Public Works and Government Services Canada | Travaux publics et Services gouvernementaux Canada

RETURN BIDS TO:
RETOURNER LES SOUMISSIONS À:
Réception des soumissions - TPSGC / Bid Receiving - PWGSC
1550, Avenue d'Estimauville
1550, D'Estimauville Avenue
Québec
Québec
G1J 0C7

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
TPSGC/PWGSC
601-1550, Avenue d'Estimauville
Québec
Québec
G1J 0C7

Title - Sujet Kaelble - Regulatory Dry-docking	
Solicitation No. - N° de l'invitation F3774-17N188/A	**Date** 2017-09-15
Client Reference No. - N° de référence du client F3774-17N188	**GETS Ref. No. - N° de réf. de SEAG** PW-$QCL-037-17210
File No. - N° de dossier QCL-7-40106 (037)	**CCC No./N° CCC - FMS No./N° VME**
Solicitation Closes - L'invitation prend fin **at - à 02:00 PM** **on - le 2017-10-10**	**Time Zone** **Fuseau horaire** Heure Avancée de l'Est HAE
F.O.B. - F.A.B. **Plant-Usine:** ☐ **Destination:** ☑ **Other-Autre:** ☐	
Address Enquiries to: - Adresser toutes questions à: Woods, Michael	**Buyer Id - Id de l'acheteur** qcl037
Telephone No. - N° de téléphone (418) 649-2715 ( )	**FAX No. - N° de FAX** (418) 648-2209
Destination - of Goods, Services, and Construction: **Destination - des biens, services et construction:** NGCC Caporal Kaeble V.C. Pêches et Océans Canada Garde côtière 101 boulevard Champlain QUEBEC Québec G1K7Y7 Canada	

Instructions: See Herein

Instructions: Voir aux présentes

Delivery Required - Livraison exigée Voir doc	**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**

Canada

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PART 1 - GENERAL INFORMATION

1.1 Introduction

The bid solicitation and resulting contract document is divided into seven parts plus 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 and states that the Bidder agrees to be bound by the clauses and conditions contained in all parts of 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, if applicable, 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 Requirement, the Basis of Payment and other annexes.

1.2 Summary

(i) Requirement**:**

a) to carry out the docking and related work regarding the Canadian Coast Guard Ship (C.C.G.S.) Corporal Kaeble in accordance with the associated Technical Specifications attached as Annex A and all related drawings.

b) to carry out any approved unscheduled work not covered in paragraph a) above.

(ii) As per the Integrity Provisions under section 01 of Standard In*structions* 2003, bidders must provide a list of all owners and/or Directors and other associated information as required. Refer to section 4.21 of the *Supply Manual* for additional information on the Integrity Provisions.

(iii) The requirement is exempt from the provisions of the World Trade Organization Agreement on Government Procurement (WTO-AGP), Annex 4 and the North American Free Trade Agreement (NAFTA), Chapter Ten Annex 1001.2b Paragraph 1, however, it is subject to the Canadian Free Trade Agreement (CFTA) and will be limited to suppliers in Eastern Canada in accordance with Shipbuilding, Refit, Repair and Modernization Policy (1996-12-19).

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) 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 (2017-04-27) 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 on page 1 of the bid solicitation.

2.3 Enquiries - Bid Solicitation

All enquiries must be submitted in writing to the Contracting Authority no later than **seven (7) *calendar 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 questions or may request that the Bidder do so, so that the proprietary nature of the question is eliminated, and the enquiry can be answered with copies 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 the Province of Quebec.

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 (Not mandatory)

A bidders' Conference chaired by the Contracting Authority will be convened on board vessel CCGS Corporal Kaeble at 1:00 pm, September 27th, 2017. The vessel will be docked in the Port of Quebec, section 14, QC. **An attendance confirmation (by e-mail) is required before 11:00 am, September 25th, 2017, otherwise the bidders' conference will be cancelled.** Bidders must make sure to wear the required safety equipment, including; helmet, boots and goggles.

It is recommended that the Bidder or a representative of the Bidder attend the Bidders' Conference in order to review the Scope of the Work required and to receive additional information and clarifications. Bidders are to communicate with the Contracting Authority prior to the conference to confirm attendance.

Bidders that do not attend are not precluded from submitting a bid. Bidders are to provide the Contracting Authority with the names of their representatives no later than two days prior to the conference. The Contracting Authority will have an attendance form which is to be signed by the Bidder's representative(s) in attendance. Bidders are advised that any clarifications or changes resulting from the Bidder's conference and/or the subsequent viewing of the vessel shall be included as an amendment to the bid solicitation document.

2.6 Viewing – Vessel (Not mandatory)

A visit of the vessel will be held immediately after the bidders' conference.

2.7 Work Period – Marine - Bid

Work must commence and be completed as follows:

Start of work: November 6th, 2017 or as per ship's availability.
End of work: December 8th, 2017 or five (5) weeks after ship's availability. (At the earlier date.)

The Bidder agrees through submission of its response to the bid solicitation that the above time frame provides an adequate period to perform the subject work and absorb a reasonable amount of unscheduled work; and further, that they have sufficient material and human resources allocated or available to complete the subject work and a reasonable amount of unscheduled work within the Work period.

2.8 Docking Facility

Before award of Contract, the successful Bidder may be required to demonstrate to the satisfaction of Canada that the certified capacity of the dry docking facility to be used for the work is adequate for the anticipated loading as specified in the related dry docking plans and other documents. The successful Bidder will be notified in writing and 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 clearly show the adequacy of the proposed docking arrangement.

Upon written request from the Contracting Authority, the Bidder must provide current (providing there is no end date on the certificate submitted, then it is to have been issued within the past two years) and valid certification of the capacity and condition of the docking facility to be used for the Work.

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, in fact, preclude the facility from being considered as a possible dry docking site.

2.9 List of Proposed Sub-contractors

If the bid includes the use of subcontractors, the Bidder agrees, upon written request from the Contracting Authority, to provide a list of all subcontractors including a description of the things to be purchased, a description of the work to be performed by specification section and the location of the performance of that work. The list should not include the purchase of off-the-shelf items, software and such standard articles and materials as are ordinarily produced by manufacturers in the normal course of business, or the provision of such incidental services as might ordinarily be subcontracted in performing the Work, i.e. subcontract work valued at less than $5000.00

2.10 Quality Plan - Solicitation

Upon written request from the Contracting Authority, the Bidder shall provide an example of its Quality Plans applied to similar former projects. The Plan must be in the same format that will be used after award of contract.

2.11 Inspection and Test Plan

Upon written request from the Contracting Authority, the Bidder may be required to provide an example of its Inspection Plans for each item of the specifications.

2.12 Vessel Refit, Repair or Docking - Cost

All charges, fees expenses and disbursements incidental to the carrying out of the Work, including all items described in Supplemental General Conditions 1029 (2010-08-16) Ship Repair, section (07), are included in the Evaluation Price (and in the Contract Price under the Contract), including, without limitation:

1. **Services:** include all costs for ship services such as water, steam, electricity, etc., required for vessel maintenance for the duration of the Contract.

2. **Docking and Undocking includes**:

   (a) all costs resulting from dry docking, wharfage, security, shoring, shifting and/or moving of the vessel within the successful Bidder's facility;

   (b) the cost of services to tie up the vessel alongside and to cast off.

   Unless specified otherwise, the vessel will be delivered by Canada to the successful Bidder's facility alongside a mutually agreed safe transfer point, afloat and upright, and the successful Bidder will do the same when the Work is completed. The cost of services to tie up the vessel alongside and to cast off is included in the Evaluation Price

3. **Field Service Representatives/Supervisory Services:** include all costs for field service representatives/supervisory services including manufacturers' representatives, engineers, etc.

4. **Removals**: include all costs for removals necessary to carry out the Work and will be the responsibility of the successful Bidder whether or not they are identified in the specifications, except those removals not apparent when viewing the vessel or examining the drawings. The successful Bidder will also be responsible for safe storage of removed items and reinstalling them on completion of the Work. The successful Bidder will be responsible for renewal of components damaged during removal.

5. **Sheltering, Staging, Cranage and Transportation:** include the cost of all sheltering, staging including handrails, cranage and transportation to carry out the Work as specified.

   The successful Bidder will be responsible for the cost of any necessary modification of these facilities to meet applicable safety regulations.

PART 3 - BID PREPARATION INSTRUCTIONS

3.1 Bid Preparation Instructions

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

Section I: Management Bid (**1** hard copy)
Section II: Financial Bid (**1** hard copy)
Section III: Certifications Requirements (**1** hard copy)

Prices must appear in the financial bid only (Annex I) and Appendix 1 to Annex I. 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 are encouraged to :

1) use paper containing fibre certified as originating from a sustainably-managed forest and/or 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: Management Bid

The Management Bid should be concise and should include all the certifications and other requirements as noted in Parts 4 and 6.

Section II: Financial Bid

Bidders must submit their financial bid in accordance with the Financial Bid Presentation Sheet Annex I and the detailed Pricing Data Sheet, Appendix 1 to Annex I. The total amount of applicable taxes is to be shown separately, if applicable.

Section III: Certification Requirements

Bidders must submit the certifications required under Part 5.

3.1.2 Unscheduled Work and Evaluation Price

In any vessel refit, repair or docking contract, unscheduled work will arise after the vessel and its equipment is opened up and surveyed. The anticipated cost of the Work will be included in the evaluation of bids. The overall total cost will be calculated by including an estimated amount of additional personhours (and/or material) multiplied by a firm hourly charge-out labour rate and is added to the firm price for the Work.

The overall total referred to as the "Evaluation Price" will be used for evaluating the bids. The estimated work will be based on historical experience and there is no minimum or maximum amount of unscheduled work nor is there a guarantee of such work.

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 technical, management and financial evaluation criteria specified below.

(b) An evaluation team composed of representatives of Canada will evaluate the bids.

4.1.1 Financial Bid

Bidders must submit their financial bid in accordance with the Financial Bid Presentation Sheet Annex “I” and the detailed Pricing Data Sheet, Appendix 1 to Annex “I”. The total amount of Goods and Services Tax or Harmonized Sales Tax is to be shown separately, if applicable.

4.1.1.1 Unscheduled Work and Evaluation Price

In any vessel refit, repair or docking contract, unscheduled work will arise after the vessel and its equipment is opened up and surveyed. The anticipated cost of the Work will be included in the evaluation of bids. The overall total cost will be calculated by including an estimated amount of additional person-hours (and/or material) multiplied by a firm hourly charge-out labour rate and is added to the firm price for the Work.

The overall total referred to as the "Evaluation Price" will be used for evaluating the bids. The estimated work will be based on historical experience and there is no minimum or maximum amount of unscheduled work nor is there a guarantee of such work.

4.1.2 Mandatory Requirements

Bids will be assessed in accordance with the entire requirement of the bid solicitation including compliance with the mandatory certifications and table of deliverable requirements as detailed in Parts 2, 4, 5 and 6. Only those bids which are found to meet all the mandatory requirements within the specified time frames will be deemed responsive.

4.1.3 Table of Mandatory Requirements to be met by bid closing

Notwithstanding deliverable requirements specified anywhere else within this solicitation and its associated Technical Specification, the following are the only mandatory deliverables that must be submitted with the Bid at the time of bid closing. The following are mandatory and the Bidder must be compliant on each item to be considered responsive.

Item	Description	Completed and attached
1	Completed Annex “I” Financial Bid presentation Sheet;	
2	Completed Appendix 1 to Annex “I” Price per item sheet;	
3	Letter or proof of Insurance as per article 6.13 of Part 6;	

4.1.4 Other information upon request only

The following information, which supports the bid, may be requested by the Contracting Authority from the bidder and it must be provided within **two (2)** working days of the written request:

Item	Description	Completed and attached	To be forwarded if requested by the CA
1	Current and valid certification of the capacity and condition of the docking facility, as per clause 2.8 of Part 2;		Prior to contract award
2	Examples of quality and inspections plans, as per articles 2.10 and 2.11		Prior to contract award
3	Proof of good standing with Worker's Compensation Board as per clause 6.6 of Part 6;		Prior to contract award
4	Proof of welding certification, as per clause 6.7 of Part 6;		Prior to contract award
5	Proof of valid Labor Agreement or similar instrument covering the work period as per clause 6.8 of Part 6;		Prior to contract award
6	ISO Registration Certificate or Quality Assurance Documentation, as per article 11 of Part 6		Prior to contract award
7	Environment Protection as per article 6.12 Part 6		Prior to contract award
8	List of Proposed Sub-contractors		Prior to contract award
9	Annex "J" – Pricing Data Sheets		Prior to contract award

4.1.5 Deliverables after Contract award

Item	Description	Must be supplied after contract award, within
1	Insurance Requirements as per article 7.11, Part 7;	10 calendar days
2	Work Schedule and reports as per item 7.16, Part 7.	5 calendar days

4.2 Basis of Selection

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

4.3 Public Bid Opening

A public bid opening will be held in Public Works and Government Services Canada, 601-1550, D'Estimauville Ave., Québec, Qc at 02:00 PM (EDST) on the date show at the first page.

Following solicitation closing, bid results may be obtained by calling at No. (418) 649-2888.

PART 5 - CERTIFICATIONS

Bidders must provide the required certifications and additional 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 will 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 provided 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), 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 website (http://www.esdc.gc.ca/en/jobs/workplace/human_rights/employment_equity/federal_contractor_program.page?&_ga=1.229006812.1158694905.1413548969).

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.

PART 6 - SECURITY, FINANCIAL AND OTHER REQUIREMENTS

6.1 Security Requirement *(Not used)*

6.2 Financial Requirements *(Not used)*

6.3 Accommodation

Bidder shall be responsible to provide accommodation in accordance with item 4 paragraph 4.12 of Annex A for the duration of the Contract.

6.4 Parking

Bidder shall be responsible to provide parking and services in accordance with item 4.11 of Annex A for the duration of the Contract.

6.5 Material and Supply Support *(Not used)*

6.6 Workers' Compensation - Letter of Good Standing

It is mandatory that the Bidder has an account in good standing with the Provincial Workers Compensation Board/Commission.

Upon written request from the Contracting Authority, the Bidder must submit a certificate or Letter of Good Standing from the applicable Workers Compensation Board/Commission. Failure to provide this information will render the bid non responsive.

6.7 Welding Certification

Welding must only be undertaken by a company Certified by the Canadian Welding Bureau (CWB) to the requirements of the following Canadian Standards Association (CSA) standards:

(a) CSA W47.1, Certification of Companies for Fusion Welding of Steel, section 2;
(b) CSA W47.2, Certification of companies for fusion welding of aluminum;
(c) CSA W59, Welded steel construction (metal arc welding); and
(d) CSA W59.2, Welded aluminum construction.

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 intended to be used in the completion 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 welding certification.

6.8 Valid Labour Agreement

If the Bidder has a labour agreement, or other suitable instrument, in place with its unionized labour or workforce, it must be valid for the proposed period of any resulting contract.

Upon written request from the Contracting Authority, the Bidder must provide evidence of that agreement or other suitable instrument.

6.9 Work Schedule and Reports *(Not used)*

6.10 Supervision of Fueling and Disembarking Fuel

SACC Manual Clause A9056C (2008-05-12) Supervision of Fueling and Disembarking Fuel

6.11 ISO 9001:2008 - Quality Management Systems

Upon written request from the Contracting Authority, the Bidder must provide its current ISO Registration Documentation indicating its registration to ISO 9001:2008.

Documentation and procedures of bidders not registered to the ISO standards may be subject to a Quality System Evaluation (QSE) by the Inspection Authority before award of a contract.

6.12 Environmental Protection

Upon written request from the Contracting Authority, the Bidder must submit details of its environmental emergency response plans, waste management procedures and/or formal environmental training undertaken by its employees.

6.13 Insurances Requirements

At bids closing date 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".

PART 7 - RESULTING CONTRACT CLAUSES

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

1. Requirement

The contractor must:

a) to carry out the docking and related work regarding the Canadian Coast Guard Ship (C.C.G.S.) Corporal Kaeble in accordance with the associated Technical Specifications attached as Annex A and all related drawings.

b) carry out any approved unscheduled work not covered in paragraph **a**) above.

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) issued by Public Works and Government Services Canada.

2.1 General Conditions

2030, (2016-04-04), General Conditions - Higher Complexity - Goods, apply to and form part of the Contract. (except for paragraph 26 "*Liability*" which is deleted in its entirety and replace by the item 7.42 below).

Paragraph 22 "Warranty" of 2030, General Conditions – Higher Complexity – Goods, is amended in the Annex " E " - Warranty.

2.2 Supplemental General Conditions

From beginning to end of work:

Unmanned ship:

1029 (2010-08-16) Ship Repairs, excluding section 08 apply to and form part of the Contract.

On required basis only:

Manned ship:

1029 (2010-08-16) Ship Repairs, excluding section 09 apply to and form part of the Contract.

3. Security Requirement

There is no security requirement associated with this Statement of Work

4. Term of Contract

The contract period is from Contract award date until the end of the warranty period inclusively.

4.1. Work Period – Marine – Contract

Work must commence and be completed as follows:

Start of work: November 6th, 2017 or as per ship's availability.
End of work: December 8th, 2017 or five (5) weeks after ship's availability. (At the earlier date.)

The Contractor agrees that the above time frame provides an adequate period to perform the subject work and absorb a reasonable amount of unscheduled work; and further, that it has sufficient material and human resources allocated or available to complete the subject work and a reasonable amount of unscheduled work within the Work Period.

5. Authorities

5.1 Contracting Authority

The Contracting Authority for the Contract is:

Michael Woods
Supply Specialist (marine)
Public Works and Government Services Canada
Eastern Quebec Directorate
Marine Section

Telephone: 418-649-2715
Facsimile: 418-648-2209
E-mail address: michael.woods@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.

5.2 Technical Authority (Will be filled in at contract award)

The Technical Authority for the Contract is:

Name : _____
Title : _____
Telephone: _____
Facsimile: _____
E-mail address: _____

The Technical Authority 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.

5.3 Inspection Authority/Inspector

The Inspection Authority for the Contract is:

Same as paragraph 5.2 above.

