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RETOURNER LES SOUMISSIONS À:

Bid Receiving Public Works and Government
Services Canada/Réception des soumissions
Travaux publics et Services gouvernementaux
Canada

1713 Bedford Row

Halifax, N.S./Halifax, (N.É.)

Halifax

Nova Scotia

B3J 1T3

Bid Fax: (902) 496-5016

INVITATION TO TENDER

APPEL D'OFFRES

**Tender To: Public Works and Government Services
Canada**

We hereby offer to sell to Her Majesty the Queen in right of
Canada, in accordance with the terms and conditions set
out herein, referred to herein or attached hereto, the goods,
services, and construction listed herein and on any attached
sheets at the price(s) set out therefor.

Soumission aux: Travaux Publics et Services Gouvernementaux Canada

Nous offrons par la présente de vendre à Sa Majesté la
Reine du chef du Canada, aux conditions énoncées ou
incluses par référence dans la présente et aux annexes
ci-jointes, les biens, services et construction énumérés
ici et sur toute feuille ci-annexée, au(x) prix indiqué(s).

Comments - Commentaires

Vendor/Firm Name and Address

Raison sociale et adresse du
fournisseur/de l'entrepreneur

Issuing Office - Bureau de distribution

Atlantic Region Acquisitions/Région de l'Atlantique
Acquisitions

1713 Bedford Row

Halifax, N.S./Halifax, (N.É.)

Halifax

Nova Scot

B3J 1T3

Title - Sujet CCGS Corporal Teather Drydocking	
Solicitation No. - N° de l'invitation F5561-200689/A	Date 2020-09-30
Client Reference No. - N° de référence du client F5561-20-0689	GETS Ref. No. - N° de réf. de SEAG PW-\$HAL-201-11081
File No. - N° de dossier HAL-0-85094 (201)	CCC No./N° CCC - FMS No./N° VME
Solicitation Closes - L'invitation prend fin at - à 02:00 PM on - le 2020-10-22	
Time Zone Fuseau horaire Atlantic Daylight Saving Time ADT	
F.O.B. - F.A.B. Plant-Usine: <input type="checkbox"/> Destination: <input checked="" type="checkbox"/> Other-Autre: <input type="checkbox"/>	
Address Enquiries to: - Adresser toutes questions à: Crocker, Quentin	Buyer Id - Id de l'acheteur hal201
Telephone No. - N° de téléphone (902) 478-8034 ()	FAX No. - N° de FAX (902) 496-5016
Destination - of Goods, Services, and Construction: Destination - des biens, services et construction: FISHERIES AND OCEANS/ PECHES ET OCEANS MARINE ENGINEERING MARITIME REGIONAL HEAD QUARTERS BUILDING 50 DISCOVERY DRIVE - LEVEL 4 DARTMOUTH NOVA SCOTIA B2Y4A2 CANADA	

Instructions: See Herein

Instructions: Voir aux présentes

Delivery Required - Livraison exigée See Herein	Delivery Offered - Livraison proposée
Vendor/Firm Name and Address Raison sociale et adresse du fournisseur/de l'entrepreneur	
Telephone No. - N° de téléphone Facsimile No. - N° de télécopieur	
Name and title of person authorized to sign on behalf of Vendor/Firm (type or print) Nom et titre de la personne autorisée à signer au nom du fournisseur/ de l'entrepreneur (taper ou écrire en caractères d'imprimerie)	
Signature	Date

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PART 1 - GENERAL INFORMATION

1.1 Introduction

The bid solicitation is divided into seven parts plus attachments and annexes, as follows:

- Part 1 General Information: provides a general description of the requirement;
- Part 2 Bidder Instructions: provides the instructions, clauses and conditions applicable to the bid solicitation;
- Part 3 Bid Preparation Instructions: provides bidders with instructions on how to prepare their bid;
- Part 4 Evaluation Procedures and Basis of Selection: indicates how the evaluation will be conducted, the evaluation criteria that must be addressed in the bid, and the basis of selection;
- Part 5 Certifications: includes the certifications to be provided;
- Part 6 Security, Financial and Other Requirements: includes specific requirements that must be addressed by bidders; and
- Part 7 Resulting Contract Clauses: includes the clauses and conditions that will apply to any resulting contract.

The Annexes include the Statement of Work, the Basis of Payment, the Insurance Requirements, and any other annexes.

1.2 Summary

The Contractor must:

- 1.2.1 carry out the docking, maintenance and alterations of the Department of Fisheries and Oceans vessel CCGS Corporal Teather in accordance with the Requirement at Annex "A".
- 1.2.2 carry out any approved unscheduled work not covered in the above paragraph (a).

The Federal Contractors Program (FCP) for employment equity applies to this procurement; see Part 5 - Certifications, Part 7 - Resulting Contract Clauses and the annex titled [Federal Contractors Program for Employment Equity - Certification](#).

1.3 Debriefings

Bidders may request a debriefing on the results of the bid solicitation process. Bidders should make the request to the Contracting Authority within 15 working days from receipt of the results of the bid solicitation process. The debriefing may be in writing, by telephone or in person.

PART 2 - BIDDER INSTRUCTIONS

2.1 Standard Instructions, Clauses and Conditions

All instructions, clauses and conditions identified in the bid solicitation by number, date and title are set out in the [Standard Acquisition Clauses and Conditions Manual](https://buyandsell.gc.ca/policy-and-guidelines/standard-acquisition-clauses-and-conditions-manual) (https://buyandsell.gc.ca/policy-and-guidelines/standard-acquisition-clauses-and-conditions-manual) issued by Public Works and Government Services Canada.

Bidders who submit a bid agree to be bound by the instructions, clauses and conditions of the bid solicitation and accept the clauses and conditions of the resulting contract.

The [2003](#) (2020-05-28) Standard Instructions - Goods or Services - Competitive Requirements, are incorporated by reference into and form part of the bid solicitation.

2.2 Submission of Bids

Bids must be submitted only to Public Works and Government Services Canada (PWGSC) Bid Receiving Unit by the date, time and place indicated in the bid solicitation.

Note: For bidders choosing to submit using epost Connect for bids closing at the Bid Receiving Unit in Halifax, NS, the email address is:

TPSGC.RAReceptionSoumissionsNE-ARBidReceivingNS.PWGSC@tpsgc-pwgsc.gc.ca

Note: Bids will not be accepted if emailed directly to this email address. This email address is to be used to open an epost Connect conversation, as detailed in Standard Instructions [2003](#), or to send bids through an epost Connect message if the bidder is using its own licensing agreement for epost Connect.

Please ensure to initiate the ePost Connect conversation at least 6 days prior to bid closing.

Bidders electing to submit hard copy bids are to take note of the reduced hours of the mail room at 1713 Bedford Row due to COVID-19 restrictions:

Mail room hours: Monday to Thursday – 10am to 3pm; closed Fridays.

2.3 Enquiries - Bid Solicitation

All enquiries must be submitted in writing to the Contracting Authority no later than five (5) working days before the bid closing date. Enquiries received after that time may not be answered.

Bidders should reference as accurately as possible the numbered item of the bid solicitation to which the enquiry relates. Care should be taken by bidders to explain each question in sufficient detail in order to enable Canada to provide an accurate answer. Technical enquiries that are of a proprietary nature must be clearly marked "proprietary" at each relevant item. Items identified as "proprietary" will be treated as such except where Canada determines that the enquiry is not of a proprietary nature. Canada may edit the question(s) or may request that the Bidder do so, so that the proprietary nature of the question(s) is eliminated and the enquiry can be answered to all bidders. Enquiries not submitted in a form that can be distributed to all bidders may not be answered by Canada.

2.4 Applicable Laws

Any resulting contract must be interpreted and governed, and the relations between the parties determined, by the laws in force in Nova Scotia.

Bidders may, at their discretion, substitute the applicable laws of a Canadian province or territory of their choice without affecting the validity of their bid, by deleting the name of the Canadian province or territory specified and inserting the name of the Canadian province or territory of their choice. If no change is made, it acknowledges that the applicable laws specified are acceptable to the bidders.

2.5 Bidders' Conference and Optional Site Visit

A bidders' conference will be held via teleconference **on October 8th, 2020. The conference will begin at 13:00 ADT.** The scope of the requirement outlined in the bid solicitation will be reviewed during the

conference and questions will be answered. It is recommended that bidders who intend to submit a bid attend or send a representative.

Bidders are requested to communicate with the Contracting Authority before the conference to confirm attendance and obtain videoconference login details. Bidders should provide, in writing, to the Contracting Authority, the name(s) of the person(s) who will be attending and a list of issues they wish to table no later than 2 working days before the scheduled conference.

Any clarifications or changes to the bid solicitation resulting from the bidders' conference will be included as an amendment to the bid solicitation. Bidders who do not attend will not be precluded from submitting a bid.

2.6 Optional Site Visit

No vessel viewing is offered for this requirement.

2.7 Work Period – Marine - Bid

Work must commence and be completed as follows:

Commence: 04 November 2020
Complete: 16 December 2020.

By submitting a bid, the Bidder certifies that they have sufficient material and human resources allocated or available and that the above work period is adequate to both complete the known work and absorb a reasonable amount of unscheduled work.

2.8 Project Schedule

As part of its technical bid, the Bidder must propose its preliminary project schedule, in Gantt chart format. The project schedule must include the Bidder's work breakdown structure, the scheduling of main activities and milestone events, and any potential problem areas involved in completing the Work.

The Bidder's schedule must also provide a target date for each of the following significant events:

- a. Vessel Docking ;
- b. Vessel Undocking ;
- c. Sea Trials.

2.9 Vessel Transfer Costs

2.9.1 The evaluation price must include the cost for transferring the vessel from its home port to the shipyard/ship repair facility where the Work will be performed and the cost of transferring the vessel to its home port following completion of the Work, in accordance with the following:

- a) The Bidder must provide the location of the shipyard/ship repair facility where it proposes to perform the Work together with the applicable vessel transfer cost from the list provided under paragraph 2 of this clause:

Proposed shipyard/ship repair facility: _____

Applicable vessel transfer cost: _____ .

b) If the list in paragraph 2 of this clause does not provide the shipyard/ship repair location where the Bidder intends to perform the Work, then the Bidder must advise the Contracting Authority, in writing, at least five (5) calendar days before the bid closing date, of its proposed location for performing the Work.

The Contracting Authority will confirm to the Bidder, in writing, at least two (2) calendar days before the bid closing date, the location of the shipyard/ship repair and the applicable vessel transfer cost.

A bid that specifies a location for executing the Work which is not on the list of paragraph 2 of this clause, and for which a notification in writing has not been received by the Contracting Authority as required above, will be considered non-responsive.

2.9.2 List of shipyard/ship repair facilities and applicable vessel transfer costs

Vessel: CCGS Corporal Teather Home port: Dartmouth, Nova Scotia

Transfer costs in the case of vessels transferred using a government delivery crew include the fuel cost at the vessel's most economical speed of transit and for unmanned refits only, crew transportation costs for the delivery crew based on the location of the vessel's home port and the shipyard/ship repair facility.

Crew transportation costs do not include any members of the delivery crew who remain at the shipyard/ship repair facility in order to discharge project responsibilities related to the vessel being transferred.

Transfer costs in the case of vessels transferred unmanned by either commercial towing, railway, highway or other suitable means of transportation must be:

- i) included as part of the Bidder's financial bid in the case where the Bidder is responsible for the transfer; or
- ii) identified as the applicable vessel transfer cost, as given in the list below, in the case when Canada is responsible for the transfer.

Shipyard / ship repair facility	Applicable vessel transfer cost
Davie Québec Inc. Levis, QC	\$ 40,365.00
Verreault Navigation Inc. Les Méchins, QC	\$ 28,467.00
St John's Dockyard, St. John's NFLD	\$ 26,377.00
Irving Shipbuilding, Halifax, NS	\$ 195.00
Shelburne Ship Repair, Shelburne, NS	\$ 5,153.00
Lunenburg Industrial Foundry & Engineering, Lunenburg, NS	\$ 2,403.00
Aecon Atlantic Industrial Inc., Pictou, NS	\$ 18,358.00

2.10 Docking Facility Certification

Before contract award, the successful Bidder may be required to demonstrate to the satisfaction of Canada that the certified capacity of the docking facility, including any means or conveyance to remove the vessel from the water, is adequate for the anticipated loading in accordance with the related dry docking plans and other documents detailed in the Contract. The successful Bidder will be notified in writing and will be allowed a reasonable period of time to provide detailed keel block load distribution

sketches and blocking stability considerations, along with the supporting calculations to show the adequacy of the proposed docking arrangement.

Before contract award and within two (2) calendar days of written notification by the Contracting Authority, the successful Bidder must provide current and valid certification of the capacity and condition of the docking facility to be used for the Work. The certification must be provided by a recognized consultant or classification society and must have been issued within the past two years.

Although a dry docking facility may have a total capacity greater than the vessel to be docked, the weight distribution of the vessel may cause individual block loading to be exceeded. Also, while the physical dimensions of a dry docking facility may indicate acceptability for docking of a specific vessel, other limitations such as spacing of rails on a marine railway, concrete piers of abutments adjoining the dry dock may, preclude the facility from being considered as a possible dry docking site and render the bid non-responsive.

2.11 Workers Compensation Certification- Letter of Good Standing

The Bidder must have an account in good standing with the applicable provincial or territorial Workers' Compensation Board.

The Bidder must provide, within two (2) days following a request from the Contracting Authority, a certificate or letter from the applicable Workers' Compensation Board confirming the Bidder's good standing account. Failure to comply with the request may result in the bid being declared non-responsive.

2.12 Welding Certification

1. Welding must be performed by a welder certified by the Canadian Welding Bureau (CWB) for the following Canadian Standards Association (CSA) standards:
 - a. CSA W47.1 (current version), Certification of Companies for Fusion Welding of Steel (Minimum Division Level 2.1);
 - b. CSA W47.2 (current version), Certification of Companies for Fusion Welding of Aluminum (Minimum Division Level 2.0).
2. Before contract award and within two (2) calendar days of the written request by the Contracting Authority, the successful Bidder must submit evidence demonstrating its or its subcontractor's certification by CWB in accordance with the CSA welding standards.

2.13 Equivalent Products

1. Products that are equivalent in form, fit, function and quality to the item(s) specified in the bid solicitation will be considered where the Bidder:
 - a. designates the brand name, model and/or part number of the substitute product;
 - b. states that the substitute product is fully interchangeable with the item specified;
 - c. provides complete specifications and descriptive literature for each substitute product;

- d. provides compliance statements that include technical specifics showing the substitute product meets all mandatory performance criteria that are specified in the bid solicitation; and
 - e. clearly identifies those areas in the specifications and descriptive literature that support the substitute product's compliance with any mandatory performance criteria.
- 2. Products offered as equivalent in form, fit, function and quality will not be considered if:
 - a. the bid fails to provide all the information requested to allow the Contracting Authority to fully evaluate the equivalency of each substitute product; or
 - b. the substitute product fails to meet or exceed the mandatory performance criteria specified in the bid solicitation for that item.
- 3. In conducting its evaluation of the bids, Canada may, but will have no obligation to, request bidders offering a substitute product to demonstrate, at the sole cost of bidders, that the substitute product is equivalent to the item specified in the bid solicitation.

2.14 SAAC Manual Clauses

A7035T (2007-05-25) List of Proposed Sub-contractors
A9125T (2007-05-25) Valid Labour Agreement

PART 3 - BID PREPARATION INSTRUCTIONS

3.1 Bid Preparation Instructions

Canada requests that bidders provide their bid in separately bound sections as follows:

Section I: Financial Bid (1 hard copy)
Section II: Certifications (1 hard copy)

Prices must appear in the financial bid only. No prices must be indicated in any other section of the bid. Canada requests that bidders follow the format instructions described below in the preparation of their bid:

- (a) use 8.5 x 11 inch (216 mm x 279 mm) paper;
- (b) use a numbering system that corresponds to the bid solicitation.

In April 2006, Canada issued a policy directing federal departments and agencies to take the necessary steps to incorporate environmental considerations into the procurement process Policy on Green Procurement (<http://www.tpsgc-pwgsc.gc.ca/ecologisation-greening/achats-procurement/politique-policy-eng.html>). To assist Canada in reaching its objectives, bidders should:

- 1) use 8.5 x 11 inch (216 mm x 279 mm) paper containing fibre certified as originating from a sustainably-managed forest and containing minimum 30% recycled content; and
- 2) use an environmentally-preferable format including black and white printing instead of colour printing, printing double sided/duplex, using staples or clips instead of cerlox, duotangs or binders.

Section I: Financial Bid

3.1.1 Bidders must submit their financial bid in accordance with the Financial Bid Presentation Sheet in Annex "F". The total amount of Applicable Taxes must be shown separately, if applicable.

3.1.2 SACC Manual Clauses

C0414T (2008-05-12) Vessel Refit, Repair or Docking – Cost
C0417T (2008-05-12) Unscheduled Work and Evaluation Price

Section II: Certifications

Bidders must submit the certifications required under Part 5.

PART 4 - EVALUATION PROCEDURES AND BASIS OF SELECTION

4.1 Evaluation Procedures

- (a) Bids will be assessed in accordance with the entire requirement of the bid solicitation including the financial evaluation criteria.
- (b) An evaluation team composed of representatives of Canada will evaluate the bids.

4.2 Basis of Selection

A bid must comply with all requirements of the bid solicitation to be declared responsive. The responsive bid with the lowest evaluated price will be recommended for award of a contract.

PART 5 – CERTIFICATIONS AND ADDITIONAL INFORMATION

Bidders must provide the required certifications and associated information to be awarded a contract.

The certifications provided by Bidders to Canada are subject to verification by Canada at all times. Unless specified otherwise, Canada will declare a bid non-responsive, or will declare a contractor in default if any certification made by the Bidder is found to be untrue, whether made knowingly or unknowingly, during the bid evaluation period or during the contract period.

The Contracting Authority will have the right to ask for additional information to verify the Bidder's certifications. Failure to comply and to cooperate with any request or requirement imposed by the Contracting Authority may render the bid non-responsive or constitute a default under the Contract.

5.1 Certifications Required with the Bid

Bidders must submit the following duly completed certifications as part of their bid.

5.1.1 Integrity Provisions - Declaration of Convicted Offences

In accordance with the *Ineligibility and Suspension Policy* (<http://www.tpsgc-pwgsc.gc.ca/ci-if/politique-policy-eng.html>), the Bidder must provide with its bid the required documentation, as applicable, to be given further consideration in the procurement process.

5.2 Certifications Precedent to Contract Award and Additional Information

The certifications and additional information listed below should be submitted with the bid but may be submitted afterwards. If any of these required certifications or additional information is not completed and submitted as requested, the Contracting Authority will inform the Bidder of a time frame within which to provide the information. Failure to provide the certifications or the additional information listed below within the time frame specified will render the bid non-responsive.

5.2.1 Integrity Provisions – Required Documentation

In accordance with the [Ineligibility and Suspension Policy](http://www.tpsgc-pwgsc.gc.ca/ci-if/politique-policy-eng.html) (<http://www.tpsgc-pwgsc.gc.ca/ci-if/politique-policy-eng.html>), the Bidder must provide the required documentation, as applicable, to be given further consideration in the procurement process.

5.2.2 Federal Contractors Program for Employment Equity - Bid Certification

By submitting a bid, the Bidder certifies that the Bidder, and any of the Bidder's members if the Bidder is a Joint Venture, is not named on the Federal Contractors Program (FCP) for employment equity "FCP Limited Eligibility to Bid" list available at the bottom of the page of the [Employment and Social Development Canada \(ESDC\) - Labour's](http://www.esdc.gc.ca/en/jobs/workplace/human_rights/employment_equity/federal_contractor_program.page?&_ga=1.229006812.1158694905.1413548969#afed) website (http://www.esdc.gc.ca/en/jobs/workplace/human_rights/employment_equity/federal_contractor_program.page?&_ga=1.229006812.1158694905.1413548969#afed).

Canada will have the right to declare a bid non-responsive if the Bidder, or any member of the Bidder if the Bidder is a Joint Venture, appears on the "FCP Limited Eligibility to Bid" list at the time of contract award.

Canada will also have the right to terminate the Contract for default if a Contractor, or any member of the Contractor if the Contractor is a Joint Venture, appears on the "[FCP Limited Eligibility to Bid](#)" list during the period of the Contract.

5.2.3 Additional Certifications Precedent to Contract Award

- a. Project Schedule
- b. Docking Facility Certification
- c. Workers Compensation Certification- Letter of Good Standing
- d. Welding Certification
- e. List of Proposed Sub-contractors
- f. Valid Labour Agreement
- g. Insurance Certificate
- h. ISO Registration Documentation

PART 6 - SECURITY, FINANCIAL AND OTHER REQUIREMENTS

6.1 Security Requirements

There is no security requirement associated with the requirement.

6.2 Financial Capability

SACC Manual clause [A9033T](#) (2012-07-16) Financial Capability

6.3 Insurance Requirements

The Bidder must provide a letter from an insurance broker or an insurance company licensed to operate in Canada stating that the Bidder, if awarded a contract as a result of the bid solicitation, can be insured in accordance with the Insurance Requirements specified in Annex C.

If the information is not provided in the bid, the Contracting Authority will so inform the Bidder and provide the Bidder with a time frame within which to meet the requirement. Failure to comply with the request of the Contracting Authority and meet the requirement within that time period will render the bid non-responsive.

6.4 ISO 9001:2015 - Quality Management Systems

Before contract award and within two (2) calendar days of written notification by the Contracting Authority the Bidder must provide its current ISO Registration Documentation indicating its registration to ISO 9001:2015. Documentation and procedures of bidders not registered to the ISO standards may be subject to a Quality System Evaluation (QSE) by the Inspection Authority or designate before award of a contract.

PART 7 - RESULTING CONTRACT CLAUSES

The following clauses and conditions apply to and form part of any contract resulting from the bid solicitation.

7.1 Requirement

The Contractor must:

- a. carry out the docking, maintenance and alterations of the Department of Fisheries and Oceans vessel CCGS Corporal Teather in accordance with the Requirement at Annex "A".
- b. carry out any approved unscheduled work not covered in the above paragraph (a).

7.2 Standard Clauses and Conditions

All clauses and conditions identified in the Contract by number, date and title are set out in the [Standard Acquisition Clauses and Conditions Manual](https://buyandsell.gc.ca/policy-and-guidelines/standard-acquisition-clauses-and-conditions-manual)(<https://buyandsell.gc.ca/policy-and-guidelines/standard-acquisition-clauses-and-conditions-manual>) issued by Public Works and Government Services Canada.

7.2.1 General Conditions

[2030](#) (2020-05-28), General Conditions - Higher Complexity - Goods, apply to and form part of the Contract.

7.2.2 Supplemental General Conditions

1029 (2018-12-06) Ship Repairs, apply to and form part of the Contract.

7.3 Security Requirements

There is no security requirement applicable to this Contract.

7.4 Term of Contract

7.4.1 Work Period – Marine – Contract

Work must commence and be completed as follows:

Solicitation No. - N° de l'invitation
F5561-200689/A
Client Ref. No. - N° de réf. du client
F5561-20-0689

Amd. No. - N° de la modif.
File No. - N° du dossier
HAL-0-85094

Buyer ID - Id de l'acheteur
HAL201
CCC No./N° CCC - FMS No./N° VME

Commence: 4 November 2020;
Complete: 16 December 2020.

The Contractor certifies that they have sufficient material and human resources allocated or available and that the above work period is adequate to both complete the known work and absorb a reasonable amount of unscheduled work.

7.5 Authorities

7.5.1 Contracting Authority

The Contracting Authority for the Contract is:

Name: Quentin Crocker
Title: Supply Team Leader
Public Works and Government Services Canada
Acquisitions Branch, Marine Procurement
Address: 1713 Bedford Row, Halifax, NS, B3J 1T3

Telephone: (902) 478-8034
E-mail address: Quentin.Crocker@pwgsc-tpsgc.gc.ca

The Contracting Authority is responsible for the management of the Contract and any changes to the Contract must be authorized in writing by the Contracting Authority. The Contractor must not perform work in excess of or outside the scope of the Contract based on verbal or written requests or instructions from anybody other than the Contracting Authority.

7.5.2 Technical Authority

The Technical Authority for the Contract is:

Jeff Mercier
Vessel Maintenance Manager
Fisheries and Oceans / Canadian Coast Guard

Telephone: (902) 471-0802
E-mail Address: jeffrey.mercier@dfo-mpo.gc.ca

The Technical Authority named above is the representative of the department or agency for whom the Work is being carried out under the Contract and is responsible for all matters concerning the technical content of the Work under the Contract. Technical matters may be discussed with the Technical Authority, however the Technical Authority has no authority to authorize changes to the scope of the Work. Changes to the scope of the Work can only be made through a contract amendment issued by the Contracting Authority.

7.6 Payment

7.6.1 Basis of Payment

In consideration of the Contractor satisfactorily completing all of its obligations under the Contract, the Contractor will be paid a firm price as specified in Annex "B". Customs duties are included and Goods and Services Tax or Harmonized Sales Tax is extra, if applicable.

Canada will not pay the Contractor for any design changes, modifications or interpretations of the Work, unless they have been approved, in writing, by the Contracting Authority before their incorporation into the Work.

7.6.2 Limitation of Price

SACC Manual clause C6000C (2017-08-17) Limitation of Price

7.6.3 Progress Payments

1. Canada will make progress payments in accordance with the payment provisions of the Contract, no more than once a month, for cost incurred in the performance of the Work, up to 100 percent of the amount claimed and approved by Canada if:
 - a. an accurate and complete claim for payment using form [PWGSC-TPSGC 1111](#), Claim for Progress Payment, and any other document required by the Contract have been submitted in accordance with the invoicing instructions provided in the Contract;
 - b. the amount claimed is in accordance with the basis of payment;
 - c. the total amount for all progress payments paid by Canada does not exceed 80 percent of the total amount to be paid under the Contract;
 - d. all certificates appearing on form [PWGSC-TPSGC 1111](#) have been signed by the respective authorized representatives.
2. The balance of the amount payable will be paid in accordance with the payment provisions of the Contract upon completion and delivery of all work required under the Contract if the Work has been accepted by Canada and a final claim for the payment is submitted.
3. Progress payments are interim payments only. Canada may conduct a government audit and interim time and cost verifications and reserves the rights to make adjustments to the Contract from time to time during the performance of the Work. Any overpayment resulting from progress payments or otherwise must be refunded promptly to Canada.

7.7 Invoicing Instructions - Progress Payment Claim - Supporting Documentation required

1. The Contractor must submit a claim for payment using form [PWGSC-TPSGC 1111](#), Claim for Progress Payment.

Each claim must show:

- a. all information required on form [PWGSC-TPSGC 1111](#);
- b. all applicable information detailed under the section entitled "Invoice Submission" of the general conditions;
- c. the description and value of the milestone claimed as detailed in the Contract.

Each claim must be supported by:

- a. a copy of the fully up-to-date and signed individual inspection and test plan for the specification item being claimed;

- b. a copy of a worksheet indicating a percentage of progress complete of each individual specification item being claimed signed by the Project Manager, Technical Authority and Contracting Authority.
2. Applicable Taxes must be calculated on the total amount of the claim before the holdback is applied. At the time the holdback is claimed, there will be no Applicable Taxes payable as it was claimed and payable under the previous claims for progress payments.
3. The Contractor must prepare and certify one original and two (2) copies of the claim on form [PWGSC-TPSGC 1111](#), and forward it to the Project Authority identified under the section entitled "Authorities" of the Contract for appropriate certification after inspection and acceptance of the Work takes place.
4. The Project Authority will then forward the original and two (2) copies of the claim to the Contracting Authority for certification and onward submission to the Payment Office for the remaining certification and payment action.
5. The Contractor must not submit claims until all work identified in the claim is completed.

7.8 Project Schedule

The Contractor must provide a detailed project schedule in Gantt chart format to the Contracting Authority and the Technical Authority one (1) week after award of Contract. This schedule must highlight the specific dates for the events listed below and all items listed in the Pricing Data Sheet.

The Contractor's schedule must include target dates for each of the following significant events:

- a. Vessel Docking ;
- b. Vessel Undocking ;
- c. Sea Trials.

7.9 Meetings

Progress meetings, chaired by the Contracting Authority, will take place at the Contractor's facility as and when required, generally once a week. Interim meetings may also be scheduled. Contractor's attendees at these meetings will, as a minimum, be its Contract (Project) Manager, Production Manager (Superintendent) and Quality Assurance Manager. Progress meetings will generally incorporate technical meetings to be chaired by the Technical Authority.

7.10 Welding Certification

The Contractor must ensure that welding is performed by a welder certified by the Canadian Welding Bureau (CWB) for the following Canadian Standards Association (CSA) standard(s):

- a. CSA W47.1 (current version), Certification of Companies for Fusion Welding of Steel (Minimum Division Level 2.1);
- b. CSA W47.2 (current version), Certification of Companies for Fusion Welding of Aluminum (Minimum Division Level 2.0).

In addition, welding must be done in accordance with the requirements of the applicable drawings and specifications.

Before the commencement of any fabrication work, and upon request from the Inspection Authority, the Contractor must provide approved welding procedures and/or a list of welding personnel they intend to use in the performance of the Work. The list must identify the CWB welding procedure qualifications attained by each of the personnel listed and must be accompanied by a copy of each person's current CWB certification to CSA welding standards.

7.11 Inspection and Acceptance

The Technical Authority is the Inspection Authority. All reports, deliverable items, documents, goods and all services rendered under the Contract are subject to inspection by the Inspection Authority or representative. Should any report, document, good or service not be in accordance with the requirements of the Statement of Work and to the satisfaction of the Inspection Authority, as submitted, the Inspection Authority will have the right to reject it or require its correction at the sole expense of the Contractor before recommending payment.

7.12 Outstanding Work and Acceptance

The Inspection Authority, in conjunction with the Contractor, will prepare a list of outstanding work items at the end of the work period. This list will form the annexes to the formal acceptance document for the vessel. A contract completion meeting will be convened by the Inspection Authority on the work completion date to review and sign off the form PWGSC-TPSGC 1205, Acceptance. In addition to any amount held under the Warranty Holdback Clause, a holdback of twice the estimated value of outstanding work will be held until that work is completed.

The Contractor must complete the above form in three (3) copies, which will be distributed by the Inspection Authority as follows:

- a. original to the Contracting Authority;
- b. one copy to the Technical Authority;
- c. one copy to the Contractor.

7.13 Vessel Warranty – Refit and Repair

The warranty clause of the general conditions forming part of the Contract is deleted and replaced by the following:

"08 Warranty"

The Contractor, if requested by Canada, must replace or repair at its own expense any finished work, excluding Government Issue incorporated in the Work, which becomes defective or which fails to conform to contract requirements as a result of faulty or inefficient manufacture, material or workmanship.

Despite acceptance of the finished work, and without restricting any other term of the Contract or any condition, warranty or provision imposed by law, the Contractor warrants that the following will be free from all defects and will conform with the requirements of the Contract:

The painting of the underwater portion of the hull for a period of 365 days commencing from the date of undocking, except that the Contractor will only be liable to repair and/or replace to a value to be determined as follows:

Original cost to Canada of the underwater painting work, divided by 365 days and multiplied by the number of days remaining in the warranty period. The resultant sum would represent the "Dollar Credit" due to Canada from the Contractor.

All other painting work for a period of 365 days commencing from the date of acceptance of the Work;

All other items of work for a period of ninety (90) days commencing from the date of acceptance of the Work, except that:

the warranty on the work related to any system or equipment not immediately placed in continuous use or service will be for a period of ninety (90) days from the date of acceptance of the vessel;

for all outstanding defects, deviations, and work items listed on the Acceptance Document at Delivery, the warranty will be ninety (90) days from the subsequent date of acceptance for each item.

The Contractor agrees to pass to Canada, and exercise on behalf of Canada, all warranties on the materials supplied or held by the Contractor which exceed the periods indicated above.

Refer to Annex "D" for Warranty Defect Claim Procedures and forms.

7.14 Warranty – Contractor responsible for all costs

Section 22 entitled Warranty of general conditions 2030 is amended by deleting subsections 3 and 4 in its entirety and replacing it with the following:

The Work or any part of the Work found to be defective or non-conforming will be returned to the Contractor's plant for replacement, repair or making good. However, when in the opinion of Canada it is not expedient to remove the Work from its location, the Contractor must carry out any necessary repair or making good of the Work at that location. In such cases, the Contractor will be responsible for all Costs (including travel and living expenses) incurred in so doing, Canada will not reimburse these Costs.

The Contractor must pay the transportation cost associated with returning the Work or any part of the Work to the Contractor's plant pursuant to subsection 3. The Contractor must also pay the transportation cost associated with forwarding the replacement or returning the Work or part of the Work when rectified to the delivery point specified in the Contract or to another location directed by Canada.

All other provisions of the warranty section remain in effect.

7.15 Certifications and Additional Information

7.15.1 Compliance

Unless specified otherwise, the continuous compliance with the certifications provided by the Contractor in its bid or precedent to contract award, and the ongoing cooperation in providing additional information are conditions of the Contract and failure to comply will constitute the Contractor in default. Certifications are subject to verification by Canada during the entire period of the Contract.

7.15.2 Federal Contractors Program for Employment Equity - Default by the Contractor

The Contractor understands and agrees that, when an Agreement to Implement Employment Equity (AIEE) exists between the Contractor and Employment and Social Development Canada (ESDC)-Labour, the AIEE must remain valid during the entire period of the Contract. If the AIEE becomes invalid, the name of the Contractor will be added to the "[FCP Limited Eligibility to Bid](#)" list. The imposition of such a sanction by ESDC will constitute the Contractor in default as per the terms of the Contract.

7.15.3 SACC Manual Clauses

A0285C (2007-05-25) Workers Compensation
A9047C (2008-05-12) Title to Property – Vessel
A9006C (2012-07-16) Defence Contract
B5007C (2010-01-11) Procedures for Design Change or Additional Work

B6100C (2008-05-12)	Stability
B9014C (2013-04-25)	Outstanding Work and Acceptance – Civilian
B9035C (2008-05-12)	Progress Meetings
A0024C (2014-11-27)	Vessel Unmanned Refits
A0290C (2008-05-12)	Hazardous Waste – Vessels
A9055C (2010-08-16)	Scrap and Waste Material
A9066C (2008-05-12)	Vessel – Access by Canada
A9068C (2010-01-11)	Government Site Regulations

7.16 Applicable Laws

The Contract must be interpreted and governed, and the relations between the parties determined, by the laws in force in _____.

7.17 Priority of Documents

If there is a discrepancy between the wording of any documents that appear on the list, the wording of the document that first appears on the list has priority over the wording of any document that subsequently appears on the list.

- (a) the Articles of Agreement;
- (b) the supplemental general conditions 1029 (2018-12-06);
- (c) the general conditions 2030 (2020-05-28);
- (d) Annex A, Statement of Work;
- (e) Annex B, Basis of Payment;
- (f) Annex F, Financial Bid Presentation Sheet;
- (g) Appendix 1 to Annex F, Pricing Data Sheet
- (h) Annex C, Insurance Requirements;
- (i) the Contractor's bid dated _____.

7.18 Insurance Requirements

The Contractor must comply with the insurance requirements specified in Annex C. The Contractor must maintain the required insurance coverage for the duration of the Contract. Compliance with the insurance requirements does not release the Contractor from or reduce its liability under the Contract.

The Contractor is responsible for deciding if additional insurance coverage is necessary to fulfill its obligation under the Contract and to ensure compliance with any applicable law. Any additional insurance coverage is at the Contractor's expense, and for its own benefit and protection.

The Contractor must forward to the Contracting Authority within ten (10) days after the date of award of the Contract, a Certificate of Insurance evidencing the insurance coverage and confirming that the insurance policy complying with the requirements is in force. Coverage must be placed with an Insurer licensed to carry out business in Canada. The Contractor must, if requested by the Contracting Authority, forward to Canada a certified true copy of all applicable insurance policies.

7.19 ISO 9001:2015 - Quality Management Systems

In the performance of the Work described in the Contract, the Contractor must comply with the requirements of:

ISO 9001:2015 - Quality management systems - Requirements, published by the International Organization for Standardization (ISO), current edition at date of submission of the Contractor's bid with the exclusion of the following requirement:

Design and development.

It is not the intent of this clause to require that the Contractor be registered to the applicable standard; however, the Contractor's quality management system must address each requirement contained in the standard.

Assistance for Government Quality Assurance (GQA):

The Contractor must provide the Inspection Authority or designate with the accommodation and facilities required for the proper accomplishment of GQA and must provide any assistance required by the Inspection Authority for evaluation, verification, validation, documentation or release of product. The Inspection Authority or designate must have the right of access to any area of the Contractor's or Subcontractor's facilities where any part of the Work is being performed.

The Inspection Authority or designate must be afforded unrestricted opportunity to evaluate and verify Contractor conformity with Quality System procedures and to validate product conformity with contract requirements. The Contractor must make available, for reasonable use by the Inspection Authority or designate, the equipment necessary for all validation purposes. Contractor personnel must be made available for operation of such equipment as required.

When the Inspection Authority or designate determines that GQA is required at a subcontractor's facilities, the Contractor must provide for this in the purchasing document and forward copies to the Inspection Authority or designate, together with relevant technical data as the Inspection Authority or designate may request. The Contractor must notify the Inspection Authority or designate of non-conforming product received from a subcontractor when the product has been subject to GQA.

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File No. - N° du dossier
HAL-0-85094

Buyer ID - Id de l'acheteur
HAL201
CCC No./N° CCC - FMS No./N° VME

ANNEX "A"

STATEMENT OF WORK

The entire Statement of Work is a separate electronic document entitled:

DRY-DOCKING & REFIT SPECIFICATION
CCGS Corporal Teather
SPECIFICATION NO: 20-C182-018-1
REVISION 9

Potential bidders requiring a copy of the complete technical data package are to submit an email request directly to the Contracting Authority.

ANNEX "B"

BASIS OF PAYMENT

Remark to Bidder: Annex B will form the Basis of Payment for the resulting contract and should not be filled in at the bid submission stage. Refer to Annex F "Financial Bid Presentation Sheet".

1. Contract Price

a)	Known Work For work as stated in Part 1, Specified in Annex "A" for a FIRM PRICE of:	\$ _____
b)	HST (_____ %) of Line a) only	\$ _____
c)	Total Firm Price HST Included: For a FIRM PRICE of :	\$ _____

2. Unscheduled Work

2.1 Price Breakdown:

The Contractor must, upon request, provide a price breakdown for all unscheduled work, by specific activities with trades, person-hours, material, subcontracts and services.

2.2 Pro-rated Prices:

Hours and prices for unscheduled work will be based on comparable historical data applicable to similar work at the same facility, or will be determined by pro-rating the quoted work costs in the Contract when in similar areas of the vessel.

2.3 Payment for Unscheduled Work:

The Contractor will be paid for unscheduled work arising, as authorized by Canada. The authorized unscheduled work will be calculated as follows:

Number of hours (to be negotiated) x \$ _____, being the Contractor's firm hourly charge-out labour rate which includes overhead and profit, plus net laid-down cost of materials to which will be added a mark-up of 10 percent, plus Goods and Services Tax or Harmonized Sales Tax, if applicable, calculated at _____ percent of the total cost of material and labour. The firm hourly charge-out labour rate and the material mark-up will remain firm for the term of the Contract and any subsequent amendments.

C0902C (2008-12-12)

3 Overtime

No overtime work will be compensated for under the Contract unless authorized in advance and in writing by the Contracting Authority. Any request for payment must be accompanied by a copy of the overtime authorization and a report containing such details as Canada may require with respect to the overtime work performed. Compensation for authorized overtime will be calculated by taking the average hourly direct labour rate premiums, plus certified fringe benefit additives, plus profit of 7 1/2 percent on labour premium and fringe benefits. These rates will remain firm for the duration of the Contract including all amendments and are subject to audit if deemed necessary by Canada.

4 Daily Services Fee

In the event of a delay in the performance of the Work that lengthens the Work Period beyond the date specified in this Contract, and if such delay is recognized and agreed upon by the Contracting Authority as being attributable to Canada, Canada agrees to pay the Contractor the daily services fee, described below, for each day of such delay. This fee shall be the sole liability of Canada to the Contractor for the delay.

The firm daily services fee is:

- | | | |
|-----|---------------------------------------|----------|
| (a) | For a working day on the drydock | \$ _____ |
| (b) | For a non-working day on the drydock: | \$ _____ |
| (c) | For a working day at the berth: | \$ _____ |
| (d) | For a non-working day at the berth: | \$ _____ |

The above fees shall include but not be limited to, all aspects of the following costs: Administrative Support, Production Services, Quality Assurance, Material Support, Planned Maintenance and Ship Services, and all other resources and direct costs needed to maintain the Vessel at the Contractor's facility. These fees are firm and not subject to any additional charges for mark-up or profit.

5 FSR and Subcontractor Travel

5.1 Travel Management

The Contractor is responsible for the management of subcontractor travel. Any variation from the National Joint Council Travel Directive that incurs unauthorized costs requires written authorization from the Contracting Authority prior to travel. Travel costs claimed without written authorization will be rejected or reimbursed at the estimated authorized price (ie. business class flights will be reimbursed at the price of an economy flight), at the discretion of the Contracting Authority.

Only allowances that specifically include the provision to reimburse subcontractor travel and living expenses will be reimbursed by Canada.

5.2 Travel Directive

The Contractor will be reimbursed authorized travel and living expenses reasonably and properly incurred by the authorized subcontractor in the performance of the Work, at cost, without any allowance for profit and/or administrative overhead. Exceptions will only be considered if authorized in advance in writing by the CA prior to travel. The allowance must form part of the overall bid and must be adjusted by the PSPC 1379 process upon proof of final invoice. The reimbursement is eligible for the Contractor's allowance mark-up in accordance with the pricing data sheet, which is not to exceed 10%. Travel claim 1379 adjustments and associated invoices are cost reimbursements and are not subject to additional taxes.

All claims for travel reimbursement must be in accordance with the meal, and private vehicle allowances specified in Appendices B, C and D of the [National Joint Council Travel Directive](#), and with the other provisions of the directive referring to "travellers", rather than those referring to "employees". Canada will not pay any incidental expense allowance for authorized travel. In order to be eligible to claim breakfast the traveller must have departed their residence prior to 6:00 am local time. In order to be eligible to claim supper the traveller must have arrived at their residence after 6:00 pm local time. Departure and arrival times must be supported by timesheets.

5.3 Claims Process

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F5561-200689/A
Client Ref. No. - N° de réf. du client
F5561-20-0689

Amd. No. - N° de la modif.
File No. - N° du dossier
HAL-0-85094

Buyer ID - Id de l'acheteur
HAL201
CCC No./N° CCC - FMS No./N° VME

The Contractor must provide receipts and invoices to support 1379 adjustment travel claims for all claim items except meals. Travel claims must be invoiced as a non-taxable line item. Travel claims must be supported by timesheets, receipts/invoices and a copy of the written travel authorization. Original receipts must be provided unless waived in writing by the Contracting Authority. Original receipts submitted to the Contracting Authority will not be returned.

The Contractor must provide a full breakdown of the travel claim in a Microsoft Excel workbook, providing details of each individual expense (see figure 5.4). A separate workbook must be submitted to the Contracting Authority for each traveller per invoice period, and must include, at a minimum, the following information:

Header

Name of traveller;
Company name;
Contract number;
Specification item;
Value of allowance including markup;
Value of any previous claims (if applicable);
Period of claim;
Date and time of departure and arrival from/to residence.

Line Item Details

Date;
Category of claim (ie. Taxi, Air Fare, Hotel, etc);
Actual cost indicated on receipt, including applicable taxes;
Cost in CAD, including applicable taxes;
Foreign exchange rate (if applicable);
Foreign exchange conversion date (if applicable);
Price variation (if applicable);
Reason for price variation (ie. exchange rate variation, cost-sharing between multiple projects, etc.)

Line item details must be sorted by date then by category. Each cell must be formatted to reflect the appropriate value based on its contents. The workbook must be open for editing and no parts of the workbook may be locked. The workbook and all information contained within will become the property of Canada.

