

CCGS Ann Harvey
Annual Refit – Dry Docking
2 August 2021 – 4 October 2021



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PREAMBLE

1. INTENT

The intent of this specification must describe the necessary work involved in carrying out the ship's Annual Refit. All work specified herein and all repairs, inspections and renewals must be carried out to the satisfaction of the Owner's Representative and, where applicable, the attending ABS Class Surveyor. Unless otherwise specifically stated, the Owner's Representative is the Chief Engineer.

2. MANUFACTURER'S RECOMMENDATIONS

The overhaul and installation of all machinery and equipment specified herein must be as per the manufacturer's applicable instructions, drawings and specifications. The surface preparation, ambient limitations and coating applications must be as per the manufacturer's instructions and specifications.

3. TESTING AND RECORDS

All test results, calibrations, measurements and readings are to be recorded. All tests are to be witnessed by the Inspection Authority, Technical Authority and where required, ABS Class Surveyor. The Contractor is responsible for contacting ABS Class Surveyor when their presence is required for inspections or testing. The Contractor must advise the Technical Authority in every case when ABS Class Surveyor arrives onsite for inspection of vessel's equipment or structure. The recorded test results, calibrations, measurements and readings from the entire refit specification must be provided in electronic PDF format on 3 separate USB memory sticks and 1 typewritten bound reports on 8.5" X 11" paper. The bound report must be tabbed as per table of contents in the refit specification. The bound report must be provided to the Chief Engineer prior to the end of refit.

The Contractor must also provide reports/measurements/readings per individual specification item within the timeline indicated to the Chief Engineer.

4. WORKMANSHIP

The contractor must use fully qualified, certified and competent tradesmen and supervision to ensure a uniform high level of workmanship as judged by normally accepted shipbuilding standards and to the Owner's satisfaction.

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5. FACILITIES

Quotation must include all of the necessary labor and equipment required for the erection of access staging, rigging, lighting, tugs, pilotage, necessary crange and line handling.

6. MATERIALS AND SUBSTITUTIONS

All material must be supplied by the contractor and all materials must be new and unused unless otherwise specified. All replacement material in the form of jointing, packing, insulation, small hardware, oils, lubricants, cleaning solvents, preservatives, paints, coatings, etc., must be in accordance with the equipment manufacturer’s drawings, manuals or instructions. Where no particular item is specified, or where substitution must be made, the Owner’s representative must approve all material offered.

7. REMOVALS

Any items of equipment to be removed and subsequently reinstalled in order to carry out work specified or for access to carry out the work specified, must be jointly inspected for damages prior to removal by both the contractor and Owner’s representative.

8. EXPOSURE AND PROTECTION OF EQUIPMENT

The contractor must provide adequate temporary protection for any equipment or areas affected by this refit. The contractor must take proper precautions to maintain in a proper state of preservation any machinery, equipment, fittings, stores or items of outfit which might become damaged by exposure, movement of materials, sand grit or shot blasting, airborne particles from sand, grit or shot blasting, welding grinding, burning, gouging, painting or airborne particles of paint. Any damage must be the responsibility of the contractor. Government furnished equipment and materials must be received by the contractor and stored in a secure warehouse or storeroom having a controlled environment appropriate to the equipment as per the manufacturer’s instructions.

9. LIGHTING AND VENTILATION

Temporary lighting and/or temporary ventilation required by the contractor to carry out any item of this specification must be supplied, installed and maintained in a safe working condition by the contractor and removed upon the completion of work.

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10. CLEANLINESS

The contractor must at all times, maintain the work areas in which his personnel have access in a clean condition and free from debris. Upon completion of this refit, the contractor must ensure that the vessel is in a clean condition, free from all foreign material in any system or location placed there as a result of this refit. The contractor must provide adequate temporary protection for any equipment or areas affected by this refit. The contractor must dispose of any and all oil and water residue, which accumulates in the machinery space bilges as a result of any refit work detailed in this specification in accordance with applicable Provincial Regulations.

11. ASBESTOS

Any and all insulation materials must be asbestos free and approved for the required application.

12. ENTRY INTO ENCLOSED SPACES

The contractor must abide by the Coast Guard Enclosed Space Entry Policy. The policy is listed in the a Coast Guard's Safety Management System, section 7.D.9 and section 7.D.9 (N). Entry certificates must clearly state the type of work permitted and must be renewed as required by the regulations. Additional copies of these certificates must be posted in conspicuous locations for the information of ship and contractor personnel.

A fire zone must be established and naked lights must not be used within this zone until "gas-free" certification has been issued.

The Contractor is to ensure that any work carried out in confined spaces as defined by the Canada Labor Code complies fully with all provisions of the code.

A number of spaces onboard the vessel are designated as Enclosed Spaces; these spaces are to be entered only under safe and controlled circumstances. The Contractor must have in place an Enclosed Space Entry Permit system, equal to or better than the procedure contained in the Coast Guard's Safety Management System, section 7.D.9. Ship's breathing apparatus and EEBD's are not to be used except in an emergency.

13. Suspension Of Work

The Senior Vessel Maintenance Manager (SVMM) reserves the right to suspend work immediately when that work is being performed in contravention of the Coast Guard's Safety

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Management System. Work must be allowed to resume when the SVMM, in consultation with the Contractor and PWGSC, is satisfied that the agreed-upon procedures are in place and being adhered to.

14. HOTWORK

Any item of work involving the use of heat in its execution requires that the contractor advise the owner's representative prior to starting such heating and upon its completion. The contractor must be responsible for maintaining a competent and properly equipped fire watch during and for one full hour after all hotwork. The fire watch must be arranged such that all sides of surfaces being worked on are visible and accessible. The contractor must provide sufficient suitable fire extinguishers and a fire watch during any such heating and until the work has cooled. Ship's extinguishers must not be used except in an emergency. The Contractor must abide by the Coast Guard Hotwork Policy. The policy is listed in the Coast Guard's Safety Management System , section 7.D.11 and section 7.D.11 (N). The contractor must be responsible to ensure the contractor's personnel including any subcontractors must follow the policy.

15. LOCKOUT AND TAGOUT PROCEDURES

1. The Contractor must be responsible to protect persons working onboard the vessel while working on or near shipboard systems and equipment from accidental exposure to:

- electrical currents
- hydraulic
- pneumatic
- gas or stem pressure and vacuum
- high temperatures
- cryogenic temperatures
- radio frequency emissions
- potentially reactive chemicals
- stored mechanical energy
- equipment actuation

2. The contractor, under the supervision of the Chief Engineer and or the Electrical Officer, must be responsible for the Lockout and Tagout of equipment and systems listed in the specification.

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3. The Contractor must supply and install all locks and tags and must complete the Lockout Tagout Log sheet provided by the Vessel.

4. The Contractor must remove all locks and tags and complete the Lockout Tagout Log sheet provided by the Vessel.

16. PAINTING

All new and disturbed steelwork that will not be on the underwater wetted surface of the ship's hull is to be protected with two coats of Contractor supplied primer. Type to be specified by each spec item. The paint is to be applied as per the manufacturer's instructions on their respective product data sheets. Finish coats are described in individual specification items.

17. WELDING

Welding must be in accordance with the Canadian Coast Guard Welding Specifications for Ferrous Materials, Revision 4. (TP6151 E)

The Contractor must be currently certified by the Canadian Welding Bureau (CWB) in accordance with CWB 47.1 latest revision Division I, II or III at the time of bid closing.

The Contractor must provide a current letter of validation from the CWB indicating compliance with standard CSA W47.1, Division I, II or III. (latest revision)

The Contractor may be required to provide approved procedure data sheets for each type of joint and welding position that will be involved in this refit.

The Contractor may be required to supply a current Welders Ticket for each individual welder that will be involved in this refit.

18. SMOKING

The Public Service Smoking Policy forbids smoking in all Government ships in areas inside the ship where shipyard personnel will be working. The contractor must inform shipyard workers of this policy and ensure that it is complied with.

19. RESTRICTED AREAS

The following areas are out of bounds to shipyard personnel except to perform work as required by the specifications: all cabins, offices, Wheelhouse, Control Room, Engineer's office, public washrooms, cafeteria, dining room and lounge areas.

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20. ELECTRICAL STANDARDS

Any electrical installations or renewals must be in accordance with the latest editions of the following marine standards:

- (a) TP 127E-TC Marine Safety Electrical Standards.
- (b) IEEE Standard 45 - Recommended Practice for Electrical Installation on Shipboard.

If any cable installed within this contract is found to be damaged, shorted or opened as a result of the manner of installation, the entire length of cable must be replaced and installed at no cost to the Department. Plastic tie-wraps may be used to secure wiring in panels or junction boxes only.

21. DRAWINGS

All drawings and drawing revisions that the Contractor is requested to do in the execution of this contract must be of a quality equal to that of the drawings that are requested to be updated. For example, drawings that have been lettered and dimensioned in a professional manner must not be updated using freehand. Prints and reproductions that a contractor is required to provide must be made on one piece of paper.

Sign off and acceptance of jobs will not occur until any and all drawings are updated to the satisfaction of the Owner's representative.

22. TRANSDUCERS

The contractor must not paint the transducers and all transducers must be afforded the necessary protection during hull cleaning, blasting, burning, welding and coating operations.

23. OWNER'S REPRESENTATIVE

Throughout this document, there is made reference to the Owner's Representative. For the purpose of this document, the Owner's representative is defined as the Chief Engineer of the Vessel.

24. Regulatory Authority Inspections

The Contractor must confirm a schedule of inspections with the regulatory authority (ABS Class Society) for all work described in this specification and must be responsible for arranging attendance when inspections are required and for ensuring the work is credited by the regulatory

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authority in the Chief Engineer's 'Hull and Machinery Survey Book'.

The Contractor must ensure the Chief Engineer is informed when the regulating authority is onsite such that the Chief Engineer can witness the inspections by the regulating authority.

Notwithstanding any errors, omissions, discrepancies, duplication or lack of clarity in these project requirements, it must be the responsibility of the Contractor to ensure that the execution of the work specified herein is to the satisfaction of the SVMM and the Inspection Authority. Inspection of any item by the SVMM does not substitute for any required inspection by ABS Class Surveyor or by the Inspection Authority.

25. Waste Oil Products

Disposal of waste oil products must be carried out by the Contractor, or subcontractor, who has been licensed by provincial authorities for the disposal of petroleum products. Copies of certificates must be produced upon request. This must be in accordance with the Coast Guard Policy for Handling Fuel, Oil, and Waste Oil Products, which is part of the Fleet Safety Manual, section 7.C.3. a copy of which is in the attached safety annex.

26. WHMIS

The contractor must provide current MSDS sheets for any WHMIS-controlled products used onboard or around the vessel at the start of the work period before the products are used. This includes at the minimum MSDS sheets for any solvents, cleaners, chemicals, coatings and blasting grits to be used. Any neutralizing chemicals or specialized protective equipment required must be provided by the Contractor at all times these WHMIS-controlled products are onboard the vessel.

27. SAFETY ANNEX

The Contractor must follow the Coast Guard Policies as outlined in the attached Safety Annex. This Annex contains excerpts from the Fisheries and Oceans Canada, Canadian Coast Guard Fleet Safety Manual (DFO 5737) and deals with contractor responsibilities for items such as Hot Work, Confined Space Entry, Diving, Diving Operations and Dry-docking.

An electronic copy of the Fleet Safety Manual (Adobe Acrobat .PDF version) can be found at http://142.130.14.20/fleet-flotte/Safety/main_e.htm

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Contractor Safety & Security

A valid minimum security screening at the Reliability Status level is required for any contractor to be granted unescorted access to a workplace controlled by the CCG. DFO Departmental Policy requires that a Security Requirement Check List (SRCL) be completed.

Safety Familiarization

The Contractors Basic Safety Familiarization must be completed for all contractors working on CCG vessels. It will verify that a basic safety briefing has been given, understood and acknowledged by the contractor. All contractors must follow applicable OHS regulations in accordance with CCG safety/security/environmental requirements, fire alarm protocol and conduct to follow in case of fire or other emergency situations, familiarization of restricted areas and spaces, known risks and hazards encountered at the worksite (ie asbestos, fire fighting systems, hazardous materials, flammables etc).

28. Data Book

The Contractor is to produce two Data Books in English which must list products, supplies and other purchases by the contractor for this refit, listing supplier and contact information. This book must also include the copies of the readings required for the completion of each specification item. The data book must be 8 X 12" format and binded. The data book must be indexed and tabbed in the same order as the refit specifications index. Contractor must also provide 2 electronic copies to the TA and Project Authority. The complete data books must be provided to CG for completion of the refit.

29. LEAD PAINT

The Contractor is to note that CCG ships have been painted with lead based paints in the past and as a result some of the Contractor's processes may be affected.

See attached: The most current lead survey performed by Rogers Enterprises Limited will be made available to all contractors.

Workplace Controls

Contractor must take precautions to mitigate the potential lead hazard that can result from processes such as welding, burning, grinding, gouging, power tooling, chipping and other work that can disturb the paint when lead is present in any quantity.

In general, the presence of known or suspected hazards in the workplace requires that risk assessments based on work activity and site conditions be completed and controls implemented to reduce risks to an acceptable level by the Contractor. Controls for lead include:

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- removal of the hazard where prudent,
- engineering controls such as encapsulation,
- administrative controls such as management plans, training and familiarization, procedures and safe work instructions,
- appropriate use of personal protective equipment (PPE) where work is to be performed that may expose workers to hazardous materials.

Controls for paint containing lead in the workplace start with awareness of the possible presence of lead, especially in older coatings. Safe work instructions should be followed that focus on limiting the spread or inhalation or ingestion of lead dust, both during the removal of paint from surfaces and during the clean-up of waste.

Required Actions to Address Coatings that Contain Lead

Note: It must be presumed that older/existing coatings on CCG vessels contain lead and, until proven otherwise, appropriate actions and precautions must be taken for any work that will disturb these coatings.

The following actions must be undertaken to identify potential hazards at the earliest possible time and to minimize the risk of exposure.

1. When work that disturbs the paint is undertaken **in-house**, or when paint is inadvertently disturbed, appropriate actions need to be taken. In general, as a minimum, to minimize risk of lead exposure, , the following actions must be taken:
 - Determine if the paint contains lead. If the paint contains lead, or if it is not possible to test in advance of undertaking the work, assume that the paint contains lead;
 - Assess the risk in accordance with section 7.A.1 of the Fleet Safety and Security Manual;
 - Isolate the area undergoing work;
 - Use PPE that is appropriate for the type of disturbance, eg., disposable coveralls, gloves, Work Line Respirator with a Full Face Piece, or ½ face respirator with P100 filters;
 - Implement hygiene measures, such as frequent wet cleaning, to ensure that the dust does not migrate beyond the work zone. If a vacuum cleaner must be used in the clean-up, use a HEPA type; do not use compressed air to clean-up dust.
 - Shut down forced ventilation to the area and cover vents, if deemed necessary;
 - Wash hands, face and any other exposed parts of the body just after exiting the affected area;

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- Dispose of contaminated disposable coveralls, gloves, plastic or other materials used to contain the area or used in the cleanup. Put waste into secure containers or sealed impermeable plastic bags, labelled as lead-containing waste and dispose of such following federal, provincial, and local regulations; and
 - Implement quality control measures to ensure isolation of the areas undergoing work and that adjacent areas do not become contaminated.
2. Unless a vessel's coatings have been proven lead free, prior to the initiation of contracted work that would disturb the coatings in any CCG vessel, such as welding, grinding, gouging, powertooling, chipping or any other work that could generate airborne lead hazards, the coatings that will be disturbed must be summed to contain lead and work be planned accordingly.

If a coating that contains lead is present, prior to proceeding with work that would disturb it, the Contractor must ensure the lead abatement meets Provincial Occupational Health and Safety Regulations for all facets of the work including containment, removal, decontamination, final cleaning of the CG asset and disposal. There are several methods for the removal of lead containing coatings including:

- Manual scraping or sanding using non-powered hand tools – practical for small areas only
- Power tools with dust collection systems and HEPA filters
- Chemical gel or paste removal
- Laser ablation
- Induction ablation
- High pressure water jet
- Abrasive blasting
- Dry ice blasting

Note: Heat gun paint removal would be practical for small areas only but is not recommended given a risk of lead vapor with the potential increase of risk to workers.

3. As a minimum the Contractor must take the following measures when working in areas with coatings that contain lead:
- perform a risk assessment to identify work site safety hazards and to mitigate associated risks.
 - fully contain the areas where lead abatement is taking place as appropriate to the

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situation to reduce the possibility of lead being dispersed throughout the ship. Forced air ventilation systems must be turned off and shipboard vents sealed in the areas that would be affected by the work. Provide full enclosures with HEPA-filtered mechanical ventilation, kept under negative pressure. Check for damage (eg, rips) in the enclosure daily, and repair immediately.

- post warning signs and mark off the work area.
- restrict access to essential personnel only.
- remove coatings using an approved method that minimizes airborne particulates. The Contractor must use techniques that do not spread lead dust or fumes, such as chemical stripping, laser ablation, induction stripping, vacuum-shrouded hand tools or vacuum blasting. It is noted that alternate methods can have different associated hazards that must be managed. For example, chemical stripping agents also contain potentially harmful substances and must be used with care. Mechanical removal through sanding or grinding may produce more air born lead dust.
- clean up to prevent dust from spreading at least once each day. Put waste into secure containers or sealed impermeable plastic bags, Bags and containers must be labelled as lead-containing waste and disposed of following applicable regulations. Use HEPA vacuum cleaners in the clean-up.
- after completing work, wait at least 1 day to let any dust settle if an internal space and then do a final clean-up. Wet wipe all surfaces, do not rinse the materials used to wipe the surfaces down the drain or pour contaminated water down the drain, and put the materials used for cleaning the surfaces as well as the plastic used to contain the area in sealed plastic bags for disposal.
- Contractor must appropriately decontaminate personnel, PPE and equipment and follow Provincial Regulations for appropriate disposal.
- Implement quality control measures to ensure isolation of the areas undergoing work and that adjacent areas do not become contaminated.

30. Covid 19

All contractors and sub contractors will be required to practice appropriate COVID-19 precautions for both themselves and CCG personnel as per CCG/6102 National Standard Operating procedure. This will require as a minimum:

- 1) Mandatory completion of “CCG Atlantic Region Screening Questionnaire” (included) for all personnel and subs

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- 2) Mandatory temperature checks as required by either CCG rescue specialist's, CG delegate or register nurse.
- 3) Any personnel exhibiting any symptoms must be immediately removed from vessel. CCG to be informed immediately of any such cases.
- 4) Personnel must be provided with sufficient supply of appropriate safety gloves and masks as required
- 5) Personnel and subs will only permitted in areas of vessel required to perform the work scope. All other areas are prohibited.
- 6) All personnel will practice social distancing of 2 meters where possible

ALL contractors and subs MUST be pre-approved before entry onto the vessel.

SHIP'S PARTICULARS

Length O.A. ----- 83.0 Metres
 Breadth Mld. ----- 16.2 Metres
 Depth Mld. ----- 7.75 Metres
 Deep Draft ----- 6.06 Metres
 Displacement ----- 5146 MT
 Gross Tonnage ----- 3853 Tonnes
 Year built ----- 1987

Rigging Weights

Tailshaft 24280 kg, Length 14.448 meters
 Propeller 7200 kg
 Sterntube 12,185 kg
 Anchor (Complete) 2028 kg
 Anchor Shank 549 kg
 Rudder 17381 lbs
 Rudder Stock 16958 lbs

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Production Chart & Subcontractors Allowances		

H-01 Production Chart & Subcontractors Allowances

Part 1 – Scope

- 1.1** The intent of this specification must be to give the owner’s representatives an accurate timeline on production and completion dates for Coast Guard Operational Services.

Part 2 – References

2.1 Guidance Drawings/Nameplate Data

- 2.1.1** N/A

2.2 Standards

- 2.2.1** N/A

2.3 Regulations

- 2.3.1** N/A

2.4 Owner Furnished Equipment

- 2.4.1** The Contractor must supply all materials, equipment and parts required to perform the specified work unless otherwise stated.

Part 3 – Technical Description

3.1 General

- 3.1.1** The successful Contractor must supply the Chief Engineer with three (3) bound hard copies of a detailed bar chart showing the planned work schedule for the ship’s refit. This bar chart must show each specification item, the planned and actual start date, the duration and the completion date. An electronic version must be forwarded to the Senior Vessel Maintenance Manager (SVMM) – Chris.Woolfrey@dfm-mpo.gc.ca. The Contractor must also forward an electronic copy of the Production Chart to the Contracting Authority.
- 3.1.2** A critical path of work must be identified, which shows the critical tasks that may delay the completion of the refit and if they must not be completed within the estimated time frame. The critical path may exist due to labor constraints or tasks which cannot be completed concurrently with other tasks.
- 3.1.3** If work arises that affects the critical path, it must be immediately brought to the attention of the Chief Engineer, VMM and PSPC. Every effort must be made to

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Production Chart & Subcontractors Allowances		

prevent the vessel from delay in completing the refit in the time frame provided. Regular QA procedures must apply.

- 3.1.4** The bar chart must be updated weekly and for each production meeting to reflect all changes to the actual production of the refit and changes to the anticipated completion dates of each individual item. The Contractor must include on the updates to the production chart any work arising from PSPC 1379 action that indicates the additional work must impact the completion schedule for the vessel.

Subcontractors with Allowances

- 3,1,5 The Contractor shall provide a weekly update of the hours billed by the subcontractors along with their hourly rates.
- 3.1.6 The results shall be tabulated in an excel spreadsheet clearly indicating the Subcontractor, date(s), hours worked and hourly rate for the hours worked.
- 3.1.7 The update is to be emailed to Technical Authority, Contracting Officer and Project Authority the day prior to the weekly scheduled Progress Meeting.

Part 4 – Proof Of Performance

4.1 Inspection

- 4.1.1** All work must be completed to the satisfaction of the Chief Engineer, VMM, PSPC and if required the ABS Inspector.

4.2 Testing

- 4.2.1** N/A

4.3 Certification

- 4.3.1** N/A

Part 5 – Deliverables

5.1 Drawings/Reports

- 5.1.1** The successful Contractor must supply the Chief Engineer with three (3) bound hard copies of a detailed bar chart showing the planned work schedule for the ship’s refit. This bar chart must show each specification item, the planned and actual start date, the duration and the completion date. An electronic version must be forwarded to the Senior Vessel Maintenance Manager (SVMM) –

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Production Chart & Subcontractors Allowances		

Chris.Woolfrey@dfo-mpo.gc.ca. The Contractor must also forward an electronic copy of the Production Chart to the Contracting Authority.

5.1.2 Three copies of each weekly update must be given to the Chief Engineer one day prior to each weekly Production Meeting. The SVMM and Contracting Authority must also be forwarded an electronic copy of the weekly update prior to the Production Meeting.

5.2 Spares

5.2.1 N/A

5.3 Training

5.3.1 N/A

5.4 Manuals

5.4.1 N/A

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Contractor Basic Familiarization and PJSA		

H-02 Contractor Basic Familiarization and PJSA.

Part 1: Scope

- 1.1** The Contractor must ensure that they disclose any pertinent information, agree to follow all applicable laws, and comply with the requirements of the FSSM; and in particular that Contractor's employees and/or subcontractors engaged in general housekeeping, maintenance and/or repair activities must not commence work until they have received the familiarization contained in Annex B and completed a pre-job safety assessment (PJSA).

Part 2: References

2.1 Guidance Drawings/Nameplate Data:

- 2.1.1** N/A

2.2 Standards

- 2.2.1** Fleet Safety and Security Manual Sect 10.A.2

2.3 Regulations

- 2.3.1** N/A

2.4 Owner Furnished Equipment

- 2.4.1** The contractor must supply all materials, equipment, and parts required to perform the specified work unless otherwise stated.

Part 3: Technical Description

3.1 General

- 3.1.1** The Contractor will arrange with the vessel for a Contractor Basic Safety Familiarization for the Contractor's supervisory staff to be given by Coast Guard before any work commences. The familiarization will consist of a basic tour of the vessel in locations where the Contractor will be working.
- 3.1.2** Following the initial Contractor Basic Safety Familiarization it will be the Contractor's responsibility to provide the Contractor's workers and any subcontractors and the subcontractors workers with a Contractor Basic Safety Familiarization.
- 3.1.3** The Contractor will ensure completed copies of all Contractor Basic Safety Familiarization forms are provided to Coast Guard.

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Contractor Basic Familiarization and PJSA		

3.1.4 The Contractor will ensure completed copies of all Pre Job Safety Assessments (PJSA) forms are provided to Coast Guard.

3.2 Location

3.2.1 N/A

3.3 Interferences

3.3.1 N/A

Part 4: Proof Of Performance

4.1 Inspection

4.1.2 Coast Guard reserves the right to monitor Contractor compliance.

4.2 Testing

4.2.1 N/A

4.3 Certification

4.3.1 N/A

Part 5: DELIVERABLES:

5.1 Drawings/Reports

5.1.1 Completed Contractor Basic Safety Familiarization forms.

5.2 Spares

5.2.1 N/A

5.3 Training

5.3.1 N/A

5.4 Manuals

5.4.1 N/A

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Contractor Basic Familiarization and PJSA		

10.0
MAINTENANCE OF THE SHIP AND EQUIPMENT

CCG FLEET SAFETY AND SECURITY

ANNEX "B"

FSSM 10.A.2 CONTRACTORS BASIC SAFETY FAMILIARIZATION
(This record shall be kept for a period of two years)

The Commanding Officer or the Competent Person Designated Responsible is to ensure that contractors receive a basic shipboard or shore facilities safety familiarization and should include, but is not limited to, knowledge of the following items:

- a) Fire alarm and conduct to follow in case of fire or other emergency situations, and
- b) Off limit spaces, and
- c) Hazards encountered at the worksite (asbestos, fire fighting systems, hazardous material etc.

Date Basic Safety Familiarization completed _____
mm dd yyyy

Brief description of contract or work to be completed:

From: _____ To: _____
mm dd yyyy mm dd yyyy

Name (Print) _____ (Print) _____
Contractor Representative Competent Person, Designated Responsible

Signature: _____ Signature: _____
Contractor Representative Competent Person, Designated Responsible

Approved by Director General, Fleet

CCGS ANN HARVEY	
Spec Item #: H-02	SPECIFICATION
Contractor Basic Familiarization and PJSA	

PRE-JOB SAFETY ASSESSMENT (PJSA) ANNEX A			
PRE-JOB SAFETY Assessment (PJSA)			
	<p>Job Description:</p> <p>Date : _____</p> <p>Worker/Contractor : _____</p> <p>Location: _____</p> <p>Ship/Station: _____</p> <p>Immediate Supervisor's Name: _____</p> <p>Number of workers : _____</p>		
<p>Review the following at the work site and ONLY check the items which apply to the task. List all the hazards you have checked on the back of the card. In the third column detail your methods of CONTROL.</p>			
Shutdowns/Permits-signed / posted	Respiratory Hazard	Working at Heights Hazards	
Hot Work	Silica / Concrete	Barricades / flagging and signs	
HVAC	Asbestos	Dangerous openings	
Sprinkler	Mould	Protect from falling items	
Fire Suppression Systems	Fibreglass/insulation	Powered platforms (man lift)	
Electrical	Smoke	Others working above or below	
Water (valves)	Airborne particles- chipping	Fall arrest	
Hydraulic (valves)	Spray Painting	Ladders	
Compressed Gasses	MSDS Reviewed	Other:	
Lockout procedure in place	Other	Ergonomics Hazards	
Confined Space		Working in tight area	
Asbestos		Part of body in line-of-fire	
Other:		Working above your head	
Environmental Hazards	Activity Hazards	Pinch points identified	
Spill potential	Sensitive equipment in area	Repetitive motion	
Weather Conditions	Burn / Heat sources	Repetitive work in awkward position	
Ventilation Required	Energized Equipment in area	Other:	
Heat stress/ cold exposure	Welding / Grinding	Personal Limitations / Hazards	
Other workers in area	Electrical cords / tools-condition	Trained to use tool / perform work	
Inadequate lighting	Equipment / tools – inspected	Clear instructions	
Noise levels	Housekeeping	Insufficient number of workers	
Biohazards	Access / Egress Hazards	Physical limitations	
	Partially obstructed		
	Slip / trip potential identified		

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Spec Item #: H-03	SPECIFICATION	
Services		

H-03 Services

Part 1: Scope

The following services must be supplied, fitted and / or connected upon arrival in dry-dock, maintained throughout dry-docking period and removed from the vessel on completion of the work period. The Contractor must supply all material to point of onboard connection and all cranes/scaffolding required for connection/disconnection. The Contractor must be responsible for any additional connections required when the ship is moved between dry-dock and alongside berth at Contractor's facilities. Services are required for the full refit / dry-dock period. Each item must be priced separately.

Part 2: References

N/A

Part 3: Technical Description

3.1 The Contractor must quote a global price and daily rates for all services supplied to the vessel during the contracted period. The Contractor must supply all material to point of onboard connection. Quote to include all cranes/scaffolding required for connection/disconnection.

3.2 All service lines including discharges must be arranged such that they cannot be pinched off or restricted by equipment operating under or around the vessel.

3.3 The Contractor must quote on supplying the following:

3.3.1 Readings and Reports

Contractor must collect and bind all reading and reports in a booklet form. Two (2) bound copies and 1 electronic copy (USB memory stick) must be delivered to the Chief Engineer prior to the vessel leaving the contractor's facility. Contractor must also provide an electronic copy (USB memory stick) of the Readings and Reports to the SVMM prior to the vessel leaving the contractor's facility.

3.3.2 Electrical Power

Metered electrical service 600 VAC, 3 phase, 60Hz., 440A continuous to be supplied and maintained. Quote on supplying 150,000 KWH and on unit cost per KWH; to be adjusted up or down by 1379 action. Contractor must supply and install shore power cable.

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Note: Problems have been experienced in the past with one phase fuse blowing resulting in only two phases feeding the vessel. This caused electric motors on the ship to trip out on overload and the ship's emergency and auxiliary generators to start and attempt to come on line. Thus the electrical service is to be protected such that loss of a single phase at the contractor's end of the cable results in immediate opening of the remaining phases.

- a. A ground cable must be attached to the ship's hull. Contractor must supply and install the ground cable.
- b. The contractor must ensure compliance with the included **Transport Canada Marine Safety Bulletin – "Grounding Safety in Dry-dock"**.

Kilowatt-hour meter readings must be taken from the ship's shore power meter located on the main switchboard and from the Contractors KWh meter supplying power to the vessel. The meter readings must be recorded by Contractor and the Chief Engineer's designate at the time of connection and disconnection. In case of discrepancy, the vessel's KWh meter must be used for calculation of shore power costs.

3.3.3 Firemain

Water must be maintained to the vessel's fire main at a pressure of 550 kPa (80 psi) and be continuous 24 hours per day. Supply line must be fitted with an isolating valve and a pressure-regulating valve (with pressure gauge) which must be located at two connections at extremities of the vessel as directed by the Chief Engineer on the ship. The vessels firemain is 2 ½ inches.

3.3.4 Gangways

The Contractor must supply and erect two gangways, complete with safety nets, guardrails and adequate lighting to the satisfaction of the Commanding Officer on opposite sides of the vessel. Gangways must be safe, well lit and structurally suitable for the passage of shipyard workers and ship's crew. Contractor must maintain gangways in a safe condition throughout the duration of the dry-docking.

Ship's gangway must not be used during the refit / dry-dock period except with the approval of the Commanding Officer and at no liability to CCG. Any movement of the gangways required by Contractor must be at the expense of the Contractor.

The contractor is to ensure that should any ongoing work render a gangway unusable or unsafe the gangway will be barricaded at both ends during the work and un-barricaded immediately following the work. The Contractor must ensure that two functional gangways are fitted to the vessel at all times. This must be carried out in consultation with the Commanding Officer.

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3.3.5 Emergency Contacts

Contractor must supply a listing of shipyard telephone numbers, fire, police and emergency telephone numbers to the Chief Engineer when the ship arrives in Contractor's yard.

3.3.6 Potable Fresh Water

The Contractor must supply potable water connection through a regulator to the ship's domestic system (2" @ 60 psi while the vessel is in drydock. Water supply to be connected to the fill station on the upper deck aft. Contractor must use only new fresh water hoses. The potable water supply line is to be new first use, approved for use with potable water and arranged such that there are no connections including joins lying on the ground or dock. This is to prevent possible contamination. Contractor must provide current test results indicating the water meets provincial drinking water standards prior to being connected to the vessel's domestic fresh water system. Pressure to be maintained at all times. The flow rate is to be such that fully opening any two hydrants will result in no appreciable pressure drop. This will be tested by and to the satisfaction of the Chief Officer.

The Contractor must provide fresh water connection through a regulator to ship's HVAC air conditioning units (2" connection @ 35 psi) connected to the air conditioning heat exchanger port side aft in the main engine room. Contractor must further provide an exhaust return hose overboard for the heated air conditioning cooling water.

The Contractor must supply one fresh water supply through a regulator to the ship's refrigeration units (2" connection @ 30 psi.) connected to flange outside the MCR. Contractor must further provide an exhaust return hose overboard for the heated air conditioning cooling water.

The Contractor must provide per cubic meter unit pricing for the supply of fresh water to the vessel. Supply of fresh water must be supplied through a metered source. Initial meter reading to be taken by the Contractor and the Chief Engineer's prior to connection of fresh water lines to the vessel's systems. The final meter reading must be taken by the Contractor and Chief Engineer's delegate upon disconnection of the fresh water supply lines to the vessel at the end of the refit period. Costs for fresh water to be adjusted by 1379 action.

The Contractor must supply any fresh water and / or hot water required for the cleaning, testing or flushing of tanks as required by this specification from a source separate from the ship's potable fresh water and cooling water connections. The volume and costs of this fresh water and hot water must not be included in the metered volume supplied to the vessel for potable fresh water or cooling water.

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3.3.7 Overboard Connections

Overboard discharges during the drydocking period must include the following listed below. The Contractor must connect hoses to the overboards which must be lead away from the ships side to an appropriate location for disposal.

1. Sewage Treatment Tank Overboard, port side aft
2. Galley Drains (miniject) Overboard, stbd side midships
3. Grey Water Drains Overboard, stbd side midships
4. Central Cooler Discharge (for HVAC air conditioning), overboard port side midships
5. Refrigeration units cooling water overboard. Connected at flange outside MCR. Hose must be run from flange to overboard.
6. Air Conditioner Cooling Water Overboard. Hose must be run from the Air Conditioning Cooler located aft in port main engine room at tanktop level.

Note: These connections must be made within four (4) hours of ship dry-docking.

3.3.7.1 Volume of cooling water- bidders are to bid on 100 cubic meter per day. Contractor to bid on installing a flow meter to measure the actual amount of cooling water being used. Initial meter reading to be taken by the Contractor and the Chief Engineer's prior to connection of fresh water lines to the vessel's systems. The final meter reading must be taken by the Contractor and Chief Engineer's delegate upon disconnection of the cooling water supply lines to the vessel at the end of the refit period. Costs for cooling water to be adjusted by 1379 action.

3.3.8 Garbage Removal

A suitable garbage container with cover must be provided for the duration of the refit. Garbage container must be a minimum of 6 m³ and must be placed on the Main Deck in a location agreed upon by the Contractor and the Chief Officer. The garbage container must be emptied every 2 days or more often if required.

3.3.9 Berthing

Berthing and mooring facilities must be suitable for a vessel of this size and must be to the satisfaction of the Commanding Officer.

During the contract period, if the ship is not in the dry-dock, the ship must be berthed at the Contractor's wharf at a safe and secure berth with adequate water at extreme low tide to ensure the vessel will not touch bottom.

Contractor is responsible for all movements of the vessel during the contract period, including arrangements and costs for line handlers, tugs, pilot's and slipping of the lines from the Contractor's wharf on departure of vessel from yard upon completion of the refit.

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3.3.10 Cleaning

Contractor must ensure all spaces, compartments and areas of the ship, external and internal, are left in an “as clean condition as found”.

Cost of removing dirt, debris and cleaning up work areas to the “as clean as found condition” must be included in each specification item.

3.3.11 Oily Bilge Water

Contractor must quote on removing 30m³ of oily-water from the ship’s bilge’s and tanks. The quotation must include the cost of crantage, pumping, trucking and disposal of oily mixture. Contractor must provide the name of the firm contracted for the pumping and disposal of the waste oil. Contractor must quote the cost of disposal of 1 m³ for adjustment purposes by 1379 action. Contractor must advise the Chief Engineer when oily bilge water must be pumped out and a copy of the shipping manifest, indicating volume of oily-water removed must be given to the Chief Engineer. Contractor must bid on assuming an oily water mixture of 25% oil and 75% water.

3.3.12 Crantage

Contractor must bid on supplying general services of a dockside crane, driver and rigger for 20 lifts during dry-dock period as and when requested by Chief Engineer. Contractor must quote a unit price per lift to be adjusted up or down via 1379 action.

3.3.13 Internet

Contractor must provide internet access to the vessel. Cable must be connected as directed by the Ship's Electrical Officer. Internet must be provided for 24hrs a day for the duration of the refit. The cost of connections/disconnection and service charges must be included in the contractors quotation.

3.3.14 Compressed Air

The Contractor must bid to supply compressed air supply through a reducing station to deliver 105 psi, (36 CFM) constant pressure. This air supply must be connected to the ship’s service air system at the helicopter workshop service air fitting. Contractor must quote on supplying compressed air to the vessel for a seven (7) day period, 12 hours per day, while the control air receiver relief valves are being overhauled and bow thruster breaker is being installed. Contractor must also quote on a per day unit price. If supply of compressed air is required beyond the seven days quoted, additional days will be adjusted via 1379 action.

3.3.15 Inspections

The contractor must supply the necessary manpower and equipment to erect, as necessary, scaffolding to facilitate the inspection of the ship’s hull as necessary by ABS Class Surveyor

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and Ship's personnel. This will include scaffolding and equipment to access propellers, rudder, thruster, sea chests, anodes and hull seam repair inspection. The scaffolding must be removed when the work is complete. All scaffolding is to be erected by certified scaffolders and must have a valid inspection approval certificate attached.

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Spec Item #: H-04	SPECIFICATION	
Annual Liferaft Servicing		

H-04 Annual Liferaft Servicing

Part 1: SCOPE

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

Part 2: REFERENCES

Guidance Drawings/Nameplate data

DESCRIPTION	LOCATION	SERIAL #
Zodiac 25 Persons	Officers Deck Port	XDC4EZ13C010 MFG – 03/2010
Zodiac 25 Persons	Officers Deck Port	XDC2FA68G011 MFG- 07/2010
Zodiac 25 Persons	Officers Deck Port	XDC8EZ24E010 MFG – 05/2010
Survitec SAS 10 Persons	Officers Deck Port	XDC2FA68G011 MFG – 12/2012

Service provider must be certified to work on specified equipment

Standards

2.1 The following Coast Guard Standards and or Technical Bulletins must 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 Guard Fleet Safety Manual (DFO 5737)

Owner Furnished Equipment

2.2 The Contractor must supply all materials, equipment and parts required to perform the

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Annual Liferaft Servicing		

specified work unless otherwise stated.

Part 3: TECHNICAL DESCRIPTION

- 3.1 The Contractor must remove the liferafts and their hydrostatic releases from their stowed positions on the vessel and transport them to and from the contractor's premises, when designated by the vessel, for servicing.
- 3.2 Contractor must subcontract the annual inspection and recertification of the liferafts by an approved Transport Canada service facility that meets OEM certification.
- 3.3 The liferafts must be removed and sent for servicing within 3 business days of the contractor being advised they are ready for removal. The liferafts are to be returned to the vessel within 15 working days after being removed.
- 3.4 The Contractor is responsible for ensuring the liferafts are witnessed by TCMS as required and for providing certificates for the life rafts as appropriate.
- 3.5 The Contractor will return the liferafts and their hydrostatic releases to the stowed position on the vessel.

Part 4: PROOF OF PERFORMANCE

Inspection, Testing & Certification

- 4.1 All liferafts are back aboard the vessel in their stowed positions.
- 4.2 All of the above work is completed to the satisfaction of the Commanding Officer.

Part 5: Deliverables

Reports, Drawings, Manuals, Spares & Training

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Annual Liferaft Servicing		

- 5.1 The contractor will provide a listing of the work that was performed including 'as found and as left condition'.
- 5.2 Certificates and work description are provided to the Commanding Officer.

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Spec Item #: H-05	SPECIFICATION	
Fixed Fire Fighting Systems Annual Inspection/ Maintenance		

H-05 Fixed Fire Fighting Systems Annual Inspection/ Maintenance

Part 1: Scope

1.1 Contractor must arrange for inspection, testing and recertification of all ship's fixed fire extinguishing systems, as described and listed below, by an authorized service provider. Proof of credentials and certification of service provider must be made available to Chief Engineer.

Part 2: References

Guidance Drawings/Nameplate data

L1-2726365-01 Kidde Marine FM-200 System Layout

Standards

2.1 The following Coast Guard Standards and or Technical Bulletins must 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 Guard Fleet Safety Manual (DFO 5737)

Owner Furnished Equipment

2.2 Sub-contractor must supply the required materials and equipment.

Part 3: Technical Description

3.1 Contractor is to tender for "an authorized service provider" to complete all work as outlined in the specification including all Travel and Living expenses.

3.2 No components or parts must be replaced without the prior consent of the Technical Authority.

3.3 All certificates and service reports issued by the Contractor for this work must refer to each serviced component's serial number and location on the vessel.

3.4 Contractor is responsible for arranging ABS Surveyor for all fire fighting and fire detection system inspections.

3.5 All systems must be left in an operational condition overnight.

3.6 Contractor must inform Chief Engineer prior to making any system inoperable due to

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Fixed Fire Fighting Systems Annual Inspection/ Maintenance		

maintenance/inspection. All bottles must be disconnected before tests are completed.

3.7 Final inspection of completed work must be undertaken by Contractor's charge hand in the presence of the designated Ship's Officer. All work must be to the satisfaction of the Chief Engineer and ABS Class Surveyor.

FM200 SYSTEMS

3.8 Twenty one (21) independent, Kidde fixed FM-200 fire extinguishing systems must be thoroughly examined by qualified technicians and inspection certificates issued. Systems must be inspected to current TCMSB standards and as per current Kidde FM-200 marine maintenance manuals for "ECS Series" and "ADS Series" FM-200 systems. Service provider must be currently certified by Kidde for this inspection service and must produce documentation to verify same. Inspection and testing of all equipment must be witnessed by the Technical Authority. See FM 200 System Data Chart below.

LOCATION OF HALOCARBON SYSTEM	SYSTEM PURPOSE	TYPE OF SYSTEM	EQUIPMENT MAKE	EQUIPMENT SERIAL NUMBER	LAST DATE INSPECTED (DD/MM/YR)	PRESSURE READING (PSI OR BAR)	WEIGHT OF AGENT (LBs)
Fwd FM-200/CO2 Rm	Bowthruster Comp't Fire Protection	Full	KIDDE Fenwal	345576	Aug-15		57
Aft Stores Handling Room	Aviation Fuel Cofferdam Protect	Full	KIDDE Fenwal	14502	Aug-15		78
Fwd FM-200/CO2 Rm	Fwd Winch Room Protection	Full	KIDDE Fenwal	345558	Aug-15		96.7
Fwd FM-200/CO2 Rm	Bosun's Stores Protection	Full	KIDDE Fenwal	343475	Aug-15		142
Main E/R Bilge Port Aft	Bilge Protection	Full	KIDDE Fenwal	343502	Aug-15		113

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Main E/R Bilge Stbd Fwd	Bilge Protection	Full	KIDDE Fenwal	343483	Aug-15		113
Main Winch Room	Winch Room Protection	Full	KIDDE Fenwal	343610	Aug-15		358
Steering Flat	Steering Flat Protection	Full	KIDDE Fenwal	344678	Aug-15		352
Emerg'y Gen'r Room	Emerg'y Genr Rm Protection	Full	KIDDE Fenwal	338897	Aug-15		70
Fwd FM- 200/CO2 Rm	Forward Paint Locker Protection	Full	KIDDE Fenwal	333090	Aug-15		15
Motor Room Stbd Platform	Purifier Room Protection	Full	KIDDE Fenwal		Sep-15		151
Motor Room Stbd Platform	Central Stores Protection	Full	KIDDE Fenwal		Sep-15		273
Motor Room Port Platform	CycloConverter Room Protection	Full	KIDDE Fenwal		Sep-15		371
FM 200/Foam Room	Upper Engine Room Protection	Full	KIDDE Fenwal	344877	Aug-15		339
FM 200/Foam Room	Upper Engine Room Protection	Full	KIDDE Fenwal	344875	Aug-15		339
Motor Room Platform	Motor Room Bilge Protection	Full	KIDDE Fenwal		Sep-15		304
Motor Room Stbd Platform	Sewage Comp't Protection	Full	KIDDE Fenwal		Sep-15		262

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Motor Room Port Platform	Transformer Room Protection	Full	KIDDE Fenwal		Sep-15	239
FM 200/Foam Room	Engineroom Casing Protection	Full	KIDDE Fenwal	343579	Aug-15	428
FM 200/Foam Room	Engineroom Casing Protection	Full	KIDDE Fenwal	343605	Aug-15	428
FM 200/Foam Room	Main Engineroom Lower Protection	Full	KIDDE Fenwal	343602	Aug-15	458
FM 200/Foam Room	Main Engineroom Lower Protection	Full	KIDDE Fenwal	344527	Aug-15	458
Motor Room Platform	Lower Motor Room Protection	Full	KIDDE Fenwal		Sep-15	499
Motor Room Platform	Upper Motor Room Protection	Full	KIDDE Fenwa		Sep-15	540

- 3.9 All manual and electric pull cables must be inspected and tested.
- 3.10 All gas piping must be inspected, blown through, proven clear and pressure tested.
- 3.11 All sirens, horns and bells must be inspected and tested.
- 3.12 All gas cylinders must be weighed and Net weight determined and recorded.
- 3.13 All time delay functions must be tested and proven correct.
- 3.14 All pressure activated switches for fire alarm initiation must be tested.
- 3.15 All pressure activated switches for shutdown functions must be tested.

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3.16 Contractor to visually inspect all FM200 bottles at deck level for possible excessive amounts of corrosion or rust accumulation of exterior of bottles. The Technical Authority must be advised immediately if any problems are found.

3.17 System must be properly reassembled in good working order. All cylinders must be firmly secured in their respective mountings. Inspection certificates must be submitted to ABS with three (3) typewritten copies given to the Chief Engineer.

GALLEY Amerex KP475 Wet Chemical System

3.18 Contractor must service and inspect the Amerex Wet Chemical System.

3.19 Contractor must test and prove clear the piping and nozzles (14) and ensure there are no foreign materials in the piping system that could prevent these systems from working correctly. All piping support brackets must be verified in place and correctly fastened.

3.20 Contractor must inspect cylinder, cylinder valve and control head assembly. Cylinder should not show evidence of corrosion or damage. Cylinder charge must be determined and verified correct. All functions and adjustments of control head must be verified correct.

3.21 Contractor must clean linkages, cabling and pulleys and renew the fusible links in the canopy release cabling.

3.22 Operation of Fire-Shutter to Crew's Mess to be proven.

3.23 Contractor must obtain a sample of the wet chemical in service; to be sent off to lab for testing to ascertain that wet chemical in service is in good order. Copy of lab testing must be provided to Coast Guard.

3.24 Upon completion of the servicing of the above system all must be reconnected in good order.

3.25 The vessel must be given a minimum of 2 days notice prior to the commencement of this work to provide minimum disruption to the galley staff and crew.

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CO₂ FIRE SMOTHERING SYSTEM INSPECTION

3.26 Contractor must have maintenance and testing of Cargo Hold CO₂ system performed by qualified personnel.

3.27 The CO₂ fire fighting system must be thoroughly examined and tested

a. As per Ship Safety requirements.

b. All tests to be witnessed by Owner's representative and attending ABS Surveyor.

3.28 All bottles must be disconnected before tests are conducted. The Technical Authority must be advised prior to disconnecting. All hand control levers, pull handles, cables, cocks, and valves must be checked and proven operational. The piping must be blown through with dry compressed air or nitrogen to prove the lines are clear and that the time delays and sirens are operational. All pressure-operated switches must be proven operational.

3.29 All CO₂ hoses must be renewed.

3.30 All CO₂ bottles are to have their levels ascertained. Any recharging must be done by 1379 action. The contents must be recorded. Contractor must replace any CO₂ discharged.

3.31 List of bottles:

Cargo Hold (CO₂) 13 x 67.5 Lt. bottles located in the Forward FM200/CO₂ Room

3.32 Manual release systems operated from:

a. Manually at CO₂ bottles.

b. Outside Fwd. FM200/CO₂ Room.

3.33 Contractor to confirm operation of all local/remote manual releases.

3.34 Upon completion of testing CO₂ system must be re-connected and in working order.

3.35 Copies of certificates must be forwarded to the Technical Authority and ABS Surveyor.

Helicopter Hanger Fixed Systems

3.36 Fire Combat Model 13028, 450 PKP / 100AFFF, twin agent and Minute Man II Model 150/603 system. Each tank is fitted with a nitrogen driver cylinder.

3.37 Contractor must ascertain level in nitrogen tanks. Any loss of nitrogen must be dealt with

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by PWGSC 1379 action and the cause of the loss rectified.

3.38 Contractor must take a sample of the AFFF and send off to lab for analysis to determine that AFFF is within recommended guidelines.

Fixed Foam Firefighting System – Monitors & Hose Reels

SECURIPLEX Balanced Pressure Proportioning System

Model: 1015-118

(500 litre three percent AFFF concentrate.)

Located: FM200 Room- Port Side Boat Deck

3.39 Contractor must perform the annual inspection and servicing of the ship's fixed foam fire fighting system, as per manufacturer's recommendations.

3.40 Any recharging/repairs to be covered by PWGSC 1379 action.

3.41 The Contractor must ensure lockout/tagout permits are in place and must inform the Technical Authority before work begins.

3.42 Pressure balancing valve to be carefully disassembled for inspection. Any deposits left by foam concentrate to be cleaned from valve internals. After inspection, valve to be reassembled in good order.

3.43 Level and contents of foam concentrate tank to be checked. Concentrate sample to be taken from foam tank. Sample to be tested and copies of results given to Chief Officer.

3.44 Condition of nozzles, valves, gauges, piping, hoses and hose reels, monitors and pumps to be checked.

3.45 Following testing/inspection the contractor will restore the system to operational readiness.

3.46 Contractor must provide certificates and service reports of Inspection for the system inspected.

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Notifier Fire Detection System

3.47 Contractor must perform maintenance and inspection of the Notifier Fire Detection system completed by a qualified service provider.

3.48 Contractor must test each device in the fire detection system for operation and ensure that it sounds and displays on the main panel on the bridge deck and the mimic panels in the control room and quarter master stations.