The Inspection Authority is the representative of the department or agency for whom the Work is being performed under the Contract and is responsible for inspection of the Work and acceptance of the finished work. The Inspection Authority may be represented on-site by a designated inspector and any other Government of Canada inspector who may from time to time be assigned in support of the designated Inspector.

6. Payment

6.1 Basis of Payment - Firm Price

In consideration of the Contractor satisfactorily completing all of its obligations under the Contract, the Contractor will be paid the firm price indicated in Annex B. Goods and Services Tax or Harmonized Sales Tax is extra, if applicable. Payment for unscheduled work will be done in accordance with Basis of Payment outlined at Annex B.

6.2 Payment Terms - 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 90 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 90 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.

6.3 Method of Payment

SACC Manual Clause	C6000C (2017-08-17)	Limitation of Price
SACC Manual Clause	H4500C (2010-01-11)	Lien - Section 427 of the Bank Act

7. Invoicing Instructions

7.1 Invoicing Instructions - Progress Payment Claim

The Contractor must submit invoices that contain the information required by the General Conditions 2030(2016-04-04) Part 13.

7.2 Invoicing

Invoice to be made to the name of:

DFO.invoicing-facturation.MPO@canada.ca

Write the name of the contact person:
[redacted]

Electronic Copy to be sent for verification to: michael.woods@pwgsc-tpsgc.gc.ca

7.3 Warranty Holdback

A warranty holdback of **10%** of the total contract price as last amended (applicable taxes excluded) will be applied to the final claim for payment. This holdback will be payable by Canada upon the expiry of the 90 day warranty period(s) applicable to the work. Applicable taxes are to be calculated and paid on the total amount of the claim before the 10% holdback is applied. At the time that the holdback is released, there will be no applicable taxes payable, as it was included in previous payments.

8. Certifications

8.1 Compliance with the certifications provided by the Contractor in its bid is a condition of the Contract and subject to verification by Canada during the entire contract period. If the Contractor does not comply with any certification or it is determined that any certification made by the Contractor in its bid is untrue, whether made knowingly or unknowingly, Canada has the right, pursuant to the default provision of the Contract, to terminate the Contract for default.

9. Applicable Laws

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

10. Priority of Documents

If there is a discrepancy between the wordings 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, (2010-08-16), Ship Repairs;
c) the General Conditions 2030, (2016-04-04), General Conditions - Higher Complexity - Goods
d) Annex A, Requirement;
e) Annex B, Basis of Payment;
f) Annex C, Insurance Requirements;
g) Annex D, Inspection/Quality Assurance/Quality Control;
h) Annex E, Warranty;
i) Annex F, Vessel Custody
j) the Contractor's bid dated _____

11. 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 will not release the Contractor from or reduce its liability under the Contract.

The Contractor is responsible to decide 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 will be at the Contractor's expense, and for its own benefit and protection.

The Contractor must forward to the Contracting Authority within **ten (10)** calendar days after the date of award of the Contract a Certificate of Insurance including details of the insurance coverage, exclusions, deductibles and conditions and confirming that the insurance policy complying with the requirements is in force. The Contractor must, if requested by the Contracting Authority, forward to Canada a certified true copy of all applicable insurance policies.

12. Financial Security

(Not used)

13. Accommodation

Contractor shall be responsible to provide accommodation in accordance with item 4.12 of Annex A for the duration of the Contract.

14. Parking

Bidder shall be responsible to provide parking spots and services in accordance with item 4.11 of Annex A for the duration of the Contract.

15. Sub-contracts and Sub-contractor List

The Contracting Authority is to be notified, in writing, of any changes to the list of subcontractors before commencing the work.

When the Contractor sub-contracts work, a copy of the sub-contract purchase order is to be passed to the Contracting Authority. In addition, the Contractor must monitor progress of sub-contracted work and inform the Inspection Authority on pertinent stages of work to permit inspection when considered necessary the Inspection Authority.

16. Work Schedule and Reports

No later than **five (5)** calendar days after contract award, the preliminary schedule must be revised and expanded as necessary and resubmitted before commencement of the Work.

The Contractor must provide a detailed work schedule showing the commencement and completion dates for the Work in the available work period, including realistic target dates for significant events. During the Work Period the schedule is to be reviewed on an ongoing basis by the Inspection Authority and the Contractor, updated when necessary, and available in the Contractor's office for review by Canada's authorities to determine the progress of the Work.

Production work schedules must be revised and resubmitted before each Progress Meeting. The revised schedules must show the effect of progressed work and approved work arisings. Changes in scheduled completion dates due to unscheduled work will not be accepted except as negotiated under Design Change or Additional Work, Article 26.

17. Insulation Materials - Asbestos Free

All materials used to insulate or re-insulate any surfaces on board the vessel must meet Transport Canada Marine standards, for commercial marine work, and, for all work, be free from asbestos in any

form. The Contractor must ensure that all machinery and equipment located below or adjacent to surfaces to be re-insulated are adequately covered and protected before removing existing insulation.

18. Loan of Equipment - Marine

The Contractor may apply for the loan of the Government special tools and test equipment particular to the subject vessel as identified in the Specifications. The provision of other equipment required for the execution of work in the Specifications is the sole responsibility of the Contractor.

Equipment loaned under this provision must be used only for work under this Contract and may be subject to demurrage charges if not returned on the date required by Canada. In addition, equipment loaned under the above provision must be returned in a like condition, subject to normal wear and tear.

A list of Government equipment that the Contractor intends to request must be submitted to the Contracting Authority within ten (10) calendar days of Contract Award to permit timely supply or for alternate arrangements to be made. The request must state the time frame for which the equipment is required.

19. Trade Qualifications

The Contractor must use qualified, certificated **(**if applicable) and competent trades people and supervision to ensure a uniform high level of workmanship. The Inspection Authority may request to view and record details of the certification and/or qualifications held by the Contractor's trades people. This request should not be unduly exercised but only to ensure qualified trades people are on the job

20. Material and Supply Support *(Not used)*

21. ISO 9001:2008 - Quality Management Systems

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

ISO 9001:2008 - 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 : 7.3 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.

21.2 Assistance for Government Quality Assurance (GQA):

The Contractor must provide the Inspection Authority 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 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 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, the equipment necessary for all validation purposes. Contractor personnel must be made available for operation of such equipment as required.

When the Inspection Authority 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, together with relevant technical data as the Inspection Authority may request.

The Contractor must notify the Inspection Authority of non-conforming product received from a subcontractor when the product has been subject to GQA.

22. Quality Control Plan

The Contractor must implement and follow the Quality Control Plan (QCP) prepared according to the latest issue (at contract date) of ISO 10005 Quality management - Guidelines for quality plans, approved by the Inspection and Technical Authorities. The QCP shall describe how the Contractor will conform to the specified quality requirements of the Contract and specify how the required quality activities are to be carried out, including quality assurance of subcontractors. The Contractor must include a traceability matrix from the elements of the specified quality requirements to the corresponding paragraphs in the QCP.

The documents referenced in the QCP shall be made available when requested by the Inspection Authority.

The Contractor must make appropriate amendments to the QCP throughout the term of the contract to reflect current and planned quality activities. Amendments to the QCP must be acceptable to the Inspection and Technical Authorities.

Refer to Annex “D” for further details on the Quality Control Plan requirements.

23. Welding Certification

Welding must only be undertaken by a company Certified by the Canadian Welding Bureau (CWB) to the requirements of the following Canadian Standards Association (CSA) standards:

(a) CSA W47.1, Certification of Companies for Fusion Welding of Steel, section 2;
(b) CSA W47.2, Certification of companies for fusion welding of aluminum;
(c) CSA W59, Welded Steel Construction (Metal Arc Welding). And
(d) CSA W59.2, Welded aluminum construction.

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 intended to be used in the completion 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 welding certification.

24. Environmental Protection

The Contractor and its sub-contractors engaged in the Work on a Crown vessel must carry out the Work in compliance with applicable municipal, provincial and federal environmental laws, regulations and industry standards.

The Contractor must have detailed procedures and processes for identifying, removing, tracking, storing, transporting and disposing of all potential pollutants and hazardous material encountered, to ensure compliance as required above.

All waste disposal certificates are to be provided to the Inspection Authority, with information copies sent to the Contracting Authority. Furthermore, additional evidence of compliance with municipal, provincial and federal environmental laws and regulations is to be furnished by the Contractor to the Contracting Authority when so requested.

The Contractor must have environmental emergency response plans and/or procedures in place. Contractor and subcontractor employees must have received the appropriate training in emergency preparedness and response. Contractor personnel engaging in activities which may cause environmental impacts or potential non compliance situations, must be competent to do so, on the basis of appropriate education, training, or experience.

25. Supervision of Fueling and Disembarking Fuel

SACC Manual Clause A9056C (2008-05-12) Supervision of Fueling and Disembarking Fuel

26. Procedure for Design Change or Additional Work

SACC Manual Clause B5007C (2010-01-11) Design Change or Additional Work

26.1 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.

26.2 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.

27. Equipment/Systems: Inspection/Test

Refer to Annex D for details on equipment and systems inspections and testing requirements.

28. Inspection and Test Plan

The Contractor shall, in support of their QCP, implement an approved Inspection & Test Plan (ITP).

The Contractor shall provide at no additional cost to the Crown, all applicable test data, all Contractor technical data, test pieces and samples as may reasonably be required by the Inspection Authority to verify conformance to contract requirements. The Contractor shall forward at his expense such technical data, test data, test pieces and samples to such location as the Inspector may direct.

Refer to Annex “D” for details on Inspection and Test Plan Requirements.

29. Vessel Custody

1. This work is going to take place with the vessel “out of commission” and therefore in the “care, control and custody” of the Contractor.

2. An “ACCEPTANCE CERTIFICATE - ASSUMPTION OF CUSTODY OF FEDERAL GOVERNMENT SHIPS BY SHIPYARDS” Appendix 1 of Annex “F” must be completed as required and a copy passed to the Inspection Authority.

3. To facilitate this turnover, representatives of the Contractor and Canada must confirm the condition of the vessel.

4. A vessel condition report must be appended to the above noted certificate and must be accompanied by colour photographs or videos in either conventional or digital format.

5. When the vessel is to be returned to the “care, control and custody” of Canada, an “ACCEPTANCE CERTIFICATE - RESUMPTION OF CUSTODY OF FEDERAL GOVERNMENT SHIPS BY THE CLIENT DEPARTMENT” Appendix 2 of Annex “F” must be completed and a signed copy passed to Canada for distribution.

30 a. Vessel Unmanned Refits

The vessel will be unmanned during the work period and will be considered to be out-of commission. The vessel during that period will be in the care or custody of the Contractor and under its control.

30 b. Vessel Manned Refits

On a required basis only

1. The vessel will be manned during the work period and will be considered to be in commission. The vessel during that period will remain in the care or custody of Canada and under its control.

2. Fire fighting equipment must be readily accessible and made available by the Contractor should a fire emergency arise. The Contractor must take adequate precautions when burning or welding is carried out in compartments or other confined areas of the vessel.

31. Pre-Refit Meeting

A Pre-Refit meeting will be convened and chaired by the Contracting Authority at the Contractor’s facility before the commencement of the work period.

32. Meetings

Progress meetings, chaired by the Contracting Authority, will take place at the Contractor's facility as and when required, generally once a month. Interim meetings may also be scheduled. Contractor 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**.**

33. Outstanding Work and Acceptance

The Inspection Authority, in conjunction with the Contractor, will prepare a list of outstanding work items towards the end of the vessel 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 Inspector on the work completion date to review and sign off the Acceptance Document. In addition to any amount held under the Warranty Holdback Clause (see section 7.3 above), a holdback of twice the estimated value of outstanding work will be held until completion of said work.

The PWGSC-TPSGC 1205 Acceptance Document is to be completed and distribution is to be made by the Public Works and Government Services Canada Inspection Authority as follows:

(a) original to the PWGSC Contracting Authority
(b) one copy to the Technical Authority
(c) one copy to contractor

34. Licensing

The Contractor must obtain and maintain all permits, licenses and certificates of approval required for the work to be performed under any applicable federal, provincial or municipal legislation. The Contractor is responsible for any charges imposed by such legislation or regulations. Upon request, the Contractor must provide a copy of any such permit, license or certificate to Canada.

35. Hazardous Waste - Vessels

1. The Contractor acknowledges that sufficient information has been provided by Canada with respect to the location and estimated amount of hazardous materials such as asbestos, lead, PCBs, silica or other hazardous materials or toxic substances.

2. The price includes all costs associated with the removal, handling, storage, disposal and/or working in the vicinity of hazardous materials such as asbestos, lead, PCBs, silica and other hazardous materials or toxic substances on board the vessel, including those costs resulting from the need to comply with applicable laws and regulations in relation to the removal, handling, disposal or storage of hazardous materials or toxic substances.

3. The completion date for the Work takes into account the fact that the removal, handling, storage, disposal and/or working in the vicinity of hazardous materials such as asbestos, lead, PCBs, silica and other hazardous materials or toxic substances may be affected by the need to comply with applicable laws or regulations and that this will not be considered to be an excusable delay.

36. Government Site Regulations

SACC Manual Clause A9068C (2010-01-11), Government Site Regulations

37. Scrap and Waste Material

SACC Manual Clause A9055D (2010-08-16), Scrap and Waste Material

38. Stability and Weight Management

SACC Manual Clause B6100C (2008-05-12), Stability and Weight Management

39. Vessel - Access by Canada

SACC Manual Clause A9066C (2008-05-12), Vessel - Access by Canada

40. Title to Property - Vessel

SACC Manual Clause A9047C (2008-05-12), Title to Property - Vessel

41. Defence Contract

SACC Manual Clause A9006C (2012-07-16) Defence Contract

42. Limitation of Contractor's Liability for Damages to Canada

1. 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.

2. 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 million per incident or occurrence to an annual aggregate of $20 million for losses or damage caused in any one year of carrying out the Contract, each year starting on the date of coming into force of the Contract or its anniversary. This limitation of the Contractor's liability does not apply to nor include:

   (a) Any infringement of intellectual property rights;

   (b) Any breach of warranty obligations;

   (c) Any liability of Canada to a third party arising from any act or omission of the Contractor in performing the Contract; or

   (d) Any loss for which the policies of insurance specified in the Contract or any other policies of insurance held by the Contractor would provide insurance coverage.

3. 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.

4. The Parties agree that nothing herein is intended to limit any insurable interest of the Contractor nor to limit the amounts otherwise recoverable under any insurance policy. The Parties agree that to the extent that the insurance coverage required to be maintained by the Contractor under this Contract or any additional insurance coverage maintained by the Contractor, whichever is greater, is more than the limitations of liability described in sub article (2), the limitations provided herein are increased accordingly and the Contractor shall be liable for the higher amount to the full extent of the insurance proceeds recovered.

5. If, at any time, the total cumulative liability of the Contractor for losses or damage suffered by Canada caused by the Contractor's performance of or failure to perform the Contract, excluding liability described under subsection 2(a), (b), (c) and (d) exceeds $40 million, either Party may terminate the Contract by giving notice in writing to the other Party and neither Party will make any claim against the other for damages, costs, expected profits or any other such loss arising out of the termination. However, no such termination or expiry of the Contact shall reduce or terminate any of the liabilities that have accrued to the effective date of the termination but which liabilities are subject to the limitations as specified in sub-article (1) through (4) above.

6. The date of termination pursuant to this Article, shall be the date specified by Canada in its notice to terminate, or, if the Contractor exercises the right to terminate, in a notice to the Contractor from Canada in response to the Contractor's notice to terminate. The date of termination shall be in Canada's discretion to a maximum of 12 months after service of the original notice to terminate served by either Party pursuant to sub-article 5, above.

7. In the event of a termination under this Article, the Contract will automatically remain in force subject to all of the same terms and conditions until the date of termination and the Contractor agrees that it will be paid in accordance with the applicable provisions as set out in the Basis of Payment, Annex B and that the Contractor's liability remains as specified in subarticles (1) through (4), above.

8. Nothing shall limit Canada's other remedies, including Canada's right to terminate the Contract for default for breach by the Contractor of any of its obligations under this Contract, notwithstanding that the Contractor may have reached any limitation of its liability hereunder.

ANNEX A

REQUIREMENT - SPECIFICATION

See electronic Annex.

ANNEX B

BASIS OF PAYMENT FIRM PRICE

***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. See annex 'I'* – Financial Bid Presentation Sheet.**

B1 Contract Firm Price

A)	**Known Work** For work as stated in Clause 1.a) of the contract, specified in Annex "A" and detailed in the attached Price Per Item Sheet Appendix 1 of Annex "I", ***for a FIRM PRICE of:***	$_____
B)	**Total Firm Price :**	**$_____**

B2 Unscheduled Work

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 ten (10) percent, plus Goods and Services Tax or Harmonized Sales Tax, if applicable, calculated at five (5) 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.

B2.1: Notwithstanding definitions or useage elsewhere in this document, or in the Bidder's Cost Management System, when negotiating *Hours* for unscheduled work, PWGSC will consider only those hours of labour directly involved in the production of the subject work package.
Elements of *Related Labour Costs* identified in B2.2 below, will not be negotiated, but will be included in the firm hourly Charge-out Labour Rate in accordance with paragraph B2.2

B2.2: Allowance for *Related Labour Costs* such as: Management, Direct Supervision, Purchasing and Material Handling, Quality Assurance and Reporting, First Aid, Gas Free Inspecting and Reporting, and Estimating will be included as *Overhead* within the *firm hourly Charge-out Labour Rate* entered in line B2 above.

B2.3: The 10% mark-up rate for materials will also apply to subcontracted costs. The mark-up rate includes any allowance for material and subcontract management not allowed for in the Chargeout Labour Rate. The Contractor will not be entitled to a separate labour component for the purchase and handling of materials or subcontract administration.