Figure 5.4

Travel Claim							
Name of Traveller: _____				Allowance Total: _____			
Company Name: _____				Sum of Previous Claims against Allowance: _____			
Contract Number: _____				Period of Claim: _____			
Specification Number: _____				Date/Time Departure from Residence: _____			
Spec Item Number: _____				Date/Time Arrival to Residence: _____			
Date (DD-MM-YYYY)	Category (hotel, taxi, etc)	Actual Cost (Actual currency paid)	Claim Amount (CAD)	FCX Rate Used (N.NNNN)	FCX Date (DD-MM-YYYY)	Price Variation (CAD)	Reason for Variation (text)

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ANNEX "C"

INSURANCE REQUIREMENTS

C1 Ship Repairers' Liability Insurance

1. The Contractor must obtain Ship Repairers' Liability Insurance and maintain it in force throughout the duration of the Contract, in an amount usual for a contract of this nature, but for not less than \$10,000,000 per accident or occurrence and in the annual aggregate.
2. The Ship Repairers' Liability insurance must include the following:
 - a. Additional Insured: Canada is added as an additional insured, but only with respect to liability arising out of the Contractor's performance of the Contract. The interest of Canada as additional insured should read as follows: Canada, represented by Public Works and Government Services Canada.
 - b. Waiver of Subrogation Rights: Contractor's Insurer to waive all rights of subrogation against Canada as represented by the Department of Fisheries and Oceans/Canadian Coast Guard and Public Works and Government Services Canada for any and all loss of or damage to the vessel, however caused.
 - c. Notice of Cancellation: The Contractor will provide the Contracting Authority thirty (30) days prior written notice of policy cancellation or any changes to the insurance policy.
 - d. Contractual Liability: The policy must, on a blanket basis or by specific reference to the contract, extend to assumed liabilities with respect to contractual provisions.
 - e. Cross Liability/Separation of Insureds: Without increasing the limit of liability, the policy must protect all insured parties to the full extent of coverage provided. Further, the policy must apply to each Insured in the same manner and to the same extent as if a separate policy had been issued to each.
 - f. Litigation Rights: Pursuant to subsection 5(d) of the [Department of Justice Act](#), S.C. 1993, c. J-2, s.1, if a suit is instituted for or against Canada which the Insurer would, but for this clause, have the right to pursue or defend on behalf of Canada as an Additional Named Insured under the insurance policy, the Insurer must promptly contact the Attorney General of Canada to agree on the legal strategies by sending a letter, by registered mail or by courier, with an acknowledgement of receipt.

For the province of Quebec, send to:

*Director Business Law Directorate,
Quebec Regional Office (Ottawa),
Department of Justice,
284 Wellington Street, Room SAT-6042,
Ottawa, Ontario, K1A 0H8*

For other provinces and territories, send to:

*Senior General Counsel,
Civil Litigation Section,
Department of Justice
234 Wellington Street, East Tower
Ottawa, Ontario K1A 0H8*

A copy of the letter must be sent to the Contracting Authority. Canada reserves the right to co-defend any action brought against Canada. All expenses incurred by Canada to co-defend such actions will be at Canada's expense. If Canada decides to co-defend any action brought against it, and Canada does not agree to a proposed settlement agreed to by the Contractor's insurer and the plaintiff(s) that would result in the settlement or dismissal of the action against Canada, then Canada will be responsible to the Contractor's insurer for any difference between the proposed settlement amount and the amount finally awarded or paid to the plaintiffs (inclusive of costs and interest) on behalf of Canada.

G5001C (2018-06-21)

C2 Commercial General Liability Insurance

1. The Contractor must obtain Commercial General Liability Insurance, and maintain it in force throughout the duration of the Contract, in an amount usual for a contract of this nature, but for not less than \$2,000,000 per accident or occurrence and in the annual aggregate.
2. The Commercial General Liability policy must include the following:
 - a. Additional Insured: Canada is added as an additional insured, but only with respect to liability arising out of the Contractor's performance of the Contract. The interest of Canada should read as follows: Canada, as represented by Public Works and Government Services Canada.
 - b. Bodily Injury and Property Damage to third parties arising out of the operations of the Contractor.
 - c. Products and Completed Operations: Coverage for bodily injury or property damage arising out of goods or products manufactured, sold, handled, or distributed by the Contractor and/or arising out of operations that have been completed by the Contractor.
 - d. Personal Injury: While not limited to, the coverage must include Violation of Privacy, Libel and Slander, False Arrest, Detention or Imprisonment and Defamation of Character.
 - e. Cross Liability/Separation of Insureds: Without increasing the limit of liability, the policy must protect all insured parties to the full extent of coverage provided. Further, the policy must apply to each Insured in the same manner and to the same extent as if a separate policy had been issued to each.
 - f. Blanket Contractual Liability: The policy must, on a blanket basis or by specific reference to the Contract, extend to assumed liabilities with respect to contractual provisions.

-
- g. Employees and, if applicable, Volunteers must be included as Additional Insured.
 - h. Employers' Liability (or confirmation that all employees are covered by Worker's compensation (WSIB) or similar program)
 - i. Broad Form Property Damage including Completed Operations: Expands the Property Damage coverage to include certain losses that would otherwise be excluded by the standard care, custody or control exclusion found in a standard policy.
 - j. Notice of Cancellation: The Contractor will provide the Contracting Authority thirty (30) days prior written notice of policy cancellation or any changes to the insurance policy.
 - k. If the policy is written on a claims-made basis, coverage must be in place for a period of at least 12 months after the completion or termination of the Contract.
 - l. Owners' or Contractors' Protective Liability: Covers the damages that the Contractor becomes legally obligated to pay arising out of the operations of a subcontractor.
 - m. Non-Owned Automobile Liability - Coverage for suits against the Contractor resulting from the use of hired or non-owned vehicles.
 - n. Advertising Injury: While not limited to, the endorsement must include coverage piracy or misappropriation of ideas, or infringement of copyright, trademark, title or slogan.
 - o. All Risks Tenants Legal Liability - to protect the Contractor for liabilities arising out of its occupancy of leased premises.
 - p. Amendment to the Watercraft Exclusion to extend to incidental repair operations on board watercraft.
 - q. Sudden and Accidental Pollution Liability (minimum 120 hours): To protect the Contractor for liabilities arising from damages caused by accidental pollution incidents.
 - r. Litigation Rights: Pursuant to subsection 5(d) of the [Department of Justice Act](#), S.C. 1993, c. J-2, s.1, if a suit is instituted for or against Canada which the Insurer would, but for this clause, have the right to pursue or defend on behalf of Canada as an Additional Named Insured under the insurance policy, the Insurer must promptly contact the Attorney General of Canada to agree on the legal strategies by sending a letter, by registered mail or by courier, with an acknowledgement of receipt.

For the province of Quebec, send to:

*Director Business Law Directorate,
Quebec Regional Office (Ottawa),
Department of Justice,
284 Wellington Street, Room SAT-6042,
Ottawa, Ontario, K1A 0H8*

For other provinces and territories, send to:

*Senior General Counsel,
Civil Litigation Section,
Department of Justice
234 Wellington Street, East Tower
Ottawa, Ontario K1A 0H8*

A copy of the letter must be sent to the Contracting Authority. Canada reserves the right to co-defend any action brought against Canada. All expenses incurred by Canada to co-defend such actions will be at Canada's expense. If Canada decides to co-defend any action brought against it, and Canada does not agree to a proposed settlement agreed to by the Contractor's insurer and the plaintiff(s) that would result in the settlement or dismissal of the action against Canada, then Canada will be responsible to the Contractor's insurer for any difference between the proposed settlement amount and the amount finally awarded or paid to the plaintiffs (inclusive of costs and interest) on behalf of Canada.

G2001C (2018-06-21)

C3 Limitation of Contractor's Liability for Damages to Canada

This section applies despite any other provision of the Contract and replaces the section of the general conditions entitled "Liability". Any reference in this section to damages caused by the Contractor also includes damages caused by its employees, as well as its subcontractors, agents, and representatives, and any of their employees.

Whether the claim is based in contract, tort, or another cause of action, the Contractor's liability for all damages suffered by Canada caused by the Contractor's performance of or failure to perform the Contract is limited to \$10,000,000.00. This limitation of the Contractor's liability does not apply to:

any infringement of intellectual property rights; or

any breach of warranty obligations

Each Party agrees that it is fully liable for any damages that it causes to any third party in connection with the Contract, regardless of whether the third party makes its claim against Canada or the Contractor. If Canada is required, as a result of joint and several liability, to pay a third party in respect of damages caused by the Contractor, the Contractor must reimburse Canada for that amount.

N0001C (2008-05-12)

ANNEX “D”

WARRANTY DEFECT CLAIM PROCEDURES AND FORMS

Warranty Procedures

1. Scope

a. The following are the procedures, which suit the particular requirements for warranty considerations for a vessel on completion of a refit.

2. Definition

There are a number of definitions of “warranty” most of which are intended to describe its force and effect in law. One such definition is offered as follows:

“A warranty is an agreement whereby the vendor’s or manufacturer’s responsibility for performance of its product is extended for a specific period of time beyond the date at which the title to the product passes to the buyer.”

3. Warranty Conditions

a. 2030 General Conditions - Higher Complexity - Goods are augmented by clauses incorporated into the subject Contract.

b. The warranty periods may be stated in more than one part:

i. 90 days commencing from the day the PWGSC 1205 Acceptance Document is signed for workmanship provided by the contractor for the refit work specified;

ii. 365 days from the date of acceptance for the specified areas of painting;

iii. 365 days commencing from the day the PWGSC 1205 Acceptance Document is signed for parts and material provided by the contractor for the refit work specified;

iv. Any other specific warranty periods that may be required in the contract or offered by the Contractor.

c. The foregoing does not cover the disposition of other deficiencies that will be directly related to Technical Authority problem areas of the following nature:

i. items becoming unserviceable that were not included in the refit specification;

ii. refit specifications or other related documentation requiring amendments or corrections to increase viability; and

iii. work performed that is directly related to the Technical Authority.

4. Reporting Failures With Warranty Potential

a. The initial purpose of a report of a failure is to facilitate the decision as to whether or not to involve warranty and to generate action to effect repairs. Therefore in addition to identification, location data, etc. the report must contain details of the defect. Warranty decisions as a general rule are to be made locally and the administrative process is to be in accordance with procedures as indicated.

b. These procedures are necessary as invoking a warranty does not simply mean that the warrantor will automatically proceed with repairs at his expense. A review of the defect may well result in a disclaimer of responsibility, therefore, it is imperative that during such a review the Department is directly represented by competent technical authority qualified to agree or disagree with the warrantor's assertions.

5. Procedures

a. Immediately it becomes known to the Ship's Staff that an equipment/system is performing below accepted standards or has become defective, the procedures for the investigation and reporting are as follows:

i. The vessel advises the Technical Authority when a defect, which is considered to be directly associated the refit work, has occurred.

ii. On review of the Specification and the Acceptance Document, the Technical Authority in consort with Ship's Staff is to complete the Tombstone Data and section 1 of the Warranty Claim Form attached and forward the original to the Contractor for review with a copy to the PWGSC contracting Authority. If the PWGSC Contracting or Inspection Authority is unable to support warranty action, the Defect Claim Form will be returned to the originator with a brief justification. (It is to be noted that in the latter instance PWGSC will inform the Contractor of its decision and no further action will be required of the Contractor.

Warranty defect claims may be forwarded in hard copy, by fax or by e-mail whichever format is the most convenient.

iii. Assuming the Contractor accepts full responsibility for repair, the Contractor completes Section 2 and 3 of the Warranty Claim Form, returns it to the Inspection Authority who confirms corrective action has been completed, and who then distributes the form to the Technical Authority and the PWGSC Contracting Authority.

b. In the event that the Contractor disputes the claim as a warranty defect, or agrees to share, the contractor is to complete Part 2 of the Warranty Claim Form with the appropriate information and forward it to the Contracting Authority who will distribute copies as necessary.

c. When a warranty defect claim is disputed by the Contractor, the Technical Authority may arrange to correct the defect by in-house resources or by contracting the work out. All associated costs must be tracked and recorded as a possible charge against the contractor by PWGSC action. Material costs and man-hours expended in correcting the defect are to be recorded and entered in Section 5 of the warranty defect claim by the Technical Authority who will forward the warranty defect claim to the PWGSC Contracting Authority for action. Defective parts of equipment are to be retained pending settlement of claim.

d. Defective equipment associated with potential warranty should not normally be dismantled until the contractor's representative has had the opportunity to observe the defect. The necessary work is to be undertaken through normal repair methods and costs must be segregated as a possible charge against a contractor by PWGSC action.

6. Liability

a. Agreement between the Contracting Authority, Inspection Authority, Technical Authority and the Contractor will result in one of the following conditions:

-
- i. The contractor accepts full responsibility for costs to repair or overhaul under the warranty provisions of the contract;
- ii. The Technical Authority accepts full responsibility for repair and overhaul of item concerned;
or
- iii. The Contractor and the Technical Authority agree to share responsibility for the costs to repair or overhaul the unserviceable item, in such cases the PWGSC Contracting Authority will negotiate the best possible sharing arrangement.
- b. In the event of a disagreement as in paragraph 5c, PWGSC will take necessary action with the contractor while the Technical Authority informs its Senior Management including pertinent data and recommendations.
- c. The total cost of processing warranty claims must include accommodation and travel costs of the contractor's employees as well as equipment/system down time and operational constraints. Accordingly, the cost to remediate the defect, in man-hours and material, will be discussed between the Contracting/Inspection Authorities and the Technical Authority to determine the best course of action.

7. Alongside Period For Warranty Repairs and Checks

- a. If at all possible, an alongside period for the vessel is to be arranged just before the expiration of the 90 day warranty period. This alongside period is to provide time for warranty repair and check by the contractor.

Buyer ID - Id de l'acheteur
HAL201
CCC No./N° CCC - FMS No./N° VME

Solicitation No. - N° de l'invitation
F5561-200689/A
Client Ref. No. - N° de réf. du client
F5561-20-0689

Amd. No. - N° de la modif.
File No. - N° du dossier
HAL-0-85094

Buyer ID - Id de l'acheteur
HAL201
CCC No./N° CCC - FMS No./N° VME

2. Contractor's Investigative Report – Le rapport investigateur de l'entrepreneur

3. Contractor's Corrective Action – La modalité de reprise de l'entrepreneur

Contractor's Name and Signature – Nom et signature de l'entrepreneur
reprise

Date of Corrective Action - Date de modalité de
reprise

Client Name and Signature - Nom et signature de client

Date

4. PWGSC Review of Warranty Claim Action – Examen d'action de réclamation de garantie par TPSGC

Signature – Signature

Date

5. Additional Information – Renseignements supplémentaires



PWGSC-TPSGC

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ANNEX “E”

INTEGRITY PROVISIONS – REQUIRED DOCUMENTATION

Failure to provide the following information will render the bid non-responsive.

Complete Legal Name of Supplier: _____

Supplier Address: _____

Supplier PBN: _____

Solicitation Number: F5561-200689/A

List of Directors:

Please provide a list of names of all individuals currently on the Board of Directors of the above company.

Name	Position

Attach additional names on a separate sheet if required.

ANNEX "F"

FINANCIAL BID PRESENTATION SHEET

Proposed Work Period Location: _____

1. Evaluation of Price

a)	Known Work For work as stated in Part 1, specified in Annex "A" and detailed in the attached Pricing Data Sheet for a FIRM PRICE of:	\$ _____
b)	Unscheduled Work – Regular Labour Rate Estimated labour hours at a firm Charge-out Labour Rate, including overhead and profit: 1,700 person hours X \$ _____ per hour for a PRICE of:	\$ _____
c)	Daily Services Fees i) Three (3) working days on drydock X \$ _____ = \$ _____ ii) Two (2) non-working day on drydock X \$ _____ = \$ _____ iii) Two (2) working days at berth X \$ _____ = \$ _____ iv) One (1) non-working day at berth X \$ _____ = \$ _____	\$ _____
d)	Vessel Transfer Cost As stated in Part 2.	\$ _____
e)	EVALUATION PRICE HST Excluded, [a + b + c+ d]: For an EVALUATION PRICE of :	\$ _____

2. Unscheduled Work

2.1 Price Breakdown:

The Contractor must, upon request, provide a price breakdown for all unscheduled work, by specific activities with trades, person-hours, material, subcontracts and services.

2.2 Pro-rated Prices:

Hours and prices for unscheduled work will be based on comparable historical data applicable to similar work at the same facility, or will be determined by pro-rating the quoted work costs in the Contract when in similar areas of the vessel.

2.3 Payment for Unscheduled Work:

The Contractor will be paid for unscheduled work arising, as authorized by Canada. The authorized unscheduled work will be calculated as follows:
Number of hours (to be negotiated) x \$ _____, being the Contractor's firm hourly charge-out labour rate which includes overhead and profit, plus net laid-down cost of materials to which will be added a mark-up of 10 percent, plus Goods and Services Tax or Harmonized Sales Tax, if applicable, calculated at 15 percent of the total cost of material and labour. The firm hourly charge-out labour rate and the material mark-up will remain firm for the term of the Contract and any subsequent amendments.

3. Overtime

No overtime work will be compensated for under the Contract unless authorized in advance and in writing by the Contracting Authority. Any request for payment must be accompanied by a copy of the overtime authorization and a report containing such details as Canada may require with respect to the overtime work performed. Compensation for authorized overtime will be calculated by taking the average hourly direct labour rate premiums, plus certified fringe benefit additives, plus profit of 7 1/2 percent on labour premium and fringe benefits. These rates will remain firm for the duration of the Contract including all amendments and are subject to audit if deemed necessary by Canada.

4. Daily Services Fee

In the event of a delay in the performance of the Work that lengthens the Work Period beyond the date specified in this Contract, and if such delay is recognized and agreed upon by the Contracting Authority as being attributable to Canada, Canada agrees to pay the Contractor the daily services fee, described below, for each day of such delay. This fee shall be the sole liability of Canada to the Contractor for the delay.

The firm daily services fee is:

- | | | |
|-----|---------------------------------------|----------|
| (a) | For a working day on the drydock | \$ _____ |
| (b) | For a non-working day on the drydock: | \$ _____ |
| (c) | For a working day at the berth: | \$ _____ |
| (d) | For a non-working day at the berth: | \$ _____ |

The above fees shall include but not be limited to, all aspects of the following costs: Administrative Support, Production Services, Quality Assurance, Material Support, Planned Maintenance and Ship Services, and all other resources and direct costs needed to maintain the Vessel at the Contractor's facility. These fees are firm and not subject to any additional charges for mark-up or profit.

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File No. - N° du dossier
HAL-0-85094

Buyer ID - Id de l'acheteur
HAL201
CCC No./N° CCC - FMS No./N° VME

APPENDIX “1” to ANNEX “F” PRICING DATA SHEET

The Pricing Data sheet will be provided with the minutes of the bidder's conference as a Solicitation Amendment and will be titled **Pricing Data Sheet**.

CANADIAN COAST GUARD ATLANTIC REGION

CCGS C. TEATHER



DRY DOCKING AND REFIT SPECIFICATION

SPECIFICATION NO.:
20-C182-018-1

REQUISTION NUMBER:
F5561-200689
NOV 4th – Dec 16th

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GENERAL NOTES

ON-SITE PROJECT OFFICER: All the specified work, as well as all work arisings, shall be completed to the satisfaction of the **Coast Guard Technical Authority (CGTA/TA)**. Upon completion of each item of the specification, the CGTA shall be notified so that he/she may inspect the work prior to the complete closing up of any work. Failure to give notification does not absolve Contractor of the responsibility of providing CGTA the opportunity to inspect any item. Inspection of any item by the CGTA does not substitute for any required inspection by Transport Canada Marine Safety and Security (TCMSS), classification societies or alternate authority identified by the CGTA.

SAFETY: Vessel shall be under Contractor's Safety Management program while under their Care & Custody. Potential Contractor's shall include with their bids the name of their Safety Manager or Supervisor who will ensure that these requirements for workplace safety are met. When under Canadian Coast Guard (CCG) Care & Custody the ISM Safety annex shall apply.

SUB-CONTRACTORS: All conditions, stipulations etc. listed in the General Notes apply to any Sub-Contractors employed by the Main Contractor to carry out work on any Specification item.

SCHEDULE: At the Pre-Refit Meeting, the successful Contractor shall provide a Production Bar Chart or Schedule showing commencement and completion dates for each item in this specification. This document shall highlight any critical dates and be capable of showing the effects of late completion date of the work package. Contractor shall provide updated Production Schedules to the CGTA, and Public Service and Procurement Canada (PSPC) whenever the schedule is revised.

SAFE WORK CERTIFICATES:

Contractor must obtain Marine Chemist Certificates in accordance with TCMSS TP 3177E before any cleaning, painting or hot work is commenced in confined spaces or machinery compartments, Contractor and subcontractor personnel issuing these certificates shall be fully trained, qualified and certified in accordance with Canada Labour Code (CLC) requirements and all relevant provincial legislation. Certificates shall clearly state the type of work permitted and shall be renewed as required by the regulations. Contractor and his sub-Contractors are advised that any work carried out in confined spaces as defined by the CLC and relevant provincial legislation shall fully comply with all provisions therein.

CONFINED SPACE:

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

GENERAL NOTES

known work requiring the services of a confined space rescue team shall be the responsibility of Contractor.

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

CONTRACTOR REQUIREMENTS

Steel Structures

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

Aluminum Structures

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

Welding Procedures

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

Welding Personnel

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

Performance and Qualification Testing

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

Limitations Prior to Commencing Welding Work

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

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

Governing Standards for Welding

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

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

GENERAL NOTES

INSPECTION OF WELDS

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

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

Each item that involves hotwork shall have a defined zone which shall be kept sealed off from the rest of the vessel during the complete work period that involves the generation of welding gases, smoke, and grinding dust etc. These zones shall be indicated in the items contained within the known work package. All extra work arisings that involve hotwork shall have a zone determined using the same logic. The zone shall be limited to the space(s) where the hotwork is being done, boundary areas where fire watches are required, and the access routes between the zone and the exterior of the vessel for workers, welding and cutting equipment and ventilation ductwork.

In areas where accommodations and or workplaces cannot be completely isolated from personal access a double sealed door (air lock) arrangement shall be erected to minimize ingress of the contaminants into occupied areas. A ventilation extraction point shall be located as near as practical to the inside door on the worksite side to reduce the egress into the air lock and subsequently the accommodations and/or workspaces.

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

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

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

In areas that are exposed to the elements:
outside air temperature of minus (-) 40⁰ C to plus (+) 35⁰ C;
wind velocity of 50 knots;
water temperature of minus (-) 2⁰ C to plus (+) 30⁰ C;

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

GENERAL NOTES

HOTWORK & FIRE WATCHES: Contractor shall abide by their Safety Management Program when performing Hot-work. Contractor shall provide sufficient suitable fire extinguishers and a fire watch during any such heating and until the work has cooled. Ship's extinguishers are **not** shall be used except in an emergency. Should Contractor have to use ship's extinguishers in an emergency they shall be recharged and re-certified by a local facility, of CCG's choice, at Contractor's cost.

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

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

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

INSPECTION: Contractor shall be responsible for calling in the services of ABS, and HC Inspectors when and as required for survey and inspection items. All ABS surveyors called in by Contractor shall sign-off the CGTA's Inspection Log Book for all items surveyed.

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

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

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

PAINTING: Unless specified otherwise, replacement and/or disturbed steelwork shall be given a minimum of two (2) coats of Intershiel 300 bronze Epoxy; each coat shall be of contrasting colour. **Lead-based paints must not be used.** Prior to painting, all new and disturbed

GENERAL NOTES

steelwork shall be power tool cleaned as a minimum standard of surface preparation. Contractor shall notify the CGTA after the first coat of paint is fully cured so that it may be inspected prior to the application of the second coat. Failure to do so shall result in another coat being applied at Contractor's expense.

MATERIALS & TOOLS: All materials, unless otherwise specified, shall be supplied by Contractor. Contractor to supply all necessary tools and equipment to perform the specified work. Also referred to as Contractor Furnished Material (CFM). Special, ship-specific tools, as required, will be issued by and returned to CGTA. Contractor shall be responsible for removing the tools from their stored location aboard the vessel, and returning them and securing them in place when finished. Otherwise, ship's tools and equipment will not be available for Contractor's use. Contractor must provide power and air for any tools required, the ship's supply must not be used.

MEASUREMENTS: All dimensional measurements shall be taken and recorded in inches. Unless otherwise specified, the dimensions shall be taken and reported in thousandths of an inch (0.000 inch). All measuring devices shall be described on the submitted reporting sheets. All reported dimensions shall be either typed or printed in a neat legible manner, and shall include the name of the person who took the readings.

CO-OPERATION: During the period that the ship is in refit, members of the ship's complement, Coast Guard technical staff, and service specialists may be carrying out repairs to, maintenance of, or modifications of various ships' equipment not covered in this specification. Contractor shall not deny access to the vessel to these persons. Every effort will be taken to ensure that this Coast Guard controlled work will not interfere or conflict with that being carried out by Contractor.

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

ACCESS: The following areas are out of bounds to Contractor's personnel except to perform work as required by the specifications: all cabins, offices, workshops, Wheelhouse, Control Room, public washrooms, Officers' and Crew's Messes and Lounges. Contractor shall ensure that no workers bring meals onboard the ship

INSPECTION & GUIDANCE: During this contract, Ship's Crew and Regional Staff will be onboard conducting inspections and providing guidance to Contractor personnel.

HAZARDOUS MATERIALS: There are no locations having Asbestos Containing Materials (ACM) and Lead Paint. Lead in coatings may exist and will be dealt with in H-10

GENERAL NOTES

PROTECTION OF EQUIPMENT

Contractor must take measures to ensure that all surfaces and items of material or equipment installed on the vessel, finished surfaces, final color coats and other finished work must be protected against damage, soiling, and/or contamination.

All electrical and electronic equipment and components must be protected during the execution of the specified work against damage by direct or indirect physical contact or by the effects of adverse temperatures or other environmental conditions. Any damage to surfaces, equipment, furnishings or decor incurred prior to acceptance by Canada must be returned to "As Delivered" condition by Contractor at no expense to Canada. All openings in machinery and/or systems prior to connections being made must be kept covered by inserts or covers at all times.

Contractor must obtain and follow instructions from its sub-Contractors for any special protection required for sub-Contractor furnished equipment during the specified work. Such instructions must be made available to the CGTA and TCMSS. Contractor must ensure that the ship's machinery, equipment and systems are protected from all hazards, including but not limited to damage from ongoing work, corrosion, sandblasting (directly or indirectly), paint over, hot work, adverse temperature or other environmental conditions and contaminants.

1 - SERVICES

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

2. COVID-19 Screening

During Shipyard care and custody of the vessel the Contractor is responsible for screening all people entering the CCGS Teather, including CG personnel to the standard described in NSOP 511 Minimum Screening Process for Canadian Coast Guard Personnel Accessing a Contractors Facility During an Infectious Disease Outbreak such as COVID-19. This standard will be included under Services in the Dry-Docking reference package.

During Coast Guard care and custody of the vessel, the Shipyard/Contractor must comply with screening requirements described in CCGC-13-2020 COVID-19 – Health Screening Questionnaire for Canadian Coast Guard Personnel and Visitors Accessing Canadian Coast Guard Facilities and Vessels. This standard will be included under Services in the Dry-Docking reference package.

3. UNMANNED REFIT: During the majority of the contract period, the CCGS Teather will be unmanned. As a result, the ship shall be placed in the care and custody of Contractor as described in this specification. However, access to the vessel shall not be denied to CCG, Public Service Procurement Canada (PSPC) personnel by the Contractor. Every effort will be taken to ensure that vessel access by these personnel shall not interfere or conflict with the Contractor's work.
4. CCG / PSPC Offices: For the period of the Contract, the Contractor must provide furnished office accommodations for authorized representatives of Canada including the provision of high speed wireless internet service.

The above office furnishings and accommodations are to be made available for three (3) representatives of Canada only and may not be occupied at all times during the period of the Contract. During periods of non-occupancy the Contractor may make other uses of the office accommodations as required.

5. CARE AND CUSTODY: During the contract period, the ship shall be placed in the custody of Contractor who shall be responsible for all safety and security matters pertaining to the vessel. As the ship will not be de-stored, Contractor shall provide whatever security arrangements are required to safeguard CCG and DFO equipment and material that remain onboard during the contract period.
6. Security: During the Contract period, the Contractor must provide and maintain continuous, 24 hour-per-day, 7 day-per-week security measures to in relation to the vessel. The Contract must utilize security measures that are adequate to ensure integrity against personal injury, fire and flood in accordance with Part II of the Canada Labour Code, as well as to ensure that the ship remains free from damage, vandalism and/or theft resulting from unauthorized entry or activity.

At a minimum, the Contractor's security measures must include, but are not limited to:

- Controlled access to the worksite with a lock and key, key card access, and/or gate code, as well as fencing or other physical barriers in place to stop unauthorized personnel from accessing the worksite .
- Adequate lighting at the worksite day or night, to ensure the vessel is visible and may be observed clearly and without obstruction from a distance of at least 100M.
- High Definition Video Monitoring to capture the vessel and the surrounding worksite directly on a 24hr continuous basis with the capability that any video monitoring data can be transferred to an external computing or digital storage device.

7. **TURNOVER:** The turnover of the ship to and from Contractor shall be carried out on a compartment-by-compartment basis with a Contractor's Representative, and Captain (or Representative) in attendance.

As part of the initial turnover, digital photographs will be taken by the CGTA with Contractor Representative in attendance consisting of a minimum of four photographs per space. USB copies of the photographs will be distributed to Contractor, CCG Representative and the PSPC and shall be accepted as representative of the condition of the vessel at turnover.

On completion of the photographic survey and compartment inspections, CGTA shall provide Contractor's Representative with keys as required for access to all areas of the ship's interior spaces. Turnover to the Contractor shall be finalized by completion of an "Assumption of Custody Certificate" to be supplied by PSPC.

When custody is returned to CCG, a "Resumption of Custody Certificate" shall be completed after completion of a second compartment inspection survey and return of all keys to CGTA.

Contractor shall be responsible for the safe transfer of the ship between its pre/post-docking berth and its docking blocks. During docking and undocking of the ship, radio contact shall be maintained between the vessel's Commanding Officer and the Contractor's Docking Officer, if the vessel is crewed at these times. If the ship is unmanned at the docking and undocking, the safe movement of the ship shall be the sole responsibility of the Contractor.

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

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

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

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

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

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

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

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

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

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

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

12. FIRE MAIN: Contractor shall connect a one and a half (1 ½) inch diameter fresh water line to the ship's fire main, with an isolation valve placed onboard. Fire main shall be charged and maintained at 100 psig.
13. GARBAGE: A garbage container, 6 m3 (215 Ft.3) minimum capacity, strictly for ship's use shall be placed in a convenient location as close as possible to the ship's gangway. Contractor shall provide this service for the duration of the refit. The bin shall be empty on a regular basis to negate the problems of odors.
14. CRANAGE: Contractor shall bid on supplying general services of a dockside crane, driver and rigger for twenty (20) hours during the dry-docking period as and when required by the CGTA, plus an hourly rate for PSPC 1379 adjustment purposes.
15. WASTE OIL: Contractor shall bid on removal and disposal of 5,000 liters of waste oil / water mixture from the vessel during the refit period, and quote a unit rate per litre for PSPC 1379 adjustment purposes. Removal and disposal shall be performed by an identified licensed waste oil disposal company in full compliance with regulatory requirements.
16. Copies of all dirty water and oily water removal invoices with quantities shall be given to the CGTA. Copies of invoices detailing disposal of the liquids shall be given to the CGTA.

17. CLEANING: Contractor shall ensure that all spaces, compartments and areas of the ship where work has been carried out, or Shipyard staff has used for transit routes, are “as clean as found” when work is completed. The cost of clean-up work shall be included in the quote for each specification item.
18. PARKING: Sufficient parking for DFO/CCG and PSPC representatives shall be provided conveniently close to the berthed or docked vessel. Contractor shall provide five (5) clearly designated for “DFO/CCG and PSPC use only” parking spaces for the duration of the docking period.
19. ALLEYWAY AND BULKHEAD PROTECTION: Alleyways and area that shall be used by Contractor’s personnel on a regular basis for access to required work areas shall be suitably protected from damage, soil, etc. All affected alleyways shall have deck surfaces covered by 6mm Masonite extending to the full extremities of the areas dealt with. All seams, butts, and edges of the applied Masonite shall be taped to discourage ingress of soil beneath, as well as to stop any migration of the applied sections. Contractor shall quote on supplying and installing 150 square meters of 6 mm Masonite rough one side and installed rough side up. Upon completion of refit, Contractor shall lift all Masonite. The area shall be swept and

mopped on completion of the refit and any tape residue shall be removed. Contractor to quote separately a price per square foot for cost of supply, installation and removal of any additional Masonite as may be required.

All internal bulkhead panels in the above-noted areas shall be suitably protected with application of 3mm inch Masonite panels (or heavy construction paper) extending to a minimum 1.5 m height above the deck level and all corners shall be covered and taped. Again, all butts, seams and edges shall be taped. Contractor shall quote on supplying and installing 100 square meters of 3 mm Masonite (or heavy construction paper). Upon completion of refit Contractor shall remove all Masonite/paper and dispose. The areas shall be wiped clean on completion of the refit and any tape residue shall be removed. Contractor to quote separately a price per square foot for cost of supply, installation and removal of any Masonite/paper that may be required. Total cost shall be adjusted up or down by PSPC 1379 action.

20. SCAFFOLDING: Contractor shall supply the necessary manpower and equipment to erect, as necessary, scaffolding and staging to facilitate the inspection of the ship’s hull as necessary by a surveyor from ABS and ship’s personnel. This will include scaffolding and equipment to access propellers, rudder, thruster and renewal of anodes. The scaffolding shall be removed when the work is complete, at Contractor’s expense.
21. GASOLINE TANKS: Contractor must remove the port and starboard gasoline tanks from the vessel and store the tanks so that they are protected from the weather for the duration of the dry-docking. All gasoline must be removed and disposed of according to provincial and federal regulations. After all dry-dock work is complete the contractor must reinstall the gasoline tanks. Cranage required to do the work is covered under the Cranage section (item 14) in Services.

22. Hazardous Materials -LEAD

- a. All coatings must be tested for lead prior to any work process that could disturb the coating system or possibly generate airborne lead hazards. This will include but not limited to: welding, burning, grinding, gouging, power tooling or chipping. An allowance for the services of a

qualified Environmental Hazardous Material Sub-Contractor to test coatings for lead is located in specification item H-10.

- b. CG is in the process of creating a Vessel Specific Coating Management Plan (VSCMP) for the CCGS Teather. Until that is completed, the Contractor must test coatings in all areas where coatings will be disturbed, as a result of scheduled or unscheduled work, where testing has not been previously completed. This must be done in conjunction with spec item H-10 and all samples/reports must be used in the VSCMP. The coating sample numbers must be marked on the corresponding area and documented as per the directions in Specification H-10.
- c. Any work that requires the disturbance of coatings with lead levels that exceed $1.0\text{mg}/\text{cm}^2$ (5000ppm) must be remediated prior to disturbing the coating. The Contractor must include an allowance of \$50,000.00 for a qualified hazardous material abatement company for the abatement of lead coatings and disposal of lead coatings if required. This allowance will be included in the overall bid and will be adjusted up or down using the PSPC 1379 process upon proof of final invoice.
- d. All remediation must be carried out by a provincially certified remediation company and in accordance with the *"EACO Lead Guideline For Construction, Renovation, Maintenance or Repair October 2014"*, or the applicable Provincial Standard, whichever is more stringent. A hold point will be assumed for each remediation prior to the removal of any enclosures. This hold point will consist of the delivery appropriate sample reports, an inspection by the CGTA and any third party Contractor that is deemed necessary by the CGTA.
- e. If lead remediation is required to access an area for scheduled work, the Contractor must re-allocate/re-schedule their resources to carry out other known work items until the area becomes accessible following the lead remediation.
- f. During the remediation process, the Contractor must obtain the services of a qualified air quality testing company to conduct routine air quality testing for airborne lead concentration in the applicable areas. The airborne lead concentration test results must be used to monitor the level of airborne dust after abatements and to ensure that PPE and containment are adequate and in accordance with the *"EACO Lead Guideline For Construction, Renovation, Maintenance or Repair October 2014"*.
- g. The Contractor must include an allowance of \$25,000.00 to have a qualified air quality testing company conduct airborne lead concentration testing in areas with lead containing coatings that must be disturbed. This allowance will form part of the overall bid and will be adjusted up or down using the PSPC 1379 process upon proof of invoice.
- h. The Contractor must include an allowance of \$10,000.00 for accessing heights and confined spaces to take lead concentration readings. This includes confined space rescue teams, scaffolding, lift booms, marine chemist. This allowance will form part of the overall bid and will be adjusted up or down using the PSPC 1379 process upon proof of invoice.
- i. Prior to commencement of any work that could result in the disturbance of coatings, the Contractor must receive written approval from the CGTA. This approval will be dependent on testing results confirming no lead is present or the acceptance of the hold points in paragraph 29.4 above. Failure to obtain approval prior to disturbing coatings could lead to potential lead exposure and serious health complications.

2 – PRODUCTION CHART

1: SCOPE:

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

2: TECHNICAL DESCRIPTION:

2.1 General

1. Contractor shall supply three copies of a detailed gantt chart showing the planned work schedule for the ship's refit. All copies shall be in colour as per the originals.
2. This bar chart shall show, for each specification item, the start date, the manpower loading, the duration and the completion date. The chart shall also highlight any critical paths.
3. The production chart shall be updated weekly and for each production meeting to reflect the actual production on the refit and changes to the anticipated completion dates of each individual item.
4. The production chart shall clearly indicate the arrival/departure dates of any Subcontractors/Field Service Representatives.
5. The production chart shall include the status and production on each PSPC 1379 arising.
6. Three copies of the production chart shall be given to the Chief Engineer the day prior to each Production Meeting. A copy shall be emailed to the Senior Vessel Maintenance Manager (SVMM), Jeff Mercier (jeffrey.mercier@dfo-mpo.gc.ca) the day prior as well.
7. A copy of the original bar chart shall be provided via email to the PSPC contracting Officer and SVMM before the close of business on the day of the ships arrival at the Contractors premises.
8. Contractor shall provide a weekly update of the hours billed by the subcontractors along with their hourly rates, to the CGTA, PSPC Contracting Officer and a hardcopy for CGTA aboard the vessel.
9. The results shall be tabulated in an excel spreadsheet clearly indicating the Subcontractor, date(s), hours worked and hourly rate for the hours worked.
10. The update shall be emailed to, PSPC Contracting Officer and SVMM the day prior to the weekly scheduled Progress Meeting.

2 – PRODUCTION CHART

2.2 Location

1. N/A

2.3 Interferences

1. N/A

3: REFERENCES:

3.1 Guidance Drawings/Nameplate Data

1. N/A

3.2 Standards and Regulations

1. N/A

3.3 Production Chart & Subcontractors Allowances

1. N/A

3.4 Owner Furnished Equipment

1. N/A

4: PROOF OF PERFORMANCE:

4.1 Inspection

1. N/A

4.2 Testing

1. N/A

4.3 Certification

1. N/A

5: DELIVERABLES:

5.1 Reports, Drawings, and Manuals

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

2 – PRODUCTION CHART

5.2 Spares

1. N/A

5.3 Training

1. N/A

HD-01 BERTHING AND MOORING

1: SCOPE:

The intent of this specification item is for the Contractor to provide berthing services. During the contract period at the Contractors facilities, while not in dock, the vessel must be berthed at the contractor's wharf at a safe and secure berth with adequate water at extreme low tide to ensure that the vessel will not touch bottom.

2: TECHNICAL DESCRIPTION:

2.1 General

1. The vessel will be delivered to the Contractor's facility under its own power.
2. Contractor is to include in their overall bid, all costs for initial tying up, any movement of the vessel during refit, and letting go of lines from Contractor's wharf on departure after completion of contract. Contractor is responsible for supplying all necessary lines for securing the vessel at their facility.
3. Maneuvering of the vessel into and of contractors docking facilities is the responsibility of Contractor. Costs for tugs and pilots required for any movements of the vessel during the contract period must be included in the bid price, shown as a separate cost.
4. One gangway must be supplied at the Contractors jetty. This gangway must be set up and rigged from the wharf onto the aft main deck, complete with safety net. Gangway must be well lit and structurally sufficient to support passage of the Contractor's workmen and the ship's crew. The supplied gangway must be in accordance with the with the provisions stipulated in the tackle regulations as well as the safe working practices regulation made pursuant to the Canada Shipping Act and the Marine Occupational Safety and Health Regulations, Part 2 on Temporary Structures made pursuant to the Canada Labour Code, Part 2.

5. Vessel Particulars:

Length Overall = 42.8m
Breadth Overall = 7.0 m
Draft = 2.8 m

2.2 Location

1. N/A

2.3 Interferences

1. N/A

3: REFERENCES:

HD-01 BERTHING AND MOORING

3.1 Guidance Drawings/Nameplate Data

1. N/A

3.2 Standards and Regulations

1. N/A

3.3 Subcontractors Allowances

1. N/A

3.4 Owner Furnished Equipment

1. N/A

4: PROOF OF PERFORMANCE:

4.1 Inspection

1. N/A

4.2 Testing

1. N/A

4.3 Certification

1. N/A

5: DELIVERABLES:

5.1 Reports, Drawings, and Manuals

1. N/A

5.2 Spares

1. N/A

5.3 Training

1. N/A

HD-02 DRYDOCKING

1: SCOPE:

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

2: TECHNICAL DESCRIPTION:

2.1 General

1. Dry docking shall be under the direct supervision of a Certified Docking Master. Prior to docking the vessel, Contractor shall present to Canadian Coast Guard their plan to effect a safe docking. This will include, but not be limited to, an explanation of block loading, dock preparation, tide wind- tug issues, manpower arrangements and communications. Contractor shall provide reasonable notice to CCG prior to undocking the vessel and make similar presentations regarding safe undocking and for the vessel's on dock period. Vessel's crew will be present for docking and undocking.
2. Contractor shall supply the services of divers to confirm that the vessel is setting evenly on the bilge and keel blocks.
3. Contractor shall quote a unit daily service day cost on dock. This cost shall form part of the overall quote. This quote shall include any tug and/or pilotage service cost.
4. Docking shall be undertaken during the first two days of refit. If necessary, Contractor shall prepare the dock in advance of the ship's arrival and the official start date of the contract period. If premium time is required for evening shifts or weekend work to meet this objective, Contractor shall identify this and include all costs in the quotation.
5. Ship's personnel will be responsible for all line handling onboard the vessel only during the initial docking and final undocking operations. Contractor shall supply personnel on the dock walls and ashore for all line handling.
6. Contractor shall ensure that docking blocks are clear of transducer faces and sea bay access covers.
7. The Contractor shall make sure enough room between the block, the speed log and the echo sounder.

HD-02 DRYDOCKING

8. Two gangways shall be supplied and set up by Contractor while the vessel is drydocked. These gangways shall be set up and rigged from the wharf onto the buoy deck, complete with safety net. Gangways shall be safe, well-lit and structurally sufficient to support passage of Contractor's workmen and ship's crew.
9. During undocking Contractor shall ensure that sufficient personnel are in attendance throughout the ship's spaces to monitor for leakage around the numerous sea connections, stern tubes, sea chests, and any other areas in communication with the underwater area of the vessel that were disturbed during dry docking, and to correct any deficiencies that may arise.
10. Contractor shall quote a unit cost on the removal of keel blocks as well as a unit cost on the insertion of keel blocks. This quote shall be included in the overall bid.

2.2 Location

1. N/A

2.3 Interferences

1. N/A

3: REFERENCES:

3.1 Guidance Drawings/Nameplate Data

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

3.2 Standards and Regulations

1. N/A

3.3 Subcontractors Allowances

1. N/A

3.4 Owner Furnished Equipment

1. N/A

HD-02 DRYDOCKING

4: PROOF OF PERFORMANCE:

4.1 Inspection

1. N/A

4.2 Testing

1. N/A

4.3 Certification

1. N/A

5: DELIVERABLES:

5.1 Reports, Drawings, and Manuals

1. N/A

5.2 Spares

1. N/A

5.3 Training

1. N/A

HD-03 HULL INSPECTION /BUTTS AND SEAMS

1: SCOPE:

The intent of this specification item is for Contractor to repair welded joints in hull plating as identified in a hull survey by the ABS surveyor and CGTA. To be completed in conjunction with specification item HD-05 Hull Cleaning and Painting.

2: TECHNICAL DESCRIPTION:

2.1 General

1. Contractor must arrange for the ABS Class inspection of the underwater hull area shell plating and paint system condition. Inspection to be scheduled upon completion of hull cleaning and within 48 hours of docking. Contractor to note that this inspection also includes the bow thruster tunnel. The ABS surveyor's hull inspection will determine those areas that require weld renewal. Joints selected for repair will be marked and must be cleaned to sound metal by air arc gouging and / or grinding. Joint welds are then to be built up to the original level by the ABS approved welding techniques with approved materials. All work must be to the approval of the ABS and the CGTA. Prior to commencing repair Contractor shall inform the CGTA and provide a copy of their welding procedure.
2. The underwater hull survey inspection shall be carried out in accordance with the Classification Society's survey requirements for a vessel of this type.
3. For bidding purposes, Contractor must include in their overall bid price the cost of 50 feet of air arc gouging and 150 feet of bead weld. Contractor must include cost per foot for each of air arc gouging and bead welding for adjusting purposes.
4. Butts and seams falling in way of any fuel tanks will require the fuel tank to be pumped down by the vessel's crew. Contractor must gas free and certified safe for hot work after they remove and dispose of any remaining fuel in accordance with all Federal, Provincial and Municipal regulations. Disposal certificates must be provided to the CGTA.
5. Butts and seams falling in way of ballast/void tanks with coated internals will require interior paint work to be touched up in way of heat damaged. The foregoing gas freeing and paint work will be handled through PSPC 1379 action.
6. Contractor must supply all scaffolding, materials, equipment, and personnel to arc gouge and re-weld the existing deteriorating welds as identified by the ABS surveyor on both sides of the vessel. Contractor to quote on the services of a person lift and operator for 8 hours for survey and inspection purposes. Contractor to quote hourly rate for this work.
7. Upon completion of all work, NDT (UT or Mag particle or equivalent) must be carried out by a qualified technician in areas chosen by the attending ABS surveyor. Contractor must schedule the attendance of a certified NDT Technician along with the ABS surveyor. The ABS surveyor will direct the NDT technician as to areas that require inspections.