3.49 Contractor must test the following devices listed in Device Location Table:

Testing Legend Table

Device	Description:	Manufacturer	Model
SP	Photo Electric Smoke Detector	Notifier	FSP851A
P	Manual Pull Station	Notifier	NBG-12
H	Heat Detector-Rate of Rise fixed Temp	Notifier	FST-851RA
FH	Heat Detector-Fixed Temperature	Notifier	FST-851A
FH	Heat Detector-Fixed Temperature	Notifier	FST-851HA
FEN	Fenwal Heat Detector	Notifier	225
ISO	Monitor Module	Notifier	B224BIA
MON	Monitor Module	Notifier	Fmm-101A
REL	Relay	Notifier	
ISO	Isolation Module	Notifier	ISO-X

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Device Location Table

Device Location	Device Type	Device Location	Device Type
Bridge Deck			
Wheelhouse Console Port	PAN	Wheelhouse Top of Stair, 1D6	SP
Wheelhouse Port, 1D3	SP	Wheelhouse Locker, 1D7	SP
Wheelhouse Center, 1D5	SP	Under Wheelhouse Port, 1D2	SP
Wheelhouse Stbd, 1D4	SP	Under Wheelhouse Stbd, 1D1	SP
Wheelhouse Exit, 1M1	P		
Officers Deck			
Stair Tower, 1D8	SP	Chief Officer Day Room, 1D15	SP
Passage Stbd, 1D9	SP	Chief Officer Bedroom, 1D16	SP
Passage Stbd, 1M2	P	Chief Officer Lobby, 1D17	SP
Captains Day Room, 1D10	SP	Port Passage, 1D18	SP
Captains Lobby, 1D11	SP	Port Passage, 1M4	P
Captains Bedroom, 1D12	SP	Auxiliary Electrical Rm, 1D30	SP
Comm Officer Rm 311, 1D13	SP	Auxiliary Fan Supply Rm, 1D31	SP
1 st Officer Rm 307, 1D14	SP		

Boat Deck			
Stair Tower, 1D19	SP	Port Passage, 1D28	SP
Stbd Passage, 1D20	SP	Port Passage Exit, 1M6	P

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Fixed Fire Fighting Systems Annual Inspection/ Maintenance		

Stbd Passage, 1M3	P	Deck Locker 408, 1D29	SP
Storage Locker, 1D21	SP	FM200 Rm, 1D156	FH
Officers Lounge Port, 1D158	FH	Main E/R FM 200 LP, 1M67	LP
Officers Lounge Stbd, 1D159	FH	Helicopter Workshop, 1D152	FH
Derrick Control Room, 1D22	SP	Helicopter Hanger, 1M10	FEN
Officers Laundry, 1D157	FH	Helicopter Hanger Port, 1M9	P
2nd Officials Dayroom, 1D23	SP	AV Gas Fuel Cabinet, 1M8	FEN
2 nd Officials Bedroom, 1D24	SP	AC Fan Rm Port, 1D153	FH
Port Passage, 1D25	SP	AC Fan Rm Stbd, 1D154	FH
Elec Equipment Rm, 1D26	SP	EGen Rm, 1D155	FH
SAR Equipment Rm, 1D27	SP	EGen FM200 LP, 1M69	LP
Upper Deck			
Passage Fwd, 1D32	SP	Aft Stairs, 1D51	SP
QM Station Port, 1D33	SP	Aft Passage, 1D52	SP
QM Stn Port Indicator Unit		Ice Observer Cabin, 1D53	SP
Officers Mess Port, 1D150	FH	Passage Port, 1M17	P
Officers Mess Stbd, 1D151	FH	Bosun Cabin, 1D54	SP
Officers Pantry, 1D149	FH	Flight Engineer Cabin, 1D55	SP
Fwd Passage Stbd, 1D36	SP	Port Exit, 1M11	P
Sick Bay, 1D38	SP	Stationary Locker, 1D34	SP
QM Station Stbd, 1D37	SP	Helicopter Pilot Cabin, 1D56	SP

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Fixed Fire Fighting Systems Annual Inspection/ Maintenance		

QM Stn Stbd Indicator Unit		Passage Port, 1D57	SP
Fwd Stairs, 1D35	SP	Exercise Rm, 1D58	SP
Chief Engineer Bedroom, 1D39	SP	Exercise Rm, 1D59	SP
CE Dayroom, 1D41	SP	Cadets Cabin, 1D60	SP
Stbd Passage, 1D40	SP	Logistics Officer Cabin, 1D62	SP
SE Bedroom, 1D42	SP	Port Passage, 1D63	SP
Senior Engineer Dayroom, 1D43	SP	Ships Office, 1D65	SP
Stbd Passage, 1D44	SP	Photocopy Rm, 1D66	SP
Stbd Passage, 1M14	P	3 rd Officer Cabin, 1D67	SP
Engineers Office, 1D61	SP	2 nd Officer Cabin, 1D68	SP
Engineers Office, 1D64	SP	Medical Officer, 1D69	SP
2 nd Engineers Bedroom, 1D45	SP	Port Passage, 1D70	SP
3 rd Engineer Bedroom, 1D46	SP		
Stbd Passage, 1M15	P		
EO Bedroom, 1D47	SP		
Smoking Rm, 1D48	SP		
Center Aft Passage, 1D49	SP		
Stbd Passage, 1M16	P		
Cleaning Locker, 1D50	SP		
Lower Deck			
Potato Rm, 1D71	SP		SP

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Spec Item #: H-05	SPECIFICATION		
Fixed Fire Fighting Systems Annual Inspection/ Maintenance			

		Passage Mud Rm, 1D74	
Lobby Cold Storage, 1D72	SP	Passage Mud Rm, 1M18	P
Fruit/Veg Cold Storage, 1D73	SP	Dry Stores, 1D76	SP
Passage Fwd Mud Rm, 1D75	SP	SG Locker P Aft, 1D137	FH
Fwd Stair to Engine Rm, 1D77	SP	Steering Gear FM 200 Low Pressure, 1M61	LP
Fwd Stair Stbd, 1D79	SP	Canteen, 1D94	SP
Passage Stbd, 1D148	FH	Seaman Rm 642, 1D89	SP
Galley Aft, 1D147	FH	Seaman Rm 609, 1D95	SP
Galley Fwd, 1M30	MON	Port Passage, 1D96	SP
Galley Hood System, 1M20	P	Port Passage, 1M28	P
Stbd Passage, 1D144	FH	Aft Stair, 1D97	SP
Crew Mess Aft, 1D145	FH	Linen Locker, 1D98	SP
Incinerator Rm, 1D146	FH	Seaman Room 612, 1D99	SP
WT Door Power Locker, 1D106	SP	Seaman Rm 615, 1D100	SP
Chief Cook Cabin RM 657, 1D80	SP	Crew Lounge Aft, 1D140	FH
Cook/Steward RM 655, 1D81	SP	Crew Lounge FWD, 1D139	FH
Stbd Passage, 1D82	SP	Seaman Rm 617, 1D101	SP
Stbd Passage, 1M23	P	Lead Seaman Room 620, 1D102	SP
Stair at Frame 70, 1D83	SP	Lead Seaman Room 622, 1D103	SP
Oiler Rm 652, 1D84	SP	Port Passage, 1D104	SP

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Spec Item #: H-05	SPECIFICATION		
Fixed Fire Fighting Systems Annual Inspection/ Maintenance			

Oiler Rm 650, 1D85	SP	Clean Locker, 1D105	SP
Ships Clerk Rm 647, 1D86	SP	Crew Laundry Rm, 1D138	FH
Stbd Passage, 1D87	SP	Linen Locker, 1D107	SP
Stbd Passage, 1M24	P	Boatswains Mate Cabin, 1D108	SP
Steward Rm 644, 1D88	SP	Passage Port, 1D109	SP
Clothing Store, 1D90	SP	Locker Room, 1D110	SP
Bonded Store, 1D91	SP	Passage Port, 1D111	SP
Stores Main Deck Rm 603, 1D93	SP	Main Deck FWD	
Stores Handling, 1D92	SP	CO2/FM 200 Room, 2D14	FH
Stores Handling, 1M26	P	Winch Rm FWD FM 200 LP, 2M68	LP
Steering Gear Fwd, 1D141	FH	On Deck FWD, 2M32	P
Steering Gear Stbd, 1D142	FH	Winch Rm Stbd, 2D115	SP
Steering Gear Port, 1D143	FH	Winch Rm Port, 2D114	SP
SG Locker P Fwd, 1D136	FH	Rope Stores Port, 2D15	FH
		Rope Stores Center, 2D16	FH
Rope Stores Stbd, 2D17	FH	Upper Hold Stbd Fwd, 2D9	FH
Paint Locker, 2M33	FEN	Upper Hold Port Fwd, 2D10	FH
Upper Bowthruster, 2D112	SP	Lower Hold Port, 2D11	FH
Lower Bowthruster, 2D113	SP	Lower Hold Cent Fwd, 2D12	FH
Upper Hold Port Aft, 2D7	FH	Lower Hold Stbd, 2D13	FH
Upper Hold Stbd Aft, 2D8	FH		

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Spec Item #: H-05	SPECIFICATION	
Fixed Fire Fighting Systems Annual Inspection/ Maintenance		

Engine Room Deck			
Winch Room Port Aft, 2D1	FH	AT Transformer Rm, 2M38	P
Winch Room Stbd Aft, 2D2	FH	Transformer Rm Stbd Fwd. 2D121	SP
Winch RM Port, 2D3	FH	Transformer Rm Port Fwd, 2D122	SP
Winch RM Port FWD, 2D4	FH	Transformer Rm Port Aft, 2D123	SP
Winch RM Stbd FWD, 2D5	FH	Transformer Rm Stbd Aft, 2D124	SP
Winch RM Stbd, 2D6	FH	Lower ER Center Aft, 2D31	FH
Winch RM FM 200 LP, 2M62	LP	Lower ER Port AFT, 2D32	FH
Upper ER at MCC, 2D19	FH	Lower ER Port Center, 2D33	FH
Upper ER at Workshop, 2D20	FH	Lower ER Port FWD, 2D34	FH
Outside Workshop, 2M34	P	Lower ER Center FWD, 2D35	FH
Upper ER Electrical Workshop, 2D21	FH	Lower ER Center FWD, 2D36	FH
Upper ER Stbd FWD, 2D23	FH	Lower ER Stbd FWD, 2D37	FH
Upper ER Stbd AFT, 2D24	FH	Lower ER Stbd Center, 2D38	FH
Upper ER Stbd AFT, 2D25	FH	Lower ER Stbd Aft, 2D39	FH
Upper ER @ Boiler, 2D26	FH	FM 200 ER Bilge Stbd LP, 2M63	LP
Upper ER Port Fwd, 2D27	FH	FM 200 ER Bilge Port LP, 2M64	LP
Upper ER Port AFT, 2D28	FH	Cycloconverter Rm Cent Port, 2D118	SP
Upper ER @ MCR, 2D29	FH	Cycloconverter Rm Cent Fwd, 2D119	SP

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Spec Item #: H-05	SPECIFICATION	
Fixed Fire Fighting Systems Annual Inspection/ Maintenance		

Upper ER @ Boiler, 2D30	FH	Cycloconverter Rm Stbd Fwd, 2D120	SP
ER Control RM Aft , 2D116	SP	Lower Prop Mot Rm Stbd Aft, 2D49	FH
ER Control RM Fwd, 2D117	SP	Upper Prop Mot Rm Stbd Aft, 2D45	FH
ER Control RM Exit, 2M35	P	FM200 LP Prop Motor Rm Port, 2M65	LP
Purifier Rm Aft, 2D53	FH	FM200 LP Prop Motor Rm Stbd, 2M66	LP
Purifier Rm Fwd, 2D54	FH	Sewage Compt Aft, 2D46	FH
Lower Prop Mot Rm Aft Cent, 2D52	FH	Sewage Compt Port, 2D47	FH
Lower Prop Mot Rm Fwd Cent, 2D51	FH	Sewage Compt Stbd, 2D48	FH
Lower Prop Mot Rm Port Aft, 2D50	FH	Central Stores Port, 2D125	SP
Upper Prop Mot Rm Stbd Aft, 2D44	FH	Central Stores Center, 2D126	SP

Upper Prop Mot Rm Cent Fwd, 2D43	FH	Central Stores Stbd, 2D127	SP
Upper Prop Mot Rm Port Fwd, 2D42	FH	General Alarm Interface, 2M44	REL
Upper Prop Mot Rm Port Aft, 2D41	FH	Fire Door Release Interface, 2M49	REL

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Spec Item #: H-05	SPECIFICATION	
Fixed Fire Fighting Systems Annual Inspection/ Maintenance		

Upper Prop Mot Rm Port Cent, 2D40	FH		
Prop Motor Rm Exit, 2M40	P		

3.50 Contractor must provide Fire Alarm device test and inspection record for all devices noted showing that they operated correctly or corrective action that was taken.

3.51 Any defects must be addressed by 1379 action.

Part 4: Proof of Performance

Inspection

4.1 Contractor must provide proof of performance of the all of the above noted systems as indicated throughout.

Testing

4.2 N/A

Certification

4.3 Contractor must provide annual certification reports for all systems serviced throughout specification. Certificate dates must be for Sept 2021.

Part 5: Deliverables

Reports

5.1 Contractor must provide annual inspection certificates for all fire fighting systems to the Chief Engineer.

5.2 Contractor must provide foam analysis reports from labs to the Chief Engineer.

5.3 Contractor must provide service reports indicating all inspections/work carried out to the Chief Engineer.

	CCGS ANN HARVEY	
Spec Item #: H-06	SPECIFICATION	
Servicing of Halocarbon Refrigeration / AC Systems		Servicing of Halocarbon Refrigeration / AC Systems

H-06 Servicing of Halocarbon Refrigeration / AC Systems

Part 1: SCOPE

1.1 Contractor must provide the following services;

- A) Annual Leak Testing of Domestic Refrigeration and Air Conditioning Systems.
- B) Filter Drier and Oil changes on the Domestic Refrigeration Compressors (2 of)
- C) Filter Drier and Oil changes on the main Accom HVAC A/C Compressors (1 of stbd)
- D) Filter Drier and Compressor Oil changes on the MCR and Radio Room A/C units
- E) Filter Drier and Compressor Oil changes on the Wheelhouse A/C unit

Part 2: REFERENCES

2.1 The Contractor's Qualified Refrigeration Technician(s) must perform the following work on CCGS Ann Harvey's Refrigeration and Air Conditioning Systems. The Contractor must provide to the Owner photocopies of the Refrigeration Technicians Certificate of Trade Qualifications prior to the commencement of the following work.

Owner Furnished Equipment

2.2 The Contractor must supply all parts and consumables. Allow \$2,500.00 for parts and consumables to be adjusted up or down by 1379 on proof of detailed (c/w part numbers) invoices. The following parts and consumables must be provided at a minimum:

- a) quantity 2 of Sporlan Filter-drier Cartridge P/N RC 4267
- b) quantity 2 of Sporlan Filter-Drier Cartridge P/N 4864 7/8"
- c) quantity 2 Gallons of Copeland Ultra 32 CC POE Synthetic Compressor Oil (3/4 Gallons each sump capacity plus quantity for 'flushing'.) Domestic Refrigeration Compressors Refrigerant R-134a
- d) quantity 7 Gallons (some of which will be left for Ship's stores) of Compressor Oil Mineral Oil 150 for A/C Compressors Refrigerant R-22
- e) quantity 1 of Liquid Line Drier Emerson P/N EKP-416

The certificated refrigeration technician(s) must provide and use their own clean recovery

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Spec Item #: H-06	SPECIFICATION	
Servicing of Halocarbon Refrigeration / AC Systems		Servicing of Halocarbon Refrigeration / AC Systems

cylinder for refrigerant 134a, Nitrogen cylinder and vacuum pump.

Part 3: TECHNICAL DESCRIPTION

- 3.1 The technician(s) must, with the assistance of the ship's Electrical Officer isolate and lock out the electrical power supply to the Domestic Refrigeration System for the duration of the work of component & seals renewal as required to correct the identified defects and to perform a thorough nitrogen pressurized leak test on the Domestic Refrigeration Systems.
- 3.2 Domestic Refrigeration System: Upon successful completion of all repairs and satisfactory nitrogen leak testing, drier and oil renewals the system piping must be evacuated of all air and moisture. The Domestic Refrigeration System must then be returned to service.
- 3.3 Accommodation, MCR, Radio and Wheelhouse: Contractor must leak test units using nitrogen. Upon successful completion of all repairs and satisfactory nitrogen leak testing, drier and oil renewals the system piping must be evacuated of all air and moisture.
- 3.4 Upon completion of all work, each system must be run up for testing to ensure correct operation pressures and temperatures. Chief Engineer or delegate to witness the run up and correct operation of each system.
- 3.5 The technician(s) must log all work performed on these systems in both the local Logs and in the Halocarbon Book Log maintained by the Chief Engineer.
- 3.6 All systems must be left in good running order upon completion of work. All standby systems must be left with their charges isolated in their condensers and standby systems must be tagged to that effect. The tags must be dated and signed.
- 3.7 All work must be to the satisfaction of the Owner's Representative or Delegate. All work must be carried out in accordance with provincial and federal environmental regulations and guidelines.

Part 4: PROOF OF PERFORMANCE

Inspection, Testing & Certification

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Spec Item #: H-06	SPECIFICATION	
Servicing of Halocarbon Refrigeration / AC Systems		Servicing of Halocarbon Refrigeration / AC Systems

4.1 The Contractor must provide the Chief Engineer with 3 typewritten copies of the work conducted outlining specifically each Refrigeration System(s).

Part 5: Deliverables

Reports, Drawings, Manuals, Spares & Training

3.1 The Contractor must provide the Chief Engineer with 3 typewritten copies of the work conducted outlining specifically each Refrigeration System(s).

	CCGS ANN HARVEY	
Spec Item #: H-07	SPECIFICATION	
Aviation Fuel Cofferdam Access Manhole Installation		

H-07 Aviation Fuel Cofferdam Access Manhole Installation

Part 1: Scope

- 1.1** This document is intent of this specification must be for the Contractor to fabricate and install a new Aviation Fuel Tank Cofferdam Manhole Access in the Starboard cofferdam bulkhead.

Part 2: References

2.1 Guidance Drawings/Nameplate Data

2.1.1 Dwg. No. 72-405, Capacity Plan

2.1.2 DWG No. 72-01, Construction Sections, Sheet 1

2.1.3 PMC Dwg 17-006-100 Rev 0 Aviation Fuel Tank Cofferdam Access

2.1.4 PMC Document 17-006-100 Rev 0

2.2 Standards

2.2.1 Canadian Coast Guard Fleet Safety Manual

2.2.2 Coast Guard ISM Confined Space Entry

2.2.3 Coast Guard ISM Hotwork Procedures

2.2.4 Coast Guard ISM Lock out Tag out Procedures

2.2.5 Coast Guard ISM Fall Protection procedures

2.2.6 CWB CSA 47.1 latest revision Division I, II or III

2.2.7 TC TP 127e

2.2.8 IEC 60332-3, 60364-5-52, 60754-0,1,2, IEEE 60332-3

2.3 Regulations

2.3.1 Canada Shipping Act 2001 Hull Construction Regulations

2.3.2 Canada Shipping Act 2001 – Marine Machinery Regulations

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Aviation Fuel Cofferdam Access Manhole Installation		

2.4 Owner Furnished Equipment

2.4.1 The Contractor must supply all materials, equipment, and parts required to perform the specified work unless otherwise stated.

Part 3: Technical Description

3.1 General

3.1.1 The work in this spec item is to be performed in conjunction with spec item H-28 Lead Paint Abatement, H-08 Aviation Fuel Cofferdam Cleaning, Inspection and Coating and spec item H-09 Aviation Fuel System Annual Servicing.

3.1.2 Contractor must contact Poseidon Marine Consultants Ltd when technical information or clarification is required to complete the renewals outlined in Doc. No. 17-006-100 Rev 0. and Dwg 17-006-100 Rev 0. Poseidon hours must be supported by detailed invoice for adjustment purposes.

3.1.3 Aviation Cofferdam Manhole cover located on aft section of Upper Deck (Port side of Tow Winch) must be dismantled and the space must be opened up and tested to ensure that it is gas free and safe for personnel to enter. One copy of gas free certificate must be given to the Chief Engineer prior to personnel entering the tank and a copy of the certificate must be posted in close proximity to the manhole access.

3.1.4 The Contractor must provide the space with a mechanical ventilation system, vented to the outside of the ship. Good ventilation must be provided and any blowers/extractors must ensure good air movement for the length of the space. Aviation Cofferdam is considered a confined space and the Contractor must ensure the space is safe for entry under the Coast Guard Safety Management System.

3.1.5 The Contractor must provide and maintain a Confined Space Entry Rescue Team and equipment. The Confined Space Entry Rescue Team and equipment must be standing by at all times when personnel are in the Aviation Fuel Cofferdam.

3.1.6 Contractor must be responsible for the scheduling of ABS Class surveyor for the inspection / survey requirements in the course of completing this work. The C/E

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Spec Item #: H-07	SPECIFICATION	
Aviation Fuel Cofferdam Access Manhole Installation		

must be advised of ABS attendance as the onsite representative. Contractor must be responsible to plan and implement repairs as per ABS requirements, ie crop outs, prep work, welding procedures, ND Testing.

- 3.1.7** The Contractor must remove the perforated sheathing and insulation in way of the area where the manhole access is to be installed. The coating on this sheathing contains lead. The Contractor must remove the sheathing ashore and dispose of as per applicable Provincial Regulations.
- 3.1.8** Contractor must complete new Aviation Fuel Tank Cofferdam Access as per Doc. No. 17-006-100 Rev 0 and Dwg. 17-006-100 Rev 0. Indicated steel grade is based on equivalency with referenced vessel drawings.
- 3.1.9** Contractor must be responsible for removal of manhole covers and gas freeing of tanks/spaces to effect repairs noted in the work scope for duration of the work. For the purposes of work arising, the Contractor must quote a unit cost to gas-free the Aviation Fuel Tank Cofferdam for PWGSC 1379 adjustment should further work be required.
- 3.1.10** Contractor must provide all ancillary services to complete the work noted in the work scope for duration of the work. These include but are not limited to strip out, cleaning, debris removal, lighting, ventilation, shore power etc.
- 3.1.11** Contractor must complete CG Hotwork permits and notify Chief Engineer prior to start of work as per Coast Guard Safety Management System. Any cleaning and protection of affected spaces required by the Contractor to complete hotwork must be their responsibility.
- 3.1.12** Contractor must protect adjacent vessel spaces / equipment from Hotwork and debris as a result of hotwork required.
- 3.1.13** Contractor must be responsible for identification of interference items to complete steel work. Any removals (wiring, piping etc) must be locked out where applicable and disconnected/removed or adequately protected/covered. Re-installation must be included in the bid and all removed items to be re-installed upon completion of work.
- 3.1.14** Contractor must provide mill certificates for steel plate. Certificates are to be provided to CE and ABS. All new steel must be shot blasted and coated with weldable primer prior to placement onboard.

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Spec Item #: H-07	SPECIFICATION	
Aviation Fuel Cofferdam Access Manhole Installation		

3.1.15 Contractor must bid on supplying third party ND Testing on all new welds. Reports must be provided to the Technical Authority, Project Authority and ABS in a timely fashion. NDT must include 100% visual inspection, 100% UT for new weld seams or full penetration welds and 100% MPI for all other connections.

3.1.16 The Contractor must supply new Insulation / Perforated Sheathing to replace the insulation and metal sheathing removed and disposed of in way of the manhole access. Upon completion of fitting new tank accesses The Contractor must obtain services of accredited Red Seal Insulator company to re-insulate and properly dress sheathing around manhole covers as found on other existing tank accesses.

3.1.17 Contractor must have all affected spaces professionally cleaned of all debris and have vessels Designate inspect and sign off once complete.

3.2 Location

3.6.1 Main Deck, Upper Deck.

3.3 Interferences

3.7.1 The Contractor must be responsible for the identification of interference items, their temporary removal, storage, and refitting to vessel.

Part 4: Proof of Performance

4.1 Inspection

4.1.1 All work must be subject to inspection by the Chief Engineer or delegate and ABS Class surveyor.

4.1.2 Contractor must arrange for Third Party ND Testing for all welds and must supply report to CG and TCMS as required.

4.1.3 Contractor must consult with CG NACE inspector prior to coatings to schedule inspection points for surface preparation, environmental conditions and coating applications and adhere to manufacturer recommendations and best industry practices

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Spec Item #: H-07	SPECIFICATION	
Aviation Fuel Cofferdam Access Manhole Installation		

4.2 Testing

4.2.1 NA

4.3 Certification

4.3.1 All ABS (Transport Canada recognized) approval certificates for materials being fitted must be supplied to the Chief Engineer prior to installation of product and must be approved by the attending ABS surveyor prior to purchase.

Part 5: Deliverables

5.1 Drawings/Reports

5.1.1 NA

5.2 Spares

5.2.1 NA

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Spec Item #: H-08	SPECIFICATION	
Aviation Fuel Cofferdam Cleaning, Inspection and Coating		

H-08 Aviation Fuel Cofferdam Cleaning, Inspection and Coating

Note: there is avgas in the tank, safety precautions must be strictly adhered to. Work to be performed in conjunction with H-07 and H-09.

Part 1: Scope

1.1 The Contractor must open up the Aviation Cofferdam for cleaning, inspection, and coating repair.

Part 2: Reference

Guidance Drawings/Nameplate data

2.1 The following Coast Guard Standards and or Technical Bulletins must 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 Guard Fleet Safety Manual (DFO 5737)

Owner Furnished Equipment

2.2 The Contractor must supply all materials, equipment and parts required to perform the specified work unless otherwise stated. Contractor must provide to the Chief Engineer copies of product specifications and MSDS for all chemicals and coating products used.

Part 3: Technical Description

3.1 The work in this spec item is to be performed in conjunction with sepc item H-28 Lead Paint Abatement, H-07 Aviation Fuel Cofferdam Access Manhole Installation and H-09 Aviation Fuel System Annual Servicing

3.2 Aviation Cofferdam Manhole cover located on aft section of Upper Deck (Port side of Tow Winch) must be dismantled and the space must be opened up and tested to ensure that it is gas free and safe for personnel to enter. One copy of gas free certificate must be given to the Chief

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Aviation Fuel Cofferdam Cleaning, Inspection and Coating		

Engineer prior to personnel entering the tank and a copy of the certificate must be posted in close proximity to the manhole access.

3.3 The Contractor must provide the tank with a mechanical ventilation system, vented to the outside of the ship. Good ventilation must be provided and any blowers/extractors must ensure good air movement for the length of the space. Aviation Cofferdam is considered a confined space and the Contractor must ensure the space is safe for entry under the Coast Guard Safety Management System.

3.4 The Contractor must provide and maintain a Confined Space Entry Rescue Team and equipment. The Confined Space Entry Rescue Team and equipment must be standing by at all times when personnel are in the Aviation Fuel Cofferdam.

3.5 The Aviation Cofferdam must be thoroughly cleaned. Cleaning must be by shop vacuum followed by a ragging with a handheld spray cleaner/degreaser. All residues must be disposed of ashore.

3.6 There are areas of the cofferdam plating where the coating has failed and corrosion is occurring. All these spot areas of corroding bare steel are to be power tooled to SSPC SP3. The dust so generated is to be collected as generated. The freshly prepared bare steel is to be immediately coated with one stripe coat to all welds and edges and one overall coat of Contractor-supplied Interbond 998 @ 14 mils DFT, as per the product manufacturers.

3.7 Fume extraction ventilation must be maintained until all coatings have cured. Contractor must bid on an estimated total coating repair area of 40 square meters. The Contractor must also include in the bid a quote on cost per square meter of surface preparation and coating repair for total area adjustment by 1379 action.

3.8 Cofferdam internals are to be inspected by the Chief Engineer and an ABS Class surveyor upon completion of the surface prep, coatings application and curing.

3.9 Sounding pipes, suction pipes and vents must be proven clear and the cofferdam must then be closed up using new 1/4" neoprene rubber manhole gasket.

3.10 Contractor must quote a unit cost to provide and replace manhole cover studs c/w washer and nut. Any studs broken in the removal and replacement of the manhole covers must

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Spec Item #: H-08	SPECIFICATION	
Aviation Fuel Cofferdam Cleaning, Inspection and Coating		

be renewed by 1379 action. The Chief Engineer must inspect the Aviation Cofferdam prior to final closing.

Part 4: Proof of Performance

- a. Contractor must contact Chief Engineer for inspection of Aviation Cofferdam upon completion of cleaning and coating repairs.

Part 5: Deliverables

N/A

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Spec Item #: H-09	SPECIFICATION	
Aviation Fuel System Annual Servicing		

H-09 Aviation Fuel System Annual Servicing

Note: This work is to be performed in conjunction with H-07 and H-08.

Part 1: SCOPE

- 1.1 The intent of this spec is to have recertify the Aviation Fueling System including equipment listed below. The Contractor must install his own lock-outs on the Aviation Fuel System Supply Breaker # 10 on the Aft Load Center on the Motor Room Flat.

Part 2: REFERENCES

Service provider must be certified to work on specified equipment.

Part 3: TECHNICAL DESCRIPTION

- 3.1 Contractor must use the services of a certified fuel equipment testing and calibration company to complete the tasks listed below.
- 3.2 The Contractor must arrange ABS Class Surveyor attendance for any and all inspections required by ABS for recertification of the Av Gas System.
- 3.3 The Contractor must provide the Chief Engineer at least 24 hours notice of all planned inspections and ABS Class Surveyor attendance required to complete this spec item.
- 3.4 Contractor must dismount, transport, service and re-install the following components of the Aviation Bulk Fuelling System:
 - a) Dispensing Meter, Note: Contractor may service Dispensing Meter in Situ.
 - b) Flame Engulfment Relief Valve

Item 'a' is located in the Fuel Dispensing Cabinet Boat Deck Port Aft

Item 'b' is mounted on the piping on the Towing Deck (Stbd Aft Main Deck)

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Spec Item #: H-09	SPECIFICATION	
Aviation Fuel System Annual Servicing		

- 3.5 All temporary openings created in the Aviation Fuel System are to be temporarily wrapped or sealed against the ingress of any contaminants.
- 3.6 The helicopter fuelling hose consists of one - 75 ft. length of 1.5" diameter. Aviation fuel hose with T1X15T Brass male couplings each end.
- 3.7 The Contractor must use calibrated test equipment and current copies of the equipment calibration certification must accompany the hose certificates. All certificates to be given to the Chief Engineer upon completion of the work.
- 3.8 The Contractor will be responsible for ensuring testing is carried out to the satisfaction of the Chief Engineer and ABS Class surveyor and for providing a copy of a Transport Canada Marine Safety form SI-26 Component Inspection Certificate or ABS equivalent in addition to a signed test certificate from the Contractor.
- 3.9 Perform a static pressure test on all the hoses using diesel fuel to Manufacturers instructions regarding procedure, pressure value and number of cycles.
- 3.10 Upon satisfactory completion of hydrostatic testing the hose must be completely drained of fluid and blown through with clean dry air.
- 3.11 The Contractor must measure and record the static conductivity of the hose assembly and include same on the hose test certificate.
- 3.12 Contractor must re-install items 'a' and 'b' with new Aviation Fuel compatible gaskets C.A.F. type with P.T.F.E. envelope. Contractor must re-connect the tested and drained fuel hose using gas-rated pipe thread tape. The fuel hose must be reeled back onto the storage reel once the fuel system has been tested and the hose connections proven tight. Contractor must ensure that the bonding straps are re-installed on each flange as per original.
- 3.13 Contractor must hand the new test certificates to the Owner's representative prior to the testing of the serviced system. Testing must be conducted with the assistance of the Senior Engineer.
- 3.14 The Contractor must service the valves listed below:

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- A) Filling pneumatic Tank valve
 - 3" valve with actuator
- B) Tank Suction Line
 - 3" valve with actuator
 - 3" wafer style check valve. 316L Stainless Steel with PTFE seats
- C) Tank Sampling Pneumatic Valve
 - 2" valve with actuator
- D) Fuel Bunkering 3-Way
 - 3" 3-way valve
- E) Pump #1 Discharge Non Return
 - 2" check valve wafer style
- F) Pump #2 Discharge Non Return
 - 2" check valve wafer style
- G) Hose Reel 3 Way
 - 1.5" 3-way valve
- H) Filter Water Sereerator
 - Inlet 3" 3-way valve
 - Outlet 3" 3-way valve

3.15 The Contractor must replace all valves that are deemed unservicable or that do not pass inspection.

3.16 All replacement valves must be ABS Class approved. Contractor must supply ABS Class Approval certificates for any new valves supplied. Supply of new valves will be adjusted via 1379 upon proof of invoice.

3.17 The Contractor must exchange the in-service BSP relief valves with owner-supplied certified spares (Inside Aviation Cofferdam).

- A) Avgas Piping Pressure Relief Valve 1.5" BSP set at 12PSI
- B) Avgas Piping Vacuum Relief Valve 1.5 BSP set at 0.5" Hg

3.18 The Aviation Fuel Tank Cofferdam is a ventilated and monitored Confined Space. Contractor must comply with Owner's Safety Annex Confined Space Entry Procedure. The only purpose in entering the Cofferdam is to dismount valves 'A' & 'B' and install

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Aviation Fuel System Annual Servicing		

owner-supplied certified replacements. The dismantled BSP relief valves are to be handed to the Owner's Representative for certification in home port. The contractor must use gas-line pipe sealant tape on the pipe threads. The valves are identical externally except for the etched pressure rating. The contractor is to take utmost care to install the owner-supplied certified replacement valves as original for orientation and spring tension.

3.19 The Contractor must dismantle and open for cleaning and inspection the relief vent pipe outlet flame screen "Flame Arrester assembly" located at aft end of Towing Deck.

3.20 Flame arrester assembly (12 bolts) and open same (4 bolts) for cleaning and inspection. The element consists of 9 layers of 316 SS mesh 0.112 mm dia wire x 0.254 pitch. Cleaning to be by solvent and subsequent compressed air blow through; no mechanical cleaning must be performed. Any defects seen in the flame screen to be brought to the attention of the Owner's representative. The flame screen is to be re-assembled and re-installed in good order with anti-seize compound applied to the fastener threads.

Part 4: PROOF OF PERFORMANCE

Inspection, Testing & Certification

4.1 Contractor must conduct a conductivity and static pressure test on fuel hose.

4.2 Contractor must provide a Transport Canada Marine Safety form SI-26 Component Inspection Certificate in addition to a signed test certificate from the contractor.

Part 5: Deliverables

Reports, Drawings, Manuals, Spares & Training

5.1 Contractor must provide 3 typewritten service reports detailing work and inspections conducted to the Chief Engineer upon completion of this spec item.

	CCGS ANN HARVEY	
Spec Item #: H-10	SPECIFICATION	
Accommodation and Dryer & Smoking Lounge Duct Cleaning		

H-10 Accommodation and Dryer & Smoking Lounge Duct Cleaning

Part 1: Scope

- 1.1 The intent is to clean the duct work for the Accommodation and Dryer and Smoking Lounge Ducts by certified HVAC specialist upon following completion of all grit blasting operations, cleaning and painting of the vessels hull and superstructure.

Part 2: References

Guidance Drawings/Nameplate data

HVAC Diagram 72-263 Sheets 1 & 2 (Drawings to be provided to successful bidder)

Standards

- 2.1 The following Coast Guard Standards and or Technical Bulletins must 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 Guard Fleet Safety Manual (DFO 5737)

Owner Furnished Equipment

- 2.2 The Contractor must supply all materials, equipment and parts required to perform the specified work unless otherwise stated.
- 2.3 See 'Dryer Vent' image in Appendix A.

Part 3: Technical Description

Accommodation Duct Cleaning

- 3.1 The Contractor with the ship's Electrical Officer must lock-out the affected HVAC Fan and A/C Compressor prior to start of work.
- 3.2 The Contractor must complete the work on one 'side' at a time.
- 3.3 The Contractor must complete the ship's lockout/tagout procedure and forms. The Contractor must supply their own locks and tags.

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Spec Item #: H-10	SPECIFICATION	
Accommodation and Dryer & Smoking Lounge Duct Cleaning		

- 3.4 The Contractor must provide the services of a qualified HVAC technician to remove all grime, grit, dust and debris from the internal surfaces of the vessels HVAC ducting.
- 3.5 The Contractor can use any of the current plugged access penetrations for the cleaning equipment. Any access penetrations opened must be properly plugged following the work.
- 3.6 If any further openings in the ducting are requested by the Contractor they must be covered with screwed sheet metal panels, tape, and the insulation replaced in good order. The Chief Engineer must be advised of the requirement and the need for it before any further openings are made.
- 3.7 All insulation removed is to be reinstalled in good order with all moisture barrier sealed as original and all taped seams re-taped with new approved tape for HVAC systems.
- 3.8 Contractor must be responsible for the dismantling and re-installation of all ceiling panels to access various ventilation trunking, ducting, and tubes. The Contractor must ensure that his workers are all informed as to the requirement for verifying the identification markings on the panels such that each panel is restored and well secured in its original position on completion of work and inspection. Note that other concurrent repair and maintenance work must require the dismantling of ceiling panels. The Contractor for this work must ensure his employees are aware that they must not re-install any ceiling panels removed by other persons. The Chief Officer must be informed the ducting and outlets are ready for inspection prior to re-installation of the ceiling panels dismantled for this work only.
- 3.9 All items are to be replaced in good order upon completion of all work.
- 3.10 Any wiring, piping, lighting, fixtures, fasteners, metal work, etc. that has been removed or repositioned to carry out this work must be reinstalled in good order in the original location and condition.

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Spec Item #: H-10	SPECIFICATION	
Accommodation and Dryer & Smoking Lounge Duct Cleaning		

3.11 Port Accommodation Ventilation Located in Fan Room, Boat Deck

Capacity 5300 CFM

Officers Deck:

Chief Mates Dayroom	194 CFM	2 diffusers
Chief Mates Nightroom	115 CFM	1 diffuser
Spare Cabin Port	140 CFM	2 diffusers
Spare Cabin Starboard	154 CFM	2 diffusers
C/O Nightroom	68 CFM	1 diffuser
C/O Dayroom	190 CFM	2 diffusers

Boat Deck:

Stbd Accommodation Ventilation: Located in Fan Room, Boat Deck, Capacity 5300CFM:

SAR Equipment Room	218 CFM	2 diffusers
Electronic Room	196 CFM	2 diffusers
Officials Nightroom	120 CFM	1 diffuser
Officials Dayroom	79 CFM	1 diffuser
Winch Control Room	211 CFM	3 diffusers
Laundry Room (NRV Fitted)	65 CFM	1 diffuser
Clothing Stores	64 CFM	1 diffuser
Officer's Lounge	228 CFM	4 diffusers

Upper Deck

Officer's Mess	320 CFM	3 diffusers
Q/M Station Port	32 CFM	1 diffuser
Nurse Cabin	119 CFM	1 diffuser
Second Mate Cabin	133 CFM	1 diffuser
Third Mate Cabin	117 CFM	1 diffuser

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Accommodation and Dryer & Smoking Lounge Duct Cleaning		

Log. Officer Cabin	112 CFM	1 diffuser
Photocopier Office	47 CFM	1 diffuser
Administration Office	170 CFM	1 diffuser
Engineer Drawing Office	57 CFM	1 diffuser
Helicopter Pilot Cabin	165 CFM	1 diffuser
Flight Engineer	132 CFM	1 diffuser
Bosun Cabin	143 CFM	1 diffuser
Ice Observer Cabin	175 CFM	1 diffuser
Officers Pantry (NRV Fitted)	67 CFM	1 diffuser
Sick Bay (NRV Fitted)	161 CFM	1 diffuser
Q/M Station Starboard	65 CFM	1 diffuser
C/E Nightroom	114 CFM	1 diffuser

Upper Deck

C/E Dayroom	179 CFM	1 diffuser
S/E Nightroom	122 CFM	1 diffuser
S/E Dayroom	158 CFM	1 diffuser
Second Engineer Cabin	151 CFM	1 diffuser
Third Engineer Cabin	147 CFM	1 diffuser
E/O Cabin	143 CFM	1 diffuser
Exercise Room	258 CFM	2 diffusers
Cadets Cabin	97 CFM	1 diffuser
Engineers Office	97 CFM	1 diffuser
Return Air Register	17"x12"	1 register

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Spec Item #: H-10	SPECIFICATION	
Accommodation and Dryer & Smoking Lounge Duct Cleaning		

Main Deck

Crews Mess	492 CFM	2 diffusers
C/Cook Cabin	143 CFM	1 diffuser
Second Cook Cabin	200 CFM	1 diffuser
Oiler Cabin	187 CFM	1 diffuser
Oiler Cabin	194 CFM	1 diffuser
Oiler Cabin	161 CFM	1 diffuser
Steward Cabin	172 CFM	1 diffuser
Seamen Cabin	190 CFM	1 diffuser
Return Air Register 12"x8"		1 register Upper Deck
Seaman Change Room	134 CFM	1 diffuser
Bosun Mate Cabin	140 CFM	1 diffuser
Clerk/Storekeeper Cabin	158 CFM	1 diffuser
Leading Seamen Cabin	175 CFM	1 diffuser
Linen Locker	45 CFM	1 diffuser
Laundry Room	120 CFM	1 diffuser
NRV Fitted for above 2 areas		
Seaman Cabin	157 CFM	1 diffuser
Seamen Cabin	158 CFM	1 diffuser
Seamen cabin	154 CFM	1 diffuser
Seamen Cabin	187 CFM	1 diffuser
Crew's Lounge	463 CFM	4 diffusers
Canteen	65 CFM	1 diffuser
Galley (NRV Fitted)		4 diffusers
Return Air Register 12"x8"		1 register

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Spec Item #: H-10	SPECIFICATION	
Accommodation and Dryer & Smoking Lounge Duct Cleaning		

Dryer Duct Cleaning

- 3.12 Contractor must clean 4 dryer exhaust ducting.
- 3.13 3 dryers are located in the Laundry Room on the Lower Deck and one dryer is located in the Laundry Room on the Boat Deck.
- 3.14 Contractor must ensure 2 dryers are operational at all times.
- 3.15 Contractor must open up cleanouts on the back of the dryers.
- 3.16 The exhaust ducting from the Laundry Room on the Lower Deck exhausts to the stbd breezeway on the Main Deck. Contractor must ream out the exhaust ducting down from this point to the cleanouts below. Each dryer exhausts through a 4" gooseneck.
- 3.17 Contractor must catch and remove lint deposits from dryer clean outs that are collected and fall from the cleaning.
- 3.18 The dryer located on the Boat Deck exhaust high on the port side superstructure. Contractor must ream out this ducting from the dryer cleanout up until the reaming tool protrudes through the exhaust gooseneck on the superstructure. At this point the cleanout tool should be retracted back through the ducting and all loose lint and debris that falls and comes with the tool must be collected.
- 3.19 Contractor must reinstall cleanouts on back of dryers upon completion.

Smoking Lounge Duct Cleaning

- 3.20 The Contractor must clean the Smoking lounge exhaust ducting.
- 3.21 Contractor must catch and remove all dirt and debris from the smoking lounge exhaust ducting that are collected and fall from the cleaning.

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Spec Item #: H-10	SPECIFICATION	
Accommodation and Dryer & Smoking Lounge Duct Cleaning		

Part 4: PROOF OF PERFORMANCE

Inspection, Testing & Certification

- 4.1 The Chief Officer will inspect all spaces to ensure all removals are replaced.
- 4.2 Contractor to collect images and video of ducting before and after cleaning. Signoff will occur when all work is completed to the satisfaction of the Chief Officer.

Part 5: Deliverables

Reports, Drawings, Manuals, Spares & Training

- 5.1 Service report to be provided to Chief Engineer.
- 5.2 Three copies of images and video to be forwarded to Technical Authority upon completion of work.

	CCGS ANN HARVEY	
Spec Item #: H-11	SPECIFICATION	
Galley Exhaust Trunk Cleaning		

H-11 Galley Exhaust Trunk Cleaning

Part 1: SCOPE

- 1.1 Contractor must clean Galley Exhaust Trunking in way of range hood to discharge on Upper Breezeway Deck to remove soft and hardened on deposits.

Part 2: REFERENCES

N/A

Part 3: TECHNICAL DESCRIPTION

- 3.1 Contractor with ship's Electrical Officer must lockout the Galley Exhaust Fan Breakers.
- 3.2 The exhaust fans and motors are accessed by a bolted on steel plate located overhead at the front of the stbd breezeway just below the exhaust screen.
- 3.3 The access plate is sufficiently heavy and awkward that Contractor must supply a minimum of two people for the access plate dis-mounting and re-installation (3 persons recommended). The fan motor leads must be tagged and dis-connected and the fan/motor assemblies dismantled and transported ashore to Contractor's premises for cleaning and de-greasing.
- 3.4 The Contractor must lay protection down over the galley range, deep fat fryer etc to ensure no cleaning debris can contaminate the food handling surfaces. The Contractor must dismount the range-hood intake screens and lay same aside for cleaning.
- 3.5 The Contractor must lay protection down on the stbd breezeway forward in way of the exhaust trunking outlet to collect chemical and grease residue generated by this work.
- 3.6 The Contractor must provide and use an approved non-toxic residue-free high flashpoint cleaning agent and mechanical means to thoroughly clean and degrease the interior of the Galley Exhaust Trunking throughout its full length.
- 3.7 The Contractor must supply to the Owner's representative a copy of the MSDS sheets and spec. sheets for the cleaning chemical(s) used in this work.

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Spec Item #: H-11	SPECIFICATION	
Galley Exhaust Trunk Cleaning		

- 3.8 The Contractor must take every precaution to protect the fusible link within the ducting intake hood. (Contractor to advise Owner's Representative when mechanical inhibition of the automatic Fire Smothering System is required).
- 3.9 In the event that the Contractor accidentally releases the Fixed Fire Smothering agent the Contractor must subsequently re-charge and re-certify the Fire Smothering System at the Contractors own expense. The Contractor is also fully responsible for the clean-up of the Smothering Agent.
- 3.10 Contractor's estimate for labour and materials must assume that the grease towards the discharge end of the exhaust trunking is hardened and persistent.
- 3.11 Subsequent to Owner's Representative's inspection as satisfactory the Fan/Motor assemblies must be re-installed, re-connected; de-isolated and correct direction of rotation proven. Intake screens and access plate must be re-installed in good order.

Location

- 3.12 Intake Galley Range Hood
 Discharge: Upper Deck Breezeway Starboard Forward

Part 4: PROOF OF PERFORMANCE

Inspection, Testing & Certification

- 4.1 Contractor must contact C/E when cleaning is completed for a visual inspection.

Part 5: Deliverables

Reports, Drawings, Manuals, Spares & Training

N/A

	CCGS ANN HARVEY	
Spec Item #: H-12	SPECIFICATION	
Water Ballast Tank Inspection / Survey Credit		

H-12 Water Ballast Tank Inspection / Survey Credit

Part 1: Scope

- 1.1 The intent of this specification is to clean, inspect and test the WB tanks for ABS 5 year survey credit.
- 1.2 This work must be carried out in-conjunction with:

Tank	Location	Capacity
Forepeak Tank	Fr. 175-Stem	84 M ³
Aft Peak Tank	Fr. 1-13	111.4 M ³
#1 DB WB Port	Fr. 126-152	50.8 M ³
#1 DB WB Stbd	Fr. 126-152	50.8 M ³

Part 2: Reference

Guidance Drawings/Nameplate data

- 2.1.1 72-405, Capacity Plan
- 2.1.2 72-60A, List of Manholes

2.2 Standards

- 2.2.1 The following Coast Guard Standards and or Technical Bulletins must be adhered to in the course of executing this specification. Copies of these standards and bulletins can be obtained from the CCG Technical Authority.
- 2.2.2 Canadian Coast Guard Fleet Safety Manual (DFO 5737)
- 2.2.3 Coast Guard ISM Confined Space Entry (7.B.3)
- 2.2.4 Coast Guard ISM Hotwork Procedures (7.B.4)
- 2.2.5 Coast Guard ISM Fall Protection Procedures (7.B.2)
- 2.2.6 Canadian Coast Guard Welding Specifications for Ferrous Materials, Revision 4. (TP6151 E)
- 2.2.7 CWB CSA 47.1 Latest Revision
- 2.2.8 SSPC-SPT

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Spec Item #: H-12	SPECIFICATION	
Water Ballast Tank Inspection / Survey Credit		

2.3 Regulations

2.3.1 NA

2.4 Owner Furnished Equipment

2.4.1 The Contractor must supply all materials, equipment and parts to perform the specified work unless otherwise stated.

Part 3: TECHNICAL DESCRIPTION

3.1 The ship's crew will pump the tank down to the suction level. Contractor must lockout the fill and discharge valves prior to opening the tanks for cleaning/inspection. Ships' crew will advise of valve locations.

3.2 Contractor must remove the manhole cover from the tank and dispose of the remaining water. The contractor must quote the cost of removing and disposing 2 m3 total volume of water from each tank. The quote must also include a unit cost per additional 1 m3 and the total will be adjusted up or down by 1379 action on proof of disposal invoice.

3.3 Contractor must ventilate ALL tanks and provide mechanical ventilation to all areas of the tank. The tank is to be certified Gas Free / Safe for Hotwork. The tank is to be safe for personnel to enter and for Hot Work. Certificates must be handed to the Chief Engineer prior to any personnel commencing work in the tank and a copy of these certificates must be posted in a conspicuous area near the entrance to the tank.

3.4 Contractor must thoroughly clean the internal surfaces of the tanks from scale, debris and sludge. Contractor must pressure wash the tank at 3000 psi at a minimum. All dirt/mud, debris and water found in tank and from pressure washing must be removed ashore and disposed of by Contractor. During the water washing process, contractor will take care not to direct a stream of water at a tank's level transducer. Each level transducer is located at a low point in the tank, usually adjacent to a manhole location. Exact location can be made by following the cable inside the tank. The level transducers must be covered up prior to any water washing of the tank and coverings must be removed upon completion of work scope.

3.5 CG will arrange services of Third Party NACE inspector to complete survey of the ballast tanks for coating repairs. Contractor must provide the tank safe for entry along with CSE rescue team and tank watch for NACE Inspector. Contractor must quote unit cost for CSE Rescue team /

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Water Ballast Tank Inspection / Survey Credit		

NACE Inspector inspection.

3.6 Contractor must consult with CG NACE inspector prior to coatings to schedule inspection points and ensure that the surface preparation, environmental conditions and coating applications meet manufacturer recommendations and best industry practices

3.7 Following the cleaning of the tank, the tank must be inspected by the Chief Engineer and ABS Inspector. Contractor must provide a CSE rescue team during these inspections.

Forepeak Tank

3.8 The suction/discharge valve bay in the bottom of the tank is to be completely dry and free of scale. The Contractor must unbolt the support bracket and move aside the extended spindle valve wheel yoke. The valve bonnet must be dismantled and the valve opened for cleaning, inspection by ABS and Chief Engineer. The contractor must lap the valve seat to ensure a good seat/fit. The Contractor must also remove and replace with new the valve stem gland packing (3 turns). The packing gland must be re-secured with sufficient tension to provide an air tight seal without causing undue resistance to valve stem operation.

3.9 Contractor must quote on powertool cleaning rusty areas to bright metal (SSPC 3) and feathering into surrounding sound coating. The contractor must quote on touching up 50 M² of tank coating and include a unit cost of touch up per additional square meter. The total touch up area cost must then be adjusted up or down by 1379 action based on unit cost per meter. Unit cost must include surface preparation and coating. Contractor must mark areas required for re-coating and have CG representative attend to agree on total area before proceeding.

3.10 Bare areas must be coated with two (2) coats of contrasting colors of Intertuf Epoxy or equivalent as agreed upon by CE. The repair coating will be Intertuf Epoxy Black with overcoat of Intertuf Epoxy Aluminum applied in accordance with Coating Manufacturers Application Directions. Total DFT must be 12 to 16 mils. Mechanical forced tank ventilation and or heaters must be maintained until the new coating areas are cured. CG must retain the services of a NACE Inspector to oversee coating applications.

3.11 The contractor must clean the sealing surfaces around the manhole / cover and install the cover using new ¼ inch thick neoprene gaskets. Contractor must wire brush manhole cover studs, apply anti-seize compound.

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Spec Item #: H-12	SPECIFICATION	
Water Ballast Tank Inspection / Survey Credit		

3.12 Contractor must quote on renewing 3 manhole cover studs. Contractor must provide a unit cost to change additional manhole cover studs. The actual cost must be adjusted up or down via PWGSC 1379 action.

3.13 The Forepeak Tank Valve extended spindle linkages and knuckles must be cleaned and greased with water repellent grease for optimum freedom of movement. Contractor must bid on cleaning /servicing and re-greasing 3 knuckles. Contractor must operate extended spindle to prove ease of operation with Chief Engineer present. Any defects noted must be addressed by PWGSC 1379 action.

Aft Peak Tank

3.14 #7 Void Space must be opened up and tested to ensure that it is gas free and safe for personnel to access the Aft Peak Tank manhole cover.

3.15 Contractor must quote on powertool cleaning damaged coating, bare and rusted areas to bare metal SSPC-SP-11, Power Tool Clean Standard. It must be feather back to all "intact" existing coating. Area(s) requiring coating repairs must be marked and agreed upon by CG before proceeding or there will be no adjustment made. For bidding purposes the contractor must quote on touching up 25 square meters. Contractor must include the unit cost per additional square meter including surface preparation, coatings and ancillary services. The total area must then be adjusted up or down by 1379 action based on unit cost per meter. Bare areas must be coated with two (2) coats of contrasting colors of Intertuf Epoxy or equivalent as agreed upon by CE with overcoat of Intertuf Epoxy Aluminum applied in accordance with Coating Manufacturers Application Directions. Total DFT must be 12 to 16 mils. Mechanical forced tank ventilation must be maintained and heaters (if required) provided until the new coating areas are cured. CG must retain the services of a NACE Inspector to oversee coating applications.

3.16 Sounding pipes, suction pipes and vents must be proven clear and the tank must be closed up using new 1/4" neoprene rubber manhole gaskets. Contractor must quote on renewing 5 manhole cover studs. Contractor must quote unit cost to replace an additional manhole cover studs to be adjusted up or down via 1379 action. The Chief Engineer must inspect each tank prior to final closing.

#1DB WB Tanks Port and Stbd

3.17 Contractor must quote on powertool cleaning damaged coating, bare and rusted areas to bare metal SSPC-SP-11, Power Tool Clean Standard. It must be feather back to all "intact"

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Spec Item #: H-12	SPECIFICATION	
Water Ballast Tank Inspection / Survey Credit		

existing coating. Area(s) requiring coating repairs must be marked and agreed upon by CG before proceeding or there will be no adjustment made. For bidding purposes the contractor must quote on touching up 25 square meters. Contractor must include the unit cost per additional square meter including surface preparation, coatings and ancillary services. The total area must then be adjusted up or down by 1379 action based on unit cost per meter. Bare areas must be coated with two (2) coats of contrasting colors of Intertuf Epoxy or equivalent as agreed upon by CE with overcoat of Intertuf Epoxy Aluminum applied in accordance with Coating Manufacturers Application Directions. Total DFT must be 12 to 16 mils. Mechanical forced tank ventilation must be maintained and heaters (if required) provided until the new coating areas are cured. CG shall retain the services of a NACE Inspector to oversee coating applications.

3.18 Sounding pipes, suction pipes and vents must be proven clear and the tank must be closed up using new 1/4" neoprene rubber manhole gaskets. Contractor must quote on renewing 5 manhole cover studs. Contractor must quote unit cost to replace an additional manhole cover stud to be adjusted up or down via 1379 action. The Chief Engineer must inspect each tank prior to final closing.