B3 Overtime

No overtime work shall 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 in the following manner:

a. For Known Work, the Contractor will be paid the original contract price plus agreed overtime hours paid at the following premium rates;

b. For Unscheduled Work, the Contractor will be paid for agreed overtime hours paid at the *firm hourly Charge-out Labour Rate* above plus the following premium rates:

Premium for Time and one half: $ _____ per hour; *or,*

Premium for Double time: $ _____ per hour

The above premiums rates shall be calculated as follows:

Premium for time and one half:

½ (that portion of the firm Hourly Charge-out Labour Rate in B2 that is directly attributable to salary cost plus related certified fringe benefits) times 7.5% (representing profit)

Premium for double time:

½ (that portion of the Unscheduled Work firm Charge-out Labour Rate in B2 that is directly attributable to salary cost plus related certified fringe benefits) times 7.5% (representing profit)

These premiums will remain firm for the duration of the Contract, including all amendments and are subject to audit by Canada, and to retroactive adjustment if Canada discovers that the premiums have not been calculated in accordance with the formulae, above.

B4 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 in drydock: $_____

(b) For a non-working day in drydock: $_____

(c) For a working day alongside: $_____

(d) For a non-working day alongside: $_____

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, including all items listed in B5. These fees are firm and not subject to any additional charges for mark-up or profit.

B5 Cost of all Services is Included in Contract Price

All charges, fees expenses and disbursements incidental to the carrying out of the Work, including all items described in Supplemental General Conditions 1029 (2010-08-16) Ship Repair, section (07), are included in the Contract Price for the Work, including, without limitation:

1. **Services:** include all costs for ship services such as water, steam, electricity, etc., required for vessel maintenance for the duration of the Contract.

2. **Docking and Undocking** include:

   (a) all costs resulting from drydocking, wharfage, security, shoring, shifting and/or moving of the vessel within the Contractor's facility;

   (b) the cost of services to tie up the vessel alongside and to cast off.

   Unless specified otherwise, the vessel will be delivered by Canada to the Contractor's facility alongside a mutually agreed safe transfer point, afloat and upright, and the Contractor will do the same when the Work is completed.

3. **Field Service Representatives/Supervisory Services:** include all costs for field service representatives/supervisory services including manufacturers' representatives, engineers, etc.

4. **Removals**: include all costs for removals necessary to carry out the Work and will be the responsibility of the Contractor whether or not they are identified in the specifications, except those removals not apparent when viewing the vessel or examining the drawings. The Contractor will also be responsible for safe storage of removed items and reinstalling them on completion of the Work. The Contractor will be responsible for renewal of components damaged during removal.

5. **Sheltering, Staging, Cranage and Transportation:** include the cost of all sheltering, staging including handrails, cranage and transportation to carry out the Work as specified.

   The Contractor will be responsible for the cost of any necessary modification of these facilities to meet applicable safety regulations.

ANNEX C

INSURANCE REQUIREMENTS

C.1 Ship Repairers' Liability Insurance – G5001C (2014-06-26)

1. The Contractor must obtain Ship Repairer's 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 Repairer's 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 Fisheries and Oceans Canada – 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 Insurer will endeavour to provide the Contracting Authority thirty (30) days written notice of cancellation.

   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.

C.2 Commercial General Liability Insurance – G2001C (2014-06-26)

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 $10,000,000 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) 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.

d) 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.

e) 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.

f) Employees and, if applicable, Volunteers must be included as Additional Insured.

g) Employers' Liability (or confirmation that all employees are covered by Worker's compensation (WSIB) or similar program)

h) Notice of Cancellation: The Insurer will endeavour to provide the Contracting Authority thirty (30) days written notice of policy cancellation.

i) 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.

j) Owners' or Contractors' Protective Liability: Covers the damages that the Contractor becomes legally obligated to pay arising out of the operations of a subcontractor.

k) Sudden and Accidental Pollution Liability (minimum 120 hours): To protect the Contractor for liabilities arising from damages caused by accidental pollution incidents.

ANNEX D

INSPECTION/QUALITY ASSURANCE/QUALITY CONTROL

D.1 Inspection and Test Plan (ITP):

1. The Contractor must prepare an Inspection and Test Plan (ITP) comprising individual inspection and test plans for each specification item of this project, in accordance with the Quality Standard and its Quality Control Plan. The ITP must be submitted to the Inspection Authority for review and amended by the Contractor to the satisfaction of the Inspection Authority.
   (a) Each ITP must contain all inspection points identified in the Technical Specification highlighting any mandatory points that must be witnessed by the Inspection Authority and other "hold" points imposed by the Contractor to ensure the quality of the work.
   (b) Milestone delivery date for the ITP is given in the Contract, however individual ITPs should be forwarded for review as developed.

2. Coding:

   (a) Each Inspection and Test Plan (ITP) is to be coded for identification clearly demonstrating a systematic approach similar to the following (Contractor's system should be defined in its Quality Control Plan):
      (i) Prefixes for Inspections, Test and Trials:

      Prefix "1" is a Contractor inspection, i.e. 1H-10-01, 1H-10-02;

      prefix "2" is a Contractor post repair test, i.e. 2H-10-01; and

      prefix "3" is a Contractor post repair trial, i.e. 3H-10-01.

      (b) Specification items followed by assigned sequence numbers for inspection processes within each Specification Item; and

      (c) Cross reference to a verification document number

3. Inspection and Test Plan Criteria:

   Inspection criteria, procedures and requirements are stated in the specifications, drawings, technical orders and reference standards invoked by the Specifications. Test and trial documentation may also be included or referenced in the Specifications. An individual Inspection and Test Plan (ITP) is required for each Specification item.

   (a) All ITPs must be prepared by the Contractor in accordance with the above criteria, its Quality Plan, and must provide the following reference information:

      (i) the ship's name;
      (ii) the Specification item number;

      (iii) equipment/system description and a statement defining the parameter which is being inspected;
      (iv) a list of applicable documents referenced or specified in the inspection procedure;
      (v) the inspection, test or trial requirements specified in the Technical Specification;
      (vi) the tools and equipment required to accomplish the inspection;
      (vii) the environmental conditions under which the inspections are to be conducted and the tolerances on the inspection conditions;

(viii) a detailed step-by step procedure of how each inspection is to be performed, conformance parameters, accept/reject criteria and recording of results, deficiencies found and description of corrective action(s) required;

(ix) name and signature of the person who prepared the plan, date prepared and amendment level; and,

(x) names and signatures of the persons conducting and witnessing the inspection, test or trial.

4. Contractor Imposed Testing:

   Tests and trials in addition to those given in the Techncial Specification must be approved by the Inspection Authority.

   (a) Amendments: Amendment action for the Inspection and Test Plans must be ongoing throughout the refit and reflect the inspection requirements for unscheduled work. Amendments must be submitted as developed, but not less frequently than once every second week.

D.2 Conduct of Inspection

1. Inspections must be conducted in accordance with the ITP.

2. The Contractor must provide its own staff or subcontracted staff to conduct inspections, tests and trials; excepting that Technical Authority or Inspection Authority personnel may be designated in the specifications, in which case the Contractor must ensure that its own staff are provided in support of such inspection/test/trial.

3. The Contractor must ensure that the required conditions stated in the ITP prevail at the commencement of, and for the duration of, each inspection/test/trial.

4. The Contractor must ensure that personnel required for equipment operation and records taking during the inspection/test/trial are briefed and available at the start and throughout the duration of the inspection/test/trial. Tradesmen or FSRs who may be required to effect minor changes or adjustments in the installation must be available at short notice.

5. The Contractor is to coordinate the activities of all personnel taking part in each inspection/test/trial and ensure that safe conditions prevail throughout the inspection/test/trial.

D.3 Inspection Records and Reports

1. The Contractor on the inspection record, test or trials sheets as applicable must record the results of each inspection. The Contractor must maintain files of completed inspection records consistent with the Quality Standard and its Quality Plan for this project.

2. The Contractor's QC representative (and the FSR when required) must sign as having witnessed the inspection, test or trial on the inspection record. The Contractor must forward originals of completed inspection records, together with completed test(s) and/or trials sheets to the Inspection Authority as they are completed.

3. Unsatisfactory inspection/test/trial results, for which corrective action cannot be completed during the normal course of the inspection/test/trial, will require the Contractor to establish and record the cause of the unsatisfactory condition to the satisfaction of the Inspection Authority. Canada representatives may assist in identification where appropriate.

4. Corrective action to remove cause of unsatisfactory inspections must be submitted to the Inspection Authority in writing by the Contractor, for approval before affecting such repairs and rescheduling of

the unsatisfactory inspection/test/trial. Such notices must be included in the final records passed to the Inspection Authority.

5. The Contractor must undertake rectification of defects and deficiencies in the Contractor's installation or repair as soon as practicable. The Contractor is responsible to schedule such repairs at its own risk.

6. The Contractor must reschedule unsatisfactory inspections after any required repairs have been completed.

7. Quality Control, Inspection and Test records that substantiate conformance to the specified requirements, including records of corrective actions, must be retained by the Contractor for three (3) years from the date of completion or termination of the Contract and must be made available to the Inspection Authority upon request.

D.4 Inspection and Trials Process

1. Drawings and Purchase Orders
   (a) Upon receipt of two (2) copies of each drawing or purchase order, the designated Inspection Authority will review its content against the provisions of the Specifications. Where discrepancies are noted, the Inspection Authority will formally advise all concerned, in writing using a Discrepancy Notice. The resolution of any such discrepancy is a matter for consultation between the Contractor and other Crown Authorities.

The Inspection Authority is NOT responsible for the resolution of discrepancies.

2. Inspection
   (a) Upon receipt and acceptance of the Contractor's ITP, inspection will consist of a number of Inspection Points supplemented by such other inspections, tests, demonstrations and trials as may be deemed necessary by the Inspection Authority to permit him to certify that the work has been performed in compliance with the provisions of the Specifications. The Contractor must be responsible for notifying the designated Inspection Authority of when the work will be available for inspection, sufficiently in advance to permit the designated Inspection Authority to arrange for the appropriate inspection.

   (b) The Inspection Authority will inspect the materials, equipment and work throughout the project against the provisions of the Techncial Specification and, where non-conformances are noted, will issue appropriate **INSPECTION NON-CONFORMANCE REPORTS.**
   (c) The Contract requires the implementation of a Quality Assurance/Quality Control system, so the Inspection authority must require that the Contractor provide a copy of its internal inspection report pertaining to a work item before conducting the requested inspection. If third party inspections are required by the Contract (e.g. inspections by a certified CWB 178.2 welding inspector), the reports of these inspections must be required before the Work is inspected by the Inspection Authority.
   (d) The QA/QC system is a requirement, so if the documentation is presented to the Inspection Authority before an inspection stating that the Work is satisfactory but the Inspection Authority finds that the Work has not been satisfactorily inspected, the Inspection Authority must issue an Inspection Non-conformance Report against the Work and another against the failure of the Contractor's QA/QC system.
   (e) Before carrying out any inspection, the Inspection Authority must review the requirements for the Work and the acceptance and/or rejection standards to be applied. Where more than one standard or requirement is called up and they are potentially conflicting, the Inspection Authority must refer to the order of precedence in the Contract to determine the standard or requirement to be applied.

3. Inspection Non-conformance report

(a) An Inspection Non-conformance report will be issued for each non-conformance noted by the Inspection Authority. Each report will be uniquely numbered for reference purposes, will be signed and dated by the Inspection Authority, and will describe the non-conformance.

(b) When the non-conformance has been corrected by the Contractor and has been re-inspected and accepted by the Inspection Authority, the Inspection Authority will complete the Report by adding an applicable signed and dated notation.

(c) At the end of the project, the content of all Inspection Non-conformance Reports which have not been signed-off by the Inspection Authority will be transferred to the Acceptance Documents before the Inspection Authority's certification of such documents.

4. Tests, Trials, and Demonstrations
   (a) To enable the Inspection Authority to certify that the Work has been performed satisfactorily, in accordance with the Contract and Specifications, the Contractor must schedule, co-ordinate, perform, and record all specified Tests, Trials and Demonstrations required by the Inspection Authority.
   (b) Where the Specifications contain a specific performance requirement for any component, equipment, sub-system or system, the Contractor must test such component, equipment, sub-system or system to the satisfaction of the Inspection Authority, to prove that the specified performance has been achieved and that the component, equipment, sub-system or system performs as required by the specifications.
   (c) Tests, trials and demonstrations must be conducted in accordance with a logical, systematic schedule which must ensure that all associated components and equipment are proven before sub-systems demonstration or testing, and that sub-systems are proven before system demonstration or testing.

   (d) Where the Specifications do not contain specific performance requirements for any component, equipment, sub-system or system, the Contractor must demonstrate such component, equipment, sub-system or system to the satisfaction of the Inspection Authority.
   (e) The contractor must submit its Test and Inspection Plan as indicated in section D.1 above.
   (f) The Contractor must co-ordinate each test, trial and demonstration with all interested parties, including the Inspection Authority; Contracting and Technical Authorities; regulatory authorities; Classification Society; Sub-contractors; etc. The Contractor must provide the Inspection Authority and other Crown Authorities with a minimum of **five working days** notice of each scheduled test, trial, or demonstration.
   (g) The Contractor must keep written records of all tests, trials, and demonstrations conducted.
   (h) The Contractor must in all respects be responsible for the conduct of all tests and trials in accordance with the requirements of the Contract.
   (i) The Inspection Authority and the Technical Authority reserve the right to defer starting or continuing with any sea trials for any reasonable cause including but not limited to adverse weather, visibility, equipment failure or degradation, lack of qualified personnel and inadequate compliance with safety standards.

ANNEX E

WARRANTY

General Conditions 2030 (2016-04-04) - Higher Complexity Goods, are hereby amended by deleting section 2030 22 (2014-09-25), Warranty and replacing it as follows:

E.1 Section 22 Warranty

1. At the discretion of the Minister, the Contractor will replace or make good at its own expense any finished work, excluding Government Issue incorporated therein, which becomes defective or which fails to conform to contract requirements as a result of faulty or inefficient manufacture, material or workmanship.

2. Notwithstanding prior acceptance of the finished work, and without restricting any other term of the Contract or any condition, warranty or provision implied or imposed by law, the Contractor hereby warrants that the following shall be free from all defects and shall conform with the requirements of the contract:

(a) The painting of the underwater portion of the hull for a period of three hundred and sixty-five (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 three hundred and sixty-five (365) days and multiplied by the number of days remaining in the warranty period. The resultant would represent the "Dollar Credit" due to Canada from the Contractor.

(b) All other painting Work for a period of three hundred and sixty-five (365) days commencing from the date of acceptance of the Work;

(c) All parts and material provided by the Contractor for a period of three hundred and sixty-five (365) days commencing from the date of acceptance of such parts or material;

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

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

ii) 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.

3. If more than one warranty period applies, in accordance with the above, to any Work, then the warranty shall be for the longest period.

4. 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.

E.2 Warranty Procedures

E2.1 Scope

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

E2.2 Definition

a. 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.”

E2.3 Warranty Conditions

a. General Conditions 2030, 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 undocking the vessel for the specified areas of underwater paint and topside 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.

E2.4 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.

E2.5 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 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 manhours 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.

E2.6 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 manhours and material, will be discussed between the Contracting/Inspection Authorities and the Technical Authority to determine the best course of action.

E2.7 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.

b. In respect to the underwater paint, should it become defective during the associated warranty period the contractor is only liable to repair to a value determined as follows:

"Original cost to Canada for painting and preservation of the underwater section of the hull, divided by three hundred and sixty-five (365) days and multiplied by the number of days remaining in the three hundred and sixty-five (365) days warranty period. The resultant would represent the 'Dollar Credit' due to Canada from the Contractor."

c. The Underwater paint system, before expiration of the warranty, should be checked by divers. The Technical Authority, is to arrange the inspection and inform the Contracting Authority of any adverse results.

Appendix 1 of Annex E

Public Works and Government Services Canada

Travaux publics et Services gouvernementaux Canada

Warranty Claim
Réclamation De Garantie

Vessel Name – Nom de navire	File No. – N° de dossier	Contract No. - N ° de contrat
Customer Department – Ministère client		Warranty Claim Serial No. Numéro de série de réclamation de garantie
Contractor – Entrepreneur		**Effect on Vessel Operations** **Effet sur des opérations de navire** Critical Degraded Operational Non-operational Critique Dégradé Opérationnel Non-opérationnel

1. Description of Complaint – Description de plainte

Contact Information – l'information de contact

Name – Nom

Tel. No. - N ° Tél

Signature – Signature

Date

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

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

ANNEX F

VESSEL CUSTODY

F1 Vessel Custody

1. This work is going to take place with the vessel “out of commission” and therefore in the “care, control and custody” of the Contractor.

2. An “ACCEPTANCE CERTIFICATE - ASSUMPTION OF CUSTODY OF FEDERAL GOVERNMENT SHIPS BY SHIPYARDS” (attached as Appendix 1 to this Annex F) shall be completed as required and a copy passed to the Inspection Authority.

3. To facilitate this turnover, representatives of the Contractor and Canada shall confirm the condition of the vessel.

4. A vessel condition report shall be appended to the above noted certificate and shall be accompanied by colour photographs or videos in either conventional or digital format.

5. When the vessel is to be returned to the “care, control and custody” of Canada, an “ACCEPTANCE CERTIFICATE - RESUMPTION OF CUSTODY OF FEDERAL GOVERNMENT SHIPS BY THE CLIENT DEPARTMENT” (Attached as appendix 2 to this Annex F) shall be completed and a signed copy passed to Canada for distribution.

UNMANNED REFIT:

During the majority of the contract period, the vessel shall be **unmanned.** As a result, the ship shall be placed in the care and custody of the Contractor as described in the Technical Specification. However, access to the vessel shall not be denied to CCG, PWGSC and TCMSB 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.

Cleaning: Contractor to ensure that all spaces, compartments and areas of the ship 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.

CCG / PWGSC Offices: notwithstanding the fact that the vessel will be unmanned, the Contractor shall respect the directives included in the Technical Specification in regard to the protection and the layout of the cabins onboard the vessel.

Parking: Sufficient parking for CCG and PWGSC representatives shall be provided conveniently close to the berthed or docked vessel. The available parking should be sufficient for a maximum of **three (3)** vehicles at any given time.

