inspections are included in technical description.

4.2 Testing

PAR testing is required after all other work has been completed.

4.3 Certification

Transport Canada division 3 items 3D001 and 3D002 shall be updated.

5: DELIVERABLES:

5.1 Reports, Drawings, and Manuals

A typewritten report will be provided, detailing results of all tests and all work performed.

5.2 Spares

All spare parts are to be returned to CCG for spare inventory.

5.3 Training

N/A

E-02 – Engine Cooling System

1: SCOPE:

This specification is to outline all work to be performed on the main engine cooling system.

2: TECHNICAL DESCRIPTION:

2.1 General

1. The fresh water (coolant) side of the main engine cooling system shall be pressure tested and all leaks are to be identified and repaired.
    a. In the case of leaks detected at a threaded fitting, the fitting shall be fully disconnected, and threads shall be cleaned and inspected. Pipe threads shall be prepared with Loctite 7649 primer and reconnected with Loctite 567 Thread Sealant.
    b. In the case of leaks detected at a flanged connection, the connection shall be fully disconnected, and each surface shall be cleaned and inspected for pitting/wear. If the surfaces are acceptable, the flanged fitting shall be reconnected using new gaskets (produced of the same material as original), and bonding straps.
2. The fresh water system shall be fully drained and the used fluid shall be disposed of.
3. The two main engine intercoolers shall be thoroughly cleaned. Contractor is responsible for removal and reinstallation of the coolers.
4. The sight glass on the coolant header tank (located on the flying bridge) shall be replaced. The replacement sight glass shall be contractor supplied. The replacement sight glass material shall be tempered glass.
    a. Measurements of current sight glass are as follows:
        i. 11" high
        ii. 1" wide
        iii. 1 1/16"deep/thick
        iv. 9" tube
        v. 3/8"tube O.D
        vi. 1" Nut size (hex head) ½" thread with ½" nut on the inside of the tank.
5. Ship's engineer shall be responsible for changing the coolant filter while the system is drained.
6. At completion of all work listed above, the cooling system shall be fully reassembled and pressure tested to confirm no leaks. The cooling system shall be refilled with new CAT Extended Life Coolant.

2.2 Location

All components of the cooling system are located in the engine room, with exception to the header tank, located on the flying bridge, and associated piping.

2.3 Interferences

There is no known interference items associated with this specification. Contractor is responsible for identifying any interference items at time of viewing.

3: REFERENCES:

3.1 Guidance Drawings/Nameplate Data
The two engines to be inspected are both CAT 3408 engines, S/N 8RG00229 & 8RG0226.

3.2 Standards and Regulations
N/A

3.4 Owner Furnished Equipment
N/A

4: PROOF OF PERFORMANCE:

4.1 Inspection
See testing.

4.2 Testing
A pressure test to the full cooling system shall be performed before and after all other work in this specification. Acceptance shall be based on no leaks detected.

4.3 Certification
N/A

5: DELIVERABLES:

5.1 Reports, Drawings, and Manuals
A computer generated report shall be prepared and provided to CGTA prior to billing. The report shall identify all pressures and durations of tests performed, as well as all leaks detected and repaired.
Any manufacturer documentation provided with new equipment installed in the cooling system shall be provided to CGTA at end of refit.

5.2 Spares
N/A

5.3Training
N/A

E-03 – Flying bridge Windshield

1: SCOPE:

This specification is to replace the existing windshield located on the flying bridge.

2: TECHNICAL DESCRIPTION:

2.1 General

1. Prior to start of refit, contractor shall order a sheet of Lexan to replace the existing windshield.
    a. Overall length: 10', height: 19", thickness ¼"
2. Contractor shall remove the existing windshield.
3. Contractor shall cut/bend the new lexan to fit the existing framing aboard the vessel.
4. Contractor shall renew the surfaces of all Aluminum mounting bracing/supports/pillars including the bottom flat bar and related hardware (nuts, bolts, and washers) by media blasting to bare metal. They shall be left bare of paint.
5. Any cracks or damaged areas found in the aluminum braces/supports/pillars shall be repaired prior to installation of the new windshield.
6. All rubber insulating/isolating material between the Lexan and braces/supports/pillars is to be renewed.
7. Contractor shall install the new windshield as per attached guidance drawings, to CGTA satisfaction.