Part 4: PROOF OF PERFORMANCE

4.1 Inspection, Testing & Certification

4.1.1. The contractor must hydrostatically test the tanks (4 of total) using fresh water upon completion of all inspections, coatings, repair work etc. Upon ABS Inspector's satisfied witnessing of the tank test and inspection of the tank vent heads the vent heads must be re-installed with new gasket and stainless steel fasteners. Note: Contractor must not bid on disposal of FW from hydrostatic test as vessel can pump off overboard.

4.1.2. All tests must be witnessed by the Chief Engineer as well as the ABS Class Surveyor.

Part 5: Deliverables

Reports, Drawings, Manuals, Spares & Training

5.1.1. Contractor must provide report on coatings applied including environmental and atmosphere conditions monitored. Note: CG has acquired Third Party NACE Inspector to

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Spec Item #: H-12	SPECIFICATION	
Water Ballast Tank Inspection / Survey Credit		

oversee all coatings to ensure manufacturer guidelines and environmental guidelines are met.

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Spec Item #: H-13	SPECIFICATION	
Fuel Oil Tank Inspection, Cleaning / Survey Credit		

H-13 FO Tanks Cleaning and Survey

Part 1: Scope

1.2 The intent of this specification must be to inspect and test the FO tanks noted below for ABS 5 year survey credit.

Part 2: REFERENCES:

2.1 Guidance Drawings/Nameplate Data

2.1.1 72-405 Capacity Plan

2.1.2 72-754 Flume Stabilization Diagram

Tank	Location	Capacity	Manhole Location
Day Tank	F 70-76	28.7 m3	Upper Generator RM Port Side
Upper Flume Tank	F 117-126	111.7 m3	Upper Cargohold Aft Bulkhead
Lower Flume Tank	F 117-126	111.7 m3	Lower Cargohold Aft Bulkhead

2.2 Standards

2.2.1 The following Coast Guard Standards and/or Technical Bulletins must be followed while executing this specification. Copies of these standards and bulletins can be obtained from the CCG Technical Authority.

2.2.1.1 Canadian Coast Guard Fleet Safety Manual (DFO 5737)

2.2.1.2 Coast Guard ISM Lockout/Tagout

2.2.1.3 Coast Guard ISM Hotwork procedures

2.3 Regulations

2.3.1 N/A

2.4 Owner Furnished Equipment

2.4.1 The Contractor must supply all materials, equipment and parts required to perform the specified work unless otherwise stated.

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Spec Item #: H-13	SPECIFICATION	
Fuel Oil Tank Inspection, Cleaning / Survey Credit		

Part 3: TECHNICAL DESCRIPTION

3.1 Ship's crew will pump the tanks down to the suction levels. Contractor must lockout the fill and discharge valves for all tanks being opened for cleaning/inspection and must fill out Vessels' Lockout / Tagout forms. Ships crew will advise of valve locations.

3.2 Contractor must remove the manhole covers from the tanks and dispose of the residual oil for disposal ashore. The contractor must quote the cost of removing and disposing 5m3 total volume of diesel fuel dregs from all the listed tanks combined. The quote must also include a unit cost per additional 1 m3 and the total will be adjusted up or down by 1379 action on proof of disposal invoice.

3.3 The contractor must ventilate each tank and provide mechanical ventilation to all areas of the tank. Each tank is to be gas freed, and certified Gas Free / Safe for Entry. Certificates must be handed to the Chief Engineer prior to any personnel commencing work in each tank and a copy of these certificates must be posted in a conspicuous area near the entrance to each tank.

3.4 The contractor must thoroughly clean the internal surfaces of the tanks from debris, scale and sludge. Contractor must pressure wash the tanks at 3000 PSI. All material and liquids remaining in the tank resulting from the cleaning must be removed from the vessel and disposed of ashore on the same day as it is generated by the Contractor. All rusty areas are to be power tool cleaned. Contractor must quote on power tool cleaning 5 m3 of rusty areas as well as provide a unit cost per additional 1 m3 to be adjusted up or down via PSPC 1379 action. Contractor must with CE agree on total area before commencing power tool cleaning. Contractor must wipe down the internals of the tanks with lint free rags.

3.5 Following the cleaning of the tanks, the tanks must be inspected by the Chief Engineer and ABS Inspector. Contractor must provide a qualified CSE Rescue and Manhole lookout during these inspections.

3.6 The contractor must clean the sealing surfaces around the manhole and cover and install the cover using new ¼ inch thick neoprene gaskets. The vents, sounding pipes and overflow pipes must be proven clear.

3.7 Contractor must quote on replacing 4 manhole cover studs. Contractor must provide a unit cost to changeout additional cover stud(s) which must be adjusted up or down via PSPC 1379 action.

3.8 The contractor must quote a price on pneumatically testing to no more than 3.5 psi each tank to the satisfaction of the attending ABS Inspector. All tests must be witnessed by the Chief Engineer as well as the ABS Inspector.

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Spec Item #: H-13	SPECIFICATION	
Fuel Oil Tank Inspection, Cleaning / Survey Credit		

3.9 The quote must include the installation and removal of blanks/balloons for suctions, sounding pipes, overflow pipes and vent head removals, additional tank entries for subsequent balloon adjustment or removal and then **final inspection by Chief Engineer which will be carried out immediately prior to final closing of successfully tested tanks**. All testing is to be done as per the requirements of the attending Marine Safety Inspector. Contractor must advise Chief Engineer in a timely manner when tanks are available for final inspection complete with a qualified Manhole Watch. Note that the quote is to include multiple tank entries for any tank where the contractor has improperly ballooned or blanked the tank openings on the initial attempts.

Part 4: PROOF OF PERFORMANCE

Inspection, Testing & Certification

- 4.3 Contractor must arrange for CE and ABS inspection of FO tanks upon completion of cleaning.
- 4.4 Contractor must have tank inspected and pressure test witnessed by ABS for survey credit.

Part 5: Deliverables

Reports, Drawings, Manuals, Spares & Training

- 5.1.1. Contractor must provide copies of the waste oil disposal receipts and all relevant Safety Management System completed forms and checklists to the Chief Engineer

	CCGS ANN HARVEY	
Spec Item #: H-14	SPECIFICATION	
Void Tanks Inspection, Testing/ Survey Credit		

H-14 Void Tanks Inspection, Testing / Survey Credit

Part 1: SCOPE

1.1 The intent of this specification is to inspect and test the following tanks for ABS 5 year survey credit:

Tank	Location	Capacity
No. 5 Void Tank Port	Fr 30-54	43.5 m3
No. 5 Void Tank Stbd	Fr 30-54	43.5 m3
No. 6 Void Tank Port	Fr 13-30	55.7 m3
No. 6 Void Tank Stbd	Fr 13-30	55.7 m3
No. 7 Void Tank Port	Fr 12-13	142.6 m3

1.2 This work must be carried out in-conjunction:

- H- Aft Peak Water Ballast Tank Survey

Part 2: References

2.1 Guidance Drawings/Nameplate data

- 2.1.1 72-405 Capacity Plan
- 2.1.2 72-60A, List of Manholes

2.3 Standards

- 2.2.9 The following Coast Guard Standards and or Technical Bulletins must be adhered to in the course of executing this specification. Copies of these standards and bulletins can be obtained from the CCG Technical Authority.
- 2.2.10 Canadian Coast Guard Fleet Safety Manual (DFO 5737)
- 2.2.11 Coast Guard ISM Confined Space Entry (7.B.3)
- 2.2.12 Coast Guard ISM Hotwork Procedures (7.B.4)

	CCGS ANN HARVEY	
Spec Item #: H-14	SPECIFICATION	
Void Tanks Inspection, Testing/ Survey Credit		

2.2.13 Coast Guard ISM Fall Protection Procedures (7.B.2)

2.2.14 Canadian Coast Guard Welding Specifications for Ferrous Materials, Revision 4. (TP6151 E)

2.2.15 CWB CSA 47.1 Latest Revision

2.2.16 SSPC-SPT

2.4 Regulations

2.3.2 NA

Part 3: TECHNICAL DESCRIPTION

3.1 Contractor must remove the manhole covers from the tanks. The contractor must ventilate each tank and provide mechanical ventilation to all areas of the tank. Each tank is to be gas freed, and certified Gas Free. Each tank is to be safe for personnel to enter. Certificates must be handed to the Chief Engineer prior to any personnel commencing work in each tank and a copy of these certificates must be posted in a conspicuous area near the entrance to each tank.

3.2 Manhole Cover Locations

#6 Void Port – Fwd outboard corner Central Stores on longitudinal bulkhead

5 Void Port – Fwd transverse bulkhead inside # 6 Void Port

#6 Void Stbd – Fwd outboard corner Central Stores on longitudinal bulkhead

#5 Void Stbd - Fwd transverse bulkhead inside # 6 Void Stbd

#7 Void - Steering Gear Compartment on the Main Deck

3.3 The void spaces must be damp-wiped clean as required with lint free rags. Care must be taken so as not to wet any piping insulation. All residues must be disposed of ashore. Tank internals are then to be inspected by the Chief Engineer and ABS Inspector. Contractor must have a qualified CSE manhole watch and rescue team present during this inspection.

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Spec Item #: H-14	SPECIFICATION	
Void Tanks Inspection, Testing/ Survey Credit		

3.4 Sounding pipes, suction pipes and vents must be proven clear. Alarm float switches must be proven operational. Contractor must arrange with C/E prior to testing alarm float switches to ensure personnel are available to accept sounded alarm. The tank must be closed up using new 1/4" neoprene rubber manhole gaskets. The Chief Engineer must inspect each tank prior to final closing.

3.5 Contractor must quote on replacing 6 manhole cover studs. Contractor must provide a unit cost to change out additional cover stud(s) which must be adjusted up or down via PSPC 1379 action.

3.6 The contractor must pneumatically test to no more than 3.5 psi each tank to the satisfaction of the attending ABS Inspector. All tests must be witnessed by the Chief Engineer as well as the ABS Inspector.

3.7 The unit cost per pneumatic test must include the installation and removal of blanks/balloons for suctions, sounding pipes and vent head removals, additional tank entries for subsequent balloon adjustment or removal and then **final inspection by Chief Engineer which will be carried out immediately prior to final closing of successfully tested tanks**. All testing is to be done as per the requirements of the attending ABS Inspector. Contractor must advise Chief Engineer in a timely manner when tanks are available for final inspection complete with a qualified CSE manhole watch and rescue team.

3.8 Vent heads requiring removal for this testing must be installed in good order with new gaskets upon completion of all work. Vent heads must be remounted as original using contractor supplied stainless steel fasteners.

3.9 Manhole Covers must be fitted using new ¼" neoprene gaskets. Manhole cover studs must be liberally applied with anti-seize.

3.2 Location

3.2.1 See Locations under provided table Part 1: Scope

	CCGS ANN HARVEY	
Spec Item #: H-14	SPECIFICATION	
Void Tanks Inspection, Testing/ Survey Credit		

3.3 Interferences

3.3.1 The Contractor must be responsible for identification of interference items, their temporary removal, storage and refitting to the vessel in the scope of completing this specification.

Part 4: PROOF OF PERFORMANCE

Inspection, Testing & Certification

4.1 Contractor must have tank(s) inspected and pressure test where required by ABS for survey credit.

Part 5: Deliverables

Reports, Drawings, Manuals, Spares & Training

5.1 N/A

	CCGS ANN HARVEY	
Spec Item #: H-15	SPECIFICATION	
Waste Oil Stbd-Oily Bilge Tank Cleaning, Inspection and Survey Credit		

H-15 Waste Oil Stbd -Oily Bilge Tank Cleaning / Inspection

Part 1: Scope

1.1 The intent of this specification is to open the oily bilge tank for cleaning and inspection/survey by ABS Class Surveyor to obtain ABS survey credit.

Part 2: References

2.1 Guidance Drawings/Nameplate data

- 2.1.1 72-405 Capacity Plan
- | | | |
|-----------------|--------------|-----------------------------|
| Tank | Location | Capacity |
| Oily Bilge Tank | Frames 30-37 | Capacity 4.9 m ³ |
- 2.1.2 72-60A, List of Manholes

2.2 Standards

- 2.2.17 The following Coast Guard Standards and or Technical Bulletins must be adhered to in the course of executing this specification. Copies of these standards and bulletins can be obtained from the CCG Technical Authority.
- 2.2.18 Canadian Coast Guard Fleet Safety Manual (DFO 5737)
- 2.2.19 Coast Guard ISM Confined Space Entry (7.B.3)
- 2.2.20 Coast Guard ISM Hotwork Procedures (7.B.4)
- 2.2.21 Coast Guard ISM Fall Protection Procedures (7.B.2)
- 2.2.22 Canadian Coast Guard Welding Specifications for Ferrous Materials, Revision 4. (TP6151 E)
- 2.2.23 CWB CSA 47.1 Latest Revision
- 2.2.24 SSPC-SPT

2.3 Regulations

- 2.3.1 NA

	CCGS ANN HARVEY	
Spec Item #: H-15	SPECIFICATION	
Waste Oil Stbd-Oily Bilge Tank Cleaning, Inspection and Survey Credit		

2.4 Owner Furnished Equipment

2.4.1 The Contractor must supply all materials, equipment and parts to perform the specified work unless otherwise stated.

Part 3: Technical Description

3.1 Contractor must lockout Oily Bilge Tank inlet/discharge valves and fill out vessels Lockout/Tagout forms.

3.2 Contractor must quote on disposal of a total of 5 m³ total of oily water and waste oil (80% oily water and 20% waste oil) from Oily Bilge Tank, Waste Oil Tank and Purifier Sludge Tank. Contractor must provide unit cost per additional m³ for adjustment purposes. This will be adjusted up or down by 1379 upon proof of invoice.

3.3 The Oily Bilge Tank must be opened up and tested to ensure that it is gas free safe for personnel to enter. Copy of gas free certificates for the tank must be given to the Chief Engineer prior to men entering the tank and a copy of each certificate must be posted in close proximity to the manhole cover for the tank.

3.4 The Contractor must provide the tank with a mechanical ventilation system, vented to the outside of the ship. Good ventilation must be provided and any blowers/extractors must ensure good air movement and solvent vapour removal from the lowest point in the tanks.

3.5 Contractor is to open the tank and remove any residue in the tank.

3.6 Contractor must pressure wash the tank at 3000psi. During the water washing process, contractor will take care not to direct a stream of water at a tank's level transducer. Each level transducer is located at a low point in the tank, usually adjacent to a manhole location. Exact location can be made by following the cable inside the tank. The level transducers must be covered up prior to any water washing of the tank and coverings must be removed upon completion of work scope. All residues must be disposed of ashore. Contractor must then rag down the tank with lint free rags.

3.7 Contractor must arrange CE or vessel designate to complete inspection of Oily Bilge Tank

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Spec Item #: H-15	SPECIFICATION	
Waste Oil Stbd-Oily Bilge Tank Cleaning, Inspection and Survey Credit		

with certified CSE tank watch present.

3.8 Upon satisfactory CG inspection, Contractor must arrange ABS Surveyor for inspection.

3.9 The Chief Engineer and attending ABS surveyor will inspect the Oily Bilge tank.

3.10 Upon satisfactory inspection by ABS the manhole cover is to be re-installed on the Oily Bilge Tank in the presence of the Chief Engineer using a new ¼ " neoprene gasket approved for use with oil. Manhole cover studs must be liberally applied with anti-seizing compound to the threads.

3.11 The Oily Bilge Tank must be hydrostatically tested with fresh water to the satisfaction of the attending ABS Inspector. The contractor must supply all necessary materials, fittings, and labor for the respective hydrostatic tests. Vent heads requiring removal for this testing must be installed in good order with new gaskets upon completion of all work. Contractor must bid on removal / disposal of water from the Oily Bilge Tank in course of completing hydrostatic test. Tank volume 4.9 m3. Contractor must also quote unit price per additional hydrostatic test including water disposal should repairs be required.

3.1 Location

3.2.1 Fr 30-37

Part 4: Proof of Performance

4.1 Inspection, Testing & Certification

4.1.1. All work must be completed to the satisfaction of the Chief Engineer within the scope of the specification.

4.1.2. The Contractor is responsible for arranging ABS for tank inspections for survey credit.

Part 5: Deliverables

N/A

	CCGS ANN HARVEY	
Spec Item #: H-16	SPECIFICATION	
Chain Lockers Cleaning, Inspection, Painting and Survey Credit		

H-16 Chain Locker Survey

Part 1: Scope

- 1.1 The intent of this spec must open both chain lockers for cleaning, inspection and painting.
- 1.2 This work must be carried out in conjunction with:
 - H-17 Anchors and Chains

Part 2: References

Guidance Drawings/Nameplate data

N/A

Standards

- 2.1 The following Coast Guard Standards and or Technical Bulletins must 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 Guard Fleet Safety Manual (DFO 5737)

Owner Furnished Equipment

- 2.2 The Contractor must supply all materials, equipment and parts required to perform the specified work unless otherwise stated.

Part 3: Technical Description

3.1 The Port and Starboard Chain Locker access manhole covers are located beneath Windlass Operator's Stand on the Foc'sle deck. A section of the platform must be removed and subsequently replaced to allow good access to the chain lockers.

3.2 Port and Starboard chain lockers to be adequately ventilated to provide good air movement and permit entry of personnel. Each chain locker must be considered a confined space and must be tested safe for entry / hotwork prior to entry into this space as per Coast Guard Safety Management System. Copies

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Spec Item #: H-16	SPECIFICATION	
Chain Lockers Cleaning, Inspection, Painting and Survey Credit		

of the testing results must be posted in a conspicuous area adjacent to the manholes.

3.3 The false floor plates must be unfastened and taken up for thorough cleaning and subsequent painting on both sides. The protective covers over the piping must be removed and taken up through for cleaning. The protective covers are attached by 16 3/4" bolts. All internal surfaces of the chain lockers must be hydro blasted at 3000psi and cleaned of all rust, scale, and debris. Contractor must then hand tool clean any areas of loose debris not removed by hydro blasting. Bilge wells to be thoroughly cleaned and suctions proven clear. Proper operation of the bilge alarm must be proven. Test to be witnessed by one of the ship's personnel. All scale and debris must be disposed of ashore by the Contractor.

3.4 Contractor must arrange inspection by ABS Inspector and notify Chief Engineer of inspection.

3.5 Chain lockers, protective covers and false floors must be coated with two coats of Amercoat Amerlock #2 Surface Tolerant Epoxy (Aluminum). Apply at 5-6 mils DFT per coat. Contractor must quote on 50 M₂ of interior surface area in total for the chainlockers. Contractor must quote unit cost per M₂ to be adjusted by 1379.

3.6 Sounding pipes, drains, and vents must be checked for obstruction and proven clear. Upon completion of inspection, the false floor plates and protective covers over the pipes must be reinstalled and secured in place.

3.7 Contractor must re-install manhole covers after final inspection by Chief Engineer.

Part 4: Proof of Performance

4.1 Both chain lockers must be inspected by Chief Engineer and a ABS Inspector prior to stowing the anchor cables.

Part 5: Deliverables

N/A

	CCGS ANN HARVEY	
Spec Item #: H-17	SPECIFICATION	
Anchors and Chains Cleaning, Inspection and Survey Credit		

H-17 Anchors and Chains

Part 1: Scope

- 11** The intent of this spec is to remove both anchors and chains for cleaning and inspection for ABS survey credit. This work must be carried out in conjunction with the chain locker cleaning and inspection.
- 12** This work must be carried out in conjunction with:
 - H-16 Chain Locker Survey

Part 2: References

Guidance Drawings/Nameplate data

N/A

Standards

- 2.1** The following Coast Guard Standards and or Technical Bulletins must 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 Guard Fleet Safety Manual (DFO 5737)

Owner Furnished Equipment

- 2.2** The Contractor must supply all materials, equipment and parts required to perform the specified work unless otherwise stated.

Part 3: Technical Description

- 31** Both chain locker access covers are located beneath the anchor windlass operator platform. A section of the platform must be removed to allow good access to the chain lockers. It must be replaced upon completion of the specification.
- 32** The chain lockers are considered confined spaces. Contractor must certify gas free the chain locker prior to entry as per Coast Guard

	CCGS ANN HARVEY	
Spec Item #: H-17	SPECIFICATION	
Anchors and Chains Cleaning, Inspection and Survey Credit		

Safety Management System.

- 33** Contractor must lockout the anchor windlass prior to entry into the chain locker. Vessels E/O will direct Contractor to the appropriate breaker. The Lockout / Tagout must be registered in the vessels Lockout / Tagout book.

Both chain locker access covers must be removed and both cable bitter ends let go. The port and starboard anchors with their respective cables (9 shots on port and 8 shots on the starboard of 2" SL chain) must be run out and immediately transported to Contractors facility for cleaning and subsequent inspection by the Vessels Designate and attending ABS inspector. Contractor must arrange with Yard Supervisor on date to complete removals. Contractor must be responsible for all carnage and transportation costs to and from vessel. The anchors and chains must be stored at Contractors facility until they can be returned back onboard the vessel.

- 34** The joining shackles must be broken at both anchors and at the second shot at each cable enabling the first two shots of each cable to be removed and re-attached at the original bitter end. The anchors must be re-attached to the cables at the original third shot. If required, new joining shackles must be Owner supplied.

- 35** Each cable must be hydro blasted clean. All seizing wire markings to be removed from each cable. All links and studs on each cable must be visually inspected for defects. Any defective links and studs must be marked for identification and brought to the attention of the Chief Officer.

- 36** The Contractor must take measurements of both chains to determine chain wear. Measurements of the chain will be taken in two places diametrical opposite of each other, their totals added and divided by 2 to obtain the diameter of the chain. There must be 20 measurements taken on each chain for a total of 40 measurements. The measurements must be type written in tabular form and a copy given to the Vessels Designate. Prior to start of measurements the Vessels Designate must be informed. The Vessels Designate will determine where chain measurements must

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Spec Item #: H-17	SPECIFICATION	
Anchors and Chains Cleaning, Inspection and Survey Credit		

be taken.

- 37** Cable shots must be marked as per accepted marine practice using new seizing wire and paint. Shot lengths must be marked off with white paint and joining shackles must be painted with red marine enamel.
- 38** The contractor must sand blast both anchors to SSPC-SP-6 and must apply two coats of Amercoat 238 Abrasion Resistant Epoxy (Black). Paint must be applied at 10 mils DFT per coat.
- 39** Contractor should note that stowing of the cable must be carried out on completion with the chain locker cleaning. The bitter ends must be re-attached to the chain locker and the cables must be stowed onboard ensuring proper fleeting of the chain within the chain locker.
- 310** Upon the Vessels Designate inspection of the cable and anchor stowage, and the completion of all contractor work both chain locker access covers must be replaced in good order using new ¼" neoprene gaskets.
- 311** Contractor must quote on replacing 10 manhole cover studs. Contractor must provide a unit cost to change additional manhole cover studs to be adjusted up or down via PSPC 1379 action.
- 312** Coast Guard will provide an operator for the anchor windlass for the removal and stowage of the anchors and anchor cable to and from the vessel as requested by the contractor. Contractor must be responsible for all rigging and craneage.

Part 4: Proof of Performance

- 4.1 Vessel Designate and ABS Inspector must inspect chains and anchors upon being lowered on dock floor.
- 4.2 Vessel Designate must inspect chains and anchor stowage.

	CCGS ANN HARVEY	
Spec Item #: H-17	SPECIFICATION	
Anchors and Chains Cleaning, Inspection and Survey Credit		

Part 5: Deliverables

N/A

	CCGS ANN HARVEY	
Spec Item #: H-18	SPECIFICATION	
ABS Inspected Steel Repairs		

H-18 ABS Inspected Steel Repairs

Part 1: Scope:

- 1.1 The intent of this specification must be to complete steel work jobs on the hull of the vessel That require inspection by ABS Inspector
- 1.2 This work must be carried out in-conjunction with:
 - HD-02 Hull Cleaning, Survey and Coating
 - H-17 Chains and Anchor Survey

Part 2: References:

2.1 Guidance Drawings/Nameplate Data

- 2.1.1 Forecastle Unit 803 (Anchor Pocket) 72-30 Sh 2 of 2
- 2.1.2 Double Bit Drawing A3-144-09-G, Rev 0

2.2 Standards

- 2.2.1. Canadian Coast Guard Fleet Safety Manual
- 2.2.2. Coast Guard ISM Confined Space Entry
- 2.2.3. Coast Guard ISM Hotwork Procedures
- 2.2.4. Coast Guard ISM Lock out Tag out Procedures
- 2.2.5. Coast Guard ISM Fall Protection procedures
- 2.2.6. CWB CSA 47.1 latest revision Division I, II or III
- 2.2.7. TC TP 127e
- 2.2.8. IEC 60332-3, 60364-5-52, 60754-0,1,2
- 2.2.9. IEEE 60332-3

2.3 Regulations

- 2.3.1. CSA Hull Construction Regulations
- 2.3.2. CSA Marine Machinery Regulations

	CCGS ANN HARVEY	
Spec Item #: H-18	SPECIFICATION	
ABS Inspected Steel Repairs		

2.4 Owner Furnished Equipment

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

Part 3: Technical Description:

General

3.1 Focsle Deck Stbd Double Bit Replacement

- 3.1.1 Contractor must remove damaged double bit as shown in picture below and install owner supplied ABS Approved Double Bit supplied by Schoellhorn-Albrecht.
- 3.1.2 The contractor must remove insulation and sheeting underneath and reinstall in good order upon completion of work.
- 3.1.3 The contractor must request hot work permits from the Chief Engineer or his delegate and post such permits in a noticeable location. During all hot work, the contractor is to maintain a fire watch as per CCG Fleet Safety Manual.
- 3.1.4 Contractor must fit extraction fans to ventilate outside during all hotwork.
- 3.1.5 The Contractor must ensure that only CWB certified welders are used to complete the welding using CWB procedures.
- 3.1.6 The contractor must provide weld procedure to ABS Inspector for approval prior to start of any welding and make note of inspection points ie fit up inspection required by ABS Inspector.
- 3.1.7 The contractor must perform 100% NDT Mag Particle testing on the weld. Any deviation from this must be dealt with by 1379.
- 3.1.8 The contractor must be responsible for arranging ABS Inspection.

	CCGS ANN HARVEY	
Spec Item #: H-18	SPECIFICATION	
ABS Inspected Steel Repairs		

3.1.9 All damaged coatings must be feather backed. Contractor must apply 2 coats of Marine Grade Amercoat 5105 primer to new and affected steel and 2 coat of Krylon 250 Rust Tough / K00110113-16 / Gloss Black for the topcoat at 2-3 mils DFT per coat.

3.2 Port Anchor Pocket Build up

3.2.1 Contractor must build up with weld (buttering) the lower rolling anchor (trip bar) to uniform profile iwo of the work areas. (pic below).



3.2.2 All weld procedures for this build up must be approved prior by ABS Inspector.

3.2 Location

3.2.1. Stbd Breezeway just aft of Gangway.

3.2.2. Chainhandler Fairleads P&S Welldeck

3.3 Interferences

	CCGS ANN HARVEY	
Spec Item #: H-18	SPECIFICATION	
ABS Inspected Steel Repairs		

3.3.1. Contractor is responsible for the identification of interference items, their temporary removal, storage and refitting to vessel.

Part 4: Proof of Performance:

4.1 Inspection

4.1.1. All work must be completed to the satisfaction of the TA and ABS Class Surveyor.

4.2 Testing

N/A

4.3 Certification

NA

Part 5: Deliverables:

5.1 Drawings/Reports

NA

	CCGS ANN HARVEY	
Spec Item #: H-19	SPECIFICATION	
Incinerator Fan Deck Installation		

H-19 Incinerator Fan Deck Installation

Part 1: Scope:

- 1.3 The intent of this specification must be to install deck grating iwo the incinerator flue gas fan to allow access for maintenance and inspection
- 1.4 This work must be carried out in-conjunction with: NA

Part 2: References:

2.1 Guidance Drawings/Nameplate Data

2.2 Standards

- 2.2.1. Canadian Coast Guard Fleet Safety Manual
- 2.2.2. Coast Guard ISM Confined Space Entry
- 2.2.3. Coast Guard ISM Hotwork Procedures
- 2.2.4. Coast Guard ISM Lock out Tag out Procedures
- 2.2.5. Coast Guard ISM Fall Protection procedures
- 2.2.6. CWB CSA 47.1 latest revision Division I, II or III
- 2.2.7. TC TP 127e
- 2.2.8. IEC 60332-3, 60364-5-52, 60754-0,1,2
- 2.2.9. IEEE 60332-3

2.3 Regulations

- 2.3.1. CSA Hull Construction Regulations
- 2.3.2. CSA Marine Machinery Regulations

2.4 Owner Furnished Equipment

- 2.4.1. The contractor must supply all materials, equipment, and parts required to perform the specified work unless otherwise stated.

	CCGS ANN HARVEY	
Spec Item #: H-19	SPECIFICATION	
Incinerator Fan Deck Installation		

Part 3: Technical Description:

3.1 General

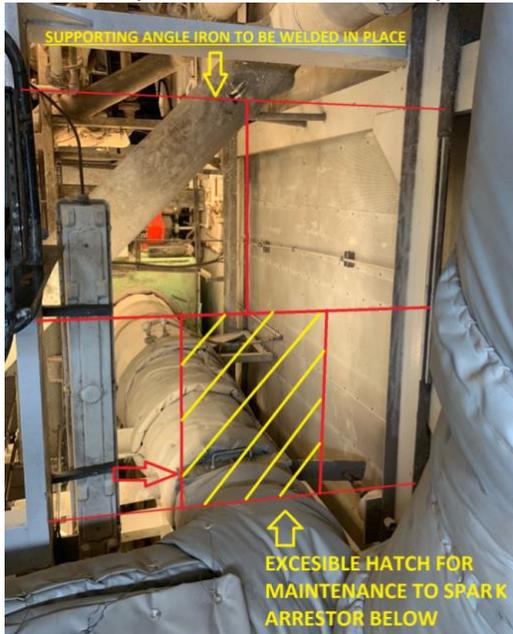
- 3.1.1 The contractor must request hot work permits from the Chief Engineer or his delegate and post such permits in a noticeable location. During all hot work, the contractor is to maintain a fire watch as per CCG Fleet Safety Manual.
- 3.1.2 Contractor must fit extraction fans to ventilate outside during all hotwork.
- 3.1.3 The Contractor must ensure that only CWB certified welders are used to complete the welding using CWB procedures.
- 3.1.4 Contractor must install 1" steel grating as per the existing grating in the stack areas. The total area to be covered is approx. 60 sq feet and must be cut to fit the newly installed angle iron. All grating must be secured in place with bolted hold downs.



- 3.1.5 Contractor must weld 3" angle (1/4" 50w) or equivalent iwo the existing beams and structure to allow fitting of sections of grating with sufficient span for the support of the grating and safe access for personnel. Total pieces of angle iron to be cut and welded in place approximately 12, Total linear feet of angle iron required approximately 50 ft.

	CCGS ANN HARVEY	
Spec Item #: H-19	SPECIFICATION	
Incinerator Fan Deck Installation		

- 3.1.6 Contractor must make allowance for a lifting handle on the access hatch area of grating as per the pic below for removal of this hatch for maintenance. The angle iron must be doubled up in this area for overlap.



- 3.1.7 All damaged coatings must be feather backed. Contractor must apply 2 coats of Marine Grade Amercoat 5105 primer to new and affected steel and 2 coat of Amercoat 5450 Alkyd Marine Enamel for the topcoat at 2-3 mils DFT per coat.
- 3.1.8 The contractor must install a working platform at the Jacket water Expansion Tank Mezzanine deck level (b/w Main and Upper deck levels). The contractor must ensure the structure is safe for work and must ensure fall protection PPE is worn.
- 3.1.9 The contractor must ensure sufficient fire protection is used to prevent falling debris below.

3.4 Location

- 3.2.3. Upper Deck level of exhaust stack

	CCGS ANN HARVEY	
Spec Item #: H-19	SPECIFICATION	
Incinerator Fan Deck Installation		

3.5 Interferences

3.3.2. Contractor is responsible for the identification of interference items, their temporary removal, storage and refitting to vessel.

Part 4: Proof of Performance:

4.2 Inspection

4.1.2. All work must be completed to the satisfaction of the TA.

4.2 Testing

N/A

4.3 Certification

NA

Part 5: Deliverables:

5.2 Drawings/Reports

NA

	CCGS ANN HARVEY	
Spec Item #: H-20	SPECIFICATION	
Officers Pantry, SAR Locker, Washrooms and Showers Flooring Repairs		

H-20 Officers Pantry, SAR Locker, Washrooms and Showers Flooring Repairs

Part 1: Scope

- 1.1** The intent of this specification must be to repair flooring in the Officer's Pantry, listed washrooms showers and SAR Locker.
- 1.2** This spec item must be completed in conjunction with: Spec Item H-22 Floor covering renewals, Spec Item H-21 Flooring Underlayment Repairs, Spec Item H-23 Cabin and Ships Office new furniture installation and H-24 SAR Locker Steel Deck Repair.

Part 2: References

2.1 Guidance Drawings/Nameplate Data

- | | | |
|--------------|---------------------------------------|---------------------------|
| 2.1.1 | Deck Coverings Main Deck | Dwg. 72-312 |
| 2.1.2 | Deck Coverings Upper Deck | Dwg. 72-312 |
| 2.1.3 | Plan of Doors | Dwg. 72-316 |
| 2.1.4 | Bulkheads Linings | Dwg 72-324, 325, 326, 327 |
| 2.1.5 | General Arrangement Main & Upper Deck | Dwg 72-301 |

2.2 Standards

- 2.2.1** Fleet Safety and Security Manual (DFO/5737)
- 2.2.2** CSA W47.1 1983 – Canadian Welding Bureau Standards for the fusion welding of steel
- 2.2.3** CSA W47.2 – M1987(R1998) – Canadian Welding Bureau Standard for the fusion welding of aluminum and aluminum alloys
- 2.2.4** Society for Protective Coatings (SSPC) Standards
- 2.2.5.1** SP1 – Solvent Cleaning
- 2.2.5.2** SP3 – Power Tool Cleaning

2.3 Regulations

- 2.3.1** Canada Shipping Act 2001 – Marine Machinery Regulations

	CCGS ANN HARVEY	
Spec Item #: H-20	SPECIFICATION	
Officers Pantry, SAR Locker, Washrooms and Showers Flooring Repairs		

2.4 Owner Furnished Equipment

2.4.1 The Contractor must supply all materials, equipment, and parts required to perform the specified work unless otherwise stated.

Part 3: Technical Description

3.1 General

3.1.1 Locations of Dex-o-tex Flooring repair:

- Chief Engineers Washroom – Approx 4 m2
- Senior Engineers Washroom – Approx 4 m2
- Cook Washrooms – Approx 4 m2
- Officers Pantry - Approx 11 m2
- SAR Locker - Approx 2.5 m2
- Deck outside SAR Locker – Approx 1.5 m2
- Wheelhouse Washroom – Approx 3 m2

3.1.2 Contractor must use the services of certified flooring installation company for flooring repair. The flooring repair FSR must be a certified with experience in Marine floorings installation and Dex-O-Tex installation.

3.1.3 FSR must provide all Class Approved certificates for all flooring materials being used to TA and ABS surveyor for approval prior to starting any removals.

3.1.4 The Contractor must be responsible for the identification, removal, temporary storage and refitting to the vessel, all interference items necessary to complete this spec item.

3.1.5 Once approved, the FSR must remove the entire deck covering system which includes quarry tile and underlayment to bare steel including the perimeter border.

3.1.6 Contractor must remove and re-install all furniture, equipment and base moldings to complete this work.

3.1.7 Contractor must ensure all cabins and compartment doors in-way of the renewals are closed and taped to prevent debris/dirt from contaminating adjacent areas. Contractor must provide and fit barriers where spaces cannot be

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closed off from the work area. The temporary barriers must include fitted openings that can open/close to allow access with continued containment

- 3.1.8** The entire steel deck and borders must be power tooled cleaned to bare metal SSPC SP-11. The steel deck must be coated with 2 coats of Amercoat Primer 5105 upon completion to manufacturer guidelines and standard. FSR must provide barrier to all adjacent vessel compartments. Barrier must be taped to prevent debris from contaminating rest of vessel. Debris generated must be removed daily as to not be tracked through vessel.
- 3.1.9** FSR must utilize extraction fans to remove all airborne debris during removals and steel renewals. The fans must be vented to the exterior of the vessel.
- 3.1.10** FSR must provide NACE report confirming the surface is acceptable and prime the bare steel decking.
- 3.1.11** FSR must install new underlayment to thickness as per original found on drawing 72-312.
- 3.1.12** FSR must install new Dex-O-Tex Marine Epoxy Colour Flake 402 Dark Gray, flooring system, which must be a continuous, seamless and slip-resistant including integral cove base along perimeters matching that found prior to removals. **Note:** for the deck outside SAR locker, Contractor must only apply Dex-O-Tex floor underlayment. Coast Guard will be responsible for supplying and installing tile flooring.
- 3.1.13** Any bulkhead panels removed to complete this flooring repair and renewal, must be reused unless CG advises otherwise. The CE must inspect the bulkhead panels/track with the Contractor and advise if any bulkhead panels/track must be replaced. Contractor must include in their bid for the replacement of 10 bulkhead panels and track systems. The bid must include for the removal/re-installations of any and all interference items as required including light switches, receptacles, shelves, hand rails, etc.

Part 4: Proof of Performance

4.1 Inspection

- 4.1.1 All work must be subject to inspection and approval by the Chief Engineer or delegate.

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Officers Pantry, SAR Locker, Washrooms and Showers Flooring Repairs		

4.2 Testing

4.2.1 NA

4.3 Certification

4.3.1 All ABS recognized approval certificates for materials being fitted must be supplied to the TA prior to installation of product and must be approved by the attending ABS surveyor prior to purchase.

Part 5: Deliverables

5.1 Drawings/Reports

5.1.1 NA

5.2 Spares

5.2.2 NA

5.3 Training

5.3.1 NA

5.4 Manuals

5.4.1 NA

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Flooring Underlayment Repair		

2.2.3 CSA W47.2 – M1987(R1998) – Canadian Welding Bureau Standard for the fusion welding of aluminum and aluminum alloys

2.2.4 Society for Protective Coatings (SSPC) Standards

2.2.5.3 SP1 – Solvent Cleaning

2.2.5.4 SP3 – Power Tool Cleaning

2.7 Regulations

2.3.3 Canada Shipping Act 2001 – Marine Machinery Regulations

2.8 Owner Furnished Equipment

2.4.2 The Contractor must supply all materials, equipment, and parts required to perform the specified work unless otherwise stated.

Part 3: Technical Description

3.1 General

3.1.1 Contractor must complete underlayment repairs. Contractor must supply ABS (Transport Canada) approved underlayment to the below listed locations.

#547- Senior Engineers Night Cabin

546 - Senior Engineers Day Cabin

#626 - Bosun’s Cabin

#644 - Stewards Cabin

3.1.2 Contractor must use the services of certified flooring installation company for flooring underlayment repair. The flooring repair FSR must be a certified with experience in Marine floorings installation Contractor must be responsible for all underlayment repairs, labor and travel costs.

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Flooring Underlayment Repair		

- 3.1.3** Contractor must include in their bid for 2m² of underlayment repairs per cabin listed above. The new underlayment must be applied as per the 'Deck Coverings Main Deck Dwg. 72-312' at 6-8mm thick. Contractor must supply and install Transport Canada approved Dex-O-Tex underlayment or equivalent as per manufacturer guidelines. Dex-O-Tex approved products can be found on the following link with TC approval certificate numbers,
<https://dexotexmarine.com/uploads/files/file170405170315.pdf>
- 3.1.4** Areas must be power tooled clean to bare metal SSPC-SP-11 for completing the underlayment repairs. Steel deck must be cleaned of all loose debris upon completion of power tooling. The steel deck must be coated with 2 coats of Amercoat Primer 5105 upon completion to manufacturer guidelines and standard.
- 3.1.5** Contractor must ensure all cabins and compartment doors in-way of the renewals are closed and taped to prevent debris/dirt from contaminating adjacent areas. Contractor must provide and fit barriers where spaces cannot be closed off from the work area. The temporary barriers must include fitted openings that can open/close to allow access with continued containment
- 3.1.6** Forced air extraction fans must be used to remove airborne debris during removals vented to the exterior of the vessel.
- 3.1.7** The Contractor must be responsible for the identification, removal, temporary storage and refitting to the vessel, all interference items necessary to complete this spec item.
- 3.1.8** Contractor must schedule the work so that only one deck of the vessel is affected at a time to minimize impact to vessels' crew.
- 3.1.9** Any bulkhead panels removed to complete this flooring repair and renewal, must be reused unless CG advises otherwise. The CE must inspect the bulkhead panels/track with the Contractor and advise if any bulkhead panels/track must be replaced. Contractor must include in their bid for the replacement of 10 bulkhead panels and track systems. The bid must include for the removal/re-installations of any and all interference items as required including light switches, receptacles, shelves etc.

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Flooring Underlayment Repair		

3.1.10 Contractor must have all spaces professionally cleaned of all debris and have vessels Designate inspect and sign off once complete.

3.2 Location

3.5.1 Upper Deck and Main deck

Interferences

3.5.2 The Contractor must be responsible for the identification of interference items, their temporary removal, storage, and refitting to vessel.

Part 4: Proof of Performance

4.4 Inspection

4.1.1 All work must be subject to inspection by the Chief Engineer or delegate.

4.5 Testing

4.5.1 NA

4.6 Certification

4.6.1 All ABS (Transport Canada recognized) approval certificates for materials being fitted must be supplied to the Chief Engineer prior to installation of product and must be approved by the attending ABS surveyor prior to purchase.

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Spec Item #: H-21	SPECIFICATION	
Flooring Underlayment Repair		

Part 5: Deliverables

5.1 Drawings/Reports

5.1.1 NA

5.1.1 NA

5.2 Training

5.3.1 NA

5.3 Manuals

NA

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Spec Item #: H-22	SPECIFICATION	
Floor Covering Renewals		

- 2.2.2** CSA W47.1 1983 – Canadian Welding Bureau Standards for the fusion welding of steel
- 2.2.3** CSA W47.2 – M1987(R1998) – Canadian Welding Bureau Standard for the fusion welding of aluminum and aluminum alloys
- 2.2.4** Society for Protective Coatings (SSPC) Standards
 - 2.2.5.5** SP1 – Solvent Cleaning
 - 2.2.5.6** SP3 – Power Tool Cleaning

2.3 Regulations

- 2.3.4** Canada Shipping Act 2001 – Marine Machinery Regulations

2.4 Owner Furnished Equipment

- 2.4.1 The Contractor must supply all materials, equipment, and parts required to perform the specified work unless otherwise stated.

Part 3: Technical Description

3.1 General

- 3.1.1** The installation of new flooring product must only be started after all other work specified in spec items H-20, H-21, H-23, H-28, L-04, L-05, L-06, L-07 and L-08 has been completed and as directed by the Chief Engineer.
- 3.1.2** Contractor must replace flooring in the listed areas with new ABS (Transport Canada) approved, Owner supplied flooring in the following areas.

Location requiring flooring renewal

- Room 313 Captain’s Cabin Day Cabin, Vinyl – Approx 17 M2
- Room 314 Captain’s Night Cabin, Carpet – Approx 22 M2
- Room 304 Chief Officers Day Cabin, Vinyl – Approx 17 M2
- Room 305 Chief Officer’s Night Cabin, Carpet – Approx 9 M2

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Floor Covering Renewals		

- Room 311 Third Officers Cabin, Vinyl – Approx 16 M2
- Room 307 Second Officers Cabin, Vinyl _ Approx 16 M2
- Room 201 Bridge , Vinyl Plank– Approx 110 M2
- Room 411 Officials Day Cabin, Vinal – Approx 12 M2
- Room 411 Officials Night Cabin, Carpet - -Approx 17.6 M2
- Room 422 Officers Lounge FWD Area, carpet – Approx 14 M2
- Room 546 Senior Engineers Day Cabin – Approx 12 M2
- Room 541 2nd Engineers Cabin – Approx 13 M2
- Room 520 Logistic Officers Cabi- Approx 13 M2
- Room 518 Ships Office - Approx 14 M2

3.1.3 Contractor must use the services of certified flooring installation company for flooring repair. The flooring installer must be a certified with experience in Marine floorings installation to complete the flooring renewals.

3.1.4 Contractor must remove and dispose of all old floor coverings in the above listed locations. Contractor must remove all wall base moldings and re-install upon completion or floor renewals.

3.1.5 Contractor must be responsible for all renewals, labor and travel costs.

3.1.6 Contractor must fit new Owner supplied vinyl, vinyl plank and carpet, as per list above, as per manufacturer’s installation specifications.

3.1.14 The Contractor must be responsible for the identification, removal, temporary storage and refitting to the vessel, all interference items necessary to complete this spec item.

3.1.7 The vinyl and carpet flooring areas must be fitted with as few seams as possible and must be welded together for continuous seam as per manufacturer’s guidelines for installation.

3.1.8 Contractor must schedule the work so that only one deck of the vessel is affected at a time to minimize impact to vessels’ crew.

3.1.9 All new flooring must be completely covered over by ¼” Masonite board or equivalent and must be duct taped at all seams for protection of the flooring upon completion.

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Floor Covering Renewals		

3.1.10 Contractor must have all spaces professionally cleaned of all debris and have vessels Designate inspect and sign off once complete.

3.2 Location

3.6.1 Bridge, Boat Deck, Officers Deck, Upper Deck and Main Deck

3.3 Interferences

6 The Contractor must be responsible for the identification of interference items, their temporary removal, storage, and refitting to vessel.

Part 4: Proof of Performance

4.7 Inspection

4.1.2 All work must be subject to inspection by the Chief Engineer or delegate.

4.8 Testing

4.2.2 NA

4.9 Certification

4.3.2 All ABS (Transport Canada recognized) approval certificates for materials being fitted must be supplied to the Chief Engineer prior to installation of product and must be approved by the attending ABS surveyor prior to purchase.

Part 5: Deliverables

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Spec Item #: H-22	SPECIFICATION	
Floor Covering Renewals		

7 Drawings/Reports

5.1.2 NA

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Spec Item #: H-23	SPECIFICATION	
Cabin(s) and Office Furniture Installation		

H-23 Cabin(s) and Office Furniture Installation

Part 1: Scope

- 1.1** The intent of this specification must be to install new Owner Supplied Furniture in the locations listed in 3.1.1.
- 1.2** This work must be carried out in-conjunction with: This spec item must be completed in conjunction with: Spec Item H-21 Floor covering renewals, Spec Item H-22 Floor Covering Renewals, Spec Item H-20 Officers Pantry, SAR Locker, Washroom and Shower Flooring Repair.

Part 2: References

2.1 Guidance Drawings/Nameplate Data

- | | | |
|--------------|---|---------------------------|
| 2.1.1 | Deck Coverings Main Deck | Dwg. 72-312 |
| 2.1.2 | Deck Coverings Upper Deck | Dwg. 72-312 |
| 2.1.3 | Plan of Doors | Dwg. 72-316 |
| 2.1.4 | Bulkheads Linings | Dwg 72-324, 325, 326, 327 |
| 2.1.5 | General Arrangement Main & Upper Deck | Dwg 72-301 |
| 2.1.6 | <u>Furnishing Outfitting Service</u> | |
| | G&D Sales-Ian Vincent | |
| | 709 753-2868 | |
| | Spurrell's Cabinetry-Dave Spurrell | |
| | 709 685-7344 | |

Installation must be completed by experienced cabinet installer.

2.2 Standards

- 2.2.1** Fleet Safety and Security Manual (DFO/5737)
- 2.2.2** Society for Protective Coatings (SSPC) Standards

2.3 Regulations

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Cabin(s) and Office Furniture Installation		

2.3.1 Canada Shipping Act 2001 – Marine Machinery Regulations

2.4 Owner Furnished Equipment

2.4.1 The Contractor must supply all materials, equipment, and parts required to perform the specified work unless otherwise stated.

Part 3: Technical Description

3.1 General

3.1.1 Locations of new furniture installation

- Senior Engineers Day Cabin
- Senior Engineers Night Cabin
- 2nd Engineers Cabin
- Logistic Officers Cabin
- Bosuns Cabin
- Ships Office
- Captains Day Cabin
- Official's Day Cabin
- Official's Night Cabin

3.1.2 The Contractor must remove existing furniture from the above listed cabins and office to allow for the installation of the new Owner supplied furniture as directed by the Chief Engineer.

3.1.3 The Chief Engineer will inform Contractor of existing furniture to be removed and the layout of the new furniture. Contractor must be responsible for the proper disposal of all furniture identified by the Chief Engineer for disposal.

3.1.4 The Contractor must be responsible for the identification, removal, temporary storage and refitting to the vessel, all interference items necessary to complete this spec item.

3.1.5 The bulkhead panels must be reused unless CG advises otherwise. The CE shall inspect the bulkhead panels/track with the Contractor and advise if any bulkhead panels/track must be replaced. Contractor must include in their bid for the replacement of 5 bulkhead panels and track systems per cabin. The bid must

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Cabin(s) and Office Furniture Installation		

include for the removal/re-installations of any interference items as required including light switches, receptacles, shelves etc.

- 3.1.6** The Contractor must include in the bid, a per unit cost for all materials and labor to replace a bulkhead panel and track system. Adjustment up or down will be made via 1379 action upon proof of invoice.
- 3.1.7** Contractor must re-finish the bulkhead panels in the following spaces with CG supplied Gislaved Folie flame retardant foils:
- Senior Engineers Day Cabin
 - Senior Engineers Night Cabin
 - 2nd Engineers Cabin
 - Logistic Officers Cabin
 - Bosuns Cabin
 - Ships Office
- 3.1.8** The Contractor must be responsible for removal of all hand-rails, lights, switches, outlets, instruction decals, pictures, vanities, mirrors, mounted equipment, or any other interference items necessary to apply Gislaved Foil to the bulkhead panels. Contractor must take note of the location of all interference items prior to removal by digital picture to allow for re-locating upon installation of new foil finish. Contractor must allow for dressing up 12 screw holes per bulkhead panels prior to fitting the new foil to allow for a smooth finish with no visible defects. The foil shall be installed as per manufacturer installation instructions following the layout of the individual bulkhead panels.
- 3.1.9** Contractor must be responsible for re-installation of all removed interference items following application of Gislaved Foil to the bulkhead panels.
- 3.1.10** The Contractor must install new furniture as per design layout and as directed by the Chief Engineer.
- 3.1.11** The following will have new furniture installed by the Suggested Furnishing Outfitters 2.1.11
- Senior Engineer's Day and Night Cabin, 2ND Engineer's Cabin. L/O Cabin Furniture and Ships Office Desks supplied by G & D Sales
 - Bosun's Cabin Furniture and Captain's Desk supplied by Spurrell's Cabinetry

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Cabin(s) and Office Furniture Installation		

3.1.12 New furniture must be protected from damage while other spec items are being completed.

3.1.13 Contractor must have all spaces listed in 3.1.1 professionally cleaned of all debris following flooring and furniture refurbishment and have vessels Designate inspect and sign off once complete.

Part 4: Proof of Performance

4.1 Inspection

4.1.1 All work must be subject to inspection by the Chief Engineer or delegate.

4.2 Testing

4.2.1 NA

4.3 Certification

4.3.1 All ABS recognized approval certificates for Contractor supplied materials being fitted must be supplied to the TA prior to installation of product and must be approved by the attending ABS surveyor prior to purchase.

Part 5: Deliverables

5.1 Drawings/Reports

5.1.1 NA

5.2 Spares

5.2.1 NA

5.3 Training

5.3.1 NA

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Spec Item #: H-23	SPECIFICATION	
Cabin(s) and Office Furniture Installation		

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Spec Item #: H-24	SPECIFICATION	
SAR Locker Steel Deck Renewal		

H-24 SAR Locker Steel Deck Renewal

Part 1: Scope:

- 1.1 The intent of this specification must be to complete steel deck renewal in the SAR Locker, Room xxx, Boat Deck. This work must be completed as per Poseidon Marine Consultants (PMC) Technical Specification 21-074-001 Rev 0, and PMC dwg. 21-074-001 Rev 0.
- 1.2 This work must be carried out in-conjunction with:
 - H-20 Officers Pantry, SAR Locker, Washrooms and Showers Flooring Repairs
 - H-21 Flooring Underlayment Repair

Part 2: References

2.1 Guidance Drawings/Nameplate Data

- 2.1.1 **PMC Dwg 21-074-100 Rev 0**
- 2.1.2 **PMC Technical Specification 21-074-100 Rev 0**

2.2 Standards

- 2.2.1 Canadian Coast Guard Fleet Safety Manual
- 2.2.2 Coast Guard ISM Hotwork Procedures
- 2.2.3 Coast Guard ISM Lock out Tag out Procedures
- 2.2.4 CWB CSA 47.1 latest revision Division I, II or III
- 2.2.5 TC TP 127e
- 2.2.6 IEC 60332-3, 60364-5-52, 60754-0,1,2, IEEE 60332-3

2.3 Regulations

- 2.3.1 **Canada Shipping Act 2001 Hull Construction Regulations**

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SAR Locker Steel Deck Renewal		

2.3.2 Canada Shipping Act 2001 – Marine Machinery Regulations

2.4 Owner Furnished Equipment

2.4.2 The Contractor must supply all materials, equipment, and parts required to perform the specified work unless otherwise stated.