HD-03 HULL INSPECTION /BUTTS AND SEAMS

8. In addition to the above work, Contractor must provide a cost on the following in their bid;
 - Unit cost per additional foot of arc gouging.
 - Unit cost per additional foot of welding.
 - Unit cost per additional NDT (UT or Mag particle or equivalent)
 - Unit cost for gas free certified
9. Contractor must schedule the ABS surveyor to inspect and credit repairs, prior to coatings application. All new and disturbed steel must be prepared and coated in conjunction with HD-06 Hull Cleaning and Painting. Contractor must carry out all ABS specified repairs.
10. Contractor must ensure a survey credit is obtained from ABS for the inspection and certification of the shell plating. Contractor shall present this survey credit to the PSPC and the CGTA prior to the flooding of the dock to re-float the vessel. Contractor shall notify the PSPC and the CGTA so that these authorities may witness the shell plating inspection by the ABS surveyor.

2.2. Location

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

2.3. Interferences

1. No known interferences. Contractor shall take note of the interference items during the vessel viewing and include the costs associated with dealing with these items, including removals, reinstallations and painting of disturbed metal parts.
2. Contractor is responsible for protecting surrounding area and equipment while carrying out this work.

3: REFERENCES:

3.1 Guidance Drawings/Nameplate Data

HD-03 HULL INSPECTION /BUTTS AND SEAMS

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

3.2 Standards and Regulations

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

3.3 Production Chart & Subcontractors Allowances

1. N/A

3.4 Owner Furnished Equipment

HD-03 HULL INSPECTION /BUTTS AND SEAMS

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

4: PROOF OF PERFORMANCE:

4.1 Inspection

1. The Contractor shall afford the CGTA the opportunity to witness the ABS's inspection of the underwater hull prior to and following all prescribed repairs.
2. All work to be completed to the satisfaction of the ABS surveyor and the CGTA.

4.2 Testing

1. Contractor shall include the cost of 10 non-destructive tests on the new welds; these tests shall be as directed by the attending ABS surveyor. Contractor must supply a report to the CGTA on the NDT readings along with a detailed drawing showing each measurement location.
2. Contractor shall perform and record Wet Film Thickness readings during each application of underwater surface area coating as required by the FSR. The readings and their locations shall be contained in the final report.

4.3 Certification

1. Contractor is responsible for arranging the ABS surveyor for all required inspections in order to obtain credit towards the vessel's continuous hull and machinery survey.
2. Prior to the close of contract, certification or other documentation shall be submitted to the CGTA attesting to the quality of new materials and components such as shell plating, structural members and welding rods.

5: DELIVERABLES:

5.1 Reports, Drawings, and Manuals

1. A computer generated report shall be provided in digital format to the CGTA. At a minimum this report must include all reading taken, NDT readings, drawings, certificates, results/recommendations, etc. identified in this specification item.

HD-03 HULL INSPECTION /BUTTS AND SEAMS

2. Following the ABS underwater hull inspection and prior to carrying out any identified repairs, Contractor shall submit in PDF format a copy of drawing AF6099-10000-03_AF Shell Expansion outlining in red all proposed plate repairs.

5.2 Spares

1. N/A

5.3 Training

1. N/A

HD-04 ANODES

1: SCOPE:

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

2: TECHNICAL DESCRIPTION:

2.1 General

Anodes

1. All sacrificial hull anodes shall be visually inspected in the presence of the CGTA or delegate for defects and findings, recorded on a general hull plan. Recommendations for replacement shall be made accordingly.
2. Contractor shall remove all wasted and/or damaged anodes from the vessel and grind smooth all previous anode welded connections. Contractor shall fit new anodes in the same locations as the removed anodes. This shall be done after the hull coating has been applied. All weld areas shall be touched up with the hull coating after the anodes have been fitted.
3. All anodes / other protection shall be removed after completion of the coating application. Any anodes that are covered with coating shall be renewed at Contractor's expense.

1. Hull Anodes

1. The Contractor must replace all sacrificial hull anodes MM28AB (20 in total).
2. Replacement hull anodes, type MM 28AB, will be Contractor supplied

2. Sea chests/seabay/fire pump suction

1. The Contractor must replace three anodes, one in each of the three sea chests.
2. The Contractor must replace one anode in single Fire Pump suction sea chest.
3. Replacement anodes, type MM 26A, will be Contractor supplied.

3. Bow thruster tunnel

1. The Contractor must replace all four Bow Thruster Tunnel anodes, two on each side of the propeller.
2. Replacement anodes, type MM 26A, will be Contractor supplied.

HD-04 ANODES

4. Bow thruster anodes

1. The Contractor must replace the two cone shaped anodes, one on each side of the propeller.

Replacement anodes (Type TRAC 24) will be provided by the contractor.

The Contractor must install the cone shaped anodes in accordance with Manual No.: 29351 24 TRAC ASSY.



4. A unit price per anode replacement shall be included in the pricing data sheet.
5. All anodes shall be protected from the coating material being applied in the sea chest areas during the work execution of paint process. All anode protection shall be removed after completion of the coating application. Any anodes that are covered with coating shall be renewed at Contractor's expense.

2.2 Location

1. Hull Area

2.3 Interferences

1. N/A

HD-04 ANODES

3: REFERENCES:

3.1 Guidance Drawings/Nameplate data

Manual:

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

Drawings:

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

3.2 Standard and Regulations

1. Canada Shipping Act, 2001 (2001, c. 26) Hull Inspection Regulations (C.R.C., c.1432)
2. ABS, Rules & Regulations for the Classification of HSC (High Speed Craft)

3.3 Owner Furnished Equipment

1. N/A

4: PROOF OF PERFORMANCE:

4.1 Inspection

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

4.2 Testing

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

4.3 Certification

HD-04 ANODES

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

5: DELIVERABLES:

5.1 Reports, Drawings and Manuals

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

5.2 Spares

1. N/A

5.3 Training

1. N/A

HD-05 STORM VALVES & SEA CONNECTIONS INSPECTION

1: SCOPE:

The intent of this specification item is for Contractor to remove, disassemble, clean and layout for the RO's inspection all storm valves and sea connections. The Contractor must start this specification item as soon as possible to ensure any failed valves will have enough time to be replaced before the end of the docking period.

2: TECHNICAL DESCRIPTION

2.1 General

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

HD-05 STORM VALVES & SEA CONNECTIONS INSPECTION

11. All flange gaskets disturbed as a result of the valve servicing process shall be renewed using new CFM gasket material.

2.2 Location

	ID	Description	Location
	V256001	Main Isolation Port	MMR Port Fwd
	V256002	Main Isolation Stbd	MMR Stbd Fwd
	V256003	Fwd Sea Chest Isolation	Bow Thruster Rm
	V256007	Port Sea Chest Re-circulation	MMR Ctr Fwd
	V256008	Stbd Sea Chest Re-circulation	MMR Stbd Fwd
	V256010	Port Sea Chest Vent	MMR Ctr Fwd
	V256011	Stbd Sea Chest Vent	MMR Stbd Fwd
	V256012	Fwd Sea Chest Vent	Bow Thruster Rm Port
	V256013	Port Sea Strainer Outlet	MMR Fwd
	V256014	Stbd Sea Strainer Outlet	MMR Fwd
	V256018	PS Main Engine Supply	MMR Fwd
	V256022	SB Main Engine Supply	MMR Fwd
	V256042	Fwd Sea Strainer Outlet	Bow Thruster Rm
	V256090	Cooling Water Supply Header Vent	MMR Fwd
	V256136	SW for Fridge	MMR Fwd
	V555017	Emergency FM Supply	Bow Thruster Room
	V520055	Bilge Eductor Supply	Bow Thruster Room
	V256020	SW to GS Pump	MMR Stbd Fwd
	V520015	FM Supply	

Storm Valves

	ID	Description	Location
	V526023	Fuel Oil Spill LCR O/B Discharge	Laundry Rm
	V526029	HVAC/DK LCR O/B Discharge	Bow Thruster Rm Port
	V526031	Wet Gear Rm O/B Discharge	MMR Port Aft

Overboard Valves

	ID	Description	Location
	V593091	Sewage Plant O/B Discharge	MMR Port Aft
	V256032	Port O/B Discharge	MMR Port Fwd
	V256035	Stbd O/B Discharge	MMR Stbd Fwd

	V256065	ACU O/B Discharge	Bow Thruster Rm Port Aft
	V256114	Stbd ME Gear Box O/B Discharge	MMR Stbd
	V256115	Port ME Gear Box O/B Discharge	MMR Port
	V256131	Cyclone Filter O/B Discharge	MMR Stbd Aft
	V520018	Bilge O/B	AMR Port Fwd
	V520019	Bilge O/B	MMR Port Aft
	V520056	Bilge Eductor O/B	Bow Thruster Rm Stbd
	V593071	O/B Discharge (Check Valve)	MMR Aft
	V256043	PS Main Engine Exhaust	Steering Gear
	V256045	PS Diesel Generator Exhaust	Steering Gear
	V256047	SB Diesel Generator Exhaust	Steering Gear
	V256049	SB Main Engine Exhaust	Steering Gear
	V530001	RO Overboard	Bow Thruster Room
	V555009	Fire Main Drain	

Blow Down Air Valves

	ID	Description	Location
	V551061	Blow down Air Side Sea Chest (S)	MMR Stbd Fwd
	V551062	Blow down Air Bottom Sea Chest (P)	MMR Fwd
	V551070	Blow down Air RO Unit	Bow Thruster Room Stbd
	V551074	Blow down Air FWD Sea Chest	Bow Thruster Room Aft
	V551075	Blow down Air Bilge O/B valve	Bow Thruster Room Stbd
	V551076	Blow down Air HVAC ACU O/B	Bow Thruster Room Port
	V551089	Blow down Air Fire Water O/B	Bow Thruster Room Stbd
	V551126	Blow down Air Gear Box Port O/B	MMR Port
	V551127	Blow down Air Gear Box Stbd O/B	MMR Stbd
	V551128	Blow down Air Cyclone Filter O/B	MMR Stbd Aft
	V551073	Blow Down Side Discharge AMR Bilge Pump	AMR Port
	V551071	Blow Down Side Discharge MMR Bilge Pump	MMR Port Aft
	V551068	Blow Down Sewage Discharge	MMR Port Aft
	V551063	Blow Down ME Discharge O/B PS	MMR Port Fwd
	V551064	Blow Down ME Discharge O/B SB	MMR Stbd Fwd

Misc Valves

	ID	Description	Location
	V520115	Emergency Bilge Valve	MMR Fwd

HD-05 STORM VALVES & SEA CONNECTIONS INSPECTION

2.3 Interferences

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

Refer to General Notes: section 12 and 17

3: REFERENCES:

3.1 Guidance Drawings/Nameplate data

Drawings:

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

3.2 Standard and Regulations

1. Canada Shipping Act 2001, Hull Inspection Regulations (C.R.C., c. 1432)
2. ABS, Rules & Regulations for the Classification of HSC

3.3 Allowances

1. N/A

3.4 Owner Furnished Equipment

1. N/A

4: PROOF OF PERFORMANCE:

4.1 Inspection

1. Following all valves servicing and prior to installation, Contractor shall provide the attending ABS surveyor and CGTA an opportunity to inspect all valves as listed above.

HD-05 STORM VALVES & SEA CONNECTIONS INSPECTION

4.2 Testing

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

4.3 Certification

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

5: DELIVERABLES:

5.1 Reports, Drawings and Manuals

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

5.2 Spares

1. N/A

5.3 Training

1. N/A

HD-06 HULL CLEANING AND VESSEL PAINTING

1: SCOPE:

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

2: TECHNICAL DESCRIPTION:

2.1 General

1. The existing hull coating must be repaired and/or renewed utilizing Contractor Supplied Coatings as specified below.

2. Contractor must use an International Paints (IP) NACE inspector to oversee all coating processes for all critical points within this specification. IP NACE inspector contact information:

Michael Kemp

Technical Sales Representative
Marine Coatings

T (902) 468-1401

F (902) 468-1403

M (902) 497-8363

E michael.kemp@akzonobel.com

International Paint (a division of Akzo Nobel Coating Ltd. Canada)

Suite 2, 250 Brownlow Avenue
Dartmouth, Nova Scotia
Canada
B3B 1W9

3. Contractor must prepare the underwater hull and apply the coating system in strict accordance with the manufacturer's instructions. In conjunction with any other functional quality assurance procedure as may be specified by the manufacturer, the following points must be carried out:

- Provide a list of batch numbers with correspondent dates of manufacture.
- Record the quantity and type of any solvent added.
- Measure and record the ambient conditions.
- Record details of spray tips and pressures used.
- WFT gauge readings to be taken on a regular basis during application.
- Using a calibrated DFT gauge, fifteen (15) measurements per 9.3 m² are to be taken and recorded. Upon agreement of consistency with the CGTA, fifteen (15) measurements per 93m² are then to be taken and recorded over the entire underwater hull area. All recorded information must be typewritten and two hard copies and one electronic copy in PDF format to be given to the CGTA.

HD-06 HULL CLEANING AND PAINTING

4. Once the vessel has been dry-docked, the entire hull must be hydro-blasted (minimum 5000 psi) to remove any accumulated growth salt deposition and loose paint, within 24 hours of docking. This must include all underwater appendages such as rudders, speed log and echo sounder cowlings, sea chests and associated gratings (gratings to be removed to allow cleaning of the sea chests), bow thruster tubes, etc. The sea inlet grids for the bow thruster, sea chests, sea bays and underwater overboard discharge valves are to be hydro-blasted remove any accumulated growth.
5. Upon completion of high pressure wash, the hull must be inspected for paint damage by the CGTA and the Contractor. All underwater hull areas must be inspected for damage, including all plating and appendages from the keel a level line visible at approximately the 2.8m draft marks. This inspection is to be completed within 48 hours of docking. During the vessel underwater hull inspection up to the deep load line all areas with poor coating adhesion or lack of coating shall be recorded on a copy of the shell expansion plan by Contractor and verified by the CGTA. These areas shall be recoated as per Paint Manufacturer specification.
6. Any local requirements for protective structures (ie. Shelter around the vessel while sandblast and coating application) will be the responsibility of the Contractor and must be included in the bid price. All existing coatings removed from the vessel must be contained and disposed of in accordance with applicable territorial and federal environmental regulations.
7. Painting must be carried out only after any tank repairs are completed, hull anodes are installed, hull identity markings (excludes vinyl decals) and hull inspections are complete.
8. Intact exposed epoxy hull coating must be sweep blasted to a surface profile of 3 mils to allow adhesion of the required finished coat. In hull areas where only small amounts or sections of existing epoxy coating exist, removal of coating to bare steel must be accomplished. All bare areas of hull steel and areas where existing coating is damaged, loose, blistered, missing or otherwise compromised, must be blasted to near white standard, SSPC-SP-10. Edges of intact paint shall be feathered back to a minimum of 10 mm, and blown clean with compressed air. The surface profile shall have a minimum roughness of 3 mils (75 microns).
9. Contractor must take measures to ensure that no damage, unnecessary cleaning or repairs accrue from the sand or grit blasting and/or the application of coatings. Grit used for blast cleaning shall not be permitted to enter into any part of the vessel or its equipment. Where such ingress may occur, the equipment and vessel must be suitably protected, while sandblasting or when painting is in progress. Any cleaning required due to failure to comply will be at Contractor's expense.
10. All underwater hull surfaces shall be degreased by solvent cleaning to SSPC-SP-1 standard prior to application of coatings.
11. Upon completion of the specified surface preparations, the affected areas shall be surveyed by the International Paints FSR and CGTA. The surface areas of bared steel and intact coatings shall be agreed upon, recorded by the Contractor and signed-off by all parties with copies of the document for each.
12. Application of underwater hull coatings are to be as follows:

HD-06 HULL CLEANING AND VESSEL PAINTING

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

Second coat: Contractor to quote on applying one (1) coat of "INTERGARD 263" epoxy tie coat, light gray, at 4 mils D.F.T. to areas that were coated with INTERSHIELD 300 and areas of exposed epoxy that were swept blasted.

Third coat: Contractor to quote on applying one (1) coat of "INTER SPEED 640" TIN-FREE ANTIFOULING, RED, at 4 mils D.F.T. to areas that were coated with INTERGARD 263.

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

13. New coatings must be stored, prepared and applied in full compliance with manufacturer's requirements, to provide a finished coat of no less than 17 mils D.F.T. overall. Any requirement for variance from manufacturer's instructions must be approved by the CGTA prior to proceeding.

14. New coatings shall be applied with atmospheric and steel conditions acceptable to paint manufacturer and CGTA. Application conditions shall be recorded by Contractor and/or paint manufacturer's representative for inclusion in the final Report to be submitted to CGTA.

15. Where ambient air temperatures may become a problem, Contractor shall take steps to ensure that the painting and curing of the underwater hull coating system will be completed before the completion date of the contract. If required Contractor is responsible for providing shelter(s) and heating required to meet the coating manufacturer's specifications and include this cost in the overall bid price.

16. Coatings application to hull steel affected by "flash" rust is not acceptable and must be corrected at the Contractor's expense.

17. Contractor must "cut-in" a straight line of paint at the top of the underwater hull coatings and prevent overspray of these coatings onto the above water hull area.

18. All hull plate openings including overboard discharges, suction, grids, etc. must be plugged to prevent the ingress of sand during sandblasting operations. In addition, deck mounted/fitted equipment, including but not limited to those listed below are to be protected during any and all sandblasting and coatings operations. Contractor will be responsible for repair/replacement of any damaged items to the satisfaction of the CGTA. Where suitably fitted closure arrangements are not available for use, protection must be made by complete coverage with heavy gauge

HD-06 HULL CLEANING AND PAINTING

poly-wrap and/or canvass suitably secured against environmental elements. All applied coverings must be removed upon completion of blasting.

19. Areas of obvious concern include but are not limited to:

- All fan intakes and discharges.
- All natural ventilation intakes and/or discharges.
- All machinery exhaust pipe ends.
- Aft deck crane.
- Anchor windlass.
- Lifeboat cables and blocks.

20. All hull-mounted equipment such as anodes, echo sounders, speed log, transducers, ship side valves, propellers, bow thruster, rudder bearings and its cover, etc. shall be suitably protected against damage during cleaning of the hull, grit blasting and application of the coatings. Contractor is responsible for repair / renewal of any such damaged items.

21. Contractor must ensure that application of coatings does not take place to surfaces or equipment other than those areas specified, and that any inlets or discharges in the shell must not be blocked by the coating.

22. Total underwater hull area is approximately 330 square meters. Contractor to quote on blasting approximately 10 square meters to bare steel and coated as specified previously, the remainder of the hull being swept blasted if the epoxy coating is exposed. Contractor must provide a unit cost per square meter for sandblasting to bare steel, unit cost for sweep-blasting per square meter and a unit cost per square meter for coating application as previously specified. Actual area dealt with must be agreed upon by the CGTA and Contractor and will be adjusted through PSPC 1379 action.

23. Contractor to plug all deck scuppers and discharges, or take whatever means required to prevent water and other liquids from contaminating hull areas being coated or prepared for coating application. Contractor shall be responsible for removing these plugs upon completion of underwater hull work.

24. Contractor shall remove from the vessel all traces of sand and/or grit used for blast cleaning. Contractor shall be responsible and liable for ensuring that the hull is clear and clean, prior to, during and immediately after the application of coatings.

25. All above water line surfaces, accommodation area, scuttles, port holes, windows, deck machinery, susceptible to damage from surface preparation and coating application overspray shall be protected accordingly.

26. Contractor is responsible for the cleanup of all blasting grit, debris and overspray from the vessel's interior and exterior decks.

27. The Contractor must include in their bid price the recovery of all grit blasting substrate, this must include but not be limited to all paint, debris and grit as well as the disposal thereof. This recovery and disposal of the substrate must be completed in accordance with all applicable provincial/federal regulations.

HD-06 HULL CLEANING AND VESSEL PAINTING

28. Draft Markings

1. Contractor shall renew the following draft markings on the vessel by grit blasting clean each draft mark to the bare steel, re-punch the outline of the draft mark if required and applying the Interspeed 640 for under parts. **Draft marks that have interspeed 640 coating applied shall have two coats of CFM Trilux 11 white applied.** The renewal of these marks shall be done after the final painting and curing of the underwater hull coating.
2. Forward: Both Port and Starboard side draft markings including the 2.4M and 1.6M meter markings for a total of 10 markings shall be renewed.
3. Aft: Both Port and Starboard side draft markings including the 2.0M and 2.8M meter markings for a total of 10 markings shall be renewed.
4. When renewing the draft markings Contractor shall ensure that the draft markings are the correct height and obliqueness to the hull, representing the true draft of the marking and vessel and are acceptable to the attending ABS surveyor.
5. Contractor shall renew the Port and Starboard Plimsoll markings at mid-ship including all load lines and mid-ship markings via the same procedure as outlined above for the draft marks.

29. Above waterline to the top of the Bulwark area

1. Contractor must repair the affected areas between the waterline and the top of the bulwark as per the International Paints coating scheme, supplied by AkzoNobel Coatings Ltd, in APPENDIX C. Contractor and CGTA to identify and agree upon the total square area for all disturbed / bare/corroded areas for the repairs prior to start of work. Contractor must prepare each area identified above to an SSPC – SP11 standard. Contractor must bid on repairing 25 square meters of above water line area and include the cost in their overall bid. The actual area coated will be adjusted by PSPC 1379 action.

2. All bare areas as describe above, after proper preparation (adhere to paint manufacturer's recommendations) and as witnessed and approved CGTA, are to be coated with one coat of **Intershield 300ENA300/A (Bronze)** applied at 5.0 mils DFT followed by one coat of **Interprime 198 CPA098 (Grey)**, applied to achieve a dry film thickness (DFT) of 2.0 mils. A subsequent coat of **Interlac 665** spot coat shall be applied to all areas previously coated with **Interprime 198** to achieve a DFT of 2.0 mils.

3. A final coat of **Interthane 665 RAL 3000 RED** at a DFT of 2.0 mils shall be applied to the entire above waterline to main deck area.

HD-06 HULL CLEANING AND PAINTING

30. Contractor must apply the coating material before visible oxidation occurs. If oxidation does occur, the entire oxidized surface must be re-blasted to the standard specified above.

31. All staging, cranes, screens, lighting, sheltering and any other support services, equipment, paint and materials necessary to carry out these specifications must be CFM, installed, and removed upon completion of all work.

32. Suitable storage facilities must be provided close to the work site by Contractor 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.

33. Contractor must remove all protective materials from the machinery, equipment and hull openings on completion of the coating work. All grit, dirt, debris, rust, scale, etc. must be removed from all decks and areas of accumulation and disposed of ashore by Contractor

34. All work must be completed to the satisfaction of the CGTA.

1.2 Location

1. Vessel 's exterior hull, decking and superstructure

1.3 Interferences

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

3: REFERENCES:

3.1 Guidance Drawings/Nameplate data

1. Drawing # AF6099-10000-03_AF Shell Expansion
2. Drawing # AF6099-63100-01_AF Paint schedule
3. Drawing # AF6099-89940-08_AF Draft Marks And Load Line Marks Plan Draft Marks

4. APPENDIX C- Onboard coating scheme

3.2 Standards and Regulations

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

3.3 Allowances

1. N/A

3.4 Owner Furnished Equipment

1. All staging, crantage, screens, lighting and any other support services, equipment, paint and materials necessary to carry out these specifications shall be Contractor supplied. Unless otherwise specified, all labour, materials, and equipment required to complete all tasks required in this specification shall be Contractor supplied
2. Contractor must supply all coatings, paints, equipment, and hardware necessary for the cleaning and painting of the underwater and above water areas of the hull.

4: PROOF OF PERFORMANCE:

4.1 Inspection

1. Contractor shall follow the inspection regime outlined in General Notes, and provide documentation to support all inspections and tests performed.
2. The CGTA and ABS surveyor must inspect the entire hull for defects and deficiencies.
3. National Association of Corrosion Engineers (NACE) Surveyor to oversee the application of the hull coating and perform inspections.

4.2 Testing

1. Contractor and/or NACE inspector must take sixty (60) wet film thickness measurements; thirty (30) per side, in areas where hull has been cleaned to bare steel. The measurements shall be witnessed by the CGTA and recorded with locations referenced to the attached shell expansion drawing. Unwitnessed measurements shall not be accepted.

4.3 Certification

1. Contractor shall provide certification for all hull coatings applied

5: DELIVERABLES:

5.1 Reports, Drawings and Manuals

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

5.2 Spares

1. N/A

5.3 Training

1. N/A

HD-07 SEA CHESTS AND STRAINERS

1: SCOPE:

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

2: TECHNICAL DESCRIPTION:

2.1 General

1. Contractor shall open up the three (3) sea chests for cleaning and inspection. In addition, the two (2) main inlet sea strainers shall be opened as well. This work shall be carried out in conjunction with HD-06 Hull Cleaning and Painting and HD-01 Dry Docking.
2. Sea chest grates shall be removed so that internal inspection of the Sea Chests can take place.
3. Contractor shall follow the coating manufacturer's recommendations and procedures when applying the coatings outlined below. Contractor shall allow sufficient curing times as outlined by the manufacturer during the application of all coatings. Contractor shall take random thickness readings (mils) between coats with the CGTA in attendance.
4. Contractor shall note that access to the sea chests is only available via removable shell grids (one per chest). Contractor shall note the location of shell grids when planning blocking arrangements for dry docking. Contractor shall identify (mark) each grid being removed for their original location.
5. Contractor shall use hydro-blasting at 5,000 psi minimum and mechanical means (power brushing) for the cleaning the areas identified in this specification item. All debris shall be removed and disposed of ashore by Contractor. Copies of invoices detailing disposal of the debris shall be given to the CGTA.
6. The exact measured area of the sea chests is unknown at this time since it is included in the underwater hull area calculation, but it was estimated to be approximately 10 square meters.
7. For bidding purposes, Contractor shall bid on this area being 100% bare. Contractor shall quote on power tooling this area and prepping it for coating application as per the requirements outlined in HD-06 Hull Cleaning and Painting, Underwater Hull Painting section. The cost shall form part of the overall bid. Actual work carried out shall be adjusted up or down (credit), through PSPC 1379 action. This area is considered part of the underwater hull area and as such coating applications are covered under HD-06 Underwater Hull Cleaning and Painting.
8. Contractor shall remove all screens from each sea strainer for cleaning and inspection. Zinc Anodes shall be inspected for wastage and renewed as directed by the CGTA.

HD-07 SEA CHESTS AND STRAINERS

9. Contractor shall high pressure wash the grids and inlet areas and grid holes shall be mechanically reamed to their original diameter.

10. Contractor must clean all marine growth from all seabays (both forward and aft seabays), inlet piping and main seabay headers.

11. All grids must be prepared and coated as per HD-06 Hull Cleaning and Painting, coating shall be applied to both sides. First Coat shall be allowed to dry prior to grid being turned to apply coating to the opposite side. Grating holes shall not be obstructed by coating applications upon completion of this specification item.

12. The grid securing tabs on the hull shall be inspected. Any broken tabs shall be welded back into position. Contractor shall assume that 3 tabs shall require welding repairs and include a cost in their overall bid, actual work carried out shall be adjusted up or down (credit), through PSPC 1379 action. Contractor must provide a unit price to repair one tab, for adjustment purposes.



Example of a Grid tab (broken off)

2.2 Location

Sea Chests

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

HD-07 SEA CHESTS AND STRAINERS

2.3 Interferences

1. N/A

3: REFERENCES:

3.1 Guidance Drawings/Nameplate data

1. N/A

3.2 Standards and Regulations

1. N/A

3.3 Allowances

1. N/A

3.4 Owner Furnished Equipment

1. N/A

4: PROOF OF PERFORMANCE:

4.1 Inspection

1. N/A

4.2 Testing

1. N/A

4.3 Certification

1. N/A

5: DELIVERABLES:

5.1 Reports, Drawings and Manuals

1. N/A

5.2 Spares

1. N/A

5.3 Training

1. N/A

HD-08 RUDDER, RUDDER BEARING AND SKEG INSPECTION

1: SCOPE:

The Contractor must prepare both rudders, their associated rudder stocks and rudder bearings for a RO survey.

2: TECHNICAL DESCRIPTION

1. The Contractor must disconnect and remove the rudders from the vessel. Where electrical circuits and position switches are removed or disconnected, the connections must be clearly marked and recorded and all disconnected wiring must be marked and the connections recorded. Where linkages are fitted, their fitted distance must be marked and recorded prior to disconnection such that these distances can be re-established upon re-assembly.
2. The Contractor must ensure, prior to the start of disassembly, precautions are taken to ensure the reassembly and reinstallation of all system and equipment components are as per original and in accordance with manufacturer's specifications.
3. The Contractor must report by email all deficiencies as they are identified, to the TA and make recommendations for their prompt remedial action. Any approved repairs or replacements will be negotiated using form PSPC 1379, as applicable.
4. The Contractor must disconnect and remove the two rudders and rudder stock assemblies. These must be laid out for a ABS survey.
5. The Contractor must visually inspect the rudders and must note any defects. On each rudder the Contractor must remove the docking plug and perform a pressure test of not more than 3 psi for 1 hour.
6. This test must be witnessed by attending ABS surveyor and the TA. Any approved repairs or replacements will be negotiated using form PSPC 1379, as applicable.
7. The Contractor must visually inspect the rudder stocks for any defects; the diameters must be measured and recorded. Recommendations for repairs must be made accordingly. Any approved repairs or replacements will be negotiated using form PSPC 1379, as applicable.
8. The Contractor must inspect the rudder stock key and keyway for any defects using NDT LP Level II testing in full compliance with CAN/ONGC-48.9712. All findings must be recorded and

HD-08 RUDDER, RUDDER BEARING AND SKEG INSPECTION

9. delivered to the TA as soon as practical. Any approved repairs or replacements will be negotiated using form PSPC 1379, as applicable.
10. The Contractor must visually inspect the top rudder bearings and bearing fasteners of both rudders for any defects and the findings must be recorded and submitted to the ABS surveyor and the TA. Any approved repairs or replacements will be negotiated using form PSPC 1379, as applicable.
11. The Contractor must visually inspect the rudder carrier bearings for both rudder stocks for any defects and the findings must be recorded and submitted to the ABS surveyor and the TA. Any approved repairs or replacements will be negotiated using form PSPC 1379, as applicable.
12. Following the inspection the Contractor must reassemble both rudders, rudder stocks and carrier bearings as per original and in accordance with manufacturer's specifications. The Contractor must re-install the rudders and reconnect all equipment and items removed during the removal of the rudders.
13. Before installation of the rudders, the Contractor must replace the Nylon protection plates on the rudders. The Contractor must remove the existing plates and install new Thordon plates, as described in drawing TG-28380 (Thordon SXL Steering Wear Pads assembly), taking care to correctly adjust the holding screws. The Contractor must machine the rudder bearing hold ring to allow the Thordon plate to be 2mm higher than the ring on final installation. All materials and parts required to complete this work will be supplied by the contractor.
14. The Contractor must exercise care to ensure that all values recorded prior to disassembly are achieved during re-assembly and that all electrical connections are re-established as recorded.
15. The Contractor must ensure that the tiller achieves a proper fit and that the tiller nut is tightened up in the presence of the TA.
16. The Contractor must prepare a test and trials plan for the full functional test of the steering gear and rudders. This functional test must be carried out before the undocking of the vessel so that the full movement of the rudders can be observed.

HD-08 RUDDER, RUDDER BEARING AND SKEG INSPECTION

17.Rudder Skeg Inspections

The Contractor must ensure that all applicable environmental and safety precautions are taken to collect all residual liquid or other filling mixture inside in the skegs before the docking pugs are removed.

The Contractor must remove the docking plugs from the PORT and STBD skegs, drain all residual liquid or other filling mixture and must perform a pressure test of not more than 3 psi for 1 hour which is to be witnessed by the attending ABS surveyor and the TA.

The Contractor must float coat both skegs with water based corrosion preventative and then drain it before installing the docking plugs.

2.2 Location

Steering compartment

2.3 Interferences

Contractor is responsible for the identification of any interference items, their temporary removal and storage and reinstallation on the vessel.

3: REFERENCES:

3.1 Guidance Drawings/Nameplate data

AF6099-56100-02	Steering System Schematic of the Hydraulic System
AF6099-56100-03	Steering Gear Room Arrangement Plan
AF6099-10000-11	Rudders Construction Plan Sheet 1 of 2
AF6099-10000-11	Rudders Construction Plan Sheet 2 of 2
TG-28380	Thordon SXL Steering wear pads assembly

3.2 Standards and Regulations

1. Canada Shipping Act, 2001: Marine Machinery Regulations (SOR/90-264)
2. ABS, Rules & Regulations for the Classification of HSC
3. CAN/ONGC-48.9712

HD-08 RUDDER, RUDDER BEARING AND SKEG INSPECTION

3.3 Allowances

1. N/A

3.4 Owner Furnished Equipment

1. N/A

4: PROOF OF PERFORMANCE:

4.1 Inspection

The Contractor must afford the attending ABS surveyor and the TA the opportunity to inspect all disassembled components following disassembly and cleaning.

4.2 Testing

1. The Contractor must perform a functional test on the rudder system, verifying that the rudders move hard over to hard over and perform as per the specifications of the installation manual. This test must be carried out before the vessel is undocked.
2. The Contractor must conduct a dock trial where both the rudders systems are tested for correct operation in both directions and to ensure that proper rudder angle indications are received on all system gauges.
3. The Contractor must prepare a test and inspection plan for the sea trials of the steering gear system. Sea trials for the steering gear system must include hard over to hard over maneuvers of both rudders in the full follow-up mode and the non-follow-up mode. These trials must be conducted at various speeds of the vessel from zero speed to full ahead and astern conditions.
4. The Contractor must correct any defects, at no cost to Canada, that are a result of any work carried out by the Contractor on this specification Section.
5. Following initial testing and subsequent repairs, the Contractor shall afford the attending ABS surveyor, the IA and TA the opportunity to witness a comprehensive operational test under full load of all disturbed equipment and systems.

4.3 Certification

- 1.N/A

HD-08 RUDDER, RUDDER BEARING AND SKEG INSPECTION

5: DELIVERABLES:

5.1 Reports, Drawings and Manuals

The Contractor must prepare and submit to the TA prior to the close of the contract and in accordance with Section 2.11 a comprehensive report of all inspections including all findings, recommendations, test results and recorded measurements.

5.2 Spares

1. N/A

5.3 Training

1. N/A

HD-09 SIDESHELL AND BULKHEAD REPAIR

This specification and all accompanying reference drawings for this item will be included in the drawing package.

HD-10 PROPELLER SHAFT SEALS AND SHAFT CLEARANCES

1: SCOPE:

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

2: Technical Description

2.1 General

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

HD-10 PROPELLER SHAFT SEALS AND SHAFT CLEARANCES

9. Contractor shall reinstall the Aft Sterntube Bearing covers, previously removed from the Port and Starboard side. Contractor shall lock the screws, to original position as per the original lock style.
10. Contractor shall reinstall the Rope Guard with Net Cutters previously removed from the Port and Starboard side to their original position and as per their original lock style.
11. Any parts that need to be replace or repairs required will be negotiated using PSPC 1379 action.

2.2 Location

1. N/A

2.3 Interferences

1. Refer to General Notes: section 12 and 17

3: Reference

3.1 Guidance Drawings/Nameplate data

1. Manual

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

2. Drawing

Drawing Number	Drawing Title	Electronic File Name
6099-24300-01	Shaft alignment drawings	

3.2 Standards and Regulations

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

3.3 Allowances

1. N/A

3.4 Owner Furnished Equipment

1. N/A

HD-10 PROPELLER SHAFT SEALS AND SHAFT CLEARANCES

4: PROOF OF PERFORMANCE:

4.1 Inspection

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

4.2 Testing

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

4.3 Certification

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

5: DELIVERABLES:

5.1 Reports, Drawings and Manuals

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

5.2 Spares

1. N/A

5.3 Training

1. N/A

HD-11 TANK INSPECTIONS

1: SCOPE:

The Contractor must open, clean and present the Sewage Sludge tank, the Black Water tank, the Dirty Oil & Sludge tank, Grey Water tank, the Bilge Water tank, Lube oil tank, Fuel oil tank #1, Fuel oil tank # 2, Fuel oil tank # 3, Fuel oil tank # 9 and the Fuel oil day tank for inspection by the attending ABS surveyor.

2: TECHNICAL DESCRIPTION:

1. The Contractor must stop and lock-out the ship's sanitary water system.
2. The Contractor must contain the contents of all the tanks mentioned in the scope and must dispose of these contents in accordance with all Federal, Provincial and Municipal regulations in effect. The Contractor must provide disposal certificates.
3. For bidding purposes, the Contractor must bid on the removal of 5000 liters of clean fuel from fuel oil tanks 1-3, 9 and the fuel oil day tank. The amount of removed fuel will be adjusted by using the PSPC 1379 process. The Contractor must dispose of the clean fuel according to provincial and federal regulations.
4. For bidding purposes, the Contractor must bid on the removal of 2000 liters of waste oil from the bilge water and dirty oil tanks. The amount of removed waste oil will be adjusted by using the PSPC 1379 process. The Contractor must dispose of the waste oil according to provincial and federal regulations.
5. For bidding purposes, the Contractor must bid on the removal of 2000 liters of sewage from the grey water tank, black water tank and sludge tank. The amount of removed sewage will be adjusted by using the PSPC 1379 process. The Contractor must dispose of the sewage according to provincial and federal regulations.
6. All tank transducers must be removed prior to opening and cleaning of all tanks, stored in a safe place for the duration of refit. The Contractor must reconnect all transducers after all testing is completed.
7. The Contractor must remove the Dirty Oil & Sludge Tank (#15), Sewage sludge tank (#6), Black water tank (#7b), Grey water tank (#7a), Bilge water tank (#4), Fuel oil tank #1, Fuel oil tank # 2, Fuel oil tank # 3, Fuel oil tank # 9 docking plug drain the tank and dispose of the oil and sludge remaining in the tank.
8. The Contractor must open the manhole to the Dirty Oil & Sludge tank (#15), pump dry, clean, ventilate the tank and certify it safe for entry to access the Sewage Sludge tank (#6) for the duration of the work inside these tanks.
9. The Contractor must open the manhole cover to the Sewage Sludge Tank, pump dry, clean, ventilate the tank and certify it safe for entry for the duration of the work inside.

HD-11 TANK INSPECTIONS

10. The Contractor must open the manhole cover of the Lube Oil Tank, FO tank 1, FO tank 2 FO tank 3 FO tank 9 and the day tank, ventilate, wipe clean the tank and certify it safe for entry for the duration of the work inside.
11. The Contractor must clean all tanks, mentioned above EXCEPT the lub oil tank and all fuel oil tanks with a pressure wash system of at least 5000 psi.
12. All ten (10) tanks must be inspected by the ABS surveyor and the TA for structural damage and the quality of each tank's coating system.
13. The Contractor must pneumatically pressure test all ten (10) tanks to a head of 2.44 meters above the crown of the tank for duration of 1 hour. This pressure test must be witnessed by the ABS surveyor with TA being able to witness the test.
14. The Contractor must remove the suction pipes all tanks except Lube oil and the Fuel oil tanks. Each pipe is connected to a flange. The pipes must be cleaned, inside and out, with a water pressure system with at least 5000 psi. The Contractor must inspect these pipes for corrosion and advise the TA of any defects. Any approved repairs or replacements will be negotiated using form PSPC 1379, as applicable.
15. The Contractor must reinstall the five suction pipes with new Garlock style gaskets.
16. Once all work inside the tanks is complete the Contractor must reinstall the five docking plugs and must reinstall the manhole covers using new Contractor supplied manhole gaskets, nuts and washers. All replacement materials must be of the Stainless Steel. Any structural repairs required to any tanks will be handled via PSPC 1379 action.

17.Coating System Touch-Up Dirty Oil Tank

If required and after any required structural work, the Contractor must prepare the surfaces in accordance with manufacturer's recommendations to be coated to an SP-11 standard with feathered edges to the existing coating system. The Contractor must quote for the preparation and coating of 5 square meters of surface area in the Dirty Oil Tank with 1 coat of Interline 624 Buff with a Dry Film Thickness of 6 mil and on 1 coat of Interline 624 White with a Dry Film Thickness of 10 mil. The Contractor must apply International Interline 925 to a Dry Film Thickness of 12mil. The actual area recoated will be adjusted upwards or downwards as required and prorated using the PSPC 1379 process.

18.Coating System Touch-Up

If required and after any required structural work, the Contractor must prepare the surfaces in accordance with manufacturer's recommendations to be coated to an SP-11 standard with feathered edges to the existing coating system. The Contractor must quote for the preparation and coating of 10 square meters total of surface area in the Sewage Sludge Tank and the Black Water Tank, Grey Water Tank, Bilge Water Tank, Dirty Oil & Sludge Tank. The Contractor must apply International Interline 925

HD-11 TANK INSPECTIONS

to a Dry Film Thickness of 12mil. The actual area recoated will be adjusted upwards or downwards as required and prorated using the PSPC 1379 process.

2.2 Location

1. Main machinery room below deck plates

2.3 Interferences

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

3: REFERENCES:

3.1 Guidance Drawings/Nameplate data

Drawing number	Description	Electronic File
AF6099-89940-02	Tank Arrangement, Capacity Plan	
Appendix C	MSPV International Coatings Maintenance Plan OBM	

3.2 Standards and Regulations

1. The following Coast Guard Standards and or Technical Bulletins shall be adhered to in the course of executing this specification. Copies of these standards and bulletins can be obtained from the CCG Technical Authority.
 - Canadian Coast Fleet Safety Manual (DFO 5737)

3.3 Allowances

See technical description

3.4 Owner Furnished Equipment

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

HD-11 TANK INSPECTIONS

4: PROOF OF PERFORMANCE:

4.1 Inspection

1. The Contractor must advise the ABS surveyor and the CGTA when the tanks and their coating systems are ready for inspection and survey credit must be obtained for the tanks. Final inspection of all tanks to be carried out jointly by The Contractor and CGTA.

4.2 Testing

1. The Contractor must pneumatically pressure test all ten (10) tanks to a head of 2.44 meters above the crown of the tank for duration of 1 hour. This pressure test must be witnessed by the ABS surveyor with TA being able to witness the test.
2. The Contractor must provide a final vacuum test on each of the docking plugs if they are removed for the draining of the respective tanks. This vacuum test must be witnessed by the TA.
3. The Contractor must correct any defects, at no cost to Canada, that are a result of any work carried out by the Contractor.

4.3 Certification

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

5: DELIVERABLES:

5.1 Reports, Drawings and Manuals

1. The Contractor must provide the TA with a copy of all gas free and entry certificates for the tanks.
2. The Contractor must provide the TA with a copy of all disposal certificates for the waste quantities removed from the 10 tanks.
3. The Contractor must provide the TA with a written report of the condition of the tanks, their coating systems and where the coating systems have been touched up, the details of the substrate temperature the wet and dry bulb temperatures before, during and after coating system application and the relative humidity.

5.2 Spares

1. N/A

5.3 Training

1. N/A

HD-12 BOW THRUSTER GEAR OIL AND SEAL CHANGE

1: SCOPE:

The intent of this specification is for the Contractor to replace the bow thruster gear oil and the propeller shaft seals.

2: TECHNICAL DESCRIPTION

General

1. The Contractor must ensure that all applicable safety precautions including equipment lock outs and tag outs are implemented prior to the start of work.
2. The Contractor must ensure that, prior to the start of disassembly, precautions are taken to ensure the reassembly and reinstallation of all system and equipment will be as per original and in accordance with manufacturer's specification.
3. The Contractor must report, by email, all deficiencies as they are identified to the TA and make recommendations for their remedial action. Any approved repairs or replacements will be negotiated using PSPC 1379 action, as applicable.
4. The Contractor must remove the bow thruster grates to access the thruster unit.
5. The Contractor must notify the TA when the oil will be drained from the bow thruster unit such that the TA can take an oil sample for analysis mid-stream through the draining process. The oil must be drained into a clean container to allow for the examination of the oil condition by the TA and IA.
6. The Contractor must follow the TRAC shaft seal change procedure manual to change the oil and seals. The oil and seals will be provided by the contractor.
7. All oil and debris must be removed from the vessel and disposed of ashore in accordance with Federal, Provincial and Municipal regulations in effect.
8. Following the completion of all disassembly, and prior to reassembly, the Contractor must afford the TA and TI the opportunity to inspect all disassembled components.

2.2 Location

Bow Thruster compartment/ bow region of hull

2.3 Interference

1. Contractor is responsible for the identification of any interference items, their temporary removal and storage and reinstallation in good order.