GENERAL (MANNED):

The services as described in item 4 shall be supplied, fitted and/or connected **whenever ship's crew are living aboard the ship**. This is expected to include the time period after arrival at the Contractor’s facility and prior to formal handover to the Contractor. The services shall also to be provided after the vessel has been returned to the care and custody of the ship's crew until signing of the acceptance document and departure of the ship from the Contractor's facilities. The Contractor shall be responsible for any additional disconnections and re-connections required

when the ship is moved between dock / slipway and any berth at the Contractor's premises. The Contractor is to quote a global price and daily rates for these services according to his proposed schedule which will determine the planned length of time that the vessel is not under his control.

GENERAL (UNMANNED):

The services as described in item 4 shall be supplied, fitted and/or connected upon formal handover to the Contractor, and maintained **throughout the period that the ship is under the Contractor's control**. Contractor to be responsible for any additional disconnections and re-connections required when the ship is moved between dock / slipway and any berth at the Contractor's premises. The Contractor is to quote a global price and daily rates for these services according to his proposed schedule which will determine the planned length of time that the vessel is under his control.

Care and Custody: During the contract period, the ship shall be placed in the custody of the Contractor who shall be responsible for all safety and security matters pertaining to the vessel. As the ship will not be de-stored, the Contractor shall provide whatever security arrangements are required to safeguard CCG and DFO equipment and material that remains onboard during the contract period.

Security Watches: During the contract period, the Contractor shall provide and maintain a continuous, **24 hour-per-day**, **7 day-per-week** security watch consisting of at least **one (1)** mobile security patroller. The patroller are to provide mobile safety and security checks throughout the vessel. The patrols shall be 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 and/or theft resulting from unauthorized entry or activity.

Turnover: The turnover of the ship to and from the Contractor shall be carried out on a compartment-by-compartment basis with a Contractor's Representative and the Chief Engineer (or Representative) in attendance.

As part of the initial turnover, the Contractor shall provide the services of a qualified photographer (who is to be identified as a Sub-contractor) to accompany the abovementioned persons and take a minimum of **six (6)** digital colour photographs of each compartment and passageway: **one (1)** each looking forward, aft, port, starboard, up and down. The Contractor shall supply **two (2)** sets of printed copies of the photographs, bound and organized by deck level and compartment name, to the Chief Engineer within **seven (7)** days of the ship's arrival at the Contractor's facilities.

In addition to the photographs, the Contractor is to prepare compartment inspection sheets for each space for signature at the time of turnover. After sign-off, copies of the inspection sheets are to be given to the Chief Engineer and placed on the door of each compartment or in each passageway.

On completion of the photographic survey and compartment inspections, and once the inspection sheets have been posted, the Chief Engineer shall provide the 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 CCG.

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 the Chief Engineer.

The Contractor shall be responsible for the safe transfer of the ship between it’s pre/post-docking berth and it’s docking blocks. During docking and undocking of the ship, radio contact is to 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.

APPENDIX 1 OF ANNEX F

ACCEPTANCE CERTIFICATE
ASSUMPTION OF CUSTODY OF FEDERAL GOVERNMENT SHIPS BY SHIPYARDS

TURNOVER OF CUSTODY of CCGS _____

Contract Serial Number :_____

I, _____ (Contractor's Representative) on behalf of _____ _____ take over the responsibility for the said Vessel from the Department of Fisheries and Oceans. This take over of responsibilities is effective at _____, Province of _____ on the _____ day of _____, 2017, at ____ hours.

_____
(Signature - Contractor's Representative)

_____
(Witness)

I, _____ (Vessel's Master or Chief Engineer) on behalf of the Department of Fisheries and Oceans, turn over the custody and responsibility for the said Vessel to the Contractor. This turn-over effective at _____, Province of _____ on the ____ day of _____, 2017, at _____ hours.

_____
(Signature - Vessel's Master)

_____
(Witness)

APPENDIX 2 OF ANNEX F

ACCEPTANCE CERTIFICATE
RESUMPTION OF CUSTODY OF FEDERAL GOVERNMENT SHIPS
BY THE CLIENT DEPARTMENT

RESUMPTION OF CUSTODY of CCGS _____

Contract Serial Number :_____

I, _____ (Contractor's Representative) on behalf of _____ _____ turn-over the responsibility for the said Vessel to the Department of Fisheries and Oceans. This turn-over effective at _____, Province of _____ on the _____ day of _____, 2017, at ____ hours.

_____
(Signature - Contractor's Representative)

_____
(Witness)

I, _____ (Vessel's Master or Chief Engineer) on behalf of the Department of Fisheries and Oceans, accept the resumption of custody and responsibility for the said Vessel from the Contractor. This turn-over effective at,
_____ Province of _____ on the ___ day of _____, 2017, at _____ hours.

_____
(Signature - Vessel's Master)

_____
(Witness)

ANNEX G

SECURITY REQUIREMENTS CHECK LIST

(Not used)

ANNEX H

PROJECT MANAGEMENT SERVICES

(not used)

ANNEX I

FINANCIAL BID PRESENTATION SHEET

I0 Proposed Docking Facility Location: _____

I1 Price for Evaluation

A)	**Known Work** For work as stated in Clause 1.2 (i) a), specified in Annex "A" and detailed in the attached Price Per Item Sheet, Appendix 1 of Annex "I", ***for a FIRM PRICE of:***	$_____
B)	**Unscheduled Work** Contractor *Labour Cost*: Estimated labour hours at a firm *hourly Charge-out Labour Rate*, including overhead and profit for evaluation purpose only: 400 person hours X $_____ per hour ***for a PRICE of :*** *See Note I2.1 and I2.2 below.*	$_____
C)	**Daily Service Fees for evaluation purpose only** *As per Clause I4 below* i) Ten (10) in drydock working days X $_____ /firm daily service fee = $_____; **plus** ii) Five (5) in drydock non-working days X $_____ /firm daily service fee = $_____ iii) Ten (10) alongside working days X $_____ /firm daily service fee = $_____; **plus** iv) Five (5) alongside non-working days X $_____ /firm daily service fee = $_____	$_____
D)	**Vessel Transfer Cost** *As per paragraph I6 below*	$_____
E)	**EVALUATION PRICE** Applicable taxes excluded [A + B + C + D]: **TOTAL EVALUATION PRICE of :**	**$_____**

I2 Unscheduled Work

The Contractor will be paid for unscheduled work arising, as authorized by the Minister, calculated in the following manner:

"Number of hours (to be negotiated) X $_____ your firm hourly *Charge-out Labour Rate* which includes *Overhead* and profit, plus net laid-down cost of materials to which shall be added a 10% mark-up, plus Applicable Taxes. The firm hourly *Charge-out Labour Rate* and the material mark-up will remain firm for the duration of the Contract and any subsequent amendments thereto."

I2.1: Notwithstanding definitions or useage elsewhere in this document, or in the Bidder's Cost Management System, when negotiating *Hours* for unscheduled work, PWGSC will consider only those hours of labour directly involved in the production of the subject work package.
Elements of Related Labour Costs identified in I2.2 below, will not be negotiated, but will be compensated for in accordance with paragraph I2.2 It is therefore incumbent upon

the Bidder to enter values in the above table which will result in fair compensation, regardless of the structure of their Cost Management System.

I2.2: Allowance for *Related Labour Costs* such as: Management, Direct Supervision, Purchasing and Material Handling, Quality Assurance and Reporting, First Aid, Gas Free Inspecting and Reporting, and Estimating will be included as *Overhead* for the purposes of determining the *Charge-out Labour Rate* entered in line I2 above.

I2.3: The 10% mark-up rate for materials will also apply to subcontracted costs. The mark-up rate includes any allowance for material and subcontract management not allowed for in the Chargeout Labour Rate. The Contractor will not be entitled to a separate labour component for the purchase and handling of materials or subcontract administration.

I3 Overtime

No overtime work shall 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 in the following manner:

a. For Known Work, the Contractor will be paid the original contract price plus agreed overtime hours paid at the following premium rates;

b. For Unscheduled Work, the Contractor will be paid for agreed overtime hours paid at the quoted *Charge-out Labour Rate* plus the following premium rates:

Premium For Time and one half: $ _____ per hour; or,

Premium For Double time: $ _____ per hour

Premium for time and one half:

½ (that portion of the firm Hourly Charge-out Labour Rate in I2 that is directly attributable to salary cost plus related certified fringe benefits) times 7.5% (representing profit)

Premium for double time:

(that portion of the Unscheduled Work firm Charge-out Labour Rate in I2 that is directly attributable to salary cost plus related certified fringe benefits) times 7.5% (representing profit)

These premiums will remain firm for the duration of the Contract, including all amendments and are subject to audit by Canada, and to retroactive adjustment under the Contract if Canada discovers that the premiums have not been calculated in accordance with the formulae, above.

I4 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 in drydock: $_____

(b) For a non-working day in drydock: $_____

(c) For a working day alongside: $_____

(d) For a non-working day alongside: $_____

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 including all items listed in **I5.** These fees are firm and not subject to any additional charges for mark-up or profit.

I5 Cost of all Services is Included in Contract Price

All charges, fees expenses and disbursements incidental to the carrying out of the Work, including all items described in Supplemental General Conditions 1029 (2010-08-16) Ship Repair, section (07), are included in the Evaluation Price for the Work, including, without limitation:

1. **Services:** include all costs for ship services such as water, steam, electricity, etc., required for vessel maintenance for the duration of the Contract.

2. **Docking and Undocking** include:

   (a) all costs resulting from drydocking, wharfage, security, shoring, shifting and/or moving of the vessel within the successful Bidder's facility;

   (b) the cost of services to tie up the vessel alongside and to cast off.

   Unless specified otherwise, the vessel will be delivered by Canada to the successful Bidder's facility alongside a mutually agreed safe transfer point, afloat and upright, and the successful Bidder will do the same when the Work is completed.

3. **Field Service Representatives/Supervisory Services:** include all costs for field service representatives/supervisory services including manufacturers' representatives, engineers, etc.

4. **Removals**: include all costs for removals necessary to carry out the Work and will be the responsibility of the Contractor whether or not they are identified in the specifications, except those removals not apparent when viewing the vessel or examining the drawings. The uccessful Bidder will also be responsible for safe storage of removed items and reinstalling them on completion of the Work. The successful Bidder will be responsible for renewal of components damaged during removal.

5. **Sheltering, Staging, Cranage and Transportation:** include the cost of all sheltering, staging including handrails, cranage and transportation to carry out the Work as specified.

The successful Bidder will be responsible for the cost of any necessary modification of these facilities to meet applicable safety regulations.

I6 Vessel Transfer Costs

1. The Evaluation Price shall include the cost for transferring the vessel from its home port to the shipyard/ship repair facility where the majority of the Work will be undertaken and the cost of returning the vessels to their home port following completion of the Work, in accordance with the following:
   (a) The bidder shall enter on Line **I0**, the location of the shipyard/ship repair facility where it proposes to undertake the Work. The applicable vessels' transfer costs provided under section 3. of this clause shall be entered into table I1.

   (b) Should the list in section 3. of this clause not provide the shipyard/ship repair location where the bidder intends to undertake the Work, then the bidder must advise the Contracting Authority, in writing, no later than **five calendar days** prior to the bid closing date, of its proposed location for undertaking the Work. The Contracting Authority will acknowledge to the bidder, in writing, no later than **three calendar** days prior to the bid closing date, the location of the shipyard/ship repair and confirm the applicable vessel transfer cost.

A Bid that specifies a location for undertaking the Work which is not in the list under section 3. of this clause, and for which a notification in writing has not been received by the Contracting Authority five days prior to the bid closing date, shall be deemed to be non-responsive.

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

3. Round trip transfer costs applicable to the following facilities are:

Company	City	Manned Transfer Cost
Davie Inc.	Lévis QC	**$4,692**
Oceans Industries Inc.	Île-aux-Coudres, QC	**$7,256**
Chantier Forillon	Gaspé, QC	**$23,171**
Irving Shipbuilding Inc. (Halifax Shipyard)	Halifax NS	**$41,649**
NewDock- St-John's Dockyard Ltd.	St. John's NF	**$49,872**
Heddle Marine Service Inc.	Hamilton, ON	**$17,559**
Meridien Maritime	Matane, QC	**$14,318**
Verreault Navigation Inc.	Les Méchins QC	**$15,576**

Appendix 1 of Annex I

A) KNOWN SCHEDULED WORK

PRICE PER ITEM SHEET		
Item	**Description**	**Firm Price**
1	**General Remarks**	_____$
2	**List of Acronyms**	**n/a**
3	**Vessel Particulars**	**n/a**
4	**Services**	_____$
5	**Dry-Docking**	_____$
6	**Weight alteration Report**	_____$
7	**Underwater hull Inspection and hull Painting.** (Price without including the optional item(s) in table : **B) OPTIONAL SCHEDULED WORK** (bellow))	_____$
8	**Removal and Reinstallation of jettisonable tanks**	_____$
9	**Main Deck coating**	_____$
10	**Forepeak coating**	_____$
11	**Coating Bilge in the laundry room**	_____$
12	**Anodes**	_____$
13	**Tank Inspection**.(Price without including the optional item(s) in table : **B) OPTIONAL SCHEDULED WORK** (bellow))	_____$
14	**Through hull fitting survey & isolation kit installation**	_____$
15	**Limber holes**	_____$
16	**Rudder, Rudder bearings & Skeg Inspections**	_____$
17	**Installation of level indicators in the jettisonable tanks**	_____$
18	**Anchor, Chain & Chain locker Inspection.** (Price without including the optional item(s) in table : **B) OPTIONAL SCHEDULED WORK** (bellow))	_____$
19	**Propeller hubs, shaft clearances & shaft seals.** (Price without including the optional item(s) in table : **B) OPTIONAL SCHEDULED WORK** (bellow))	_____$
20	**Bow Thruster gear oil and seal change**	_____$
21	**Sewage sludge tank, black water tank, bildge water tank, grey water tank, dirty oil & sludge tank, lube oil tank**	_____$
22	**Potable Water Tanks**	_____$
23	**Ballast water tank Inspections.** (Price without including the optional item(s) in table : **B) OPTIONAL SCHEDULED WORK** (bellow))	_____$
	A) KNOWN SCHEDULED WORK – TOTAL FIRM PRICE	_____$

B) OPTIONAL SCHEDULED WORK

PRICE PER ITEM SHEET		
Item	**Description**	**Firm Price**
7	**7.3.1.6 – Ultrasonic thickness measurements (200 measurements)**	_____$
	7.3.4.2.1 – Supply, installation and removal of temporary shelter (shelter provided by shipyard)	_____$
	7.3.4.2.2 - Installation and removal of temporary shelter (shelter provided by Canada)	_____$
	7.3.7 – Draft Markings	_____$
13	**13.3 – Non destructive testing**	_____$
	13.3.3 – Pressure testing	_____$
	13.4 – Fuel tanks	_____$
	13.6 – Lube oil tanks	_____$
18	**18.3.1.4 – Liquid dye inspection**	_____$
	18.3.1.5 – Anchor shots disconnection and reconnection	_____$
	18.3.1.6 – Painting	_____$
19	**19.3.4.2 – Liquide pentrant test**	_____$
	19.3.8 – Controlable Pitch Propeller Inspection	_____$
	19.3.9 – OD Box Inspection	_____$
23	**23.4.2.1 – Hydro test**	_____$
	23.4.2.2 – Pneumatic test	_____$
	B) OPTIONAL SCHEDULED WORK – TOTAL FIRM PRICE	_____$

Note: PWGSC reserves the right to exercise all the options or partial options.

The Contractor grants to Canada the irrevocable option to acquire the goods, services or both described at Annex A of the Contract under the same conditions and at the prices and/or rates stated in the Contract. The option may only be exercised by the Contracting Authority and will be evidenced, for administrative purposes only, through a contract amendment. The Contracting Authority may exercise the option within **5 days** after beginning of work by sending a written notice to the Contractor.

TOTAL (A) SCHEDULED WORK	TOTAL (B) OPTIONAL SHEDULED WORK	TOTAL KNOWN WORK FIRM PRICE ((A) + (B))
$ _____	$ _____	$ _____

Remark to Bidders:

Canada may reject the bid if any of the prices submitted do not reasonably reflect the cost of performing the part of the work to which that price applies.