Part 3: Technical Description

3.1 General

3.1.1 The work in this spec item is to be performed in conjunction with spec item H-20, Pantry, SAR Locker, Washrooms and Showers Flooring Repairs.

3.1.2 Contractor must contact Poseidon Marine Consultants Ltd when technical information or clarification is required to complete the renewals outlined in Technical Specification. No. 21-074-100 Rev 0. and Dwg 21-074-100 Rev 0. Poseidon hours must be supported by detailed invoice for adjustment purposes.

3.1.3 Contractor must perform all work to renew the steel deck in the SAR Locker as detailed in PMC Technical Specification 21-074-100 Rev 0 and PMC Dwg. 21-074-100 Rev 0.

3.1.4 The Contractor must provide the area with a mechanical ventilation system, vented to the outside of the ship. Good ventilation must be provided and any blowers/extractors must ensure good air movement for the affected spaces.

3.1.5 Contractor must be responsible for the scheduling of ABS Class surveyor for the inspection / survey requirements in the course of completing this work. The C/E must be advised of ABS attendance as the onsite representative. Contractor must be responsible to plan and implement repairs as per ABS requirements, ie crop outs, prep work, welding procedures, ND Testing.

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SAR Locker Steel Deck Renewal		

- 3.1.6** Contractor must provide all ancillary services to complete the work noted in the work scope for duration of the work. These include but are not limited to strip out, cleaning, debris removal, lighting, ventilation, shore power etc.
- 3.1.7** Contractor must complete CG Hotwork permits and notify Chief Engineer prior to start of work as per Coast Guard Safety Management System. Any cleaning and protection of affected spaces required by the Contractor to complete hotwork must be their responsibility.
- 3.1.8** Contractor must protect all adjacent vessel spaces / equipment from Hotwork and debris as a result of any hotwork required.
- 3.1.9** Contractor must be responsible for identification of interference items to complete steel renewal. Any removals (wiring, piping, shelving, bulkhead panels, etc.) must be the responsibility of the Contractor. Lock outs for wiring and piping to be removed to facilitate the work must be the responsibility of the Contractor and locked out where applicable and disconnected/removed or adequately protected/covered. Re-installation must be included in the bid and all removed items to be re-installed upon completion of work.
- 3.1.10** Contractor must provide mill certificates for steel plate. Certificates are to be provided to CE and ABS. All new steel must be shot blasted and coated with weldable primer prior to placement onboard.
- 3.1.11** Contractor must bid on supplying third party ND Testing on all new welds. Reports must be provided to the Technical Authority, Project Authority and ABS in a timely fashion. NDT must include 100% visual inspection, 100% UT for new weld seams or full penetration welds and 100% MPI for all other connections.
- 3.1.12** The Contractor must be responsible for the identification, removal, temporary storage and refitting of all interference items necessary to complete this spec item.
- 3.1.13** Upon completion of steel deck renewal The Contractor must obtain services of accredited Red Seal Insulator company to re-insulate and properly dress sheathing that was removed to complete the steel deck renewal.
- 3.1.14** Contractor must have all affected spaces professionally cleaned of all debris and have vessels Designate inspect and sign off once complete.

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SAR Locker Steel Deck Renewal		

3.2 Location

3.2.1 Boat Deck, Upper Deck.

3.3 Interferences

3.3.1 The Contractor must be responsible for the identification of interference items, their temporary removal, storage, and refitting to vessel.

Part 4: Proof of Performance

4.1 Inspection

4.1.1 All work must be subject to inspection by the Chief Engineer or delegate and ABS Class surveyor.

4.1.2 Contractor must arrange for Third Party ND Testing for all welds and must supply report to CG and TCMS as required.

4.1.3 Contractor must consult with CG NACE inspector prior to coatings application and to schedule inspection points for surface preparation, environmental conditions and coating applications and adhere to manufacturer recommendations and best industry practices

4.2 Testing

4.2.1 NA

4.3 Certification

4.3.1 All ABS (Transport Canada recognized) approval certificates for materials being fitted must be supplied to the Chief Engineer prior to installation of product and must be approved by the attending ABS surveyor prior to purchase.

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SAR Locker Steel Deck Renewal		

Part 5: Deliverables

5.1 Drawings/Reports

5.1.1 The Contractor must provide copies of ND Testing reports to C/E and ABS Surveyor prior to coating application.

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Spec Item #: H-25	SPECIFICATION	
Port and Stbd. Fresh Water Tanks Inspection and Cleaning		

H-25 Port and Stbd. Fresh Water Tanks Inspection and Cleaning

Part 1: Scope

- 1.1 The Intent of this specification is to open up Port and Stbd Fresh Water Tanks for Annual Cleaning and inspection of coatings inside each tank. After cleaning contractor must super-chlorinate and flush tanks and take water samples, as per requirements in the Coast Guard Fleet Safety and Security Manual. (DFO/5737).

Part 2: References

- 2.1 Contractor must supply the product data sheets and MSDS sheets on all products used in the course of this work (cleaning, sterilizing and neutralizing).
- 2.2 The Contractor must supply all materials, equipment and parts required to perform the specified work unless otherwise stated.

Part 3: Technical Description

TANK	LOCATION	Volume (M ³)
Fresh Water (P&S)	Fr.30-41	50.0 M ³ Each

Approximate surface area of the tanks: 120 M² (each tank)

Manhole covers access is from after sides of tanks in Central Stores and in Propulsion Motor Room, 2 covers per tank.

Tanks boundaries: Outboard - Void Spaces No 5 Port & Stbd, Under - Motor Room, Inboard - Motor Room, Aft - Central Stores, Above - Accommodations Main Deck

Openings for ventilation purposes, Manholes in Central Stores, Vent pipes on breezeway aft Upper Deck (2.5"), Drain pipes Motor Room Deckhead (1.25")

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Port and Stbd. Fresh Water Tanks Inspection and Cleaning		

- 3.2 The Contractor must begin the specified work in this spec item within 4 days after the start of the refit period.
- 3.3 Contractor must drain entire content of fresh water tanks. Upon draining of tanks, Contractor must remove Manhole covers for each tank, 2 covers per tank.
Note: Removal of manhole cover on aft side of the port fresh water tank will require removal of adjacent void space #6 manhole cover.
- 3.4 The Contractor must provide each tank with a mechanical ventilation system, vented to the outside of the ship. Tanks to be certified safe for personnel to enter prior to work being carried out internally, as per Coast Guard Safety Management System. The fresh water tanks are considered confined spaces under the Safety Management System.
- 3.5 The Contractor must provide sufficient disposable footwear coverings to ensure that no personnel must enter the tank with exposed footwear.
- 3.6 Tank internals must be washed down before they have dried off from draining with non-toxic cleaning solution then hosed down with fresh water. MSDS and product application sheet for the cleaning solution used must be handed to the Owner's Representative prior to cleaning inside the Fresh Water Tanks.
- 3.7 The Commanding Officer or delegate and Third Party NACE Inspector will inspect the internal coatings of each tank. Any areas requiring repair of the internal tank coating will be identified. Total area to be repaired to be agreed upon by the Contractor and SVMM prior to any repairs of the coating being started. Contractor to provide square meter unit pricing for repair of internal tank coating. Cost to repair internal tank coating to be adjusted by 1379 action. Upon completion of any internal coating repairs, the Contractor must clean the tank internals with non-toxic cleaning solution then hose down with fresh water. MSDS and product application sheet for the cleaning solution used must be handed to the Owner's Representative prior to cleaning inside the Fresh Water Tanks.
- 3.8 Care must be taken to protect tank-sounding transducers and sight glasses for the duration of all work in the tanks. The tank level transmitter opening must be reamed out and proven clean and clear. The bottom sight glass connection must be inspected and cleaned from inside the tank. Contractor must remove all cleaning water from tank as it accumulates; standing depth not to exceed three inches of water at any time.

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Port and Stbd. Fresh Water Tanks Inspection and Cleaning		

- 3.9 All cleaning residue and debris must be removed from the tanks after each cleaning, including tank bottom. Upon completion of cleaning, the Vessel's Commanding Officer and/or delegate must inspect tank internals.
- 3.10 Sounding pipes, suction and fill pipes, sight glass openings and tank vents must be proven clear prior to sealing up tanks.
- 3.11 Contractor must remove vent heads from each before filling tanks.
- 3.12 Manhole covers must then be reinstalled using new 1/4" neoprene gaskets. Any studs broken during the removal and replacement of the manhole covers to be renewed at contractor's expense.
- 3.13 Contractor must fill both tanks, for flushing, until they overflow from vent lines. Contractor must drain tank after it fills, Contractor must be responsible for disposal of flush water.
- 3.14 Contractor must again fill tank with super-chlorinated water, as per Coast Guard Fleet Safety Manual, Section &.A.12 "Potable Water Quality".
- 3.15 Contractor must de-chlorinate super-chlorinated water and dispose of as per Coast Guard Fleet Safety Manual, Section &.A.12 "Potable Water Quality". Contractor again must be responsible for removing de-chlorinated water disposal from tanks.
- 3.16 After tanks are drained of de-chlorinated water, Contractor must again fill both tanks until overflow at vent heads. Contractor must then re-install vent heads.
- 3.17 Contractor must then obtain a water sample from each tank, along with a water sample from the galley and farthest run on the ship (4 total samples). Coast Guard will supply sample bottles for testing of water. Owners Representative must be present when The Contractor is taking the water samples.
- 3.18 Contractor must have water samples tested to the 29 requirements as set out by the Coast Guard Fleet Safety Manual, Section &.A.12 "Potable Water Quality".
- 3.19 Contractor must send sample test results to the Commanding Officer immediately after the Contractor receives the water test results from the Lab.

	CCGS ANN HARVEY	
Spec Item #: H-25	SPECIFICATION	
Port and Stbd. Fresh Water Tanks Inspection and Cleaning		

Part 4: PROOF OF PERFORMANCE

Inspection, Testing & Certification

4.1

Part 5: Deliverables

Reports, Drawings, Manuals, Spares & Training

- 5.1 Satisfactory Potable Water Test Reports
- 5.2 Cleaning and Coating Product Chemicals Specifications and MSDS sheets
- 5.3 Safety Management System forms and checklists.

This specification item is completed once all the above has been received by the Chief Engineer.

	CCGS ANN HARVEY	
Spec Item #: H-26	SPECIFICATION	
Port and Stbd Clearview and Window Replacement		

H-26 Port and Stbd Clearview and Window Replacement

Part 1: Scope

- 1.1 The intent of this specification is to replace the two Bridge Clearview's screens, complete with their windows and controllers, with Owner Supplied units.
- 1.2 This work it be completed in conjunction with Spec Item H-22 Flooring Renewals, L-04 CCTV System Upgrade, L-05 BNWAS Installation, L-06 Radar ECDIS Upgrade and L-07 VHF DF Upgrade.

Part 2: References

Guidance Drawings/Nameplate data

Diagram 72-310 Window List

2.1 Standards

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

- 2.1.1 Canadian Coast Guard Fleet Safety Manual (DFO 5737)

2.2 Regulations

- 2.2.1 Canada Shipping Act 2001 – Marine Machinery Regulations
 2.2.2 Transport Canada Electrical Standards TP 127E

2.3 Owner Furnished Equipment

- 2.3.1 The Contractor must supply all materials, equipment and parts required to perform the specified work unless otherwise stated.

	CCGS ANN HARVEY	
Spec Item #: H-26	SPECIFICATION	
Port and Stbd Clearview and Window Replacement		

Part 3: Technical Description

3.1 General



Clearview renewals

- 3.1.1 The Contractor with the ship's Electrical Officer must lock-out both Clearview's at Electrical Panel, EP 101, breakers 13 port Clearview and breaker 14 stbd Clearview, (120 Volts AC, 15 Amp breakers) prior to start of work.
- 3.1.2 The Contractor must complete the ship's lockout/tagout procedure and forms but The Contractor must supply their own locks and tags.
- 3.1.3 Contractor must remove the old Clearview's (2), complete with windows and controllers, along with all wiring from Electrical Panel EP-101 to clear views and from Clearview's to controllers, located in bulkhead panel below each window. Note: Clearview windows are approximately 86 mm high and 126 mm long.
- 3.1.4 The Contractor must be responsible for the identification, removal, storage and refitting of all interference items necessary to complete this spec item.
- 3.1.5 The Contractor must be responsible for the removal and replacement of any and all broken or damaged window frame securing bolts. The Contractor must only use stainless steel fasteners for replacement.
- 3.1.6 Contractor must install new Owner Supplied Clearview's, complete with windows and

	CCGS ANN HARVEY	
Spec Item #: H-26	SPECIFICATION	
Port and Stbd Clearview and Window Replacement		

controllers as per equipment and wires removed and the manufactures installation directions.

- 3.1.7 Contractor must use sealing compound to seal windows that is approved by TC and ABS Inspectors.
- 3.1.8 The Contractor must hose test each window to test for leaks upon curing of the sealing compound(s). Repair of any leaks must be corrected at The Contractors expense.
- 3.1.9 Contractor must secure and tag wires as per TP 127E requirements. Stamped metal cable identification tags must be secured to each cable at each end of the cable as well as on each side of any bulkhead or deck penetration. Cable numbering system must be approved by the ship's Electrical Officer prior to manufacture of the cable tags.
- 3.1.10 This work will involve removing wheelhouse deckhead panels, bulkhead panels and access to crawl space below wheelhouse. The Contractor must be responsible for the identification, removal and storage of all interference items necessary to complete the work.
- 3.1.11 All removed or disturbed interference items must be replaced in good order upon completion of all work.
- 3.1.12 Any wiring, lighting, fixtures, fasteners, metal work, etc. that has been removed or repositioned to carry out this work must be reinstalled in good order in its original location and condition.
- 3.1.13 All work must be completed to the satiation of the Chief Engineer and ABS Inspector.

3.2 Location

3.2.1 Wheelhouse

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Spec Item #: H-26	SPECIFICATION	
Port and Stbd Clearview and Window Replacement		

Part 4: PROOF OF PERFORMANCE

4.1 Inspection,

4.1.1 Inspection must be subjected to inspection by the Chief Engineer and ABS Inspectors.

4.2 Testing

4.2.1 Hose Testing, with Fire Hose for ABS Inspector

4.3 Certification

4.3.1 N/A

Part 5: Deliverables

5.1 Reports

5.1.1 N/A

5.2 Drawings

5.2.1 N/A

5.3 Manuals, Spares

5.3.1 N/A

5.4 Training

5.4.1 N/A

	CCGS ANN HARVEY	
Spec Item #: H-27	SPECIFICATION	
Annual Lifeboat, Lifeboat Davit, Miranda Davit and Barge Davit Inspection and Servicing		

H-27 Annual Lifeboat, Lifeboat Davit, Miranda Davit and Barge Davit Inspection and Servicing

Part 1: SCOPE

1.1 The intent of this spec is to inspect and service the Lifeboat, Lifeboat Davit, Miranda Davit and Barge Davit.

Part 2: Reference

Guidance Drawings/Nameplate data

2.1 The following Coast Guard Standards and or Technical Bulletins must be adhered to in the course of executing this specification. Copies of these standards and bulletins can be obtained from the CCG Technical Authority.

- a. Canadian Coast Guard Fleet Safety Manual (DFO 5737)

Part 2: REFERENCES

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Spec Item #: H-27	SPECIFICATION	
Annual Lifeboat, Lifeboat Davit, Miranda Davit and Barge Davit Inspection and Servicing		

Part 3: TECHNICAL DESCRIPTION

3.1 Contractor to bid with an allowance of \$15,000, to be adjusted up or down by 1379 action, for the services of the Schat Field Service Representative to complete the annual inspection and servicing of the Lifeboat, Lifeboat Davit, Miranda Davit and Barge Davit.

3.2 All parts for repairs shall be Owner supplied.

3.3 Contractor to bid on 80 hours for assistance to FSR to be adjusted up or down with actual cost.

Part 4: PROOF OF PERFORMANCE

Inspection, Testing & Certification

N/A

Part 5: Deliverables

Reports, Drawings, Manuals, Spares & Training

N/A

	CCGS ANN HARVEY	
Spec Item #: H-28	SPECIFICATION	
New Wheelhouse Access Hatches Installation		

H-28 New Wheelhouse Access Hatches Installation

Part 1: Scope

- 1.4** The intent of this sepc item is to install two (2) “Anchor” brand 34-127K access hatches in the Wheelhouse deck as per Poseidon Marine Consultants Dwg. 20-014-101 Rev 0.

Part 2: References

2.1 Guidance Drawings/Nameplate Data

- 2.1.1 PMC Dwg. No. 20-014-101 Rev 0.
- 2.1.2 Lead Assessment Report
- 2.1.3 Lead Exposure Control Plan

2.2 Standards

- 2.2.1 Canadian Coast Guard Fleet Safety Manual
- 2.2.2 Coast Guard ISM Confined Space Entry
- 2.2.3 Coast Guard ISM Hotwork Procedures
- 2.2.4 Coast Guard ISM Lock out Tag out Procedures
- 2.2.5 Coast Guard ISM Fall Protection procedures
- 2.2.6 CWB CSA 47.1 latest revision Division I, II or III
- 2.2.7 TC TP 127e
- 2.2.8 IEC 60332-3, 60364-5-52, 60754-0,1,2, IEEE 60332-3

2.3 Regulations

- 2.3.1** Canada Shipping Act 2001 Hull Construction Regulations
- 2.3.2** Canada Shipping Act 2001 – Marine Machinery Regulations

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Spec Item #: H-28	SPECIFICATION	
New Wheelhouse Access Hatches Installation		

2.4 Owner Furnished Equipment

2.4.1 The Contractor must supply all materials, equipment, and parts required to perform the specified work unless otherwise stated.

Part 3: Technical Description

3.1 General

3.1.1 The work in this spec item is to be performed in conjunction with spec item H-28 Lead Paint Abatement, H-24 Flooring Renewals.

3.1.2 Contractor must contact Poseidon Marine Consultants Ltd when technical information or clarification is required to complete the installation detailed in Dwg. No. 20-014-101 Rev 0. Poseidon hours must be supported by detailed invoice for adjustment purposes.

3.1.3 The Contractor must abate lead containing coating in the crawl space deckhead in way of the new access hatch locations. The coatings must be abated a minimum of 12 inches beyond the planned access hatch perimeter.

3.1.4 The Contractor must erect temporary enclosures to contain all debris, dust and smoke created during the work scope of this spec item. The enclosures must be of sufficient construction to prevent any contamination of the Wheelhouse electronics and furnishings.

3.1.5 The Contractor must be responsible for the scheduling of ABS Class surveyor for the inspection / survey requirements in the course of completing this work. The C/E must be advised of ABS attendance as the onsite representative. Contractor must be responsible to plan and implement repairs as per ABS requirements, ie crop outs, prep work, welding procedures, ND Testing.

3.1.6 Contractor must complete new Access Hatch Installation as per Dwg. 20-014-101 Rev 0. Indicated steel grade is based on equivalency with referenced vessel drawings.

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Spec Item #: H-28	SPECIFICATION	
New Wheelhouse Access Hatches Installation		

- 3.1.7** Contractor must provide all ancillary services to complete the work noted in the work scope for duration of the work. These include but are not limited to strip out, cleaning, debris removal, lighting, ventilation, shore power etc.
- 3.1.8** The Contractor must ensure that only CWB certified welders are used to complete the welding using CWB procedures.
- 3.1.9** Contractor must complete CG Hotwork permits and notify Chief Engineer prior to start of work as per Coast Guard Safety Management System. Any cleaning and protection of affected spaces required by the Contractor to complete hotwork must be their responsibility.
- 3.1.10** Contractor must protect adjacent vessel spaces / equipment from Hotwork and debris as a result of any hotwork required.
- 3.1.11** Contractor must be responsible for identification of interference items to complete steel work. Any removals (wiring, piping etc) must be locked out where applicable and disconnected/removed or adequately protected/covered. Re-installation must be included in the bid and all removed items to be re-installed to the “as found” condition upon completion of work.
- 3.1.12** Contractor must provide mill certificates for steel plate. Certificates are to be provided to CE and ABS. All new steel must be shot blasted and coated with weldable primer prior to placement onboard.
- 3.1.13** Contractor must bid on supplying third party ND Testing on all new welds. Reports must be provided to the Technical Authority, Project Authority and ABS in a timely fashion. NDT must include 100% visual inspection, 100% UT for new weld seams or full penetration welds and 100% MPI for all other connections.
- 3.1.14** Contractor must have all affected spaces professionally cleaned of all debris and have vessels Designate inspect and sign off once complete.

3.2 Location

3.2.1 Wheelhouse, Crawl Space

	CCGS ANN HARVEY	
Spec Item #: H-28	SPECIFICATION	
New Wheelhouse Access Hatches Installation		

3.3 Interferences

3.3.1 The Contractor must be responsible for the identification of interference items, their temporary removal, storage, and refitting to vessel.

Part 4: Proof of Performance

4.10 Inspection

4.1.3 All work must be subject to inspection by the Chief Engineer or delegate and ABS Class surveyor.

4.1.4 Contractor must arrange for Third Party ND Testing for all welds and must supply report to CG and TCMS as required.

4.1.5 Contractor must consult with CG NACE inspector prior to coatings to schedule inspection points for surface preparation, environmental conditions and coating applications and adhere to manufacturer recommendations and best industry practices

4.11 Testing

4.2.3 NA

4.12 Certification

4.3.3 All ABS (Transport Canada recognized) approval certificates for materials being fitted must be supplied to the Chief Engineer prior to installation of product and must be approved by the attending ABS surveyor prior to purchase.

Part 5: Deliverables

	CCGS ANN HARVEY	
Spec Item #: H-28	SPECIFICATION	
New Wheelhouse Access Hatches Installation		

8 Drawings/Reports

5.1.3 NA

	CCGS ANN HARVEY	
Spec Item #: H-29	SPECIFICATION	
Lead Paint Abatement		

H-29 Lead Paint Abatement

Part 1: SCOPE

- 1.2 The intent of this spec is to abate lead containing coatings from all areas listed in the Lead Paint Assessment Report that are above 1000 ppm and where coating abatement is required to perform work set out in any individual spec items.

Part 2: REFERENCES

Guidance Documents

- 2.1 Lead Paint Assessment, CCGS Ann Harvey, April 2021
 2.2 Lead Exposure Control Plan, CCGS Ann Harvey, April 2021

Part 3: TECHNICAL DESCRIPTION

- 3.1 The Contractor must use the services of a certified lead abatement company to remove lead containing coatings from all areas where abatement of the lead coating is required to proceed with the work listed in each individual spec item contained in this specification.
- 3.2 Areas requiring lead coating abatement are:
- a. Steering gear compartment, area iwo of new manhole
 - b. crawl space deck head iwo new hatches
 - c. CCTV System Upgrade, Winch room fwd bulkhead, Hangar fwd bulkhead
 - d. radar seats on mast
 - e. Crawl space aft bulkhead iwo new conduit penetration
- 3.3 The Contractor must also quote a per square meter unit price for the abatement, removal and disposal of lead containing coating in additional areas. Adjustment to be made by 1379 action.
- 3.4 The Contractor must use the services of a certified environmental hygienist to oversee and monitor the lead coating abatement.

	CCGS ANN HARVEY	
Spec Item #: H-29	SPECIFICATION	
Lead Paint Abatement		

- 3.5 The Contractor must follow the procedures set out in the Lead Exposure Control Plan to complete the abatement of lead containing coatings.
- 3.6 The Contractor must have sufficient work force to abate all affected areas simultaneously and have all the required abatement completed within the seven days of the start of refit.
- 3.7 The Contractor must use non aggressive means to abate the lead containing coating wherever possible.
- 3.8 The Contractor must abate the lead containing coating 12 inches beyond the areas required to complete the work in each spec item.
- 3.9 The Contractor must be responsible for the removal of all waste ashore and disposal of all waste as per applicable Provincial Regulations.
- 3.10 The Contractor must clean each affected area and leave the area in an “as clean as found condition”.

3.4 Location

3.2.2 N/A

3.5 Interferences

3.3.2 The Contractor must be responsible for the identification of interference items, their temporary removal, storage, and refitting to vessel.

Part 4: Proof of Performance

4.1 Inspection

4.1.6 All work must be subject to inspection and approval by the Environmental Hygienist

	CCGS ANN HARVEY	
Spec Item #: H-29	SPECIFICATION	
Lead Paint Abatement		

4.2 Testing

4.2.1 NA

4.3 Certification

Part 5: Deliverables

5.1 Drawings/Reports

5.1.1 NA

5.2 Spares

5.2.1 NA

	CCGS ANN HARVEY	
Spec Item #: H-29	SPECIFICATION	
Lead Paint Abatement		

	CCGS ANN HARVEY	
Spec Item #: H-30	SPECIFICATION	
Stack Coating Abatement		

H-30 Stack Coating Abatement

Part 1: SCOPE

- 1.3 The intent of this spec is to abate lead containing coatings from stack area of CCGS Ann Harvey and to apply new non lead containing coatings.

Part 2: REFERENCES

Guidance Documents

- 2.1 Lead Paint Assessment, CCGS Ann Harvey, April 2021
2.2 Lead Exposure Control Plan, CCGS Ann Harvey, April 2021

Part 3: TECHNICAL DESCRIPTION

- 3.1 The Contractor must use the services of a certified environmental hygienist to oversee and monitor the lead paint abatement.
- 3.2 The Contractor must follow the procedures set out in the Lead Exposure Control Plan to complete the abatement of lead containing coatings.
- 3.3 Coast Guard will retain the services of an independent consultant to verify that the surface preparation and coating, storage, preparation and application as per the specification. Payment for the consultant will be directly by Coast Guard outside of this contract.
- 3.4 The Contractor must allow safe access to areas where work is being performed under this specification including storage and mixing areas as the consultant deems necessary for the purpose of verifying that the surface preparation, coating, storage, preparation and application are as per the specification.
- 3.5 The contractor must include in his bid for this item the cost of all labour and materials for the coating abatement and application of new coatings to the stack area. Area to be abated and coated is estimated at 220 square meters

	CCGS ANN HARVEY	
Spec Item #: H-30	SPECIFICATION	
Stack Coating Abatement		

- 3.6 The Contractor must erect a suitable temporary enclosure to contain all debris, grit, dust and dirt generated during the removal of the current stack coatings.
- 3.7 All staging, cranes, screens, scaffolding, lighting and any other support services, equipment, paint and materials necessary to carry out these specifications must be Contractor supplied.
- 3.8 The contractor must cover all deck machinery, and equipment including all Davit blocks, cables and fittings, ventilation louvers and openings into the ship to prevent ingress of grit from blasting. The contractor will remove any and all coverings after the coating operations are complete.
- 3.9 The entire stack area must be abrasive blasted to SSPC-SP-10 Near White finish. Edges of existing coatings shall be “feathered back” by blasting or suitable mechanical means to allow a sound surface to accept the new coating.
- 3.10 The Contractor’s Representative and Owner’s Representative will inspect the surface preparation before any coating is applied.
- 3.11 Two coats of Krylon Primer: K00110825-16 / Gray Primer to all bare. Apply as per manufacturers application recommendations and CG NACE Inspectors recommendations
- 3.12 Two complete coats of Krylon 250 Rust Tough / K00110404-16 / Gloss White. Apply at 10 mils DFT or to Coating Manufacturers Application Data specified thickness.
- 3.13 The contractor is to take DFT thickness readings between coats. The Chief Engineer is to witness the tests.
- 3.14 All government symbols and icons must be painted red using Krylon 250 Rust Tough / K00110695-16 / Safety Red. The Contractor must apply two coats at 2 mils DFT per coat. Stencils for the Federal Identity Program Markings will be owner supplied.
- 3.15 The Contractor must be responsible for the removal of all waste ashore and disposal of all waste as per applicable Provincial Regulations.
- 3.16 The Contractor must clean all affected area and leave the area in an “as clean as found condition”.

3.2 Location

	CCGS ANN HARVEY	
Spec Item #: H-30	SPECIFICATION	
Stack Coating Abatement		

3.2.1 N/A

3.3 Interferences

3.3.1 The Contractor must be responsible for the identification of interference items, their temporary removal, storage, and refitting to vessel.

Part 4: Proof of Performance

4.1 Inspection

4.1.7 All work must be subject to inspection and approval by the Certified Environmental Hygienist

4.2 Testing

4.2.2 NA

4.3 Certification

Part 5: Deliverables

5.3 Drawings/Reports

5.1.2 NA

	CCGS ANN HARVEY	
Spec Item #: H-31	SPECIFICATION	
Chain Handling Winch overhaul and Control Station Replacement		

H-31 Chain Handling Winch overhaul and Control Station Replacement

Part 1: SCOPE:

- 1.1 The intent of this specification is for the contractor to overhaul the Chain Handling Winch motor, install the new owner supplied control station and replace Hydraulic hoses with new.

Part 2: REFERENCES:

2.1 Reference info

- 2.1.1 Nameplate Data: Hagglund Drives AB (Sweden)
UK 64 16300 BO RN 0100

- 2.1.2 Capacities: Chain Handling Winch Hydraulic Reservoir Tank -300 l Hydrex XV

2.2 Standards

- 2.2.1 The following Coast Guard Standards and or Technical Bulletins must 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)

2.3 Owner Furnished Equipment

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

Part 3: TECHNICAL DESCRIPTION:

- 3.1 The contractor shall lock out machinery at the P-615-30 MCC #5 located between the Engineer's Workshop and MCR with the assistance of the ship's Electrical Officer.
- 3.2 The contractor shall drain oil from all systems and replace with new filtered Hydrex XV oil. The capacities of which are noted in the reference section of this SOW. Contractor supplied oil.

	CCGS ANN HARVEY	
Spec Item #: H-31	SPECIFICATION	
Chain Handling Winch overhaul and Control Station Replacement		

- 3.3 The contractor shall remove all hydraulic lines for inspection. The contractor shall allow for \$2000 for replacement hoses as determined by Chief Engineer to be adjusted by 1379.



- 3.4 The contractor shall crop off the protection cage surrounding the Chain Handling Winch to allow access for removal of the winch. The cage shall be re-welded back in position upon completion of all work. The contractor shall apply 2 coats of marine primer and 1 coat of CG Supplied Coating to all disturbed painting.

	CCGS ANN HARVEY	
Spec Item #: H-31	SPECIFICATION	
Chain Handling Winch overhaul and Control Station Replacement		



- 3.3 The contractor shall remove the Chain Handling Winch in its entirety for transport to the contractor's machine shop for overhaul / inspection. All hose fittings shall be properly capped / blanked to prevent ingress of dirt. The contractor shall allow \$5000 for new parts to complete overhaul to be adjusted by 1379 upon proof of invoice. The contractor shall install new owner supplied bearings and seals.
- 3.4 The contractor shall arrange for inspection of all components by Chief Engineer prior to reassembly or ordering replacement parts.
- 3.5 The contractor shall disassemble and inspect the condition of all deck penetration fittings. Any replacement shall be 1379 action.
- 3.6 The contractor shall remove the existing control station aft of the Cargo Hatch and install the new Owner supplied Control station. The unit is fastened to the vertical pedestle with 4 bolt flange connection below the cabinet.

	CCGS ANN HARVEY	
Spec Item #: H-31	SPECIFICATION	
Chain Handling Winch overhaul and Control Station Replacement		



Existing Control Station

- 3.7 The contractor shall run 100 ft of #14 (10 conductor) cable iwo of the existing cable route from the aft control station being replaced to the starter panel located in the Upper cargo hold as seen below. The contractor shall remove the existing cable. This new cable shall connect the e-stop and illuminated switches in the new control station.
- 3.7 The contractor shall remove the existing cable transit iwo the control station and install a new contractor supplied 1" watertight transit to allow for the larger size #14 cable.
- 3.8 The contractor shall make the electrical connections for the new control station e-stop and start-stop controls.



	CCGS ANN HARVEY	
Spec Item #: H-31	SPECIFICATION	
Chain Handling Winch overhaul and Control Station Replacement		

Starter Panel in Cargo Hold Deck penetration @ control station Cargo Hold view

- 3.9 The contractor shall allow for 100 ft of 3/8 stainless tubing to be ran for incorporating the pressure gauge located within the new control cabinet to the pressure side of the winch. This tubing shall be properly secured along its route. The contractor shall connect the new Control Station controller to the existing hydraulic lines. The contractor shall make watertight deck penetration for the new tubing connection. The contractor shall provide hydraulic hose for pressure gauge from the deck connection.
- 3.10 The contractor shall replace the HPU oil filters both LP suction and HP discharge on the unit upon completion of all work.
- 3.11 The system is to be flushed to result in ISO 17/14 cleanliness code. The system filters are to be cleaned or replaced as required. The system is to be refilled with new contractor supplied hydraulic oil using appropriate offline filtration techniques to clean the new oil. The contractor is to provide a "system running" particle count after an appropriate test run to ensure the entire system has been circulated.

Part 4: PROOF OF PERFORMANCE:

- 4.1 Test run system for proper operation of new control station, winch operation and to ensure air and leak free operation.

Part 5: Deliverables:

5.3 Drawings/Reports

- 5.1.1 A service report is to be provided for any repairs required and parts purchased.

	CCGS ANN HARVEY	
Spec Item #: HD-01	SPECIFICATION	
Docking and Undocking		

HD-01 Docking and Undocking

Part 1: Scope

1.1 The contractor must bid on docking and undocking the ship, allowing sufficient lay days to carry out the specified work, with a reasonable time allowance for arising new work. The total cost must include any tug and/or pilotage service cost.

Part 2: REFERENCES

2.1 The Contractor must dock the vessel in accordance with the vessel's docking plan drawing # 72-63 (To be provided to successful bidder)

Part 3: Technical Description

3.1 The contractor must quote the number of laydays required to complete the work outlined in the refit specification within the time frame allotted allowing a reasonable time allowance for arising work. In addition the unit layday cost for additional laydays must be quoted for vessel on dock and for vessel floating. The unit cost for additional day of services must also be quoted.

3.2 The docking must be under the direct supervision of a Certified Docking Master. The docking arrangement must provide a minimum of 14.513 meters clearance aft. The keel block heights must be 4 feet (1.22M) or higher. Keel blocks must have a minimum port - starboard width of 2m to support both sides of the duct keel. The Contractor must prepare blocks and necessary shoring to maintain the true alignment of the vessel's hull and machinery during the docking period.

3.3 The following information is to be recorded by the Contractor on Ship Condition Reports:

- a. Prior to docking, all tanks on vessel to be sounded and contents recorded. Copy to be signed by the ship's Captain, the Chief Engineer and Contractor's Docking Master.

	CCGS ANN HARVEY	
Spec Item #: HD-01	SPECIFICATION	
Docking and Undocking		

b. On docking, all tanks emptied to be listed, and copies held by Contractor and Chief Engineer.

c. At undocking, all tanks to be refilled to obtain same draft and trim as at docking, and condition agreed by the Docking Master, the ship's Captain and the Chief Engineer.

3.4 The contractor must supply the services of a certified commercial diver to confirm that the vessel is settling evenly on the bilge and keel blocks (The contractor must comply with CG Diving Policy as outlined in the Safety Annex). Quote to include any tug and/or pilotage service cost. The contractor must ensure that docking blocks are directly in line with ship framing before vessel fully settles.

3.5 Contractor will be responsible for all line handling during docking and undocking operations.

3.6 The contractor must ensure that docking blocks are clear of transducer faces and sea intake grids. Contractor must further ensure that no keel block obstructs access to Frame # 70 Stbd to 700 mm fwd of frame 70 and immediately forward of Frame 54 to access #2 double bottom docking plugs.

3.7 The frame spacing is to be marked on the hull to aid in the initial hull survey by the Technical Authority & TCMS. Immediately after hydro-blasting, but prior to any grit blasting for the underwater hull coating, the Contractor is mark the frame spacing at 5 frame intervals from the stern post (Fr "0"); markings are to be in a contrasting colour, 6" in height, and are to be at the turn of the bilge, port and starboard. Where keel blocks align with the frame spacing, they are also to be marked in a similar manner, port and starboard

3.8 During undocking the Contractor must ensure that sufficient personnel are in attendance to standby the numerous sea connections, stern tubes, sea chests, etc. that were opened up during dry-docking to correct any deficiencies that may arise.

	CCGS ANN HARVEY	
Spec Item #: HD-01	SPECIFICATION	
Docking and Undocking		

Part 4: Proof of Performance

4.1 The Contractor must dock the vessel in accordance with the vessel's docking plan drawing # 72-63.

Part 5: Deliverables

5.1 At undocking, all tanks to be refilled to obtain same draft and trim as at docking, and condition agreed by the Docking Master, the ship's Captain and the Chief Engineer.

	CCGS ANN HARVEY	
Spec Item #: HD-02	SPECIFICATION	
Hull Cleaning, Survey and Coating		

HD-02 Hull Cleaning, Survey and Coating

Part 1: SCOPE

1.1. The Contractor must clean the entire hull, repair any damaged coatings and paint from the keel to the top of the bulwarks.

Part 2: References

- 2.1 This work must be carried out in conjunction with HD-03.
- 2.2 Docking Plan 72-63

Part 3: Technical Description

3.1 Contractor to protect all anodes and transducers from abrasion and coating. Protection to be removed before undocking. Transducers located as follows:

- 1. Speed Log Transducer Frame 161-162 port
- 2. Echo Sounder Transducer Frame 127 port and stbd

CAPAC Impressed Current Cathodic Protection Anode Locations:

- Frame 146 Lower Cargo Hold, port side
- Frame 146 Lower Cargo Hold, starboard side
- Frame 55 Cycloconverter Room, port side
- Frame 55 Purifier Room, starboard side

Locations of Reference anodes:

- Port Frame 84 (just fwd of boiler ship side blow down)
- Stbd Frame 28 (sewage compartment just aft of fwd bulkhead)

3.2 The Contractor must cover all deck machinery, and equipment including all Speedcrane

	CCGS ANN HARVEY	
Spec Item #: HD-02	SPECIFICATION	
Hull Cleaning, Survey and Coating		

blocks, cables and fittings and openings into the ship to prevent ingress of grit from blasting. The contractor will remove any and all coverings after the coating operations are complete.

3.3 The Contractor must plug deck scuppers and discharges as well as taking other measures necessary to prevent any liquids from contaminating areas being prepared or coated. The plugs must be hollow and contain extension tubes to allow precipitation run-off to run clear of the hull. He must also take measures to ensure that no damage, unnecessary cleaning or any repairs result from either the hull preparation process or coating application. Grit for blast cleaning is not permitted to enter any part of the ship. The Contractor must ensure that every opening into the vessel where grit can gain entry is suitably covered. Measures are also to be taken to ensure that surfaces and equipment other than those specified are not coated and that any inlets or discharges in the shell will not be blocked by the coating. The contractor is responsible for removing any over spray on the vessel as a result of this work. The contractor will remove any and all coverings and plugs after the coating operations are complete and sufficiently cured.

3.4 Coast Guard may retain the services of an independent consultant to verify that the surface preparation and coating, storage, preparation and application as per the specification. Payment for the consultant will be directly by Coast Guard outside of this contract.

3.5 The Contractor is to allow safe access to areas where work is being performed under this specification including storage and mixing areas as the consultant deems necessary for the purpose of verifying that the surface preparation, coating, storage, preparation and application are as per the specification.

3.6 Contractor must clean the entire hull, repair any defective paintwork, and paint the upper ship's hull from the lightship drafts height to the top of the bulwarks.

3.7 The Contractor must hydro blast the entire hull area including up the top of all bulwarks. high pressure fresh water washing (5000 PSI minimum) to remove all marine growth and allow a preliminary hull inspection. This must include rudders, propellers and the thruster tube. All marine growth must be removed. The contractor must supply all coatings and paints for the underwater and above water areas of the hull. The Contractor must hydro blast the hull within 4 hours of docking. Any delay in hydro blast resulting in additional time or work to clean the hull must not result in additional costs to Coast Guard.

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3.8 The Chief Engineer and a ABS Class Surveyor will then inspect the entire hull following the cleaning of the hull.

Underwater Hull (Approx 2000 square meters)

3.9 The contractor must include in his bid for this item the cost of all labour and materials for the underwater area coating repair for an area of 500 square meters. He must further quote the unit cost per square meter for surface preparation and coating application as detailed below. The total area of coating repair must be adjusted up or down by 1379 action based strictly on the pre-agreed area.

3.10 All **bare and rusted areas** must be abrasive blasted to SSPC-SP-10 Near White finish. Edges of existing coatings must be “feathered back” by blasting or suitable mechanical means to allow a sound surface to accept the new coating.

3.11 The Contractor’s Representative and Owner’s Representative will inspect the surface preparation before any coating is applied and come to a consensus on the total affected area.

3.12 Any areas marked up for further surface preparation are to be re-inspected by the contractor and Chief Engineer before any coating is applied.

3.13 One touch-up coat applied to all bare areas of the hull of Intershield Inerta 160 Black, 20 mils DFT.

3.14 One overcoat coat of Intershield 163 Inerta 160 Black, 10 mils DFT minimum applied to the entire underwater hull area.

3.15 The Contractor is to take DFT thickness readings between coats. The Chief Engineer or deligate is to witness the tests.

3.16 The Contractor and Chief Engineer will inspect the touch-up coat areas and mark areas for further surface preparation between coats. Any marked up areas are to be re-inspected by the

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Contractor and Chief Engineer before any additional coating is applied.

3.17 Sea bay grids must be protected during application of coating and orifice diameters must be verified as original before undocking by the Chief Engineer (i.e. not blocked or reduced).

3.18 The draft marks, load lines, thruster symbols, and all government symbols and icons must be painted white using Intersheen White 579. The Contractor must apply two coats at 2 mils DFT per coat. Stencils for the Federal Identity Program Markings will be owner supplied.

Above Water Area (approx 600 square meters)

3.19 The contractor must include in his bid for this item the cost of all labour and materials for the above the water line area coating repair for an area of 200 square meters. He must further quote the unit cost per square meter for surface preparation and coating application as detailed below. The total area of coating repair must be adjusted up or down by 1379 action based strictly on the pre-agreed area.

3.20 The contractor will remove the port and stbd gangways from the vessel before blasting begins. The gangways are to be reinstalled in good order following all work. This is to allow bulwark preparation and painting in way of gangway stowage area.

3.21 All bare and rusted areas must be abrasive blasted to SSPC-SP-10 Near White finish. Edges of existing coatings must be “feathered back” using blasting or suitable mechanical means to allow a sound surface to accept the new coating.

3.22 The Contractor and Chief Engineer will inspect the surface preparation before any coating is applied and mark up areas for further preparation.

3.23 Any marked up areas are to be re-inspected by the contractor and Chief Engineer before any coating is applied.

3.24 The entire hull area from the water line to the top of the bulwarks must be sand swept in preparation for application of coatings as follows:

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- a. Two coats of Krylon Primer K00110695-16 / Red Oxide Primer, to all bare areas having the top coat color Gloss Red or Gloss Black. Two coats of Krylon Primer: K00110825-16 / Gray Primer to all bare areas having a top coat color of Gloss White. Apply as per manufacturers application recommendations.
- b. Two complete coats of : Krylon 250 Rust Tough / K00110695-16 / Safety Red to all areas to be painted red. Krylon 250 Rust Tough / K00110113-16 / Gloss Black to all areas to be painted black and Krylon 250 Rust Tough / K00110404-16 / Gloss White to all areas to be painted white. Apply as per manufactures application recommendations.

3.25 The contractor and Owner’s representative will inspect the previous coat and mark areas for further surface preparation between coats. Any marked up areas are to be re-inspected by the contractor and Owner’s representative before any additional coating is applied.

3.26 The contractor is to take DFT thickness readings between coats. The Owner’s representative is to witness the tests.

3.27 All traces of grit used for blast cleaning must be removed by the Contractor. Contractor to be responsible and liable for ensuring that the hull is clear and clean prior to, during and immediately after the coating application.

3.28 All staging, cranes, screens, lighting and any other support services, equipment, paint and materials necessary to carry out these specifications must be Contractor supplied.

3.29 Suitable storage facilities must 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.

3.30 The mixing and spraying equipment must be kept heated and protected as necessary, while in use, to ensure that the coating is maintained at the recommended temperature.

3.31 All coatings must be applied in strict accordance with the manufacturer’s instructions and recommendations.

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Hull Cleaning, Survey and Coating		

3.32 The contractor will be responsible for removing all traces of grit and/or blasting residue from the vessel to the satisfaction of the Chief Engineer.

Part 4: PROOF OF PERFORMANCE

Inspection, Testing & Certification

4.1 N/A

Part 5: Deliverables

- 5.1 The contractor must prepare a report that indicates;
- a. The areas on the underwater hull that were repaired.
 - b. Which areas were blasted and indicate the blast media type and air pressure
 - c. Which areas were coated with what type of product and how much coating was used.
 - d. Thickness measurements of the applied coatings
 - e. Atmospheric conditions (temp, humidity, dew point)
 - f. Temperature of the vessel hull.

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Spec Item #: HD-03	SPECIFICATION	
Sea Chests, Seabays and Sea Strainers Cleaning, Inspection and Repair		

HD-03 Sea Chests, Seabays and Sea Strainers Cleaning, Inspection and Repair

Part 1: SCOPE

- 1.1 The Contractor must open-up, clean and coat the internals of the ship's Sea Chests, Sea Bay and main sea strainers. This includes the tool-accessible areas inside the contained and adjacent pipe stubs.
- 1.2 This work must be carried out in-conjunction with HD-02 Underwater Hull Cleaning and Coating

Part 2: References

2.2 Guidance Drawings/Nameplate data

- 2.2.1 72-405 Capacity Plan
- 2.2.2 72-71 Drain Plugs

2.3 Locations

Space	Item	Frame
Propulsion Generator Room	Port high and low suctions	96-106
Propulsion Generator Room	Stbd high and low suctions	96-106
Propulsion Generator Room	R.O. & Distiller Sea Chest	102-105 Starboard
Propulsion Motor Room	Aft Sea Chest	51-54 Port

2.4 Standards

- 2.4.1 The following Coast Guard Standards and or Technical Bulletins must be adhered to in the course of executing this specification. Copies of these standards and bulletins can be obtained from the CCG Technical Authority.
- 2.4.2 Canadian Coast Guard Fleet Safety Manual (DFO 5737)
- 2.4.3 Coast Guard ISM Confined Space Entry (7.B.3)
- 2.4.4 Coast Guard ISM Hotwork Procedures (7.B.4)

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- 2.4.5 Coast Guard ISM Fall Protection Procedures (7.B.2)
- 2.4.6 Canadian Coast Guard Welding Specifications for Ferrous Materials, Revision 4. (TP6151 E)
- 2.4.7 CWB CSA 47.1 Latest Revision
- 2.4.8 SSPC-SPT

2.5 Regulations

- 2.5.1 NA

Part 3: TECHNICAL DESCRIPTION

3.1 Sea Chests

- 3.1.1 Contractor must use hydro blasting at 5000 psi and mechanical means (power brushing) for the cleaning of the areas in this specification item. All debris must be removed to the Contractors' premises.
- 3.1.2 Contractor must remove all marine growth, loose paint and scale.
- 3.1.3 The area of the sea chests and sea bays is 400 square meters. (Estimate 25% of the area will be bare). The sea chests will be cleaned to SSPC SP 3.
- 3.1.4 Contractor must remove the manhole covers and grids from all sea chests and sea boxes for cleaning and inspection. The grid and inlet areas must be cleaned and grid holes must be mechanically reamed to the original diameter. Zinc anodes must be inspected for wastage and renewed as directed specifically by the vessel's TA. Contractor must include in their bid for supplying and fitting twenty (20) - M24 anodes and must provide unit cost to supply and install per additional anode for adjustment up or down by 1379 action.
- 3.1.5 The Contractor must inform the TA when the sea chests are open and cleaned. The Contractor must hydro blast and power brush clean the spaces to SSPC SP 3 to the satisfaction of the TA. Sea chests must be inspected by the TA and ABS Inspector.

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Sea Chests, Seabays and Sea Strainers Cleaning, Inspection and Repair		

- 3.1.6 Edges of existing coatings must be “feathered back” by blasting or suitable mechanical means to allow a sound surface to accept the new coating.
- 3.1.7 The Contractor and TA will inspect the surface preparation before any coating is applied and mark up areas for further preparation.
- 3.1.8 All new zinc anodes and existing anodes with more than 50 % zinc remaining must be protected from coating. Temperature sensors and adjacent valve discs and seats must be protected from coating.
- 3.1.9 Any marked up areas are to be re-inspected by the Contractor and TA before any coating is applied.
- 3.1.10 The bare areas in the spaces are to have two coats of anti-corrosive paint (Amercoat HMP 771 anti-corrosive (black) apply at 4-5 mils DFT per coat) applied as well as one full overcoat of anti-fouling paint (Amercoat ABC #4 anti-fouling (red) applied at 4 mils DFT per coat.) applied to the entire internal areas of the sea chests. Equivalent products may be used at the Contractor’s request and concurrence of the Technical Authority provided that the Material Data, Safety Data and Application Data for any equivalent product are provided to the Owner and complied with.
- 3.1.11 The Contractor and TA will inspect the previous coat and mark areas for further surface preparation between coats. Any marked up areas are to be re-inspected by the Contractor and TA before any additional coating is applied.
- 3.1.12 The Contractor is to take DFT thickness readings between coats. The TA is to witness the tests.
- 3.1.13 Upon completion of removal of the temporary protections applied as 3.8 and final inspection by the TA with the assistance of a manlift operator as required; the grids must be installed in good order and secured with locking arrangements on all fasteners. Locking bars must be used. Tack welds on the bolt heads are not to be used. The Contractor’s bid must include the cost of labour and materials for the replacement of 32 defective threaded fasteners (M16 x 50). All fasteners must be stainless steel.

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Sea Chests, Seabays and Sea Strainers Cleaning, Inspection and Repair		

3.2 Sea Bay

- 3.2.1 The docking plug must be removed to allow the sea bay to drain. The manhole cover (Fr. 96) must be removed. The sea bay internal spaces including pipe stub internals must be thoroughly cleaned to SSPC SP 3. The resulting debris including decaying sea life must be collected and removed from the vessel promptly and frequently.

- 3.2.2 After inspection by the TA and ABS Inspector, the bare areas must have two coats of anti-corrosive paint (Amercoat HMP 771 anti-corrosive (black) apply at 4-5 mils DFT per coat) applied as well as one coat of anti-fouling paint over the entire surface area (Amercoat ABC #4 anti-fouling (red) apply at 4 mils DFT per coat.). The new zinc anodes, existing zinc anodes less than 50% wasted, temperature sensors and valve seats and discs must be protected from coating. The Contractor must provide forced ventilation to the areas to aid in the curing of the coatings.

- 3.2.3 The contractor’s bid must include the cost of the labour and materials to replace (16) - M24 zinc anodes as and where directed by the TA. Contractor must quote unit cost to supply and install per anode to allow for adjustment up or down by 1379 action.

- 3.2.4 Upon completion of inspection, anode renewal, coating repair and renewal, any repair work, removal of temporary protection from coating of zincs, sensors etc, and final inspection by the TA; then the docking plugs and manhole covers must be re- installed in good order using new Contractor supplied jointing on manhole covers.

- 3.2.5 When all seabay work and sea connections work has been satisfactorily completed and all valves are re-installed in good order then the Sea bay must be hydrostatically tested (fill to overflow the vent – static head test) with the test being witnessed by the TA and ABS Inspector. Should it be necessary to drain the Sea bay for the purposes of hull coating touch-up, the docking plug must be removed and on completion of being drained, the docking plug must be installed with the locking bar welded over as per original.

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Spec Item #: HD-03	SPECIFICATION	
Sea Chests, Seabays and Sea Strainers Cleaning, Inspection and Repair		

3.3 Sea Bay Strainers Port and Stbd

- 3.3.1 Main sea strainers must be opened for inspection, cleaning to SSPC SP 3, and reaming of strainer plate holes to original diameter.
- 3.3.2 The Contractor and TA will inspect the surface preparation before any coating is applied and mark up areas for further preparation.
- 3.3.3 Any marked up areas are to be re-inspected by the Contractor and TA before any coating is applied.
- 3.3.4 The strainers are to have two coats of anti-corrosive paint (Amercoat HMP 771 anti- corrosive (black) apply at 4-5 mils DFT per coat) applied as well as one coat of anti-fouling paint (Amercoat ABC #4 anti-fouling (red) apply at 4 mils DFT per coat).
- 3.3.5 The Contractor and TA will inspect the previous coat and mark areas for further surface preparation between coats. Any marked up areas are to be re-inspected by the Contractor and TA before any additional coating is applied.
- 3.3.6 The Contractor is to take DFT thickness readings between coats and present them to the Technical Authority. The TA is to witness the tests.
- 3.3.7 The Contractor is to supply and affix (Bolted) one M24 tank anode to each strainer screen.
- 3.3.8 All manholes covers must be closed up using new 1/4" neoprene gaskets.

3.3 Location

- 3.2.2 See Locations under provided table Part 2 Reference 2.2

3.4 Interferences

- 3.3.2 The Contractor must be responsible for identification of interference items, their temporary removal, storage and refitting to the vessel in the scope of completing this specification.