HD-12 BOW THRUSTER GEAR OIL AND SEAL CHANGE

2. Contractor is responsible for protecting surrounding area and equipment while carrying out this work.

3: REFERENCES:

3.1 Guidance drawings/Name plate data

1	Hydraulic Thruster (PKK 24 TRAC (24)
2	24 TRAC ASSY drawing #29351

3.2 Standards:

1. Canadian Coast Fleet Safety Manual (DFO 5737)
2. Coast Guard ISM Lock Out/Tag Out Procedures
3. Canada Shipping Act 2001 - Machinery Inspection Regulations
4. ABS, Rules & Regulations for the Classification of HSC

3.3 Allowances

1. N/A

3.4 Owner Furnished Equipment

1. All oils necessary to complete the inspection will be supplied as CSM
2. Seals for both BT shafts will be CSM

4: PROOF OF PREFORMANCE:

4.1 Inspection

1. N/A

4.2 Testing

HD-12 BOW THRUSTER GEAR OIL AND SEAL CHANGE

1. The Contractor must develop a test and trials plan to test the bow thruster. As a minimum, the hydraulic system must be tested in the dock prior to the undocking of the vessel to allow for inspection of the oil seal under static pressure.
2. The Contractor must conduct a dock trial where the bow thruster is checked for proper operation by verifying pitch angles from full PORT to full STBD.
3. The Contractor must conduct a sea trial where the thruster will be used with maximum thrust for a period of five minutes in each direction. The operational level of the oil header tank is to be recorded before trials and monitored during all trials.
4. The Contractor must afford the TA the opportunity to witness all tests and trials.
5. The Contractor must correct any defects, at no cost to Canada, that are a result of any work carried out by the Contractor.

4.3 Certification

1. N/A

PART 5: DELIVERABLES:

5.1 Drawings / Reports

1. A comprehensive report of all inspections including all findings, recommendations, test result and recorded measurements must be prepared and submitted to the TA and TI prior to the close of contract.

5.2 Spares

1. N/A

5.3 Training

1. N/A

5.4 Manuals

1. N/A

HD-13 ANCHOR CHAIN AND CHAIN LOCKER INSPECTION

1: SCOPE:

The Intent of this specification is to range the anchor and anchor chain for an ABS survey, and to inspect the chain locker.

2: TECHNICAL DESCRIPTION:

1. The Contractor must arrange for the lowering of the anchor and chain without hydraulic power being available for operating the anchor winch.
2. The Contractor must ensure that prior to the start of disassembly, precautions are taken to ensure the reassembly and reinstallation of all system and equipment are as per original and in accordance with manufacturer's specifications.
3. The Contractor disconnects the bitter end of the anchor chain in the chain locker and must range the anchor and anchor chain such that they can be cleaned by hydro-blasting at 5000 PSI. This must be followed by a thorough visual inspection of the anchor and chain for indications of excessive wear, wastage and other defects. The Contractor must take measurements at locations indicated by the attending ABS surveyor to measure various chain links, checking for elongations of the chain. All evidence of defects must be recorded and must be brought to the attention of the attending ABS surveyor and the TA. Any approved repairs or replacements will be negotiated using form PSPC 1379, as applicable.
4. The Contractor must inspect the anchor eye and anchor shackles using liquid dye penetrant testing performed by a NDT LPT Level II certified Technician. Test to be witnessed by Class surveyor with an opportunity for TA to present as well. Any approved repairs or replacements will be negotiated using form PSPC 1379, as applicable.
5. The Contractor must disconnect the first 2 shots of anchor chain from the anchor shackle and these must be added to the end disconnected from the chain locker. The Contractor must supply all material necessary to perform this disconnection and reconnection.
6. Following all repairs, replacements, and anchor shot swaps, the anchor chain must be prepped and painted in accordance with paint manufacturer's recommendations and marked as follows:
 - a. All shot joining shackles must be painted red;
 - b. The adjacent shackles on either side of the joining shackle must be painted white. The number of shackles painted white must represent the numbered shot of chain. When the paint is cured these shackles must also be marked with stainless steel wire of 0.050 diameter.
7. The Contractor must reconnect the bitter end of the chain once the work in section 11.3.2 has been completed. Following this, the Contractor must stow the anchor chain and anchor.

HD-13 ANCHOR CHAIN AND CHAIN LOCKER INSPECTION

Chain Locker Inspection

1. The Contractor must open the chain locker and must ventilate and certify for entry for confined space. The certificate of entry must be valid for entry for the duration of the work and the survey.
2. The Contractor must pressure wash the chain locker interior with a minimum of 5000 psi. The Contractor must bid on the removal and disposal of 100L of liquid waste and 10 kg of sludge. This must not include the water used for cleaning the chain locker; water used for cleaning the chain locker shall be the responsibility of the contractor. All waste is to be removed to a shore facility in accordance with federal and provincial regulations.
3. The Contractor must clean the chain locker bilge suction after removing the bottom perforated plate of the chain locker.
4. If, following the ABS survey, there is a need to make structural repairs in the chain locker, any approved repairs or replacements will be negotiated using form PSPC 1379, as applicable.
5. The Contractor must bid on replacing 5 Sq. m of the chain locker coating system consisting of 1 coat of Intershield 300 Aluminum to a Dry Film Thickness of 5 mil followed by 1 coat of Intershield 300 Bronze to a Dry Film Thickness of 5 mil.
6. The Contractor must allow sufficient time in the contract period for the full curing of the chain locker coating system.
7. The area of coating system renewal in the chain locker will be adjusted upwards or downwards as required and prorated using the PSPC 1379 process.
8. The Contractor must supply and install a new manhole cover gasket before the final closing of the chain locker. TA or IA to witness the closing of Chain Locker.

2.2 Location

1. Chain locker and bow of vessel

2.3 Interferences

1. Contractor is responsible for the identification of any interference items, their temporary removal and storage and reinstallation on the vessel.

HD-13 ANCHOR CHAIN AND CHAIN LOCKER INSPECTION

3: REFERENCES:

3.1 Guidance Drawings/Nameplate data

AF6099-58100-01	Anchor System Arrangement Plan
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3.2 Standards and Regulations

1. Canada Shipping Act, 2001: Marine Machinery Regulations (SOR/90-264)
2. ABS, Rules & Regulations for the Classification of Special Service Craft
3. ISO 9712:2012, International Standards for Qualification and Certification of NDT Personnel
4. ANSI/ASNT CP-189-2011, ASNT Standard for Qualification and Certification of NDT Personnel

3.3 Allowances

1. N/A

3.4 Owner Furnished Equipment

1. N/A

4: PROOF OF PERFORMANCE:

4.1 Inspection

The Contractor must schedule a survey of the anchor and anchor chain by the attending ABS surveyor and afford the TA the opportunity to witness the inspection.

The Contractor must schedule a survey of the chain locker by the attending ABS surveyor and afford the TA the opportunity to witness the inspection in order to determine if any structural or coating repairs are required and upon completion of any prescribed repairs.

4.2 Testing

1. The Contractor must perform an operational test of the anchor windlass, following the stowage of the anchor chain and the anchor onboard the vessel. This operational test must be done after the undocking of the vessel and prior to sea trials. The test must consist of walking the anchor out using the windlass when hydraulic power is available, lowering the anchor into the water and retrieving the anchor using the windlass. The Contractor must verify that the anchor and anchor chain are retrieved correctly and that the anchor and chain are capable of being stowed correctly. The Contractor must afford the attending ABS surveyor and the TA the opportunity to witness the test.

HD-13 ANCHOR CHAIN AND CHAIN LOCKER INSPECTION

2. The Contractor must correct any defects, at no cost to Canada, that are a result of any work carried out by the Contractor.

4.3 Certification

1.If the Contractor is required to use new parts for the re-joining of the anchor shots, certificates suitable for ABS survey credits must be provided to the attending surveyor and to the TA.

5: DELIVERABLES:

5.1 Reports, Drawings and Manuals

1.The Contractor must prepare and submit a comprehensive report to the TA of all work done to the anchor, anchor chains and the chain locker, including all of the measurements taken, the results of the NDT tests and any certificates available for the parts used for rejoining the anchor chain shots.

5.2 Spares

1. N/A

5.3 Training

1. N/A

H-01 LIFERAFTS ANNUAL INSPECTION

1: SCOPE:

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

2: TECHNICAL DESCRIPTION:

2.1 General

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

2.2 Location

1. See **REFERENCES** section

2.3 Interferences

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

H-01 LIFERAFTS ANNUAL INSPECTION

Liferaft	Size	Location	Serial #
Port	16 pers.	Port Side Bridge Deck	XDC -1FC56B111
Stbd	16 pers.	Stbd. Side Bridge Deck	XDC -1F50B111
SAR	4 pers.	Aft Bridge Deck	0FG87C212

REFERENCES:

3.1 Guidance Drawings/Nameplate data

3.2 Standards and Regulations

2. The following Coast Guard Standards and or Technical Bulletins shall be adhered to in the course of executing this specification. Copies of these standards and bulletins can be obtained from the CCG Technical Authority.
 - Canadian Coast Fleet Safety Manual (DFO 5737)

3.3 Allowances

1. Refer to Section 2.1, subsection 3 above

3.4 Owner Furnished Equipment

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

4: PROOF OF PERFORMANCE:

4.1 Inspection

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

4.2 Testing

1. Inspection and testing shall be completed as per ABS requirements.

4.3 Certification

2. Contractor shall provide all test certificates, and endorsement of safe operation required by the ABS for certification to the CGTA.

H-01 LIFERAFTS ANNUAL INSPECTION

5: DELIVERABLES:

5.1 Reports, Drawings and Manuals

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

5.2 Spares

1. N/A

5.3 Training

1. N/A

H-02 FIXED FIRE FIGHTING SYSTEMS

1: SCOPE:

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

2: TECHNICAL DESCRIPTION:

2.1 General

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

2.2 Location

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

2.3 Interferences

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

H-02 FIXED FIRE FIGHTING SYSTEMS

3: REFERENCES:

3.1 Guidance Drawings/Nameplate Data

1. N/A

3.2 Standards and Regulations

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

3.3 Allowances

1. N/A

3.4 Owner Furnished Equipment

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

4: PROOF OF PERFORMANCE:

4.1 Inspection

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

4.2 Testing

1. Systems shall be inspected to the satisfaction of the ABS surveyor and OEM

4.3 Certification

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

H-02 FIXED FIRE FIGHTING SYSTEMS

5: DELIVERABLES:

5.1 Reports, Drawings and Manuals

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

5.2 Spares

1. N/A

5.3 Training

1. N/A

H-03 FIRE DETECTION SYSTEM INSPECTION

1: SCOPE:

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

2: TECHNICAL DESCRIPTION:

2.1 General

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

2.2 Location

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

2.3 Interferences

1. N/A

3: REFERENCES:

3.1 Guidance Drawings/Nameplate Data

- 1.N/A

H-03 FIRE DETECTION SYSTEM INSPECTION

3.2 Standards and Regulations

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

3.3 Allowances

1. N/A

3.4 Owner Furnished Equipment

1. N/A

4: PROOF OF PERFORMANCE:

4.1 Inspection

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

4.2 Testing

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

4.3 Certification

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

5: DELIVERABLES:

5.1 Reports, Drawings and Manuals

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

5.2 Spares

1. N/A

5.3 Training

1. N/A

H-04 PORTABLE FIRE EXTINGUISHERS

1: SCOPE:

The intent of this specification item is for Contractor to complete the annual inspection of all 43 portable fire extinguishers onboard the vessel. This is also to include 2 hydro tests and 5 six year inspections.

2: TECHNICAL DESCRIPTION:

2.1 General

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

#	Type (lbs)	Location	S/N	Next Hydro mm/yy	Next 6 yr mm/yy	Date of manufacture
1	10 LB P	Command Centre Aft	83275999	2030	01/2024	2018
3	15 LB CO2	Command Centre Fwd	763246	02/2022	-	2012
4	10 LB P	Wheelhouse Stbd	437634	2023	01/ 2023	2011
6	2.5 Gal Foam	Outside Dry Stores	92802493	01/2022	-	2017
8	K Class Wet	Galley	18410	02/2022	-	2012
9	2.5 Gal Foam	Outside Ch/E Cabin	29038	03/2022	-	2012
12	15 LB CO2	Electronics Equip Room	770571	02/2022	-	2012
13	15 LB CO2	Emerg Generator Room	770568	02/2022	-	2012
14	10 LB P	Emerg Generator Room	250067	2025	02/2025	2013
15	2.5 Gal Foam	Steering Gear	29001	2022	02/ 2022	2012
18	10 LB P	MCR	83276635	2030	01/ 2024	2018
20	2.5 Gal Foam	BT Compartment	29040	03/2022	-	2012
21	2.5 Gal Foam	Alleyway B/w Heads	29039	03/2022	-	2012
22	15 LB CO2	MMR Port Side Middle	745722	02/2021	-	2011
23	20 LB P	MMR Stbd Fwd	76802492	2030	01/ 2024	2018
24	2.5 Gal Foam	MMR Stbd Middle	29069	02/2022	-	2012
25	15 LB CO2	MMR Aft	745802	02/2021	-	2011
26	2.5 Gal Foam	MMR At Entrance	29066	02/2022	-	2012
28	2.5 Gal Foam	AMR Aft	29033	02/2022	-	2012
29	15 LB CO2	AMR Fwd	747600	02/2021	-	2011
30	2.5 Gal Foam	Outside MMR	29037	02/2022	-	2012
31	10 LB P	Stbd Breezeway	83275963	2030	01/ 2024	2018

32	6L K Class	Port Battery Locker	18467	04/ 2024	-	2012
34	2.5 Gal Foam	Stbd Battery Locker	641006	04/ 2024	-	2011
35	2.5 LB P	Rescue Boat	65059469	2031	01/2025	2019
36	5 LB P	FRC	76451952	2031	01/2025	2019
37	5 LB P	FRC	AE-107128		02/2022	
38	2.5 Gal Foam	Fueling Station	29029	04/ 2024	-	2012
SP1	10 LB P	Fire Locker Fwd Stbd	83276636	01/2030	01/ 2024	2018
SP2	20 LB P	Fire Locker Fwd Stbd	76802483	01/2030	01/ 2024	2018
SP3	15 LB CO2	Fire Locker Fwd Stbd	747576	02/2021	-	2011
SP4	5 LB P	Fire Locker Fwd Stbd	783895	2026	2023	2014
SP5	5 LB P	Fire Locker Fwd Stbd	12924097	2028	2022	2016

3. Extinguishers shall be dealt with so that no space will be left without a portable fire extinguisher at any one time. NOTE: Contractor shall provide temporary equivalent units for use if any extinguishers are required to be removed from the ship for servicing.
4. Any cost of transporting the extinguishers from vessel to the place of inspection, and including the return of the extinguishers to the vessel, shall be included in the overall bid.
5. The following fire extinguisher shall be hydro tested:
- 15 lb CO₂, location: Main Machinery Room Aft Centre
6. The following 3 fire extinguishers shall have a 6 year inspection completed:
 - 5 lb dry chem. Serial # 107657, location: FRC
 - 5 lb. dry chem. Serial # 821562, location: FRC
 - 4 lb. dry chem. Serial # 27344, location: Shepherd Boat
 -
7. Any required repairs identified as a result of the inspections shall be negotiated through PSPC 1379 action.
8. Extinguishers shall be properly secured in their original locations after inspection.

2.2 Location

1. All throughout ship

2.3 Interferences

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

3: REFERENCES:

H-04 PORTABLE FIRE EXTINGUISHERS

3.1 Guidance Drawings/Nameplate data

1. N/A

3.2 Standards and Regulations

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

3.3 Allowances

1. N/A

3.4 Owner Furnished Equipment

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

4: PROOF OF PERFORMANCE:

4.1 Inspection

1. Contractor shall arrange all necessary ABS inspections related to the portable fire extinguishers.

4.2 Testing

1. Systems to be inspected to the satiation of ABS and OEM.

4.3 Certification

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

5: DELIVERABLES:

5.1 Reports, Drawings and Manuals

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

5.2 Spares

1. N/A

5.3 Training

1. N/A

H-05 ANNUAL DUCT CLEANING

1: SCOPE:

The intent of this specification item is for Contractor to access and clean the air ducting for galley exhaust (including the galley range hood) and Laundry. In addition Contractor shall clean dryer ducting from the laundry room.

2: TECHNICAL DESCRIPTION:

2.1 General

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

H-05 ANNUAL DUCT CLEANING

5. Contractor is responsible for the cleaning of all spaces, furniture, equipment, etc. that is contaminated or soiled during this scope of work.
6. All systems shall be closed up as per their original configuration upon completion of the cleaning process.

GALLEY

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

Laundry Dryers

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

H-05 ANNUAL DUCT CLEANING

2.2 Locations

Galley

Below the main deck – bottom of stair well turn right into alleyway, look to the right into the alleyway and next door on the left.

Laundry Room

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

HVAC Main Unit

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

2.3 Interferences

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

3: REFERENCES:

3.1 Guidance Drawings/Nameplate Data

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

DWG: HVAC Single Line DWG AF6099-51000-01

3.2 Standards and Regulations

1. The following Coast Guard Standards and or Technical Bulletins shall be adhered to in the course of executing this specification. Copies of these standards and bulletins can be obtained from the CCG Technical Authority.
 - Canadian Coast Fleet Safety Manual (DFO 5737)
 - Coast Guard ISM Lock Out/Tag Out Procedures
2. National Air Duct Cleaners Association (NADCA), international standard for Assessment, Cleaning and Restoration (ACR) of HVAC Systems, 2013.

3.3 Allowances

1. N/A

H-05 ANNUAL DUCT CLEANING

3.4 Owner Furnished Equipment

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

4: PROOF OF PERFORMANCE:

4.1 Inspection

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

4.2 Testing

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

4.3 Certification

1. N/A

5: DELIVERABLES:

5.1 Reports, Drawings and Manuals

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

5.2 Spares

1. N/A

5.3 Training

1. N/A

H-06 ANNUAL LIFEBOAT DAVIT INSPECTION

1: SCOPE:

The intent of this specification item is for Contractor to survey the Welin Lambie Life Boat Davit, for the ABS annual inspection and testing.

2: TECHNICAL DESCRIPTION

1.1 General

1. Contractor shall obtain the services of a RO approved Field Service Representative (FSR). Contractor shall provide all equipment, hardware, personnel, etc. to carry out the required work under the direction and guidance of the FSR.
2. Contractor shall include an allowance of \$20,000 to cover expenses of an ABS approved FSR. The FSR shall be reimbursed for any necessary parts, services, authorized travel and living expenses reasonably and properly incurred in the performance of the work. Contractor shall provide the fee schedule from for the services of the FSR. This info shall be included in the PSPC data pricing sheet. Final costs for the FSR as well as parts and materials shall be adjusted up/down upon proof of invoices through PSPC 1379 action.
3. All manufacturer's procedures and recommendations shall be followed during the scope of work with technical specifications being adhered to as a minimum by Contractor. Contractor shall arrange for scheduling the on-site presence of a ABS surveyor as required for inspections/testing during the course of this work.
4. Contractor shall supply all the necessary staging and crange as required to work on, remove, transport, and install the various components during this inspection and/or repair process if warranted. All personnel working on the davit system shall be suitably trained in fall restraint and all fall restraint equipment shall be certified and current.
5. Contractor shall supply certified weights for the load test as instructed by the FSR. Contractor shall contact Welin Lambie for the specific type of weight and quantity required for this specific lifeboat. The supply, transport, hook-up and removal of these weights for the specification shall be included in the overhaul bid.

H-06 ANNUAL LIFEBOAT DAVIT INSPECTION

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

2.2 Location

1. Midship starboard side bridge deck.

H-06 ANNUAL LIFEBOAT DAVIT INSPECTION

2.3 Interference

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

3: REFERENCES:

3.1 Guidance Drawings / Nameplate Data

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

Manual: - Welin Lambie Resue Boat Davit

3.2 Standards:

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

3.3 Allowances

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

3.4 Owner Furnished Equipment

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

4: PROOF OF PREFORMANCE:

1. All documentation shall be provided to demonstrate OEM compliance.
2. Demonstrate operation to satisfaction of CGTA, FSR and the ABS surveyor.

H-06 ANNUAL LIFEBOAT DAVIT INSPECTION

PART 5: DELIVERABLES:

5.1 Drawings / Reports

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

5.2 Spares

1. N/A

5.3 Training

1. N/A

5.4 Manuals

1. N/A

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H-07 ALLIED CRANE ANNUAL INSPECTION

1: SCOPE:

The intent of this specification item is for Contractor to complete the 5 year inspection routine on the ALLIED Crane

2: TECHNICAL DESCRIPTION

General

1. Contractor must complete all inspection items on the 5 year routine for the Allied Crane as described in the ALLIED CRANE manual. An Inspection checklist has been provided in Appendix B. The ALLIED crane technical Manual will be provided in PDF for the particulars of each job.
2. All oils required used during the inspection will be supplied as GSM, all other materials/equipment required to carry the inspection out must be contractor supplied.
3. Contractor is responsible for all crange and rigging to carry out the inspection. A provision for carnage is made in the SERVICES section.
4. Contractor must remove and dispose of any remaining oil in accordance with all Federal, Provincial and Municipal regulations. Disposal certificates must be provided to the CGTA.
5. Prior to final load testing, using calibrated weights or a dynamometer contractor to calibrate the Omega weight display. Procedure for this calibration, as provided by Allied Crane is aboard the vessel.

2.2 Location

Center of open after main deck

2.3 Interference

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

H-07 ALLIED CRANE ANNUAL INSPECTION

3: REFERENCES:

3.1 Guidance drawings/Name plate data

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

3.2 Standards:

1. Canadian Coast Fleet Safety Manual (DFO 5737)
2. Coast Guard ISM Lock Out/Tag Out Procedures
3. Canada Shipping Act 2001 - Machinery Inspection Regulations
4. RO recommendations for Man lift devices.

3.3 Allowances

1. N/A

3.4 Owner Furnished Equipment

All oils necessary to complete the inspection will be supplied as GSM
All other materials are CSM

4: PROOF OF PREFORMANCE:

4.1 Inspection

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

4.2 Testing

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

4.3 Certification

2. Crane performance to satisfy requirements of the ABS surveyor for annual certification.

H-07 ALLIED CRANE ANNUAL INSPECTION

PART 5: DELIVERABLES:

5.1 Drawings / Reports

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

5.2 Spares

1. N/A

5.3 Training

1. N/A

5.4 Manuals

1. N/A

H-08 FRESH WATER TANK CLEANING AND INSPECTION

1. TECHNICAL DESCRIPTION:

General

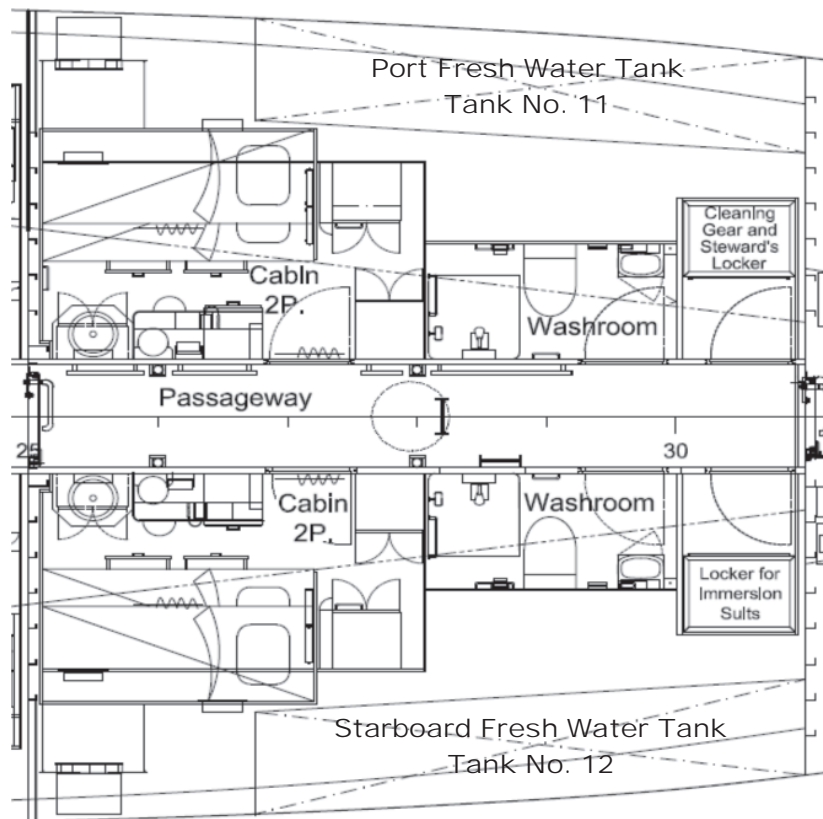
1. The intent of this specification item is to open the fresh water tanks, clean, inspect and touch up the coating.

Table H-7.1 Fresh Water Tanks

ID	Tank Name	Location	Volume	Manhole Location
Tank 11	FW Tank Port	Fr 26.75-31	3.205 cu M	Behind Port Shower Stall Access – Two manhole covers
Tank 12	FW Tank Stbd	Fr 26.75-31	3.205 cu M	Behind Stbd Shower Stall Access – Two manhole covers

Contractor must drain the tanks of water. The manhole covers shall be removed from each tank by Contractor. Contractor shall provide each tank with a mechanical ventilation/extraction system, vented to the outside of the ship. Good ventilation shall be provided and any blowers/extractors shall ensure good air movement and solvent vapour removal from the lowest point in the tanks. Vapours, dust, dirt, etc. shall not be allowed to enter the Accommodation space of the ship and shall be directed by flexible ducting to the outside of the vessel.

H-08 FRESH WATER TANK CLEANING AND INSPECTION



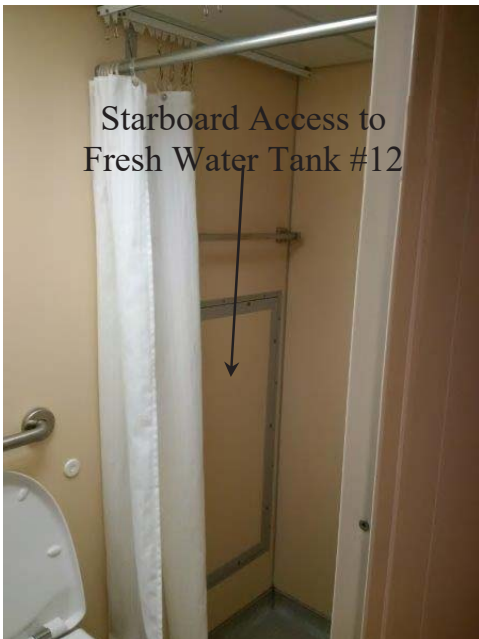
H-08 FRESH WATER TANK CLEANING AND INSPECTION

Bow Thruster Compartment

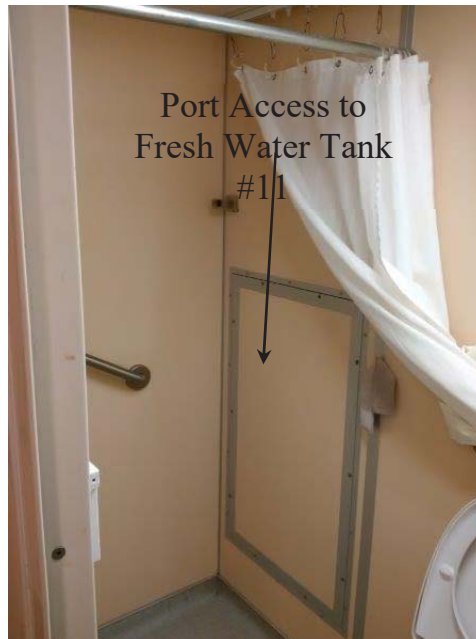


Access location to tanks – Port and Starboard Washrooms

Starboard Access to
Fresh Water Tank #12



Port Access to
Fresh Water Tank
#11



H-08 FRESH WATER TANK CLEANING AND INSPECTION

The void space in the fresh water tank areas – hull plate, tanks and framing are insulated – be careful on entry

Contractor shall allow for 3m2 of repairs to insulation – remove old damaged, supply and install new

Foil back / yellow soft insulation – bid on 2 inch thick

2. Tanks must be certified safe for personnel to enter prior to any work being carried out internally. Contractor is responsible for arranging for a certified Marine Chemist to visit the vessel and to carry out the necessary testing to obtain safe entry certificates. A copy of a gas free certificate shall be given to the CGTA prior to personnel entering the tank and a copy of each certificate shall be posted in a conspicuous location in close proximity to the manhole cover for each tank. Spaces shall be tested each day that personnel are required entry in the tanks. Contractor shall take note of the DFO/5737 Fleet Safety Manual, 7.B.3 - ENTRY INTO CONFINED SPACES.

3. Contractor must open both tanks and remove any remaining water from the tanks. The amount is estimated to be approximately 20 L per tank.

4. Approximate surface area of the tanks;

44 square meters for Starboard

44 square meters for Port

5. The internals of each tank shall be hydro-blast clean (2500 psi maximum). Contractor shall protect each tank sounding transducer and temperature transducer prior to commencing work and for the duration of all work in the tanks.

6. Contractor shall take precautions to ensure that no damage, unnecessary cleaning, or repairs shall occur from hydro blasting and/or the application of coatings. Contractor shall ensure that every internal tank opening, where paint chips and debris from hydro blasting can gain entry, is suitably covered. Measures shall be taken to ensure that surfaces and equipment other than those specified are not coated and that any inlets or discharges will not be blocked by the coating or grit.

7. Contractor will perform 20 shots of Ultrasonic NDT on the portion of deflected hull plating within the port freshwater tank. Any repairs to the affected hull plating will be negotiated under PSPC 1379 action.

H-08 FRESH WATER TANK CLEANING AND INSPECTION

8. Any rust areas and/or bare areas in the tanks shall be power tool buffed with a hand wire wheel to remove rust and bring areas to clean metal surfaces. The bare areas shall be buffed to SSPC-SP-3 standards. Contractor shall be responsible for disposing of all removed paintwork, scale, dirt, etc. in an environmentally safe manner and shall demonstrate compliance to the CGTA.

9. Upon completion of **hydro** blasting and the removal of all debris, both tanks shall be thoroughly wipe down using lint free material or air swept to remove all visible signs of moisture on all surfaces. Contractor shall supply industrial dehumidification equipment to remove all moisture from each tank to a humidity level as required by the coating manufacturer for the application of their product. Contractor shall demonstrate that these conditions are met to the CGTA prior to the application of each coat. Contractor shall ensure that each coating application is thoroughly dry before any further applications take place. Contractor shall be responsible for landing this equipment on board and the subsequent removal including all personnel, hardware, lifting equipment, etc. Contractor shall also be responsible for monitoring this equipment as required.

10. Upon completion of **hydro** blasting all residue and debris shall be cleaned and removed from the tanks. Upon completion of all cleaning, the CGTA and attending ABS surveyor and local accredited Health Inspection Representative shall thoroughly inspect the tank internals.

11. Contractor is responsible for arranging and co-ordination the ABS surveyor and Health Inspection Representative for all required inspections identified in this specification item.

12. The Contractor must arrange for a certified NACE level two surveyor to oversee/ensure the coating system is applied as per the manufacturers specification. The NACE inspector will give a paper or electronic report on the coating application.

13. All distributed areas shall be coated with 1 coat of Royal Coatings Easy-prime and **1 or 2** coats of Royal Coatings Easy Flex (**as per manufacturers recommendation**). The **3** coats shall be applied to yield 5 mils DFT per coat, with a suitable drying time provided for between coats. Contractor will supply and maintain heating equipment to obtain a tank surface temperature of 18 to 20 degrees Celsius on steel. Steel shall be coated during periods of drying and curing. The tanks shall be allowed to cure as per the manufacturers recommendations under these conditions prior to being filled. When coating is thoroughly cured, tank shall be inspected by CGTA and local accredited health inspector. Coating adhesion and condition shall be acceptable to the CGTA and local accredited health inspector. For bid purposes, Contractor shall bid on repairing 5 square meters and provide a unit cost for repairing 1 square meter for adjustment purposes through PSPC 1379 action.

14. Upon completion of the above work and to the satisfaction of the Chief Engineer and accredited health inspection representative, tanks shall be wiped clean. Sounding pipes, suction pipes and vents shall be proven clear prior to filling the tanks with water. All debris shall be removed ashore and each tank closed up in good order. The Chief Engineer shall examine each tank prior to final closing. Manhole covers shall be replaced using new 1/4 inch neoprene gaskets.

15. Upon completion of all work each tank shall be filled with fresh water (contractor supply). Each vent shall be removed and each tank shall be filled to overflowing for a hydrostatic test on

H-08 FRESH WATER TANK CLEANING AND INSPECTION

each tank to the satisfaction of the ABS surveyor. Vents shall be installed with new contractor supply gaskets upon completion of all work.

16. Contractor shall supply and add 12% chlorine to each tank and test to ensure a minimum level of 50 mg/l free chlorine. The solution shall be circulated by ship's personnel and then let set for 24 hours.

17. The super-chlorinated water shall then be run through various potable water piping systems on board the vessel for at least one hour. Testing shall be carried out to ensure that the super-chlorinated solution is flowing through each tap. Contractor shall test various locations to prove this.

18. Upon completion of super-chlorinated, the tank solutions shall be neutralised in each tank using CFM 35% hydrogen peroxide. The contents of the tank water shall be tested to determine that the chlorine has been neutralised. Once this has been achieved Contractor shall remove and dispose of the water. Contractor shall submit a type written report to the Chief Officer showing the results of the various tests during the super-chlorinated /de-chlorination process.

19. Upon completion of all testing, the contractor must fill the tanks with potable water. Contractor shall dose and test the tank contents until a free chlorine maintenance level of 0.2-0.5 mg/l of free chlorine has been attained.

2.2 Location

1. Below main deck port and stbd washrooms (hatch cover), BT compartment

2.3 Interferences

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

3: REFERENCES:

3.1 Guidance Drawings/Nameplate data

1. N/A

3.2 Standards and Regulations

1. DFO/5737 Fleet Safety Manual, 7.B.3 - ENTRY INTO CONFINED SPACES.

H-08 FRESH WATER TANK CLEANING AND INSPECTION

3.3 Allowances

1. N/A

3.4 Owner Furnished Equipment

1. N/A

4: PROOF OF PERFORMANCE:

4.1 Inspection

1. Contractor shall arrange and co-ordinate the visits required for the Provincial Health Inspector or accredited testing authority.
2. CG will arrange a 3rd party NACE surveyor (level 2) to oversee coating application of this specification item.

4.2 Testing

1. Technical description covers testing

4.3 Certification

1. Contractor must obtain test certificates from the Provincial Regulator that certifies that the water in the tanks as "fit to drink". These certificates must be passed on to the CGTA.
2. Contractor must obtain test certificates from an independent lab that certifies the water in the tanks meets FSM standards. These certificates must be passed on to the CGTA.
3. Contractor must obtain NACE (level 2) report from the NACE surveyor on the fresh water tank coating application. This report must be given to the CGTA

5: DELIVERABLES:

5.1 Reports, Drawings and Manuals

1. Contractor/NACE inspector to deliver coating application report to CGTA

5.2 Spares

1. N/A

5.3 Training

1. N/A

H-09 VENT AND AIR PIPE MODIFICATION

1: SCOPE: The purpose of this specification item is to Modifying 12 air pipes and 3 vent pipes to meet ABS coaming height standards.

2: TECHNICAL DESCRIPTION:

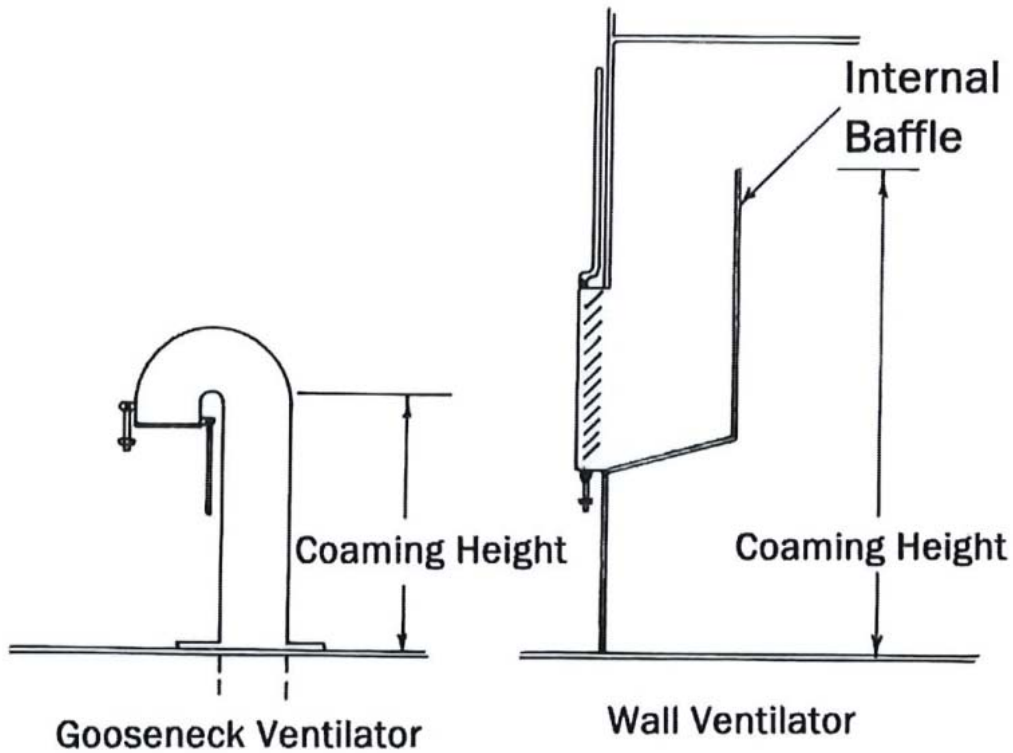
2.1 General

1. The contractor must modify all vent/air pipes in the following list to meet ABS minimum coaming height requirements.

	No & Deck fitted on	Closing Appliances	Remark	Required height	Approx. height	Modified Height
Ventilators	Main Deck (s)/ 1 No, Goose neck	Hinged Cover 1 Latch	SG Flat exhaust	900	809	
	Main Deck (s), 1 No, Goose neck	Hinged Cover 1 Latch	SG Intake	900	807	
	Main Deck (p), 1 No, Goose neck	Hinged Cover 1 Latch	SAR Medical Lckr	900	868	
	Main deck Fr.1 +145 (P), 1 No	Automatic (float ball)	Ballast - tank 17	760	646	
	Main deck Fr.1 +155 (S), 1 No	Automatic (float ball)	Ballast - tank 16	760	646	
	Main deck Fr.9 - 335 (P), 1 No	Automatic (float ball)	Fuel oil storage/overflow - tank 9	760	494	
	Main deck Fr.9 +150 (P), 1 No	Automatic (float ball)	Tanks 6 & 7b	760	520	
	Main deck Fr.15 - 295 (S), 1 No	Automatic (float ball)	Dirty oil & sludge - tank 15	760	455	
	Main deck Fr.15 - 90 (S), 1 No	Automatic (float ball)	M.E. Lub. oil -tank 5	760	458	
	Main deck Fr.17 - 200 (P), 1 No	Automatic (float ball)	Bilge water -tank 4	760	454	

Air pipes	Main deck Fr.30 +150 (P), 1 No	Automatic (float ball)	Fresh water - tank 11	760	510	
	Main deck Fr.30 +150 (S), 1 No	Automatic (float ball)	Fresh water - tank 12	760	510	
	Main deck Fr.9 - 150 (P), 1 No	Automatic (float ball)	Grey water -tank 7a	760	455	
	Main deck Fr.8 +341 (S), 1 No, Goose neck		Air Receiver safety valve AMR	760	450	
	Main deck Fr.11 - 410 (S), 1 No Goose neck		Air Receiver safety valve MMR	760	450	

2. Contractor must not exceed the minimum coaming height by 100 mm. The following is sketch showing how coaming measurements are taken:



3. Contractor must use the same materials as the parent metals on the existing pipes to make the required modifications. Spool pieces will be accepted.

4. Each pipe, once modified, should be approved by the CGTA before installing.

5. Once the pipe is modified and approved for installation it must be painted as per the existing pipe.

6. After the work is complete the contractor must take a full set of coaming measurements for all 15 affected vent/air pipes. The measurements must be recorded in the provided table under "Modified Height", verified and approved by ABS.

H-09 VENT AND AIR PIPE MODIFICATION

2.2 Location

1. Various locations around the ship

2.3 Interferences

1. Contractor is responsible for identifying any interference items and taking the precautions to remove to remove them, store them in safe location and reinstalling them upon completion of the work.

3: REFERENCES:

3.1 Guidance Drawings/Nameplate Data

1. Air pipe and sounding diagram
2. Pipe schedule AF6099-50000-04_AF

3.2 Standards and Regulations

1. Contractor shall refer to General Notes for any applicable standards and regulations.
2. ABS vent and air pipe coaming requirements.

3.3 Allowances

1. N/A

3.4 Owner Furnished Equipment

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

4: PROOF OF PERFORMANCE:

4.1 Inspection

1. CGTA will inspect all modified air/vent pipes before being installed on the ship

4.2 Testing

1. All modified vent pipes, once installed, must have their coaming height measured and recorded in the provided table

4.3 Certification

1. N/A

H-09 VENT AND AIR PIPE MODIFICATION

5: DELIVERABLES:

5.1 Reports, Drawings and Manuals

1. Contractor must deliver the completed table included in the Technical Description with the modified heights recorded and approved by ABS.

5.3 Spares

1. N/A

5.4 Training

1. N/A

H-10 LEAD COATING SURVEY & MANAGEMENT PLAN

1. SCOPE OF WORK

The intent of this specification is for the Contractor to obtain the services of a qualified Environmental Hazardous Material Sub-Contractor to conduct a coating survey and test for lead based paint on all accessible areas of the vessel. The Sub-Contractor must create a Vessel Specific Coating Management Plan (VSCMP) using the survey results. Upon completion, the VSCMP must be delivered to the CGTA and will become property of CCG to be used, copied, edited and distributed as CCG sees fit. Many of the work items in this specification are dependent on the results of the lead testing. Therefore all testing must be conducted in coordination with the refit spec items as early as possible to reduce delays.

2. TECHNICAL DESCRIPTION

2.1. General

1. The Contractor must obtain the services of qualified Environmental Hazardous Material Sub-Contractors to conduct a detailed coatings survey, inspecting for lead content in all accessible spaces on board the vessel. This survey will be done in accordance with the CG Technical Bulletin CCGC 04-2020 Paint Containing Lead on CCG Vessels.
2. The Contractor must include an allowance of \$50,000 to cover the services of qualified Environmental Hazardous Material Sub-Contractors. The allowance will form part of the overall bid and will be adjusted up or down using the PSPC 1379 process upon proof of final invoice.
3. The Contractor must carry out lead testing on all accessible coated surfaces on board the vessel using a handheld XRF lead testing gun. (1) Reading must be taken every 5m² on flat surfaces or every 3m on surfaces like frames, pipes and cable trays. Additional readings must be taken directly on either side of a boundary between different types or colours of coatings. Any reading above 1.0mg/cm² (5000ppm) will be considered a positive reading. Contractor must have the testing carried out by a Natural Resources Canada certified technician, certified to NRCAN NDTCB XRF Operator program based on Health Canada Safety Code 32. Previous lead testing on other CCG vessels was conducted by Corey Randell from TEAM Industrial Services.

TEAM Industrial Services
Corey Randell, Operation Supervisor
61 Raddall, Unit Q
Dartmouth, NS, B3B 1T4
corey.randell@teaminc.com
Cell: 902 233 3859

4. Contractor must be aware that many paint readings will have to be taken at heights or in confined spaces. Any costs associated to access to these spaces/equipment can be included under the allowances in the services section 29h and must have CGTA approval. This includes equipment and services such as boom lifts, scaffolding, marine chemist and confined space rescue as required to complete the work specified for spec item H-10.

5. Any positive readings discovered must be brought to the immediate attention of the CGTA and the CG safety representative.
6. The complete set of the reading results must be sent to the CGTA for review prior to generation of the VSCMP. All areas remediated over the course of this work period must be captured and updated in the VSCMP upon conclusion of the work.
7. In the event of a confirmed positive reading, the Contractor must carry out extensive testing working outwards in a grid from the positive reading to determine the boundaries of the lead coating. Readings must be taken at a minimum of every 1m. Boundaries of all lead coatings must be indicated using red paint marker.
8. All test readings must be numbered and the corresponding number written on the coating with permanent marker. All readings must include information like the space, area or piece of equipment they were taken in/on, an approximate location within that space using fixed objects as reference point and the suspected type of coating.
9. Contractor must use all XRF lead testing readings and laboratory test results to create a Vessel Specific Coatings Management Plan (VSCMP). This plan will be similar to the Vessel Specific Asbestos Management Plan (VSAMP) and it can be used for reference. The VSCMP must be organized by room/space/equipment and must contain all lead testing data. Any locations/equipment that contain lead coatings must be well outlined in the VSCMP. The CGTA will hold a meeting with the Sub- Contractor to discuss the expectations of the VSCMP. The vessels VSAMP was created and maintained by Pinchin Ltd., contact information noted.