Annex J

A) KNOWN SCHEDULED WORK

PRICING DATA SHEETS			
Item	**Description**		**Firm Price**
	A) SCHEDULED WORK		
1	**General Notes (Scope, health and safety related requirements and general requirements)** (Bidders can enter $0.00 or indicate 'included' if the fees for this item are distributed in each of the items bellow. In case the fees are not distributed an amount must be indicated in the price box.)		_____ $
2	**List of Acronyms**		n/a
3	**Vessel Particulars**		n/a
4	**4.0 Services** (Price Excluding sub item(s) below) (Bidders can enter $0.00 or indicate 'included' if the fees for this item are distributed in each of the items bellow. In case the fees are not distributed an amount must be indicated in the price box.)	_____ $	
	4.2 Berthing and Mooring	_____ $	
	4.4 Gangways	_____ $	
	4.5.1 Electrical Power 600 V c.a., 200 amps, 60 Hz.		
	Connect: _____ $ Disconnect: _____ $		
	Service (30 000 KW-hr) (Final amount prorated) Price _____ $ / KW-hr X 30 000 KW-hr = _____ $		
	Firm Price for item 4.5.1	_____ $	
	4.6 Fire Main Charging Service	_____ $	
	4.7.1 Cranage and Manlift Services (Final amount prorated) Price for Cranage _____ $ /Hr. X 10 Hours = _____ $ Price for Manlift _____ $ /Hr. X 10 Hours = _____ $	_____ $	
	4.8 Garbage removal	_____ $	
	4.9 Portable Toilet	_____ $	
	4.10 Vessel Security	_____ $	
	4.11 Parking (3 spaces)	_____ $	
	4.12 Office, Telephone, internet		
	Telephone lines Connect and Disconnect = _____ $ Service = _____ $		
	Internet Connect and Disconnect = _____ $ Service = _____ $		
	Firm Price for item 4.12	_____ $	
	Firm Price for item 4		_____ $

PRICING DATA SHEETS			
Item	**Description**		**Firm Price**
5	**Dry-docking** (Price Excluding sub item(s) below) (Bidders can enter $0.00 or indicate 'included' if the fees for this item are distributed in each of the items bellow. In case the fees are not distributed an amount must be indicated in the price box.)	_____ $	
	Dry docking	_____ $	
	Un-docking	_____ $	
	Firm Price for item 5		_____ **$**
6	**Weight alteration Report**		_____ **$**
7	**Underwater hull Inspection and hull Painting.** (Price Excluding optional item(s) at table: **B) OPTIONAL SCHEDULED WORK** and sub item(s) below)	_____ $	
	7.3.1 Underwater hull Cleaning and Inspection (Price Excluding sub item(s) below) (Bidders can enter $0.00 or indicate 'included' if the fees for this item are distributed in each of the items bellow. In case the fees are not distributed an amount must be indicated in the price box.)	_____ $	
	7.3.1.1 Cleaning underwater hull area : 330 m² x _____$/m² = _____ $	_____ $	
	7.3.1.5 Removal and disposal of solid debris: (Final amount prorated) _____ $/m3	_____ $	
	7.3.2.2 Price for 50 m of plate seam and butt welding (Final amount prorated) **Price for 50 m of plate seam welds =** 50 m x ___ $/m = _____ $ **Price for 50 m of butt welds =** 50 m x ___ $/m = _____ $	_____ $	
	7.3.2.3 Sea Chest Grate Modifications	_____ $	
	7.3.3 Underwater hull Coating System Inspection (Price Excluding sub item(s) below)	_____ $	
	7.3.3.1 Inspect the underwater hull coating system up to the deep load line and the bow thruster pipe tunnel	_____ $	
	7.3.3.3 Price for preparation and recoating of 200 square meters of underwater hull surface area (Final amount prorated) 200 m² x _____$/ m² = _____ $	_____ $	
	7.3.4 Above Water Line Coating. (Price Excluding sub item(s) below)	_____ $	
	7.3.4.1 Cleaning above water line (165 m²) 165 m² x _____$/ m² = _____ $	_____ $	
	7.3.4.7 Revêtement endommagée à reprendre incluant les zones amincies. (Montant final établi au prorata) **Prix pour :** 50 m² x _____$/ m² = _____ $	_____ $	
	7.3.4.8 Paint the entire hull surface above the waterline. (Final amount prorated) **Price for:** 165 m² x _____$/ m² = _____ $	_____ $	
	7.3.5 Sortie d'échappement	_____ $	

PRICING DATA SHEETS			
Item	**Description**		**Firm Price**
	7.3.7 New Aft draft marks	_____ $	
	Firm Price for item 7		_____ **$**
8	**Removal and Reinstallation of jettisonable tanks** (Price Excluding sub item(s) below)	_____ $	
	8.3.2 Gasoline storage (1 000 liters)	_____ $	
	8.4 Two Deck Panels	_____ $	
	8.5.1 Launch tests	_____ $	
	Firm Price for item 8		_____ **$**
9	**Main Deck coating** (Price Excluding sub item(s) below) (Bidders can enter $0.00 or indicate 'included' if the fees for this item are distributed in each of the items bellow. In case the fees are not distributed an amount must be indicated in the price box.)	_____ $	
	9.3.3 Cleaning Main Deck = 144 m²	_____ $	
	9.3.4 Prepare and Paint Main Deck (Final amount prorated) Price for: 50 m² x _____$/ m² = _____ $		
	Firm Price for item 9		_____ **$**
10	**Forepeak coating** (Price Excluding sub item(s) below) (Bidders can enter $0.00 or indicate 'included' if the fees for this item are distributed in each of the items bellow. In case the fees are not distributed an amount must be indicated in the price box.)	_____ $	
	10.3.3 Cleaning Forepeak	_____ $	
	10.3.4 Prepare and Paint Forepeak (50 m²) (Final amount prorated) Price for: 50 m² x _____$/ m² = _____ $	_____ $	
	Firm Price for item 10		_____ **$**
11	**Coating Bilge in the laundry room** (Final amount prorated) (Price Excluding sub item(s) below) (Bidders can enter $0.00 or indicate 'included' if the fees for this item are distributed in each of the items bellow. In case the fees are not distributed an amount must be indicated in the price box.)	_____ $	
	11.1.3 Paint laundry room (8 m²)(Final amount prorated) Price for preps and paint: 8 m² x _____$/ m² = _____ $	_____ $	
	Firm Price for item 11		_____ **$**
12	**Anodes** (Final amount prorated) (Price Excluding sub item(s) below) (Bidders can enter $0.00 or indicate 'included' if the fees for this item are distributed in each of the items bellow. In case the fees are not distributed an amount must be indicated in the price box.)	_____ $	
	12.3.2 Hull Anodes (type MM28AB) Price for work on (1) anode (type MM28AB) = ____ $ x 20 anodes = _____ $	_____ $	
	12.3.3 Sea Chest and Sea Bay Anodes (type MME 26AA) Price for work on (1) anode (type MME 26AA) = ____ $ x 8 anodes = _____ $	_____ $	

PRICING DATA SHEETS			
Item	**Description**		**Firm Price**
	12.3.4 Bow Thruster Tunnel Anodes (type MME 26AA) Price for work on (1) anode (type MME 26AA) = ____ $ x 4 anodes = _____ $	_____ $	
	12.3.5 Bow Thruster Anodes (type TRAC 24) Price for work on (1) anode (type TRAC 24) = ____ $ x 2 anodes = _____ $	_____ $	
	Firm Price for item 12		_____ **$**
13	**Tank Inspection**. (Price Excluding optional item(s) at table: **B) OPTIONAL SCHEDULED WORK** and sub item(s) below)	_____ $	
	13.5 Gasoline Tank Inspection	_____ $	
	Firm Price for item 13		_____ **$**
14	**Through hull fitting survey & isolation kit installation**		_____ **$**
15	**Limber holes** (Price Excluding sub item(s) below) (Bidders can enter $0.00 or indicate 'included' if the fees for this item are distributed in each of the items bellow. In case the fees are not distributed an amount must be indicated in the price box.)	_____ $	
	15.5.1 Removal Main Engine Room Strip-out - Starboard	_____ $	
	15.5.2 Removal Main Engine Room Strip-out - Port	_____ $	
	15.6.1 Installation – Main Engine Room Strip-out - Starboard	_____ $	
	15.6.2 Installation Main Engine Room Strip-out - Port	_____ $	
	Firm Price for item 15		_____ **$**
16	**Rudder, Rudder bearings & Skeg Inspections**		_____ **$**
17	**Installation of level indicators in the jettisonable tanks**		_____ **$**
18	**Anchor, Chain & Chain locker Inspection.** (Price Excluding optional item(s) at table: **B) OPTIONAL SCHEDULED WORK** and sub item(s) below)	_____ $	
	18.3.1 Anchor and Chain Inspection. (Price Excluding optional item(s) at table: **B) OPTIONAL SCHEDULED WORK)**	_____ $	
	18.3.2 Chain Locker Inspection.	_____ $	
	Firm Price for item 18		_____ **$**
19	**Propeller hubs, shaft clearances & shaft seals.** (Price Excluding optional item(s) at table: **B) OPTIONAL SCHEDULED WORK** and sub item(s) below) (Bidders can enter $0.00 or indicate 'included' if the fees for this item are distributed in each of the items bellow. In case the fees are not distributed an amount must be indicated in the price box.)	_____ $	
	19.3 Propeller Shaft Seals (Price Excluding sub item(s) below)	_____ $	
	19.3.2 Propeller Shaft Clearances	_____ $	
	19.3.3 Propeller Shaft Removals and Inspections	_____ $	
	19.3.4 Propeller Shaft Inspection	_____ $	
	19.3.5 Repair to shaft coating	_____ $	
	19.3.7 Propeller Hubs and Blade Removal	_____ $	
	19.3.8 Controlable Pitch Propeller Inspection	_____ $	

PRICING DATA SHEETS			
Item	**Description**		**Firm Price**
	19.3.10 Propeller Shaft Installation	_____ $	
	Firm Price for item 19		_____ **$**
20	**Bow Thruster gear oil and seal change**		_____ **$**
21	**Sewage sludge tank, black water tank, bildge water tank, grey water tank, dirty oil & sludge tank, lube oil tank** (Price Excluding sub item(s) below) (Bidders can enter $0.00 or indicate 'included' if the fees for this item are distributed in each of the items bellow. In case the fees are not distributed an amount must be indicated in the price box.)	_____ $	
	21.3.1 Tank Cleaning (Price Excluding sub item(s) below)	_____ $	
	21.3.1.4 Removal of liquid waste (200 liters) (Final amount prorated)	_____ $	
	21.3.1.4 Removal of solid waste (20 liters) (Final amount prorated)	_____ $	
	21.3.1.7 Removal of liquid waste (100 liters) (Final amount prorated)	_____ $	
	21.3.1.7 Removal of solid waste (20 liters) (Final amount prorated)	_____ $	
	21.3.1.10 Removal of liquid waste (100 liters) (Final amount prorated)	_____ $	
	21.3.1.10 Removal of solid waste (15 liters) (Final amount prorated)	_____ $	
	21.3.1.11 Removal of liquid waste (100 liters) (Final amount prorated)	_____ $	
	21.3.1.11 Removal of solid waste (15 liters) (Final amount prorated)	_____ $	
	21.3.2 Coating System Touch-Up Dirty Oil Tank (#15) (Price Excluding sub item(s) below)	_____ $	
	21.3.2.1 Price to prepare and paint (Final amount prorated): 5 m² x _____$/ m² = _____ $	_____ $	
	21.3.3 Coating System Touch-Up Dirty Oil Tank (#4, 6, 7a, 7b) (Final amount prorated) (Price Excluding sub item(s) below)	_____ $	
	21.3.3.1 Prix pour préparation et de la peinture du réservoir des boues et eaux usées et des eaux-vannes (Final amount prorated): 10 m² x ____ $/ m² = _____ $	_____ $	
	21.4.2.1 Hydrostatic Test	_____ $	
	21.4.2.3 Vaccum Test	_____ $	
	Firm Price for item 21		_____ **$**
22	**Potable Water Tanks** (Price Excluding sub item(s) below) (Bidders can enter $0.00 or indicate 'included' if the fees for this item are distributed in each of the items bellow. In case the fees are not distributed an amount must be indicated in the price box.)	_____ $	
	22.3.1 Tank Cleaning (Price Excluding sub item(s) below)	_____ $	
	22.3.1.4 Remove 1 m3 standing water (Final amount prorated)	_____ $	

PRICING DATA SHEETS			
Item	**Description**		**Firm Price**
	22.3.1.7 Pipe Supports	_____ $	
	22.3.2 Tank Coating System Touch-Up (Price Excluding sub item(s) below)	_____ $	
	22.3.2.2 Touch-up and repair (10 m²) (Final amount prorated) 10 m² x ____ $/ m² = _____ $	_____ $	
	Firm Price for item 22		_____ **$**
23	**Ballast water tank Inspections.** (Price Excluding optional item(s) at table: **B) OPTIONAL SCHEDULED WORK** and sub item(s) below) (Bidders can enter $0.00 or indicate 'included' if the fees for this item are distributed in each of the items bellow. In case the fees are not distributed an amount must be indicated in the price box.)	_____ $	
	23.3.1 Tank cleaning	_____ $	
	23.3.1.5 Remove 3,5 m3 standing water (Final amount prorated) 3,5 m² x ____ $/ m² = _____ $	_____ $	
	23.3.2.2 Touch-up and repair (5 m²) 5 m² x ____ $/ m² = _____ $	_____ $	
	Firm Price for item 23		_____ **$**
	A) SCHEDULED WORK -TOTAL FIRM PRICE		_____ **$**

B) OPTIONAL SCHEDULED WORK

PRICE PER ITEM SHEET		
Item	**Description**	**Firm Price**
7	**7.3.1.6 – Ultrasonic thickness measurements (200 measurements)**	_____$
	7.3.3.5.1 – Temporary shelter entire area to be painted (shelter provided by shipyard)	_____$
	7.3.3.5.1 – Temporary shelter to cover 10 m (shelter provided by shipyard)	_____$
	7.3.3.5.2 - Temporary shelter (shelter provided by Canada)	_____$
	7.3.7 – New Aft Draft Marks	_____$
13	**13.3 – Non destructive testing** (Price Excluding sub item(s) below)	_____$
	13.3.3 – Pressure testing	_____$
	13.4 – Fuel tanks	_____$
	13.6 – Lube oil tanks	_____$
18	**18.3.1.4 – Liquid dye inspection**	_____$
	18.3.1.5 – Anchor shots disconnection and reconnection	_____$
	18.3.1.6 – Painting	_____$
19	**19.3.4.2 – Liquide pentrant test**	_____$
	19.3.8 – Controlable Pitch Propeller Inspection	_____$
	19.3.9 – OD Box Inspection	_____$
23	**23.4.3 – Hydrostatic tests**	_____$
	23.4.4 – Pneumatic tests	_____$
	B) OPTIONAL SCHEDULED WORK – TOTAL FIRM PRICE	_____$

Remark to Bidders:

Canada may reject the bid if any of the prices submitted do not reasonably reflect the cost of performing the part of the work to which that price applies.

Annex A

CCGS CAPORAL Kaeble V.C. Dry-Docking 2017

Specification No: Spec F3774-17IN188

Date: 2017-09-15

Revision No: 0

Prepared by Marine Engineering
Canadian Coast Guard
Central & Arctic Region
Integrated Technical Services
101 boul Champlain, Québec, Qc, G1K 7Y7

Table of Contents

1.0 GENERAL NOTES

1.1 IDENTIFICATION

1.1.1 These General Notes describe the Canadian Coast Guard (CCG) requirements applicable to all accompanying Technical Specifications.

1.2 REFERENCES

1.2.1 Document Priority Order

ACTS	**Title**	**supplied**
CSA	Canada Shipping Act	
CLC	Canada Labour Code	
REGULATIONS	**Title**	
MOHS	Maritime Occupational Health and Safety	
CT-043-EQ-EG-001E (EKME#3049715v3A)	CCG Welding Specification	
TP127E	Transport Canada Marine Safety Electrical Standard	Transport Canada
70-000-000-EU-JA-001	Specification for the Installation of Shipboard Electronic Equipment	

1.2.2 Drawings, Documentation and applicable Regulations:

FSM Procedures	**Title**	
7.A.1	Assessing risk	
7.A.12	Potable Water Quality	
7. B.2.	Fall Protection	
7.B.3	Entry Into Confined Spaces	
7.B.4	Hotwork	
7.B.5	Lockout and Tagout	
7.B.6	Electrical Safety – Energized Circuits	
7.E.5	Handling, Storage & Disposal of Hazardous Material	
7.E.8	Use of Halocarbons	
8.B.1	Security of the Vessel	
10.A.2	Maintenance and Refits	
10.A.6	Paint and Other Coatings	
10.A.7	Contractor Safety and Security	
Ship Specific	Vessel Specific - Asbestos	

	Management Plan	
CA-024-000-EQ-WB-033	MSPV C&P variant final trim and stability booklet for MSPV "Caporal Kaeble V.C."	
Publications	**Title**	
CCG/6016	CCG Fleet, Federal Identity Program Guide	Included
TP3177E	Standard for the Control of Gas Hazards in Vessels to be Repaired or Altered	included
IEEE 45-2002	Recommended Practice for Electrical Installation on Ships	
Bulletin No: 06/1989	Grounding Safety in Drydock	
CSA W47.1-F09 (C2014)	Certification of Companies for Fusion Welding of Steel Structures Division 2 Certification	
CSA W47.2-F11	Certification of Companies for Fusion Welding of Aluminum	
CSA W59-F13	Welded Steel Construction – Metal Arc Welding	
CSA W59.2-FM1991 (C2013)	Welded Aluminum Construction	
AWS D1.6/D1.6M:2007	Structural Welding Code – Stainless Steel	
SSPC-SP1	Solvent Cleaning	
SSPC-SP10/ NACE no.2	Near White Blast Cleaning	
SSPC-SP11	Power Tooling to Bare Metal	
SSPC-SP-15	Commercial Grade Power-Tool Cleaning	no

CAN/ONGC-48.9712	Non-destructive testing- qualification and certification of NDT (non destructive testing) personnel	
Interline 975	Application Guidelines Potable Water Tank	
DRAWINGS	**Title**	
AF6095-10000-01	Midship and Other Sections Plans	
AF6095-10000-03	Shell Expansion	
AF6095-10000-04	Watertight Bulkheads Plans	
AF6095-10000-11-01	Rudders Construction Plan Sht 1 of 2	
AF6095-10000-11-02	Rudders Construction Plan Sht 2 of 2	
AF6095-10000-14-01	Dry Docking Plan Sht 1 of 2	
AF6095-10000-14-02	Dry Docking Plan Sht 2 of 2	
AF6095-50000-03	Valve Schedule	
AF6095-56100-02	Steering System Schematic of the Hydraulic System	
AF6095-56100-03	Steering Gear Room Arrangement Plan	
AF6095-63100-01	Paint Schedule	
AF6095-63300-01	Scheme of Cathodic Protection	
AF6095-89940-01-01	General Arrangement Plan Sht 1 of 2	
AF6095-89940-01-02	General Arrangement Plan Sht 2 of 2	
AF6095-89940-02	Tank Arrangement, Capacity Plan	
AF6095-89940-03	Lines Plan	
AF6095-89940-08	Draft Marks and Load Line Marks Plan	
6094-24300-01	Shaft Line arrangement Plan	
6094-61100-01	Bottom plug Diagram	
TG-28380-assembly	Thordon SXL Steering System wear pads assembly	
	Photo de l’entrée du trou d’homme pour le réservoir d’huile usagée et de boues	Entrée réservoir d'eaux vannes.pdf
	Gasoline Tank Drawing (section blue print)	
	Caporal Kaeble welded sea bay	

	grating (picture)	
	Draft Marks transom (picture)	
	Kamewa CP-A D installation Manual	
	Kamewa CP-A D User manual	
	Trac 2824 Seal Change procedure	
	Thorshield system application Instruction manual	
	Liste des anodes – Anode list	Liste des anodes
346040	Trac hydraulic thruster installation & operation	
35989	Trac hydraul Manual francais	
15069-800-S-001	Limber holes Engine Room	

1.3 OCCUPATIONAL HEALTH AND SAFETY

1.3.1 The Contractor and all sub-contractors must follow Occupational Health and Safety (OHS) procedures in accordance with applicable federal and provincial OHS regulations ensuring that Contractor activities are carried out in a safe manner and do not endanger the safety of any personnel.