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Sea Chests, Seabays and Sea Strainers Cleaning, Inspection and Repair		

Part 4: PROOF OF PERFORMANCE

Inspection, Testing & Certification

4.2 Contractor must arrange for all inspections and pressure test where required by ABS for survey credit.

4.3 At undocking the Contractor is to carry out leakage inspections and check for any ingress of water. Any leakage is to be corrected immediately, prior to undocking the vessel.

Part 5: Deliverables

Reports, Drawings, Manuals, Spares & Training

5.1 The Contractor is to provide the TA with the DFT thickness readings prior to closing up the spaces.

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Spec Item #: HD-04	SPECIFICATION	
Storm Valves		

HD-04 Storm Valves

Part 1: Scope

1.1 The intent of this item must be to open up the list of valves and their associated steam de-icing valves for cleaning, inspection and maintenance as per the quadrennial survey required by the Transport Canada Marine Safety Branch.

Part 2: References

Identification of valves.

Location	Description	Application
Propulsion motor room Frame 35 stbd	2" SDNR globe	OW separator
Propulsion motor room Frame 47 stbd.	3" SDNR globe	Sub fire pump
Generator room Frame 83 port.	2" right angle cock	Boiler blowdown
Generator room Frame 90 – 91port.	4" SDNR globe	Ballast pump
Generator room Frame 89 – 90 port.	4" SDNR globe	Ballast pump
Generator room Frame 101 –102 port.	12" butterfly	Central cooler
Generator room Frame 90 – 91 stbd.	4" SDNR globe	F/W distiller
Generator room Frame 92 – 93 stbd.	3" SDNR globe	Aux. Generator
Frame 29 in void tank # 6P	4" SDNR globe	Grey water drain
Frame 28 in void tank # 6P	3" SDNR globe	Sewage disch.
Frame 29 in void tank # 6S	3" SDNR globe	Grey water drain

Part 3: Technical Description

3.1 All valves and associated steam valves, where applicable, must be suitably tagged such that they may be reinstalled in their original respective locations.

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Spec Item #: HD-04	SPECIFICATION	
Storm Valves		

3.2 The contractor must disassemble the overboard valves listed as well as their respective steam clean out valves. Spindles must be removed from the valve bonnets, cleaned and laid out for inspection. The internals of the valve bodies, valves, and sealing surfaces must be cleaned thoroughly. The 12 inch butterfly valve must be removed, disassembled, cleaned and laid out for inspection.

3.3 Metal to metal seated valves must be lapped to provide a watertight seal.

3.4 To insure that a watertight seal is maintained between the valve and valve seat, the Contractor must remove all listed valves from the vessel for overhaul and pressure testing. All valves are to be pressure tested to 100psi and witnessed by Chief Engineer in contractors work shop prior to reinstallation onboard the vessel. *ABS Class surveyor to inspect all valves when opened.*

3.5 Upon the completion of all work and satisfactory testing, all valves must be assembled with new gland packing and jointing and installed in their respective positions in the correction orientation (all flow arrows pointing “overboard”) aboard the vessel.

3.6 The contractor must supply all materials required to carry out the specified work.

Part 4: Proof of Performance

4.1 After re-installation, each valve will be test operated in the presence of the Owner’s Representative, fully opened to fully closed. Valves will then be left in their normal operating position.

Part 5: Deliverables

5.1 At undocking the Contractor is to carry out leakage inspections and check for any ingress of water. Any leakage is to be corrected immediately prior to undocking the vessel.

	CCGS ANN HARVEY	
Spec Item #: HD-05	SPECIFICATION	
Sea Connections		

HD-05 Sea Connections

Part 1: Scope

1.1 The intent of this item must be to open up the listed valves for inspection, cleaning, and maintenance as per the quadrennial survey requirements for ABS.

Part 2: References

Sea Suction Valve locations

Location	Description	Application
Port sea chest Fr. 96 – 106	4" butterfly valve	Air vent high chest
Port sea chest Fr. 96 – 106	4" butterfly valve	Air vent low chest
Port sea chest Fr. 96 – 106	¾" SDNR globe	Air inj. high chest
Port sea chest Fr. 96 – 106	¾" SDNR globe	Air inj. low chest
Port sea chest Fr. 96 – 106	1/2" SDNR globe	Steam inj. high chest
Port sea chest Fr. 96 – 106	1/2" SDNR globe	Steam inj. low chest
Port sea chest Fr. 96 – 106	8" butterfly valve	Recirc. high chest
Port sea chest Fr. 96 – 106	8" butterfly valve	Recirc. low chest
Port sea chest Fr. 96 – 106	16" butterfly valve	Sea inlet high chest
Port sea chest Fr. 96 – 106	16" butterfly valve	Sea inlet low chest
Stbd. sea chest Fr. 96 – 106	4" butterfly valve	Air vent high chest
Stbd. sea chest Fr. 96 – 106	4" butterfly valve	Air vent low chest
Stbd. sea chest Fr. 96 – 106	¾" SDNR globe	Air inj. high chest
Stbd. sea chest Fr. 96 – 106	¾" SDNR globe	Air inj. low chest
Stbd. sea chest Fr. 96 – 106	1/2" SDNR globe	Steam inj. high chest
Stbd. sea chest Fr. 96 – 106	1/2" SDNR globe	Steam inj. low chest
Stbd. sea chest Fr. 96 – 106	8" butterfly valve	Recirc. high chest

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Spec Item #: HD-05	SPECIFICATION	
Sea Connections		

Location	Description	Application
Stbd. sea chest Fr. 96 – 106	8" butterfly valve	Recirc. low chest
Stbd. sea chest Fr. 96 – 106	16" butterfly valve	Sea inlet high chest
Stbd. sea chest Fr. 96 – 106	16" butterfly valve	Sea inlet low chest
F/W gen. sea chest Fr. 102-106	4" butterfly valve	Air vent
F/W gen. sea chest Fr. 102-106	3" SL angle globe	F/W gen. Suction
F/W gen. sea chest Fr. 102-106	1 ¼" SL angle globe	R/O unit suction
F/W gen. sea chest Fr. 102-106	¾" SDNR globe	Air injection
Aft sea chest port Fr. 51-54	3" SL angle globe	Sub. Fire pump
Aft sea chest port Fr. 51-54	2.5" SL angle globe	Stern tube pump
Aft sea chest port Fr. 51-54	¾" SDNR globe	Air injection
Aft sea chest port Fr. 51-54	½" SDNR globe	Steam injection
Aft Sea Chest port Fr. 51-54	5" SL Globe	Vent Valve port

Location	Description	Application
Sea Bay Fr. 96 – 102	16" butterfly valve	Sea inlet port
Sea Bay Fr. 96 – 102	16" butterfly valve	Sea inlet stbd.
Sea Bay Fr. 96 – 102	6" butterfly valve	Air vent port
Sea Bay Fr. 96 – 102	6" butterfly valve	Air vent stbd.
Sea Bay Fr. 96 – 102	5" SL angle globe	Fire pump suction
Sea Bay Fr. 96 – 102	3" SL angle globe	Aux. Gen. suction

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Sea Connections		

Sea Bay Fr. 96 – 102	8" SL angle globe	Foam pump
Sea Bay Fr. 96 – 102	8" butterfly valve	Main S/W P/P aft
Sea Bay Fr. 96 – 102	8" butterfly valve	Main S/W P/P fwd
Sea Bay Fr. 96 – 102	8" butterfly valve	Main S/W P/P stby
Sea Bay Fr. 96 – 102	4" SL angle globe	Ballast pumps
Sea Bay Fr. 96 – 102	4" SL angle globe	Distiller / RO unit

Part 3: Technical Description

3.1 All valves must be suitably tagged such that they may be reinstalled in their original respective locations.

3.2 The Contractor must include in this specification item an allowance of \$12,000 for repairs to defects in pipe stubs (particularly flange seams and faces) revealed in the course of sea connections inspection work. This allowance is to be adjusted up or down by 1379 action on proof of detailed invoices and time sheets. Chief Engineer must be advised promptly when a piping defect is discovered in the course of this work so that photographic records may be taken.

3.3 The Contractor must dismount and disassemble the globe valves as listed. Spindles must be removed, cleaned and laid out for inspection. The internals of the valve bodies, valves, and sealing surfaces must be cleaned thoroughly cleaned, and laid out for inspection.

3.4 The butterfly valves must be removed, disassembled, cleaned and laid out for inspection.

3.5 Metal to metal seated valves must be lapped to provide a watertight seal.

3.6 The Contractor must provide a test method to insure that a watertight seal is maintained between the valve and valve seat for the screw type valves.

3.7 This test method must be confirmed to be acceptable to the attending ABS Class Surveyor.

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Spec Item #: HD-05	SPECIFICATION	
Sea Connections		

3.8 To insure that a watertight seal is maintained between the valve and valve seat, the Contractor must remove all listed valves from the vessel for overhaul and pressure testing. All valves are to be pressure tested to 100psi and witnessed by Chief Engineer in contractors work shop prior to reinstallation onboard the vessel.

3.9 Following all inspections and tests, all valves must be assembled with all new gland packing and all new appropriate jointing, as applicable and installed in good order in their original respective locations and orientations.

3.10 The Contractor must be responsible to supply all materials and equipment required to carry out the specified work.

Part 4: Proof of Performance

4.1 After re-installation, each valve will be test operated in the presence of the Owner’s Representative, fully opened to fully closed. Valves will then be left in their normal operating position.

Part 5: Deliverables

5.1 At undocking the Contractor is to carry out leakage inspections and check for any ingress of water. Any leakage is to be corrected immediately prior to undocking the vessel at The Contractor’s expense.

	CCGS ANN HARVEY	
Spec Item #: HD-06	SPECIFICATION	
Rudder and Rudder Trunk Anodes		

HD-06 Rudder and Rudder Trunk Anodes

Part 1: Scope

1.1 The intent of this specification is to replace all wasted anodes that are fitted to the rudder and in the rudder trunk.

Part 2: Reference

N/A

Part 3: Technical Description

3.1 The contractor must replace all wasted anodes that are fitted to the rudder and in the rudder trunk. Quote on supplying and fitting quantity 20 of M24 anodes. A separate bonding cable must be attached to the rudder prior to any welding on the rudder.

3.2 The contractor must ensure that old anode straps are removed and ground down. The hull steel so exposed must be primed and painted.

3.3 The Contractor must include unit price for supply and installation of additional anodes for the purposes of adjustment by 1379 action.

Part 4: Proof of Performance

N/A

Part 5: Deliverables

N/A

	CCGS ANN HARVEY	
Spec Item #: HD-07	SPECIFICATION	
Port and Stbd Stern tube Bearing Weardown Measurement		

HD-07 Port and Stbd Stern tube Bearing Weardown Measurement

Part 1: Scope

1.1 The intent of this item is to record the port and stbd stern tube bearing clearance within eight hours of dry-docking the ship and prior to re-floating of the vessel.

Part 2: References

Service provider must be certified to work on specified equipment

Part 3: Technical Description

3.1 Stern tube bearing wear down readings must be taken on the Port and Starboard stern tubes within (48) forty-eight hours of the dry-docking the ship.

3.2 All readings clearances must be measured by feeler gauge at after end of after bearing upon removal of rope guards by the Contractor.

3.3 The Chief Engineer must witness the feeler gauge readings. Electronic and typed copies of feeler gauge readings must be provided to the Chief Engineer within 24 hrs of the readings being taken.

3.4 Both rope guards must be re-installed in good order following the final readings being taken.

Part 4: Proof of Performance

N/A

	CCGS ANN HARVEY	
Spec Item #: HD-07	SPECIFICATION	
Port and Stbd Stern tube Bearing Wear-down Measurement		

Part 5: Deliverables

5.1 Electronic and typewritten copies of all readings must be provided to Chief Engineer upon completion of all readings.

	CCGS ANN HARVEY	
Spec Item #: HD-08	SPECIFICATION	
Sea Trials		

HD-08 Sea Trials

Part 1: Scope

1.1 The intent of this specification shall be to carry out sea trials as a functional test of the ship's propulsion and other systems.

Part 2: References

N/A

Part 3: Technical Description

3.1 On completion of all specification items, sea trails will be carried out as a functional test of the ship's propulsion and other systems.

3.2 Sea trials will last a minimum of eight hours.

3.3 Trials will contain ahead and astern movements at various power levels.

3.4 Trials will be carried out to the satisfaction of the Inspection Authority and Technical Authority.

3.5 The Contractor is to have sufficient supervisory staff on board, during these trials to witness the operation of machinery which The Contractor has worked on during this refit.

Part 4: Proof of Performance

N/A

Part 5: Deliverables

N/A

	CCGS ANN HARVEY	
Spec Item #: E-01	SPECIFICATION	
Safety Valve Certification		

E-01 Safety Valve Certification

Part 1: Scope:

- 1.1 The intent of this specification is to have Safety Valves (pressure-relief) serviced and certified.
- 1.2 This work must be carried out in-conjunction with: NA

Part 2: References:

2.1 Guidance Drawings/Nameplate Data

- 2.1.1 N/A

2.2 Standards

- 2.2.1 The following Coast Guard Standards and or Technical Bulletins must 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 Guard Fleet Safety Manual (DFO 5737)

2.3 Regulations

- 2.3.3. CSA Hull Construction Regulations
- 2.3.1. CSA Marine Machinery Regulations

2.4 Owner Furnished Equipment

- 2.4.1. The contractor must supply all materials, equipment, and parts required to perform the specified work unless otherwise stated.

Part 3: Technical Description:

- 3.1 Contractor must dismount/remove the valves from their pressure vessels and label each as to origin. Ship's crew will isolate and relieve pressure from the pressure vessels prior

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Safety Valve Certification		

to valve removal. List of the valves are as follows:

List of the valves are as follows:

Valve Location

- | | |
|----------------------------------|--|
| 3.1.1 Emergency Gen. Receiver | 1: Consolidated Type 1990C1
¾" x 1" NPT set 150 PSI |
| 3.1.2 Whistle air receiver | 1: Kunkle Type 910E111
¾" 150 x 1&1/4" FNPT Set to 11 Bar,
Capacity 576 SCFM |
| 3.1.3 Control air receiver | 1: Kunkle Tyle 910F111 set to 7.7
Bar
¾" NPT Capacity 576 SCFM |
| 3.1.4 Dead ship air compressor | 1: Kingston Type 118CSS size ¼" NPT
Set to 100 PSI Capacity 133 SCFM |
| 3.1.5 Boiler Safety Relief Valve | 1: 1 ¼" NPT – Set 125 psi
Consolidated Type 1543G-21
Capacity 3262 Pounds per hour |
| 3.1.6 Main Air Receiver | |
| Upper | Model 4383-2864
33bar
Capacity 78.5 m3/h
S/N 44216A |
| Lower | Model 4383-2864
33bar
Capacity 78.5 m3/h
S/N 44123A |

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3.1.7 Air Start Compressors

LP Side Sperre ½" Qty 2
9 bar

HP Side Sperre ½" Qty 2
31.5 bar

3.1.8 Calorifiers

Cold

Watts ¾" L100XL-4m7
Set 150 PSI
210°F

Hot Center

Watts ¾" L100XL-3m7
Set 150 PSI
210°F

Hot Port

Watts ¾" L100XL-3m7
Set 150 PSI
210°F

3.1.9 Reducing Stations Aux Generator

Brass reducer

Kunkle Valve
Model 913BFEM03-KE0160
SET 160 PSI
CAP- 1034 SCFM
1"
S/N 1242555760

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Black reducer

Model 9106111

Pressure 7.7 bar

S/N 41416

Note: Only one air compressor and one Main Air receiver to be taken out of service at a time.

3.2 The Contractor must transport the valves complete with their labels to a qualified local Test Facility. The Contractor must have an allowance of \$5000 for the cost of the subcontractor to test and set the valves. The actual amount to be adjusted up or down via 1379 action upon proof of invoice. The lift pressure of the valves to be set as per ABS requirements.

3.3 Test facility must service the valves, as required. Any servicing/replacements to be dealt with by 1379 action.

3.4 The serviced and certified valves are to be returned to the ship within 4 business days after removal from the ship. The serviced and certified valves complete with their labels must be re-fitted in place using new gaskets and proven leak free.

3.3 Interferences

3.3.1 Contractor is responsible for the identification of interference items, their temporary removal, storage and refitting to vessel.

Part 4: Proof of Performance:

4.1 Inspection, Testing & Certification

Contractor must supply three copies of each test certificate to the Owner's Representative within two days of the certified valves being re-installed on the vessel. The valve test certificates must clearly identify the valve, Ship's name, valve function, the test pressure and the test date.

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Safety Valve Certification		

Part 5: Deliverables:

5.1 Drawings/Reports

5.1.1 A service report is to be provided for any repairs and/or adjustment require

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Spec Item #: E-02	SPECIFICATION	
Steering Gear and Pump Inspection		

E-02 Steering Gear and Pump Inspection

Part 1: Scope:

- 1.1 The intent of this specification must be to inspect and clean all components of the Steering Gear System as specified.

Part 2: References:

2.1 Guidance Drawings/Nameplate Data

- 2.1.1 Jastram Manual Located Onboard Vessel
Vickers Manual, Located Onboard Vessel

2.1.2 Steering Pumps

HPU Pumps (Qty 2): Bosch Rexroth, Model R902502730/000
Emer Steering Pump (Qty 1): Vickers, Model V10-151-11C20

2.2 Standards

- 2.2.1 Canadian Coast Guard Fleet Safety Manual (DFO 5737)
- 2.2.2 Port and Starboard Steering Cylinders Model # L200-1047 Ref. Dwg Wagner #C-3-602 Rev.05
- 2.2.3 Port and Starboard Control Valve Blocks alike: No 63 Steering Manifold as Wagner Drawing D-3-455 Rev 01
- 2.2.4 Appendix A, Steering Gear

2.3 Regulations

- 2.3.4. CSA Hull Construction Regulations
- 2.3.2. CSA Marine Machinery Regulations

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Spec Item #: E-02	SPECIFICATION	
Steering Gear and Pump Inspection		

2.4 Owner Furnished Equipment

2.4.1. The Contractor must supply all materials, equipment, and parts required to perform the specified work unless otherwise stated.

Part 3: Technical Description:

3.1 General

3.1 The Contractor must lock out the power supply for the steering pumps before starting the work outlined below. Ships Electrical Officer must advise Contractor as to proper breakers for isolation.

3.2 The four pumps are to have all piping disconnected. The open ends of all hydraulic piping must be capped to prevent the ingress of dirt.

3.3 The Contractor must arrange for an Authorized Jastram Representative for hydraulic work.

<p>Atlantic Region</p> <p><u>Jastram Technologies Ltd.</u> Charles Brown E: cbrown@jastram.com T: +1 902 468 6450 F: +1 902 468 6901</p>	<p>Newfoundland</p> <p><u>East Coast Hydraulics</u> Tim O'Connor E: toconnor@eastcoasthydraulics.ca T: +1-709-747-2121 F: +1 709 747 2262</p>	<p>Pacific Region</p> <p><u>Jastram Technologies Ltd.</u> Shawn Burchett E: sburchett@jastram.com T: +1 604 988 1111 F: +1 604 986 0334</p>
<p>Quebec</p> <p><u>Pro Hydraulique</u> Bertrand Lachance E: blachance@prohydraulique.com T: +1 418 659 3924 F: +1 418 659 6966</p>	<p>Central Region</p> <p><u>Jastram Technologies Ltd.</u> Dan Taylor E: dtaylor@jastram.com T: +1 905 641 2587 F: +1 905 641 5267</p>	<p>Pacific Region</p> <p><u>P.S.I. Fluid Power Ltd.</u> Brad Judd E: BJudd@psifp.com T: +1 604 278 4481 F: +1 604 278 7693</p>

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Spec Item #: E-02	SPECIFICATION	
Steering Gear and Pump Inspection		

- 3.4 The three (3) pumps must be removed ashore to the Contractor’s facilities for disassembly, cleaning, and inspection. All components must be inspected for wear and defects. The Chief Engineer and an ABS Inspector must be present for the inspection of the internal components. Each pump must be tagged to ensure refitting to the original location.
- 3.5 Upon completion of all work and inspections, the three pumps must be assembled in good order and returned to the vessel. The pumps must be installed in their respective locations in good alignment. Alignment must be checked and recorded and measurements of this must be presented to the Chief Engineer.
- 3.6 The steering gear rams and control valve assemblies JA-401116-6 PSM 710 must be opened up for ABS Inspection. Work includes cleaning, inspection, measurement, re-assembly to manufacturer’s spec., re-installation and subsequent operational demonstration and run-in
- 3.7 The Contractor must tag, disconnect, drain and cap hydraulic hoses to steering cylinders and control valve blocks. Hoses must all be inspected and any defects in same drawn to the attention of the Chief Engineer. All hydraulic oil drained to be collected into containers cleaned up by the contractor and disposed of ashore. Ram cylinder weight must be supported and tiller pins to be unsecured and removed aside. Supported cylinders must be swung aside to provide clearance for withdrawal of steering piston and rod assembly. Each cylinder to be opened in place for inspection. Measurements to be taken and recorded for cylinder wear top/bottom port/stbd at fully extended, fully retracted and mid-travel positions for both P & S cylinders. On completion of inspection by Chief Engineer and the ABS Inspector, the Contractor is to reassemble both cylinders using new owner supplied U-Cups and V-packing. Steering cylinders spherical bearings at tiller end must be cleaned and inspected for wear.
- 3.8 Contractor must refill with Owner supplied oil and bleed the system.
- 3.9 Upon completion of all work the steering gear is to be test run for 1 hour -to prove operation; to check for leaks, to vent air pockets, to run in new packing, to confirm that stops are set correctly (42 degrees port and stbd) and to the satisfaction of ABS Inspector and Chief Engineer. The Contractor is to adjust tension as required on packing gland rings after initial run-in to the satisfaction of the Chief Engineer.

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Spec Item #: E-02	SPECIFICATION	
Steering Gear and Pump Inspection		

3.10 Upon completion of the test run, the filters must be opened, cleaned, inspected by Contractor and Owner for debris and re-installed in good order and proven leak-free.

3.11 All new parts required for overhaul will be owner supplied as required.

3.2.1 Location

3.2.1. Steering Flat

3.3.1 Interferences

3.3.1. Contractor is responsible for the identification of interference items, their temporary removal, storage and refitting to vessel.

Part 4: Proof of Performance:

4.1 Inspection

All work must be completed to the satisfaction of the TA.

4.2 Testing

N/A

4.3 Certification

NA

Part 5: Deliverables:

5.1 Drawings/Reports

NA

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Spec Item #: E-03	SPECIFICATION	
Steam Piping Replacement and Repairs		

E-03 Steam Piping Replacement / Repairs

Part 1: Scope:

- 1.1 The intent of this specification must be to complete steam and condensate piping replacement throughout the vessel.
- 1.2 This work must be carried out in-conjunction with: NA

Part 2: References:

2.1 Guidance Drawings/Nameplate Data

- 2.1.1 Steam and Exhaust Diagram 72-759
- 2.1.2 Condensate and Feed Diagram 72-760

2.2 Standards

- 2.2.1. Canadian Coast Guard Fleet Safety Manual
- 2.2.2. Coast Guard ISM Hotwork Procedures
- 2.2.3. Coast Guard ISM Lock out Tag out Procedures
- 2.2.4. Coast Guard ISM Fall Protection procedures
- 2.2.5. CWB CSA 47.1 latest revision Division I, II or III
- 2.2.6. TC TP 127e
- 2.2.7. IEC 60332-3, 60364-5-52, 60754-0,1,2
- 2.2.8. IEEE 60332-3

2.3 Regulations

- 2.3.1. CSA Hull Construction Regulations
- 2.3.2. CSA Marine Machinery Regulations

2.4 Owner Furnished Equipment

- 2.4.1. The contractor must supply all materials, equipment, and parts required to perform the specified work unless otherwise stated.

	CCGS ANN HARVEY	
Spec Item #: E-03	SPECIFICATION	
Steam Piping Replacement and Repairs		

Part 3: Technical Description:

3.1 General

- 3.1.1 The Contractor must remove insulation and sheeting underneath and reinstall in good order upon completion of work.
- 3.1.2 The Contractor must request hot work permits from the Chief Engineer or his delegate and post such permits in a noticeable location. During all hot work, the contractor is to maintain a fire watch as per CCG Fleet Safety Manual.
- 3.1.3 Contractor must fit extraction fans to ventilate outside during all hotwork.
- 3.1.4 The Contractor must ensure that only CWB certified welders are used to complete the welding using CWB procedures.

Boat Deck Port Side Shore Connection

- 3.1.5 The contractor must remove insulation lagging in the stack iwo the flanges on the 2 inch pipe. Replace with new any damaged insulation upon completion of work.



SAR Locker steam pipe

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Spec Item #: E-03	SPECIFICATION	
Steam Piping Replacement and Repairs		

3.1.6 The 2" pipe will require new bulkhead penetration both inboard iwo the Stack and outboard at the port shore connection. Both ends exterior to the SAR locker will require flange replacement.

3.1.7 The Contractor must new insulation upon completion of work.

3.1.8 The Contractor must allow for 8 ft of Sch 40 black iron pipe as per Material Spec dwg 72-759

HVAC Room Piping Replacement

3.1.9 The Contractor must remove the sections of 1.5" sch 80 pipe running fwd and aft in the Hvac room (arrow on the left) and ¾" sch 40 piping running aft and downward (arrow on the right) as per pic below.



HVAC aft bulkhead

3.1.10 The contractor must remove the insulation lagging / blankets iwo the flanges on the pipes to allow access to the flanges. Replace with new any damaged insulation upon completion of work.

3.1.11 The contractor must allow for 5 flanges to be disconnected and replace with new as per the schedule mentioned 3.1.8. The lengths of piping should be put back in sections and connection flanges should be made with 4 bolt flanges as per original. New steam

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Spec Item #: E-03	SPECIFICATION	
Steam Piping Replacement and Repairs		

spiral wound (asbestos free) gaskets must be fitted. The contractor must allow for replacement of 15 feet of each pipe. Additional pipe or flanges will be actioned 1379.

Upper cargo Hold Steam lines

3.1.12 The contractor must replace the steam and condensate pipe within the crawl space as shown with new piping.



Upper Cargo Hold

3.1.13 Steam piping approximately 20 ft of 2" sch 40 pipe c/w 150 ASA flange connections must be disconnected and new fitted.

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Steam Piping Replacement and Repairs		

- 3.1.14 Condensate return piping approximately 20 ft of 1-1/2" sch 80 pipe w/ 150 ASA flange connections must be disconnected and new fitted.
- 3.1.15 The Contractor must remove the insulation lagging / blankets iwo the flanges on the pipes to allow access to the flanges. Replace with new any damaged insulation upon completion of work.
- 3.1.16 New steam spiral wound (asbestos free) gaskets must be fitted. The contractor must allow for replacement of 15 feet of each pipe. Additional pipe or flanges will be actioned 1379.
- 3.1.17 Piping that require replacement must be seamless STL ASTM A53 Grade A Black. Flanges should be made with 4 bolt flanges as per original.
- 3.1.18 Contractor must fit extraction fans to ventilate outside during all hotwork.

3.6 Location

- 3.6.1 Boat Deck Locker aft
- 3.6.2 HVAC Room Stbd side
- 3.6.3 Upper cargo Hold Fwd

3.7 Interferences

- 3.7.1 Contractor is responsible for the identification of interference items, their temporary removal, storage and refitting to vessel.

Part 4: Proof of Performance:

4.1 Inspection

- 4.1.1 All work must be completed to the satisfaction of the TA.

4.2 Testing

- 4.2.1 All piping must be pressure tested to 150 psi prior to installation.

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Steam Piping Replacement and Repairs		

4.2.2 The Contractor must request hot work permits from the Chief Engineer or his delegate and post such permits in a noticeable location. During all hot work, the contractor is to maintain a fire watch as per CCG Fleet Safety Manual.

4.2.3 The Contractor must issue and post hot work permits and must maintain a fire watch.

4.3 Certification

4.3.1 The Contractor must obtain and provide to the Technical Authority all required technical Certifications as specified in the applicable rules and codes in accordance with Standards.

Part 5: Deliverables:

5.1 Drawings/Reports

5.1.1 Contactor must provide copies of all NDT and hot work permits to the Chief Engineer upon completion of work.

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Spec Item #: E-04	SPECIFICATION	
Miscellaneous Piping Replacement / Repairs		

E-04 Miscellaneous Piping Replacement / Repairs

Part 1: Scope:

- 1.1 The intent of this specification must be to complete various piping jobs throughout the vessel.
- 1.2 This work must be carried out in-conjunction with:

HD-04 Storm Valves

Part 2: References:

2.1 Guidance Drawings/Nameplate Data

- 2.1.1 Central Cooling Diagram 72-755
- 2.1.2 UMF Flow Meter-MX Series Manual

2.2 Standards

- 2.2.1. Canadian Coast Guard Fleet Safety Manual
- 2.2.2. Coast Guard ISM Confined Space Entry
- 2.2.3. Coast Guard ISM Hotwork Procedures
- 2.2.4. Coast Guard ISM Lock out Tag out Procedures
- 2.2.5. Coast Guard ISM Fall Protection procedures
- 2.2.6. CWB CSA 47.1 latest revision Division I, II or III
- 2.2.7. TC TP 127e
- 2.2.8. IEC 60332-3, 60364-5-52, 60754-0,1,2
- 2.2.9. IEEE 60332-3

2.3 Regulations

- 2.3.1. CSA Hull Construction Regulations
- 2.3.2. CSA Marine Machinery Regulations

	CCGS ANN HARVEY	
Spec Item #: E-04	SPECIFICATION	
Miscellaneous Piping Replacement / Repairs		

2.4 Owner Furnished Equipment

2.4.1. The Contractor must supply all materials, equipment, and parts required to perform the specified work unless otherwise stated.

Part 3: Technical Description:

3.1 General

The Contractor must use only new ABS or TC approved Victaulic couplings c/w certificate. When existing Victaulic couplings are disturbed, the coupling must be replaced with a certified Victaulic coupling. Any new Victaulic couplings that are required for installation of piping, must be certified Victaulic couplings. Type Approval Certificate to be provided to ABS Class Surveyor and the Chief Engineer prior to installation.

Stern Tube cooling water pipe renewal / flow meter installation

3.1.1 Contractor must remove sections of 1 ½" cooling water line from the discharge side of sea water strainer to the port and stbd stern tube inlet valves. (port side shown below)

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Miscellaneous Piping Replacement / Repairs		



Existing CW line to port stern tube

- 3.1.2 Both Stern Tube CW Pumps must be locked out by the ship's E/O and isolated.
- 3.1.3 Contractor must allow for replacement of 60 feet 1 ½" stainless piping. Contractor must allow for 3 of Tee fittings, 6 of 90 degree fittings, 5 unions and 4 flanges.
- 3.1.4 Contractor must install 2 owner supplied flow meters as per sample pic below. The location must be determined by the Chief Engineer.

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Miscellaneous Piping Replacement / Repairs		



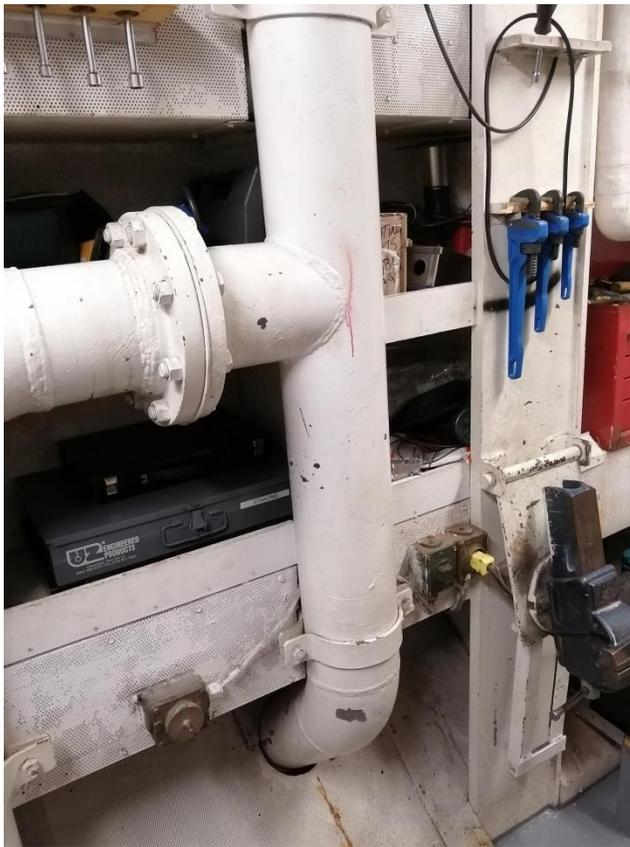
Example of new flow meters to be installed

- 3.1.5 Contractor must use existing pipe brackets where possible. Unit cost per bracket to be quoted and adjusted by 1379.
- 3.1.6 Contractor must replace 4 ft section of 2" sch 80 black iron pipe w/ 2 flanges and 2 of 90 elbows as per existing.
- 3.1.7 Contractor must install pipe c/w new gaskets and fasteners at the flange connections. All fasteners must be fitted with lock washers and anti-seize compound.

Stbd Sea Bay Chest Vent Line Replacement

- 3.1.8 Contractor must remove the section of 6" schedule 80 black iron pipe vent into the Electrical Officer's Workshop for replacement with new.

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Miscellaneous Piping Replacement / Repairs		



Stbd sea chest Vent

- 3.1.9 The contractor must allow for replacement of 15 ft of 6" sch 80 pipe.
- 3.1.10 Contractor must allow for 3 of 45 degree sections, 2 of 90 elbow sections and 3 (8 bolt) flanges.
- 3.1.11 Contractor must remove close mesh sheeting and insulation iwo pipe and reinstall upon completion of all work.
- 3.1.12 Contractor must pressure test pipe welds to 100 psi prior to installation and check flanges for leaks upon installation with head of water to the sea bay isolation valve. All tests to be witnessed by Chief Engineer of delegate.

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Spec Item #: E-04	SPECIFICATION	
Miscellaneous Piping Replacement / Repairs		

3.1.13 The contractor must supply all coatings which are to be in accordance with the ships painting scheme. Piping must get 2 coats of marine primer followed by white top coat. Coatings must be Amercoat 5105 Alkyd Primer (Red Oxide) and Amercoat 5450 Alkyd Marine Enamel for the topcoat at 2-3 mils DFT per coat.

Crew Laundry Drains Cleaning / Replacement

3.1.14 Contractor must replace the 9 ft section of 2 ½" pipe between grooved Victaulic couplings with sch 80 pipe. The contractor must replace the rubber Victaulic coupling seals with new.

3.1.15 Contractor must mechanically clean the piping from the laundry drains down to the port side of the pipe mentioned in 3.1.14. The contractor must ensure that protection iwo transformers and switchboard is in place and any debris from mechanical cleaning is collected and discarded according to Provincial Regs.

3.1.16 Contractor must mechanically clean the drains piping from the port side end of the pipe down to the ship side storm valve in Port #6 Void fr 29. This cleaning should be performed while the storm valve is removed for inspection. See Lead Paint Report prior to starting this work.

Officer's Deck Soft patch

3.1.17 Upon completion of the H-19 Incinerator Flue Gas Fan Decking installation, the contractor must proceed with work on the soft patch drains piping replacement located above the fwd section of the deck at the Boat Deck Level.

3.1.18 The contractor must ensure proper barricade of deck edge which is open for access to the engine room.

3.1.19 The contractor must remove the piping iwo three (3) victaullic couplings and replace with 2" grooved piping as per the original.

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Miscellaneous Piping Replacement / Repairs		

3.1.20 The Contractor must allow for 15 ft sch 80 black iron pipe. With one tee fitting. Coatings must be Amercoat 5105 Alkyd Primer (Red Oxide) and Amercoat 5450 Alkyd Marine Enamel for the topcoat at 2-3 mils DFT per coat.

3.1.21 The Contractor must ensure the 2 drains are free and clear along with the section turning stbd and downwards prior to installation of the new section as shown in the pic. Additional replacement of piping must be 1379 action.

3.1.22 The Contractor must fit new ABS approved 2" Victaulic coupling (3 of) iwo the new grooved piping.

3.1.23 Contractor must prove the soft patch drains clear.



Soft patch Drain above

Wire Leeds Drain line Replacement

3.1.24 Contractor must remove the section of drain line as per the pic below and replace with new schedule 80 black iron pipe

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Spec Item #: E-04	SPECIFICATION	
Miscellaneous Piping Replacement / Repairs		



- 3.1.25 Contractor must allow for replacement of 10 ft of 2" sch 80 pipe c/w certified Victaulic couplings at the ends of the CUT OUT SECTION. The pipe must be grooved as per regulatory requirements.
- 3.1.26 Additional replacement of piping must be by 1379 action.
- 3.1.27 Contractor must remove insulation and sheeting to gain access to cut the wasted section of pipe. Reinstallation of the insulation and sheeting to be carried out upon completion of the work.
- 3.1.28 Contractor must ensure the drain at the wire leads compartment port side is free and clear along with the section turning stbd and downwards prior to installation of the new section.
- 3.2 Location**
- 3.2.2. Machinery Space Engine room Flat iwo Electricians Workshop
- 3.2.3. Transformer Room aft port side
- 3.2.4. Propulsion Motor Room Port side
- 3.2.5. Engine room Stack iwo Boat Deck level

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Spec Item #: E-04	SPECIFICATION	
Miscellaneous Piping Replacement / Repairs		

3.2.6. Winch Room above hydraulic Power pack port side

3.3 Interferences

3.3.2. Contractor is responsible for the identification of interference items, their temporary removal, storage and refitting to vessel.

Part 4: Proof of Performance:

4.1 Inspection

4.1.2. All work must be completed to the satisfaction of the TA.

4.2 Testing

Contractor must pressure test all new pump fabrication

Part 5: Deliverables:

5.1 N/A

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Spec Item #: E-05	SPECIFICATION	
E-100 Starboard Boiler Survey		

E-05 E-100 Stbd. Boiler Survey

Part 1: Scope

- 1.1 The intent of this item shall be to open up the E-100 boiler for cleaning, inspection and testing and to obtain survey credit from the ABS Surveyor and to tune the E-150 Port boiler.
- 1.2 This work shall be carried out in-conjunction with: NA

Part 2: References

2.1 Stbd. Boiler – Located Engine Room Flat

Clayton Steam Generator
Model EO-100
Working Pressure – 100 PSI
Test Pressure - 125 PSI
Safety Valve – 1 1/4", 125 PSI

2.2 Field Service Representative

Clayton Sales and Service, Ltd.

22B Strathearn Ave. Unit 1B
Brampton, Ontario
Canada L6T 4S9
Phone: (905) 791-3322
Fax: (905) 790-0583
canada@claytonindustries.com

2.3 Standards

- 2.3.1 The following Coast Guard Standards and or Technical Bulletins must be adhered to in the course of executing this specification. Copies of these standards and bulletins can be obtained from the CCG Technical Authority.
- 2.3.2 Canadian Coast Guard Fleet Safety Manual (DFO 5737)
- 2.3.3 Coast Guard ISM Confined Space Entry (7.B.3)
- 2.3.4 Coast Guard ISM Hotwork Procedures (7.B.4)
- 2.3.5 Coast Guard ISM Fall Protection Procedures (7.B.2)

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Spec Item #: E-05	SPECIFICATION	
E-100 Starboard Boiler Survey		

- 2.3.6 Canadian Coast Guard Welding Specifications for Ferrous Materials, Revision 4. (TP6151 E)
- 2.3.7 CWB CSA 47.1 Latest Revision
- 2.3.8 SSPC-SPT

2.4 Regulations

- 2.3.2 NA

2.5 Owner Furnished Equipment

- 2.5.1 The Contractor shall supply all materials, equipment and parts to perform the specified work unless otherwise stated.

Part 3: Technical Description

- 3.1 The Contractor must, with vessels designate lock out the boiler as required. The Contractor must use their own locks/tags and the lock-outs shall be entered in the Ship’s Lock-out/Tag-Out Register.
- 3.2 The Contractor must have an allowance of \$12,000 for the services of Clayton FSR to supervise / oversee the inspection, re-assembly and start-up of the Stbd. boiler and tuning of the Port E-150 Boiler. The actual amount shall be adjusted up or down via 1379 action upon proof of invoice.
- 3.3 Contractor to bid on 80 hours for assistance to FSR to be adjusted up or down with actual cost.
- 3.4 The Contractor must remove or disconnect all wiring, piping, sensors, brackets, pressure gauges, and other associated hardware and appliances to carry out the specified work. All items shall be reassembled and reconnected in good order upon completion of all testing, cleaning, and inspections.
- 3.5 Mountings on both boilers shall be tagged prior to removal for identification purposes and installed back in their respective original locations upon completion of all work.
- 3.6 The contractor must supply the replacement fittings 2” nom and under for direct

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Spec Item #: E-05	SPECIFICATION	
E-100 Starboard Boiler Survey		

replacement. Contractor must have an allowance of \$1500 to be adjusted up or down via 1379 action.

<u>Item</u>	<u>Location and Size</u>
Safety Relief Valve	1 ¼ inch starboard
Separator Drain Valve	¾ inch angle globe
Burner Control Valve	¼ inch
Feed Water Pump Inlet Valve	2 inch gate
Feed Water Check Valve	2 inch angle check
Feed Water Pump Relief Valve	2 inch angle
Coil Feed Valve	2 inch globe
Coil Drain Valve	2 inch globe
Steam Trap Discharge Valve	1 inch globe
Soot Blowing Valve	1 ¼ Inch port, 1 inch starboard

3.6 The contractor must remove the following valves for overhaul by a qualified valve service shop.

Main Stop Valve	3" inch port
-----------------	--------------

The valve must be disassembled and thoroughly clean all parts for inspection. The metal seat shall be lapped and if the valve is not repairable or considered not cost effective to repair, must be replaced with new valves, owner supply. Valve gland must be repacked with new packing and all disturbed gaskets shall be replaced with new gaskets supplied by Contractor. All material must be suitable for use with steam and rated for a minimum of 150 psi operating pressure.

3.7 The Contractor must thoroughly clean by wire brushing and fresh water flushing the external surfaces of the boiler coil. Contractor must ensure catchall under boilers is plugged to contain all contamination from cleaning. The Contractor must quote on the removal of 500 gallons of water and residue from the external cleaning of the boiler coil. NO INTERNAL BLAST CLEANING.

3.8 Following the cleaning procedures, the boiler coil and the associated steam separator must be hydrostatically tested at 1.5 times the working pressure. The Contractor must provide all

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Spec Item #: E-05	SPECIFICATION	
E-100 Starboard Boiler Survey		

the equipment including blank flanges, valves, gaskets, fittings, pressure gauges, pumps, etc. necessary to perform the hydrostatic test. The Contractor must provide proof of gauge and pressure relief valve calibration to the C/E before the test.

3.9 Testing must be witnessed by the ABS Surveyor and must be to a pressure and duration to the Inspector's satisfaction. Contractor must arrange for ABS and must notify Chief Engineer prior to ABS attendance.

3.10 The combustion chamber must be thoroughly cleaned. The refractory cement must be inspected for cracks. Contractor must quote \$ 5,000 for repairs to the refractory cement. Final cost shall be adjusted up or down by 1379 action upon proof of invoice. Owners shall supply plastic refractory cement.

3.11 The FSR must be responsible to survey the burners and air supply for confirmation of Manufacturer setup. Any defective parts to be replaced with CG spares.

3.12 The Contractor must remove the safety valve and have it sent ashore to a recognized test facility to have it set and tested. An original test certificate is to be provided to the Chief Engineer and ABS Surveyor upon completion of this test.

3.13 Following the completion of the specified work, the boiler must be suitably drained. All blanks, plugs, gaskets, etc. necessary for testing must be removed. All piping, fittings, valves, brackets, burner etc. and all items disturbed to perform the cleaning and inspections must be reconnected in good order. All new gaskets must be supplied and installed by the contractor in place of gaskets and seals that were disturbed to perform this work. All alarms and controls must be reconnected and proven operational under direction of FSR.

Part 4: PROOF OF PERFORMANCE

4.1 Inspection, Testing & Certification

4.1.1. All alarms and controls must be reconnected and proven operational by the contractor. Upon completion of reassembly, boiler will be tested to verify correct operation, its ability to

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E-100 Starboard Boiler Survey		

achieve working pressure and operation of the safety valves at the correct lift pressure. This must be witnessed by the Technical Authority and attending ABS Surveyor, if required.

- 4.1.2.** Contractor must provide CE valve service reports / certification and documentation on all new valves supplied.

Part 5: Deliverables

- 5.1 Contractor must provide service reports of the work carried out in both electronic and paper format to the Technical Authority.

	CCGS ANN HARVEY	
Spec Item #: E-06	SPECIFICATION	
Annual ABB Cycloconverter Inspection and Maintenance		

E-06 Annual ABB Cycloconverter Inspection and Maintenance

Part 1: SCOPE

1.1 The intent of this spec is to inspect, service and conduct a final running test, after any maintenance, of the cycloconverters fitted on CCGS Ann Harvey. The vessel must be in the water to conduct the final running test.

Part 2: Reference

Guidance Drawings/Nameplate data

2.2 The following Coast Guard Standards and or Technical Bulletins must be adhered to in the course of executing this specification. Copies of these standards and bulletins can be obtained from the CCG Technical Authority.

- a. Canadian Coast Guard Fleet Safety Manual (DFO 5737)

ABB FSR Contact Info:

Oleg Victor Yefremov

ABB Marine Canada, Director

Programme des Projets Federaux

Government Maritime Programs

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800 Hymus Blvd.

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H4S 0B5 Canada

Mobile: 514-238-5556

oleg.yefremov@ca.abb.com

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Spec Item #: E-06	SPECIFICATION	
Annual ABB Cycloconverter Inspection and Maintenance		

Part 3: TECHNICAL DESCRIPTION

3.1 Contractor to bid with an allowance of \$15,000, to be adjusted up or down by 1379 action, for the services of the ABB Field Service Representative to complete the annual inspection and servicing of the Cycloconverters fitted on CCGS Ann Harvey.

3.2 All parts for repairs shall be Contractor supplied.

3.3 Contractor to bid on 20 hours for shipyard personnel assistance to FSR to be adjusted up or down with actual cost.

3.4 The FSR must perform the following Preventive Maintenance Scope:

- Environmental condition – Visual inspection of Cyclo cabinet
- Control Unit – AC/DC voltage measurement, Check the relay setting, HSCB
- Phase Unit – RC circuit/Gate drive unit check and measurement
- Excitation Unit - RC circuit/Gate drive unit check and measurement
- Water cooling unit – Replacement of Ion exchanger, Filter Cartridge and refill the water(if needed)
- Voltage and Current measurement
- Fiber optic cable measurement (by Optical Power meter/Light Source)
- Visual inspection of Control wire connection, power cable connection
- Attending a final running test while Control location change-over at quay side.
- Review/check the stock of current spare parts
- Provide a permissive, dry n.o. contact, for stern tube pump #2 at MCC#3.
- Stbd cyclo cooling water leak alarm. This channel is always in alarm. The flow switch was checked and it is wired up to the correct contact, a normally closed.
- Stbd cyclo-Control blocked/AC fault lockout. This alarm is present at all times. When the propulsion system is put online, the alarm should go to normal and disappear from the Techsol alarm page, but it is not.

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Spec Item #: E-06	SPECIFICATION	
Annual ABB Cycloconverter Inspection and Maintenance		

- Customer training(if requested, especially for Encoder replacement, Direct drive control and etc.)

Part 4: PROOF OF PERFORMANCE

Inspection, Testing & Certification

The FSR must attend the vessel and conduct a final running test of the cycloconverters.

Part 5: Deliverables

Reports, Drawings, Manuals, Spares & Training

The FSR must provide a report to the Chief Engineer detailing any and all deficiencies found, corrections made, any settings changed (initial and final) and any repairs made.

	CCGS ANN HARVEY	
Spec Item #: E-07	SPECIFICATION	
Wartsila Bow Thruster Inspection and Maintenance		

E-07 Wartsila Bow Thruster Inspection and Maintenance

Part 1: SCOPE

- 1.2 The intent of this spec is to have the Wartsila FSR inspect, service and conduct the annual recommended maintenance to the Wartsila bow thruster fitted on CCGS Ann Harvey.

Part 2: Reference

Guidance Drawings/Nameplate data

- 2.3 The following Coast Guard Standards and or Technical Bulletins must be adhered to in the course of executing this specification. Copies of these standards and bulletins can be obtained from the CCG Technical Authority.
- a. Canadian Coast Guard Fleet Safety Manual (DFO 5737)

Part 2: REFERENCES

Wartsila FSR Contact Info:

Barry Broderick

National Account Manager – Canadian Coast Guard

Wärtsilä Canada Inc / 27 Sagona Ave / Mount Pearl, NL, Canada

Tel +1 709 747 4600

Mob +1 709 699 8126

barry.broderick@wartsila.com

Part 3: TECHNICAL DESCRIPTION

- 3.1 Contractor to bid with an allowance of \$7,500, to be adjusted up or down by 1379 action, for the services of the Wartsila Field Service Representative to complete the annual inspection and servicing of the Wartsila Bow Thruster fitted on CCGS Ann Harvey.
- 3.2 Contractor to bid on 32 hours for shipyard personnel assistance to FSR to be adjusted up or

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Spec Item #: E-07	SPECIFICATION	
Wartsila Bow Thruster Inspection and Maintenance		

down with actual cost.

- 3.3 The Contractor must drain the oil from the bow thruster and dispose of used oil as per applicable Provincial Regulations.
- 3.4 The Contractor must remove the existing oil filter and replace with new Contractor supplied oil filters, like for like.
- 3.5 FSR must perform recommended two year maintenance and service of the Wartsila FT175H-D bow thruster including non-invasive gearbox inspection (backlash verification) through the bottom cover of the thruster pod.
- 3.6 All parts for maintenance, service and repairs must be Contractor supplied.
- 3.7 The Contractor must fill the bow thruster with new PETRO CANADA ENDURATEX EP 100 (350 LTR).

Part 4: PROOF OF PERFORMANCE

Inspection, Testing & Certification

The FSR must attend the vessel and perform recommended annual maintenance and inspection of the Wartsila bow thruster.

Part 5: Deliverables

Reports, Drawings, Manuals, Spares & Training

The FSR must provide a report to the Chief Engineer detailing any and all deficiencies found, corrections made, any settings changed (initial and final) and any repairs made.

	CCGS ANN HARVEY	
Spec Item #: L-01	SPECIFICATION	
Helicopter Deck Landing Lights Replacement		

L-01 Helicopter Deck Landing Lights Replacement

Part 1: SCOPE:

- 1.1 The intent of this specification is to replace the obsolete helicopter landing lights with a newer type Glamox/Aqua Signal LED fixture with integrated protective guard. New light fixtures will be Owner supplied.
- 1.2 The Ann Harvey is fitted with 16 such lights.

Part 2: REFERENCES:

2.1 Guidance Drawings/Nameplate Data

- 2.1.1 Original lights are Appleton Kondu KM-9 Watertight Fixture for Hazardous Locations
- 2.1.2 Replacement Lights are Glamox/Aqua Signal NS0270, HX55P-R, LED/110/230V with integrated protective guard
- 2.1.3 Guidelines Respecting Helicopter Facilities on Ships TP4414E, published by Transport Canada in the Aviation Binder in the Chief Engineer's cabin.
- 2.1.4 Drawing 72-802 sh. 12 Lighting Distribution Panel EL104
- 2.1.5 Drawing 72-805 Exterior Lighting
- 2.1.6 Drawing 72-809 sh. 4 Accommodation Lighting Officers' Deck and Wheelhouse

2.2 Standards

- 2.2.1 TP 127E Transport Canada, Marine Safety, Ship Electrical Standards, Current Edition
- 2.2.2 IEEE Std 45-2014 Recommended Practice for Electrical Installations on board ships
- 2.2.3 ICAO Annex 14, Volume II , CAP 437 standard
- 2.2.4 IACS Welding Guidelines

2.3 Regulations

- 2.3.1 All work performed and any modifications made, must be compliant with the latest Canada Shipping Act Regulations and in particular to the Marine Machinery Regulations. All work must meet Transport Canada approved class regulations.
- 2.3.2 All procedures used to install and the fixtures themselves are to be Transport Canada approved to be used in the flight deck area.

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Spec Item #: L-01	SPECIFICATION	
Helicopter Deck Landing Lights Replacement		

Owner Furnished Equipment

2.4.1 The Contractor must supply all materials, equipment, and parts required to perform the specified work unless otherwise stated.