Julia Rose, PMP
Senior Project Manager, Hazardous Materials
Pinchin Ltd. | T: 902.461.9999 | C: 902.476.3693

2.2. Location

1. Throughout the entire vessel.

2.3. Interferences

1. The Contractor is responsible for removing, storage, and reinstallation of all interference items

3. REFERENCES

3.1. Guidance/Drawings/Data

1. CG ITS Technical Bulletin CCGC 04-2020 Paint Containing Lead on CCG Vessels.
2. APPENDIX C

3.2. Standards and Regulations

1. As indicated in CG ITS Technical Bulletin CCGC 04-2020 Paint Containing Lead on CCG Vessels.

3.3 Owner Furnished Equipment

1. Unless otherwise stated, Contractor must provide all materials, labour, and equipment required to perform all tasks identified in this specification.

4. PROOF OF PERFORMANCE

4.1 Inspection

N/A

4.2 Testing

The Contractor must carry out lead testing on all accessible coated surfaces on board the vessel using a handheld XRF lead testing gun. (1) Reading must be taken every 5m² on flat surfaces or every 3m on surfaces like frames, pipes and cable trays. Additional readings must be taken directly on either side of a boundary between different types or colours of coatings. Any reading above 1.0mg/cm² (5000ppm) will be considered a positive reading.

4.3 Certification

The XRF lead testing must be carried out by a Natural Resources Canada certified technician, certified to NRCAN NDTCB XRF Operator program based on Health Canada Safety Code 32.

5. DELIVERABLES

5.1 Reports

1. The completed Vessel Specific Coatings Management Plan for the CCGS Teather.

5.2 Drawings to be Updated by Contractor

1. N/A

H-11 TRAP HAULER INSTALLATION

The intent of this specification item is to install a trap hauler on the starboard main deck by making the necessary mechanical, hydraulic and electrical modifications. The specification comprises of five modifications that will complete the install. .

- S1) Railing modification
- S2) Davit arm construction
- S3) Davit base construction
- S4) Hydraulic modifications
- S5) Electrical modifications

The 5 statements of work and their corresponding drawings can be found under H-11 TRAP HAULER INSTALLTION in the supplied drawing package

L-01 ANNUAL MEGGAR READINGS

1: SCOPE:

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

2: TECHNICAL DESCRIPTION:

2.1 General

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

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

2.2 Location

2. Throughout the vessel

2.3 Interferences

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

L-01 ANNUAL MEGGAR READINGS

3: REFERENCES:

3.1 Guidance Drawings/Nameplate data

3. See Appendix "A"

3.2 Standards and Regulations

2. TP127E latest edition.
3. Canada Shipping Act 2001 - Machinery Inspection Regulations

3.3 Allowances

2. N/A

3.4 Owner Furnished Equipment

2. N/A

4: PROOF OF PERFORMANCE:

4.1 Inspection

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

4.2 Testing

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

4.3 Certification

3. N/A

L-01 ANNUAL MEGGAR READINGS

5: DELIVERABLES:

5.2 Reports, Drawings and Manuals

4.4 The Contractor must provide to the CGTA:

- Copies of the ship's megger report in electronic format as well as two typewritten copies.
- Updated reports for any circuits and/or deficiencies corrected with 1379 action.
- Copies of the survey credit for the inspection and meggering of the vessel's electrical circuits.

4.5 The Contractor must provide to the ABS surveyor:

- Copy of the updated Megger Report to obtain Survey Credit.

4.6 The Contractor must provide to the CGTA;

- Copy of the updated Megger report within 24 hours of completion of the work and two weeks prior to completion of the refit.

5.3 Spares

1.N/A

5.3 Training

1.N/A

T1 – GMDSS System Replacement

1. SCOPE OF WORK

- 1.1.1. The intent of this specification is for the contractor to replace the Sailor 5000 series GMDSS equipment installed onboard the CCGS Corporal Teather C.V. The Sailor 5000 series GMDSS equipment has exceeded its lifetime and is no longer supported by Sailor.
- 1.1.2. The specification consists of the removal of the existing Sailor 5000 series GMDSS equipment and the installation of the new Sailor 6000 series GMDSS equipment. Most Antennas and some cabling will be reused as specified in this document. There will be some relocation of existing antennas, equipment, and electrical outlets.



NOTE: Pictures in this document may vary from what actually exist depending on the stage of the installation. To be used as location reference only.

2. TECHNICAL DESCRIPTION

2.1. General

- 2.1.1. Prior to commencement of the work the Contractor will inform the Chief Engineer.
- 2.1.2. The Contractor will ensure that all electrical systems which may be affected by their work have been locked out and tagged out before commencement of any work.
- 2.1.3. The Contractor will ensure all work areas are neat and tidy at the end of the work day.

- 2.1.4. The Contractor will clean up all debris (including any removed wiring) and dispose of it as per Provincial Regulations.
- 2.1.5. The Contractor will ensure all removed deck-head and bulkhead panels are returned and fitted in good order and that all visible surfaces of the panels are cleaned to as found condition.
- 2.1.6. The Contractor will store all materials as instructed by Chief Engineer.
- 2.1.7. The Contractor will paint any new steel as directed by the Chief Engineer before installation of equipment.
- 2.1.8. The Contractor will repaint any areas damaged during the relocation, installation, or removal of equipment as directed by the Chief Engineer.
- 2.1.9. The Contractor will ensure all wiring is properly supported in accordance with accepted / approved practices.
- 2.1.10. The contractor will secure all new and disturbed wiring using existing cable trays.
- 2.1.11. When installing wiring in locations where trays do not exist the contractor will install the wiring using appropriate hangers.
- 2.1.12. The Contractor will ensure all penetrations through frames or brackets are in accordance with accepted / approved practices.
- 2.1.13. The Contractor will ensure all disconnected cables are labelled, stowed and protected.
- 2.1.14. The Contractor will ensure all unused electrical penetrations are closed in accordance with accepted / approved practices.
- 2.1.15. The Contractor will ensure all new and existing electrical penetrations are properly prepared and cleaned prior to hot work.
- 2.1.16. Any welding by the contractor will be completed to CWB's latest revision, or equivalent.
- 2.1.17. The Contractor will ensure that the surrounding area is properly cleaned to ensure the area is safe prior to any hot work.

- 2.1.18. The Contractor will provide and install all temporary staging, lifting appliances, and rigging.
- 2.1.19. Workers working aloft must be Fall Arrest Certified.
- 2.1.20. The Contractor is responsible for all air quality testing to ensure hot work and entry is permitted.
- 2.1.21. The Contractor will issue and post hot work permits and shall maintain a fire watch.
- 2.1.22. Areas where hot work is to be carried out are to be certified by a Chemist or other qualified person as determined by the Chief Engineer.
- 2.1.23. All Welders, Chemists, and Technicians for NDT testing must be certified.
- 2.1.24. The installation shall not be considered complete, until relocated or installed equipment has been tested, and considered operating as per the manufacturers specifications, to the satisfaction of the Chief Engineer, Class and/or Flag as applicable.

Work Overview

- 2.1.25. The Contractor will remove all components and cabling from the original GMDSS system (unless otherwise specified) as detailed later in the document. This includes:
 - 2.1.25.1. Two bay console (includes Sat-C display & antenna, & two printers)
 - 2.1.25.2. Battery Charger & Power Supply
 - 2.1.25.3. MF-HF Radio (includes control unit, transceiver, tuner, & transmit antenna)
 - 2.1.25.4. Navtex system (includes a receiver, antenna, display, & power supply)
 - 2.1.25.5. Associated wiring (roughly 50 cables of varying lengths) & junction boxes.

NOTE: Do NOT remove any of the VHF Antennas, the MF-HF Receive Antenna, the Portable VHF Radios, the EPIRB, the GMDSS batteries, the GMDSS DC junction box, or the wiring between that junction box and the batteries (Cables GMD-005-01, GMD-005-02, GMD-005-07).

- 2.1.26. The contractor will install a new GMDSS system as detailed in this document. This includes:

- 2.1.26.1. Two bay console (with Sat-C display & antenna, radio telex display, & two printers)
- 2.1.26.2. Two combination power supplies / battery chargers
- 2.1.26.3. Navtex system (receiver, antenna, display, & power supply)
- 2.1.26.4. Two VHF radios with handsets
- 2.1.26.5. MF-HF radio (control unit, transceiver, tuner, & antenna – requires welding)
- 2.1.26.6. Associated wiring & junction boxes.

- 2.1.27. The Contractor will relocate an Iridium Antenna from the Middle of the Wheelhouse Top to the Aft of the Wheelhouse Top and install a new cable as detailed later in this document.

- 2.1.28. The Contractor will replace several NMEA Distribution Units as directed later in this document.

- 2.1.29. The contractor will replace a 120Vac breaker in the electrical panel as detailed later in this document.

- 2.1.30. The contractor will relocate any interference items as detailed later in this document or directed by the On-Site CCG Technical Representative or the Chief Engineer. These are known to include:
 - 2.1.30.1. Two DGPS displays
 - 2.1.30.2. VHF Wideband Control Head, Speaker, & Mic
 - 2.1.30.3. Several 120Vac power outlets
 - 2.1.30.4. Wiring and Junction Boxes

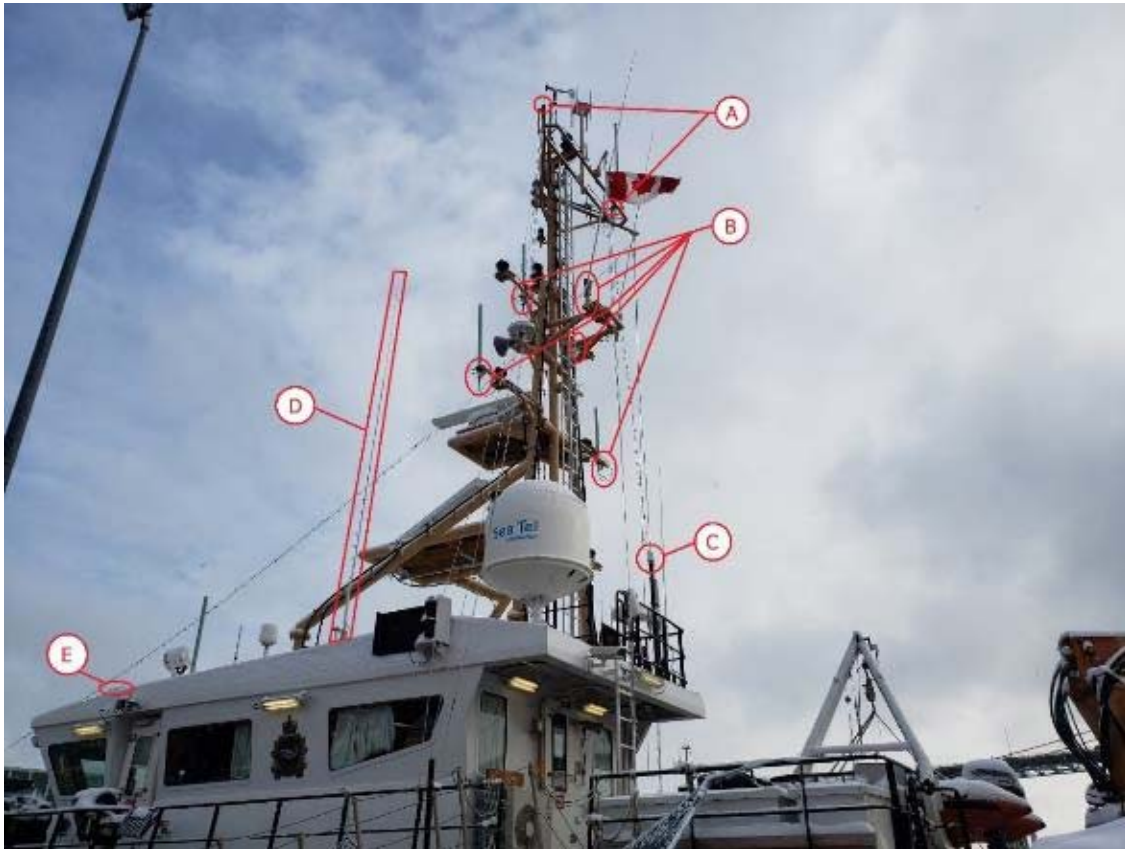


Photo #1 – Example of Completed Main Mast Work as View from Aft

2.1.31. The contractor will complete the following work as detailed later in this document:

- A) Replace the Sat-C and Navtex Antennas at the top of the mast (Total: 2)
Replace the cables to the Sat-C and Navtex Antennas
- B) Replace the cables to the GMDSS VHF Antennas and the MF Receive Antenna (Total: 5)
- C) Remove the MF-HF Antenna, Tuner, and cable from the Aft of the Bridge Top
Relocate the Iridium Antenna from the Middle of the Bridge Top to this Aft location
Remove the old Iridium antenna cable and install a new cable to the new location
- D) Modify the Old Iridium mount (requires welding, CCG will provide aluminum plates)
Install a new MF-HF Antenna, Tuner, and cable
- E) Remove the existing Quebec Police Antenna and cable
Install kick pipes (require welding)

Relocate the AIS and DGPS antennas (Total: 3)

- From: Top of Main Mast
- To: Forward Section of the Bridge Top (CCG will provided mount)

Remove old DGPS and AIS antenna cables

Install new DGPS and AIS antenna cables

NOTE #1: Distance from top of Wheelhouse to top of Main Mast is approximately 35 feet

NOTE #2: The Main Mast Ladder is NOT to be used – Issues have been identified with the way it was installed – A man lifting device (ex. Genie Boom) or staging will be required for any work aloft

DGPS & AIS Antenna Relocations

2.1.32. The contractor will relocate three GPS antennas (at positions #3, #4, & #38 - See

Dwg: C182001AL.dwg) from the top of the Main Mast down to the forward port side of the bridge top and remove associated cabling (POS-001, POS-015, and POS-025).

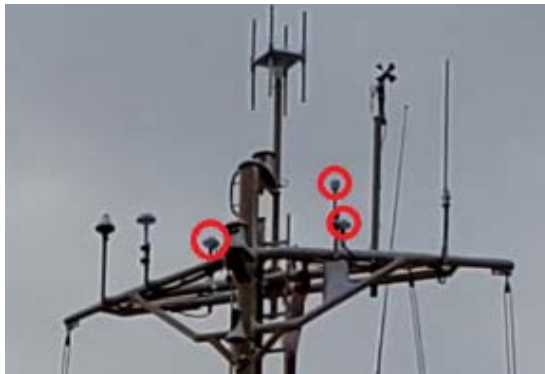


Photo #2 – Current Location of AIS/DGPS Antennas (To Be Relocated to Bridge Top)



Photo #3 – New Location for AIS/DGPS Antennas (Existing Antenna to be Removed)

2.1.32.1. The contractor will remove the existing Quebec Police Antenna at locations #27 and any associated cable.

2.1.32.2. The contractor will install two new kick pipes complete with glands on the bridge top on each side of existing kick pipe for Quebec Police antenna.

The kick pipes and the glands are to be types approved by the CCG On-Site Technical Representative and the Chief Engineer.

- 2.1.32.3. The contractor will install the CCG provided three-antenna mounting bracket onto the antenna mounting point where the Quebec Police Antenna was removed using a pipe to pipe clamp.
- 2.1.32.4. The contractor will install the AIS antenna and the two DGPS antennas onto the CCG provided mounting bracket.
- 2.1.32.5. The contractor will install new cables (POS-001A, POS-015A, & POS-025A) to these antennas as detailed in the cable list later in this document.

Main Mast Antenna Replacement

- 2.1.33. The Contractor will replace the Inmarsat C Antenna located near the top of Main Mast.



Photo #4 – Existing Sat-C Antenna (To Be Replaced)

- 2.1.33.1. The Contractor will remove the existing Inmarsat C Antenna on the Main Mast
- 2.1.33.2. The Contractor will remove the old Sat-C Antenna Cable (GMD-006)
- 2.1.33.3. The Contractor will install the new Inmarsat C Antenna on the Main Mast in the same location where the old Sat-C Antenna was removed
- 2.1.33.4. The contractor will install a new cable (GMD-3) to this antenna as detailed in the cable list later in this document.
- 2.1.34. The Contractor will replace the Navtex Antenna located near the top of Main Mast.



Photo #5 – Existing Navtex Antenna (To Be Replaced)

- 2.1.34.1. The Contractor will remove the existing Navtex Antenna on the Main Mast
- 2.1.34.2. The Contractor will remove the old Navtex Antenna Cable (NVT-002)
- 2.1.34.3. The Contractor will install the new Navtex Antenna on the Main Mast in the same location where the old Navtex Antenna was removed
- 2.1.34.4. The contractor will install a new cable (GMD-4) to this antenna as detailed in the cable list later in this document.

Main Mast Cable Replacement

- 2.1.35. The Contractor will replace the cables for the four GMDSS VHF antennas and for the GMDSS MF-HF receive antenna (Total of five antennas).
 - 2.1.35.1. The Contractor will disconnect and remove the cables (GMD-002, GMD-007, GMD-008, GMD-009, GMD-010) for these antennas.
 - 2.1.35.2. The contractor will install new cables for these antennas (GMD-21, GMD-22, GMD-23, & GMD-24) as detailed in the cable list later in this document.



Photo #6 – Existing Navtex Antenna (To Be Replaced)

Irridium Antenna Relocation

2.1.36. The Contractor will relocate the Irridium antenna from the middle of the Bridge Top to Aft

2.1.36.1. The Contractor will remove the existing MF-HF Antenna, Tuner, and Cable (TBA) from the aft of the Bridge Top. The contractor will dispose of this antenna.



Photo #7 – Existing MF-HF Antenna and Tuner (To be removed)

2.1.36.2. The contractor will remove the existing Irridium antenna and associated cable.



Photo #8 – Existing Irridium Antenna (To be Relocated)

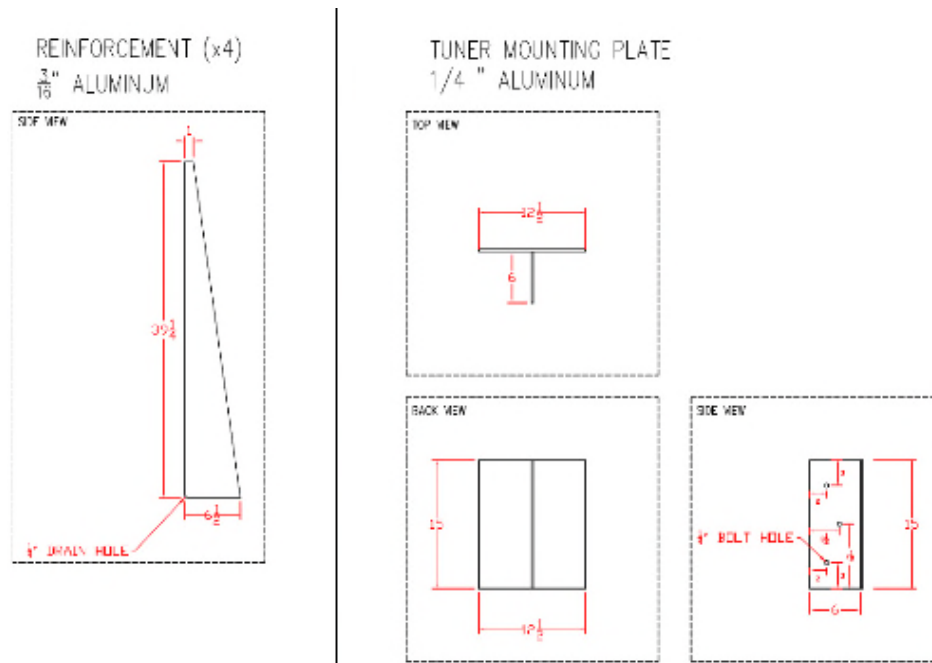
2.1.36.3. The contractor will install the Irridium antenna complete with new cable onto the post where the MF-HF antennas was removed. The contractor will create a hole in the pipe for the cable. The contractor will deburr this hole, paint any exposed metal to match existing, and route the cable to minimize chaffing.



Photo #9 – Example of a Relocated Iridium Antenna

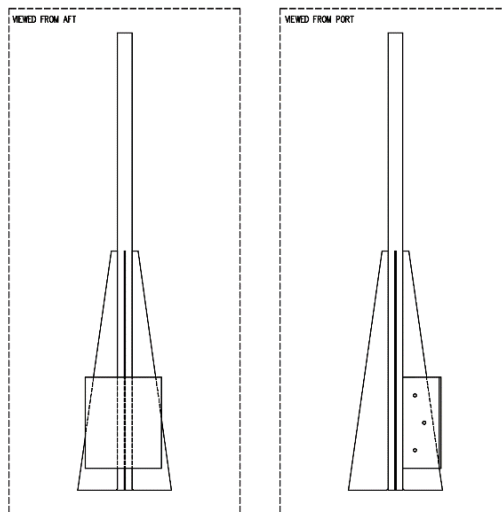
GMDSS MF-HF Transmit Antenna Installation

- 2.1.37. The Contractor will install a new GMDSS MF-HF Transmit Antenna where the Iridium antenna was removed. This requires modification of the existing antenna mount.
- 2.1.37.1. The Contractor will modify the antenna mount that was used for the Iridium antenna using the CCG provided aluminium plates so that it matches the installation on other MSPVs. This will require welding, priming, and painting at this location.



Drawing #1 – Aluminum Plates for Modifying the Antenna Mount

MODIFY EXISTING 2" SCHEDULE 40 ALUMINUM PIPE (6'3" TALL)



Drawing #2 & Photo #10 – Example of a Modified MF-HF Antenna Mount

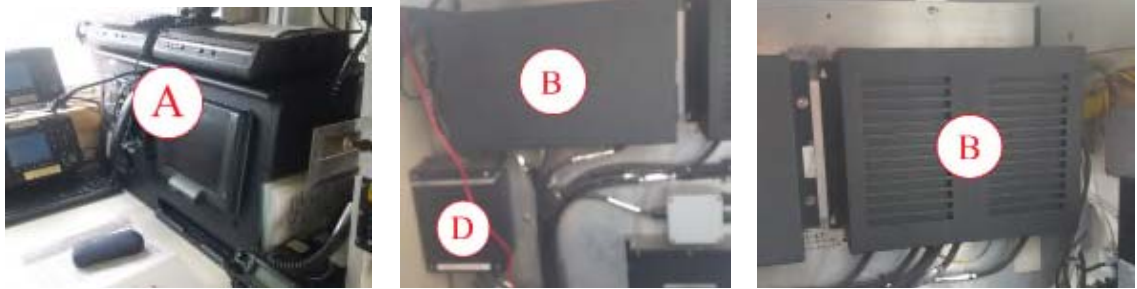
- 2.1.37.2. The Contractor will prime and paint any exposed metal to match existing as directed by the Chief Engineer before installing the equipment.
- 2.1.37.3. The Contractor will install the MF-HF tuner onto the bolt-on plate.
- 2.1.37.4. The Contractor will install cables as detailed in the cable list later in this document.
- 2.1.37.5. The Contractor will install the KUM 903 MF-HF Antenna as per the manufacturer's instructions using the CCG provided factory brackets



Photo #11 – Example of a Modified MF-HF Antenna Mount

Below Decks Equipment Removal

- 2.1.38. The Contractor will remove all below deck components and cabling from the original GMDSS systems (except for the GMDSS Portable VHF Radios). This equipment includes:



Photos #12 to #14 – Console, Power Supplys, & Battery Charger



Photos #15 to #17 –MF-HF Transceiver, VHF Radios, & Alarm Panel



Photo #18 & 19 – Navtex Receiver & Display

- A) Two bay console (includes Sat-C display, MF-HF Control Head, & two printers)
- B) Battery Charger & Power Supply Below GMDSS Desk
- C) RMF-HF Radio Transceiver, two VHF Radios, & Alarm Panel
- D) Navtex system (includes a receiver, display, & power supply)
- E) 120Vac Junction Box above the Galley Deckheads

F) All associated wiring unless otherwise noted

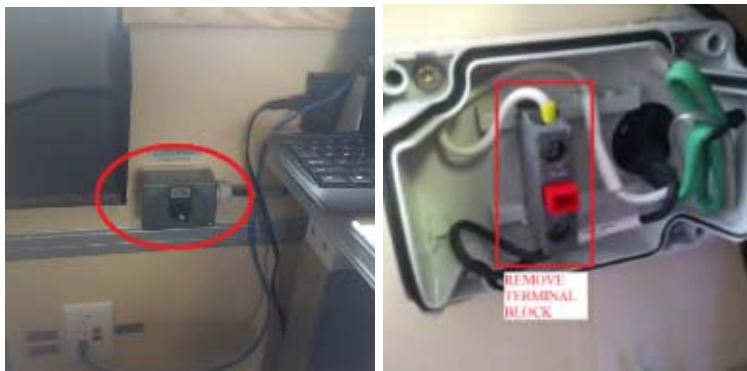
NOTE: Do NOT remove the Portable VHF Radios, the GMDSS batteries, the GMDSS DC junction box, or the wiring between that junction box and the batteries (Cables GMD-005-01, GMD-005-02, GMD-005-07)

- 2.1.39. The Contractor will disconnect and remove the RZ 255 (Modified) DGPS Distribution Unit from below the Chart Table. The contractor will remove cables POS-002, POS-014, and POS-021. All other cables associated with this piece of equipment will be retained and reused during this install (The RZ 255 is being replaced with a PRO-BUF-1, details follow later in this document).



Photo #20 – RZ 255 NMEA Distribution Unit below Chart Table

- 2.1.40. The Contractor will remove the terminal block from the DGPS selector switch Junction Box beside the GMDSS Console. This is being replaced with different blocks (See Equipment Installation Section below).



Photos #21 & #22 – DGPS Selector Switch and Block

Cable Removal

- 2.1.41. The contractor will remove all cables associated with the old GMDSS system unless otherwise specified in this document or directed by the On-Site CCG Technical Representative. Some of these cables have also been noted previously in other sections of this document. The cables to be removed are known to include:

E325, E325-01, E325-02, E325-04, GMD-001, GMD-002, GMD-003, GMD-004,

GMD-005-03, GMD-005-04, GMD-005-06, GMD-006, GMD-007, GMD-008, GMD-009, GMD-010, GMD-011, GMD-012, GMD-013, GMD-014, GMD-015, GMD-016, GMD-017, GMD-019, GMD-20, GMD-21, GMD-022, GMD-023, GMD-024, GMD-025, GMD-026, GMD-027, GMD-028, GMD-029, GMD-030, GMD-031, NVT-001, NVT-002, SPECIAL CABLE-01, POS-001, POS-002, POS-014, POS-021, POS-25

NOTE: The GMDSS Battery Cables (GMD-005-01, GMD-005-02, GMD-005-07) and the cable for connecting the GMDSS MF-HF Transmit Antenna to the Tuner (SPECIAL CABLE-02) will be retained and used as part of new the installation.

NOTE: If any Cables scheduled to be removed are found to run behind the Command Centre Rack and cannot be accessed without interfering with equipment in that rack the cables are to be cut back as far as possible and the remaining pieces labeled. The contractor will provide the On-Site CCG Technical Representative the label name and an estimated remaining length for any such cables.

Wheelhouse Equipment Relocation

2.1.42. The Contractor will relocate interference items as noted below and directed by the On-Site CCG Technical Representative to accommodate the equipment being installed.

2.1.42.1. The contractor will relocate the wideband radio control head currently located in front of the GMDSS console. The suggested new location is the shelf where the old Navtex receiver is being removed. The On-Site CCG Technical Representative will determine the exact location.



Photo #23 – Wideband VHF Control Head (To be Relocated)

2.1.42.2. The Contractor will relocate the lower two electrical outlets closest to the console. The upper outlet is fed from breaker L3-6 and the lower from E2-10 (confirm and lock out the breakers before continuing). The suggested location for these outlets is on the PORT side of the same column, or as otherwise directed by the On-Site CCG Technical Representative.



Photo #24 – Electrical Outlets closest to GMDSS Console (To be Relocated)

- 2.1.43. The contractor will relocate the SAAB R4 displays using the CCG provided bracket which will hold both displays. Install this bracket complete with displays in the location where the upper SAAB display is currently located on the windowsill or as otherwise directed by the On-Site CCG Technical Representative.



Photo #25 – SAAB R4 Display Units (To be Relocated)

- 2.1.44. The contractor will relocate the existing 24VDC junction box (JB AIS-01) and the NMEA combiner (RZ255) currently under the GMDSS desk on the aft side of the aluminium plate.



Photo #26 – JB AIS-01 & RZ255 Unit (To be Relocated)

- 2.1.44.1. The junction box will be moved elsewhere on the same side of the existing plate (see the plate layout later in this document). The suggested location is on the starboard side of the space below the GMDSS console.
- 2.1.44.2. The suggested location for the RZ255 Unit is on the starboard side of the space below the GMDSS console. The On-Site CCG Technical Representative will decide the exact location for the RZ255 Combiner.



Photo #27 – Suggested Located for RZ255 Unit

Wheelhouse Equipment Installation

NOTE 1: Wiring for equipment in the forward console requires that the contactor open the “false floor” in the wheelhouse:

- (1) Unmounted and store any interference items (ex. chairs)
- (2) Strip off the flooring material
- (3) Removed the metal plates

When all work in the forward console and below the “false floor” taking place during this refit has been completed the contractor will reinstall the metal plates, install new flooring material to match existing, and reinstall all removed interference items.

The contractor will provide flooring material that matches existing as determined by the Chief Engineer.

If applicable the contactor will replace any rivets that are removed from the metal plates with countersunk screws when the above items are reinstalled.

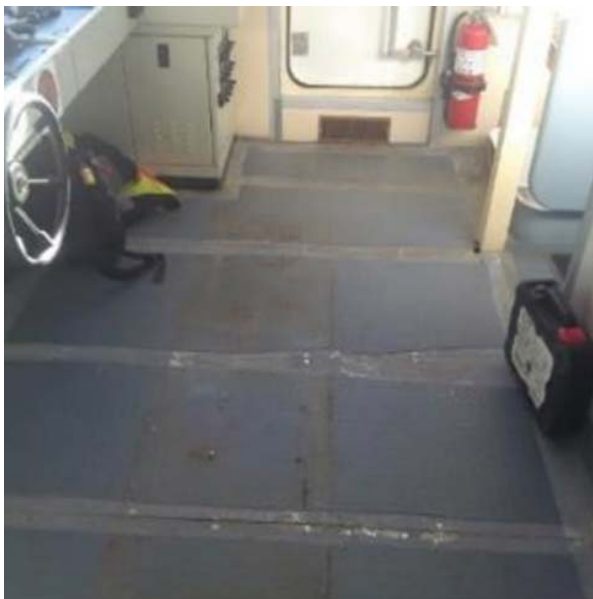


Photo #28 & #29 – MSPV Wheelhouse “False Floor”

NOTE 2: The post in the centre of the wheelhouse immediately forward of the GMDSS console contains cable routing for this install. The post is riveted and glued together. The contractor will carefully cut the post open. When the cable runs are complete the contractor is to have the post repaired to match existing. Any rivets that are removed are to be replaced with screws when the above items are reinstalled.

2.1.45. The Contractor will install a new Sailor GMDSS 6000 series console in the location where the Sailor 5000 series GMDSS console was removed.

2.1.45.1. If the console provided is a three bay version the contractor will remove the middle bay, and reassemble the console so that it consists of only two sections each of which contains a display, printer, connection board, and keyboard. Return any unused equipment and parts to the CCG.

2.1.45.2. The contractor will install the new console as close to the PORT bulkhead as possible while still allowing for existing cables.

NOTE: Watch for clearance of GPS cables that run along the port side of the console below the window

2.1.45.3. The new console is roughly 3 inches wider than the old one.

2.1.45.4. The MF/HF Telex Terminal will be on port side and the Mini C Terminal on starboard side.

2.1.45.5. The contractor will install the light and dimmer switch on the aft side of the console near to the displays in such a way that the goose neck light can be pointed to the keyboards as required. The exact location is to be determined by the CCG on-site technical representative.

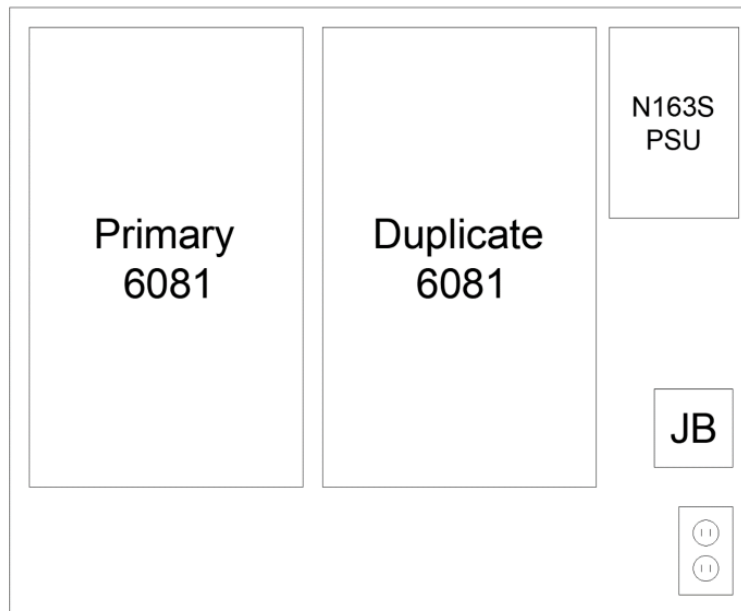
2.1.46. The Contractor will install two 6081 Power Supply / Charger units, a N163S Power Supply*, and a Navtex 24VDC junction box below the GMDSS console on the AFT side of the existing aluminium plate**.

***NOTE:** Ensure N163S has been properly tapped for 115V and the fuse is the proper 1A fuse recommended for this unit when tapped for 115V. The Unit is supplied from factory tapped for 250V with a 2A fuse.

****NOTE:** This is a 3/16 aluminum plate with available space approximately 38" tall by 31" long. Equipment is mounted on both sides. Relocate equipment and replace hardware as necessary and directed by the On-Site CCG Technical Representative to accommodate new and existing equipment.

2.1.46.1. If a kick plate is present the contractor may remove it for better access to this area during the installation. If removed the plate will be re-secured using screws when work is complete

2.1.46.2. The exact location of the equipment is to be determined by the on-site technical representative. The contractor will relocate equipment and replace hardware as necessary and directed by the On-Site CCG Technical Representative to accommodate new and existing equipment on this plate. The suggested layout is shown below.



Drawing #3 – New GMDSS Equipment Layout

NOTE: Primary 6081 and Duplicate 6081 Power Supplies Must be Installed at least *Several* Inches Apart for Heat Dissipation – Do NOT Share Mounting Hardware

- 2.1.47. The contractor will install a new Navtex Display/Control Unit above the window near the GMDSS console using the CCG provided bracket.
- 2.1.48. The contractor will install a MF/HF control-head c/w Handset, on the windowsill on the PORT side of the console. Use the factory supplied U-Mounting Bracket and Handset Cradle.
- 2.1.49. The contractor will install the Sailor 6301 Alarm Panel in the Forward Console where the previous version of this equipment was removed.
 - 2.1.49.1. If necessary the contractor will cut the console to accommodate the new Alarm Panel.
 - 2.1.49.2. The CCG will provide a bracket.

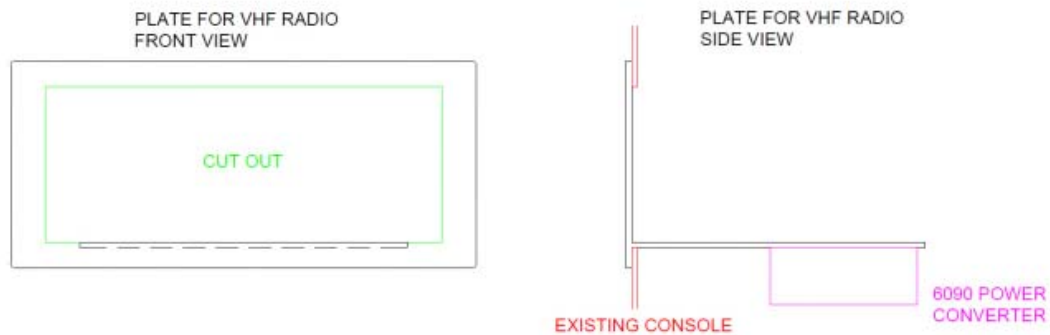
- 2.1.49.3. The contractor will install a Junction Box c/w terminal blocks in the forward console near the new Alarm Panel as directed by the CCG On-Site Technical Representative. This will be used to extend the factory power cable.
- 2.1.50. The contractor will install the two Sailor 6222 VHF radios and 6090 Power Converts in the Forward Console where the previous versions of this equipment were removed.
- 2.1.50.1. The existing clips for the handsets may be retained and reused if they are in good condition.
- 2.1.50.2. The contractor will cut the console as needed to fit the new VHF radios and brackets (the new radios are 30mm wider than the radios being removed).
- 2.1.50.3. The contractor will install a 6208 junction box in the forward console as directed by the CCG On-Site Technical Representative. The suggested location for this junction box is above the Jastram Steering Unit, as shown below, with the entrance for cables on the Port side. This will be used to provide GPS to the radios.

NOTE: When wiring 6208 junction box isolate individual unused wires with heat shrink (12VDC and radio control functions are present when radio powered on).



Photo #30 – Inside MSPV Wheelhouse Forward Console

- 2.1.50.4. The CCG will provide brackets. The brackets are designed to hold the Sailor 6090 Power Converts as shown below.



Drawing #4 – VHF Radio Brackets

- 2.1.51. The contractor will install the two CCG provided Actisense Pro-Buf-1 devices, a junction box with terminals for 24VDC power, and the Navtex Receiver below the Chart Table Desk where the RZ 255 for GPS was removed from. Mount the Pro-Buf-1 devices far enough forward that the existing wiring for GPS distribution will reach the ports. See an examples of this below.



Photo #31 & #32 – Example Install of New PRO-BUF-1 & Navtex Units

- 2.1.52. The contractor will install CCG provided ABB Terminal Blocks inside the DGPS Selector Switch Junction Box as shown in the Primary DGPS Drawing C182-027-BD.
- 2.1.53. The contractor will replace the existing SARTs located near each of the Wheelhouse outer doors and their mounts with the new equipment supplied.

Emergency Switchboard Equipment Installation

The contractor will install the CCG provided ABB S202-C16 Breaker where the ABB S202-C25 breaker labeled 3Q25 (E325) was removed from. Label to match existing.

NOTE: If there are breakers available in this panel of the specified types (16A & 10A) used during this installation these may be used instead of replacing this breaker pending approval by the CCG On-Site Technical Representative and the Chief Engineer.

Grounding of Equipment

- 2.1.54. The contractor will ground the system components as per the manufacturer's specifications and the instructions below.

Ground the following using a piece of Copper Ground Strap (Between 3" and 4" Wide):
MF/HF Tuner Unit Sailor TU6384

Ground the following using #6AWG Green wire:
Console Bays
MF/HF Transceiver Unit Sailor TU6363

Ground the following using #10 AWG Green wire:
Sailor 6081 Power Supplies/Chargers

Ground the following using #12AWG Green wire where required:
Sailor 6222 VHF Radios
Sailor 6090 Power Converters
Sailor 6018 Message Terminals
MF/HF Control Unit CU 6301
Sailor 6101 Alarm Panel
Sailor 6004 Navtex Control Panel
Sailor 6390 Navtex Receiver
Sailor N163S Power Supply
Sailor GMDSS Printers

Any additional equipment being installed or relocated which requires grounding will be grounded as per the manual and/or as directed by the CCG On-Site Technical Representative.

Cable Installation

2.1.55. The contractor will install, label and terminate the following cables (Table 1) as per DWG. C182-001-AL, C182-020-BD, C182-027-BD, C182-028-BD, and C182-033-BD.

NOTE 1: ensure cables shields are terminated correctly as per GMDSS Console manual Section 3.1 Electrical Installation where applicable.

NOTE 2: As noted earlier in this document the cables to the Forward Console run under a “False Floor”. Running these cables requires removal of the chairs and their rails/stands in the wheel house along with the flooring material and several metal plates. The metal plates may be riveted or screwed in place. When installation is complete the contractor must reinstall all equipment and material that was removed and repair the location to match existing, including replacing the flooring material. Replace any rivets that are removed with screws when the above items are reinstalled.

NOTE 3: As noted earlier the post in the centre of the wheelhouse immediately forward of the GMDSS console contains cable routing for this install. The post is riveted and glued together and must be carefully cut open. When the cable runs are complete the contractor is to have the post repaired to match existing. Replace any rivets that are removed with screws when the above items are reinstalled.