1.3.2 The Contractor and Contractor's employees must not have access to the vessel's washrooms and crew mess facilities. The Contractor must provide the necessary amenities for the Contractor's and sub-Contractors employees as required.

1.3.3 The Contractor must ensure all applicable safety precautions including equipment lock outs and tag outs are implemented prior to the start of work.

1.4 ACCESS TO WORKSITE

1.4.1 The Contractor must ensure the TA and CG staffs have unrestricted access to the worksite at all times during the contract period.

1.5 WORKPLACE HAZARDOUS MATERIALS INFORMATION SYSTEM (WHIMS)

1.5.1 The Contractor must provide the TA with Material Safety Data Sheets (MSDS) for all Contractor supplied WHIMS controlled products.

1.5.2 The TA will provide the Contractor with access to MSDS for all controlled products on the ship for all specified work items.

1.6 SMOKING IN THE WORK SPACE

1.6.1 The Contractor must ensure compliance with the Non-Smokers' Health Act. The Contractor must ensure that every employer, and any person acting on behalf of an employer, must ensure that persons refrain from smoking in any work space under the control of the employer. The Contractor must ensure that there is absolutely no smoking onboard the vessel.

1.7 CLEAN AND HAZARD FREE WORKSITE

1.7.1 Before the Contractor starts any work on the vessel, the Contractor's Quality Assurance Representative and the TA must walk through each space and area where work is to take place, including access and removal routes and areas adjacent to those where the work is to be done as a result of this specification. The Contractor's Quality Assurance Representative must take digital pictures of each area showing the outfit therein and download the photos in JPG format onto a CD or DVD. Each picture must be dated and labeled as to the location on the vessel. Two copies of this CD or DVD are to be provided to the TA for reference purposes within 48 hours of the start of the contract.

1.7.2 The Contractor, during the work period must maintain those areas of the vessel which Contractor personnel use to access those areas where work is to be undertaken, in a clean condition, free from debris and remove garbage daily.

1.7.3 Areas that pose a hazard as a result of the specification work are to be secured and clearly identified by the Contractor with signage to advise and protect all personnel from the hazard in accordance with applicable Canada Labour Code requirements.

1.7.4 The Contractor must be responsible for the removal of all garbage generated from the work of this specification and for returning the vessel to the state of cleanliness in which the vessel was at the start of the contract period.

1.7.5 Once all known work and final clean-up has been completed, the Contractor's QA Representative and the TA must perform a 'walk through' of the vessel to view all areas where work was performed by the Contractor. Any deficiencies or damage noted must be the responsibility of the Contractor. The deficiencies or damage must be repaired by the Contractor at no cost to the Coast Guard.

1.8 FIRE PROTECTION

1.8.1 The Contractor must ensure the isolation, removal and installation of fire detection and suppression systems or any components thereof, is performed by a certified technician. When the fire detection or fire suppression system is deactivated or disabled by the Contractor during the contract, the system(s) must be recertified by a qualified technician as fully functional. A signed and dated original copy of the certificate must be delivered to the TA before the signing of the 1205 Acceptance Form.

1.8.2 The Contractor must notify the TA and obtain written approval from the TA prior to disturbing, removing, isolating, deactivating / disabling or locking out any part of the fire detection or suppression systems, including heat and smoke sensors.

1.8.3 The Contractor must ensure protection against fire at all times including when working on the ship's fire detection and / or suppression system(s).

1.8.4 Failure to take the necessary precautions while performing work on the vessel's fire suppression system(s) could result in the accidental discharge of the fire suppression agent(s). The systems must be returned to their original condition and adhere to all federal and provincial regulations. The Contractor must recharge and certify systems related to all accidental discharges at no charge to Canada.

1.9 TOUCH-UP / DISTURBED PAINT

1.9.1 Unless stated otherwise the Contractor must supply and apply two coats of marine primer compatible with the vessel's existing coating system to all new and/or disturbed metal surfaces. (Ref.: Drawing AF6095-63100-01 Paint Schedule)

1.10 REGULATORY INSPECTIONS AND/OR CLASS SURVEYS

1.10.1 The Contractor must contact, coordinate and schedule all regulatory inspections and/or class surveys by the applicable authority: i.e. Lloyd's, TCMS, HC, Environment Canada or others as required by the specification.

1.10.2 Any documentation generated by the above inspections and/or surveys to show that the inspections and/or surveys were conducted (i.e. original signed and dated certificates) must be provided to the TA.

1.10.3 The Contractor must not substitute inspection by the TA for the required regulatory inspections or class surveys.

1.10.4 The Contractor must provide timely advance notification (minimum of 24 hours) of scheduled regulatory inspections and/or class surveys to the TA so they may witness the inspection. No Class inspections/surveys to be carried out without presence of TA or/and IA.

1.11 DOCUMENTATION

1.11.1 Prior to the close of contract, the Contractor must submit four (4) original hard copies and one digital copy (pdf) of all requested readings, reports and other documentation to the TA. Hard copies must be printed on Contractor, sub-Contractor or Manufacturer's letterhead, signed by the originator, bound in standard 3-ring binders and indexed by specification number. The digital (pdf) copy must be emailed to the TA or handed on a USB drive.

1.11.2 Recorded dimensions must be to a precision of three decimal places (unless otherwise stated) in the measuring system currently in use on the vessel.

1.11.3 The Contractor must provide to the TA current and valid calibration certificates for all instrumentation used during specified tests and trials.

1.12 CONTRACTOR SUPPLIED MATERIALS AND TOOLS

1.12.1 The Contractor must ensure all materials are new and unused.

1.12.2 The Contractor must ensure replacement material including but not limited to jointing, packing, insulation, small hardware, oils, lubricants, cleaning solvents, preservatives, paints, coatings etc. are in accordance with the equipment manufacturer's drawings, manuals and/or instructions.

1.12.3 Where no particular item is specified or where substitution must be made, the TA must approve the substituted item in writing. The Contractor must provide information about materials used, certificate of grade and quality of various materials to the TA prior to use.

1.12.4 The Contractor must provide all equipment, devices, tools and machinery such as cranage, staging, scaffolding and rigging necessary for the completion of the work in this specification.

1.12.5 The Contractor must provide waste disposal services for any oil, oily waste or other hazardous or controlled waste generated by the work of this specification. The Contractor must provide waste disposal certificates for all of the above generated waste and the disposal certificates must indicate that the disposal was in accordance with Federal, Provincial and Municipal regulations in effect.

1.13 GOVERNMENT SUPPLIED MATERIALS & TOOLS

1.13.1 All tools are Contractor supplied unless otherwise stated in the technical specifications.

1.13.2 Where tools are supplied by the TA they must be returned by the Contractor in the same condition as when they were borrowed. Borrowed tools must be inventoried and signed for by the Contractor on receipt and return to the TA.

1.13.3 Any Government supplied material (GSM) must be received by the Contractor and stored in a secure warehouse or storeroom having a controlled environment appropriate for the equipment as per manufacturer's instructions.

1.14 RESTRICTED AREAS

1.14.1 The Contractor must not enter the following areas except to perform work as required by the specifications: all cabins, offices, workshops, Engineers' office, Wheelhouse, Control Room, all washrooms, Galley, Mess Rooms, Lounge areas and any other areas restricted by signage.

1.15 CONTRACTOR INSPECTIONS AND PROTECTION OF EQUIPMENT AND THE WORKSITE

1.15.1 The Contractor must coordinate an inspection with the TA on the condition and location of items to be removed prior to carrying out the specified work or to gain access to a location to carry out the work.

1.15.2 Any damage incurred as a result of the Contractor's work and that is attributable to the Contractor's work performance must be repaired by the Contractor at no cost to Canada. Materials used in any replacement or repairs must meet the criteria for Contractor supplied material noted above in section Contractor Supplied Materials and Tools.

1.15.3 The Contractor must protect all equipment and surrounding areas from damage. Work areas are to be protected from the ingress of water, welding and blasting grit etc. Temporary covers to work areas must be installed.

1.15.4 The Contractor must protect the vessel from the possibility of vermin infestation (insect/mammal). If an infestation does occur during the contract period the Contractor must ensure the vessel is made vermin free and the ship decontaminated before the contract completion.

1.16 RECORDING OF WORK IN PROGRESS

1.16.1 The TA may record any work in progress using various means including, but not limited to photography or video.

1.17 LEAD PAINT AND PAINT COATINGS

1.17.1 The Contractor must not use lead based paints.

1.17.2 CG ships have been painted with lead based paints in the past and, as a result, some of the Contractor's processes such as grinding, welding and burning may release this lead from the coatings. The Contractor must ensure that coatings in the affected work areas are tested for lead content and that the work is performed in accordance with applicable Federal and Provincial regulations. The Contractor must have in place a Lead Abatement Program in order to deal with any lead paint discovered in the course of this statement of work.

1.17.3 The Contractor must provide HC product approval for underwater hull surface paints controlled by HC and the Pest Management Regulatory Agency.

1.18 ASBESTOS CONTAINING MATERIALS

1.18.1 The Contractor must not use any asbestos containing materials.

1.18.2 Handling of any asbestos containing materials must be performed by personnel trained and certified in the removal of asbestos in accordance with Federal, Provincial and Municipal regulations in effect and in accordance with the Fleet Safety Manual. The Contractor must provide the TA with disposal certificates for all asbestos containing material removed from the vessel indicating that the disposal was in accordance with Federal, Provincial and Municipal regulations in effect.

1.19 REMOVED MATERIALS AND EQUIPMENT

1.19.1 All removed equipment as a result of this specification must remain the property of Canada unless otherwise instructed.

1.20 WELDING CERTIFICATION

1.20.1 All welding and weld inspection must be in accordance with Lloyd`s Registers and CCG Welding Specification CT-043-EQ-EG-001.

1.20.2 For any items requiring the application of fusion welding for steel structures, the Contractor or his Sub-Contractors must be certified by the Canadian Welding Bureau to CSA\\ACNOR W47.1- latest edition Division, 1.

1.20.3 For any item requiring the application of fusion welding to aluminum structures, the Contractor or his Sub-Contractors must be certified by the Canadian Welding Bureau to CSA\ACNOR W47.2 – latest edition, Division 2.

1.20.4 The Contractor must provide documentation to the TA clearly identifying compliance with the welding certification requirements specified herein and the CCG Welding Specification CT-043-EQ-EG-001. Typical documents include but are not necessarily limited to: Letter of Validation, Welding Procedures, Welder Performance Qualification Cards, Inspection Personnel Qualification Cards, etc.

1.20.5 For any item requiring the application of fusion welding for stainless steel structures, the Contractor or his Sub-Contractors must be certified in accordance by the Canadian Welding Bureau to with the Canadian Welding Bureau, CSA\ACNOR W47.1 – latest edition, Division 1. Welders, welding operators and welding procedures must meet the requirements of CSA Standard W47.1, and of AWS D1.6.

1.20.6 For structural steels over 3 mm in thickness, welding must meet the requirements of CSA Standards W47.1 and W59, except as modified by the CCG Welding Specification CT-043-EQ-EG-001.

1.20.7 For structural aluminum over 3 mm in thickness, welding must meet the requirements of CSA Standards W47.2 and W59.2, except as modified by the CCG Welding Specification CT-043-EQ-EG-001.

1.21 ELECTRICAL INSTALLATIONS

1.21.1 All electrical installations and repairs must be carried out in accordance with the latest revisions of Transport Canada Marine Safety Electrical Standard TP127E and IEEE Standard 45 Recommended Practice for Electrical Installation on Ships.

2.0 LIST OF ACRONYMS

CA	Contract Authority (PSPC)
CCG	Canadian Coast Guard
CLC	Canada Labour Code
CSM	Contractor Supplied Material
CSA	Canadian Standards Association
CWB	Canadian Welding Bureau
DFO	Department of Fisheries and Oceans
DFT	Dry Film Thickness
FSM	Fleet Safety Manual (CCG)
FSR	Factory Service Representative
GSM	Government Supplied Materials
HC	Health Canada
IEEE	Institute of Electrical and Electronic Engineers
IA	Inspection Authority (CCG)
LOA	Length Over All
ME	Main Engine
MSDS	Material Safety Data Sheet
O/B	Overboard
OHS	Occupational Health and Safety
P	Port
PSPC	Public Service and Procurement Canada (PSPC)
SSMS	Safety & Security Management System
STBD	Starboard
TBS	Treasury Board of Canada Secretariat
TCMS	Transport Canada Marine Safety
TA	Technical Authority – Owner’s Representative (CCG)
WCB	Worker’s Compensation Board
WHMIS	Workplace Hazardous Material Information System

3.0 VESSEL PARTICULARS

Name: CCGS Caporal Kaeble V.C.
Type: Twin Screw, Mid Shore Patrol Vessel
Class: Near Coastal Class I
Year Built: 2012
Home Port: Québec City
Principal Dimensions:
Gross Tonnage: 253 tons
Net Tonnage: 75 tons
Construction: Material Steel
Vessel Length: 42.8 m.
Vessel Breadth: 7.00 m.
Vessel Depth: 3.80 m.

Class Notations
Hull Notation: +100A1 SSC PATROL, MONO, HSC, G4, EP.
Descriptive Notes: ABBREVIATED NOTE GREEN PASSPORT

Propulsion: Twin screw, Controllable Pitch Propeller, MTU S4000 M93L 12V

4.0 SERVICES

4.1 GENERAL

4.1.1 The Contractor must supply the following services to the vessel for the entire work period and disconnect upon completion of the work period. The Contractor must be responsible for the re-establishment of services if the vessel is moved during the work period.

4.1.2 Each of the services noted below must be separately priced in the Contractor's submitted bid.

4.1.3 The Contractor must be responsible for supplying all material, hoses, cables etc. and labour required to connect and disconnect the services to the vessel. Unless otherwise stated these services must be available 24 hours a day 7 days a week for the entire contract period.

4.1.4 All staging, manlifts, cranage, screens, lighting and any other support services, equipment and materials necessary to carry out the work identified in these specifications must be Contractor supplied.

4.1.5 All deficiencies resulting from work carried out in this specification must be repaired at Contractor's expense.

4.1.6 Prior to the start of disassembly, precautions must be taken to ensure that the reassembly and reinstallation of all system and equipment components will be as per original and in accordance with manufacturer's specifications.

4.1.7 The Contractor must report by email all deficiencies as they are identified, to the TA and make recommendations for their prompt remedial action.

4.2 BERTHING AND MOORING

4.2.1 The berthing and mooring facilities must be suitable for a vessel of this size in local weather, tide and sea conditions. Fenders must be supplied by the Contractor to prevent the vessel from contacting the wharf in local weather, tide and sea conditions.

4.2.2 The length of the dock must be a minimum of 90% of the length of the vessel (LOA).

4.2.3 During the contract period, when the ship is not in the dry dock, the ship must be berthed at the Contractor's wharf at a safe and secure location with a minimum clearance of one meter under the vessel at extreme low water level conditions to ensure the vessel will not touch bottom.

4.2.4 The Contractor must be responsible for all movements of the vessel, including berthing and mooring of the vessel for the contract period and for arrangements and costs for line handlers, tugs and pilots.

4.3 MOORING LINES

4.3.1 The Contractor must be responsible for providing the necessary mooring lines and labour required to secure the vessel alongside the facilities. Ship's mooring lines are not to be used.

4.4 GANGWAYS

4.4.1 Contractor must supply the labour and services required for the installation and removal of two (2) gangways, complete with handrails, safety nets and lighting for the duration of the contract while the vessel is moored.

4.4.2 Any movement of the gangway required by the Contractor must be at the expense of the Contractor.

4.5 ELECTRICAL POWER

4.5.1 The Contractor must be responsible for supplying 600 Volt Alternating Current, 3 phase 4 wire with a floating neutral, 60 Hertz, 200 Ampere service electrical power and all the manpower to handle the power cables for the duration of the contract.

4.5.2 The vessel’s shore power cable and associated plug connection may be used by the Contractor. However, the Contractor is responsible to replace the entire length of cable with an equal quality, size and length of cable should the shore power cable be damaged during the contract period. Damage to the shore power cable also includes damage to the plug-in connections which must be replaced if damaged. Splicing any section of the cable is not acceptable.

4.5.3 The Contractor must be responsible for ensuring that the correct phase rotation on a 3 – phase system is established prior to energizing the ship’s distribution system. Any changes to the ship’s power system to accommodate the Contractor supplied shore power connections must be returned to the original setup by the Contractor upon the disconnection of the Contractor supplied power cable and equipment. All work must be carried out by certified electricians.

4.5.4 The Contractor must supply all power to the vessel through a Contractor supplied kilowatt-hour meter. The Contractor must read the kilowatt-hour meter when the connection is made and once again when the power is disconnected. Both readings of the meter must be witnessed by the TA. The Contractor must provide a calibration certificate for the kilowatt-hour meter.

4.5.5 The Contractor must quote for a total consumption estimated at 30,000 kw-hr.

4.5.6 The final price of kw/hour must be determinate at the end of the contract period, when a meter reading was made. The cost of electricity

consumption must be adjusted upwards or downwards on a PSPC-TPSGC 1379

4.6 FIRE MAIN CHARGING SERVICE

4.6.1 The Contractor must supply a separate and continuous uninterrupted water supply through isolation valves via a calibrated pressure regulator to the ship's fire main system. Supply pressure must be at 80 to 110 psig. Pressure must be maintained at all times to the vessel. The isolation valves must be Contractor supplied and installed in a double block and drain valve arrangement.

4.6.2 The Contractor must quote for one cubic meter of non-potable water consumption.

4.6.3 The Contractor must supply, at his own cost, the fresh water used in Section 21.0(Sewage sludge and black water tanks) and Section 22.0 (Potable water tanks).