Part 3: TECHNICAL DESCRIPTION:

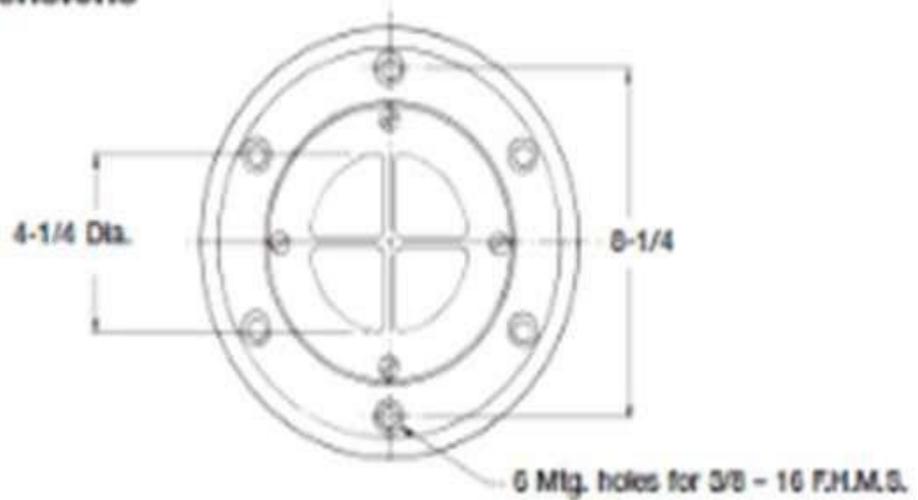
3.1 General

- 3.1.1** The existing sixteen (16) Appleton Kondu helicopter deck lights are to be replaced with new Owner supplied Glamox/Aqua Signal HL55-P R LED fixtures. All new lights will NOT be fitted in the exact locations of the lights currently fitted.
- 3.1.2** The existing helicopter landing lights are controlled with an incandescent lighting controller, Lutron DA-2500, and a dimmer switch located in the wheelhouse.
- 3.1.3** The Contractor must supply and fabricate watertight gaskets as needed for the new lights being installed.
- 3.1.4** The Contractor must be responsible for the identification, removal, temporary storage and refitting of all interference items necessary to complete this spec item.
- 3.1.5** Contractor must be responsible for any damage to paneling, ceiling tile, Tee Bar, cabinets, furniture or any other interference items or equipment that was removed and reinstalled by Contractor to carry out this specification item. Contractor must replace any damaged interference items or equipment at no cost to Owner.
- 3.1.6** Prior to commencing any hotwork the Contractor must ensure that all adjacent areas and components have been suitable protected and the extraction fans are provided for any interior steel work. These fan must be exhausted outside to an open deck.

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Spec Item #: L-01	SPECIFICATION	
Helicopter Deck Landing Lights Replacement		

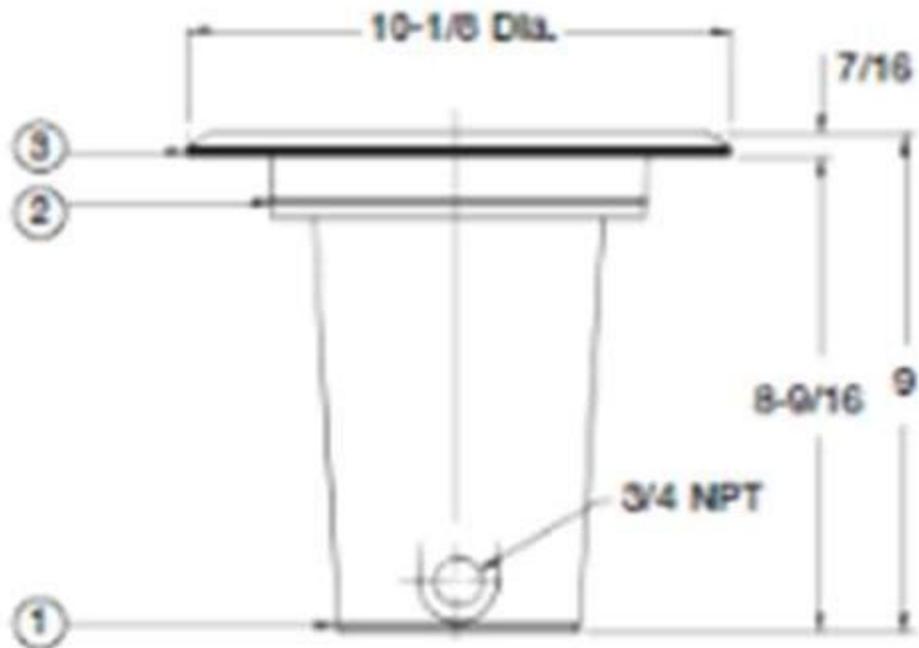
3.1.7 The existing lights have the following mounting arrangement:

Dimensions



3.1.8

Original light dimensions:



3.1.9

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Spec Item #: L-01	SPECIFICATION	
Helicopter Deck Landing Lights Replacement		

- 3.1.10** In conjunction with the Ships Electrical Officer the contractor must ensure that the helicopter lights are locked out electrically at panel EL104 circuit #3, located in the wheelhouse.
- 3.1.11** Contractor is to electrically disconnect the lights. The wiring is to be protected to reconnect to the new light fixtures.
- 3.1.12** Contractor is to remove the incandescent lighting controller , Lutron DA-2500, located in Locker #104, aft of Wheelhouse. Three cables enter the controller. These are to be disconnected from controller. They are the power feed, lighting fixtures feed and dimmer switch feed.
- 3.1.13** A 4" x 4" PVC junction box is to be installed where the controller was located. The power feed and the lighting feed will be connected in this junction box. Junction Box must be marked to indicate circuit number as directed by the Electrical Officer.
- 3.1.14** The cable for the dimmer switch must be removed in its entirety. The dimmer switch is located on the aft bulkhead of the Wheelhouse, adjacent to the stairwell doorway. A blank stainless steel plate will be installed over the dimmer switch box.
- 3.1.15** Power feed, EL104-3, enters a junction box on the Towing Deck, Port side Forward. This cable is to be re-used. Cable for the four lighting fixtures located inside of the ship, in deckhead of Upper Deck, are also to be re-used. The cabling for the 12 fixtures located outside on the helicopter deck is to be replaced with an approved marine cable with a braided sheath.
- 3.1.16** All originally fitted cables that will not be used in the installation of the new helicopter landing lights must be removed in their entirety.
- 3.1.17** The new lights come with ~ 1 meter of sealed cable per light. A new water tight junction box must be mounted close enough to connect to this cable. Each junction box must be fitted with a corrosion resistant tag. The fitted tag will be inscribed with the circuit designation as approved by the vessel's Electrical Officer.
- 3.1.18** All cables must have new metal non corrosive tags affixed to the old cables as they enter the junction boxes designating circuit designation.
- 3.1.19** The existing lights are held in place with 6 screws fastened into the hanger deck. The Contractor is to remove the light fixtures from the deck and return

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Spec Item #: L-01	SPECIFICATION	
Helicopter Deck Landing Lights Replacement		

to CG. The Contractor is responsible for identifying any interference items, their removal and replacement. The Contractor is responsible for any insulation removal and re-insulation as a result of the replacement.

- 3.1.20** All lights are accessed from the upper deck and outside except for four inside lights. These are accessed from the deckhead in the Smoke Room 532, two in the cross alleyway, and another in cabin 504.
- 3.1.21** The Contractor must supply and install a new deck insert of minimum 10" outer diameter which the new lights will mount to. Existing deck steel is 10mm thickness. The Contractor must perform 100% NDT for all deck insert welds. New insert must be cut to allow fitment of new flush mount lights and four(4) holes aligned to fit the new lights, are to be drilled and tapped to fit a 3/8" UNC mounting bolt.
- 3.1.22** The new lights must be installed in the deck, complete with a new gasket (Contractor supplied) and secured with new stainless steel countersunk 3/8" bolts. The Contractor must apply Marine RTV sealant between the light, gasket and deck upon installation.
- 3.1.23** The six existing forward lights must be removed and their holes sealed with suitably sized insert welded plate as per IACS regulations.
- 3.1.24** Their replacements must be relocated aft approximately 74 inches to the center of solid forward helideck perimeter marking. Exact location must be verified by Chief Engineer or Chief Officer. New holes must be cut in the deck to allow fitment of the new flush mount lights and four (4) holes, aligned to fit the new lights, are to be drilled and tapped to fit a 3/8" UNC mounting bolt. The new lights are to be installed in the deck, complete with a new gasket (Contractor supply) and secured with new contractor supplied stainless steel countersunk 3/8" bolts. The Contractor is to also apply Marine RTV sealant between the gasket, light and deck.
- 3.1.25** It must be noted that the helideck light currently located forward of the upper deck cleaning locker will also have to be relocated approximately 28 inches to the starboard to prevent interference with an external aft bulkhead.
- 3.1.26** Upon relocation of these six lights the length of the supplied 1m cable may not be sufficient; the supplied cable cannot be replaced. The Contractor must make a reasonable effort to use excess existing cable slack to make

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Helicopter Deck Landing Lights Replacement		

connections within the one IP67 junction box as identified in 3.1.17. If cable lengths are not sufficient the Contractor must supply and install an additional IP67 junction box, glands, and cable to make the connection to the new light locations. Contractor must bid on supplying and installing one junction box, two glands, and 2m of additional service suitable cable. This price will be adjusted up or down as required with PWGSC 1379 once the number of modified installations is determined.

3.1.25 The Contractor must bid on installing 2 watertight single cable bulkhead fittings, and include a unit cost per installed fitting. Any additional requirements will be adjusted using PWGSC 1379.

3.1.26 All disturbed areas of steel will receive 2 coats of marine grade primer followed with a top coat of CG supplied paint. See Chief Officer for paint supply and color requirements.

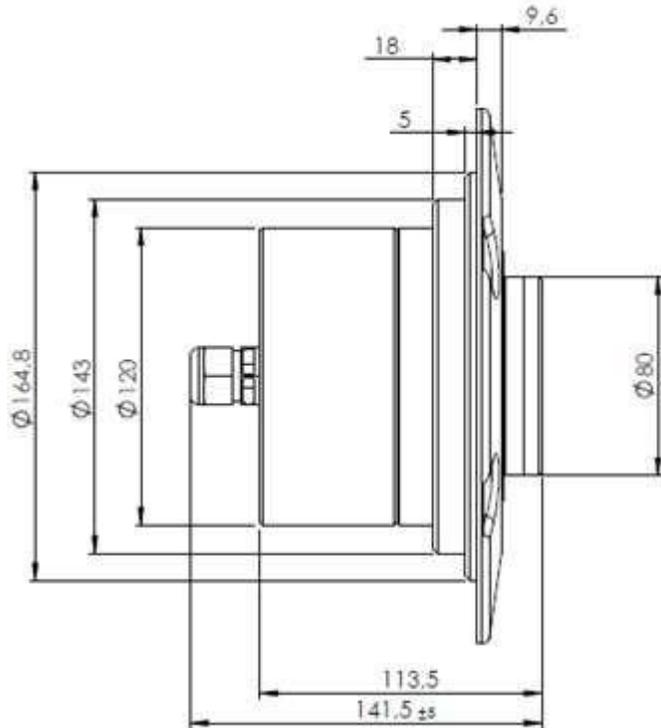
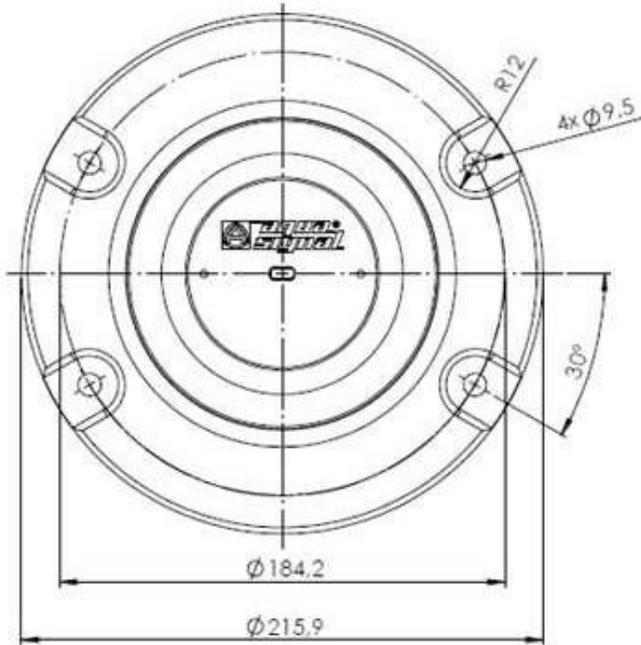
3.1.27 The Contractor must megger test all currently fitted wiring that will be used for installation of the new light. Any wiring that does not meet TP127E rules will be replaced to the nearest junction box by 1379 action.

3.1.28 The Contractor must install metal cable tags, with the cable designation stamped into the metal tag, on each cable. Metal tags must be installed at each cable end and on each side of any bulkhead/deckhead penetration. Electrical Officer must confirm cable designations to be used for each cable.

3.1.29 All cabling will be secured as per TP127E requirements with new watertight glands.

3.1.30 The new Glamox/Aquasignal lights have the following dimensions:

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Spec Item #: L-01	SPECIFICATION	
Helicopter Deck Landing Lights Replacement		



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Helicopter Deck Landing Lights Replacement		

3.2 Location

3.2.1 The flight deck lights are located on the flight deck accessed from the boat deck at the aft end of the ship.

3.3 Interferences

3.3.1 The contractor is responsible for the identification, the removal and safe storage, and the refitting of all interference items in order to complete this spec item.

Part 4: PROOF OF PERFORMANCE:

4.1 Inspection

All installations will be to the satisfaction of the Chief Engineer and attending ABS Class Surveyor.

4.2 Testing

4.2.1 All circuits will be meggered to ensure cabling has not been damaged.

4.2.2 All lights will be tested to ensure correct operation.

4.2.3 All lights will be tested to a minimum of 40PSI fire hose to ensure watertight integrity.

4.3 Certification

Part 5: DELIVERABLES:

5.1 Drawings/Reports

5.1.1 Contractor is to provide 2 hard copies and 1 electronic copy of all readings and test reports.

5.2 Training

5.2.1 N/A

5.3 Spares - N/A

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Spec Item #: L-02	SPECIFICATION	
Machinery Motor Refurbishment		

L-02 Machinery Motor Refurbishment

Part 1: SCOPE

The intent of this specification is to remove each of the Machinery motors listed below and refurbish and reinstall.

Part 2: REFERENCES

2.1 Reference

Manual

Motor Units	Location
Electric Machinery CW Pumps (2)	fr: 86-89 port side

Manufacturer: Etatech

Model: 6747035

Type: N-BPN4

Frame: 256TDZ

Performance: 14.75 kw, 3 ph, 60n hz, 600 v, 21 a, 1755 rpm

Serial no: ML2953-2 & ML2953-1

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Spec Item #: L-02	SPECIFICATION	
Machinery Motor Refurbishment		

Motor Units

Location

Aux Machinery CW Pumps (2)

fr 82-84 port side

Manufacturer: Etatech

Model: 6747035

Type: N-BPN1

Frame: 254TDZ

Performance: 9 kw, 3 ph, 60n hz, 600 v, 13 a, 1755 rpm

Serial no: ML3774-1 & ML3774-2

Accommodation A/C CW Pump (1)

fr 78 port side

Manufacturer: Etatech

Model: 6750635

Type: N-BPN1

Frame: 254T

Performance: 9 kw, 3 ph, 60n hz, 600 v, 13 a, 1755 rpm

Serial no: ML3586

Main SW Circ Pump no 2 (1)

fr. 99 fwd port

Manufacturer: Etatech

Model: 6928135

Type: N-BPN4

Frame: 326TDZ

Performance: 9 kw, 3 ph, 60n hz, 600 v, 13 a, 1755 rpm

Serial no: ML3586

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Spec Item #: L-02	SPECIFICATION	
Machinery Motor Refurbishment		

Motor Units

Location

Fire pump (1)

fr. 100 fwd stbd

Manufacturer: Etatech

Model: 6928035

Type: CF4

Frame: 326TDZ

Performance: 35 kw, 3 ph, 60 hz, 600 v, 44 a, 1755 rpm

Serial no: MK2956

Bilge / Ballast Pumps (2)

fr 91-93 port side

Manufacturer: Etatech

Model: 6747435

Type: N-BPN4

Frame: 254TDZ

Performance: 11 kw, 3 ph, 60n hz, 600 v, 16 a, 1755 rpm

Serial no: MK2957-1-2 & MK2957-1

2.2 Owner Furnished Equipment

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

Part 3: TECHNICAL DESCRIPTION

3.1 The Contractor and Ship's Electrical Officer must, prior to start of work, witness and record starting and running currents on all three phases on all motors. Megger and resistance readings of each winding in every motor must be taken and recorded by the Contractor before removal and after subsequent

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Spec Item #: L-02	SPECIFICATION	
Machinery Motor Refurbishment		

installation to prove the integrity of the motor windings.

- 3.2 The Contractor and Electrical Officer must subsequently isolate the power supply at the MCC. The Contractor must use his own locks and record the lockout/tagout in the lockout/tagout register. Contractor must then disconnect and dismount the motor assembly.
- 3.3 Each motor unit must be removed and transported to contractor's (sub-contractor's) facility for disassembly, cleaning, inspection, bearing renewal and dynamic balancing. The new contractor supplied bearings must be sealed both sides and SKF or equivalent. All grease tube fittings must be fitted with pipe plugs and a label must be created and attached to advise that the bearings are sealed.
- 3.4 The Contractor must be responsible for arranging cranes and rigging for removal and reinstallation of all motors. The Contractor must note there is a soft patch located at the Incinerator Room (Main deck) with certified electric hoist
- 3.5 Contractor must allow \$5000.00 for the materials costs to be adjusted up or down on proof of invoice.

3.2 Location

- 3.2.3 Machinery Space Tank Top

3.3 Interferences

- 3.3.1 The Contractor must be responsible for identification of interference items, their temporary removal, storage and refitting to the vessel in the scope of completing this specification.

Part 4: Proof of Performance

4.2 Inspection, Testing & Certification

- 4.1.3. All work must be completed to the satisfaction of the Chief Engineer within the scope of the specification.

Part 5: Deliverables

Reports, Drawings, Manuals, Spares & Training

- 5.1.1. Contractor must provide copies of all readings / reports detailing work performed on each motor to the Chief Engineer.

	CCGS ANN HARVEY	
Spec Item #: L-03	SPECIFICATION	
Miscellaneous Tank's Transducer Repairs		

L-03 Miscellaneous Tank's Transducer Repairs

Part 1: Scope

1.1 The intent of this item shall be to open up the tanks listed in 2.1.1 and change out existing transducers with new Owner supplied transducers.

Part 2: References

2.1 Guidance Drawings/Nameplate data

2.1.1 72-405 Capacity Plan

Tank	Location	Tank Interior / exterior	Capacity
Forepeak WB Tank	Fr. 175-STEM	Interior	84 M ³
Aft Peak WB Tank	Fr. 1-13	Interior	111.4 M ³
No. 1 DB WB Port Tank	Fr. 126-152	Interior	50.8 M ³
No. 1 DB WB Stbd Tank	Fr. 126-152	Interior	50.8 M ³
No 2 Wing WB Port Tank	Fr. 152-163	Exterior	55.1 M ³
No 2 Wing WB Stbd Tank	Fr. 152-163	Exterior	55.1 M ³
Lower Flume FO Tank	Fr. 117-126	Exterior	113 M ³
#7 FO Tank	Fr. 106-126	Exterior	52 M ³
#8 FO Tank	Fr. 106-126	Exterior	41.6 M ³
#9 FO DB Tank *	Fr. 70-96	Interior	81.5 M ³
#10 FO DB Tank *	Fr. 70-96	Interior	104.5 M ³

*TO BE CHANGED ONLY IF DOCKING PLAN ALLOWS FOR TANKS TO BE EMPTY

2.1.2 72-60A List of Manholes

2.1.3 72-63 Docking Plan

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Spec Item #: L-03	SPECIFICATION	
Miscellaneous Tank's Transducer Repairs		

2.2 Standards

1. The following Coast Guard Standards and or Technical Bulletins must be adhered to in the course of executing this specification. Copies of these standards and bulletins can be obtained from the CCG Technical Authority.
2. Canadian Coast Guard Fleet Safety Manual (DFO 5737)
3. Coast Guard ISM Confined Space Entry (7.B.3)
4. Coast Guard ISM Hotwork Procedures (7.B.4)
5. Coast Guard ISM Fall Protection Procedures (7.B.2)
6. CWB CSA 47.1 Latest Revision
7. SSPC-SPT

2.3 Regulations

2.3.3 NA

2.4 Owner Furnished Equipment

2.4.2 The Contractor must supply all materials, equipment and parts to perform the specified work unless otherwise stated.

Part 3: Technical Description

3.1 Contractor must lockout the fill / discharge valves and ensure that all necessary valve lockout / tagouts are in place.

3.2 Contractor must remove the locking bars and docking plugs for WB tanks noted. The docking plugs must be handed to the Chief Engineer for re-installation upon completion of the work. All docking plugs will be tagged as to ensure the reinstallation to the original location each docking plug is removed from.

3.3 Contractor must allow for removal of 1m³ fuel from each FO Tank for total 5 m³ and must provide a unit cost per additional m³ for adjustment purposes.

3.4 Contractor must make note there is no fuel to be removed for the #7 & #8 FO tanks. Access to this tank transducer replacement is iwo the #3 Void Tank Stbd manhole.

3.5 The Contractor must provide each tank / compartment with a mechanical ventilation system, vented to the outside of the ship. Good ventilation must be provided and any blowers/extractors must ensure good air movement and solvent vapour removal from the lowest point in the tanks.

3.6 Contractor must have the tanks tested safe for entry by certified personnel. The entry permit must be posted immediately adjacent to the manhole covers dated and signed. The Contractor must provide a

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Spec Item #: L-03	SPECIFICATION	
Miscellaneous Tank's Transducer Repairs		

confined space entry rescue team. The confined space entry rescue team must standby at the tank entrance at all times while personnel are in any tank.

3.7 The Contractor must replace each tank transducer with new OWNER supplied transducer.

3.8 Contractor must confirm with Chief Engineer when each tank is ready to be closed up using new 1/4" neoprene rubber manhole gaskets so as to ensure final inspection for debris has been completed.

3.9 Docking plugs must obtained from the Chief Engineer and be re-installed in their originally fitted location using new packing.

3.3 Location

3.3.1 N/A

3.4 Interferences

3.4.1 The Contractor must be responsible for identification of interference items, their temporary removal, storage and refitting to the vessel in the scope of completing this specification.

Part 4: Proof of Performance

4.3 Inspection, Testing & Certification

4.3.1 All work must be completed to the satisfaction of the Chief Engineer within the scope of the specification.

Part 5: Deliverables

Reports, Drawings, Manuals, Spares & Training

5.1 Contractor must provide copies of all CSE permits to Chief Engineer.

	CCGS ANN HARVEY	
Spec Item #: L-04	SPECIFICATION	
CCTV System Upgrade		

L-04 CCTV System Upgrade

Part: 1 SCOPE:

- 1.1 The intent of this specification is to completely remove the existing analog CCTV Cameras and cabling throughout the vessel and install all new owner supplied IP CCTV cabling and equipment as per Drawing CCGS Ann Harvey Camera System Wiring Diagram
- 1.2 Contractor must install 300 meters of BC-10-021 (CAT6) cable (owner supplied). This cable is shipboard approved. Contractor must provide a unit price for installation of 10 meters of this cable.
- 1.3 Contractor must supply and install 100 meters of marine approved AC power cables. Contractor must provide a unit price for supply and installation of 10 meters of this cable.
- 1.4 Contractor must supply all materials and parts required to perform the specified work unless otherwise stated.

Part: 2 REFERENCES:

2.1 Guidance Documentation

Drawing #	Description	Electronic Number
	CCGS Ann Harvey Camera System Wiring Diagram	Ann Harvey CCTV Power Distribution.pdf
	CCGS Ann Harvey Camera System Block Diagram	Ann Harvey CCTV Project.pdf

2.2 Standards

- 2.2.1 Fleet Safety and Security Manual (DFO/5737)
- 2.2.2 TP127E – Ships Electrical Standards
- 2.2.3 IEEE 45:2002 – Recommended Practice for Electrical Installations on Ships
- 2.2.4 Specification for the Installation of Shipboard Electronic Equipment (70-000-000-EU-JA-001)
- 2.2.5 General Information for the Rules and Regulations for the Classification of Ships.

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2.3 Regulations

2.3.1 Canada Shipping Act, 2001

Part: 3 TECHNICAL DESCRIPTION

3.1 General

- 3.1.1** The Contractor must supply all equipment, enclosures, ventilation, staging, chain falls, slings and shackles necessary to perform the work. All lifting equipment must be appropriate for the expected duties, and be accompanied by current certification indicating, or be permanently marked as to being, of an adequate safe working load for the expected duties. Any brackets or other welded attachments required in the performance of this specification must be welded into place by CWB-certified welders certified to welding Std. W47.1, Div. 1 and 2.
- 3.1.2** Prior to any hot work taking place, the Contractor must ensure that the area of work and all equipment, wiring, transits, etc. have been sufficiently protected from any sparks or metal filings. The Contractor must also ensure that the area of work, the system, and the adjacent space is certified as gas free and suitable for hot work as per the Fleet Safety and Security Manual.
- 3.1.3** In addition to any hot work taking place, which includes grinding and welding, the Contractor must check the vessels lead abatement documents and follow proper lead abatement procedures. If any area is of any concern, it will be brought to the attention of the Chief Engineer and a lead abatement will be conducted.
- 3.1.4** For the purpose of adjustments, the Contractor must provide a unit cost for the testing of lead. Any lead testing will be covered by a 1379.
- 3.1.5** Contractor must follow existing cable trays throughout the vessel where fitted. Once installed, all cabling must be secured as per TP127.
- 3.1.6** Contractor must repack all glands and transits that will be reused as per this specification and the method must meet or exceed TCMS or classification society requirements.
- 3.1.7** Contractor must be responsible for the temporary removal and reinstallation of any deck heads, bulkheads, paneling, insulation, and any items that is deemed to be interfering to the running of any cables and mounting of any equipment.
- 3.1.8** All cabling, once installed, the contractor must identify each cable with a marked stamped stainless steel metal tag. The labels are to be securely affixed to the cable at each end and through any deck, deck heads, and gland penetrations with the designation for each cable as provided within the applicable drawings.
- 3.1.9** Contractor must use, at a minimum, 316 grade stainless steel hardware for the mounting of all equipment.

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- 3.1.10** Contractor must prime and paint mounting brackets/plates to match existing color and any dis
- 3.1.11** The contractor must dispose of all cables that have been identified for removal indicated below at their expense.
- 3.1.12** The contractor must be responsible to ensure that all areas have been thoroughly cleaned and free of any debris resulting from the performance of this specification item.
- 3.1.13** Contractor must relabel and update all electrical supply feeds on electrical panels within this specification.
- 3.1.14** Prior to the commencement of any electrical work, the contractor must ensure that all electrical supplies feeding the systems have been isolated at the source following an established lockout/tag out procedure, and as per ISM fleet safety manual. Contractor must check with Chief Engineer or Senior Electrical Officer.
- 3.1.15** The contractor must work in conjunction with a Coast Guard Electronic Technician to oversee the work to ensure compliance with applicable Coast Guard standards.
- 3.1.16** Contractor must disconnect and remove all of the existing equipment and cabling associated within the systems as detailed in reference drawings CCGS Ann Harvey Camera System Wiring Diagram and equipment accompanied in the Equipment Removal List table below.

3.1.17 Equipment Removal List

- All equipment listed in Table below are to be returned to production electronics technician (SEW)

Quantity	Description	Specification	Location
1	CCTV Camera	American Dynamics PTZ	Lower Radar Platform
1	CCTV Camera	American Dynamics PTZ	Port Bridge Catwalk
1	CCTV Camera	American Dynamics PTZ	STBD Bridge Catwalk
1	CCTV Camera	Bosch PTZ Camera **	Helicopter Hanger Top

Notes: **This camera may already be removed

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Port and STBD side cameras and cabling to be removed

Figure 1: Port Camera

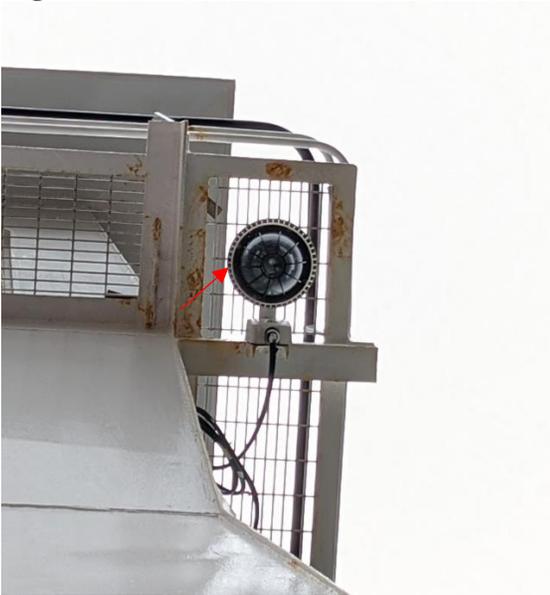


Figure 1A: Starboard Camera

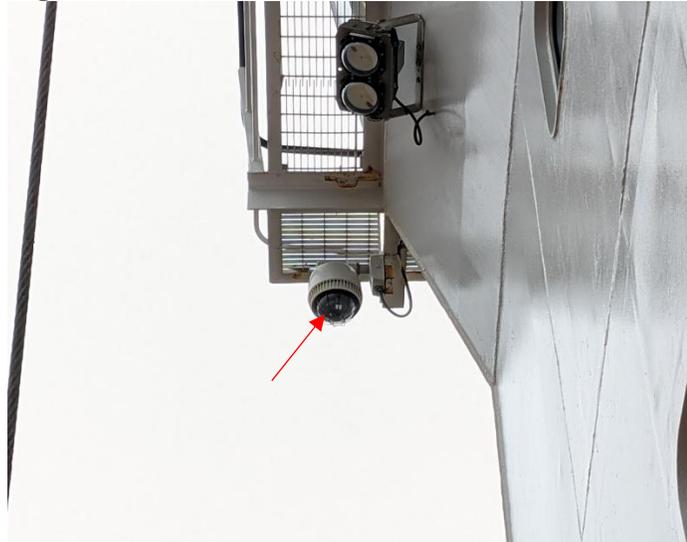


Figure 2: Forward Mast Camera and Cabling



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Helicopter Hanger Top Camera and Cable (Camera removed in photo)

Figure 2A



3.1.18 Cable Removal List

Contractor must remove and dispose of approximately 300 meters of CCTV cables at their own expense as per reference drawing CCGS Ann Harvey CCTV System Wiring Diagram. See Table below

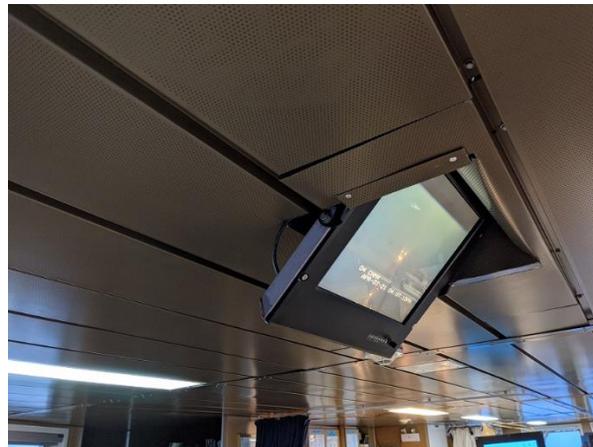
Cable Number	Type	From	To
CCTV-1	Composite	Port Wing Camera	Boat Deck, Equipment Room Rack
CCTV-2	Composite	STBD Wing Camera	Boat Deck, Equipment Room Rack
CCTV-3	Fiber	Helicopter Hanger	Boat Deck, Equipment Room Rack
CCTV-3	Composite	Camera, Helicopter Hanger Top	Helicopter Hanger
CCTV-4	Composite	FWD Mast Camera	Boat Deck, Equipment Room Rack
CCTV-5	RG-6 Coax	Port Bridge Overhead CCTV Monitor	Boat Deck, Equipment Room Rack
CCTV-6	RG-6 Coax	STBD Bridge Overhead CCTV Monitor	Boat Deck, Equipment Room Rack
CCTV-7	RG-6 Coax	QM Station Port Side CCTV Monitor (Figure 3)	Boat Deck, Equipment Room Rack
CCTV-8	RG-6 Coax	QM Station STBD Side CCTV Monitor (Figure 3A)	QM Station Port Side CCTV Monitor
CCTV-9	RG-6 Coax	Engine Control Room Console	Boat Deck, Equipment Room Rack
CCTV-10	Cat5e	Port Bridge Console	Boat Deck, Equipment Room Rack
CCTV-11	Cat5e	STBD Bridge Console	Boat Deck, Equipment Room Rack
CCTV-12	Cat5e	QM Station Port Side	Boat Deck, Equipment Room Rack
CCTV-13	Cat5e	QM Station STBD Side	Boat Deck, Equipment Room Rack

CCGS ANN HARVEY			
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CCTV System Upgrade			
CCTV-14	Cat5e	Engine Control Room Console	Boat Deck, Equipment Room Rack

Figure 3: Port Bridge Overhead CCTV Monitor



Figure 3A: STBD Bridge Overhead CCTV Monitor



3.2 EQUIPMENT INSTALLATION

Equipment list

Item	Description	Manufacturer	Model #	Location
1	IP Camera/Mount	Axis	Q6074-E/T91L61	FWD Mast - Lower Radar Platform
2	IP Camera/Mount	Axis	Q6074-E/T91L61	PORT side under Bridge Catwalk
3	IP Camera/Mount	Axis	Q6074-E/T91L61	STBD side under Bridge Catwalk
4	IP Camera/Mount	Axis	Q6074-E/T91L61	AFT Mast - Top rail of platform
5	IP Camera/Mount	Axis	Q6074-E/T91L61	AFT - Upper Deck - Under Flight Deck
6	IP Camera/Mount	Axis	Q6074-E/T91L61	Helicopter Hanger
7	IP Camera/Mount	Axis	Q3709-PVE/T91B51	Winch Room
8	UPS	Always On	GES-152NR	Bridge Desk rack
9	24 Port Patch Panel	Panduit		Bridge Deck Rack
10	24 Port Patch Panel	Panduit		Electronic Room Rack

3.2.1 Contractor must supply, fabricate, and install new mounting plates/shelves for the new *Always ON UPS* Isolation Transformer to be installed within the Crawl Space area under the Nav. Bridge within the area of the newly constructed desk. This is in conjunction with Radar/ECDIS installation spec.

3.2.2 Wing Cameras- Axis Q6054-E

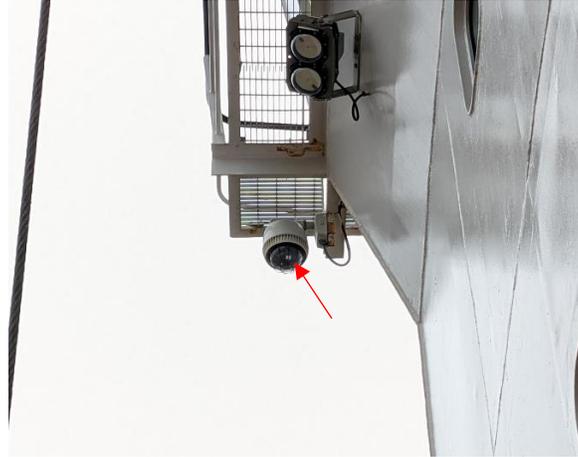
Wing Cameras, Port and Starboard, shall be mounted on the Bridge deck, below the cat walk, on the port and starboard outer most catwalk support beam where old cameras were removed.

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Spec Item #: L-04	SPECIFICATION	
CCTV System Upgrade		

Figure 4: Port Wing Camera



Figure 4A: Starboard Wing Camera

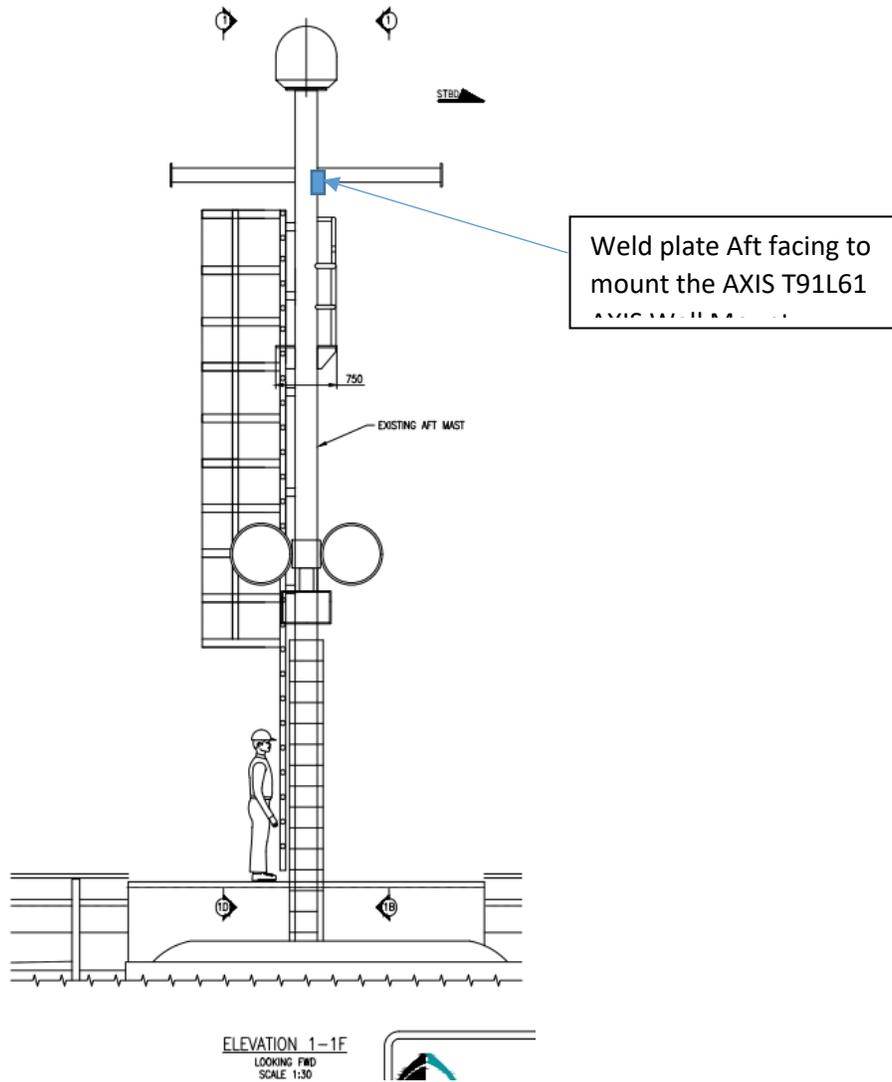


Aft Mast Camera - Axis Q6054-E

The Aft camera shall be mounted on the Aft Mast on the proposed modified mast. Plate shall be fabricated and welded to the mast to support an AXIS T91L61 mount in location below

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Spec Item #: L-04	SPECIFICATION	
CCTV System Upgrade		

Figure 5



3.2.3 Forward Mast Camera - Axis Q6054-E

The Forward Mast camera shall be mounted on the lower radar platform on the mount for the existing camera.

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Spec Item #: L-04	SPECIFICATION	
CCTV System Upgrade		

Figure 6



3.2.4 Aft Camera- Axis Q6054-E

Aft Camera shall be mounted on the upper deck, on the deck head frame, at frame -11, off centerline towards the starboard side. The camera shall be mounted using a fabricated mount, in conjunction with the Axis T91L61 wall mount. Contractor to consult CO/CE for final placement because care must be taken that the safety net around the Flight Deck don't contact the camera when lowered.

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CCTV System Upgrade		

Figure 7



3.2.5 Helicopter Hanger Camera – Axis Q6054-E

The Helicopter Hanger Camera shall be mounted on the Boat Deck on the forward bulkhead of the hanger, Frame 47, on the centerline. The camera shall be mounted using a fabricated bracket and T91L61 Wall mount. Contractor to consult CO/CE for final placement.

Figure 8



3.2.6 Winch Compartment Camera – Axis M3057-PLVE

The Winch Compartment Camera shall be mounted on the deck head frame, at frame 112, on the center line where work light is located. The camera shall be mounted using a fabricated bracket and T94S01P conduit back box. The final location TBD with consultation with CO/CE.

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Figure 9



3.2.7 The contractor must install all the equipment listed above in the Government Furnished Equipment table above as per CCGS Ann Harvey CCTV Distribution Wiring Diagram Drawing. All replacement cameras will be located in same location as the removed old cameras. Three additional cameras will be installed.

3.3 Cabling

3.3.1 Contractor must supply and install Minicom surface mount boxes at STBD and Port Bridge Wing consoles, STBD and Port Quartermaster stations and Derrick Control Room for CCTV Controllers.

3.3.2 Contractor must supply and install Minicom surface mount box at Motor Control Room desk.

3.3.3 Contractor must install owner supplied BC-10-021 (CAT6) cable as outlined in the table below

CCTV Network Cable Interconnect Summary

Cable #	From Location	To Location	Cable Type
CCTV-01	Aft Mast, CCTV Camera	Boat Deck, Electronics Equipment Room, Patch Panel	Cat6
CCTV-02	Forward Mast, CCTV Camera	Wheel House Floor deck, Desk, Patch Panel	Cat6
CCTV-03	Bridge deck, Port Wing CCTV Camera	Wheel House Floor deck, Desk, Patch Panel	Cat6
CCTV-04	Bridge deck, STBD Wing CCTV Camera	Wheel House Floor deck, Desk, Patch Panel	Cat6
CCTV-05	Boat Deck, Helicopter Hanger, CCTV Camera	Boat Deck, Electronic Equipment Room, Rack 2, Patch Panel	Cat6
CCTV-06	Upper Deck, Aft, CCTV Camera	Boat Deck, Electronic Equipment Room, Rack 3, Patch Panel	Cat6
CCTV-07	Engine Room Flats, Winch Compartment, CCTV Camera	Engine Room Flats, Motor Control Room, Minicom surface mount box	Cat6

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Spec Item #: L-04	SPECIFICATION	
CCTV System Upgrade		

CCTV Network Cable Interconnect Summary

Cable #	From Location	To Location	Cable Type
CCTV-08	Wheel House Floor, Port Wing Deckhead, CCTV Controller PC Minicom surface mount box (Figure 3)	Wheel House Floor deck, Desk, Patch Panel	Cat6
CCTV-09	Wheel House Floor STBD Wing Deckhead, CCTV Controller PC Minicom surface mount box (Figure 3A)	Wheel House Floor deck, Desk, Patch Panel	Cat6
CCTV-10	Boat Deck, Derrick Control Room, CCTV Controller PC Minicom surface mount box	Boat Deck, Electronic Equipment Room, Patch Panel	Cat6
CCTV-11	Upper Deck, Port Quarter Master Station, CCTV Controller PC Minicom surface mount box	Boat Deck, Electronic Equipment Room, Patch Panel	Cat6
CCTV-12	Upper Deck, STBD Quarter Master Station, CCTV Controller PC Minicom surface mount box	Boat Deck, Electronic Equipment Room, Patch Panel	Cat6

3.3.4 AC circuits shall be installed as detailed in **CCTV Power Distribution** and drawing *CCGS Ann Harvey CCTV Project* and *CCTV Power Distribution Diagram*. Contractor must supply and install AC cable, plugs, electrical boxes, receptacles and circuit breakers required. All cable must be Shipboard Approved Marine Cable.

3.3.5 All cable terminations will be conducted by CCG Technicians with the exception of AC power. Contractor must terminate all AC required power.

3.3.6 Contractor must supply and install marine approved AC power cables listed in Table below

CCTV Power Distribution

Cable #	From Location	To Location	Cable Type
CCTV-UPS-1A	Panel IC-101 Breaker # TBD	Electrical Outlet, Nav Bridge Crawl Space	AC PWR
CCTV-UPS-1B	Electrical Outlet, Nav Bridge Crawl Space	Isolation Transformer, Nav Bridge Crawl Space	AC PWR
CCTV-UPS-1C	Isolation Transformer, Nav Bridge Crawl Space	Wheel House Floor deck, Desk, Junction Box	AC PWR
CCTV-UPS-1D	Wheel House Floor deck, Desk, Junction Box	Wheel House Floor deck, Desk, UPS AC Input	AC PWR
CCTV-UPS-2	Wheel House Floor deck, Desk, UPS AC Output	STBD Wing Deckhead, Electrical Outlet (Figure 3A)	AC PWR
CCTV-UPS-3	Wheel House Floor deck, Desk, UPS AC Output	Port Wing Deckhead, Electrical Outlet (Figure 3)	AC PWR

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Spec Item #: L-04	SPECIFICATION	
CCTV System Upgrade		

CCTV Power Distribution

Cable #	From Location	To Location	Cable Type
Notes:			
<ul style="list-style-type: none"> • CCTV-UPS-2 & 3 Wheelhouse Floor Desk shall be terminated with a plug to allow connection to UPS • CCTV-UPS-2 & 3 STBD and Port deckheads shall be terminated in electrical boxes with outlet. 			

3.3.7 All cabling, once installed, the contractor must label each cable with marked with a stamped stainless steel metal tag. The labels are to be securely affixed to the cable at each end and through any deck, deck heads, and gland penetrations with the designation for each cable as provided in this specification.

3.3.8 The CCG Production electronic technicians will terminate all cable runs between devices using shielded CAT 6 RJ45 connectors for the purpose of testing where Minicom junction boxes are not used.

3.3.9 Contractor must be responsible for sealing all cable glands.

Part: 4 PROOF OF PERFORMANCE:

4.1 Inspection

4.1.1 All work must be subject to witness by the Chief Engineer of delegate CCG production technician (SEW).

4.2 Testing

4.2.1 All cables are to be checked for continuity after installation to ensure operational capability. Should any cable run fail to pass testing, the cable must be replaced at the contractor's expense.

4.2.2 All cable testing must be verified by a Coast Guard Production Technician.

4.2.3 New AC/DC circuits must be proven operational.

4.2.4 Electronic equipment which has been removed for the performance of this specification item must be returned to operational condition.

Part: 5 DELIVERABLES:

5.1 Spares

5.1.1 All owner supplied equipment and materials which has not been used must be returned to the owner prior to the acceptance of the item.

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Spec Item #: L-05	SPECIFICATION	
BNWAS Installation		

L-05 BNWAS Installation

Part: 1 SCOPE:

- 1.1 The intent of this specification is for the installation of a new owner supplied Bridge Navigation Watch Alarm System (BNWAS).
- 1.2 Contractor must supply all materials, and parts required to perform the specified work unless otherwise stated.
- 1.3 This work must be carried out in conjunction with the Radar/ECDIS Installation Specification.
- 1.4 Contractor must complete all work as specified within this specification within 20 working days from the refit start date as provided by Contracting Authority. This will allow the Technical Representatives, FSR's, and Classifications Society time to complete terminations and inspections prior to vessel returning to operation and on programs.

Part: 2 REFERENCES:

2.1 Guidance Drawings and Documents

Drawing Number	Description	Electronic Number
Preliminary	CCGS Ann Harvey BNWAS Block Diagram	

2.2 Standards

- 2.2.1 Fleet Safety and Security Manual (DFO/5737)
- 2.2.2 TP127E – Ships Electrical Standards
- 2.2.3 IEEE 45:2002 – Recommended Practice for Electrical Installations on Ships
- 2.2.4 Specification for the Installation of Shipboard Electronic Equipment (70-000-000-EU-JA-001)
- 2.2.5 General Information for the Rules and Regulations for the Classification of Ships.
- 2.2.6 CWB, Welding Procedures

2.3 Regulations

- 2.3.1 Canada Shipping Act, 2001

	CCGS ANN HARVEY	
Spec Item #: L-05	SPECIFICATION	
BNWAS Installation		

2.4 Owner Furnished Equipment

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

Part: 3 TECHNICAL DESCRIPTION

3.1 General

3.1.1 The contractor must supply all equipment, enclosures, ventilation, staging, chain falls, carnage, crane, slings, and shackles necessary to perform the work. All lifting equipment must be appropriate for the expected duties, and be accompanied by current certification indicating, or be permanently marked as to being, or a safe working load for the expected duties.

3.1.2 All cabling, once installed, must be marked with a stamped stainless steel metal tag for all cabling. The labels are to be securely affixed to the cable at each end and through any deck, deck heads, and/or gland penetrations with the designation for each cable as provided in this specification.

3.1.3 Contractor responsible for the temporary removal and reinstallation of any deck heads, bulkheads, paneling, insulation, and any items that is deemed to be interfering to the running of any cables and mounting of any equipment.

3.1.4 All cabling must follow existing cable trays throughout the vessel where fitted. Once installed, all cabling must be secured as per TP127.

3.1.5 Contractor must supply and install any transit blocks that are required in any deck penetrations throughout the vessel for any of the new cables.

3.1.6 The contractor must be responsible to ensure that all areas have been cleaned and free of any debris resulting from the performance of this specification item.

3.1.7 Prior to the commencement of any electrical work, the contractor must ensure that all electrical supplies feeding the systems have been isolated at the source following an established lockout/tag out procedure. Contractor must ensure that Chief Engineer or Electrical Officer is notified of any lockout/tag out completed.

3.1.8 Electrical Isolations for AC power are as follows:

- Panel EM120 Breakers # 6/8 (EM120 6/8) Nav. Bridge Info Console

3.1.9 Upon final installation, testing must be carried out as per Section 4.2 of this specification item.

3.1.10 Contractor must label the electrical breaker feed for the new BNWAS system.

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BNWAS Installation		

- 3.1.11** The contractor must work in conjunction with a Coast Guard Electronic Technician to oversee the installation of the new system to ensure compliance with applicable Coast Guard standards. Terminations of all equipment must be completed by CCG technicians with the exception of those for electrical supply which must be the contractor's responsibility as well as any grounding requirements.
- 3.1.12** Contractor must supply and install 2 suitable junction boxes for marine environment complete with at least six (6) cable glands and can accommodate at least 16 terminal blocks for the interfacing of the PIR Motion Sensors and Radar/ECDIS equipment. Each junction box must be labelled accordingly.
- 3.1.13** Contractor must fabricate and install brackets for all equipment.
- 3.1.14** Contractor must supply and install new junction box for AC Power that is suitable and approved for marine environment.
- 3.1.15** Contractor must install the following owner supplied equipment listed in the Equipment List below and with reference to the preliminary CCGS Ann Harvey Bridge Navigation Watch Alarm System Block Diagram. All equipment locations will be finalized prior to mounting by Commanding Officer, Chief Engineer or Technical Representative.

3.1.16 Equipment List

Equipment	Location
Main Electronics Unit (MEU)	Nav. Bridge Starboard Side Aft Bulkhead above GMDSS Console
Monitor and Alert Panel (MAP)	Nav. Bridge Forward Center Console Starboard Side
Remote Alert Panel (RAP)	Nav. Bridge Starboard Wing Console
Remote Alert Panel (RAP)	Nav. Bridge Port Wing Console
Motion Sensor (PIR)	Nav. Bridge Starboard Wing Aft
Motion Sensor (PIR)	Nav. Bridge Port Wing Aft
Motion Sensor (PIR)	Nav. Bridge above Forward Center Console Starboard Side
Watch Alert Panel (WAP)	Officers Deck alleyway bulkhead
Sounder Alert Beacon (SAB)	Officers Deck alleyway bulkhead
Watch Alert Panel (WAP)	Lower Deck Engine Control Room (MCR)

Main Electronics Unit (MEU) Nav. Bridge Starboard Aft Location

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BNWAS Installation		



Monitor and Alert Panel (MAP) Nav. Bridge Forward Center Console Starboard Location



Starboard Wing Remote Alert Panel (RAP) Starboard Wing Location

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Spec Item #: L-05	SPECIFICATION	
BNWAS Installation		

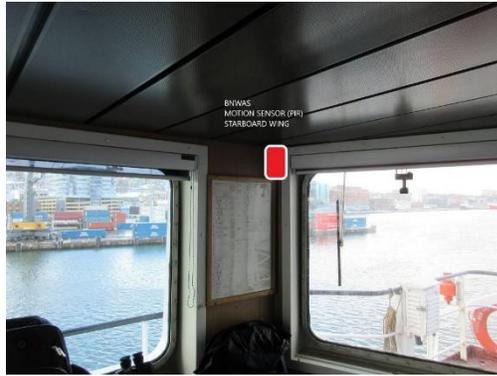


Port Wing Remote Alert Panel (RAP) Port Wing Location

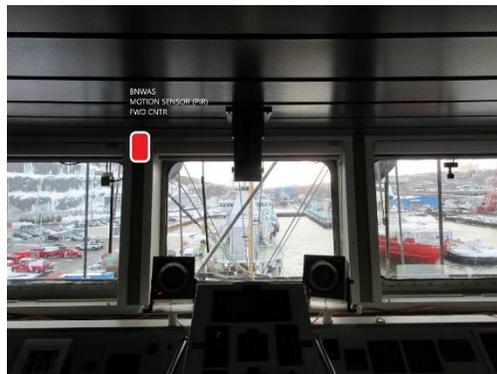


Motion Sensor Starboard Wing (PIR) Location

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Spec Item #: L-05	SPECIFICATION	
BNWAS Installation		



Motion Sensor Forward Center (PIR) Location



Motion Sensor Port Wing (PIR) Location

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Spec Item #: L-05	SPECIFICATION	
BNWAS Installation		



2nd Stage Watch Alert Panel (WAP) and Sounder Alarm Beacon (SAB) Location Officer's Deck Alleyway



3rd Stage Watch Alert Panel (WAP) Location Engine Control Room (MCR)

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Spec Item #: L-05	SPECIFICATION	
BNWAS Installation		



- 3.1.17** Contractor must use stainless steel hardware for mounting equipment, plates, and panels listed within this specification.
- 3.1.18** Contractor must supply and properly seal all deck penetrations with appropriate marine approved fire stop material.
- 3.1.19** Contractor must provide cable access thru the bulkheads for the new BNWAS cables.
- 3.1.20** Contractor must install owner supplied cables except for Marine AC cable listed in the Cable List below. Contractor must supply and install AC cable. All cables must be Shipboard Approved Marine Cable. Refer to CCGS Ann Harvey Bridge Navigation Watch Alarm System Block Diagram Preliminary.