2.2 Location

Flying Bridge

2.3 Interferences

N/A

3: REFERENCES:

3.1 Guidance Drawings/Nameplate Data

95004-19 - Flying Bridge Construction

3.2 Standards and Regulations

N/A

3.4 Owner Furnished Equipment

N/A

4: PROOF OF PERFORMANCE:

4.1 Inspection
N/A

4.2 Testing
N/A

4.3 Certification
N/A

5: DELIVERABLES:

5.1 Reports, Drawings, and Manuals
N/A

5.2 Spares
N/A

5.3Training
N/A

E-04 – Flying Bridge Bench

1: SCOPE:

This specification is to modify and repair the existing flying bridge bench.

2: TECHNICAL DESCRIPTION:

2.1 General

1. All upholstery on the bench located at the flying bridge helm shall be removed.
2. The bench shall have new 2" soft rubber padding installed in place of the removed upholstery, wrapping around the front of the seat, and continuing 6" down the underside of the bench for use as a back rest while stowed.

2.2 Location

Flying Bridge

2.3 Interferences

N/A

3: REFERENCES:

3.1 Guidance Drawings/Nameplate Data

95004-19 - Flying Bridge Construction

3.2 Standards and Regulations

N/A

3.4 Owner Furnished Equipment

N/A

4: PROOF OF PERFORMANCE:

4.1 Inspection

N/A

4.2 Testing

N/A

4.3 Certification

N/A

5: DELIVERABLES:

5.1 Reports, Drawings, and Manuals
N/A

5.2 Spares
N/A

5.3Training
N/A

ED-02 – Pumps Survey

1: SCOPE:

The intent of this specification item is to prove the correct operation of all pumps aboard the vessel.

2: TECHNICAL DESCRIPTION:

2.1 General

1. Prior to commencing work, operation is to be confirmed, and current/insulation readings are to be provided (where applicable) before and after servicing. Testing of the fire pump requires the vessel to be in water.
2. The following pumps shall be disconnected, and laid out for inspection by TCMS. Contractor is to clean all fittings, remove all gaskets and seals and reinstall with new gaskets and seals.
    - GILKES 250/700 Engine Driven Fire Pump (Belt driven on Port Engine)
    - 2 X Jabsco 150/475 Engine Driven Bilge Pumps (Port and Stbd.).
3. The Rule 3700 Submersible Pumps (Port and Stbd.) are to be functionally tested. In the event they fail to operate, a new unit is to be fitted. This additional work will be funded via 1379 action.
4. Contractor shall notify the CGTA of the inspection date and time so that the vessel engineer can be on hand to operate the systems if required. Contractor shall, if the CGTA is not present, have the TCMS inspector sign off all inspection work in the vessel's blue book. Upon successful inspection a credit for four-year survey shall be obtained.
5. Any additional work or parts required to be viewed by the onsite engineer and any work or parts required will be rectified by PWGSC 1379 action. See pictures of fire pump below.
6. Acceptance for each pump shall be based on a successful function test, demonstrating the pump operating without restriction and to the satisfaction of the TCMS inspector and the CGTA.

2.2 Location

All pumps are located in the engine room.

2.3 Interferences

Some pumps are located in bilges, and will be difficult to access.

3: REFERENCES:

3.1 Guidance Drawings/Nameplate Data

N/A

3.2 Standards and Regulations

All pumps shall be tested in accordance with Transport Canada Marine Surveyor's recommendations.

3.4 Owner Furnished Equipment

N/A

4: PROOF OF PERFORMANCE:

4.1 Inspection
See technical description.

4.2 Testing
A functional test shall be performed for each pump during sea trials.
Acceptance shall be based on successful operation with no leaks detected after no less than ten minutes operation.

4.3 Certification
Certification by Transport Canada Marine Surveyor is required for each item listed in this specification.

5: DELIVERABLES:

5.1 Reports, Drawings, and Manuals
N/A

5.2 Spares
N/A

5.3Training
N/A

1: SCOPE:

This specification covers all valve inspections, certifications, and replacements aboard the vessel.