Table 1 Cable List

LABEL	TYPE	FROM	TO	Approximate Length (Feet)
GMD-1	LMR400FR	TU6363 MF-HF Transceiver TX Connection under GMDSS Desk (forward)	MF-HF Antenna Tuning Unit Wheelhouse Top	15
GMD-2	LMR400FR	TU6363 MF-HF Transceiver RX Connection under GMDSS Desk (forward)	Connection Box for Starboard MF-HF Receive Whip (Ant #18) on Main Mast	60
GMD-3	Factory Cable	Starboard Console Connection Board J40 Terminal	New Sat C Antenna on Main Mast (Ant #16)	60
GMD-4	LMR400FR	Sailor 6390 Navtex Receiver under Chart Table	New Active Navtex Antenna on Main Mast (Ant #31)	60

LABEL	TYPE	FROM	TO	Approximate Length (Feet)
GMD-6	Cat6 patch cable of appropriate length	TU6363 MF-HF Transceiver LAN Port under GMDSS desk (forward)	MOXA Switch A Port #2 inside GMDSS Console	10
GMD-7	Factory supplied with MF/HF Sailor 6350	MF/HF Sailor TU6363 Transceiver TU-CU BUS Connection under GMDSS Desk (forward)	Console 6000 connection board "A" J35 TU connection inside GMDSS console	10
GMD-8	Cat6 patch cable	Sailor 6101 Alarm Panel in Forward Wheelhouse Console	MOXA Switch C Port #1 inside GMDSS Console	20
GMD-9	SHAWFLEX SE010E2503F0801 3C 16mm ² (6 AWG)	MF/HF Sailor TU6363 Transceiver 24VDC Connection under GMDSS Desk (forward)	Primary 6081 Power Supply and Charger X15 Connection under GMDSS Desk (aft)	10
GMD-10	Belden 9316	Console 6000 connection board "B" J43 connection inside GMDSS console	Duplicate 6081 Power Supply and Charger X15 Connection under GMDSS Desk (aft)	10
GMD-11	Belden 9316	Console 6000 connection board "B" J52 connection inside GMDSS console	Duplicate 6081 Power Supply and Charger X12 Connection under GMDSS Desk (aft)	10
GMD-12	Factory Supplied with Sailor 6101 Alarm panel	JB for Sailor 6101 Alarm Panel in Forward Wheelhouse Console	Sailor 6101 Alarm Panel in Forward Wheelhouse Console	5
GMD-12-1	Belden 9312	Primary 6081 Power Supply and Charger X13 Connection under GMDSS Desk (aft)	JB for Sailor 6101 Alarm Panel in Forward Wheelhouse Console	30

LABEL	TYPE	FROM	TO	Approximate Length (Feet)
GMD-13	Belden 9316	Console 6000 connection board "A" J52 connection inside GMDSS console	Primary 6081 Power Supply and Charger X12 Connection under GMDSS Desk (aft)	10
GMD-14	Belden 9316	Console 6000 connection board "B" J61 connection inside GMDSS console	Duplicate 6081 Power Supply and Charger X14 Connection under GMDSS Desk (aft)	10
GMD-15	Belden 9312	Sailor 6090 Power Converter #2 in Forward Wheelhouse Console	Primary 6081 Power Supply and Charger X11 Connection under GMDSS Desk (aft)	20
GMD-15-1	Factory Supplied with Sailor 6222 VHF	Sailor 6090 Power Converter #2 in Forward Wheelhouse Console	6222 VHF #2 Power Connection in Forward Wheelhouse Console	5
GMD-16	Belden 9312	Sailor 6090 Power Converter #1 in Forward Wheelhouse Console	Duplicate 6081 Power Supply and Charger X11 Connection under GMDSS Desk (aft)	20
GMD-16-1	Factory Supplied with Sailor 6222 VHF	Sailor 6090 Power Converter #1 in Forward Wheelhouse Console	Sailor 6222 VHF #1 Power Connection in Forward Wheelhouse Console	5
GMD-17	Belden 8723	Primary 6081 Power Supply and Charger X8 Connection under GMDSS Desk (aft)	Duplicate 6081 Power Supply and Charger X8 Connection under GMDSS Desk (aft)	5
GMD-18	Standard AC Cord	E329 Outlet Under GMDSS Desk	N163S Power Supply Mains AC Connection Under GMDSS Desk	5
GMD-18-1	Belden 9316	N163S Power Supply 24V Connection under GMDSS Desk	24VDC Junction Box under GMDSS desk	5
GMD-18-2	Factory Supplied with Sailor 6004	24VDC Junction Box located underneath GMDSS desk	Sailor 6004 Navtex Control Panel above GMDSS Console	20

LABEL	TYPE	FROM	TO	Approximate Length (Feet)
GMD-18-3	Belden 9316	24VDC Junction Box located underneath GMDSS desk	6390 Navtex Receiver underneath Chart Table	5
GMD-19	Cat6 Patch Cable	MOXA Switch A Port #4 inside GMDSS Console	MOXA Switch B Port #4 inside GMDSS Console	5
GMD-20	Cat6 Patch Cable	MOXA Switch B Port #2 inside GMDSS Console	MOXA Switch C Port #2 inside GMDSS Console	5
GMD-21	LMR400FR	6222 VHF #1 DSC Antenna Connection in Forward Wheelhouse Console	Antenna # 47 - Sinclair 225M Antenna on Main Mast – Lower Port	60
GMD-22	LMR400FR	6222 VHF #1Tx/Rx Antenna Connection in Forward Wheelhouse Console	Antenna # 46 - Sinclair 225M Antenna on Main Mast – Upper Port	60
GMD-23	LMR400FR	6222 VHF #2 DSC Antenna Connection in Forward Wheelhouse Console	Antenna # 20 - Sinclair 225M Antenna on Main Mast – Upper Starboard	60
GMD-24	LMR400FR	6222 VHF #2Tx/Rx Antenna Connection in Forward Wheelhouse Console	Antenna # 19 - Sinclair 225M Antenna on Main Mast – Lower Starboard	60
GMD-25	Factory Supplied with Message Terminal	Message Terminal for Telex X5 Connection in GMDSS Console	Connection Board “A” J30 Connection inside GMDSS console	5
GMD-26	Factory supplied with MF Control Head	MF-HF Controlhead TU-CU Connection on Windowsill by GMDSS Console	Connection Board “A” J34 TU-CU BUS Connection in GMDSS Console	15
GMD-27	Factory supplied with MF Control Head	MF-HF Controlhead ACC Connection on Windowsill by GMDSS Console	Connection Board “A” J31 ACC Connection in GMDSS console	15

LABEL	TYPE	FROM	TO	Approximate Length (Feet)
GMD-28	Belden 9316	Connection Board "A" J10 Connection in GMDSS console	Primary 6081 Power Supply and Charger X14 Connection under GMDSS Desk (aft)	10
GMD-29	Cat6 Patch Cable	Message Terminal for Sat C LAN Connection in GMDSS Console	MOXA Switch A Port #5 inside GMDSS Console	5
GMD-30	Cat6 Patch Cable	Primary 6081 Power Supply and Charger X6 Connection under GMDSS Desk (aft)	MOXA Switch B Port #1 inside GMDSS Console	10
GMD-31	Cat6 Patch Cable	Duplicate 6081 Power Supply and Charger X6 Connection under GMDSS Desk (aft)	MOXA Switch A Port #3 inside GMDSS Console	10
GMD-32	Cat6 Patch Cable	6004 Navtex Control Panel LAN Connection Above Port Window	MOXA Switch C Port #2 inside GMDSS Console	20
GMD-34	Cat6 Patch Cable	Sailor 6222 VHF #1 LAN Connection in Forward Wheelhouse Console	MOXA Switch B Port #4 inside GMDSS Console	20
GMD-35	Cat6 Patch Cable	Sailor 6222 VHF #2 LAN Connection in Forward Wheelhouse Console	MOXA Switch C Port #4 inside GMDSS Console	20
GMD-36	9316	MOXA Switch A Power Connection inside GMDSS Console	Connection Board "A" J60 MOXA Power Connection in GMDSS Console	5
GMD-37	9316	MOXA Switch B Power Connection inside GMDSS Console	Connection Board "A" J60 MOXA Power Connection in GMDSS Console	5

LABEL	TYPE	FROM	TO	Approximate Length (Feet)
GMD-38	9316	MOXA Switch C Power Connection inside GMDSS Console	Primary 6081 Power Supply and Charger X12 Connection under GMDSS Desk (aft)	10
GMD-39	Factory Supplied with Message Terminal	Message Terminal for Telex X4 Connection in GMDSS Console	Connection Board "A" J50 Connection inside GMDSS console	5
GMD-40	Cat6 Patch Cable	MF-HF Controlhead Network Connection on Windowsill by GMDSS Console	MOXA Switch B Port #2 inside GMDSS Console	15
GMD-41	Cat6 Patch Cable	Message Terminal for Telex LAN Connection in GMDSS Console	MOXA Switch A Port #1 inside GMDSS Console	5
GMD-42	Factory Supplied with 6208 Connection Box	6208 Connection Box for VHF Radios in Wheelhouse Forward Console	6222 VHF #1 AUX Connection in Forward Wheelhouse Console	10
GMD-43	Factory Supplied with 6208 Connection Box	6208 Connection Box for VHF Radios in Wheelhouse Forward Console	6222 VHF #2 AUX Connection in Forward Wheelhouse Console	10
GMD-44	Factory Supplied with Message Terminal	Message Terminal for Sat C X5 Connection in GMDSS Console	Connection Board "B" J42 Connection inside GMDSS console	5
GMD-45	Factory Supplied with Message Terminal	Message Terminal for Sat C X4 Connection in GMDSS Console	Connection Board "B" J50 Connection inside GMDSS console	5
GMD-46	Factory Supplied with Printer/Console	Printer USB Connection on top of GMDSS Console (PORT)	Message Terminal for Telex USB Connection in GMDSS Console	5

LABEL	TYPE	FROM	TO	Approximate Length (Feet)
GMD-47	Factory Supplied with Printer/Console	Printer Power Connection on top of GMDSS Console (PORT)	Connection Board "A" J51 connection inside GMDSS console	5
GMD-48	Factory Supplied with Printer/Console	Printer USB Connection on top of GMDSS Console (STBD)	Message Terminal for Sat C USB Connection in GMDSS Console	5
GMD-49	Factory Supplied with Printer/Console	Printer Power Connection on top of GMDSS Console (STBD)	Connection Board "B" J51 Connection inside GMDSS console	5
GMD-MF	Belden 9322	Actisense Pro-Buf-1 for Ship's GPS Distribution under Chart Table	Connection Board "A" J70 Connection inside GMDSS console	15
GMD-VHF	Belden 8723	Actisense Pro-Buf-1 for Ship's GPS Distribution under Chart Table	6208 Connection Box for VHF Radios in Wheelhouse Forward Console	20
E327	14/3 Marine Cable	Emergency Switchboard Breaker 3Q27	Secondary 6081 Power Supply below GMDSS Desk	40
E325	14/3 Marine Cable	Emergency Switchboard Breaker 3Q25	Primary 6081 Power Supply below GMDSS Desk	40
POS- 41	Belden 9322	J4N for Primary DGPS under GMDSS Console (forward)	GPS Selector Switch Junction Box beside GMDSS Console	10
POS- 41-1	Belden 9322	GPS Selector Switch Junction Box beside GMDSS Console	PRO-BUF-1 for GPS Distribution under Chart Table	15
POS- 42	Belden 9322	J4N for Secondary DGPS under GMDSS Console (forward)	GPS Selector Switch Junction Box beside GMDSS Console	10
POS- 42-1	Belden 9322	GPS Selector Switch Junction Box beside GMDSS Console	PRO-BUF-1 for GPS Distribution under Chart Table	15

LABEL	TYPE	FROM	TO	Approximate Length (Feet)
POS- 43	Belden 9322	DGPS Distribution PRO-BUF-1 #1 below Chart Table	DGPS Distribution PRO-BUF-1 #2 below Chart Table	5
EM2-25-1	Belden 9316	24VDC Junction Box for GPS Distribution below Chart Table	DGPS Distribution PRO-BUF-1 #1 below Chart Table	5
EM2-25-2	Belden 9316	24VDC Junction Box for GPS Distribution below Chart Table	DGPS Distribution PRO-BUF-1 #2 below Chart Table	5
*GMD-50	SHAWFLEX SE010E2503F0801 3C 25mm ² (3 AWG)	GMDSS DC Junction Box above Galley Deckheads	Primary 6081 Power Supply and Charger X2 Connection under GMDSS Desk (aft)	30
*GMD-51	SHAWFLEX SE010E2503F0801 3C 25mm ² (3 AWG)	GMDSS DC Junction Box above Galley Deckheads	Duplicate 6081 Power Supply and Charger X2 Connection under GMDSS Desk (aft)	30
*GYR-GPS-1	Belden 9322	R4 Junction Box below GMDSS Console (Do not connect - Secure a small coil of cable for Future Use)	Sperry NMEA distribution device near Gyro in Electronic Equipment Room (Do not connect - Secure a small coil of cable for Future Use)	60
*GYR-GPS-2	Belden 9322	R4 Junction Box below GMDSS Console (Do not connect - Secure a small coil of cable for Future Use)	Sperry NMEA distribution device near Gyro in Electronic Equipment Room (Do not connect - Secure a small coil of cable for Future Use)	60
POS-015A	LMR-400 FR	Secondary DGPS Nav Sensor under GMDSS table	Bridge Top Secondary DGPS antenna	20
POS-025A	LMR-400 FR	AIS Transponder under GMDSS table	Bridge Top GPS antenna	20

LABEL	TYPE	FROM	TO	Approximate Length (Feet)
SCS-ANT	LMR-400 FR	Iridium Unit below Command Centre Desk	Relocated Iridium Antenna on AFT of Wheelhouse top	20

***Note:** These two cables pass through a transit above the ship's galley – The contractor shall closely coordinate this work with the ship's crew as the galley must be made non-operation when the deckheads are removed in the ship's galley

2.2. Location

2.2.1. Various locations identified in the general technical description.

2.3. Interferences

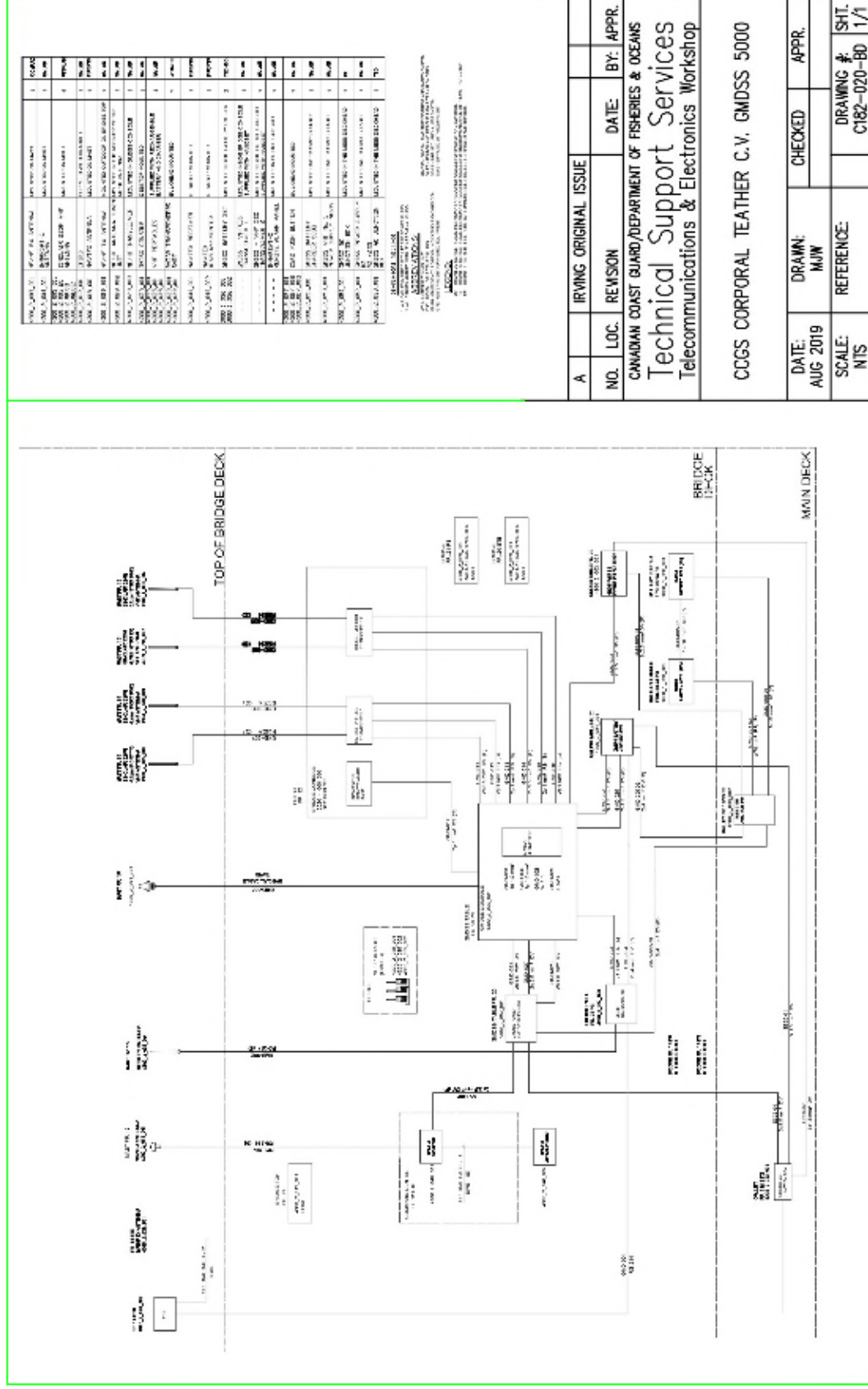
- 2.3.1. The Contractor is responsible for the identification of interference items which may affect the relocation, removal, or installation of equipment, their temporary removal, their storage and protection, and their refitting to the vessel.
- 2.3.2. The contractor is responsible for protecting the surrounding area and equipment while carrying out this work.

3. REFERENCES

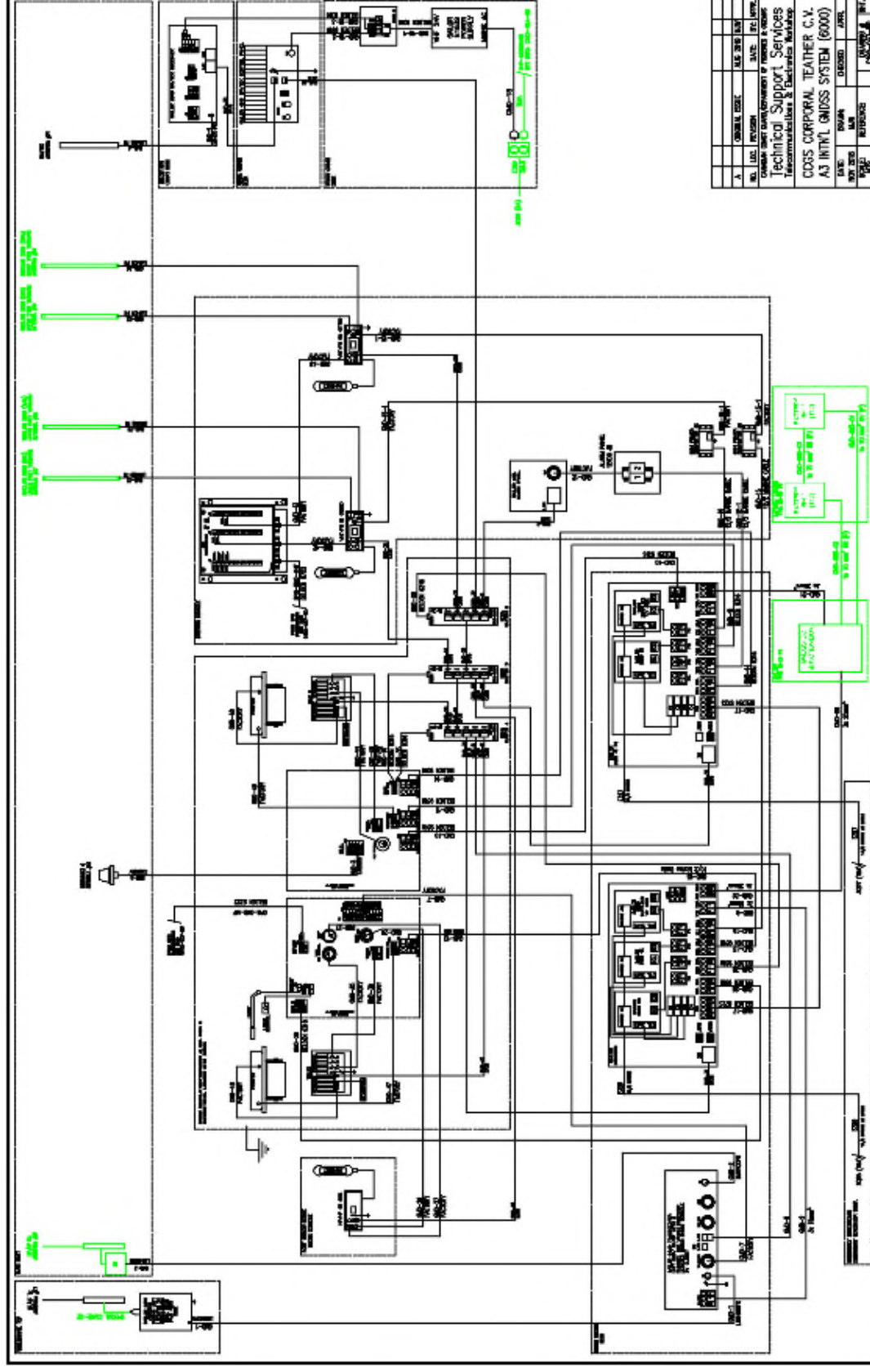
3.1. Guidance/Drawings/Data

- 3.1.1. The CCG must provide contractor access to the relevant system drawings:
- a. Existing Sailor GMDSS 5000 Drawings (Reference for Removal)
Dwg. C182-020-BD (REV A) (GMDSS 5000)
 - b. New Sailor GMDSS 6000 Drawings (Reference for Installation)
Dwg. C182-033-BD (REV A) (New Sailor GMDSS 6000 System)
 - c. DGPS Distribution Drawings (Reference for Installation & NMEA Device Replacement)
Dwg. C182-027-BD (REV A) (Primary DGPS System)
Dwg. C182-028-BD (REV A) (Secondary DGPS System)
 - d. Antenna Layout Drawing (Reference for Removal/Installation of Antennas)
Dwg. C182-001-AL (REV B) (Antenna Layout)

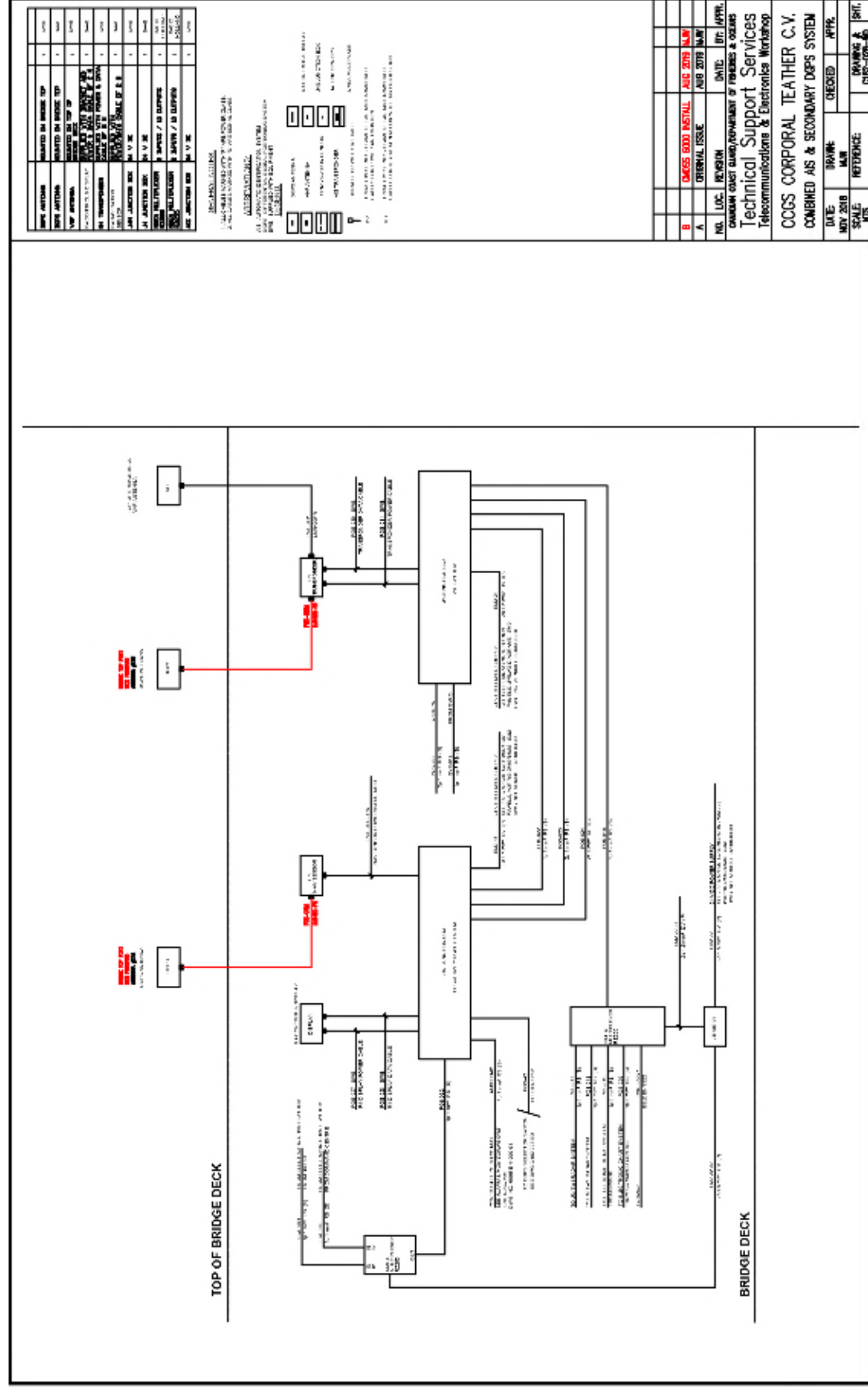
3.1.2. Example of Dwg. C182-020-BD (REV A) GMDSS 5000 – Reference for Removal



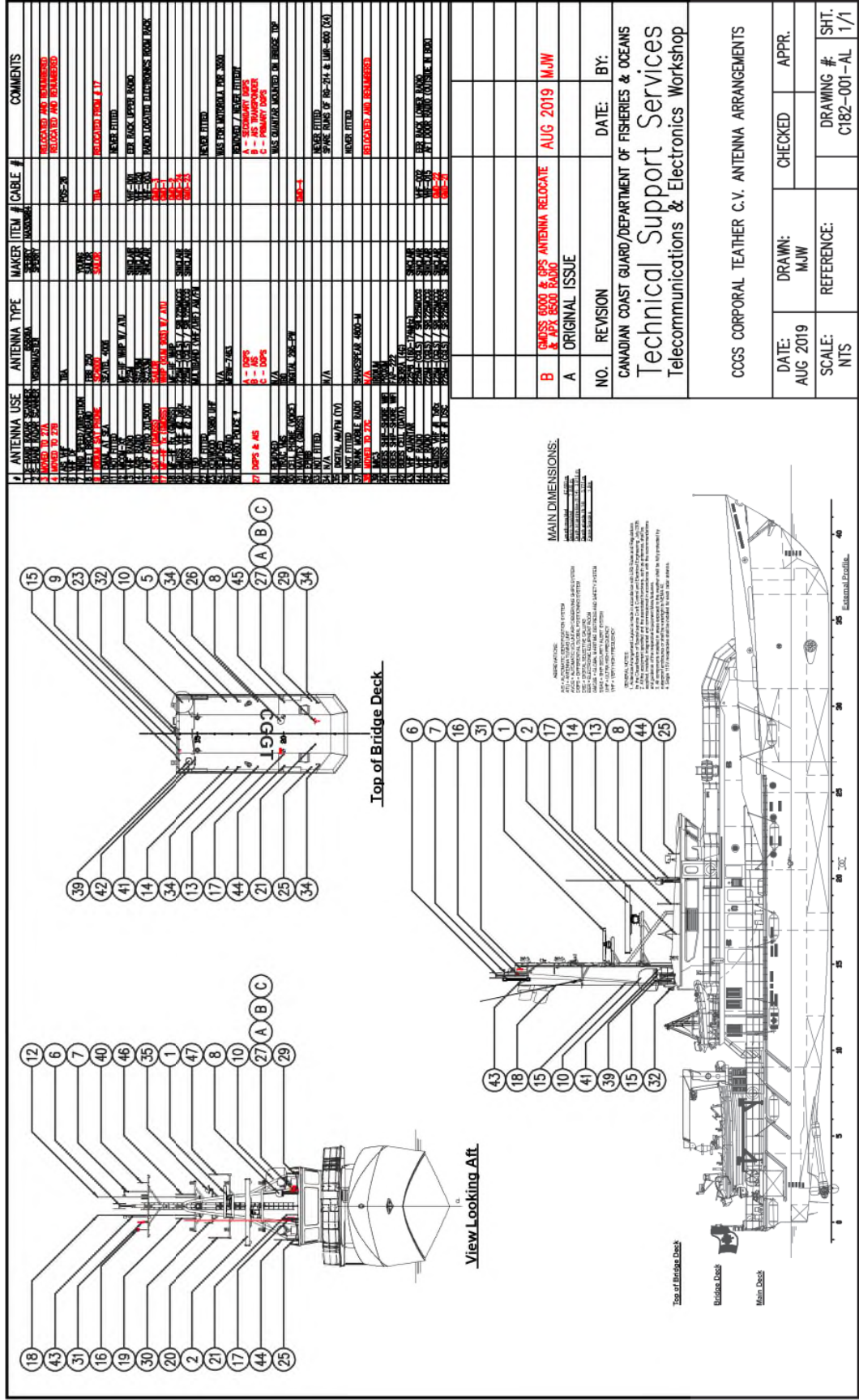
3.1.3. Example of Dwg. C182-033-BD (REV A) GMDSS 6000 – Reference for Installation



3.1.5. Example of Dwg. C182-027-BD (REV A) Primary DGPS – Reference for Installation & NMEA Device Replacement



3.1.6. Example of Dwg. C182-001-AL (REV B) Antenna Layout– Reference for Installation



3.2. Standards and Regulations

- 3.2.1. The following standards, regulations, 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 CGTA:
- a. Canadian Coast Guard Fleet Safety and Security Manual (DFO/5737)
 - b. TP127 – Ship’s Electrical Standards
 - c. IEEE 45:2002 – Recommended Practice for Electrical Installation on Ships
 - d. Specification for the Installation of Shipboard Electronic Equipment (70-000-000-EU-JA-001)
 - e. Canadian Coast Guard ISM Lock Out/Tag Out Procedures
 - f. Canada Shipping Act, 2001

3.3. Owner Furnished Equipment

3.3.1. The following materials and equipment will be provided by the CCG:

a. The Sailor 6000 Series GMDSS System with Peripherals

- 3 Bay Console
- Message Terminal x2
- Printer x2
- Keyboard x2
- Moxa Switch x3
- Navtex Control Panel
- Navtex Receiver
- Navtex Power Supply
- VHF Radio x2
- Power Converter for VHF Radio x2
- MF-HF Radio Control Unit
- MF-HF Radio Transceiver
- MF-HF Radio Tuner
- 6081 Power Supply/Charger (Includes one 6080 Power Supply Each) x2
- 6080 Power Supply x 3
- Mini C System
- Mini C Antenna
- Alarm Panel
- 6208 Connection Box
- Actisense PRO-BUF-1 NMEA Device x2
- Bracket for VHF Radio x2
- Bracket for Alarm Panel
- Bracket for SAAB displays
- Junction box for 24VDC x2
- Terminal Blocks for DGPS Switch

b. All cables listed below

- LMR400FR
- Belden 1300SB
- Cat 6 Patch Cables
- Belden 9316
- Belden 8723
- Belden 9389
- Belden 9322
- Marine 14/3
- Marine 10/2
- Marine 6/2
- Green Jacket Gnd Wire #6 AWG
- Green Jacket Gnd Wire #10 AWG
- Green Jacket Gnd Wire #12 AWG

3.3.2. Unless otherwise stated, Contractor must provide all materials, labour, and equipment required to complete all tasks in this specification including stainless steel hardware, cable ties, and cable hangers where needed.

- 3.3.3. All labour required to complete the cleaning, including that required for removals, reinstallation, opening, and closing up of equipment and ducting is the Contractor's responsibility.

4. PROOF OF PERFORMANCE

4.1. Inspection

- 4.1.1. The CCG Technical Representative must verify all equipment and wiring has been installed in good working order.
- 4.1.2. The CCG Technical Representative must verify that all spaces affected by the installation of equipment or and/or wiring have been cleaned.
- 4.1.3. The CCG Technical Representative must verify that all equipment in the areas affected by the installation of equipment or and/or wiring is fully operational after cleaning is complete.

4.2. Testing

- 4.2.1. The CCG Technical Representative must perform standard radio checks to confirm all equipment is operating correctly within CCG and / or the manufactures specifications.

4.3. Certification

- 4.3.1. N/A – Intentionally Left Blank

5. Deliverables

5.1. Reports

5.1.1. N/A – Intentionally Left Blank

5.2. Drawings to be Updated by Contractor

5.2.1. N/A – Intentionally Left Blank

5.3. Spares

5.3.1. N/A – Intentionally Left Blank

5.4. Training

5.4.1. N/A – Intentionally Left Blank

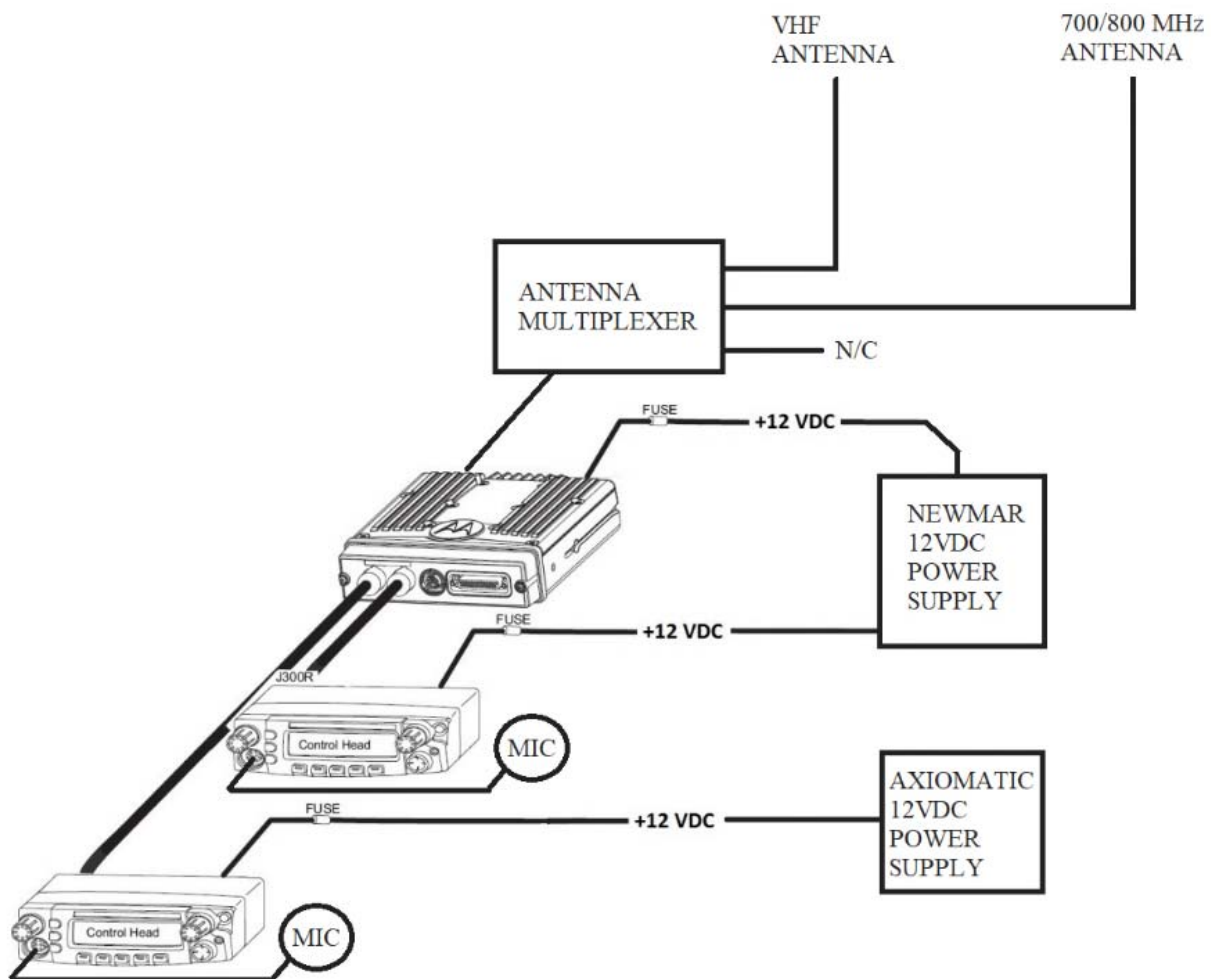
5.5. Others

5.5.1. N/A – Intentionally Left Blank

T2 – APX 8500 Radio Installation

6. SCOPE OF WORK

- 1.1.3. The intent of this specification is for the contractor to install Motorola APX 8500 equipment onboard the CCGS Teather.
- 1.1.4. The specification consists of the installation of the APX 8500 transceiver, two antennas, two control heads, two power supplies, and the associated wiring.



Drawing #1 – APX 8500 System Overview

NOTE: Pictures in this document may vary from what actually exist depending on the stage of the installation.
To be used as location reference only.

7. TECHNICAL DESCRIPTION

7.1. General

- 7.1.1. Prior to commencement of the work the Contractor shall inform the Chief Engineer.
- 7.1.2. The Contractor shall ensure that all electrical systems which may be affected by their work have been locked out and tagged out before commencement of any work.
- 7.1.3. The Contractor shall ensure all work areas are neat and tidy at the end of the work day.
- 7.1.4. The Contractor shall clean up all debris (including any removed wiring) and dispose of it as per Provincial Regulations.
- 7.1.5. The Contractor shall ensure all removed deck-head and bulkhead panels are returned and fitted in good order and that all visible surfaces of the panels are cleaned to as found condition.
- 7.1.6. The Contractor shall store all materials as instructed by Chief Engineer.
- 7.1.7. The Contractor shall paint any new steel as directed by the Chief Engineer before installation of equipment.
- 7.1.8. The Contractor shall repaint any areas damaged during the relocation, installation, or removal of equipment as directed by the Chief Engineer.
- 7.1.9. The Contractor shall ensure all wiring is properly supported in accordance with accepted / approved practices.
- 7.1.10. The contractor will properly secure all installed and disturbed wiring using existing cable trays.
- 7.1.11. When installing wiring in locations where trays do not exist the contractor will install the wiring using appropriate hangers.
- 7.1.12. The Contractor shall ensure all penetrations through frames or brackets are in accordance with accepted / approved practices.

- 7.1.13. The Contractor shall ensure all electrical disconnections are labelled, stowed and protected.
- 7.1.14. The Contractor shall ensure all unused electrical penetrations are closed in accordance with accepted / approved practices.
- 7.1.15. The Contractor shall ensure all new and existing electrical penetrations are properly prepared and cleaned prior to hot work.
- 7.1.16. Any welding by the contractor shall be completed to CWB's latest revision, or equivalent.
- 7.1.17. The Contractor shall ensure that the surrounding area is properly cleaned to ensure the area is safe prior to any hot work.
- 7.1.18. The Contractor shall provide and install all temporary staging, lifting appliances and rigging.
- 7.1.19. Workers working aloft must be Fall Arrest Certified.
- 7.1.20. The Contractor is responsible for all air quality testing to ensure hot work and entry is permitted.
- 7.1.21. The Contractor shall issue and post hot work permits and shall maintain a fire watch.
- 7.1.22. Areas where hot work is to be carried out are to be certified by a Chemist or other qualified person as determined by the Chief Engineer.
- 7.1.23. All Welders, Chemists, and Technicians for NDT testing must be certified.
- 7.1.24. The installation shall not be considered complete, until relocated or installed equipment has been tested, and considered operating as per the manufacturers specifications, to the satisfaction of the Chief Engineer, Class and/or Flag as applicable.

Command Centre Rack

- 7.1.25. The Contractor will install the provided Motorola APX 8500 transceiver unit in the command centre rack using the factory supplied bracket.

7.1.26. The Contractor will install the provided Motorola Multiplexer in the command centre rack near enough to the APX 8500 that the factory cable can be used to connect the two units.

7.1.27. The Contractor will install the provided Newmar 120Vac to 12VDC 20A power supply in the command centre rack.



Photo #1 – Suggested Locations for (A) Power Supple, (B) Multiplexer, (C) Tranceiver

Command Centre Desk

7.1.28. The Contractor will install the provided Motorola O5 model Control Head complete with Mic and the provided Motorola Speaker on the Starboard side of the Operations Center on the bulkhead above the desk aft of the monitor. The contractor will install the Control Head and speaker using the factory provided brackets.



Photo #2 – Suggested Locations for the Control Head, Mic, & Speaker



Photo #3 – Example of a Control Head & Mic at this location

Wheelhouse Forward Console

7.1.29. The contractor will install the provided Motorola O5 model Control Head complete with Mic and the provided Motorola Speaker on the port side of the forward wheelhouse console using the factory brackets.



Photo #4 & #5 – Wheelhouse Control Head

7.1.30. The contractor will install the provided AXIOMATIC 24 to 12 VDC power supply and the provided junction box next to the Bridge console to provide power to the Motorola control head and speaker

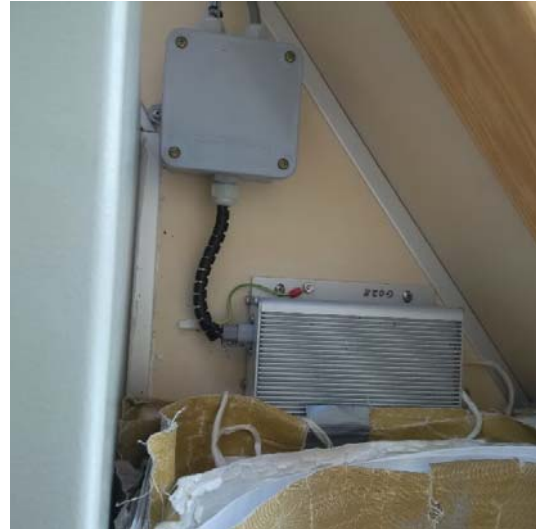
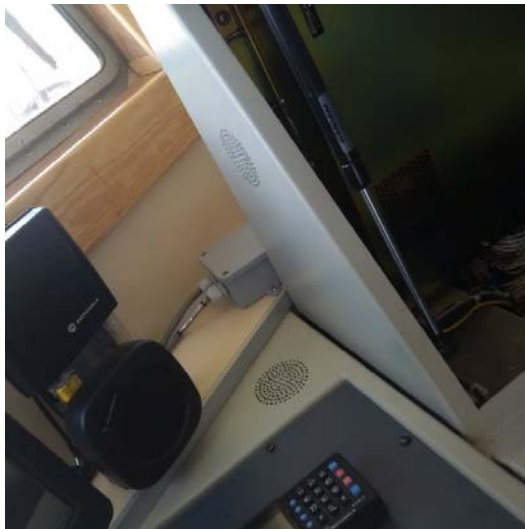


Photo #6 & #7 – Wheelhouse Power Supply & Junction Box

Wheelhouse Top

- 7.1.31. The contractor will install the provided Shakespeare HS-2774R VHF antenna and the provided Mobile Mark / Comtelpro BS750-WB UHF antennas using pipe to pipe clamps to collocate them on the forward starboard area of the wheelhouse top as per Antenna Layout drawing (C182-001-AL).
- 7.1.32. The contractor will install an additional kickpipe of a type approved by the Chief Engineer at this location to allow for the cable passage



Photo #8 – Antenna Location

Cable Removal

- 7.1.33. The contractor will remove any spare and/or unused coaxial cables found between the Command Centre Rack and the location of the new VHF and UHF antennas.

Grounding of Equipment

- 7.1.34. The contractor will ground the system components as per the manufacturer's specifications.

Cable Installation

7.1.35. The contractor will install, label and terminate the following cables (Table 1) as per DWG. C182-001-AL, C182-041-BD.

Table 2 Cable List

LABEL	TYPE	FROM	TO	Approximate Length (Feet)
APX-ANT-1	LMR400FR	Command Centre Equipment rack Multiplexer VHF Antenna connection	Bridge Top Starboard rail Position # 25 A.	30
APX-ANT-2	LMR400FR	Command Centre Equipment rack Multiplexer 700/800 MHz Antenna connection	Bridge Top Starboard rail Position # 25 B.	30
APX-ANT-MPLX	Factory	APX 8500 Transceiver	Command Centre Equipment rack Multiplexer	1
APX-CTRL-1	75 ft Factory Cable (HKN6166)	Command Centre Equipment rack APX 8500 Transceiver CAN (Blue) connection	O5 model Control head on Port side of Bridge near CCTV monitor CAN (Blue) connection.	65
*APX-CTRL-2	50 ft Factory Cable (HKN6167)	Command Centre Equipment rack APX 8500 Transceiver CAN connection (Blue)	O5 model Control head on STBD side of Operations Center below window CAN (Blue) connection.	40
APX-CTRL-PWR-1	Factory Cable (HKN6188)	12VDC from AXIOMATIC 24-12VDC converter via junction box located on port side of bridge console	Bridge mounted O5 model control head PWR/SPKR (Red) connection (Also connects to Speaker)	

LABEL	TYPE	FROM	TO	Approximate Length (Feet)
APX-CTRL-PWR-2	Factory Cable (HKN6188)	12VDC output from Newmar 12VDC power supply located inside Command Centre Rack (Also connects to Speaker)	Command Centre mounted O5 model control head PWR/SPKR (Red) connection (Also connects to Speaker)	
APX-PWR-1	Axiomatic Factory Cable	24VDC input connection on AXIOMATIC 24-12VDC converter located on port side of bridge inside console.	Terminal strip inside 24 VDC Junction Box installed inside port side bridge console.	
APX-PWR-TXXR	Factory	12VDC output from Newmar 12VDC power supply located inside Command Centre Rack	Command Centre Equipment rack APX 8500 power connection	
EM-2-27	Belden 9316	Terminal strip inside 24 VDC Junction Box installed on port side bridge console.	24VDC Panel EM-2 Breaker 27, Panel is located on bridge inside console below port side radar display.	

***NOTE:** The contactor will install this cable while the floor is open for the GMDSS install. This cable to the Forward Console runs under the “False Floor”. As noted in the T1 spec for GMDSS this requires several steps to obtain access to this area.

7.2. Location

2.2.1. Various locations identified in the general technical description.

7.3. Interferences

7.3.1. The Contractor is responsible for the identification of interference items which may affect the relocation, removal, or installation of equipment, their temporary removal, their storage and protection, and their refitting to the vessel.