4.7 CRANAGE AND MANLIFT SERVICES

4.7.1 The Contractor must quote on the general services of a crane and a man lift, including an operator and a rigger, for the support of the vessel's day-to-day activities, i.e. the moving of stores between the vessel and the Contractor's facilities ashore while the vessel is in the dry-dock and for other requirements from Canada. The Contractor must provide a Log Book of crane and man lift activities which must contain the printed name and signature of the CCG representative that required this service. The duration of time for each use of the crane and man lift services must also be recorded in this log book. The Log Book must be available for viewing by the TA at all times. The Contractor’s quote for this service item must consider a total of 20 hours for the duration of the contract. Cranage and man lift services final cost must be adjusted on a PSPC-TPSGC 1379 form. The Contractor must inform the TA and Contracting agent when 15 hours of usage has been accumulated.

4.8 GARBAGE REMOVAL

4.8.1 A garbage container or dumpster of 16 cubic meters must be located adjacent to the vessel. Garbage must be removed from the vessel daily including week-ends and holidays. Ship's personnel must comply with any recycling programs that the Contractor has in place, provided the appropriate containers are made available.

4.8.2 The Contractor must also supply a green bin for food waste. The green bin must also be emptied daily.

4.9 PORTABLE TOILET

4.9.1 The Contractor must provide a portable toilet to the vessel front of the wheel house while vessel is on the dry dock. The Contractor must clean the toilet weekly.

4.10 VESSEL SECURITY

4.10.1 The Contractor must maintain security for the vessel at all times, including outside of Contractor regular scheduled work hours. Please refer to FSM 8.B.1, Security of the Vessel.

4.10.2 In the event of any 'hot work' procedures being carried out during the day, surveillance rounds must be carried out hourly for at least 3 hours in the surrounding area of the hot work after the beginning of quiet hours.

4.10.3 If the Contractor has additional work shifts scheduled for the vessel during the contract period, the Contractor may start the surveillance rounds at the end of the last shift, recognizing that the Contractor is fully responsible for the safety and security of the vessel at all times.

4.10.4 The Contractor must provide a Log Book on the vessel which must contain the printed name and signature of the security staff upon completion of each round. The Log Book must be available for viewing by the TA at all times.

4.11 PARKING AT CONTRACTOR'S FACILITY

4.11.1 The Contractor must provide three (3) parking spaces for exclusive use of the TA and Project Team for duration of the contract period.

4.12 TELEPHONE LINES AND HIGH SPEED INTERNET

4.12.1 The Contractor must supply and connect two (2) telephone lines. One line connected to telephone system of the vessel and a separate line in the Chief Engineer's office, on main deck, port side.

4.12.2 All telephone and Internet lines must be in service 24 hours a day, ensuring communication with the exterior of the shipyard at all times. The Contractor must disconnect all telephone lines once the work is completed. Detailed billing must be supplied to the TA.

4.12.3 The Contractor must supply 1 high speed Internet line accessible from from an office with a separate telephone line and receiver for the Coast Guard and Public Works and Government Services Canada (PSPC) representatives.

4.12.4 The Contractor must provide the Chief Engineer with portable radio for internal communication between the ship and the shipyard. Contractor must replace/recharge radio battery when required. Contractor to discuss the radio frequencies used by shipyard with Chief Engineer.

4.12.5 The Contractor to provide the ship with printed copy shipyard phone directory list for communication purposes.

5.0 DRY-DOCKING

5.1 IDENTIFICATION

5.1.1 The Contractor must dry dock the vessel with the dimensions as set out in Section 3.0 of these specifications.

5.2 REFERENCES

5.2.1 CCGS Caporal Kaeble V.C. Stability Book

5.2.2 Ship Safety's Bulletin No.: 06/1989

5.2.3 Docking Plan AF6095-10000-14-01 Sheets 1 and 2

5.3 TECHNICAL

5.3.1 The Contractor must supply all labour, materials and facilities required for the berthing, mooring, dry-docking and storage of the vessel with the dimensions as outlined in Section 3.0.

5.3.2 The Contractor must prepare blocks and necessary shoring to maintain the true alignment of the vessel's hull and machinery throughout the docking period while the vessel is dry docked.

5.3.3 The vessel must be dry-docked such that all docking plugs, transducers, anodes and sea inlet grids are clear and accessible. A minimum clearance of 1.3 meters (4 feet) must be available between the keel and the dry dock. If any hull fittings are covered, the Contractor must be responsible for all labour and materials required to make alternative arrangements to drain tanks and/or move blocks to gain access to areas of specified work. Please refer to Docking plan (AF6095-10000-14). The Contractor must make sure there is enough room between the blocks, the speed log and the echo sounder.

5.3.4 The Contractor must record which block setup is used for docking the vessel, as stated in Section 1.11.

5.3.5 The Contractor must provide a ground cable between the vessel and the dock while the vessel is dry-docked as per TCMS Ship Safety Bulletin 6/89.

5.3.6 The Contractor must supply and erect at least two vessel access-ways in compliance with CLC regulations for the duration of the docking period. The Contractor must be responsible for the safe maintenance of the access-ways.

5.3.7 The Contractor must advise the TA of the details of any major changes in the distribution of weights on the vessel while the vessel is dry-docked. This information must be given to the TA prior to the undocking of the vessel.

5.4 PROOF OF PERFORMANCE

5.4.1 Inspections

5.4.1.1 Before undocking the vessel, the Contractor must install all docking plugs removed and replace all gaskets and joints with new ones. Water tightness of the plugs must be vacuum tested in the presence of the Lloyd's surveyor and the TA and IA.

5.4.1.2 Once the docking plugs have been installed and tested, the Contractor must fill all tanks that were emptied to the same level as they were when the ship was docked.

5.4.1.3 The Contractor must ensure that the hull coating system has fully cured and must provide a final report from the FSR prior to un-docking of the vessel.

5.4.1.4 Before un-docking the vessel, the Contractor must wash all transducers with a mix of soft liquid detergent and water in order to rid them of contaminants and all marine dirt. Once the transducers are cleaned, the Contractor must rinse the transducers with clear fresh water to make sure that their surface is free of all soap residues.

5.5 DELIVERABLES

5.5.1 Documentation

5.5.1.1 The Contractor must provide the following information to the TA prior to the close of the contract:

- Kilowatt hour meter readings at connection and at disconnection;
- Oil Disposal Certificates;
- FSR hull coating system report.

6.0 WEIGHT ALTERATION REPORT

6.1 Description

6.1.1 To be able to keep a current picture of the weight of the ship for stability. An up do date record of all weight added and removed during the repair work and alteration to the vessel.

6.2 Reference

6.3 Technical Description

6.3.1 The Contractor must provide a report of change of weight that will include the weight added and the weight added for each section of the specification

6.3.2 The report must be received before the end of the contract. Documentation must conform to section 1.11; documentation.

6.4 Deliverables

6.4.1 The contractor must deliver a report including

6.4.2 The weight of material removed from the vessel per section of the specification

6.4.3 The weight of material added per section of the specification

7.0 UNDERWATER HULL INSPECTION AND HULL PAINTING

7.1 IDENTIFICATION

7.1.1 The Contractor must prepare the underwater hull shell plating for inspection in accordance with Lloyd's Classification Society survey requirements for a vessel of this type.

7.1.2 The Contractor must carry out a paint survey of the underwater hull area and repair as directed by the attending hull coating system FRS.

7.1.3 The Contractor must modify the sea chest grating as specified in this Section7.3.2.3.

7.2 REFERENCES

7.2.1 Product Data

7.2.1.1 Product Data Sheets and Application guidelines for the following International Products:

- Interspeed 640;
- Intershield 300;
- Intergard 263;
- Interthane 990.

7.2.2 Drawings

Drawing Number	Description	Electronic #
AF6095-10000-14	Docking Plan 1-2 and 2-2	
AF6095-10000-01	Midship and Other Sections Plan	
AF6095-10000-03_01	Shell Expansion	
AF6095-10000-04	Watertight Bulkheads Plans	
AF6095-50000-03	Valve Schedule	
AF6095-63100-01_01	Paint Schedule	
AF6095-63300-01	Scheme of Cathodic Protection	
AF6095-89940-01_01	General Arrangement Plan 1-2	
AF6095-89940-01_02	General Arrangement Plan 2-2	
AF6095-89940-02_01	Tank Arrangement & Capacity Plan	
AF6095-89940-03_01	Line Plan	

AF6095-89940-08_01	Draft Marks and Load Line Marks Plan	
J16003-R02, rev. A	CCG 'Hero' Class Patrol Vessels Sea Chest and Grate Modifications Specifications	
Caporal Kaeble welded sea bay grating	Picture sea grating	Caporal Kaeble welded sea bay grating.jpg
Aft draft marking	Draft marks on aft of MSPV vessel	Draft mark transom.jpg
Shelter.pdf	Shelter for painting	
Interspec Caporal Kaeble V.C.		

7.2.3 Regulations

7.2.3.1 Canada Shipping Act, 2001 (2001, c. 26) Hull Inspection Regulations (C.R.C., c.1432)

7.2.3.2 Lloyd's Register, Rules & Regulations for the Classification of Special Service Craft

7.2.4 Standard

7.2.4.1 Coating Manufacturer's Specifications

7.2.4.2 CCG/6016 CCG Fleet Federal identity Program Guide

7.2.4.3 Canadian coast guard welding specification

7.3 TECHNICAL

7.3.1 Underwater Hull Cleaning and Inspection

7.3.1.1 The Contractor must hydro-blast the underwater hull area of the vessel to the deep load line within 24 hours of docking. Hydro-blasting must be done with a minimum of 5,000 PSI pressure.

7.3.1.2 Underwater Hull Area ≈ 330 m2 (≈3,552 ft2)

7.3.1.3 The Contractor must remove all sea-chest grates and clean the sea chests. **NOTE:** Modifications required as per Section 7.3.2.3.

7.3.1.4 The Contractor must thoroughly clean all sea chests and sea bays of all marine growth, dirt and debris. All dirt and debris must be removed from the vessel and disposed of ashore in accordance with Federal, Provincial and Municipal regulations in effect.

7.3.1.5 The Contractor must bid on the removal and disposal of 1 cubic meter of solid debris from the sea chests and sea bay areas. Final pricing must be pro-rated based on the volume of debris removed using PSPC 1379 process.

7.3.1.6 Optional- The Contractor must take 200 ultrasonic thickness measurements of the hull plating. The Contractor must take a minimum of 4 shots per hull plate on the underwater hull area of the vessel. Additional shot per plate must be taken in the way of the propeller areas, rudders and the exhaust overboards. The Contractor must clearly mark the location of each shot taken on the hull expansion plan and the thickness measurements must be presented in a tabular format showing the location and the thickness reading. Ultrasound measurements must be taken by a technician certified to Level II non-destructive testing. The Contractor must provide all staging and man lifts to perform this work

7.3.1.7 The Contractor must, at the earliest opportunity, schedule the Lloyd's inspection of the underwater hull structures once the hull has been cleaned. The inspections must be carried out within 48 hours of vessel docking.

7.3.1.8 The Contractor must supply all necessary staging and man lifts for the inspection by the Lloyd's surveyor, TA and IA.

7.3.2 Underwater Hull Repairs following Inspection and Modifications

7.3.2.1 The Contractor must carry out all prescribed repairs resulting from the Lloyd's inspection of the underwater hull. Repair must be in accordance with all applicable standards and regulations including those identified in 1.20. Work for underwater hull repairs must be negotiated using the PSPC 1379 process.

7.3.2.2 The Contractor must quote on 50 meters of plate seam and butt welding to be renewed consisting of the following:

- removal of the existing coating system;
- gouging to a depth such that a 1 pass weld will provide the necessary finish profile;
- replacement of the coating system as specified in Section7.3.3.3;
- Actual length of welds to be renewed must be determined as part of the underwater hull inspection and the total length renewed must be prorated using the PSPC 1379 process.
- A quality assurance report on the repaired weld will be given to the technical authority. The report must include 100% visual inspection of the repaired weld.
- All materials used for the prescribed hull repairs must meet or exceed original specifications and must be in compliance with applicable regulations and standards.

7.3.2.3 Sea Chest Grate Modifications

7.3.2.3.1 The Contractor must modify the Sea Chest and Grates according to the Lengkeek Vessel Engineering Inc. document J16003-R02, Rev A. **NOTE:** the Contractor must be responsible for ensuring that final dimensions of parts are taken to fit the actual ship's dimensions. The drawing supplied is approval in concept but final dimensions for all parts must be verified from the vessel.

7.3.2.3.2 All new steel plates and shapes must be minimum Lloyds Grade 'A'. the steel certificate must be given to the technical authority. A quality assurance report must be given to the TA including a 100% visual inspection by a welding inspector qualified according to the Canadian coast guard welding specification.

7.3.2.3.3 The Contractor must supply all material required, including any material required to complete the work of this specification item.

7.3.2.3.4 All new steel work must be sandblasted to create a surface and shop primed with a primer compatible with the vessel's existing paint system. On completion of all welding, all damaged paintwork must be receive a sweep blast to remove any loose material.

7.3.2.4 Upon completion of the prescribed repairs the Contractor must schedule the Lloyd's inspector for acceptance of the repairs and modifications prior to the application of the hull coating system. The TA and IA must be afforded the opportunity to be present for this inspection.

7.3.2.5 All new and disturbed metal resulting from the prescribed repairs must be prepared and coated in accordance with Section 7.3.3.3.

7.3.3 Underwater Hull Coating System Inspection

7.3.3.1 The Contractor must engage a NACE technician level 2 from to inspect the underwater hull coating system up to the deep load line and the bow thruster pipe tunnel. The Contractor, in conjunction with the NACE inspector and the Inspection Authority, must record all areas of poor coating adhesion or lack of coating on a copy of the shell expansion plan for the vessel.

7.3.3.2 The Contractor must supply all necessary staging and man lifts for the inspection by the NACE technician, the TA and IA.

7.3.3.3 For bidding purposes the Contractor must quote on the preparation and recoating of 200 square meters of underwater hull surface area. **NOTE:** This area must include the surface area of the two rudders. Based on the underwater hull coating system inspection this area must be prorated using the PSPC 1379 process. The underwater hull coating system must be renewed as follows:

- The Contractor must blast the surface of the underwater hull area to be recoated to SSPC-SP10 with abrasive providing a minimum amplitude of 80 microns.
- All edges to the existing coating must be feathered and blown clean with compressed air prior to the coating application.
- The Contractor must take all necessary steps after blasting the surface area to minimize steel oxidation by applying the coating in accordance with the paint manufacturer's instructions.
- The Contractor must apply a coating system that is compatible with the system in place.
- The Contractor must apply a coating conform to the ship's paint schedule AF6095-63100-01_01
- The Contractor must apply one coat of antifouling on the entire surface of the underwater hull. The entire surface is about 330 meter square.

7.3.3.4 The Contractor must apply the underwater hull coating system in the presence of the NACE inspector and particular attention must be given to the environmental conditions required for the application of the coating system with respect to substrate temperatures, dew points and air temperatures required prior to, during and post coating system application as prescribed in the product literature to ensure that the coating system will have both sufficient time and temperature to achieve a full cure. The Contractor must be responsible to ensure that the hull coating system application can be successfully completed in the allotted time of the contract.

7.3.3.5 The Contractor must apply a stripe coat by brush to edges, welds, crevices, bolt heads, transitions, backs of stiffeners, cut outs, ladders, handrails and other surface irregularities when applying the primer and intermediate coat for surfaces cleaned to bare metal. The stripe coat may be applied to the surface by spray provided it is immediately and thoroughly worked into these areas by brush.

7.3.3.5.1 **OPTIONAL ITEM:** The Contractor must supply and install a temporary shelter covering the ship's hull entire area that is to be painted. This shelter is to be ventilated and heated such that the ambient temperature of the steel can be maintained to that required in the coating system specification to allow full curing of the hull coating system. The Contractor must ensure that no combustion gasses exhausted from the heaters enter the shelter and affect the hull coating system chemistry. The shelter must only be dismantled after the full curing of the hull coating system. The Contractor must quote for a shelter and heaters covering a hull section's length of 10 meters. The Contractor must also provide a quotation for a shelter and heaters covering the entire underwater area to 1 meter past the deep water draft marks for the entire vessel.

7.3.3.5.2 **OPTIONAL ITEM:** The Contractor must install a temporary shelter supplied by Canada. The shelter is to be ventilated and heated such that the ambient temperature of the steel can be maintained to that required in the coating system specification to allow full curing of the hull coating system. The Contractor must ensure that no combustion gasses exhausted from the heaters enter the shelter and affect the hull coating system chemistry. The Contractor must dismantle the shelter after the full curing of the hull coating system. The shelter must be cleaned and dried before being taken down and stored in the provided containers. The document shelter.pdf shows the shelter.

7.3.3.6 The Contractor must completely remove all existing coatings on surfaces identified for recoating and the debris must be contained and disposed of by the Contractor in accordance with applicable federal, provincial and municipal environmental regulations.

7.3.3.7 The Contractor must provide a report on the disposal method of the coatings removed from the ship.

7.3.3.8 The Contractor must protect all underwater areas not requiring grit blasting or re-coating from damage, contamination and overspray during surface preparation and recoating. These areas must include all ship side valves, port and starboard propellers, all rudder bearings and covers, bow thruster blades, all anodes, speed logs and all depth sounding appliances.

7.3.3.9 The Contractor must protect all above waterline surfaces, accommodation area, scuttles, port holes, windows, deck machinery, susceptible to damage from surface preparation and coating application overspray.

7.3.3.10 The Contractor must be responsible for the cleanup of all blasting grit, debris and overspray from the vessel up completion of the hull coating system renewal.

7.3.4 Above Water Line Coating

7.3.4.1 The Contractor must hydro-blast the above hull area of the vessel. Hydro-blasting must be done with a minimum of 5,000 PSI pressure.

7.3.4.2 Above water Hull Area, including areas from removed gasoline tanks ≈ 165 m^2 (≈1780 ft^2)

7.3.4.3 The Contractor, in conjunction with NACE technician and the TA, must record all areas of poor coating adhesion or lack of coating on a copy of the shell expansion plan for the vessel, a copy of this document must be given to the technical authority.