2: TECHNICAL DESCRIPTION:

2.1 General

1. At the time of viewing, Contractor shall note the locations and conditions of all valves, associated hardware and interference items which may hinder access and disassembly of each valve being inspected / overhauled. Bid cost shall include all requirements to deal with visible interference items and corroded hardware. Any requirement to move or disturb an interference item, as well as returning said items to original condition, in good working order (using new gaskets and hardware), shall be Contractor's responsibility and cost to perform this work shall be included in their bid.
2. The following valves shall be removed and prepared for inspection by TMSS surveyor.

Name	Frame	Side	Size	Division 3 Field #
Main Engine Sea Water Valve	**13**	**P&S**	**3"**	**3LL110 01 & 05**
Main Engine Sea Bay Deicing Valve	**13**	**P&S**	**1.5"**	**3LL110 02 & 06**
Forward Sea Bay Vent		**P&S**	**0.5"**	**3LL110 03 & 07**
Forward Camlock Inspection Cover		**P&S**		**3LL110 04 & 08**
Fire Pump Sea Suction		**P**	**2.5"**	**3LL110 09**
Fire Pump Suction Deicing		**P**	**1"**	**3LL110 10**
Engine room bilge suction valve		**P&S**		
Main engine bilge check valve		**P&S**		
Fire main relief valve				
Fire pump discharge hydrant valve				
Emergency Bilge & Fire Suction valve				
Aft fire pump discharge overboard valve	**9**	**P**		

3. All valves shall be removed (unbolted from their flanged connections), laid out and clearly labeled (as per application) at all times. Valves with a pipe diameter of greater than 2" shall be opened, cleaned, descaled (marine growth chipped/scraped), and all valve seats wiped clean for inspection. Valve seats shall be tested to confirm full contact area. Where necessary, a machinist is to lap valve seats and retest to prove full contact area. Once fully prepared and laid out for inspection, Contractor shall notify the TMSS surveyor, CGTA and PWGSC contracting officer. Contractor shall seek TMSS surveyor approval for all valves (with field numbers) listed above.

4. Bilge manifold shall be removed, opened up, valve bodies to be removed and repacked as per all other valves, all gaskets shall be replaced and made from salt water compatible materials. Manifold is located on the Stbd side in the aft E/R space.
5. While valves are removed, the bilge manifold chest shall be media blasted bare, inside and out. All surfaces shall be primed and painted.
6. Viewing by CGTA shall not substitute for TMSS surveyor. Contractor shall allow in their bid to machine up to 3 valves of 2" diameter or above, and replace all valves of under 2" diameter with new contractor supplied stock of same materials and construction as original.
7. Contractor shall provide labor costs for repair service to valves, and final cost shall be adjusted via PWGSC 1379 action.
8. Upon approval and completion of identified repairs, Contractor shall test and issue a certificate for each valve. Contractor shall verify test compliance with applicable regulations, operational requirements and notify TMSS for re-inspection.
9. Upon TMSS surveyor and CGTA approvals, all valves shall be fitted, repacked, re-installed in their original location using new gasket material and function tested by CGTA during sea trial.

2.2 Location

The valves are located at various locations throughout the engine room and surrounding spaces.

2.3 Interferences

1. There are two valves located within void spaces (P&S). For each of these valves, access requires entry to two void spaces (enter in forward void to access hatch for mid-ship void).
2. Other valves may be located in difficult to access areas.

3: REFERENCES:

3.1 Guidance Drawings/Nameplate Data

N/A

3.2 Standards and Regulations

All valves shall be tested in accordance with Transport Canada Marine Surveyor's recommendations.

3.4 Owner Furnished Equipment

N/A

4: PROOF OF PERFORMANCE:

4.1 Inspection

Yes.

4.2 Testing

All valves shall be tested to confirm full contact area, and pressure tested to 125% normal operating pressure.

4.3 Certification

Certification by Transport Canada Marine Surveyor is required for each item listed in this specification.

5: DELIVERABLES:

5.1 Reports, Drawings, and Manuals

N/A

5.2 Spares

N/A

5.3Training

N/A

ED-04 – Sewage System

1: SCOPE:

This specification is to repair all leaks noted on the septic system.