7.3.2. The contractor is responsible for protecting the surrounding area and equipment while carrying out this work.

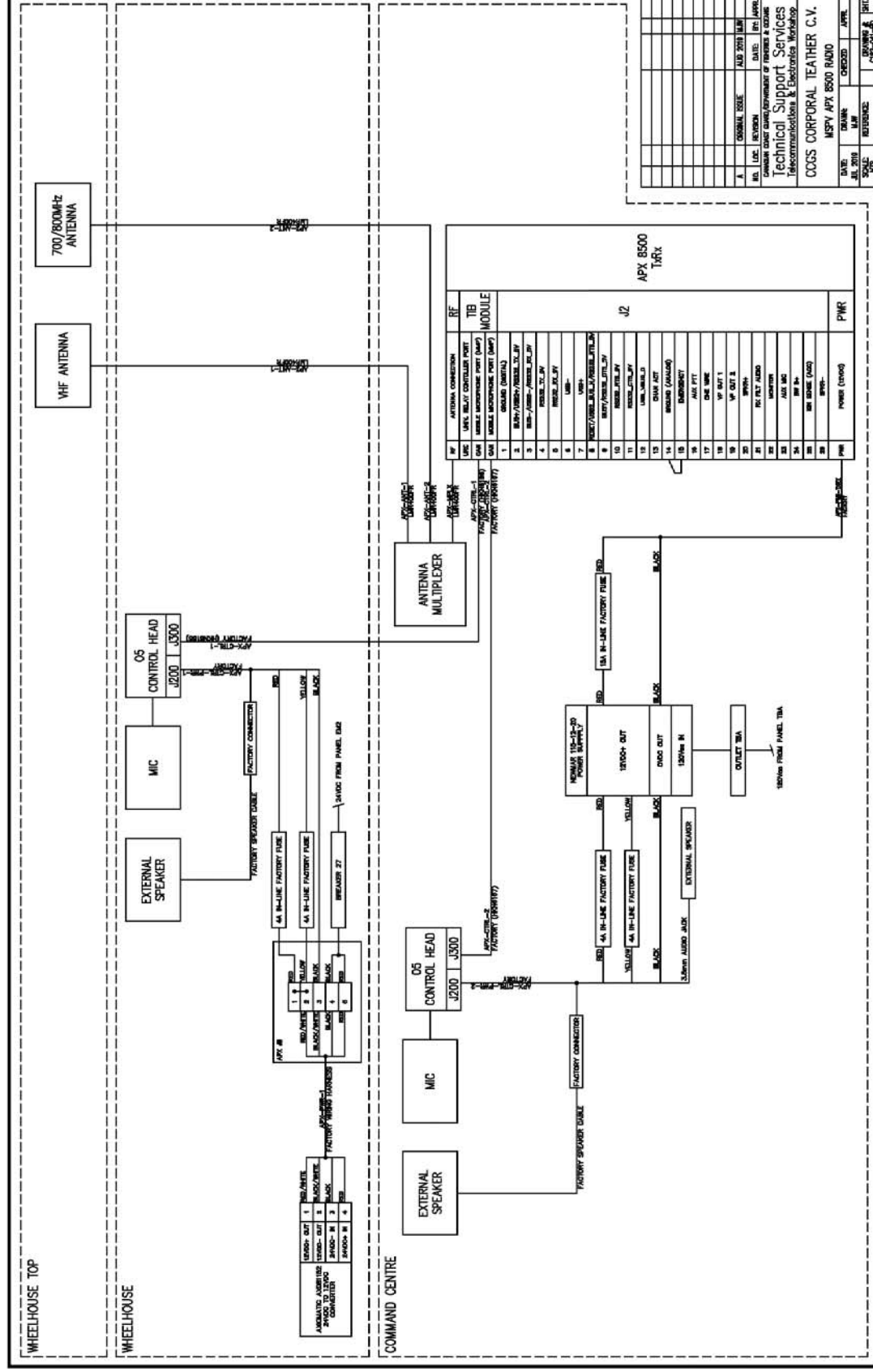
8. REFERENCES

8.1. Guidance/Drawings/Data

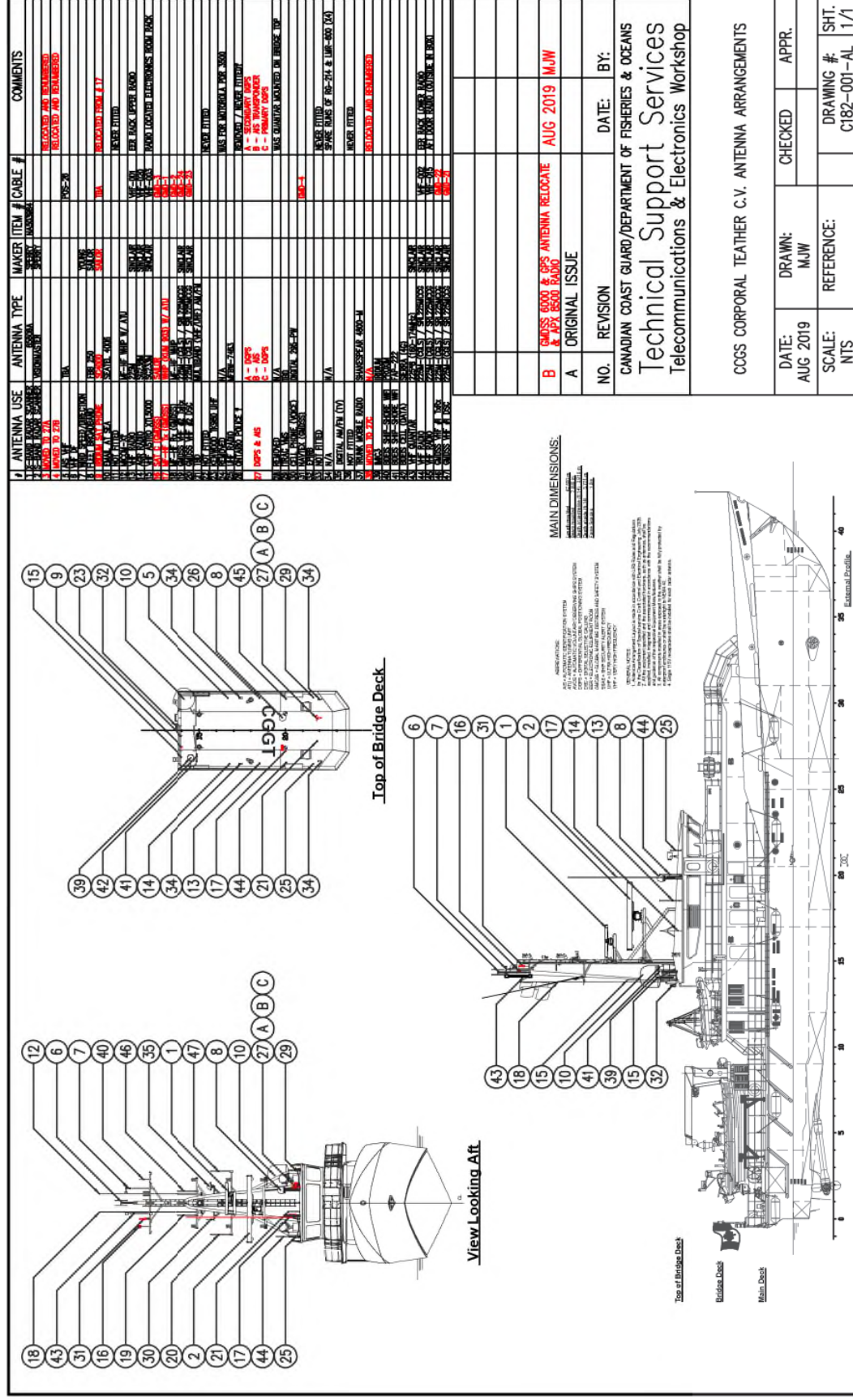
8.1.1. The CCG must provide contractor access to the relevant system drawings:

- e. APX 8500 Sysem Drawing (Reference for Installation)
Dwg. C182-041-BD (REV A) (APX 8500 MSPV)
- f. Antenna Layout Drawing (Reference for Removal/Installation of Antennas)
Dwg. C182-001-AL (REV B) (Antenna Layout)

8.1.2. Example of Dwg. C182-041-BD (REV A) APX 8500 MSPV – Reference for Installation



8.1.3. Example of Dwg. C182-001-AL (REV B) Antenna Layout– Reference for Installation



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8.2. Standards and Regulations

8.2.1. The following standards, regulations, 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 CGTA:

- g. Canadian Coast Guard Fleet Safety and Security Manual (DFO/5737)
- h. TP127 – Ship’s Electrical Standards
- i. IEEE 45:2002 – Recommended Practice for Electrical Installation on Ships
- j. Specification for the Installation of Shipboard Electronic Equipment (70-000-000-EU-JA-001)
- k. Canadian Coast Guard ISM Lock Out/Tag Out Procedures
- l. Canada Shipping Act, 2001

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8.3. Owner Furnished Equipment

8.3.1. The following materials and equipment will be provided by the CCG:

c. Motorola APX 8500 System with Peripherals

- Transceiver
- Multiplexer
- Control Head x2
- Mic x2
- Speaker x2
- Factory Cables

d. All cables listed below

- LMR400FR
- Belden 9316
- Green Jacket Gnd Wire #6 AWG
- Green Jacket Gnd Wire #10 AWG
- Green Jacket Gnd Wire #12 AWG

8.3.2. Unless otherwise stated, Contractor must provide all materials, labour, and equipment required to complete all tasks in this specification including stainless steel hardware, cable ties, and cable hangers where needed.

8.3.3. All labour required to complete the cleaning, including that required for removals, reinstallation, opening, and closing up of equipment and ducting is the Contractor's responsibility.

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9. PROOF OF PERFORMANCE

9.1. Inspection

- 9.1.1. The CCG Technical Representative must verify all equipment and wiring has been installed in good working order.
- 9.1.2. The CCG Technical Representative must verify that all spaces affected by the installation of equipment or and/or wiring have been cleaned.
- 9.1.3. The CCG Technical Representative must verify that all equipment in the areas affected by the installation of equipment or and/or wiring is fully operational after cleaning is complete.

9.2. Testing

- 9.2.1. The CCG Technical Representative must perform standard radio checks to confirm all equipment is operating correctly within CCG and / or the manufactures specifications.

9.3. Certification

- 9.3.1. N/A – Intentionally Left Blank

10. Deliverables

10.1. Reports

10.1.1. N/A – Intentionally Left Blank

10.2. Drawings to be Updated by Contractor

10.2.1. N/A – Intentionally Left Blank

10.3. Spares

10.3.1. N/A – Intentionally Left Blank

10.4. Training

10.4.1. N/A – Intentionally Left Blank

10.5. Others

10.5.1. N/A – Intentionally Left Blank

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T3 - VHF Direction Finder Replacement

11. SCOPE OF WORK

- 1.1.5. The intent of this specification is for the contractor to replace the existing OAR 4400 VHF Direction Finder system with a new Rhotheta RT-500-M System.

NOTE: Pictures in this document may vary from what actually exist depending on the stage of the installation. Any pictures are to be used as location references only.

12. TECHNICAL DESCRIPTION

12.1. General

- 12.1.1. Prior to commencement of the work the Contractor shall inform the Chief Engineer.
- 12.1.2. The Contractor shall ensure that all electrical systems which may be affected by their work have been locked out and tagged out before commencement of any work.
- 12.1.3. The Contractor shall ensure all work areas are neat and tidy at the end of the work day.
- 12.1.4. The Contractor shall clean up all debris (including all old wire that is taken out) and dispose of it as per Provincial Regulations.
- 12.1.5. The Contractor shall ensure all removed deck-head and bulkhead panels are returned and fitted in good order and that all visible surfaces of the panels are cleaned to as found condition.
- 12.1.6. The Contractor shall store all materials as instructed by Chief Engineer.
- 12.1.7. The Contractor shall paint any new steel as directed by the Chief Engineer before installation of equipment.
- 12.1.8. The Contractor shall repaint any areas damaged during the relocation, installation, or removal of equipment as directed by the Chief Engineer.
- 12.1.9. The Contractor shall ensure all wiring is properly supported in accordance with accepted / approved practices.

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- 12.1.10. The contractor will properly secure all installed and disturbed wiring using existing cable trays.
- 12.1.11. When installing wiring in locations where trays do not exist the contractor will install the wiring using appropriate hangers.
- 12.1.12. The Contractor shall ensure all penetrations through frames or brackets are in accordance with accepted / approved practices.
- 12.1.13. The Contractor shall ensure all electrical disconnections are labelled, stowed and protected.
- 12.1.14. The Contractor shall ensure all unused electrical penetrations are closed in accordance with accepted / approved practices.
- 12.1.15. The Contractor shall ensure all new and existing electrical penetrations are properly prepared and cleaned prior to hot work.
- 12.1.16. Any welding by the contractor shall be completed to CWB's latest revision, or equivalent.
- 12.1.17. The Contractor shall ensure that the surrounding area is properly cleaned to ensure the area is safe prior to any hot work.
- 12.1.18. The Contractor shall provide and install all temporary staging, lifting appliances and rigging.
- 12.1.19. Workers working aloft must be Fall Arrest Certified.
- 12.1.20. The Contractor is responsible for all air quality testing to ensure hot work and entry is permitted.
- 12.1.21. The Contractor shall issue and post hot work permits and shall maintain a fire watch.
- 12.1.22. Areas where hot work is to be carried out are to be certified by a Chemist or other qualified person as determined by the Chief Engineer.
- 12.1.23. All Welders, Chemists, and Technicians for NDT testing must be certified.

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- 12.1.24. The installation shall not be considered complete until all relocated or installed equipment has been tested and considered operating as per the manufacturer's specifications, to the satisfaction of the Chief Engineer, Class, and/or Flag as applicable.

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Main Mast Equipment Removal

- 12.1.25. The contractor will disconnect and remove the OAR 4400 antenna and all associated cabling (VHF-DF-2 and VHF-DF-3).

Note: This area cannot be reached via the ladder on the main mast due to issues with the installation of that ladder. Safely accessing this area will require an alternate method such as a crane with a man basket or staging.



Photo #1

- 12.1.26. The contractor will store and return the OAR 4400 antenna to the CCG.

Wheelhouse Equipment Removal

- 12.1.27. The contractor will disconnect and remove the OAR 4400 Display and Control unit complete with mounting bracket from the shelf above the chart table in the wheelhouse. The contractor will store and return the OAR 4400 Display and Control unit to the CCG



Photo #2

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- 12.1.27.1. The contractor will disconnect the power cable for the OAR 4400 system (VHF-DF-1) from the OAR 4400 Display and Control Unit. This cable will be reused. All cables associated with the power supply are to be left in place. They will be continue to be used.

Electronic Equipment Room Equipment Removal

- 12.1.28. The contractor will disconnect and remove the Sperry NMEA distribution device for the Gyro system located in the Electronic Equipment room.



Photo #3

- 12.1.28.1. The contractor will leave all cables associated with the Sperry NMEA distribution device in place. This unit is being replaced and the cables will be re-used as part of this project.

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Cable Installation

12.1.29. The contractor will install, label and terminate the following cables as per Drawings C182-026-BD and C182-042-BD and the instructions in this document.

Table 1

CABLE LABEL	CABLE TYPE	FROM	TO	EST. CABLE LENGTH (FT)
VHFDF-ANT	Multicable L8620(19T)SFSB-CMG	Rhotheta RT-500-M Display and Control Unit above Chart Table in Wheelhouse	Rhotheta RT-500-M Antenna Unit at top of Main Mast	100
LC-VHFDF	Belden 9322	PRO-BUF-1 for High Speed Gyro Distribution (Output 5) Located in EER	Rhotheta RT-500-M Display and Control Unit above Chart Table in Wheelhouse	50
*GPS-VHFDF	Belden 9322	#1 PRO-BUF-1 for GPS Distribution (Port 9) below PORT side of Navigation Console in Wheelhouse	Rhotheta RT-500-M Display and Control Unit on Chart table in Wheelhouse	10
*GYR-POS-1	Belden 9322	PRO-BUF-1 for Gyro Distribution (Output 5) Located in EER	Coiled Below GMDSS Console for Future Use	50
*GYR-POS-2	Belden 9322	PRO-BUF-1 for Gyro Distribution (Output 6) Located in EER	Coiled Below GMDSS Console for Future Use	50
EM1-14-1	Belden 9316	New 24VDC Junction Box in EER	PRO-BUF-1 NMEA Data Distribution Device in EER	10
EM1-14-2	Belden 9316	New 24VDC Junction Box in EER	PRO-BUF-1 NMEA Data Distribution Device in EER	10

***Note:** These cables pass through a transit above the ship's galley – The contractor shall closely coordinate this work with the ship's crew as the galley must be made non-operation when the deckheads are removed in the ship's galley

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- 12.1.30. The contractor will reuse and re-terminate the following cables as per Drawings C182-042-BD and C182-026-BD and the instructions in this document.

Table 2

CABLE LABEL	CABLE TYPE	CONNECTION TO BE RE-TERMINATED
EM2-01-01	Existing Tricab Cable	Rhotheta RT-500-M Display and Control Unit on Steering Console in Wheelhouse
EM1-14	Existing Electrical Cable	New 24VDC Junction Box in EER
GYR-006	Existing Data Cable	New PRO-BUF-1 NMEA Data Distribution Device in EER for Gyro – In 1
GYR-009	Existing Data Cable	New PRO-BUF-1 NMEA Data Distribution Device in EER for Gyro – Out 1
GYR-010	Existing Data Cable	New PRO-BUF-1 NMEA Data Distribution Device in EER for Gyro – Out 2
GYR-012	Existing Data Cable	New PRO-BUF-1 NMEA Data Distribution Device in EER for Gyro – Out 3
GYR-013	Existing Data Cable	New PRO-BUF-1 NMEA Data Distribution Device in EER for Gyro – Out 4
GYR-015	Existing Data Cable	New PRO-BUF-1 NMEA Data Distribution Device in EER for Gyro (High Speed) – In 1
GYR-007	Existing Data Cable	New PRO-BUF-1 NMEA Data Distribution Device in EER for Gyro (High Speed) – Out 1
GYR-008	Existing Data Cable	New PRO-BUF-1 NMEA Data Distribution Device in EER for Gyro (High Speed) – Out 2
GYR-011	Existing Data Cable	New PRO-BUF-1 NMEA Data Distribution Device in EER for Gyro (High Speed) – Out 3
GYR-014	Existing Data Cable	New PRO-BUF-1 NMEA Data Distribution Device in EER for Gyro (High Speed) – Out 4

CCGS C.TEATHER DRYDOCKING 2020

Main Mast Equipment Installation

- 12.1.31. The contractor will install and connect the RT-500-M antenna at the top of the main mast following the instructions below.

Note: This area cannot be reached via the ladder on the main mast due to issues with the installation of that ladder. Safely accessing this area will require an alternate method such as a crane with a man basket or staging.

- 12.1.31.1. Mount the CCG provided antenna adapter pipe onto the existing structure where the OAR-4400 antenna was removed from. Do not use any thread locker at this time as the orientation for this piece will likely need final adjustment later.
- 12.1.31.2. Route the part of the VHFDF-ANT cable at the top of the main mast through the existing structure and the CCG provided antenna adapter pipe. The unterminated end of the cable will be protruding from the end of the pipe with the adapter ring attached. The provided mounting arrangement will be similar in style to the drawing below.

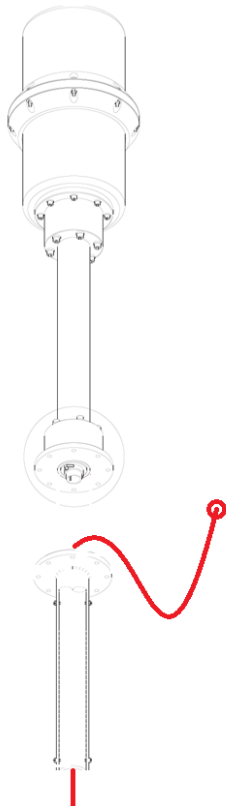


Figure #1

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***The X-1067 Connector May Be Damaged If Brought Up Through Pipe -
Attach The Connector AFTER Routing the cable Up Through The Pipe**

- 12.1.31.3. Solder the X-1067 connector provided with the system for the antenna onto the end of the cable VHFDF-7 as per the manual and the colour guide shown in DWG C182-042-BD. Note that the drawings show the connector as it appears when viewed face-on. See Photo #3 for the pins as they will appear when viewed while soldering.

Connecting cable DCU ⇌ AU

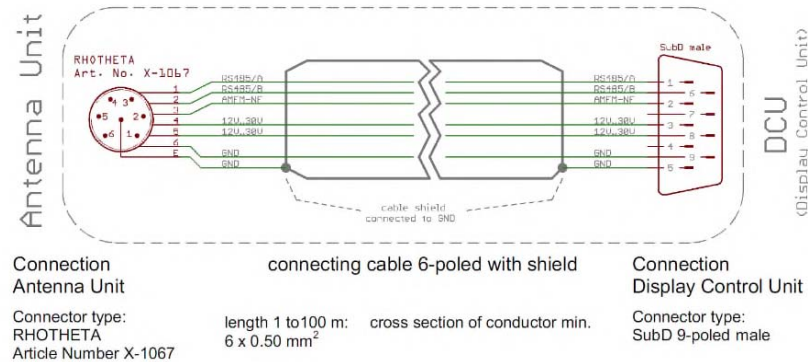


Figure #2



Photo #4

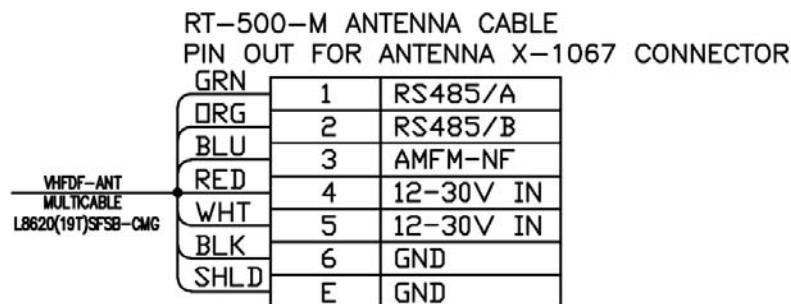


Figure #3

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- 12.1.31.4. 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 the Antenna Unit. Install the Antenna Unit onto the CCG provided adapter pipe. This requires stainless steel hardware including eight M6 bolts approximately 4cm/1.5” long, lock washers, washers, and nuts. Ensure the rubber gasket is in place between the Antenna Unit and the pipe.



Photo #5

- 12.1.31.5. Mount the antenna on at the top of the mast in the same position as the removed OAR 4400 antenna using the existing pipe-to-pipe clamps.
- 12.1.32. The contractor will work with the CCG On-Site Technical Representative to ensure that the marking line on the Antenna Unit is facing directly to the bow of the ship. Once the antenna is properly aligned the contractor will use a medium strength thread locker that can be removed without heat (LOCTITE 242 for example) on the bolts of the CCG provided antenna adapter and then secure it in place



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Photo #6

Wheelhouse Equipment Installation

- 12.1.33. The contractor will mount and connect the CCG provided RT-500-M Display Control Unit on the shelf above the chart table where the OAR 4400 unit was removed. The contractor will use the CCG provided bracket similar to what is shown below.
See DWG C182-042-BD for the wiring.



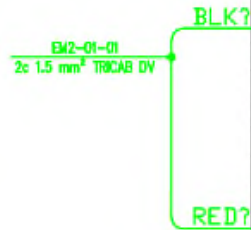
Figure #4

- 12.1.34. The contractor will reuse the Mean Well 24VDC Power Supply that was disconnected from the OAR 4400 unit – This is a 24VDC to 24VDC Converter powered from the Emergency 24VDC Panel EM2 breaker #1. The contractor will remove the old OAR connector and install the female DB15 connector and shell provided with the equipment to the existing cable (EM2-01-01) as per figure #5 and reuse it for the Rhotheta
RT-500-M
- 12.1.34.1. The contractor will use the female DB15 connector and shell provided with the equipment to connect the existing cable EM2-01-01 to the Display Control Unit. See DWG C182-042-BD and the figure below for the pinout.

Note: Confirm the polarity and conductor colours before connecting this existing cable

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RT-500-M DCU POWER CABLE
PIN OUT FOR DCU DB15 CONNECTOR



1	ALARM RELAY
2	N/A
3	SPEAKER (+)
4	SQUELCH OUT (GND)
5	LINE OUT (GND)
6	PTT IN (GND)
7	ALWAYS ON (+)
8	DC NEG. (0V) IN
9	ALARM RELAY
10	N/A
11	SPEAKER (-)
12	SQUELCH OUT
13	LINE OUT
14	PTT IN
15	DC POS. (24V) IN
SHELL	N/A

Figure #5

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- 12.1.35. The contractor will use a male DB9 connector (these may be provided with the equipment) and shell to connect the cable VHFDF-ANT to the Display Control Unit. This is the connection for the antenna. See DWG C182-042-BD and the figure below for the pinout.

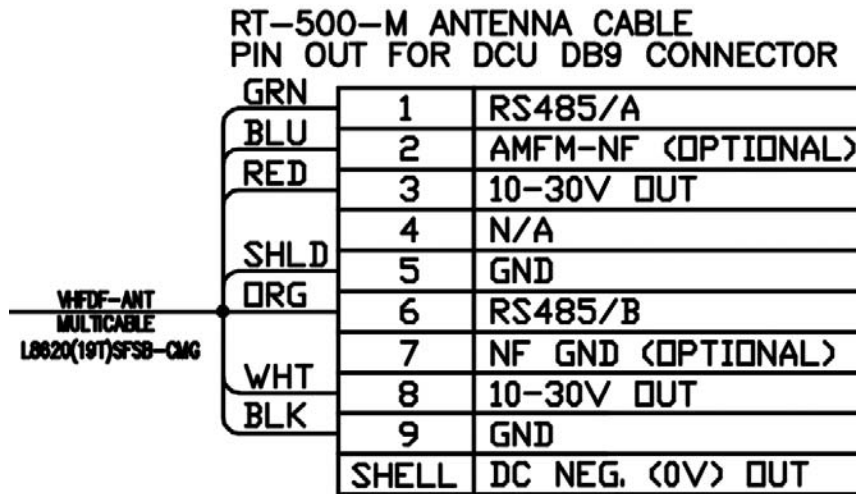


Figure #6

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- 12.1.36. The contractor will use two male DB9 connectors and shells (these may be provided with the equipment) to connect the cables LC-VHFDF and GPS-VHFDF to the Display Control Unit using the NMEA COM ports 1 and 2. This is the input from the Gyro Distribution and the GPS Distribution. See DWG C182-042-BD and the figure below for the pinout.

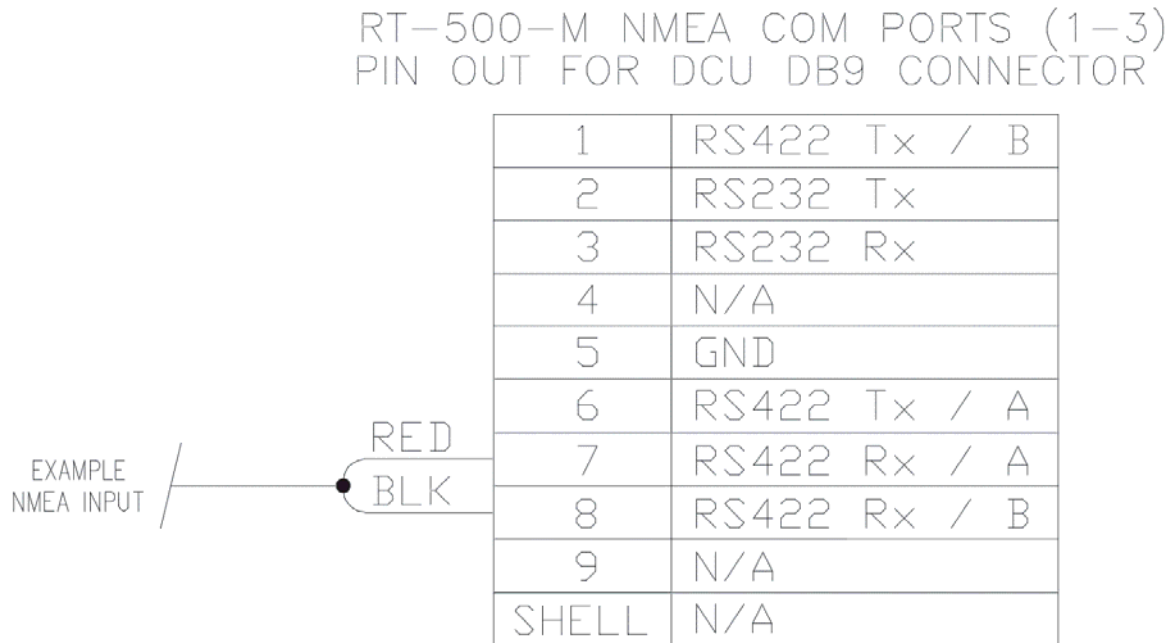


Figure #7

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Grounding of Equipment

12.1.37. The contractor will ground the system components as per the manufacturer's recommendations.

12.1.37.1. Ground the Display Control Unit as per the RT-500 System Manual using 12AWG cable.

12.2. Location

12.2.1. Various locations identified in the general technical description.

12.3. Interferences

12.3.1. The Contractor is responsible for the identification of interference items which may affect the relocation, removal, or installation of equipment, their temporary removal, their storage and protection, and their refitting to the vessel.

12.3.2. The contractor is responsible for protecting the surrounding area and equipment while carrying out this work.

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13. REFERENCES

13.1. Guidance/Drawings/Data

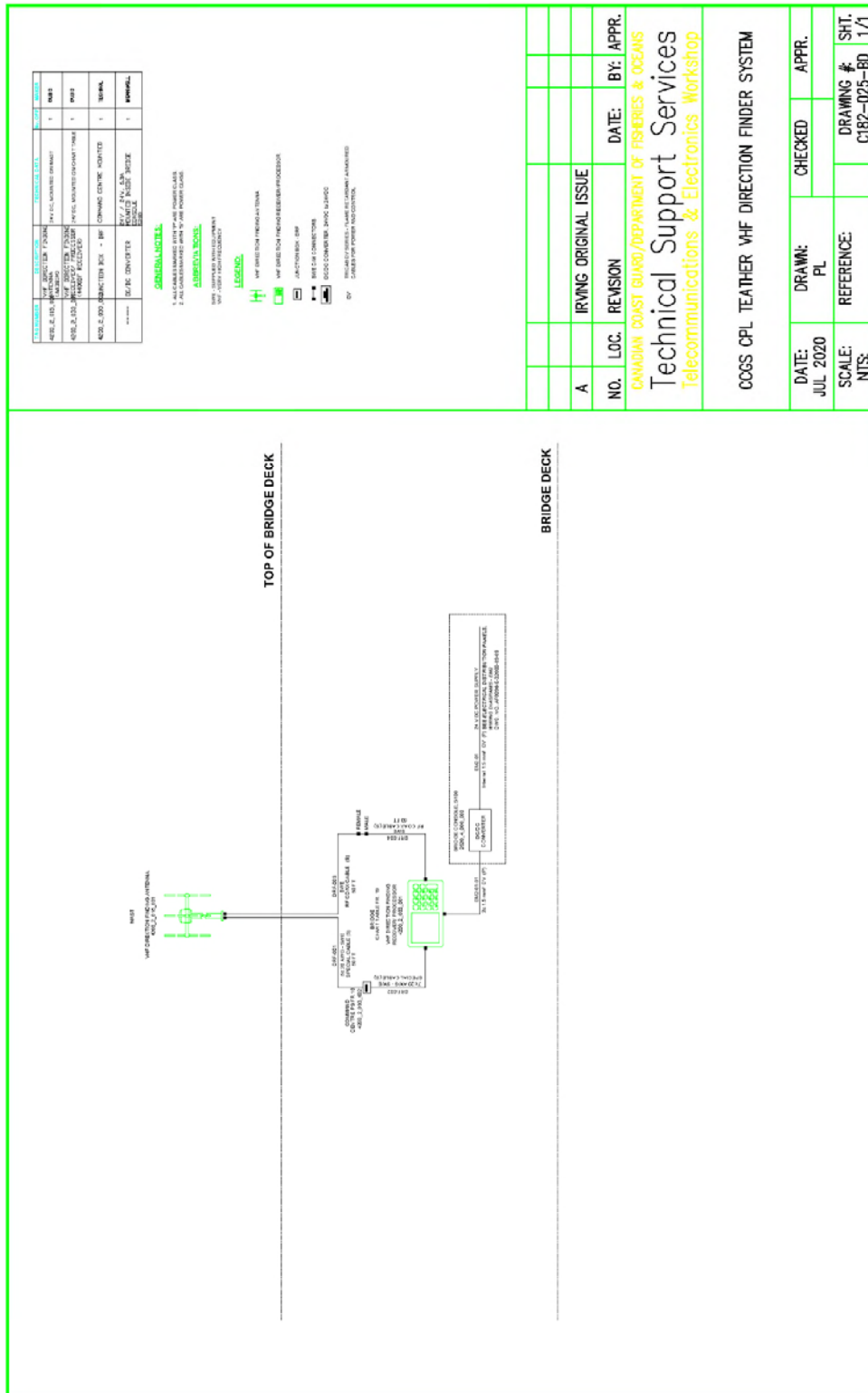
13.1.1. The CCG must provide contractor access to the relevant system drawings:

- g. Existing VHF-DF System Drawings (Reference for Removal)
Dwg. C182-025-BD (REV A) (OAR 4400 VHF-DF System)
- h. New VHF-DF System and Connections Drawings (Reference for Installation)
Dwg. C182-042-BD (REV A) (New Rhotheta RT-500-M VHF-DF System)
Dwg. C182-026-BD (REVE) (Existing Gyro System)
Dwg. C182-TBA-BD (REV A) (Existing GPS Distribution)
- i. Antenna Layout Drawing (Reference for Removal/Installation of Antennas)
Dwg. C182-001-AL (REV A) (Antenna Layout)

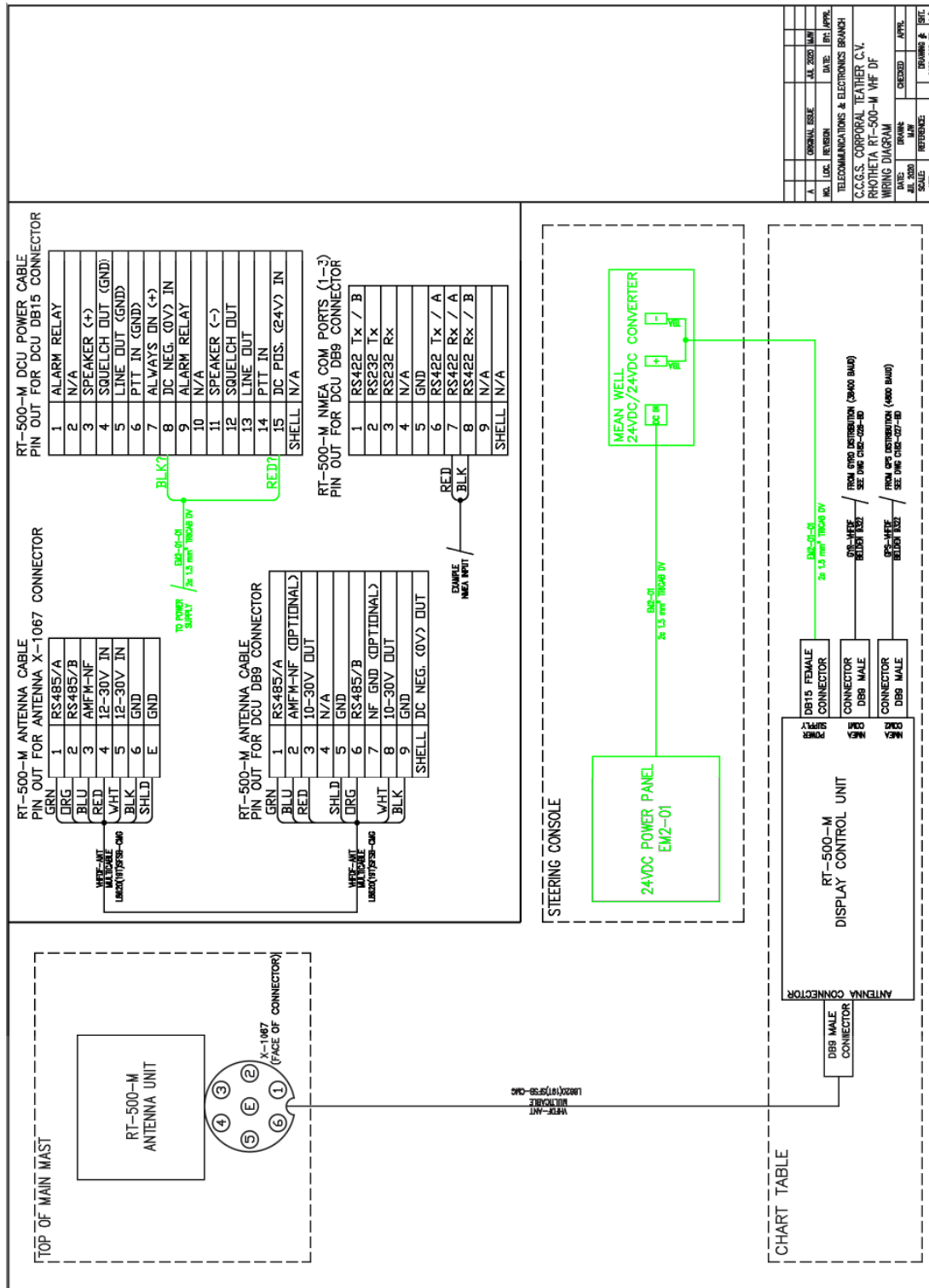
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- 13.1.2. **Example of Dwg. C182-025-BD (REV A) (Old VHF Direction Finder Equipment – Reference for Equipment Removal)**

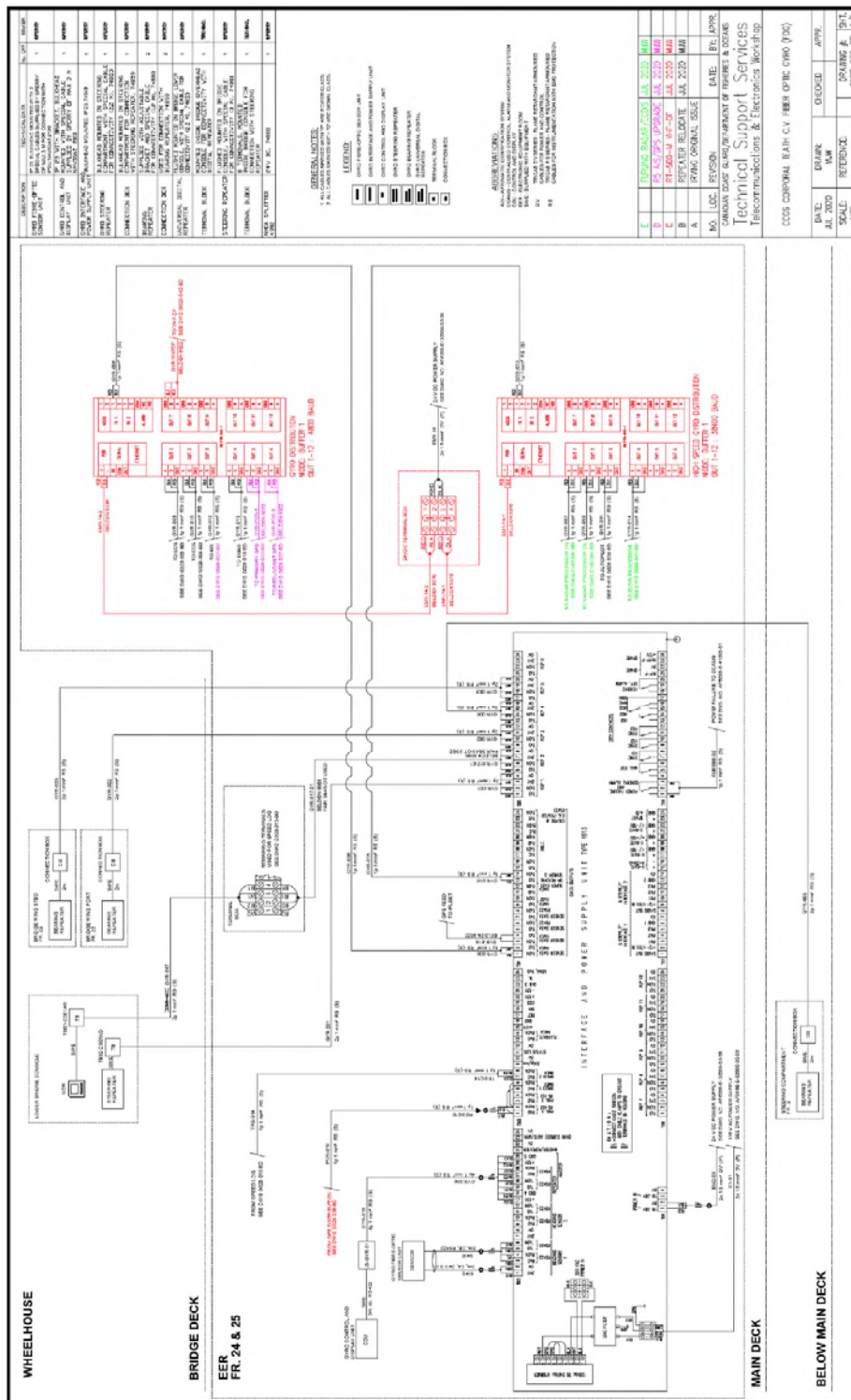
CCGS C.TEATHER DRYDOCKING 2020



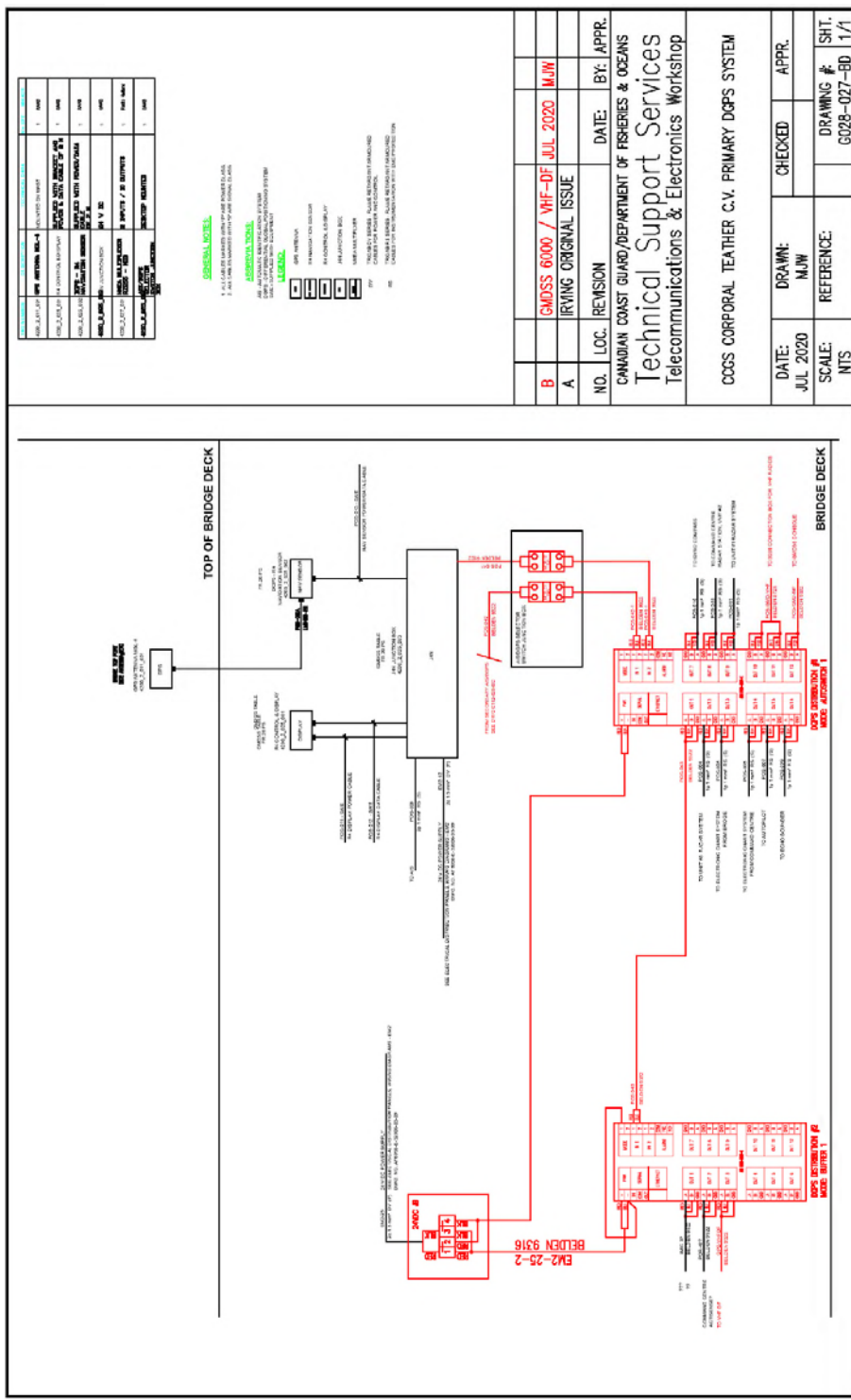
13.1.3. Example of Dwg. C182-042-BD (REV A) (New Radio Direction Finder Equipment)



13.1.4. **Example of Dwg. C182-026-BD SHT (REV E) (Gyro System/Distribution)**



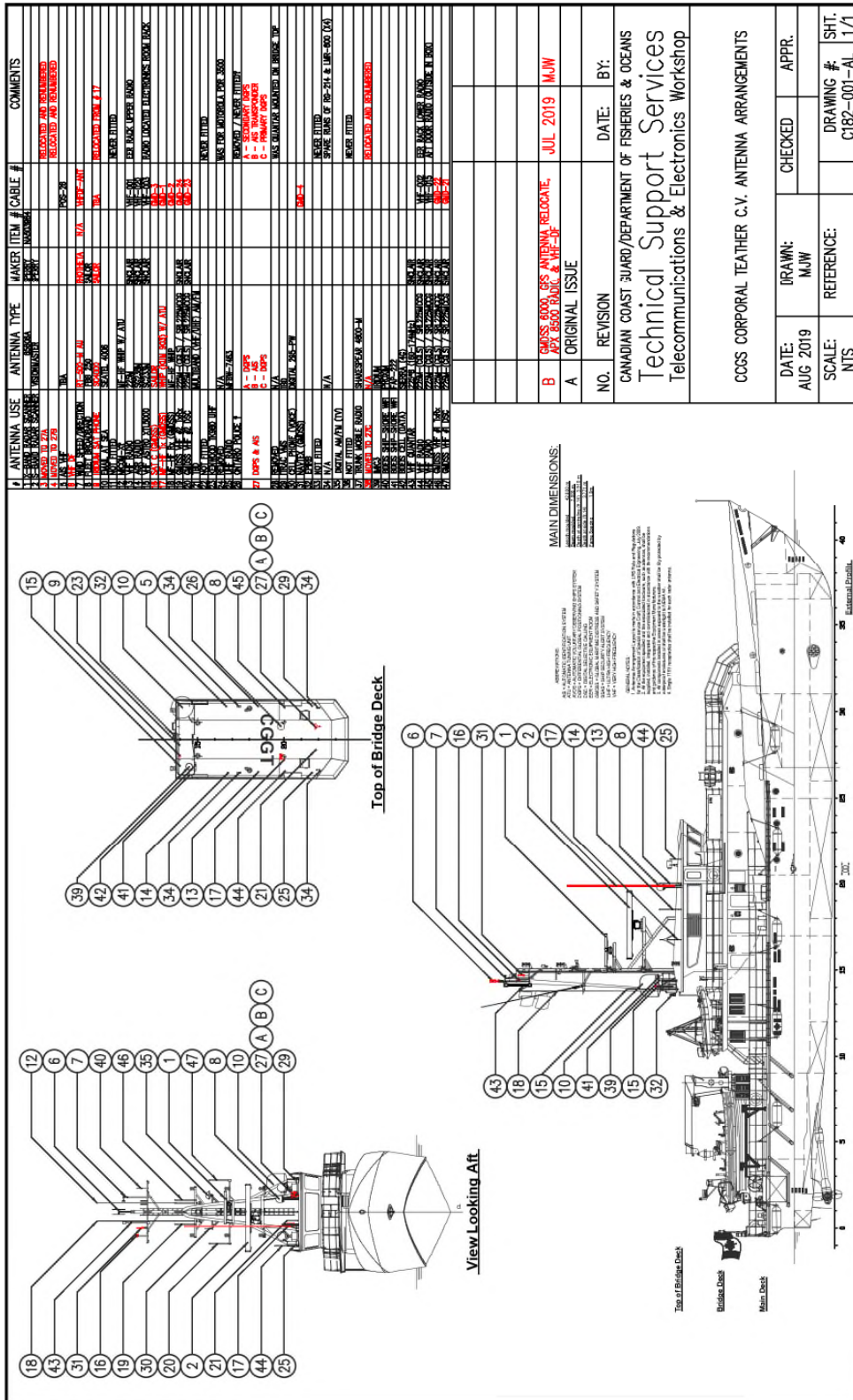
13.1.5. Example of Dwg. C182-027-WD (REV B) (GPS System/Distribution)



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13.1.6. Example of Dwg. C182-001-AL (REV B) (Antenna Layout)

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13.2. Standards and Regulations

- 13.2.1. The following standards, regulations, 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 CGTA:
- m. Canadian Coast Guard Fleet Safety and Security Manual (DFO/5737)
 - n. TP127 – Ship’s Electrical Standards
 - o. IEEE 45:2002 – Recommended Practice for Electrical Installation on Ships
 - p. Specification for the Installation of Shipboard Electronic Equipment (70-000-000-EU-JA-001)
 - q. Canadian Coast Guard ISM Lock Out/Tag Out Procedures
 - r. Canada Shipping Act, 2001

13.3. Owner Furnished Equipment

- 13.3.1. The following materials and equipment will be provided by the CCG:
- e. Multicable L8620(19T)SFSB-CMG Cable
 - f. Belden 9322 Cable
 - g. Belden 9316
 - h. Rhotheta RT-500-M Antenna Unit
 - i. Pipe and/or adapter for mounting Antenna Unit
 - j. Rubber Gasket For Antenna Mount
 - k. Rhotheta RT-500-M Control Display Unit
 - l. Mounting Brackets for Display Unit
- 13.3.2. Unless otherwise stated the contractor must provide all materials, labour, and equipment required to complete all tasks in this specification including stainless steel hardware, cable ties, and cable hangers where needed.
- 13.3.3. All labour required to complete the cleaning, including that required for removals, reinstallation, opening, and closing up of equipment and ducting is the contractor’s responsibility.