3.1.21 Cable List

Cable Label	Cable Type	From	To	Length (m)
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		CCGS ANN HARVEY		
Spec Item #: L-05		SPECIFICATION		
BNWAS Installation				
BNWAS-1A	Belden 8777SB	Main Electronics Unit (MEU) Nav. Bridge Starboard Side Aft Bulkhead above GMDSS Console	Monitor and Alert Panel (MAP) Nav. Bridge Forward Center Console	20
BNWAS-1B	Belden 8777SB	Main Electronics Unit (MEU) Nav. Bridge Starboard Side Aft Bulkhead above GMDSS Console	Monitor and Alert Panel (MAP) Nav. Bridge Forward Center Console	20
BNWAS-2	Belden 8777SB	Main Electronics Unit (MEU) Nav. Bridge Starboard Side Aft Bulkhead above GMDSS Console	Remote Alert Panel (RAP) Nav. Bridge Starboard Wing Console	20
BNWAS-3	Belden 8777SB	Remote Alert Panel (RAP) Nav. Bridge Starboard Wing Console	Remote Alert Panel (RAP) Nav. Bridge Port Wing Console	20
BNWAS-4	Belden 8777SB	Main Electronics Unit (MEU) Nav. Bridge Starboard Side Aft Bulkhead above GMDSS Console	PIR Junction Box Nav. Bridge Deck Head above MEU	3
BNWAS-5	Belden 8777SB	PIR Junction Box Nav. Bridge Deck Head above MEU	Motion Sensor (PIR) Nav. Bridge Port Wing Deck Head	20
BNWAS-6	Belden 8777SB	PIR Junction Box Nav. Bridge Deck Head above MEU	Motion Sensor (PIR) Nav. Bridge Starboard Wing Deck Head	15
BNWAS-7	Belden 8777SB	PIR Junction Box Nav. Bridge Deck Head above MEU	Motion Sensor (PIR) Nav. Bridge above Forward Center Console	15
BNWAS-8	Belden 8777SB	Main Electronics Unit (MEU) Nav. Bridge Starboard Side Aft Bulkhead above GMDSS Console	Junction Box Located in the Crawl Space under the GMDSS Console	5
BNWAS-9	Belden 8777SB	Junction Box Located in the Crawl Space under the GMDSS Console	Nav. Bridge X-Band Console (Display A) Nav. Bridge Port Side of Nav. Chart Console	15

		CCGS ANN HARVEY		
Spec Item #: L-05		SPECIFICATION		
BNWAS Installation				
BNWAS-10	Belden 8777SB	Junction Box Located in the Crawl Space under the GMDSS Console	Nav. Bridge S-Band Console (Display B) Nav. Bridge Starboard Side of Nav. Chart Console	10
BNWAS-11	Belden 8777SB	Junction Box Located in the Crawl Space under the GMDSS Console	Nav. Bridge ECDIS Console (Display C) Nav. Bridge Starboard Side of Nav. Chart Console	15
BNWAS-12	Belden 8777SB	Junction Box Located in the Crawl Space under the GMDSS Console	Nav. Bridge Aft Looking Radar Console (Display D) Nav. Bridge Starboard Side Forward Wing	20
BNWAS-13	Belden 8777SB	Main Electronics Unit (MEU) Nav. Bridge Starboard Side Aft Bulkhead above GMDSS Console	Nav. Bridge Forward Center Console Autopilot SCU	20
BNWAS-14	Belden 8777SB	Nav. Bridge Forward Center Console Autopilot SCU	Junction Box Located in the Crawl Space under the GMDSS Console	20
BNWAS-15	Belden 8777SB	Main Electronics Unit (MEU) Nav. Bridge Starboard Side Aft Bulkhead above GMDSS Console	Nav. Bridge Aft Bulkhead Center S_VDR Distribution Unit	15
BNWAS-16	Belden 8777SB	Main Electronics Unit (MEU) Nav. Bridge Starboard Side Aft Bulkhead above GMDSS Console	Officer's Deck Bulkhead alleyway Watch Alert Panel (WAP)	25
BNWAS-17	Belden 8777SB	Main Electronics Unit (MEU) Nav. Bridge Starboard Side Aft Bulkhead above GMDSS Console	Lower Deck Engine Control Room (MCR) Information Panel	50
EM120 6/8	Marine AC 14/3	Nav. Bridge Port Side Info Console Panel Em120 Breaker 6/8	Nav. Bridge AC Junction Box EM120 6/8 Crawl Space below BNWAS MEU	20

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BNWAS Installation					
EM120 6/8	Marine AC 14/3	Nav. Bridge AC Junction Box EM120 6/8 Deck head above BNWAS MEU	Main Electronics Unit (MEU) Nav. Bridge Starboard Side Aft above GMDSS Console	5	

3.2 Location

- 3.2.1 Nav. Bridge Deck
- 3.2.2 Nav. Bridge Crawl Space
- 3.2.3 Officer's Deck
- 3.2.4 Lower Deck

3.3 Interferences

- 3.3.1 Contractor is responsible for the identification of interference items, their temporary removal, storage, and refitting to vessel.

Part: 4 PROOF OF PERFORMANCE:

4.1 Inspection

- 4.1.1 All work must be subject to witness by the Chief Engineer of delegate and the attending surveyor.

4.2 Testing

- 4.2.1 All cables are to be checked for continuity after installation to ensure operational capability. Should any cable run fail to pass testing, the cable must be replaced at the contractor's expense.
- 4.2.2 All cable testing must be verified by a Coast Guard Technician.
- 4.2.3 New AC/DC circuits must be proven operational.
- 4.2.4 Electronic equipment which has been removed for the performance of this specification item must be returned to operational condition as it will be used as spares for similar equipment used in CCG fleet.

4.3 Certification

- 4.3.1 All original Class approval certificates for all system components must be submitted to the owner prior to acceptance of this item.

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Part: 5 DELIVERABLES:

5.1 Drawings/Reports

5.1.1 The contractor must provide the Chief Engineer with a typewritten report of the contractors work in both electronic and hardcopy formats outlining the details of the inspections and any alterations / repairs to the acceptance of this item.

5.2 Spares

5.2.1 All owner supplied cable which has not been used must be returned to the owner prior to the acceptance of the item.

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L-06 Radar ECDIS Upgrade

Part: 1 SCOPE:

- 1.1** The intention of this specification is for the removal of the existing Dual Bridge Master E Radar Systems and the Bridge Master II Aft (Escort) Radar System and upgrade to the new owner supplied FURUNO FAR-3000 Series Radar System and FURUNO FMD-3000 Series Electronic Chart Display and Information System (ECDIS).
- 1.2** Contractor must supply all materials, and parts required to perform the specified work unless otherwise stated.
- 1.3** This work must be carried out in conjunction with the BNWAS Installation Specification.
- 1.4** Contractor must complete all work as specified within this specification within 20 working days from the refit start date as provided by Contracting Authority. This will allow the CCG Technical Representatives, FSR's, and Classifications Society time to complete terminations and complete inspections prior to vessel returning to operation and onto its scheduled programs.

Part: 2 REFERENCES:

2.1 Reference Documentation and Drawings

Drawing Number	Description	Electronic Number
07221901	CCGS Ann Harvey Bridge Master E Radar System Wiring Diagram	
07221501	CCGS Ann Harvey Bridge Master "E" S & X Band (Dual Radar) Block Diagram	
07221301	CCGS Ann Harvey Proposed Changes to General Arrangement of Navigation Bridge and Wheelhouse	
Preliminary	CCGS Ann Harvey FURUNO Radar ECDIS Type 1 Configuration Wiring Diagram	
68806001	CCGS Ann Harvey Console Adapter Base	
20020-410-SPC-045	CCGS Ann Harvey	

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	R-1 Removal and Installation of Navigational Radars Specification Allswater Marine Consultants Ltd.	
20020-410-S-045	CCGS Ann Harvey New Radar Structural Mounting Arrangement Drawings Allswater Marine Consultants Ltd.	
IME-36160-C2 Rev. C2	FURUNO FAR-3210(-BB)/3220(-BB)/3310/3320 CHART RADAR Installation Manual	
IME-36240-C3 Rev. C3	FURUNO FAR-3320W/3220W-BB/3330SW/3230SW-BB CHART RADAR Installation Manual	
IME-44730-E Rev. E	FURUNO FMD-3200/3200-BB/3300 ECDIS Installation Manual	
C3616-G02-D	FURUNO X-Band Antenna Unit RSB-128 Outline Drawing (Aft Looking Radar Turning Unit)	
C3624-G03-F	FURUNO X-Band Antenna Unit RSB-130 Outline Drawing (X-Band Turing Unit)	
C3625-G01-C	FURUNO S-Band Antenna Unit RSB-131 Outline Drawing (S-Band Turning Unit)	
Preliminary	CCGS Ann Harvey Sailor 6222 #4 VHF-DSC Block Diagram	

2.2 Standards

2.2.1 Fleet Safety and Security Manual (DFO/5737)

2.2.2 TP127E – Ships Electrical Standards

2.2.3 IEEE 45:2002 – Recommended Practice for Electrical Installations on Ships

2.2.4 Specification for the Installation of Shipboard Electronic Equipment (70-000-000-EU-JA-001)

2.2.5 General Information for the Rules and Regulations for the Classification of Ships.

2.3 Regulations

2.3.1 Canada Shipping Act, 2001

Part: 3 TECHNICAL DESCRIPTION

3.1 General

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- 3.1.1** The contractor must supply all equipment, enclosures, ventilation, staging, scaffolding, chain falls, carnage, crane, slings, and shackles necessary to perform the work. All lifting equipment must be appropriate for the expected duties, and be accompanied by current certification indicating, or be permanently marked as to being, or a safe working load for the expected duties. Any brackets, mounts, or any other welded attachments required in the performance of this specification must be welded into place by certified welders.
- 3.1.2** Prior to any hot work taking place, the contractor must ensure that the area of work and all equipment must have be sufficiently protected from any sparks or metal filings.
- 3.1.3** In addition to any hot work taking place, which includes grinding and welding, the Contractor must check the vessels lead abatement documents and follow proper lead abatement procedures. If any area is of any concern, it will be brought to the attention of the Chief Engineer and a lead abatement will be conducted.
- 3.1.4** For the purpose of adjustments, the Contractor must provide a unit cost for the testing of lead. Any lead testing will be covered by a 1379.
- 3.1.5** Contractor must ensure that all areas have been cleaned and free of any debris resulting from the performance of this specification item.
- 3.1.6** Contractor must be responsible for the temporary removal and reinstallation of any deck heads, bulkheads, paneling, insulation, and any items that is deemed to be interfering to the running of any cables and mounting of any equipment.
- 3.1.7** The contractor must follow existing cable trays throughout the vessel where fitted for all cable installation. Once installed, all cabling must be secured as per TP127. Contractor must re-use existing cable penetrations and repack with classification society approved products. Any cable penetrations that are deemed not reusable by the contractor will be replaced and installed with new glands and dealt with by a 1379. Contractor must supply and install all required materials.
- 3.1.8** All cabling, once installed, the contractor must identify each cable with a marked stamped stainless steel metal tag. The labels are to be securely affixed to the cable at each end and through any deck, deck heads, and gland penetrations with the designation for each cable as provided in this specification.
- 3.1.9** Contractor must provide a unit cost for the supply and install of a new classification society approved ROXTEC R125 AISI 316 transit complete with blocks and suitable piping. If there is the requirement for any new transits that are not listed within this specification they will be dealt with by a 1379.
- 3.1.10** Contractor must provide a unit cost for the supply and installation of ten (10) meters (m) of cable listed within this specification.
- 3.1.11** The contractor must dispose of all cables that have been identified for removal below and in the reference drawings at their own expense.

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- 3.1.12** Contractor must repack all glands and transits that will be reused as per this specification and the method must meet or exceed TCMS or classification society requirements.
- 3.1.13** Contractor must relabel and update all electrical supply feeds on electrical panels within this specification.
- 3.1.14** Prior to the commencement of any electrical work, the contractor must ensure that all electrical supplies feeding the systems have been isolated at the source following an established lockout/tag out procedure.
- 3.1.15** Electrical isolations for AC power are as follows.
- 110 VAC Emergency Generator Room 120 VAC Electrical Distribution Panel Circuit # 5 (R-1ER) STBD X-Band Radar
 - 110 VAC Emergency Generator Room 120 VAC Electrical Distribution Panel Circuit # 6 (R-2ER) PORT S-Band Radar
 - 110 VAC Emergency Generator Room 120 VAC Electrical Distribution Panel Circuit # 12 S-Band Turning Unit (via 110/220 Step-Up Transformer in Crawl Space)
 - Panel IC-101 Breaker # 20 (IC-101-20) Nav. Console Forward INFONAV/Regulus Console Starboard Side
 - Panel IC-101 Breaker # 17 (IC-101-17) Nav. Console Forward ECPINS Console Port Side Forward
 - Panel EP-101 Breaker # 4 (EP-101-4) Nav. Console Forward ICE-VU Workstation Starboard Side
 - Panel IC-101 Breaker # 16 (IC-101-16) Nav. Console Forward IMIC3 Workstation Starboard Side
 - Panel IC-101 Breaker # 6 (IC-101-6) Nav. Console Forward Wind Speed Indicator and Man Over Board Display Aft Bulkhead
 - AFT Looking Radar Outlet located in console Starboard Side
 - Panel EM120 Breaker # 9/11 (EM120-9/11) Info Console VHF #4 Nav. Console Port Side
- 3.1.16** Upon final installation, testing must be carried out as per Section 4.2 of this specification item.
- 3.1.17** All electronic equipment and components removed from the vessel resulting from the performance of this specification must be safely stored and returned to the owner as these components must be used to service similar systems on CCG vessels.

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3.1.18 Contractor must work in conjunction with a Coast Guard Electronic Technician to oversee the installation of the new systems to ensure compliance with applicable Coast Guard standards. Terminations of all equipment must be completed by CCG technicians except all AC/DC power.

3.1.19 Contractor must refer to Specification 20020-410-SPC-045 R-1 Removal and Installation of Navigation Radars and Drawing Number 20020-410-S-045 for the removal of the old radar turning units, for the modifications to the radar pedestals, and for the installation of the new radar turning units.

3.1.20 Contractor must disconnect and remove all of the existing equipment and cabling associated within the systems as detailed in reference drawings and equipment accompanied in the tables below. It would be recommended to start the cable removal from the equipment side to eliminate any discrepancies within the applicable drawings. Reference pictures below.

3.1.21 Equipment Removal

Equipment	Location
X-Band Radar Console (Display B) complete with: <ul style="list-style-type: none"> • Processor • Display • Control Panel • Serial Interface Unit • VDR Remote Video Unit • Video Splitter • AC Isolation Switch • AC Junction Box • Puro-Flow Fuse Box 	Nav. Bridge Starboard Side Forward
Aft Looking Radar Console (Display C) complete with: <ul style="list-style-type: none"> • Processor • Display • Control Panel • Power Bar • Video Splitter • USB Hub • VDR Video Unit • AC Outlet 	Nav. Bridge Starboard Side Forward Next to Wing Console

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<ul style="list-style-type: none"> • Matrix/ServSwitch 	
S-Band Radar Console (Display A) complete with: <ul style="list-style-type: none"> • Processor • Display • Control Panel • Isolation Switch • Scanner Control Unit • AC Junction Box • Serial Interface Unit • Puro-Flow Fuse Box • Book Shelf • ECS Monitor/Keyboard/Trackball 	Nav. Bridge Port Side of Nav. Console
Cabinetry	Nav, Bridge Aft Bulkhead Surrounding Radar Transceivers
Workstation Desk	Nav. Bridge Aft Bulkhead Bridge Workstation
Wooden Shelf	Nav. Bridge Aft Locker Room 104
X-Band Transceiver	Nav. Bridge Aft Bulkhead
S-Band Transceiver	Nav. Bridge Aft Bulkhead
Radar Inter-Switch	Nav. Bridge Aft Bulkhead
S-Band Scanner Safety Switch	Main Mast Base of 1 st Radar Platform
S-Band Turning Unit & Antenna	Main Mast 1 st Platform
X-Band Scanner Safety Switch	Main Mast Base of 2 nd Radar Platform
X-Band Turning Unit & Antenna	Main Mast 2 nd Platform
X-Band Turning Unit (Aft)	Base of Aft Mast Starboard Side
ECPINS Console (Blue) Complete with: <ul style="list-style-type: none"> • PC • UPS • VGA Splitter • AC Outlet • USB Serial Hub 	Nav. Bridge Port Side Forward
INFONAV Console (Light Blue)	Nav. Bridge

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Radar ECDIS Upgrade	
<p style="text-align: center;">complete with:</p> <ul style="list-style-type: none"> • PC • UPS • Monitor/Keyboard/Trackball • Speakers • USB Serial Hub • AC Outlet • VGA Video Splitter • Power Bar 	<p>Starboard Side Forward</p>
<p style="text-align: center;">Workstation Desk Complete with:</p> <ul style="list-style-type: none"> • IMIC3 Monitor/Keyboard/Trackball • IMIC3 Speakers • IMIC3 PC • IMIC3 Printer • IMIC3 Router/Switch • IMIC3 Below Deck Equipment (BDE) • IMIC3 UPS • IMIC3 Power Bar • IMIC3 USB Serial Adapter • IMIC3 24 VDC Power Supply • Ice-Vu Modem • Ice-Vu Monitor/Keyboard/Trackball • Ice-Vu PC • Ice-Vu Power Bar • Ice-Vu Printer 	<p>Nav. Bridge Starboard Side of Nav. Console Ice-Vu and IMIC3 Workstations</p>
<p>9 KVA Step-Up Transformer (110/220) for S-Band Scanner</p>	<p>Nav. Bridge Crawl Space Center</p>

Pictures: X-Band Radar Console (Display B) and Associated Equipment

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Pictures: S-Band Radar Console (Display A) and Associated Equipment

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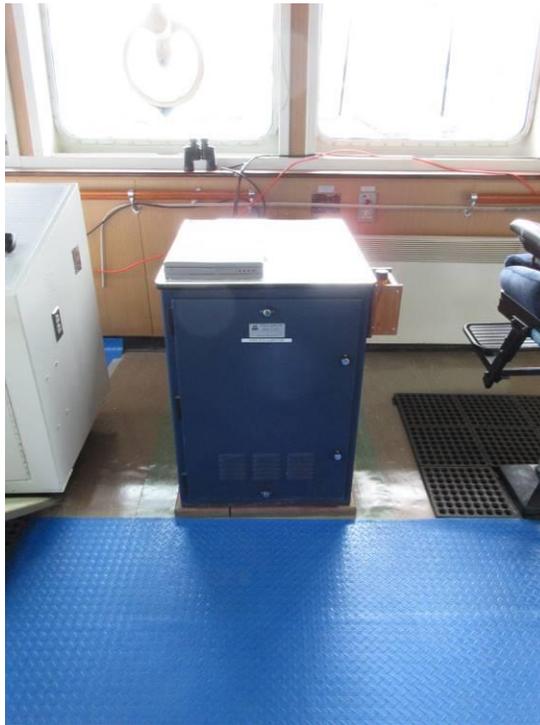


Pictures: Aft Looking Radar (Display C) and Associated Equipment



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Pictures: ECPINS Console (Blue)



Pictures: INFONAV Console

(Light Blue)



Pictures: Aft Bulkhead Cabinetry and Bridge Workstation Desk

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Pictures: Workstation Desk IMIC3 and Ice-Vu



3.1.22 The Contractor must remove all associated cabling listed below in Cable Removal List and within the reference drawings listed.

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3.1.23 Cable Removal List

Cable Number Type Label	From	To
X-Band Radar Console (Display B)		
205 RDR-DB-AC	Nav. Bridge Forward Starboard X-Band Radar Console	Nav. Bridge Forward Starboard X-Band Radar Console
204 RDR-TB-AC	Nav. Bridge Forward Starboard X-Band Radar Console	Nav. Bridge Aft Bulkhead X-Band Transceiver
B212 RDR-DB-TRIG	Nav. Bridge Forward Starboard X-Band Radar Console	Nav. Bridge Aft Bulkhead Center Radar Inter-Switch Unit
B211 RDR-DB-VID	Nav. Bridge Forward Starboard X-Band Radar Console	Nav. Bridge Aft Bulkhead Center Radar Inter-Switch Unit
B213 RDR-DB-ISW1	Nav. Bridge Forward Starboard X-Band Radar Console	Nav. Bridge Aft Bulkhead Center Radar Inter-Switch Unit
B214 RDR-DB-ISW2	Nav. Bridge Forward Starboard X-Band Radar Console	Nav. Bridge Aft Bulkhead Center Radar Inter-Switch Unit
LC-42 Gyro Feed	Nav. Bridge Forward Starboard X-Band Radar Console	Nav. Bridge Center Nav. Console Starboard
198 RDR-DB-GYRO	Nav. Bridge Forward Starboard X-Band Radar Console	Boat Deck Electronic Equipment Room Gyro Compass
RDR-DB-GPS	Nav. Bridge Forward Starboard X-Band Radar Console	Nav. Bridge Center Nav. Console Starboard
DL-9	Nav. Bridge Forward Starboard X-Band Radar Console	Nav. Bridge Center Nav. Console Starboard
237 RDR-DB-ARPA	Nav. Bridge Forward Starboard X-Band Radar Console	Nav. Bridge Forward Port Port ECS ECPINS Console (Blue)
IMIC3-ARPA-S	Nav. Bridge Forward Starboard X-Band Radar Console	Nav. Bridge Starboard IMIC3 Workstation Desk
VGA Cable	Nav. Bridge Forward Starboard X-Band Radar Console	Nav. Bridge Starboard Aft Looking Radar Console Display C
VGA Cable	Nav. Bridge Forward Starboard X-Band Radar Console	Nav. Bridge Port S-Band Radar Console Display A
Cat5E Cable	Nav. Bridge Forward Starboard X-Band Radar Console	Nav. Bridge Center Nav. Console
206 RDR-SB- BEARING	Nav. Bridge Aft Bulkhead X-Band Transceiver	Main Mast 2 nd Platform X-Band Turning Unit
206 (Extra Cable)	Nav. Bridge Aft Bulkhead X-Band Transceiver	Main Mast 2 nd Platform X-Band Turning Unit
207 RDR-SB-PMTRIG	Nav. Bridge Aft Bulkhead X-Band Transceiver	Main Mast 2 nd Platform X-Band Turning Unit

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207 (Extra Cable)	Nav. Bridge Aft Bulkhead X-Band Transceiver	Main Mast 2 nd Platform X-Band Turning Unit
208 RDR-SB-MOTOR	Nav. Bridge Aft Bulkhead X-Band Transceiver	Main Mast 2 nd Platform X-Band Turning Unit Safety Switch
208 RDR-SB-MOTOR	Main Mast 2 nd Platform X-Band Turning Unit Safety Switch	Main Mast 2 nd Platform X-Band Turning Unit
209 RDR-SB- TUENABLE	Nav. Bridge Aft Bulkhead X-Band Transceiver	Main Mast 2 nd Platform X-Band Turning Unit
B225 RDR-TB-VID	Nav. Bridge Aft Bulkhead X-Band Transceiver	Nav. Bridge Aft Bulkhead Center Radar Inter-Switch Unit
B226 RDR-TB-IEW	Nav. Bridge Aft Bulkhead X-Band Transceiver	Nav. Bridge Aft Bulkhead Center Radar Inter-Switch Unit
RIGID WAVEGUIDE	Nav. Bridge Aft Bulkhead X-Band Transceiver	Main Mast 2 nd Platform X-Band Turning Unit
S-Band Radar Console (Display A)		
205 RDR-DA-AC	Nav. Bridge Port S-Band Radar Console Display A	Nav. Bridge Port S-Band Radar Console Display A
A211 RDR-DA-VID	Nav. Bridge Port S-Band Radar Console Display A	Nav. Bridge Aft Bulkhead Radar Inter-Switch Unit
A212 RDR-DA-TRIG	Nav. Bridge Port S-Band Radar Console Display A	Nav. Bridge Aft Bulkhead Radar Inter-Switch Unit
A213 RDR-DA-ISW1	Nav. Bridge Port S-Band Radar Console Display A	Nav. Bridge Aft Bulkhead Radar Inter-Switch Unit
A214 RDR-DA-ISW2	Nav. Bridge Port S-Band Radar Console Display A	Nav. Bridge Aft Bulkhead Radar Inter-Switch Unit
LC-41 Gyro Feed	Nav. Bridge Port S-Band Radar Console Display A	Nav. Bridge Center Nav. Console Starboard
198 RDR-DA-GYRO	Nav. Bridge Port S-Band Radar Console Display A	Boat Deck Electronics Equipment Room Gyro Compass
RDR-DA-GYRO- NMEA	Nav. Bridge Port S-Band Radar Console Display A	Nav. Bridge Center Nav. Console Starboard
RDR-DA-GPS	Nav. Bridge Port S-Band Radar Console Display A	Nav. Bridge Center Nav. Console Starboard

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199 RDR-DA-GPS	Nav. Bridge Port S-Band Radar Console Display A	Nav. Bridge Center Nav. Console Starboard
RDR-DA-LOG	Nav. Bridge Port S-Band Radar Console Display A	Nav. Bridge Center Nav. Console Starboard
197 RDR-DA-LOG	Nav. Bridge Port S-Band Radar Console Display A	Nav. Bridge Center Nav. Console Starboard
DL-8	Nav. Bridge Port S-Band Radar Console Display A	Nav. Bridge Center Nav. Console Starboard
IMIC3-ARPA-X	Nav. Bridge Port S-Band Radar Console Display A	Nav. Bridge Starboard IMIC3 Workstation Desk
207 RDR-DA-ARPA	Nav. Bridge Port S-Band Radar Console Display A	Nav. Bridge Starboard ECS Console INFONAV Console (Light Blue)
S-Band to ECS	Nav. Bridge Port S-Band Radar Console Display A	Nav. Bridge Port Forward ECS Console ECPINS Console (Blue)
USB Extension Cables (x2)	Nav. Bridge Port S-Band Radar Console Display A	Nav. Bridge Port Forward ECS Console ECPINS Console (Blue)
DGPS	Nav. Bridge Port S-Band Radar Console Display A	Nav. Bridge Port Forward ECS Console ECPINS Console (Blue)
Global star	Nav. Bridge Port S-Band Radar Console Display A	Nav. Bridge Aft Bulkhead under Bridge Workstation
184 RDR-TA-AC	Nav. Bridge Port S-Band Radar Console Display A	Nav. Bridge Aft Bulkhead S-Band Transceiver
180 RDR-SCU- TUENABLE	Nav. Bridge Port S-Band Radar Console Display A	Nav. Bridge Aft Bulkhead S-Band Transceiver
184 RDR-SCU-AC	Nav. Bridge Crawl Space 110/220 VAC Step Up Transformer	Nav. Bridge Port S-Band Radar Console Display A Scanner Control Unit (SCU)
A225 RDR-TA-VID	Nav. Bridge Port S-Band Radar Console Display A	Nav. Bridge Aft Bulkhead Radar Inter-Switch Unit
A226 RDR-TA-ISW	Nav. Bridge Port S-Band Radar Console Display A	Nav. Bridge Aft Bulkhead Radar Inter-Switch Unit
166	Nav. Bridge Port	Main Mast

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RDR-SA-MOTOR	S-Band Radar Console Display A	1 st Platform S-Band Radar Safety Switch
166 RDR-SA-MOTOR	Main Mast 1 st Platform S-Band Radar Safety Switch	Main Mast 1 st Platform S-Band Radar Turning Unit
168 RDR-SA-BEARING	Nav. Bridge Aft Bulkhead S-Band Transceiver	Main Mast 1 st Platform S-Band Radar Turning Unit
169 RDR-SA-PMTRIG	Nav. Bridge Aft Bulkhead S-Band Transceiver	Main Mast 1 st Platform S-Band Radar Turning Unit
Coaxial (Heliax)Waveguide AVA5-50	Nav. Bridge Aft Bulkhead S-Band Transceiver	Main Mast 1 st Platform S-Band Radar Turning Unit
Aft Looking Radar Console (Display C)		
LC-40 Gyro Feed	Nav. Bridge Starboard Aft Looking Radar Console Display C	Nav. Bridge Center Nav. Console Starboard
DL-10	Nav. Bridge Starboard Aft Looking Radar Console Display C	Nav. Bridge Center Nav. Console Starboard
GPS	Nav. Bridge Starboard Aft Looking Radar Console Display C	Nav. Bridge Center Nav. Console Starboard
Scanner Cable	Nav. Bridge Starboard Aft Looking Radar Console Display C	Officers Deck Lower Aft Mast Radar Scanner Starboard
AC Power	Nav. Bridge Starboard Aft Looking Radar Console Display C	Nav. Bridge Starboard Aft Looking Radar Console Display C
KVM Cable (White)	Nav. Bridge Starboard Aft Looking Radar Console Display C	Nav. Bridge Starboard X-Band Radar Console Display B
KVM Cable (White)	Nav. Bridge Starboard Aft Looking Radar Console Display C	Nav. Bridge Port S-Band Radar Console Display A
KVM Cable (White)	Nav. Bridge Starboard Aft Looking Radar Console Display C	Nav. Bridge Starboard Starboard ECS Console INFONAV Console (Light Blue)
KVM Cable (White)	Nav. Bridge Starboard Aft Looking Radar Console Display C	Nav. Bridge Forward Port Port ECS Console ECPINS Console (Blue)
KVM Cable (White)	Nav. Bridge Starboard Aft Looking Radar Console Display C	Nav. Bridge Starboard Wing Console

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KVM Cable (White)	Nav. Bridge Starboard Aft Looking Radar Console Display C	Nav. Bridge Starboard ECS Console INFONAV Console (Light Blue)
KVM Cable (White)	Nav. Bridge Starboard Aft Looking Radar Console Display C	Nav. Bridge Port Forward Port ECS Console ECPINS Console (Blue)
KVM Cable (White)	Nav. Bridge Starboard Aft Looking Radar Console Display C	Nav. Bridge Port Wing Console
ECPINS Console (Blue)		
LC-44 Gyro Feed	Nav. Bridge Forward Port Port ECS Console ECPINS Console (Blue)	Boat Deck Electronics Equipment Room Gyro Compass
VDR-20	Nav. Bridge Forward Port Port ECS Console ECPINS Console (Blue)	Nav. Bridge Aft Bulkhead S-VDR Distribution Box
VDR-19	Nav. Bridge Forward Port Port ECS Console ECPINS Console (Blue)	Nav. Bridge Aft Bulkhead S-VDR Distribution Unit
DL-12	Nav. Bridge Forward Port Port ECS Console ECPINS Console (Blue)	Nav. Bridge Nav. Console Starboard Speed Log Electronics Unit
VGA Cable (Black)	Nav. Bridge Forward Port Port ECS Console ECPINS Console (Blue)	Nav. Bridge Port Nav. Console S-Band Radar Console Display A
Cat5E Cable	Nav. Bridge Forward Port Port ECS Console ECPINS Console (Blue)	Nav. Bridge Starboard Forward X-Band Radar Console Display B
Port DGPS ECS	Nav. Bridge Forward Port Port ECS Console ECPINS Console (Blue)	Nav. Bridge Nav. Console Starboard GPS Distribution
Printer Cable LPT XVME 686	Nav. Bridge Forward Port Port ECS Console ECPINS Console (Blue)	Nav. Bridge Aft Bulkhead Under Bridge Workstation Desk
Gyro Data (Azimuth Synchro)	Nav. Bridge Forward Port Port ECS Console ECPINS Console (Blue)	Nav. Bridge Nav. Console Starboard
VGA Cable (Black)	Nav. Bridge Forward Port Port ECS Console ECPINS Console (Blue)	Nav. Bridge Port Wing Console
RG-58/U Belden 8240	Nav. Bridge Forward Port Port ECS Console ECPINS Console (Blue)	Wheelhouse Top Forward Center
MX4200D Antenna Cable	Nav. Bridge Forward Port Port ECS Console	Wheelhouse Top Forward Center

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	ECPINS Console (Blue)	
MX50R Antenna Cable	Nav. Bridge Forward Port Port ECS Console ECPINS Console (Blue)	Wheelhouse Top Forward Center
Video Cables RG-6 (x3) (BL, GRN, RED)	Nav. Bridge Forward Port Port ECS Console ECPINS Console (Blue)	Nav. Bridge Starboard Wing Console
Video Cables RG-6 (x3) (BL, GRN, RED)	Nav. Bridge Forward Port Port ECS Console ECPINS Console (Blue)	Nav. Bridge Port Wing Console
INFONAV Console (Light Blue)		
LC-43 Gyro Feed	Nav. Bridge Starboard Forward Starboard ECS Console INFONAV Console (Light Blue)	Nav. Bridge Nav. Console Starboard
Wind Data	Nav. Bridge Starboard Forward Starboard ECS Console INFONAV Console (Light Blue)	Nav. Bridge Aft Bulkhead Wind Speed and Direction Display
AIS Data	Nav. Bridge Starboard Forward Starboard ECS Console INFONAV Console (Light Blue)	Nav. Bridge Starboard Nav. Console Center R4 Junction Box
DGPS Data	Nav. Bridge Starboard Forward Starboard ECS Console INFONAV Console (Light Blue)	Nav. Bridge Nav. Console Starboard GPS Distribution
Speed LOG Data	Nav. Bridge Starboard Forward Starboard ECS Console INFONAV Console (Light Blue)	Nav. Bridge Nav. Console Starboard Speed Log Electronics Unit
Gyro Data	Nav. Bridge Starboard Forward Starboard ECS Console INFONAV Console (Light Blue)	Nav. Bridge Nav. Console Starboard AIS R4 Junction Box
Gyro Feed (Old) 4 C 18 AWG	Boat Deck Electronics Equipment Room Gyro Compass	Boat Deck Electronics Equipment Room Gyro Compass
Printer Cable	Boat Deck Electronics Equipment Room Gyro Compass	Nav. Bridge Aft Bulkhead Under Bridge Workstation
ARPA Data	Boat Deck Electronics Equipment Room Gyro Compass	Nav. Bridge Forward Starboard X-Band Radar Console Display B
Data Cables (x3) Grey Jacket	Boat Deck Electronics Equipment Room Gyro Compass	Nav. Bridge Aft Bulkhead Under Bridge Workstation
IMIC3 and Ice-Vu Workstation Desk		
IMIC3-GPS	Nav. Bridge Starboard IMIC3 Workstation Desk	Nav. Bridge Nav. Console Center

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		GPS Distribution
IMIC3-AIS	Nav. Bridge Starboard IMIC3 Workstation Desk	Nav. Bridge Nav. Console Center AIS Distribution
Printer Cable	Nav. Bridge Starboard Ice-Vu Workstation Desk	Nav. Bridge Aft Bulkhead Under Bridge Workstation Desk
GPS Feed	Nav. Bridge Starboard Ice-Vu Workstation Desk	Nav. Bridge Center Nav. Console Center GPS Distribution
ICE-4	Nav. Bridge Starboard Ice-Vu Workstation Desk	Nav. Bridge Aft Bulkhead Under Bridge Workstation Desk
RG-11 Cable	Nav. Bridge Starboard Ice-Vu Workstation Desk	Nav. Bridge Aft Bulkhead Above Bridge Workstation
Bridge Workstation Aft Bulkhead		
VHF-DF Control Cable	Nav. Bridge Aft Bulkhead Old Inmarsat-B Cabinet Above Bridge Workstation Desk	Nav. Bridge Aft Locker Room 104
12C 24 AWG Data Cable	Nav. Bridge Aft Bulkhead Under Bridge Workstation Desk	Nav. Bridge Nav. Console Center

3.1.24 Contractor must reroute the following cables listed below in Cable Reroute Table.

Cable Re-route Table

Cable Number Type Label	From	To
IC-101-20 AC Power	Nav. Bridge Forward Starboard Starboard ECS Console INFONAV Console (Light Blue)	Nav. Bridge Starboard side of Nav. Chart Console New ECDIS Console location
IC-101-17 AC Power	Nav. Bridge Forward Port Port ECS Console ECPINS Console (Blue)	Nav. Bridge Port Side of Nav. Chart Console New ECS Console
EGR-110-12 AC Power	Nav. Bridge Crawl Space (Old Step Up Transformer)	Nav. Bridge Forward Starboard New Aft Looking Radar Console
EGR-110-6 AC Power	Nav. Bridge Port side of Nav. Chart Console Old S-Band Radar Console	Nav. Bridge Port side of Nav. Chart Console New X-Band Radar Console
EGR-110-5 AC Power	Nav. Bridge Forward Starboard Old X-Band Radar Console	Nav. Bridge Starboard side of Nav. Chart Console New S-Band Radar Console
IC-101-16 AC Power	Nav. Bridge Starboard side of Nav. Chart Console	Nav. Bridge Aft Bulkhead

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Radar ECDIS Upgrade		

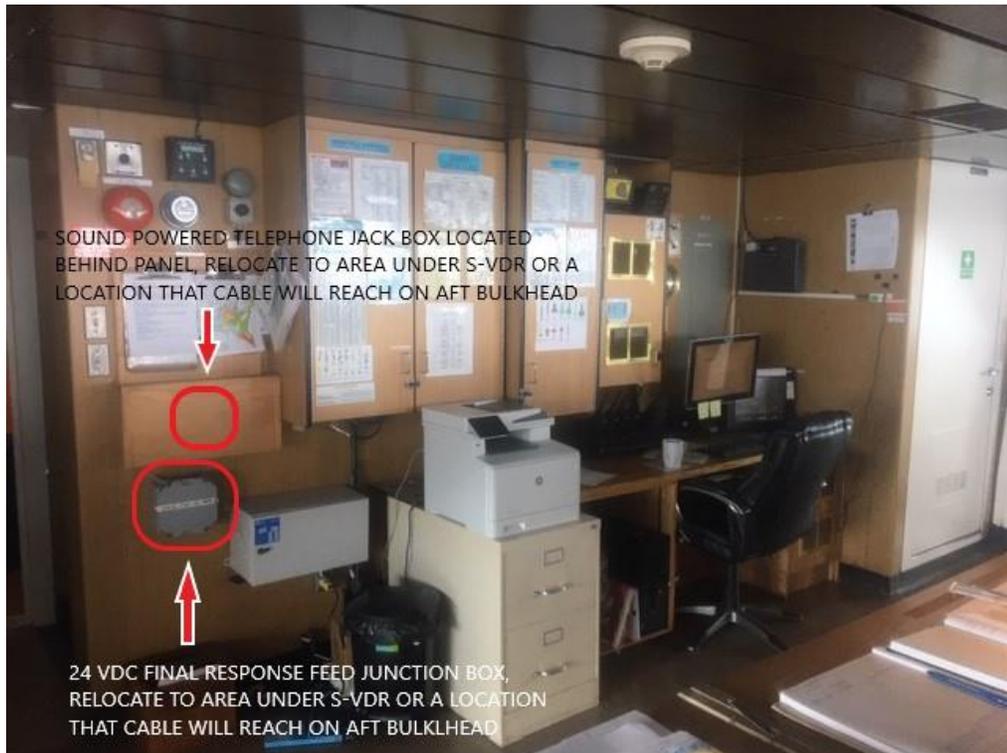
	old IMIC3 Workstation Desk	New location of IMIC3 Workstation
EP-101-4 AC Power	Nav. Bridge Starboard side of Nav. Chart Console old Ice-Vu Workstation Desk	Nav. Bridge Aft Bulkhead New location of Ice-Vu Workstation
ADE to BDE Cat5e Cable	Nav. Bridge Starboard side of Nav. Chart Console old IMIC3 Workstation Desk	Nav. Bridge Aft Bulkhead New location of IMIC3 Workstation
Cat5e Cable Belden 1300SB	Nav. Bridge Starboard side of Nav. Chart Console old IMIC3 Workstation Desk	Nav. Bridge Aft Bulkhead New location of IMIC3 Workstation
VDR-17	Nav. Bridge Forward Starboard Old Aft Looking Radar Console	Nav. Bridge Port side of Nav. Chart Console New X-Band Radar Console
GMD-34	Nav. Bridge Forward Starboard Old Aft Looking Radar Console	Nav. Bridge Forward Starboard New Aft Looking Radar Console
SW04 Cat5e Cable	Nav. Bridge Starboard side of Nav. Chart Console old Ice-Vu Workstation Desk	Nav. Bridge Aft Bulkhead New location of Ice-Vu Workstation

3.1.25 Contractor must reroute/relocate the existing 24 VDC Final Response Panel feed junction box to underneath the new fabricated workstation desk Nav. Bridge Aft Bulkhead. See picture below.

3.1.26 Contractor must reroute/relocated the existing Sound Powered Telephone (SPT) jack box to underneath the new fabricated workstation desk Nav. Bridge Aft Bulkhead. See picture below.

Picture: 24 VDC Final Response Feed Junction Box and Sound Powered Jack Box

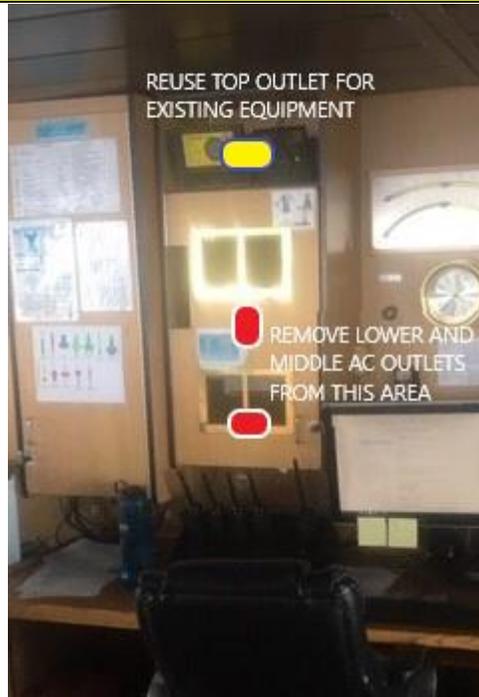
	CCGS ANN HARVEY	
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Radar ECDIS Upgrade		



3.1.27 There are three (3) outlets on the Nav. Bridge Aft Bulkhead that are fed from IC-101-6. Contractor must remove the middle and lower outlets completely and provide the same power feed to the upper outlet for the existing equipment. See picture below.

Picture: Outlets Location

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- 3.1.28** Contractor must reseal all deck penetrations, kick pipes, transits, etc. that are left following the removal and relocation of all equipment specified within this specification.
- 3.1.29** Contractor must supply and install new flooring materials to match the existing materials as found within the area of the Nav. Bridge from the removal or relocation of equipment and consoles. All materials must be certified for marine use.
- 3.1.30** Contractor must provide cable access to the Crawl Space under the Nav. Bridge for all of the new five (5) consoles by supplying and installing 4" long, 4" OD Schedule 40 pipe collars with a flange that will be bolted to the deck. Some may already have cable access but in order to properly fire stop, the existing cable access will have these new collars installed.
- 3.1.31** Contractor must supply and install the necessary material to provide an additional cable deck access under the Nav. Console Starboard side to the starboard side of the existing cable access collar. This can be similar to the above statement in 3.1.27 with regard to the collars.
- 3.1.32** Contractor must seal each new and existing deck penetration with marine grade fire stop when all cabling is verified complete by CCG Technical Representative.
- 3.1.33** Contractor must place any unused or un-removed cables into junction boxes and ensure they are isolated. Contractor must supply and install all junction boxes needed complete with glands.
- 3.1.34** Contractor must supply and install four (4) new 120 VAC 15 A breakers for an EATON 3CBL118 Electrical Panel located on the Nav. Bridge port side Info Console.

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- 3.1.35** Contractor must supply, fabricate, and install new mounting plates/shelves for the four (4) new Isolation Transformers to be installed within the Crawl Space area under the Nav. Bridge within the area of the new consoles.
- 3.1.36** Contractor must provide a grounding lug/stub for all the new equipment and consoles. Lugs/stubs to be attached to the vessels hull within close proximity.
- 3.1.37** Contractor must modify the existing deck head panels in Locker Room 104 Nav. Bridge Aft for new cables and waveguides access.
- 3.1.38** Contractor to supply and install new ROXTEC R 100 B Ex AISI 316 kit within the Crawl Space area Aft, above outside entrance to Officers Deck, to allow cable access to the stairwell on the Officers Deck which will lead into Locker Room 104.
- 3.1.39** Contractor must supply and install similar collar as stated within 3.1.27 to allow cable access to Locker Room 104 from the stairwell underneath.
- 3.1.40** Contractor must modify the existing panel within the Nav. Console Port Side to install a new Sailor 6222 VHF Transceiver above an existing Sailor 6222 and Sailor 6203 Control Head for the MF/HF radio. The existing Sailor Alarm Panel will be relocated to allow space for new VHF unit.
- 3.1.41** Contractor must install the new owner supplied FURUNO FAR 3000 and FMD 3000 Series Radar and ECDIS System, as detailed in reference drawings and as per manufacturer's installation instructions. Equipment list is shown below. Locations to be finalized prior to installing and mounting by CCG Technical Authority.
- 3.1.42** Contractor must supply and install U-Channel or similar hardware for the mounting of equipment within Locker Room 104 Nav. Bridge Aft.
- 3.1.43** Contractor must supply all mounting hardware, unless supplied with equipment, and all hardware must be of 316 Grade Stainless Steel.
- 3.1.44** Contractor must reference the CCGS Ann Harvey Proposed Changes to Navigation Bridge and Wheelhouse Drawing for proposed locations of the new consoles and relocated materials. Final location will be determined by Technical Authority prior to installation.
- 3.1.45** Contractor must reference specification 20020-410-SPC-045 CCGS Ann Harvey Radar Replacement and Pedestal Modification Specification and Drawings 20020-410-S-045 by Allswater Marine Consultants for the removal of the old radar scanners, pedestal modifications, and the removal and installation of the waveguide and coaxial cable feeding the new radar scanners.

3.1.46 Equipment List

Equipment	Mounting Location
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Radar ECDIS Upgrade	
X-Band Console (Display A)	Nav. Bridge Port Side of Nav. Chart Console
S-Band Console (Display B)	Nav. Bridge Starboard Side of Nav. Chart Console
ECDIS Console (Display C)	Nav. Bridge Starboard Side of Nav. Console next to the S-Band Console Display B
AFT Looking Radar Console (Display D)	Nav. Bridge Forward Starboard Side next to Starboard Wing
Isolation Transformers (x4)	Nav. Bridge Crawl Space under each new console <ul style="list-style-type: none"> • X-Band Console Display A • S-Band Console Display B • ECDIS Console Display C • Aft Looking Radar Display D
Power Supply Unit (PSU-014) X-Band (Display A)	Nav. Bridge Aft Locker Room 104 Port Bulkhead under existing Searchlight Power Supplies
Power Supply Unit (PSU-014) S-Band (Display B)	Nav. Bridge Aft Locker Room 104 Port Bulkhead under existing Searchlight Power Supplies
Power Supply Unit (PSU-014) AFT Looking Radar (Display D)	Nav. Bridge Aft Locker Room 104 Forward bulkhead under Iridium Sat Phone Transceiver
X-Band Transceiver RTR-108 25 KW	Nav. Bridge Aft Locker Room 104 Aft Bulkhead
S-Band Transceiver RTR-109 30 KW	Nav. Bridge Aft Locker Room 104 Aft Bulkhead
Isolation Switches (x4)	Mounted within each new console <ul style="list-style-type: none"> • X-Band Radar Display A • S-Band Radar Display B • ECDIS Display C • Aft Looking Radar Display D
Scanner Safety Switches (x3)	Three (3) new radar turning unit safety switches mounted at the following locations: <ul style="list-style-type: none"> • X-Band Radar Turning Unit Safety Switch mounted at entrance to 2nd Platform main Mast where old switch located

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Radar ECDIS Upgrade	
	<ul style="list-style-type: none"> • S-Band Radar Turning Unit Safety Switch mounted at entrance to 1st platform Main Mast where existing switch located • Aft Looking Radar Turning Unit Safety Switch mounted at base of pedestal Starboard Side of Aft Mast
X-Band Turning Unit RSB-130N (c/w 6.5 ft. Antenna)	New pedestal Main Mast 2 nd Platform
S-Band Turning Unit RSB-131N (c/w 12 ft. Antenna)	New pedestal Main Mast 1 st Platform
X-Band Turning Unit RSB-128 (c/w 4 ft. Antenna)	Modified pedestal Starboard Side of Aft Mast
Port Wing Monitor Bracket	Mounted to Port Wing Console
Starboard Wing Monitor Bracket	Mounted to Starboard Wing Console
Commanding Officers Cabin Monitor Bracket	Mounted at determined location
Sailor 6222 VHF Transceiver	Flush mounted within existing plate within Nav. Chart Console Port Side

3.1.47 Contractor must supply the material, fabricate, and install new base adapter plates for four (4) new consoles. Refer to Drawing # 68805901. The adapter bases will be mounted between the new consoles, new fabricated wooden base and the deck. The adapter base will be of welded steel construction, a minimum of 3/16" thickness, and it will be primed and painted to match the new consoles. All dimensions are to be confirmed at the time of fabrication and installation.

3.1.48 Contractor must install four (4) new owner supplied consoles to the new fabricated console adapter bases. Take note that a new fabricated console will be mounted next to the new X-Band Radar Console (Display A) for the vessels Electronic Charting System (ECS).

3.1.49 Contractor must supply and install new cable hangers to support all cabling within this specification.

3.1.50 Contractor must supply and install an extension to the existing goose neck piping on the Wheelhouse Top Forward Center to allow proper clearance for the transit. Contractor to supply and install either a new ROXTEC R125 or R127 AISI 316 transit complete with blocks to complete this work. Contractor must verify the existing gooseneck pipe to fit either transit prior to replacement.

3.1.51 Contractor must supply and install five (5) junction boxes complete with cable glands for the AC Power within all new consoles.

3.1.52 Contractor must install all cabling as supplied by owner except AC power feeds as referenced in preliminary drawing CCGS Ann Harvey FURUNO Radar ECDIS Type 1 Configuration and in Cable List below. Contractor must supply and install all required AC power cables.

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Radar ECDIS Upgrade		

3.1.53 All cable terminations will be conducted by CCG Technicians with the exception of AC power. Contractor must terminate all AC required power.