2: TECHNICAL DESCRIPTION:

2.1 General

1. A leaking flanged gasket has been noted in the short seawater supply pipe located in the engine room, connecting the seawater supply valve to the bulkhead flanged piping welded to the transverse bulkhead.
2. The pipe section shall be removed inspected and replaced if necessary. Both flanged gaskets are to be replaced with gaskets made for sea water applications.
3. There are two additional valves located under the manhole cover beneath the deck in the head, fwd of the toilet. These are in the discharge from the toilet to overboard.
    A. One is a gate valve and is connected by a rod (shown) to a "T" handle at deck level.
    B. The other is a check valve (non-return) connected to the hull. We are having a problem of the seawater somehow getting into our sewage storage tank.
4. The system is to be disassembled, inspected and repaired / replaced as required.

2.2 Location

Forward compartment - Washroom

2.3 Interferences

N/A

3: REFERENCES:

3.1 Guidance Drawings/Nameplate Data

N/A

3.2 Standards and Regulations

N/A

3.4 Owner Furnished Equipment

N/A

4: PROOF OF PERFORMANCE:

4.1 Inspection

N/A

4.2 Testing

N/A

4.3 Certification
N/A

5: DELIVERABLES:

5.1 Reports, Drawings, and Manuals
N/A

5.2 Spares
N/A

5.3Training
N/A

L-01– Engine Starters & Alternators

1: SCOPE:

The Intent of this specification is to service the engine mounted starters and alternators aboard the vessel.

2: TECHNICAL DESCRIPTION:

2.1 General

1. The port and starboard alternators & starters are to be disconnected and removed for service.
2. Prior to removal, a typewritten report of the following readings is to be completed and submitted to CGTA:
    a. Insulation (Megger) readings for all devices.
    b. Peak cranking current for starters.
    c. No load output voltage of generators.
3. All starters and alternators shall be sent to CCG specified contractor for overhaul. At the time of writing this specification no contract has been awarded for the work required. The contractor selected for this work shall be identified by CGTA at the time of bidder's meeting.
4. Upon return to shipyard, starters and alternators shall be reinstalled, with new contractor supplied belts where applicable (Belt specs: Caterpillar 4N-8218-DF X 2 per engine), and retested as per line 2.

2.2 Location

All machinery is located within the engine room of the vessel.

2.3 Interferences

N/A

3: REFERENCES:

3.1 Guidance Drawings/Nameplate Data

N/A

3.2 Standards and Regulations

TP-127E Ship's Electrical Standards

3.4 Owner Furnished Equipment

N/A

4: PROOF OF PERFORMANCE:

4.1 Inspection

Insulation performance testing (Megger) and current readings, as specified in technical description.

4.2 Testing

A successful function test shall be performed, demonstrating each machines operation without restriction and to the satisfaction of the vessel engineer.

4.3 Certification

N/A

5: DELIVERABLES:

5.1 Reports, Drawings, and Manuals

A type written report, including test results from before and after servicing.

5.2 Spares

N/A

5.3Training

N/A

L-02 – Electrical Insulation Testing

1: SCOPE:

This specification is to describe the electrical system testing and repairs to be performed aboard CCGS Clark's Harbour.

2: TECHNICAL DESCRIPTION:

2.1 General

1. Contractor shall identify all electrical circuits aboard CCGS Clark's Harbour carrying 120V or greater.
2. Contractor shall perform insulation testing (meggering) on all 120V or greater circuits. Any 120V circuit powered by a UPS rated at 150VA or less is exempt from this requirement.
3. Any circuit with an insulation measurement of 1MΩ or lower shall be repaired.
4. After all circuits requiring testing have been tested (and repaired if necessary), a computer generated report shall be produced and sent to CGTA.

2.2 Location

All locations within CCGS Clark's Harbour

2.3 Interferences

N/A

3: REFERENCES:

3.1 Guidance Drawings/Nameplate Data

None available

3.2 Standards and Regulations

N/A

3.4 Owner Furnished Equipment

N/A

4: PROOF OF PERFORMANCE:

4.1 Inspection

N/A

4.2 Testing

All insulation testing shall be performed at 250V.
Extreme care is to be taken to ensure all electronic equipment is unplugged before testing begins.
Any equipment failures resulting from meggering is the contractors responsibility.

4.3 Certification

Transport Canada requires a minimum insulation reading of 1MΩ in all circuits powered by 120VAC or greater. Any 120V circuit powered by a UPS with a capacity of 150VA or lower is exempt.

5: DELIVERABLES:

5.1 Reports, Drawings, and Manuals

A computer generated report shall be provided to CGTA.

5.2 Spares

N/A

5.3Training

N/A