13.4. Standards and Regulations

- 13.4.1. The following Canadian 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 CGTA.

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

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14. PROOF OF PERFORMANCE

14.1. Inspection

- 14.1.1. The CCG Technical Representative must verify all equipment and wiring has been installed in good working order.
- 14.1.2. The CCG Technical Representative must verify that all spaces affected by the installation of equipment or and/or wiring have been cleaned.
- 14.1.3. The CCG Technical Representative must verify that all equipment in the areas affected by the installation of equipment or and/or wiring is fully operational after cleaning is complete.

14.2. Testing

- 14.2.1. The contractor will work with the CCG Technical Representative to function check the new VHF-DF system and ensure the antenna is properly oriented by using portable radios at the dock.
 - 14.2.1.1. The contractor will adjust the Antenna's orientation as directed by the CCG Technical Representative.
- 14.2.2. The VHF Direction Finder System must be tested by a CCG Technical Representative during Sea Trials to confirm proper function and antenna orientation.
 - 14.2.2.1. If necessary the contractor will further adjust the Antenna's orientation as directed by the On-Site CCG Technical Representative
- 14.2.3. The new VHF-DF System must be proven to be fully operation after the installation is complete.

14.3. Certification

- 14.3.1. N/A – Intentionally Left Blank

15. Deliverables

15.1. Reports

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15.1.1. N/A – Intentionally Left Blank

15.2. Drawings to be Updated by Contractor

15.2.1. N/A – Intentionally Left Blank

15.3. Spares

15.3.1. N/A – Intentionally Left Blank

15.4. Training

15.4.1. N/A – Intentionally Left Blank

15.5. Others

15.5.1. N/A – Intentionally Left Blank

APPENDIX A

**CCGS C.TEATHER
DRYDOCKING 2020**

PANEL E-2 DISTRIBUTION PANEL 120 VOLT

MEGGER AT 50 V

CIRCUIT NUMBER	EQUIPMENT
E2-1	SECURITY DEVICE(SCIP)
E2-2	SPARE
E2-3	POWER SUPPLY FOR WIPER CONTROL SYSTEM
E2-4	SPARE
E2-5	ECHO SOUNDER PROCESSOR DISPLAY AND PRINTER
E2-6	SONAR ASSEMBLY
E2-7	SPEED LOG
E2-8	OPEN DECK AREA BRIDGE DECK LIGHTING
E2-9	FAX MACHINE CHART TABLE LIGHTING
E2-10	SOCKET FOR CHARGERS, PORTABLE RADIO TELEPHONE
E2-11	SPARE
E2-12	CHARGER FOR AUTOMATIC VOLUNTARY OBERVATION SHIPS (AVOS)
E2-13	SOCKET 115 VOLT 15 AMP TOP DECK RADAR ANTENNAE
E2-14	STAIR FR. 14 TOP DECK SOCKETS FOR PORTABLE FLOODLIGHTS
E2-15	CHART LAMP, RED LIGHT BRIDGE AND COMMAND CENTRE
E2-16	EMERGENCY LIGHT BRIDGE / COMMAND CENTRE
E2-17	SPARE

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E2-18	SCANNER CONTROL UNIT ANTENNAE S-BAND
E2-19	SPARE
E2-20	ELECTRIC WHISTLE
E2-21	STBD, CENTRE, AND PORT HEATED FRONT WINDOWS
E2-22	SOCKET FOR DAY SIGNALLING LAMP
E2-23	PORT WING CONSOLE HEATER
E2-24	STBD WING CONSOLE HEATER
E2-25	AIR GROUND VHF TRANSCEIVER
E2-26	CCTV CONTROL STATION / MONITOR BRIDGE
E2-27	SPARE
E2-28	POWER SUPPLY UNIT MF / HF RADIO TELEPHONE
E2-29	FRONT CENTRE WINDOW WIPER CONTROLS (3 PHASE)
E2-30	LOUD HAILER
E2-32	SPARE
E2-33	PORT AND STBD WINDOW WIPER CONTROLS (3 PHASE)
E2-34	PORT, CENTRE, AND STBD HEATED FRONT WINDOWS
E2-35	SOCKET-BRIDGE WING CONSOLES
E2-36	SOCKET-MCR CONSOLE

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PANEL E-1 EMERGENCY DISTRIBUTION 120 VOLT

MEGGER AT 100V

CIRCUIT NUMBER	EQUIPMENT
E1-01	SOCKET FOR ECHO SOUNDER TRANSCIEVER ARR. IN EER, FRS. 25-26 STBD
E1-02	JUNC. BOX FOR CCTV POWER OVER ETHERNET ADAPTERS ARR. IN EER FRS. 25-26 STBD
E1-03	SOCKET FOR E-MAIL AT SEA EQUIPMENT ARR.IN EER FRS.23-24 STBD
E104	BRIDGE ELECTRONIC CHART SYSTEM (JB) ARR. IN BRIDGE FR. 22 STBD
E1-05	RADAR "X" BAND ISOLATION SWITCH ARR.ON TOP OF BRIDGE DECK FR. 15 PORT
E1-06	RADAR "S" BAND TRANSCIEVER AND UPS FOR RADAR STATION UNIT #3 COMMAND CENTRE FR. 18
E1-07	SPARE
E1-08	SOCKET FOR CCTV CONTROLLER ARR. IN EER FR. 24 STBD
E1-09	SPARE
E1-10	FIRE DETECTION CONTROL UNIT ARR. IN BRIDGE FRS. 18-19 PORT
E1-11	GYRO COMPASS INTERFACE AND POWER SUPPLY UNIT ARR. IN BRIDGE FRS. 25-26 STBD.
E1-12	SOCKET FOR MCR PRINTER

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E1-13	SEARCHLIGHT FRS. 21 PORT TOP OF BRIDGE
E1-14	SAT. CONNECTIVITY ADAPTER 4 PORT ARR. IN COMMAND CENTRE, FRS.16-17 PORT, SAT. CONNECTIVITY ADAPTER 8 PORT ARR. IN BRIDGE FRS. 19-20 PORT
E1-15	INDIVIDUAL STARTER FOR EMERGENCY GENERATOR COMPT FAN
E1-16	RECTIFIER FOR BATTERY BACK-UP SYSTEM
E1-17	SPARE
E1-18	SPARE
E1-19	ELECTRONIC CHART SYSTEM (JB) ARR. IN COMMAND CENTRE, FR. 16 STBD
E1-20	ELECTRONIC CHART SYSTEM DISPLAY ARR. IN BRIDGE WING CONSOLE, FR. 22 PORT
E1-21	ELECTRONIC CHART SYSTEM DISPLAY ARR. IN BRIDGE WING CONSOLE, FR. 22 STBD
E1-22	SPARE
E1-23	UPS FOR LAN ARR.IN EER FRS. 23-24 STBD
E1-24	DOUBLE SOCKET FOR CELLULAR PHONE TRANSCIEVER AND AMPLIFIER ARR. IN COMMAND CENTRE FR. 17 PORT
E1-25	SEATEL DOME HEATER
E1-26	SOCKET FOR RADIO COMMUNICATION RACK ARR. IN EER, FR. 24 STBD
E1-27	SOCKET FOR RADIO COMMUNICATION RACK ARR. IN EER, FR. 17-18 STBD
E1-28	REMOTE RADAR STATION UNIT #2 ARR. IN COMMAND CENTRE FR. 16 STBD
E1-29	SPARE
E1-30	HEATER FOR SOUND POWERED TELEPHONE (JB) ARR. IN MESSROOM FR. 21

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E1-31	RED FLASHING BEACON FOR GENERAL ALARM SYSTEM ARR. IN BOW THRUSTER ROOM, FR. 34
E1-32	FLASHING BEACON FOR AUTOMATIC TELEPHONE (JB) ARR. IN EMERGENCY GENERATOR COMPARTMENT, FR. 15 STBD
E1-33	SHORE CONNECTION BOX FOR AUTOMATIC TELEPHONE ARR. IN HVAC ROOM FR. 32 PORT
E1-34	BATTERY LOCKER HEATER ARR. ON BRIDGE DECK FR.24 CL
E1-35	SPARE
E1-36	SPARE
E1-37	SPEED LOG PRE-AMP
E1-38	SPARE
E1-78	ICIC3 UPS

EMERGENCY GENERATOR DISTRIBUTION 240 VOLT

MEGGER AT 500V range

CIRCUIT NUMBER	EQUIPMENT
2Q24	ME STBD PRE-LUBRICATING PUMP
2Q25	ME PORT PRE-LUBRICATING PUMP
2Q26	IICS MAIN CABINET (ATS)
2Q27	EMER DG ROOM ACTUATORS
2Q28	COLD ROOM COMPRESSOR # 1
2Q29	COLD ROOM COMPRESSOR # 2

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2Q30	S.W. COOLING PUMP
2Q31	SPARE
2Q32	SPARE

EMERGENCY GENERATOR DISTRIBUTION 120 VOLT

MEGGER AT 500V

CIRCUIT NUMBER	EQUIPMENT
-----------------------	------------------

3Q01	EMERGENCY DISTRIBUTION PANEL E2
3Q02	EMERGENCY DISTRIBUTION PANEL E1
3Q03	RECTIFIER FOR AUTOMATION UPS B SYSTEM
3Q04	CHARGER EMER. GEN STARTING BATTERY
3Q05	INTERFACE BOX EX-PROFF HORN
3Q06	CCTV CAMERA IR ILLUMINATORS
3Q07	SPARE
3Q08	H2S ALARM SYSTEM

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3Q09	SPARE
3Q10	NAVIGATION LIGHTS PANEL - BRIDGE CONSOLE STATION
3Q11	RESCUE BOAT DAVIT HEATERS
3Q12	RECTIFIER FOR AUTOMATION UPS A SYSTEM
3Q13	EMERGENCY LIGHTS
3Q14	EMERGENCY LIGHTS
3Q15	SPARE
3Q16	SPARE
3Q17	EMERGENCY LIGHTS
3Q18	SOCKETS FOR PORTABLE (3X) FLD LIGHTS STAIR AFT MN DECK
3Q19	SOCKETS FOR PORT AND STBD RHIB (RECTIFIER 2X)
3Q20	HEATERS EMERGENCY GENERATOR
3Q21	HEATERS PORT AND STBD GENERATORS
3Q22	SPARE
3Q23	SPARE
3Q24	RVHF/FMWIDEBAND ENCYPTION TRANSCEIVER
3Q25	GMDSS CONSOLE
3Q26	GALLEY FIXED FF BOX
3Q27	SPARE
3Q28	SPARE
3Q29	NOT MARKED

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3Q30

SPARE

EMERGENCY GENERATOR DISTRIBUTION 600 VOLT

CIRCUIT NUMBER	EQUIPMENT
2Q01	SPARE
2Q02	ME STBD PREHEATING PUMP
2Q03	SPARE
2Q04	ME PORT PREHEATING PUMP
2Q05	TRAILING LO PUMP GEARBOX STBD
2Q06	SPARE
2Q07	RESCUE BOAT DAVIT ELECTRIC WINCH PUMP HPU
2Q08	SPARE
2Q09	STEERING GEAR STBD PUMP # 2
2Q10	STEERING GEAR PORT PUMP # 2
2Q11	TRAILING LO PUMP GEARBOX PORT
2Q12	EMERGENCY FIRE PUMP
2Q13	SPARE
2Q14	TRANSFORMER "ET2" 10KVA :600/240 V, 3PH, E-SWBD 240V DIST.
2Q15	SPARE
2Q16	AIR STARTING COMPRESSOR #2

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2Q17

TRANSFORMER "ET1" 3X10KVA :600/120 V, 3PH, E-SWBD 120V
DIST.

2Q18

SPARE

MOTORS

**Meggered at
500V**

**CIRCUIT
NUMBER**

EQUIPMENT

Macerator Pump (Sewage Treatment)

B/W Transfer Pump (Sewage Treatment)

Sludge Pump (Sewage Treatment)

HPU

EXHAUST FAN MOTOR MMR

EXHAUST FAN MOTOR AMR

STBD. TRAILING PUMP GEAR BOX

PORT TRAILING PUMP GEAR BOX

5510-1-118-001 AIRSTART COMP (Compressor 1)

5510-1-117-001 AIRSTART COMP (Compressor 2)

2000-1-014-003 CPP PUMP 2.1

2000-1-014-004 CPP PUMP 2.,2

2000-1-014-005 CPP PUMP 1.1

2000-1-014-006 CPP PUMP 1.2

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GRAY WATER TRANSFER STATION

JET VAC COLLECTING UNIT

COALESCING PUMP

CDU1 COMPRESSOR

CDU2 COMPRESSOR

STEERING FLAT

STEERING HYDRAULIC UNIT STBD. AUX.

STEERING HYDRAULIC STBD. MAIN

STEERING HYDRAULIC UNIT PORT AUX.

STEERING HYDRAULIC PORT MAIN

EXHAUST FAN AMR

VFD1-SB09FA INLET FAN AMR

VFD1-SB08FA INLET FAN MMR

VFD1-SB09EA INLET FAN MMR

VFD1-SB08GA INLET FAN AMR

5510-1-117 AIR START COMPRESSOR

5510-1-118 AIR START COMPRESSOR

FORE PEAK

**CCGS C.TEATHER
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MEGGER AT 500V

CIRCUIT NUMBER	EQUIPMENT
P-414	WATER HEATER ELEMENTS
P-119	INSTANT WATER HEATER ELEMENTS
P-118	A/C UNIT 2 MOTORS
P-101	HOT WATER CIR. PUMP
BSD-40	BOWTHRUSTER ROOM FAN
E2 12	EM FIRE PUMP
	#1 REVERSE OSMOSIS FILTER MOTORS HP # 1
	#2 REVERSE OSMOSIS FILTER MOTORS HP #2

PANEL P-5 CONVECTION HEATER PANEL 240 VOLT

MEGGER AT 500V

CIRCUIT NUMBER	EQUIPMENT
P5-1	WASHROOMS FR 29 & STEWARDS LOCKER BELOW M. DECK CONVECTION HEATERS
P5-2	CENTRAL STORE ROOM, MCR & MEDICAL SAR LOCKER BELOW MAIN DECK CONVECTION HEATERS
P5-3	WET GEAR STORE ROOM M. DECK CONVECTION HEATERS
P5-4	H.V.A.C. ROOM M. DECK CONVECTION HEATERS
P5-5	WASHROOMS FR. 26 STBD, GALLEY, STAIRCASE AND WASHROOM FR. 16 STBD M. DECK CONVECTION HEATERS

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P5-6	SPARE
P5-7	SPARE
P5-8	SPARE

PANEL P-2 BLAST HEATER PANEL 600 VOLT

MEGGER AT 1000V

CIRCUIT NUMBER	EQUIPMENT
P2-1	BLAST HEATERS AMR
P2-2	LINEN / LAUNDRY LOCKER BLAST HEATER
P2-3	BLAST HEATER STEERING GEAR ROOM PORT
P2-4	BLAST HEATER STEERING GEAR ROOM STBD
P2-5	SPARE
P2-6	SPARE

PANEL P-1 BLAST HEATER PANEL 600 VOLT

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MEGGER AT 1000V

CIRCUIT NUMBER	EQUIPMENT
P1-1	BLAST HEATERS MMR
P1-2	BLAST HEATERS MMR & EMERGENCY GENERATOR ROOM
P1-3	BLAST HEATERS BOW THRUSTER ROOM
P1-4	SPARE
P1-5	SPARE
P1-6	SPARE

PANEL L-5 (A.C. DISTRIBUTION 120 VOLT)

MEGGER AT 500 V

CIRCUIT NUMBER	EQUIPMENT
L5-1	LIGHTING IN FREEZER,GALLEY DRY FOOD,REFRIGERATOR,WET GEAR,TRASH COMPACTOR,
L5-2	LIGHTING IN ELECTRO. EQUIP. RM. FR.26 STBD, CAPT. CAB,CH. ENG. CABIN, HVAC ROOM, DECK EQUIP LOCKER, FUEL OIL SPILL LOCKER
L5-3	MIRROR AND WALL LAMPS IN ACCOMMODATIONS
L5-4	SOCKET-OPEN M.DK. FR.28 PORT
L5-5	SOCKET-OPEN M.DK. FRS.21 & 12 STBD
L5-6	OPEN MAIN DECK PORT AND STBD LIGHTING
L5-7	SOCKET-OPEN M.DK. FRS.28 STBD

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L5-8	SOCKETS-MESS ROOM PORT
L5-9	SOCKET-OPEN M.DK. FR.33 PORT AND STBD
L5-10	LINEN/LAUNDRY LOCKER, MCR, 2ND ENG CABIN AND 2P CABINS BELOW M.DK.
L5-11	FR.29 STBD LOCKER, STEWARD LOCKER, FR.29 PORT AND BOW THRUSTER BELOW MAIN DECK
L5-12	SOCKETS-MESS ROOM FWD BULKHEAD STBD
L5-13	BED LAMPS BELOW M.DK. AND MAIN DECK
L5-14	SOCKET-LAUNDRY AND PASSAGEWAY BELOW MAIN DECK
L5-15	SOCKETS-MCR BELOW MAIN DECK
L5-16	SOCKETS-2ND ENG AND 2P CABINS BELOW MAIN DECK
L5-17	SOCKETS 1P & 2P CABINS BELOW MAIN DECK
L5-18	SOCKETS-EER AND CAPT. CABIN MAIN DECK
L5-19	SOCKETS-INCIDENT COMM. AND CHIEF ENG. CABINS MAIN DECK
L5-20	SOCKETS 2P CABINS PORT AND 2P CABIN STBD BELOW MAIN DECK
L5-21	SOCKET FOR WORKBENCH , EM'CY DG ROOM MAIN DECK
L5-22	SOCKETS 2P CABIN PORT AND 2P CABIN STBD BELOW MAIN DECK
L5-23	SPARE
L5-24	SOCKET-OPEN M.DK. FRS. 10-11 STBD
L5-25	SOCKET-OPEN M.DK FRS. 21 & 12 PORT
L5-26	SPARE

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PANEL L-4 (MESSROOM PANEL 120 VOLT A.C.)

MEGGER AT 250 V

CIRCUIT NUMBER	EQUIPMENT
L4-1	SOCKET FOR REFRIGERATOR-GALLEY
L4-2	SOCKET FOR FOOD PROCESSOR-GALLEY
L4-3	SOCKET FOR DEEP FRYER-GALLEY
L4-4	SOCKET FOR REFRIGERATOR-MESSROOM
L4-5	SOCKET FOR MICROWAVE OVEN-MESSROOM
L4-6	SOCKET FOR TOASTER-MESSROOM
L4-7	SPARE
L4-8	SPARE
L4-9	SOCKET FOR REFRIGERATORS (CAPT. AND CH. ENG.)
L4-10	SOCKET FOR COFFEE MAKER-MESSROOM
L4-11	SOCKET FOR SOUP WARMER-MESSROOM
L4-12	SOCKET FOR MIXER-GALLEY

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PANEL L-3 (120 VOLT)

MEGGER AT 50 V

CIRCUIT NUMBER	EQUIPMENT
L3-01	SOCKET TOP DECK FWD-PORT
L3-02	SOCKET TOP DECK FWD-STBD
L3-03	SOCKET TOP DECK AFT-PORT
L3-04	SOCKET TOP DECK AFT-STBD
L3-05	NORMAL LIGHTING-COMMAND CENTRE
L3-06	SOCKETS FROM BRIDGE(CHART TABLE,GMDSS AND CELL PHONE CHARGER)
L3-07	SOCKETS FROM COMMAND CENTRE (INCIDENT COMMANDER AND STBD TABLE)
L3-08	SOCKETS FROM BRIDGE AND COMMAND CENTRE
L3-09	SPARE
L3-10	SEARCH LIGHT-STBD
L3-11	FLOODLIGHT BRIDGE DECK PORT (AFT AREA)
L3-12	FLOODLIGHT BRIDGE DECK STBD (AFT AREA)
L3-13	SOCKET RADAR ANTENNA TOP DECK PORT
L3-14	NORMAL LIGHTING-BRIDGE

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L3-15	FIRE DETECTION CONTROL UNIT
L3-16	SOCKET FOR FR. 21 PORT AND STBD BRIDGE
L3-17	POWER SUPPLY-SATELLITE ANTENNA CONTROL UNIT
L3-18	SPARE
L3-19	SOCKET FOR FLOODLIGHT FR. 31 BRIDGE DECK
L3-20	SOCKET FOR FLOODLIGHT FR. 09 MAIN DECK PORT AND STBD
L3-21	SPARE
L3-22	SPARE

L2 PP TOGGLE SWITCH

Circuit Number	Equipment
L2-12-01	WET GEAR FAN
L2-12-02	SPARE
L2-12-11-09-03	WASHROOM MAIN DECK FORWARD FAN
L2-12-04	WASHROOM BELOW MAIN DECK FR. 26 PORT AND STBD. FANS
L2-12-05	WASHROOM MAIN DECK FR. 16 STBD FAN
L2-12-06	LAUNDRY FAN
L2-12-07	HVAC ROOM FAN
L2-12-08	FUEL OIL SPILL LOCKER FAN

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L2-12-10	STAIR CASE FAN MAIN DECK FR. 18
L2-12-12	MEDICAL EQ AND SAR LOCKER FAN
L2-12-13	GALLEY HOOD FAN

PANEL L-2 (HEATING AND GALLEY 240 VOLT A.C.)

MEGGER AT 500 V

CIRCUIT NUMBER	EQUIPMENT
L2-1	Galley Mini Split
L2-2	SPARE
L2-3	SPARE
L2-4	SPARE
L2-5	STAIR CASE DUCT HEATER
L2-6	MESS ROOM AND GALLEY DUCT HEATER
L2-7	BRIDGE DUCT HEATER
L2-8	COMMAND CENTRE DUCT HEATER
L2-9	SUPPLY BOX / HEATERS (4 COMPARTMENTS)

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L2-10	SUPPLY BOX / HEATERS (7 COMPARTMENTS)
L2-11	SPARE
L2-12	FANS DISTRIBUTION

PANEL L-1 (120 VOLT A.C.)

MEGGER AT 250V

CIRCUIT NUMBER	EQUIPMENT
Q-20	BATTERY CHARGER (BATTERY BACK UP SYSTEM)
Q-21	BATTERY CHARGER (AUTOMATION UPS A)
Q-22	SOCKET AFT WORKING AREA (MAIN DECK FRAME 0)
Q-23	LIGHT STAIR BELOW MAIN DECK AND MAIN DECK
Q-24	SOCKETS STEERING GEAR , AMR, MMR, FORE
Q-25	LIGHTS STEERING GEAR, 1/2 AMR, 1/2 MMR
Q-26	LIGHTS STEERING GEAR, 1/2 AMR, 1/2 MMR
Q-27	NAVIGATION LIGHTS PANEL (BRIDGE CONSOLE)

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Q-28	BATTERY CHARGER (AUTOMATION UPS-B)
Q-29	L-3 DISTRIBUTION PANEL 120 VOLT
Q-30	L-4 DISTRIBUTION PANEL 120 VOLT(GALLEY AND MESS EQUIPMENT)
Q-31	BRIDGE AFT HEATED WINDOWS
Q-32	SPARE
Q-33	L-5 DISTRIBUTION PANEL 120 VOLT
Q-34	SPARE
Q-35	ACTUATOR FOR CYCLONE FILTER (PURGING VALVE CONTROL PANEL)
Q-36	SPARE
Q-37	BRIDGE AFT HEATED WINDOWS

PANEL L-1 (240 VOLT BUSS A)

CIRCUIT NUMBER	EQUIPMENT
Q02	L2 DISTRIBUTION PANEL
Q03	SOCKET AFT WORKING AREA-PORT FR. 8-9
Q04	SOCKET AFT WORKING AREA-STBD FR. 8-9
Q05	SOCKET FORE WORKING AREA STBD FR. 10 MAIN DECK
Q06	SOCKET AFT MMR
Q07	SOCKET FORE MMR
Q08	BOW THRUSTER ROOM FAN

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Q09	UV STERILIZER
Q10	IICS MAIN CABINET
Q11	SEWAGE TREATMENT PLANT
Q12	SOCKET GALLEY
Q13	ENGINEERS SHOP FAN
Q14	EXHAUST FAN AMR
Q15	EXHAUST FAN MMR
Q16	GRAY WATER TRANSFER PUMP
Q17	SCIENTIC FREEZER
Q18	DISHWASHER

DISTRIBUTION BOARD BUSS "B"

Q40	DISTRIBUTION BOARD BUSS"C"
Q51	PORT CONVECTION HEATER DISTRIBUTION PANEL

DISTRIBUTION BOARD BUSS "C"

Q41	COOKING RANGE
Q42	WASHING / DRYING MACHINE # 1
Q43	WASHING / DRYING MACHINE # 2

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Q44	SPARE
Q45	DISHWASHER
Q46	FOOD WASTE DISPOSER
Q47	SCIENTIST FREEZER
Q48	SPARE
Q49	FW HYDROPHORE PUMP #1
Q50	FW HYDROPHORE PUMP #2
Q52	SPARE
Q53	SPARE

TRANSFORMERS

MEGGER AT 500 V

CIRCUIT NUMBER	EQUIPMENT
	600/240V PRIMARY
	PORT STBD.
	600/240V SECONDARY

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PORT
STBD.

600/120V PRIMARY

PORT
STBD.

600/120V SECONDARY

PORT
STBD.

SHORE POWER TRANSFORMERS

PRIMARY
SECONDARY

GENERATORS

MEGGER AT 500 V

EQUIPMENT

PORT GENERATOR # 2

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CABLE TO SWBD

STBD GENERATOR # 1

CABLE TO SWBD

EM GENERATOR

600V BUSS

#1 Generator S/N: WA-576975-0111

#2 Generator S/N: WA-576977-0111

Emergency Generator S/N: MX-154850-0111

LOCKOUT/TAGOUT PROCEDURE FOR GENERATORS:

1. Lockout Generator Circuit Breaker at Switchboard.
2. Inhibit Generator start at Local Control Panel.
3. Isolate Air Start and bleed off line to Air Starter for Main Generators/ Disconnect Battery for Emergency Generator.
4. Isolate Meg Alert System for respective Generators -
 - a. Emergency Generator open fuse FU03SB11CA in Section 1 Emergency Swbd.
 - b. Port (2) Main Generator open fuse FU09SB05AB Section 3 Main Swbd.
 - c. Stbd (1) Main Generator open fuse FU04SB05AB Section 3 Main Swbd.

600 VOLT DISTRIBUTION PANEL STBD.

CIRCUIT NUMBER

EQUIPMENT

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1Q01	HOT WATER CIRCULATION PUMP #1 (B.T. ROOM)
1Q02	SPARE
1Q04	CPP STBD PRESS. MAINTAINING PUMP
1Q11	CPP STBD MAIN PUMP
1Q13	REVERSE OSMOSIS SYSTEM (B.T. ROOM)
1Q14	P-1 BLAST HEATER DISTRIBUTION PANEL
1Q15	SPARE
1Q17	SPARE
1Q18	CONDENSION UNIT HVAC CONTROL PANEL
1Q19	INLINE HEATER (ON DEMAND HOT WATER HEATER)
1Q20	SPARE
1Q21	HUMIDIFIER
1Q24	SPARE
1Q25	SPARE
1Q26	SPARE
1Q06	SPARE
1Q10	STEERING GEAR STBD PUMP # 1

600V 3 PHASE PORT DISTRIBUTION PANEL

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MEGGER AT 500 V

CIRCUIT NUMBER	EQUIPMENT
4Q02	CPP PORT MAIN PUMP
4Q03	SPARE
4Q06	VACUUM SYSTEM UNIT (240 VOLT)
4Q07	COALESCER FILTER CONTROL PANEL
4Q10	SPARE
4Q12	REVERSE OSMOSIS SYSTEM (B.T. ROOM)
4Q13	SPARE
4Q14	AIR COMPRESSOR # 1 AMR
4Q15	HOT WATER HEATER (B.T. ROOM)
4Q17	P2 BLAST HEATER DISTRIBUTION PANEL
4Q18	SPARE
4Q19	TRANSFORMER "T3" 30 KVA, 600/240V, 3PH, L1 DIST. SWBD BUSS-B
4Q20	DECK MACH. SYST. (INT HYDR, SYST.)
4Q21	AHU CONTROL PANEL DUCT. PANEL HEATER HVAC
4Q22	CPP PORT PRESSURE MAINTAINING PUMP
4Q26	SPARE
4Q08	STEERING PUMP PORT # 1
4Q09	SPARE

MCC-STBD

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DRYDOCKING 2020**

MEGGER AT 500V

CIRCUIT NUMBER	EQUIPMENT
1-A	SW SERVICE COOLING PUMP #1
1-B	F/O TRANSFER PUMP
1-C	DIRTY OIL TRANSFER PUMP
1-D	FRESH WATER TANK #11 IMMERSION HEATER
1-E	FIRE/BILGE PUMP AMR SELF PRIMING
1-F	INLET FAN MMR
1-G	INLET FAN AMR
1-H	SW PUMP CONDENSING UNIT
1-J	SPARE

MCC-PORT

MEGGER AT 500V

CIRCUIT NUMBER	EQUIPMENT
2-A	FO CONTINUOUS TRANSFER PUMP
2-B	SW SERVICE COOLING PUMP #2
2-C	L.O. TRANSFER PUMP

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2-D	BILGE/FIRE PUMP MMR SELF PRIMING
2-E	INLET FAN MMR
2-F	INLET FAN AMR
2-G	FRESH WATER TANK #12 IMMERSION HEATER
2-H	SPARE
2-J	SPARE

SECTION 3 SWBD

MEGGER AT 500 V

CIRCUIT NUMBER	EQUIPMENT
3Q02	TRANSFORMER T1 3 X10KVA 600/240 3PH L1 DISTRIBUTION SWBD BUSS A
3Q03	CB-E TIE TO EM SWBD
3Q04	TRANSFORMER T2 3X15KVA 600/120V 3 PH L1 DISTRIBUTION SWBD
	CB-TIE TIES PORT AND STRB SWBD

SECTION 2 SWBD

2Q04	TRANSFORMER T1 3X10 KVA 600/240V 3 PH L1 DISTRIBUTION SWBD BUSS A
2Q05	CB-E TIE TO EM SWBD
2Q06	TRANSFORMER T2 3X15KVA 600/120V 3 PH L1 DISTRIBUTION SWBD

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CB-SP-A

SHORE POWER A 600V AC 60 HZ 3 PH 200AMP

CB-SP-B

SHORE POWER B 600V AC 60 HZ 3 PH 200 AMP

NOTE: When taking Swbd Reading Ground Detection cables must be unplugged in Section 1 and 4 of Swbd and Ground Lead for Earth Detection Relay(IM01-SB05AB) must be disconnected in Section 3

APPENDIX B

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Daily or Every 10 Hours

No	Description	Ref
1	Inspect all fasteners, checking for loose or corroded fasteners. Re-Torque as necessary.	Paragraph 6.3.2.1
2	Inspect hydraulic hoses, tubes, fittings, and connections, checking for damage or leaks.	Paragraph 6.3.2.2
3	Inspect winch drum, checking for mis-spoiled wire rope (bird-nesting or trapped loops).	Paragraph 6.3.2.3
4	Check for any defects or dangerous conditions.	

Weekly or Every 50 Hours

No	Description	Ref
1	Repeat daily checks.	
2	Wash with fresh water.	
3	Cycle all crane functions.	Paragraph 6.3.3.1
4	Visually inspect the relief valve/breather on the top of the gear reducer on the CT winch. Check for proper operation, and ensure there is no physical damage and that it is not painted over.	

Monthly or Every 200 Hours

No	Description	Ref
1	Repeat weekly checks.	
2	Wash with fresh water and detergent. Rinse with fresh water	
3	Lubricate the crane.	Paragraph 6.3.4.1
4	Inspect crane structure and associated components for cracks, corrosion and physical damage. Prepare and paint chipped or damaged surfaces. Apply a thin coat of silicone compound to bare metal surfaces. Return crane to readiness condition.	
5	Check security of electric cable connections.	
6	Inspect and lubricate the wire rope.	Paragraph 6.3.4.2
7	Check fluid level in the swing drive gear reducer	Paragraph 6.3.4.3
8	Test dynamometer functionality	Paragraph 6.3.4.4

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Table 6-2. Service Intervals

6 - 2

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Every 5 Years or As Required

No	Description	Ref
1	Repeat annual checks.	
2	Replace all hydraulic hoses.	Paragraph 6.3.7.1

Every 3 Months or Every 500 Hours

No	Description	Ref
1	Repeat monthly checks.	
2	Re-Torque Crucial Fasteners	Paragraph 6.3.5.1

Every 6 Months or Every 1000 Hours

No	Description	Ref
1	Repeat every 3 months checks.	

Annually or Every 2000 Hours

No	Description	Ref
1	Repeat every 6 months checks.	
2	Check swing bearing wear.	Paragraph 6.3.6.1
3	Inspect sheaves.	Paragraph 6.3.6.2
4	Change fluid in the swing drive gear reducer.	Paragraph 6.3.6.3
5	Change fluid in the CT winch.	Paragraph 6.3.6.4
6	Obtain hydraulic oil sample for analysis.	Paragraph 6.3.6.5

APPENDIX C

**CCGS C.TEATHER
DRYDOCKING 2020**

**On-board Maintenance PLAN
FOR HERO CLASS VESSELS**



MID SHORE PATROL VESSEL

Project Areas: Superstructure
Interior Bulwarks
Topsides Hull
Exterior Decks

Vessel Details

General Information			
Vessel Name	Hero Class Patrol Vessels		
Year Delivered	2012		
Vessel Type	Patrol Vessel		
Port of Registry	Canada	Flag	Canada

Vessel Dimensions (Metres)		Surface Areas (Sq. Metres)	
Hull LOA	42.8	Vertical Sides	
Hull Width	7.11	Superstructure	N/A
Hull Depth	2.85	Weather Decks	N/A

General Comments
<p>This report is written to aid in the on board maintenance of the vessel by the crew.</p> <p>Proper planning is key, to receive the benefits of the coatings. A few steps to remember when completing on board maintenance are:</p> <ol style="list-style-type: none"> 1) Decide where you are going to work 2) Clean the area. Scrape away any loose coatings and or rust then wash the area with a lot of fresh water. If there is grease or oil you may need to use a degreaser. A biodegradable degreaser, then rinse with a lot of fresh water. Most degreasers are very potent and require a high mixing ratio with water. International 950 cleaner is a 20:1 mix with water. 3) Once the area is dry clean the corroded area to bare metal with hand or power tools. 4) Feather back at least 5-10 mm to ensure a tight edge for the new coatings to adhere to 5) When applying the coatings with a brush and roller you may have to apply multiple coats to ensure the proper mil thickness is achieved <p>**Standards referenced are SSPC –SP-1 Cleaning, SSPC-SP2 & SSPC-SP3 Hand and Power tool cleaning, and SSPC-SP 11 power tool cleaning to bare metal with a 1.25 mil profile.**</p>

Project Specification

Interspec #	CM700436	Issued:	Apr, 14 2010
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Specification Details

Note: DFT – Dry Film Thickness in microns (25 microns = 1 mil)

Extent - % Surface Area in process (SC = Stripe Coat, TU = Touchup, FC = Full Coat)

Clean up is the solvent that should be used to clean equipment used with that product

Location Topsides Hull					Sq. Metres:	146
Preparation:	Clean to an SP1, and the prep SP-2/SP-3/SP-11, and feather the edges					
#	Product	Colour	DFT	Extent	Clean Up	
1	Intersheild 300	Bronze	5	T/U	GTA415	
2	Intergard 263	Light Grey	4	T/U	GTA415	
3	Interthane 990 Coast Guard Red	RAL 3000	2	T/U	GTA056	
4						
5						
Total Build:			11			

Location Topsides Hull White Markings					Sq. Metres:	10
Preparation:	Clean to an SP1, and the prep SP-2/SP-3/SP-11, and feather the edges					
#	Product	Colour	DFT	Extent	Clean Up	
1	Intersheild 300	Bronze	5	T/U	GTA415	
2	Intergard 263	Light Grey	4	T/U	GTA415	
3	Interthane 990 White	RAL 9003	2	T/U	GTA056	
4						
5						
Total Build:			11			

Location Bollards, Fairleads, & Capstan Drums					Sq. Metres:	50
Preparation:	Clean to an SP1, and the prep SP-2/SP-3/SP-11, and feather the edges					
#	Product	Colour	DFT	Extent	Clean Up	
1	Interprime 198	Red	3	T/U	GTA004	
2	Interprime 198	Grey	3	T/U	GTA004	
3	Interlac 665 Black Semi-Gloss	CLA164	2	T/U	GTA004	
4						
5						
Total Build:			8			

Location Interior Fwd Bullwark					Sq. Metres:	50
Preparation:		Clean to an SP1, and the prep SP-2/SP-3/SP-11, and feather the edges				
#	Product	Colour	DFT	Extent	Clean Up	
1	Interprime 198	Red	3	T/U	GTA004	
2	Interprime 198	Grey	3	T/U	GTA004	
3	Interlac 665 Black Semi-Gloss	CLA164	2	T/U	GTA004	
4						
5						
Total Build:			8			

Location Capstan Machinery					Sq. Metres:	135
Preparation:		Clean to an SP1, and the prep SP-2/SP-3/SP-11, and feather the edges				
#	Product	Colour	DFT	Extent	Clean Up	
1	Interprime 198	Red	3	T/U	GTA004	
2	Interprime 198	Grey	2	T/U	GTA004	
3	Interlac 665 RAL 7040 Buff	CLA165	2	T/U	GTA004	
4						
5						
Total Build:			5			

Location Hand rails main deck & Bridge deck and all life rails for stairs					Sq. Metres:	50
Preparation:		Clean to an SP1, and the prep SP-2/SP-3/SP-11, and feather the edges				
#	Product	Colour	DFT	Extent	Clean Up	
1	Interprime 198	Red	3	T/U	GTA004	
2	Interprime 198	Grey	3	T/U	GTA004	
3	Interlac 665 Black Semi-Gloss	CLA164	2	T/U	GTA004	
4						
5						
Total Build:			8			

Location Main Deck and Bridge Deck					Sq. Metres:	265
Preparation:		Clean to an SP1, and the prep SP-2/SP-3/SP-11, and feather the edges				
#	Product	Colour	DFT	Extent	Clean Up	
1	Intersheild 300	Bronze	5	T/U	GTA415	
2	Intersheild 300	Aluminum	5	T/U	GTA415	
3	Interbond 201	Storm Grey	5	T/U	GTA415	
4						
5						
Total Build:			15			

Location Calibre Mounts on Bridge Deck				Sq. Metres:	50
Preparation:		Clean to an SP1, and the prep SP-2/SP-3/SP-11, and feather the edges			
#	Product	Colour	DFT	Extent	Clean up
1	Interprime 198	Red	3	T/U	GTA004
2	Interprime 198	Grey	3	T/U	GTA004
3	Interlac 665 RAL 7040 Buff	CLA165	2	T/U	GTA004
4					
5					
Total Build:			8		

Location Top of Bridge Pilot House				Sq. Metres:	135
Preparation:		Clean to an SP1, and the prep SP-2/SP-3/SP-11, and feather the edges			
#	Product	Colour	DFT	Extent	Clean Up
1	Interprime 198	Red	3	T/U	GTA004
2	Interprime 198	Grey	3	T/U	GTA004
3	Interlac 665 White	RAL 9003	2	T/U	GTA004
4					
5					
Total Build:			8		

Location Superstructure (Aluminium)				Sq. Metres:	135
Preparation:		Clean to an SP1, and the prep SP-2/SP-3/SP-11, and feather the edges			
#	Product	Colour	DFT	Extent	Clean Up
1	Interprime 198	Red	3	T/U	GTA004
2	Interprime 198	Grey	3	T/U	GTA004
3	Interlac 665 White	RAL 9003	2	T/U	GTA004
4					
5					
Total Build:			8		

Location Superstructure outside, Mast & Slewing Davit				Sq. Metres:	135
Preparation:		Clean to an SP1, and the prep SP-2/SP-3/SP-11, and feather the edges			
#	Product	Colour	DFT	Extent	Clean up
1	Interprime 198	Red	3	T/U	GTA004
2	Interprime 198	Grey	3	T/U	GTA004
3	Interlac 665 RAL 7040 Buff	CLA165	2	T/U	GTA004
4					
5					
Total Build:			8		

Location Below Floor of Engine room and Aft Peak					Sq. Metres:	150
Preparation:		Clean to an SP1, and the prep SP-2/SP-3/SP-11, and feather the edges				
#	Product	Colour	DFT	Extent	Clean up	
1	Intersheild 300	Aluminium	5	T/U	GTA415	
2	Intersheild 300	Bronze	5	T/U	GTA415	
3						
4						
5						
Total Build:			8			

Location Fore Peak and Void Spaces					Sq. Metres:	100
Preparation:		Clean to an SP1, and the prep SP-2/SP-3/SP-11, and feather the edges				
#	Product	Colour	DFT	Extent	Clean Up	
1	Intersheild 300	Aluminium	5	T/U	GTA415	
2	Intersheild 300	Bronze	5	T/U	GTA415	
3						
4						
5						
Total Build:			8			

Location Grey water and Ballast Tanks					Sq. Metres:	100
Preparation:		Clean to an SP1, and the prep SP-2/SP-3/SP-11, and feather the edges				
#	Product	Colour	DFT	Extent	Clean Up	
1	Interline 624	Buff	6	T/U	GTA415	
2	Interline 624	Grey	6	T/U	GTA415	
3						
4						
5						
Total Build:			8			



**CCGS TEATHER SC
DRYDOCKING & REFIT 2020**

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