3.1.54 Cable List

Cable Label	Cable Type	From	To	Signal
X-Band Radar (Display A)				
RDR-A-WG	Elliptical Waveguide EW85	X-Band Transceiver RTR-108 Nav. Bridge Aft Locker Room 104	X-Band Turning Unit RSB-130 Main Mast 2 nd Platform	RF
RDR-A-2	TTYCYSL A-10	X-Band Transceiver RTR-108 Nav. Bridge Aft Locker Room 104	X-Band Turning Unit RSB-130 Main Mast 2 nd Platform	Power/Data
RDR-A-1	Factory Cable	X-Band Transceiver RTR-108 Nav. Bridge Aft Locker Room 104	Power Supply Unit (PSU-014) X-Band Nav. Bridge Aft Locker Room 104	Power/Data
EGR-110-6	Marine AC 14/3	Nav. Bridge EGR-110-6 Junction Box X-Band Console (Display A)	Nav. Bridge X-Band Isolation Switch X-Band Console (Display A)	AC Power
EGR-110-6-A	Marine AC 14/3	Nav. Bridge X-Band Isolation Switch X-Band Console (Display A)	Wheelhouse Top Main Mast base of 2 nd Platform X-Band Safety Switch	AC Power
EGR-110-6-B	Marine AC 14/3	Main Mast base of 2 nd Platform X-Band Safety Switch	Power Supply Unit (PSU-014) X-Band Nav. Bridge Aft Locker Room 104	AC Power
EGR-110-6-C	Marine AC 14/3	Nav. Bridge X-Band Isolation Switch X-Band Console (Display A)	Nav. Bridge Crawl Space X-Band Radar System Isolation Transformer	AC Power
EGR-110-6-D	Marine AC 14/3	Nav. Bridge Crawl Space X-Band Radar System Isolation Transformer	Nav. Bridge X-Band Isolation Switch X-Band Console (Display A)	AC Power
RDR-A-3	Belden 1300SB	X-Band (Display A) Console Nav. Bridge Port Side of Nav. Chart Console	Power Supply Unit (PSU-014) X-Band Nav. Bridge Aft Locker Room 104	LAN
RDR-A-4	Belden 8777SB	X-Band	Power Supply Unit (PSU-014) X-Band Nav. Bridge Aft	DATA

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Radar ECDIS Upgrade				
		(Display A) Console Nav. Bridge Port Side of Nav. Chart Console	Locker Room 104	
RDR-A-5	Belden 1300SB	X-Band (Display A) Console Nav. Bridge Port Side of Nav. Chart Console	ECDIS (Display C) Console Nav. Bridge Starboard Side of Nav. Chart Console	LAN
RDR-A-6	Belden 1300SB	X-Band (Display A) Console Nav. Bridge Port Side of Nav. Chart Console	ECDIS (Display C) Console Nav. Bridge Starboard Side of Nav. Chart Console	LAN
RDR-A-12	Belden 1300SB	X-Band (Display A) Console Nav. Bridge Port Side of Nav. Chart Console	ECDIS (Display C) Console Nav. Bridge Starboard Side of Nav. Chart Console	LAN
RDR-A-13	Factory Cable	X-Band (Display A) Console Nav. Bridge Port Side of Nav. Chart Console	RCU-026 Nav. Bridge Port Wing Console	Data
RDR-A-14	Video	X-Band (Display A) Console Nav. Bridge Port Side of Nav. Chart Console	Nav. Bridge Port Wing Console	Data
RDR-A-15	Belden 8777SB	X-Band (Display A) Console Nav. Bridge Port Side of Nav. Chart Console	Nav. Bridge Port Wing Console	Data
RDR-A-AIS	Belden 8723SB	X-Band (Display A) Console Nav. Bridge Port Side of Nav. Chart Console	Nav. Bridge Nav. Chart Console Center	Data
RDR-A-HDT	Belden 8723SB	X-Band (Display A) Console Nav. Bridge Port Side of Nav. Chart Console	Nav. Bridge Nav. Chart Console Starboard	Data
RDR-A-GPS1	Belden 8723SB	X-Band (Display A) Console Nav. Bridge Port Side of Nav. Chart Console	Nav. Bridge Nav. Chart Console Center	Data
RDR-A-GPS2	Belden 8723SB	X-Band (Display A) Console Nav. Bridge Port Side of Nav. Chart Console	Nav. Bridge Nav. Chart Console Center	Data
RDR-A-LOG	Belden 8723SB	X-Band	Nav. Bridge Nav. Chart Console Starboard	Data

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Radar ECDIS Upgrade				
		(Display A) Console Nav. Bridge Port Side of Nav. Chart Console		
RDR-A- IMIC3	Belden 8723SB	X-Band (Display A) Console Nav. Bridge Port Side of Nav. Chart Console	Nav. Bridge Aft Bulkhead IMIC3 System	Data
RDR-A- DEPTH	Belden 8723SB	X-Band (Display A) Console Nav. Bridge Port Side of Nav. Chart Console	Nav. Bridge Nav. Chart Console Port Side	Data
RDR-A- WSD	Belden 8723SB	X-Band (Display A) Console Nav. Bridge Port Side of Nav. Chart Console	Nav. Bridge Nav. Chart Console Center	Data
S-Band Radar (Display B)				
RDR-B- WG	Coaxial Waveguide AVA5-50	S-Band Transceiver Unit RTR-109 Nav. Bridge Aft Locker Room 104	S-Band Turning Unit RSB-131N Main Mast 1 st Platform	RF
RDR-B-2	TTYCYSL A-10	S-Band Transceiver Unit RTR-109 Nav. Bridge Aft Locker Room 104	S-Band Turning Unit RSB-131N Main Mast 1 st Platform	Power/ Data
RDR-B-1	Factory Cable	S-Band Transceiver Unit RTR-109 Nav. Bridge Aft Locker Room 104	Power Supply Unit (PSU- 014) S-Band Nav. Bridge Aft Locker Room 104	Power/ Data
EGR- 110-5	Marine AC 14/3	EGR-110-5 Junction Box Nav. Bridge Crawl Space Center	S-Band Radar Isolation Switch Nav. Bridge Starboard S-Band Radar Console (Display B)	AC Power
EGR- 110-5-A	Marine AC 14/3	S-Band Radar Isolation Switch Nav. Bridge Starboard S-Band Radar Console (Display B)	S-Band Radar Scanner Safety Switch Main Mast base of 1 st Platform	AC Power
EGR- 110-5-B	Marine AC 14/3	S-Band Radar Scanner Safety Switch Main Mast base of 1 st Platform	Power Supply Unit (PSU- 014) S-Band Nav. Bridge Aft Locker Room 104	AC Power
EP-104- 5-C	Marine AC 14/3	S-Band Radar Isolation Switch Nav. Bridge Starboard S-Band Radar Console	Nav. Bridge Crawl Space S-Band Radar System Isolation Transformer	AC Power

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Radar ECDIS Upgrade				
		(Display B)		
EGR-110-5-D	Marine AC 14/3	Nav. Bridge Crawl Space S-Band Radar System Isolation Transformer	S-Band Radar Isolation Switch Nav. Bridge Starboard S-Band Radar Console (Display B)	AC Power
RDR-B-3	Belden 1300SB	S-Band Radar Console (Display B) Nav. Bridge Starboard Side of Nav. Chart Console	Power Supply Unit (PSU-014) S-Band Nav. Bridge Aft Locker Room 104	LAN
RDR-B-4	Belden 8777SB	S-Band Radar Console (Display B) Nav. Bridge Starboard Side of Nav. Chart Console	Power Supply Unit (PSU-014) S-Band Nav. Bridge Aft Locker Room 104	Data
RDR-B-5	Belden 1300SB	S-Band Radar Console (Display B) Nav. Bridge Starboard Side of Nav. Chart Console	ECDIS (Display C) Console Nav. Bridge Starboard Side of Nav. Chart Console	LAN
RDR-B-6	Belden 1300SB	S-Band Radar Console (Display B) Nav. Bridge Starboard Side of Nav. Chart Console	ECDIS (Display C) Console Nav. Bridge Starboard Side of Nav. Chart Console	LAN
RDR-B-12	Belden 1300SB	S-Band Console (Display B) Nav. Bridge Starboard Side of Nav. Chart Console	ECDIS (Display C) Console Nav. Bridge Starboard Side of Nav. Chart Console	LAN
RDR-B-13	Factory Cable	S-Band Radar Console (Display B) Nav. Bridge Starboard Side of Nav. Chart Console	RCU-026 Nav. Bridge Starboard Wing Console	Data
RDR-B-14	Video	S-Band Radar Console (Display B) Nav. Bridge Starboard Side of Nav. Chart Console	Nav. Bridge Starboard Wing Console	Video
RDR-B-15	Belden 8777SB	S-Band Radar Console (Display B) Nav. Bridge Starboard Side of Nav. Chart Console	Nav. Bridge Starboard Wing Console	Data
RDR-B-16	Belden 1300SB	S-Band Radar Console (Display B) Nav. Bridge Starboard Side of Nav. Chart Console	Officers Deck Commanding Officers Cabin 19" Monitor	Data
RDR-B-AIS	Belden 8723SB	S-Band Radar Console (Display B) Nav. Bridge Starboard Side of Nav. Chart Console	Nav. Bridge Nav. Chart Console Center	Data

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Spec Item #: L-06		SPECIFICATION		
Radar ECDIS Upgrade				
RDR-B-HDT	Belden 8723SB	S-Band Radar Console (Display B) Nav. Bridge Starboard Side of Nav. Chart Console	Nav. Bridge Nav. Chart Console Starboard	Data
RDR-B-GPS1	Belden 8723SB	S-Band Radar Console (Display B) Nav. Bridge Starboard Side of Nav. Chart Console	Nav. Bridge Nav. Chart Console Center	Data
RDR-B-GPS2	Belden 8723SB	S-Band Radar Console (Display B) Nav. Bridge Starboard Side of Nav. Chart Console	Nav. Bridge Nav. Chart Console Center	Data
RDR-B-LOG	Belden 8723SB	S-Band Radar Console (Display B) Nav. Bridge Starboard Side of Nav. Chart Console	Nav. Bridge Forward Center Console Port Side	Data
RDR-B-IMIC3	Belden 8723SB	S-Band Radar Console (Display B) Nav. Bridge Starboard Side of Nav. Chart Console	Nav. Bridge Aft Bulkhead IMIC3 System	Data
RDR-B-DEPTH	Belden 8723SB	S-Band Radar Console (Display B) Nav. Bridge Starboard Side of Nav. Chart Console	Nav. Bridge Nav. Chart Console Center	Data
RDR-B-WSD	Belden 8723SB	S-Band Radar Console (Display B) Nav. Bridge Starboard Side of Nav. Chart Console	Nav. Bridge Nav. Chart Console Center	Data
ECDIS (Display C)				
IC-101-20	Marine AC 14/3	EL-102-14 Junction Box ECDIS Console (Display C)	ECDIS Isolation Switch ECDIS Console (Display C)	AC Power
IC-101-20-A	Marine AC 14/3	ECDIS Isolation Switch ECDIS Console (Display C)	ECDIS (Display C) Isolation Transformer Nav. Bridge Crawl Space	AC Power
IC-101-20-B	Marine AC 14/3	ECDIS (Display C) Isolation Transformer Nav. Bridge Crawl Space	ECDIS (Display C) Console Nav. Bridge Starboard Side of Nav. Chart Console	AC Power
ECD-C-7	Belden 1300SB	ECDIS (Display C) Console Nav. Bridge Starboard Side of Nav. Chart Console	Officers Deck Commanding Officers Cabin 19" Monitor	Data
ECD-C-AIS	Belden 8723SB	ECDIS (Display C) Console Nav. Bridge	Nav. Bridge	Data

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Radar ECDIS Upgrade				
		Starboard Side of Nav. Chart Console	Nav. Chart Console Center	
ECD-C-HDT	Belden 8723SB	ECDIS (Display C) Console Nav. Bridge Starboard Side of Nav. Chart Console	Nav. Bridge Forward Center Console Starboard	Data
ECD-C-GPS1	Belden 8723SB	ECDIS (Display C) Console Nav. Bridge Starboard Side of Nav. Chart Console	Nav. Bridge Nav. Chart Console Center	Data
ECD-C-GPS2	Belden 8723SB	ECDIS (Display C) Console Nav. Bridge Starboard Side of Nav. Chart Console	Nav. Bridge Nav. Chart Console Center	Data
ECD-C-LOG	Belden 8723SB	ECDIS (Display C) Console Nav. Bridge Starboard Side of Nav. Chart Console	Nav. Bridge Nav. Chart Console Starboard	Data
ECD-C-NAVTE X	Belden 8777SB	ECDIS (Display C) Console Nav. Bridge Starboard Side of Nav. Chart Console	Nav. Bridge Nav. Chart Console Center	Data
GPS1-C-7	Belden 1300SB	ECDIS (Display C) Console Nav. Bridge Starboard Side of Nav. Chart Console	Nav. Bridge Nav. Chart Console Center FURUNO GP170 #1	Data
GPS2-C-8	Belden 1300SB	ECDIS (Display C) Console Nav. Bridge Starboard Side of Nav. Chart Console	Nav. Bridge Nav. Chart Console Center FURUNO GP170 #2	Data
Aft Looking Radar (Display D)				
RDR-D-1	Factory Cable	Power Supply Unit PSU-014 Aft Looking Radar Nav. Bridge Aft Locker Room 104	Aft Radar Scanner Base of Aft Mast Starboard Side Pedestal	Power/Data
EGR-110-12	Marine AC 14/3	EGR-110-12 Junction Box Nav. Bridge Crawl Space Center	Aft Looking Radar Isolation Switch Aft Looking Radar Console (Display D) Nav. Bridge Forward Starboard	AC Power
EGR-110-12-A	Marine AC 14/3	Aft Looking Radar Isolation Switch Aft Looking Radar Console (Display D) Nav. Bridge Forward Starboard	Aft Radar Scanner Safety Switch Base of Aft Mast Starboard Pedestal	AC Power

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Radar ECDIS Upgrade				
EGR-110-12-B	Marine AC 14/3	Aft Radar Scanner Safety Switch Base of Aft Mast Starboard Pedestal	Aft Looking Radar Power Supply Unit (PSU-014) Nav. Bridge Aft Locker Room 104	AC Power
EGR-110-12-C	Marine AC 14/3	Aft Looking Radar Isolation Switch Aft Looking Radar Console (Display D) Nav. Bridge Forward Starboard	Isolation Transformer Aft Looking Radar Crawl Space	AC Power
EGR-110-12-D	Marine AC 14/3	Isolation Transformer Aft Looking Radar Crawl Space	Nav. Bridge Forward Starboard Wing Aft Looking Radar Console (Display D)	AC Power
RDR-D-2	Belden 1300SB	Nav. Bridge Forward Starboard Wing Aft Looking Radar Console (Display D)	Aft Looking Radar Power Supply Unit (PSU-014) Nav. Bridge Aft Locker Room 104	LAN
RDR-D-3	Belden 8777SB	Nav. Bridge Forward Starboard Wing Aft Looking Radar Console (Display D)	Aft Looking Radar Power Supply Unit (PSU-014) Nav. Bridge Aft Locker Room 104	Data
RDR-D-4	Belden 1300SB	Nav. Bridge Forward Starboard Wing Aft Looking Radar Console (Display D)	ECDIS (Display C) Console Nav. Bridge Starboard Side of Nav. Chart Console	LAN
RDR-D-5	Belden 1300SB	Nav. Bridge Forward Starboard Wing Aft Looking Radar Console (Display D)	ECDIS (Display C) Console Nav. Bridge Starboard Side of Nav. Chart Console	LAN
RDR-D-AIS	Belden 8723SB	Nav. Bridge Forward Starboard Wing Aft Looking Radar Console (Display D)	Nav. Bridge Nav. Chart Console Center	Data
RDR-D-HDT	Belden 8723SB	Nav. Bridge Forward Starboard Wing Aft Looking Radar Console (Display D)	Nav. Bridge Nav. Chart Console Forward Center Console Starboard	Data
RDR-D-GPS1	Belden 8723SB	Nav. Bridge Forward Starboard Wing Aft Looking Radar Console (Display D)	Nav. Bridge Nav. Chart Console Center	Data
RDR-D-GPS2	Belden 8723SB	Nav. Bridge Forward Starboard Wing Aft Looking Radar Console (Display D)	Nav. Bridge Nav. Chart Console Center	Data

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Radar ECDIS Upgrade				
RDR-D-LOG	Belden 8723SB	Nav. Bridge Forward Starboard Wing Aft Looking Radar Console (Display D)	Nav. Bridge Nav. Chart Console Starboard	Data
Additional Cables				
LC-30 Gyro	Belden 8777SB	Boat Deck Electronics Equipment Room Gyro Compass Switch Over Unit	Nav. Bridge Nav. Console Starboard	Data
LC-31 Gyro	Belden 8777SB	Boat Deck Electronics Equipment Room Gyro Compass Switch Over Unit	Nav. Bridge Nav. Console Starboard	Data
VHF4-1	LMR-400 UF-FR	Nav. Bridge Nav. Console Port	Wheelhouse Top Forward Small Mast Port Side	RF
VHF4-2	LMR-400 UF-FR	Nav. Bridge Nav. Console Port	Wheelhouse Top Forward Small Mast Starboard Side	RF
VHF4-3	Belden 1300SB	Nav. Bridge Nav. Console Port	Nav. Bridge Aft Starboard Side GMDSS Console	Data
VHF4-5	8 PR 18 AWG	Nav. Bridge Nav. Console Port	Nav. Bridge Port Forward Deck Head Connection Box 6208 #11	Data
VHF4-5A	Factory Cable	Nav. Bridge Port Deck Head Connection Box 6208 #11	Nav. Bridge Port Bulkhead Sailor 6204 Remote	Data
VHF4-6	8 PR 18 AWG	Nav. Bridge Nav. Console Port	Nav. Bridge Starboard Forward Deck Head Connection Box 6208 # 12	Data
VHF4-6A	Factory Cable	Nav. Bridge Starboard Forward Deck Head Connection Box 6208 # 12	Nav. Bridge Starboard Bulkhead Sailor 6204 Remote	Data
EM120-9/11	Marine AC 14/3	Nav. Bridge Port Info Console EM120 Panel	Nav. Bridge Nav. Console Port VHF #4 Sailor 6222	AC Power
ECS-GPS	Belden 8723SB	Nav. Bridge Nav. Console Center GPS Distribution	Nav. Bridge Nav. Console Port ECS Console (New)	Data

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Spec Item #: L-06		SPECIFICATION		
Radar ECDIS Upgrade				
			Next to X-Band Radar Console (Display A)	
ECS-HDT	Belden 8723SB	Nav. Bridge Nav. Console Starboard Gyro Distribution	Nav. Bridge Nav. Console Port ECS Console (New) Next to X-Band Radar Console (Display A)	Data
ECS-AIS	Belden 8723SB	Nav. Bridge Nav. Console Center AIS Distribution	Nav. Bridge Nav. Console Port ECS Console (New) Next to X-Band Radar Console (Display A)	Data
ECS-WSD	Belden 8723SB	Nav. Bridge Nav. Console Center WSD Distribution	Nav. Bridge Nav. Console Port ECS Console (New) Next to X-Band Radar Console (Display A)	Data
ECS-ARPA-X	Belden 8723SB	Nav. Bridge Nav. Console Port ECS Console (New) Next to X-Band Radar Console (Display A)	Nav. Bridge Nav. Console Port ECS Console (New) Next to X-Band Radar Console (Display A)	Data
ECS-LOG	Belden 8723SB	Nav. Bridge Nav. Console Starboard Speed Log Electronics Unit	Nav. Bridge Nav. Console Port ECS Console (New) Next to X-Band Radar Console (Display A)	Data
ECS-DEPTH	Belden 8723SB	Nav. Bridge Nav. Console Center Echo Sounder Display	Nav. Bridge Nav. Console Port ECS Console (New) Next to X-Band Radar Console (Display A)	Data
ECS-TV-DIST	RG-6	Nav. Bridge Nav. Console Port ECS Console (New) Next to X-Band Radar Console (Display A)	Boat Deck Port Server (LAN) / SAR Room	Video
ECS-TV-LAN	Belden 1300SB	Nav. Bridge Nav. Console Port ECS Console (New) Next to X-Band Radar Console (Display A)	Boat Deck Port Server (LAN) / SAR Room	LAN
ECS-MCR	Belden 1300SB	Nav. Bridge Nav. Console Port ECS Console (New)	Lower Deck MCR FWD Top MIMC Panel ECS Monitor	LAN

		CCGS ANN HARVEY		
Spec Item #: L-06		SPECIFICATION		
Radar ECDIS Upgrade				
		Next to X-Band Radar Console (Display A)		
ECS-VID-SW	Belden 1300SB	Nav. Bridge Nav. Console Port ECS Console (New) Next to X-Band Radar Console (Display A)	Nav. Bridge Starboard Wing Forward Bulkhead ECS Remote Monitor	Video
ECS-VID-PW	Belden 1300SB	Nav. Bridge Nav. Console Port ECS Console (New) Next to X-Band Radar Console (Display A)	Nav. Bridge Port Wing Forward Bulkhead ECS Remote Monitor	Video
ECS-USB-PW	USB Cable	Nav. Bridge Nav. Console Port ECS Console (New) Next to X-Band Radar Console (Display A)	Nav. Bridge Port Wing Console	Data
ECS-USB-SW	USB Cable	Nav. Bridge Nav. Console Port ECS Console (New) Next to X-Band Radar Console (Display A)	Nav. Bridge Starboard Wing Console	Data
ECS-VID-CO	Belden 1300SB	Nav. Bridge Nav. Console Port ECS Console (New) Next to X-Band Radar Console (Display A)	Officer's Deck Commanding Officers Cabin	LAN
IMIC3-GPS	Belden 8723SB	Nav. Bridge Nav. Console Center GPS Distribution	Nav. Bridge Aft Bulkhead IMIC3 Workstation	Data
IMIC3-AIS	Belden 8723SB	Nav. Bridge Nav. Console Center AIS Distribution	Nav. Bridge Aft Bulkhead IMIC3 Workstation	Data
SM-2	Belden 8723SB	Nav. Bridge Nav. Console Center GP170 GPS #1	Nav. Bridge Aft Bulkhead Sea Marshall Man-Overboard Display	Data
CCTV-TV	RG-6	Boat Deck Electronics Equipment Room CCTV Rack	Boat Deck Port Server (LAN) / SAR Room	Video

3.2 Location

3.2.1 Navigating Bridge Deck

3.2.2 Wheelhouse Top

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Radar ECDIS Upgrade		

- 3.2.3 Officers Deck
- 3.2.4 Boat Deck
- 3.2.5 Main Mast
- 3.2.6 Aft Mast
- 3.2.7 Tank Top

3.3 Interferences

- 3.3.1 Contractor must be responsible for the identification of interference items, their temporary removal, storage, and refitting to vessel.

Part: 4 PROOF OF PERFORMANCE:

4.1 Inspection

- 4.1.1 All work must be subject to witness by the Chief Engineer of delegate and the attending surveyor if applicable.

4.2 Testing

- 4.2.1 The commissioning of the new radar and ECDIS system must be done under direction of an approved FSR and in accordance with the manufacturers approved procedures. This will be arranged by CCG personal.
- 4.2.2 Contractor must be responsible to ensure all relocated equipment is in proper working order witnessed and at the satisfactory of the Technical Authority.
- 4.2.3 All cables are to be checked for continuity after installation to ensure operational capability. Should any cable run fail to pass testing, the cable must be replaced at the contractor's expense.
- 4.2.4 All cable testing must be witnessed by the Technical Authority.
- 4.2.5 Contractor must be responsible to ensure new AC/DC circuits are proven operational.
- 4.2.6 All welds will be subjected to 100% visual inspection and hose test to prove watertight.

4.3 Certification

N/A

Part: 5 DELIVERABLES:

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Spec Item #: L-06	SPECIFICATION	
Radar ECDIS Upgrade		

5.1 Drawings/Reports

5.1.1 Contractor must provide the Technical Authority with a report of the contractors work in both electronic and hardcopy formats outlining the details of the inspections and any alterations/repairs prior to the acceptance of this item.

	CCGS ANN HARVEY	
Spec Item #: L-07	SPECIFICATION	
VHF DF Upgrade		

L-07 VHF DF Upgrade

PART 1: SCOPE

- 1.1. The intention of this specification is for the removal of the existing OAR 4400 VHF Direction Finder System and upgrade to the new owner supplied Rhotheta RT-500-M System.

PART 2: REFERENCES

- 2.1. Rhotheta RT500-M User Manual
- 2.2. AH VHF DF CUBIC 4400 REV A FEB 2016.PDF
- 2.3. Preliminary Drawing CCGS Ann Harvey Rhotheta RT500-M Drawing.
- 2.4. TP127E – Ships Electrical Standards
- 2.5. IEEE 45- Recommended Practice for Electrical Installations on Ships
- 2.6. Specification for the Installation of Shipboard Electronic Equipment (70-000-000-EU-Jan-001)
- 2.7. General Information for the Rules and Regulations for the Classification of Ships.

PART 3: TECHNICAL DESCRIPTION

3.1. General

- 3.1.1. The contractor must supply all equipment, enclosures, ventilation, staging, scaffolding, chain falls, crane, slings, and shackles necessary to perform the work. All lifting equipment must be appropriate for the expected duties, and be accompanied by current certification indicating, or be permanently marked as to being, of a safe working load for the expected duties. Any brackets, mounts, or any other welded attachments required in the performance of this specification must be welded into place by certified welders.
- 3.1.2. Prior to any hot work taking place, the contractor must ensure that the area of work and all equipment has been sufficiently protected from any sparks or metal filings.
- 3.1.3. Contractor must ensure that all areas have been cleaned and free of any debris resulting from the performance of this specification item.
- 3.1.4. All cabling, once installed, must be marked with a stamped metal tag securely affixed to the cable at each end with the designation for each cable as provided in this specification.
- 3.1.5. Contractor must follow existing cable trays throughout the vessel where fitted. All penetrations in fire rated bulkheads and decks must be installed using approved transit system meeting the requirements of this specification and in accordance with TP 127E.
- 3.1.6. All cabling which has been removed and deemed surplus as a result of this specification must be disposed of at the contractor's expense.
- 3.1.7. Contractor must be responsible for the temporary removal and reinstallation of any deck heads, bulkheads, paneling, insulation, and any items that is deemed to be interfering with the installation of cables or equipment within this specification.
- 3.1.8. The Contractor must ensure all new and existing electrical wires affected in this modification must be properly supported in accordance with accepted / approved practices.

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VHF DF Upgrade		

- 3.1.9. Electrical penetrations through frames or brackets must be in accordance with accepted / approved practices.
- 3.1.10. The Contractor must paint all disturbed steel as per client specifications before installation of new Rhotheta Antenna. 1 coat of primer and 2 finish coats.
- 3.1.11. The Contractor must ensure that provincial regulations are met with regard to all required training for workers including, but not necessarily limited to, fall arrest training/certification.
- 3.1.12. The installation must not be considered complete, until relocated or installed equipment has been tested, and considered operating as per manufacturers specifications, to the satisfaction of the Chief Engineer, Class and/or Flag as applicable.

3.2. Removals ANN HARVEY

- 3.2.1. Prior to the commencement of any electrical work, the contractor must ensure all electrical supplies feeding the system have been isolated at the source following an established lockout/tagout procedure.
- 3.2.2. Electrical isolations for AC power are as follows.
 - 3.2.2.1. **NAV Bridge Power Panel PE 21 Breaker 22.**
- 3.2.3. All electronic equipment and components removed from the vessel resulting from the performance of this specification must be safely stored and returned to the owner.
- 3.2.4. It would be recommended to start the cable removal from the below deck equipment side to eliminate any discrepancies within the applicable drawings.
- 3.2.5. Contractor must disconnect and remove all existing equipment and cabling indicated in **Table 1 (OAR 4400 Cable Removal List CCGS Ann Harvey)** and **Table 2 (OAR 4400 Equipment Removal List CCGS Ann Harvey)**.

3.2.5.1.1. OAR 4400 Cable Removal List CCGS Ann Harvey

Table 1

Cable Label	Cable Type	From	To	Signal
VHF-DF-1	LMR-400	Bridge Deck Center Nav Console	Main Mast Top VHF DF Antenna	RF
VHF-DF-2	20 AWG 7 Conductor	Bridge Deck Center Nav Console	Main Mast Top VHF DF Antenna	Data

3.2.5.1.2. OAR 4400 Equipment Removal List CCGS Ann Harvey

Table 2

Equipment	Location
OAR VHF DF Antenna	Main Mast Top
OAR 4400 Display and Control Unit	Bridge Deck Center Nav Console

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Photo # 1 Ann Harvey OAR 4400 VHF-DF Antenna



- 3.2.6. The Contractor will disconnect and remove the OAR 4400 Display and Control unit from the Bridge Center Console in the Wheelhouse. Leave the Power supply and all associated cabling in place except cable identified in Table 1 (OAR 4400 Cable Removal List CCGS Ann Harvey), this will be reused with the RT-500-M installation.
- 3.2.7. The contractor must dispose of all cables that have been identified in the cable removal list at their own expense.

3.3. Installations CCGS Ann Harvey

- 3.3.1. Contractor must work with a Coast Guard Electronic Technician/Technologist to oversee the installation of the new system and ensure compliance with applicable Coast Guard standards.
- 3.3.2. Contractor must provide a unit price for the installation of 5 meters of each type of cable identified in table 3.
- 3.3.3. For the purpose of adjustment contractor must include a unit cost for the supply and install of one (1) roxtec, or equal class approved transit with glands.
- 3.3.4. The contractor must install the owner supplied cable indicated in table 3 below:

Table 3 CCGS Ann Harvey cable installations

Cable Label	Cable Type	From	To	Length
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	CCGS ANN HARVEY		
Spec Item #: L-07	SPECIFICATION		
VHF DF Upgrade			

VHF-DF-1	Multicable L8260(19T) SFSB-CMG	Rhotheta RT-500-M Display and Control Unit Bridge Nav Console	Rhotheta RT-500M Antenna Unit at Top of Main Mast	60 Meters
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- 3.3.5. Prior to commencement of line item 3.3.4 above, VHF-DF-1 cable must be terminated with connector on Antenna end by Coast Guard Installation Technician. Contractors are to liaise with on site CCG Technician when they are ready to have cable terminated. Contractors are to protect cable connector and take special care to ensure connector is not damaged while being installed.
- 3.3.6. Contractor must install the Rhotheta RT500-M VHF-DF Antenna at the top of main mast following the instructions below:
- 3.3.6.1. Begin by running the part of the VHF-DF-ANT cable at the top of main mast through the CCG provided antenna mounting pipe. The terminated end of the cable will be protruding from the end of the pipe with adapter ring attached. The provided mounting arrangement will be similar in style to the drawing below:

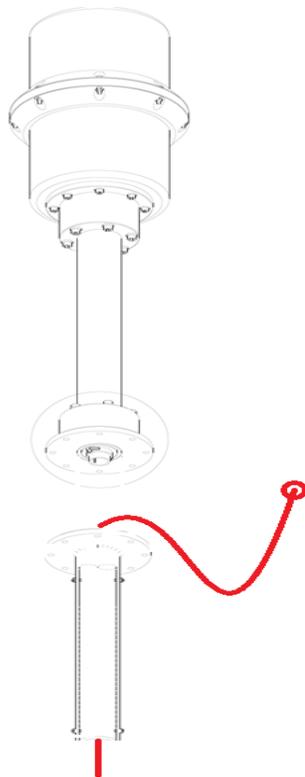


Figure #1

3.3.6.2 Place the CCG provided rubber gasket onto the base of the antenna unit. Connect the cable with the finished X-1067 connector to the connector on the bottom of the Antenna Unit. Install the Antenna Unit onto the CCG provided pipe using the attached adapter plate. This requires stainless steel hardware including eight M6 bolts at least 4cm/1.5" long, lock washers, washers and nuts. Ensure the rubber gasket is in place between the Antenna Unit and the pipe as shown in photo #2.

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Spec Item #: L-07	SPECIFICATION	
VHF DF Upgrade		

Photo # 2



3.3.6.3 Mount the antenna at the top of the mast in the same position as the removed OAR 4400 antenna using the existing pipe-to-pipe clamps. Ensure that the marking line on the Antenna Unit is facing as close to the bow of the ship as possible as shown in photo #3.

Photo # 3



Wheelhouse Equipment Installation

3.3.7 The contractor will mount the RT-500-M Display Control Unit and the external speaker in the Navigation Console where the OAR 4400 unit was removed. Use a standard 19" wide 4U plate or equivalent with a cutout as shown below. Panel is to be painted to match the existing bridge console.

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VHF DF Upgrade		

Standard 4U Plate (7" Tall / 19" Wide)

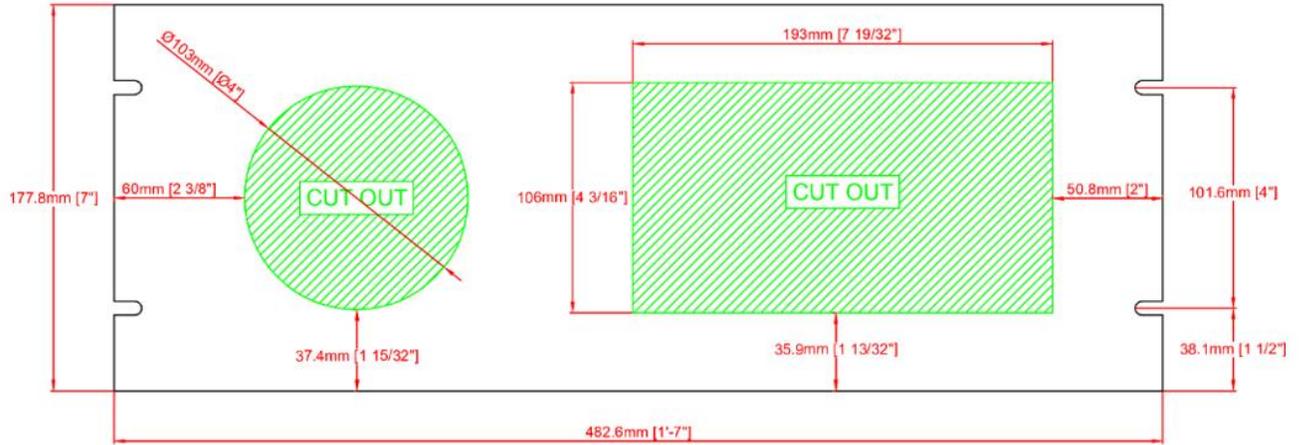


Figure #2

	CCGS ANN HARVEY	
Spec Item #: L-07	SPECIFICATION	
VHF DF Upgrade		

Grounding of Equipment

3.3.8 The contractor will ground the system components as per the manufacturer's recommendations.

PART 4: GOVERNMENT SUPPLIED MATERIAL

- 4.1. Rhotheta 500 VHF-DF Antenna
- 4.2. All cabling with the exception of AC power cable
- 4.3. Pipe and/or adapter for mounting Antenna Unit
- 4.4. Rubber Gasket For Antenna Mount

PART 5: PROOF OF PERFORMANCE

- 5.1. Inspection
 - 5.1.1. All work must be subject to witness by the Chief Engineer or delegate and the attending surveyor if applicable.
- 5.2. Testing
 - 5.2.1. All cables are to be checked for continuity after installation to ensure operational capability. Should any cable run fail to pass testing, the cable must be replaced at the contractor's expense.
 - 5.2.2. All cable testing must be witnessed by the Technical Authority.
 - 5.2.3. Electronic equipment which has been removed for the performance of this specification item must be returned to operational condition.
 - 5.2.4. Testing to be completed in accordance with the Regulations, standards, and codes found in reference documents.
- 5.3. Certification
 - 5.3.1. N/A

PART 6: DELIVERABLES

Drawings/Reports

- 6.1.1. The Contractor must provide the Chief Engineer a report of the contractor's work in both electronic and hardcopy formats outlining the details of the inspections and any alterations/repairs prior to the acceptance of this item.

	CCGS ANN HARVEY	
Spec Item #: L-08	SPECIFICATION	
Seatel TVRO Antenna Installation		

L-08 Seatel TVRO Antenna Installation

PART 1: SCOPE

- 1.1. The intention of this specification is for the removal of the existing Fleet Broadband System and the installation of the new owner supplied Thales Vessel Link in its place. It also outlines the installation of the Seatel ST 24 TVRO Antenna System on the aft centerline mast of the CCGS Ann Harvey.

PART 2: REFERENCES

- 2.1. 99-141160-A Sea Tel TV Antenna Systems Dealer Technical Manual
- 2.2. 84464-IETM Thales Vessel Link Installation Manual
- 2.3. Preliminary Ann Harvey TVRO Wiring Diagram
- 2.4. Preliminary Ann Harvey Vessel Link Wiring Diagram
- 2.5. Allswater Drawing No. 20021-410-SK-045, Rev. 0, Aft Mast
- 2.6. Allswater Drawing No. 20021-410-S-045, Rev. 0, Aft Mast Structural Modification Arrangement
- 2.7. MSA SureClimb Vertical Lifeline Cable System Drawing
- 2.8. Sure-Climb Instruction Manual – EN MX-ES CA-FR.PDF
- 2.9. TP127E – Ships Electrical Standards
- 2.10. IEEE 45- Recommended Practice for Electrical Installations on Ships
- 2.11. Specification for the Installation of Shipboard Electronic Equipment (70-000-000-EU-Jan-001)
- 2.12. General Information for the Rules and Regulations for the Classification of Ships.

PART 3: TECHNICAL DESCRIPTION

3.4. General

- 3.4.1. The contractor shall supply all equipment, enclosures, ventilation, staging, scaffolding, chain falls, crane, slings, and shackles necessary to perform the work. All lifting equipment shall be appropriate for the expected duties, and be accompanied by current certification indicating, or be permanently marked as to being, of a safe working load for the expected duties. Any brackets, mounts, or any other welded attachments required in the performance of this specification must be welded into place by certified welders.
- 3.4.2. Prior to any hot work taking place, the contractor shall ensure that the area of work and all equipment has been sufficiently protected from any sparks or metal filings.
- 3.4.3. The Contractor shall ensure all work areas are neat and tidy at the end of the work day to ensure a safe environment.
- 3.4.4. The Contractor shall remove all sharp edges and grind all burrs smooth.
- 3.4.5. The Contractor shall repaint damaged areas as per client specs. 1 coat of primer and 2 finish coats.
- 3.4.6. All welding shall be completed to CWB's latest revision, or an equivalent standard accepted by the Canadian Coast Guard.

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Seatel TVRO Antenna Installation		

- 3.4.7. The Contactor shall store all materials as instructed by the Chief Engineer.
- 3.4.8. The Contractor shall ensure that the surrounding area is properly cleaned to ensure that the surrounding area is safe prior to any hot work.
- 3.4.9. The Contractor shall ensure all new and existing electrical penetrations are properly prepared and cleaned prior to hot work.
- 3.4.10. The Contractor shall ensure all new and existing electrical wires affected in this modification shall be properly supported in accordance with accepted / approved practices.
- 3.4.11. Electrical penetrations through frames or brackets shall be in accordance with accepted / approved practices.
- 3.4.12. All existing, unused electrical penetrations shall be closed in accordance with accepted / approved practices.
- 3.4.13. The contractor shall clean up all debris (including all old wire that is taken out) and dispose of it as per Provincial regulations.
- 3.4.14. The Contractor shall paint new steel as per client specifications before installation. 1 coat of primer and 2 finish coats.
- 3.4.15. The contractor shall coat all new and disturbed areas on the aft centreline mast.
- 3.4.16. The Contractor shall ensure all electrical disconnections are labelled, stowed, and protected.
- 3.4.17. The Contractor shall be responsible for the temporary removal and reinstallation of any deck heads, bulkheads, paneling, insulation, and any items that is deemed to be interfering with the installation of cables or equipment within this specification.
- 3.4.18. The Contractor shall ensure that provincial regulations are met with regard to all required training for workers including, but not necessarily limited to, fall arrest training/certification.

3.5. Removal of Power Sources

- 3.5.1. Prior to the commencement of any work, Fleet Broadband below deck terminal located bridge stbd side aft in cabinet by GMDSS Console is to have the power disconnected and isolated. Below deck terminal power sources are:
 - 3.5.1.1 AC Main plug-in fed from APC 1500 UPS located in Cabinet at GMDSS Console.
 - 3.5.1.2 DC input cable labelled SAC-PWR fed from Thrane & Thrane AC/DC Power to be disconnected from Fleet broadband Terminal.
 - 3.5.1.3 Fleet broadband 500 antenna located on wheelhouse top stbd side pedestal to have power disconnected and isolated. Power source is L105-19 Heater power located in Officers Deck Hallway aft bulkhead.

3.6. Removal of Fleet Broadband Equipment

- 3.6.1. It would be recommended to start the cable removal from the equipment side to eliminate any discrepancies within the applicable drawings.
- 3.6.2. The Contractor must disconnect Fleet Broadband antenna LMR400FR cable labelled SAC-ANT and cable run to bridge stbd side aft is to be removed.

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Seatel TVRO Antenna Installation		

- 3.6.3. The Contractor must remove grounding cable from antenna to pedestal.
- 3.6.4. Fleet Broadband antenna heater cable is to be disconnected from antenna and cable from antenna to Junction Box located in deck head above Power Panel L105 on Officers Deck Hallway aft bulkhead must be removed.
- 3.6.5. The Contractor must remove Fleet Broadband antenna from pedestal. On-site technical representative will take custody of removed antenna.
- 3.6.6. The Contractor must remove Fleet Broadband antenna adapter plate.
- 3.6.7. The Contractor must disconnect all cables from Fleet Broadband below deck terminal located bridge stbd side aft. Refer to drawing A11_FBB_500_REVB_1705_WD.PDF. Terminal is to be removed. On-site technical representative will take custody of removed below deck terminal.
- 3.6.8. The Contractor must remove below deck terminal handset and mount. On-site technical representative will take custody of removed below deck terminal.
- 3.6.9. The Contractor must disconnect all cables from below deck Thrane & Thrane AC/DC power supply located bridge stbd side aft. Power supply is to be removed. On-site technical representative will take custody of power supply.
- 3.6.10. The Contractor must remove SAC-2 cable running between Fleet Broadband Terminal and Sailor 3771 Alarm Panel.
- 3.6.11. The Contractor must disconnect cables labelled SAC-3, SAC-4, and SAC-5A from Fleet Broadband Terminal and secure and protect them from being damaged. These cables will be reused with replacement system.

3.7. Removal of Existing Ladders, and Miscellaneous Items

- 3.4.1 The Contractor shall remove and dispose of, as per Chief Engineers instructions, the existing top plate and pipes at top of aft centerline mast.
- 3.4.2 The Contractor shall remove and dispose of, as per the Chief Engineers instructions, the existing ladder and back scratcher on the aft side of the aft centerline mast.
- 3.4.3 The Contractor shall remove and dispose of, as per the Chief Engineers instructions, the existing ladder rungs on the port side of the aft centerline mast.
- 3.4.4 The Contractor shall remove and store, as directed by the Chief Engineer, the flag, flag

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Seatel TVRO Antenna Installation		

mounting pole and hardware.

- 3.4.5. The Contractor shall remove and grind flush any obsolete or miscellaneous steel brackets or other material to ensure a clean surface to weld new mounting plate and brackets, ladder and back scratcher.

3.8. Installation of Vesselink Equipment

- 3.8.1. Contractor shall work with a Coast Guard Electronic Technician/Technologist to oversee the installation of the new systems and ensure compliance with applicable Coast Guard standards.
- 3.8.2. In location of previously removed antenna adapter plate in section 3.3.6 of this document, steel is to have all rust removed, steel primed and painted to match existing.
- 3.8.3. The Contractor must install owner supplied pole mounting adapter plate at this location with rubber gasket and stainless steel hardware.
- 3.8.4. The Contractor must install supplied antenna pole mount kit TPM-SS3 on Thales Vesselink Antenna.
- 3.8.5. The Contractor must install antenna on pole mounting adapter plate.
- 3.8.6. The Contractor must install a #6 green ground wire from antenna to antenna pedestal (not adapter plate). Pedestal bonding point is to have all paint and rust removed.
- 3.8.7. The Contractor must install owner supplied LMR 400 cable from antenna to below deck equipment located in bridge stbd side aft GMDSS console cabinet as indicated in Table 1. Label cable SAC-1. Connect cable as per drawing Preliminary Ann Harvey Vesselink Wiring Diagram. Antenna connector is to have weatherproofing tape applied.
- 3.8.8. The Contractor must install Thales Vesselink below deck equipment in same location as removed Fleet Broadband terminal located bridge stbd side aft.
- 3.8.9. The Contractor must connect existing #12 green ground wire to below deck equipment earthing point. The Contractor must install Thales Surelink handset in same location as removed Fleet Broadband handset.
- 3.8.10. All remaining cable terminations and connections will be conducted by CCG Technicians.

3.9. Installation New Sea Tel TVRO Radome, Access Ladder and Working Platform

- 3.9.1. The Contractor shall fabricate and install the TVRO mounting plate and brackets as per ref 2.2.6 and coat as per Owner's specification. The Contractor shall template the bolting pattern on the top plate from the TVRO unit.
- 3.9.2. The Contractor shall install the TVRO unit on top of the top plate as per Manufacturer's supplied installation procedure found in Ref. 2.2.1.
- 3.9.3. The Contractor shall fabricate and install the new ladder on the port side of the aft centerline mast as per ref 2.2.6 and coat as per Owner's specification.
- 3.9.4. The Contractor shall fabricate and install the ladder rungs to tie off points on fwd side of the aft centerline mast as per ref. 2.2.6 and coat as per owner's specification.
- 3.9.5. The Contractor shall fabricate and install the new working platform on the fwd side of the aft centerline mast and coat as per owner's specification. The contractor shall ensure the clearance between the working platform and the mast cross arms is maintained as per ref. 2.2.6.

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Seatel TVRO Antenna Installation		

- 3.9.6. The contractor shall fabricate a 200 mm x 200 mm plate and install to aft side of aft centerline mast and within 1 meter of TVRO Seatel Antenna.
- 3.9.7. The Contractor shall supply and install a plastic IP67 rated junction box with 2 cable glands to plate installed at line item 3.6.6. The junction box will be used to house the AC connection to the Seatel TVRO Antenna. Final location will be determined by CGTA.
- 3.9.8. The Contractor must supply and install a new class approved AC power feed from junction box above power panel L105 on Officers deck hallway to newly installed junction box near Seatel Antenna. Cable is to be terminated with special connector supplied by owner. Label this cable TVRO-1.
- 3.9.9. Contractor must install a new AC power feed from spare breaker in Power Panel located in Boat Deck SAR Equipment Room to equipment Rack #1 located in same compartment. Contractor shall supply class approved Cable, 15 Amp Circuit Breaker, and Electrical Outlet. New Cable to include marine protective braid with outer PVC jacket. Final mounting location of Electrical outlet will be determined by CGTA.
- 3.9.10. Contractor must supply and install a new gooseneck pipe complete with new Roxtec R 127 AISI316 Transit and new Roxtec blocks as required for cabling. The new pipe must turn inwards towards the aft part of ship. It will be located at base of aft centerline mast and final location will be determined by the Technical Authority.

3.9.11. The contractor shall install the owner supplied cables in the following table:

Table 1

Cable Label	Cable Type	From	To	Signal
SAC-1	LMR 400	Bridge Top Stbd Aft Vesselink Ant	Bridge Stbd Aft GMDSS Console	RF
TVRO-2	Belden RG-11	Boat Deck SAR Equipment Room	Aft Centerline Mast TVRO Antenna	DC Ant Control
TVRO-3	Belden RG-11	Boat Deck SAR Equipment Room	Aft Centerline Mast TVRO Antenna	RF
TVRO-4	Belden RG-11	Boat Deck SAR Equipment Room	Aft Centerline Mast TVRO Antenna	RF
TVRO-26	Belden RG-6	Boat Deck SAR Equipment Room	Officers Deck Chief Officers Cabin	RF
TVRO-27	Belden RG-6	Boat Deck SAR Equipment Room	Main Deck Logistic Officers Cabin	RF
TVRO-28	Belden RG-6	Boat Deck SAR Equipment Room	Main Deck Senior Engineers Cabin	RF

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Seatel TVRO Antenna Installation					
TVRO-29	Belden RG-6	Boat Deck SAR Equipment Room	Boat Deck Supernumerary Officers Cabin	RF	

- 3.9.12. The Contractor shall terminate cables installed in Table 1 with Belden FSH11V-25 F type connectors supplied by owner and connect cables to the TVRO termination point as per the Manufacturer's instructions contained in ref. 2.2.1. Cables are to be supported using Nelson Hangers supplied and installed by Contractor. Care shall be taken to ensure the cables are away from the ladder rungs so they are not stepped on.
- 3.9.13. For the purpose of adjustment contractor must include a unit cost for the supply and install for one (1) roxtec, or equal class approved transit with glands.
- 3.9.14. The contractor shall supply and install the following fall arrest system on the aft centerline mast:
- a. MSA SureClimb Vertical Lifeline Cable System – Part No. SFPLS 353050
 - b. MSA SureClimb Cable Grab – Part No. 10040010
- Detailed information regarding the installation of above system can be found in ref. 2.2.7 and ref. 2.2.8.
- 3.9.15. The Contractor shall re-install any miscellaneous items which may have been removed during removal and installation phase.
- 3.9.16. All cabling installed by contractor shall be identified with a marked stamped stainless steel metal tag. Labels are to be securely affixed to the cable at each end, through any deck, deck head, and gland penetration. The designation for each cable is provided in Table 1.

3.10. Interferences

- 3.8.1 Contractor is responsible for the identification of interference items, their temporary removal, storage protection, and refitting to vessel.

PART 4: GOVERNMENT SUPPLIED MATERIAL

- 4.5. Sea Tel TV Antenna.
- 4.6. Thales Vessel Link Antenna.
- 4.7. All cabling with the exception of AC cable.
- 4.8. RG 11 F type connectors.
- 4.9. Vesselink adapter plate.
- 4.10. Antenna pole mount kit TPM-SS.
- 4.11. AC Special Connector.

PART 5: PROOF OF PERFORMANCE

- 5.4. Inspection
- 5.4.1. All work must be subject to witness by the Chief Engineer or delegate and the attending surveyor if applicable.
 - 5.4.2. Visual inspection of all welding 100%.

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- 5.4.3. Welds 10% MPI testing completed by approved testing personnel.
- 5.4.4. The Contractor is responsible for all air quality testing to ensure hot work and entry is permitted.
- 5.4.5. The Contractor shall issue and post hot work permits and shall maintain a fire watch.
- 5.4.6. Area where work was carried out to be inspected to ensure all debris has been removed.

5.5. Testing

- 5.5.1. The commissioning of the new Sea Tel and Vessel Link System be done in accordance with the manufacturers approved procedures. This will be arranged by CCG personal.
- 5.5.2. All cables are to be checked for continuity after installation to ensure operational capability. Should any cable run fail to pass testing, the cable must be replaced at the contractor's expense.
- 5.5.3. All cable testing shall be witnessed by the Technical Authority.
- 5.5.4. Contractor shall be responsible to ensure AC connection to Seatel Antenna heater is proven operational.

5.6. Certification

- 5.6.1. N/A

PART 6: DELIVERABLES

Drawings/Reports

- 6.1.2. The Contractor shall provide the Chief Engineer a report of the contractor's work in both electronic and hardcopy formats outlining the details of the inspections and any alterations/repairs prior to the acceptance of this item.

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Fans Overhaul		

L-09 Miscellaneous Supply and Exhaust Fan Overhauls

Part 1: Scope

The intent of this specification is to remove each of the fan / motors listed below under Part 2: References and to clean the ductwork adjacent to each fan.

Part 2: References

2.1 Guidance Drawings/Nameplate data

Manual G300F Ventilating and Industrial Axial Fan

<u>Fan Unit</u>	<u>Location</u>
Motor Room Supply	Frame 54 – 59 Aux. Fan Room, Officers Deck
Dual Speed Axial Fan	
5 HP & 2.2 HP	
600 Volt, 3 PH	
Purifier Room Exhaust	Frame 54 – 59 Aux. Fan Room, Officers Deck
Single Speed Axial Fan	
0.25 KW	
600 Volt, 3 Ph	
Aux Electrical Room Exhaust	Frame 54 – 59 Above Aux. Fan Room Officer's Deck
Dual Speed Axial Fan	
0.75 KW and 0.3 KW	
600 Volt, 3 Ph	

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Fan Unit

Location

Bow Thruster Compartment Exhaust Frame 164 Bow Thruster Compt Entrance / hatch

Dual Speed Axial Fan

1 HP & 0.5 HP

600 Volt, 3 Ph

2.3 Standards

- 2.6.1 The following Coast Guard Standards and or Technical Bulletins must be adhered to in the course of executing this specification. Copies of these standards and bulletins can be obtained from the CCG Technical Authority.
- 2.6.2 Canadian Coast Guard Fleet Safety Manual (DFO 5737)
- 2.6.3 Coast Guard ISM Confined Space Entry (7.B.3)
- 2.6.4 Coast Guard ISM Hotwork Procedures (7.B.4)
- 2.6.5 Coast Guard ISM Fall Protection Procedures (7.B.2)
- 2.6.6 CWB CSA 47.1 Latest Revision
- 2.6.7 SSPC-SPT

2.4 Regulations

- 2.5.1 NA

2.5 Owner Furnished Equipment

- 2.6.1 The Contractor must supply all materials, equipment and parts to perform the specified work unless otherwise stated.

Part 3: Technical Description

- 3.1 The Contractor and Ship's Electrical Officer must; prior to start of work witness and record starting and running currents on all three phases on both motors at both speeds. Megger and resistance readings of each winding in every motor shall be taken and recorded by the Contractor before removal and after subsequent installation to prove the integrity of the motor windings. A copy of both sets of readings must be delivered to the Chief Engineer.
- 3.2 The Contractor and Electrical Officer must subsequently isolate the power supply at the MCC #5. The Contractor must use his own locks and record the lockout / tag out in the lockout / tag out register. Contractor must then disconnect and dismount the fan/motor assembly units complete with

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mounting tubes.

- 3.3 The Contractor must remove the Intake louvre on the stbd side of the Fan room casing-Officer's Deck to gain access to all the fans except the Aux Electrical Room Exhaust fan which is atop the space, and the Bow Thruster Compartment Fans.
- 3.4 Each fan/motor unit must be removed and transported to contractor's (sub-contractor's) facility for disassembly, cleaning, inspection, bearing renewal and dynamic balancing. The new bearings must be sealed both sides and SKF or equivalent. All grease tube fittings must be fitted with pipe plugs and a label must be created and attached to the fan tube to advise that the bearings are sealed. The fan tubes must be grit blasted to remove all paint, rust, and dirt and then coated with primer and enamel finish.
- 3.5 The Contractor must be responsible for supplying all staging, scaffolding, craneage and rigging necessary for removal and reinstallation of fan assemblies.
- 3.6 The Contractor must supply and install replacement intake screens and tube transitions canvas flex pieces, dimensions as original.
- 3.7 Contractor must allow \$10,000.00 for the materials costs of flex transitions, insulation, labels etc to be adjusted up or down by 1379 action upon proof of invoice.

3.4 Location

- 3.4.1 Frame 54 – 59 Aux. Fan Room, Officers Deck

3.5 Interferences

- 3.5.1 The Contractor must be responsible for identification of interference items, their temporary removal, storage and refitting to the vessel in the scope of completing this specification.

Part 4: Proof of Performance

4.4 Inspection, Testing & Certification

- 4.4.1 Upon re-installation of the refurbished motor/fan units each unit must be reconnected, de-isolated and correct direction of rotation must be confirmed. Electrical Officer shall be Owner's Representative for witnessing the recording of starting and running currents for each motor for each phase.

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4.4.2 All work must be completed to the satisfaction of the Chief Engineer within the scope of the specification.

Part 5: Deliverables

Reports, Drawings, Manuals, Spares & Training

5.1 Contractor must provide 1 electronic copy and 1 hard copy detailing servicing and inspections conducted as listed in the specification.