7.3.4.4 The Contractor must prepare the surface of the above water hull area in accordance with the coating manufacturer's requirements and as follows: The area to be recoated must cleaned to SSPC-SP-1 and be

blasted to SSPC-SP10. A sharp angular surface profile of 50-75 microns (2-3 mils) is required.

7.3.4.5 All necessary steps must be taken after blasting to minimize steel oxidation by applying the coating in accordance with the paint manufacturer's instructions.

7.3.4.6 All edges to the existing coating must be feathered and blown clean with compressed air prior to the coating application. The contractor must apply a coating of

An abrasion resistan pure epoxy coating pigmented with Aluminum with a DFt of 125 micron
A tar free epoxy tie coating for a DFT of 263 micron
An acrylic polyurethane finish for a DFT of 100 micron
And a coat of entire above waterline with an acrylic polyurethane finish for a DFT of 125 micron.
The Contractor must apply a coating compatible with the existing coating system. The existing coating system is intershield 300, intergard 263 and interthane 990.

7.3.4.7 For bidding purposes the Contractor must quote on the preparation and recoating of 50 square meters of above water hull surface area The Contractor must quote on 50 square meters of painting. Actual coating areas must be prorated accordingly.

7.3.4.8 After completion of the previous work, the Contractor must paint the entire hull surface above the waterline in conformance with the measurements and color coding specified in the CCG Fleet "Federal identity program guide", Annex I, pages 71 to 74.

7.3.4.9 The colors of the finish coat must be CCG Red 3000 for most of the hull, White RAL 9003 and Black RAL 9004 for the white bands and the lettering.

7.3.4.10 All surface preparation and recoating must be performed by a specialized crew in the application of marine exterior hull coatings for ships.

7.3.5 Wet exhaust

7.3.5.1 The Contractor must prepare the steel directly next to the main engine exhausts for a diameter of 5 inches surrounding the exhaust outlets.

7.3.5.2 The coating in place must be removed. The surface preparation must be an SSPC-SP-10.

7.3.5.3 The Contractor must protect the exhaust from sandblast getting in the exhausts

7.3.5.4 The Contractor must apply a high temperature coating resistant to abrasion.

7.3.6 Optional - Draft Markings

7.3.6.1 The Contractor must provide a separate pricing for Section 7.3.6 as this item will only be executed if required after the hull coating system inspection.

7.3.6.2 The Contractor must have the attending Lloyd's surveyor and the TA inspect the draft markings on the vessel in conformity with drawing number AF6095-89940-08.

7.3.6.3 The Contractor must renew the following draft markings on the vessel by grit blasting clean each draft mark to bare steel, re-weld the outline of the draft mark and applying the following coating system for the hull above the waterline.

7.3.6.4 The Contractor must supply and apply 2 coats of acrylic polyurethane finish white (White RAL 9003) to each of the below mentioned markings within welded outline markings. The renewal of the draft marks must be done after the final painting and curing of the underwater hull coating.

7.3.6.5 Forward: Both Port and Starboard side draft markings including the 2.4M and 1.6M meter markings for a total of 10 markings to be renewed.

7.3.6.6 Aft: Both Port and Starboard side draft markings including the 2.0M and 2.8M meter markings for a total of 10 markings to be renewed.

7.3.6.7 The Contractor must renew the Port and Starboard Plimsoll markings at mid-ship including all load lines and mid-ship markings.

7.3.6.8 When renewing the draft markings the Contractor must ensure that the draft markings are the correct height and obliqueness to the hull, representing the true draft of the vessel and that these are acceptable to the attending Lloyd's Inspector.

7.3.7 New Aft draft marks

7.3.7.1 The Contractor must create new draft markings center on the transom. And ensure they are at the correct height and obliqueness to the hull, representing the true draft of the vessel and that these are acceptable to the attending Lloyd's Inspector.

7.3.7.2 Currently there are no draft marks center aft, the marks must be measured, approved by a Lloyd's surveyor and the outline welded of the draft mark and coated.

7.3.7.3 The Contractor must remove the existing coating to prepare for welding of the raised outlines of the markings.

7.3.7.4 The Contractor must mark the draft markings including the 2.0M, 2.2M,

2.4M,2.6M and 2.8M

7.3.7.5 The installation of the marks must be done at the same time as the hull repairs before the hull coating is applied.

7.3.7.6 The coating system must be

An abrasion resistant pure epoxy coating pigmented with Aluminum with a DFt of 125 micron
A tar free epoxy tie coating for a DFT of 263 micron
An acrylic polyurethane finish for a DFT of 100 micron
And a coat of acrylic polyurethane finish for a DFT of 125 micron

7.4 PROOF OF PERFORMANCE

7.4.1 The Contractor must afford the TA the opportunity to witness the Lloyds inspection of the underwater hull prior to and following all prescribed repairs.

7.4.2 Testing/Trials

7.4.2.1 The Contractor must perform nondestructive testing as requested by the attending Lloyds Surveyor on all completed underwater hull repairs. The Contractor must quote for a total of 10 nondestructive tests. If the number of tests varies from the quoted amount, their cost must be negotiated using PSPC 1379 process.

7.4.2.2 The Contractor must provide pricing for one X-Ray weld inspection and pricing for one die penetrant inspection performed by a certified technician for Level 2 Non-Destructive testing, according to the Canadian coast guard welding standard section 5.6.8.2.

7.4.2.3 The Contractor must perform and record Wet Film Thickness readings during the application of each underwater coating system layer as required by the NACE technician. The readings and their locations must be contained in the final report.

7.4.3 Certification

7.4.3.1 The Contractor must provide, to the TA, all material test certificates for materials used to effect hull repairs identified in the Lloyds underwater hull inspection as well as the materials used for the modification of the sea chest grating.

7.4.3.2 The Contractor must provide the material certification for the underwater hull coating system applied.

7.5 DELIVERABLES

7.5.1 Documentation (Reports/Drawings/Manuals)

7.5.1.1 The Contractor must submit to the TA, in PDF format, a copy of drawing AF6095-10000-03 Shell Expansion with the location of all ultrasound readings taken and the measurements obtained.

7.5.1.2 The Contractor must submit to the TA, in PDF format, a copy of drawing AF6095-10000-03 Shell Expansion outlining in RED all proposed plate repairs following the Lloyd's underwater hull inspection and prior to carrying out the prescribed repairs.

7.5.1.3 The Contractor must provide a coating application report from the NACE Technician the TA providing the details of the coating application process as completed by the Contractor. The report must include details of all environmental conditions at the time any hull coatings were applied and at which areas on the hull the coating was applied. This must include but not be limited to the dry and wet bulb temperatures, relative humidity, dew point and the times when painting was started and stopped. Also to be included in the report must be the temperature of the product at application time as well as the substrate temperature the coating system was applied on.

7.5.1.4 The Contractor must prepare the reports as per Section 1.11 of this specification and these must be available to the TA prior to the completion of the contract.

8.0 REMOVAL AND REINSTALLATION OF JETTISONABLE TANKS

8.1 Identification

8.1.1 The two jettisonable tanks must be removed from their locations to allow painting of the surfaces now showing. The description below utilizes singular but applies to both tanks.

8.2 Reference

8.2.1 Documents

Numéro	Description
IMG-20150325-00901	Picture of a jettisonable tank

8.2.2 Drawing

Drawing number	Description
AF6101-54900-01	RHIB Gasoline System
6094-54900-02	Gasoline Storage Tanks Principle of Construction
6094-O1101-5490-01	Gasoline Storage Tank Jettison System Installation
6094-O1111-5490-01	Gasoline Storage Tank Assembly & Details
6094-55100-02	Jettison Mechanism Pneumatic Control System

8.3 Technical

8.3.1 Before the work begins, the crew will remove any piping or accessories that are connected to the tanks and isolate all orifices of the tanks.

8.3.2 The Contractor must store the gasoline, about 1 000 liters and put it back in the tanks when the work is completed.

8.3.3 The Contractor must, for the duration of the work of removal and reinstallation of the tanks, hold the tanks to insure they will not fall accidentally outside of their location.

8.3.4 The Contractor must supply six (6) eyebolts with M16 threads, three (3) for each tank, in order to hold on firmly on the tanks when released.

8.3.5 The Contractor must remove the tie-downs and the deck panels that cover the tanks. The deck panels must be sandblasted and painted.

8.3.6 The Contractor must remove the tanks from the ship.

8.3.7 Once the jettisonable tanks are removed, the Contractor must lay them on blocks and protect them so they don't get damaged from work done in the yard.

8.3.8 The UHMW-PE sliding mechanisms and the watertight bands will be inspected by the Coast Guard representative who will decide if supplementary work must be done on these elements.

8.3.9 The Contractor must take apart and re-install after the work is completed all the Teflon sliding mechanisms and the watertight band to allow for inspection and re-coating of the hull above the waterline

Figure 1: Coque du navire sans réservoir largable (banque de photo)

8.4 Two Deck Panels removed from on top of the gasoline jettisonable tanks:

8.4.1 The Contractor must transport the panels in a weather protected location.

8.4.2 The Contractor must clean the panels with a water pressure of at least 5000 psi on all surfaces.

8.4.3 The Contractor must degrease to an SSPC-SP1 the panels surfaces.

8.4.4 The Contractor must strip the panels loose corrosion and defective coating, removing all remaining paint, to SSPC-SP10. All edges to the existing coating must be feathered and blown clean with compressed air prior to the coating application

8.4.5 The Contractor must take all necessary steps, after blasting, to minimize steel oxidation by applying the coating in accordance with the paint manufacturer's instructions.

8.4.6 The Contractor must apply the following coatings:

An abrasion resistant pure epoxy coating pigmented with aluminum

DFT 125 microns

An abrasion resistant pure epoxy coating pigmented with aluminum

DFT 125 microns

An all weather deck finishing coating that must be non slip

8.4.7 The Contractor must apply a coating compatible with the existing coating system. The existing coating system is two coats of intershield 300 and one coat of interbond 201.

8.4.7.1 The Contractor must apply a stripe coat by brush to edges, welds, crevices, bolt heads, transitions, backs of stiffeners, cut outs, ladders, handrails and other surface irregularities when applying the primer and intermediate coat for surfaces cleaned to bare metal. The stripe coat may be applied to the surface by spray provided it is immediately and thoroughly worked into these areas by brush.

8.4.8 When the paint work is completed, the contractor must:

8.4.8.1 The Contractor must reinstall the watertight bands and the sliding mechanism in their original locations.

8.4.8.2 The Contractor must install the tanks in their original location.

8.4.8.3 The Contractor must perform a jettison test of the tanks and put them back in their locations.

8.4.9 The Contractor must put back the deck panels and the tie downs. See drawing for installation notes.

8.5 Proof of performance

8.5.1 The Contractor must perform a drop of the jettisonable tanks while supporting the tanks with a crane.

8.5.2 The jettison test will be performed with the TA and the Lloyds Surveyor present.

8.5.3 Certifications

8.5.3.1 Before the end of the contract, the certificates and other documents proving the quality of new material and new components must be given to the TA.

8.6 Deliverables

8.6.1 Documents (reports, drawings and manuals)

8.6.1.1 The Contractor must prepare a report including all the inspection, including the (findings) and recommendation, the test results and the measurement taken, according to section 1.11 and give it to the TA before the end of the contract.

9.0 MAIN DECK COATING

9.1 Identification

The main deck must be re-coated

9.2 Reference

AF6095-10000-02
Mspv international coatings matintenance Plan OBM
Application guideline intershield 300
Application guideline interbond 201
Interspec Caporal Kaeble V.C.

9.3 Technical

9.3.1 The main deck surface is estimated to 144 square meters.

9.3.2 The estimated area to be recoated is 50 square meters.

9.3.3 The Contractor must clean with a water pressure of at least 5000 psi the surface of the main deck.

9.3.4 The Contractor, the NACE technician and the Technical authority must determine the areas of the coating system that require maintenance and what this total surface area is.

9.3.5 The Contractor must continue the deck coating on vertical surfaces to 6 inch from the deck.

9.3.6 The areas to be re-coated must be cleaned to SSPC-SP-1

9.3.7 The areas must be prepared to SSPC-SP11.

9.3.8 All edges of the prepared area must be feathered on 2 inches.

9.3.9 The Contractor must apply the following coatings:

An abrasion resistant pure epoxy coating pigmented with aluminum

DFT 125 microns

An abrasion resistant pure epoxy coating pigmented with aluminum

DFT 125 microns

An all weather deck finishing coating that must be non slip

9.3.10 The Contractor must apply a coating compatible with the existing coating system. The existing coating system is two coats of intershield 300 and one coat of interbond 201.

9.3.10.1 The Contractor must apply a stripe coat by brush to edges, welds, crevices, bolt heads, transitions, backs of stiffeners, cut outs, ladders, handrails and other surface irregularities when applying the primer and intermediate coat for surfaces cleaned to bare metal. The stripe coat

may be applied to the surface by spray provided it is immediately and thoroughly worked into these areas by brush.

9.3.11 hatches

9.3.11.1 The Contractor must remove the hatches

– Main deck forward to the forepeak
- Main deck forward chain locker compartment
- Main deck aft of housework MMR
- Main deck aft of housework AMR

9.3.11.2 The angle iron used to install the hatches in place must be prepped and coated like the deck.

9.3.11.3 The Contractor must add a protection plate on all hatches on the main deck. The protection plate is installed where the hatch spring rests on the hatch coaming. The reinforcement must be welded as to prevent corrosion between the surfaces.

9.3.11.4 The hatch coming including the space that accommodated the hatch mechanism must be prepped and coated according to the direction for the deck.

9.3.12 Catchalls around piping

9.3.12.1 Catchalls around vents and passages for piping must be recoated.

9.3.13 Deck rings and deck openings

The contractor must remove deck caps hiding openings in the deck around the hatches to allow the preparation of the protected area.

The main deck has deck rings that can be considered for special preparation areas.

9.3.14 Sections of the Main deck outside of the bulwark must be prepped and recoated.

Figure 2: Main deck outside bulwark

9.3.15 Interference Items

9.3.15.1 The Contractor is responsible to remove and re-install all interference items from the main deck.

9.3.16 Proof of performance

9.3.17 The Contractor must examine the coating for blisters, runs, sags, dry spray and foreign material after the last coat has dried and foreign and before is has cured. No coating containing blisters, runs, sags, dry spray or foreign material will be accepted.

9.3.17.1 Deliverables

9.3.17.2 Coating application report

10.0 FOREPEAK COATING

10.1 Identification

The forepeak coating must be assessed, prepared and recoated

10.2 Reference

AF6095-10000-02
Mspv international coatings matintenance Plan OBM
Application guideline intershield 300
Application guideline interbond 201
Interspec Caporal Kaeble V.C.

10.3 Technical

10.3.1 The area to be re-coated in the forepeak is estimated to 8 square meters. The actual area will be prorated with a SPAC 1379 form.

10.3.2 The estimated area to be recoated is 50 square meters.

10.3.3 The Contractor must clean with a water pressure of at least 5000 psi the surface of the main deck.

10.3.4 The Contractor, the NACE technician and the Technical authority must determine the areas of the coating system that require maintenance and what this total surface area is.

10.3.5 The areas to be re-coated must be cleaned to SSPC-SP-1

10.3.6 The areas must be prepared to SSPC-SP11.

10.3.7 The Contractor must apply the following coatings:

An abrasion resistant pure epoxy coating pigmented with aluminum

DFT 125 microns

An abrasion resistant pure epoxy coating pigmented with aluminum

DFT 125 microns

On the deck An all weather deck finishing coating that must be non slip for a DFT 125 micron following the 2 coats of abrasion resistant pure epoxy.

10.3.8 The Contractor must apply a coating compatible with the existing coating system. The existing coating system is two coats of intershield 300.

10.3.8.1 The Contractor must apply a stripe coat by brush to edges, welds, crevices, bolt heads, transitions, backs of stiffeners, cut outs, ladders, handrails and other surface irregularities when applying the primer and intermediate coat for surfaces cleaned to bare metal. The stripe coat may be applied to the surface by spray provided it is immediately and thoroughly worked into these areas by brush.

Figure 3: ForePeak

10.3.9 Interference Items

10.3.9.1 The Contractor is responsible to remove and re-install all interference items from the forepeak.

10.3.10 Proof of performance

10.3.11 The Contractor must examine the coating for blisters, runs, sags, dry spray and foreign material after the last coat has dried and foreign and before is has cured. No coating containing blisters, runs, sags, dry spray or foreign material will be accepted.

10.3.12 The following is a list of inspection hold points. The Contractor must cease operation and obtain approval of the Technical Authority before proceeding. The inspection points are:

10.3.13 Verification of surface cleaning before mechanical preparation

10.3.14 Verification of cleanliness after abrasive blasting and prior on any coating application

10.3.15 Verification of coating quality and thickness after each coat of material prior to application of additional coats.

10.3.15.1 Deliverables

10.3.15.2 Application report

11.0 COATING BILGE IN THE LAUNDRY ROOM

11.1.1 Identification

11.1.1.1 The bilge in the laundry room have corrosion and must be re-coated. The Laundry room is in the accommodation section of the vessel.

11.1.1.2 Under one section of the laundry room bilge is the fuel tank no 3.

11.1.2 Reference

11.1.2.1 Mspv international coatings maintenance Plan OBM

11.1.2.2 Application Guideline Interbond 998

11.1.2.3 SSPC-SP1 Solvent Cleaning

11.1.2.4 SSPC-SP-6 Commercial Blast

11.1.2.5 SSPC-SP11 Power Tool Cleaning to Bare Metal

11.1.3 Technical

11.1.3.1 The Contractor must re-coat an 8 meter square surface in the laundry room. The cost will be prorated to the size agreed on through a PSPC 1379

11.1.3.2 The Contractor, the NACE technician and the Technical authority must determine the areas of the coating system that require maintenance and what this total surface area is.

11.1.3.3 The Contractor must protect the compartment against debris, including but not limited to the washing machines, the sink, the cupboards, the vacuum transfer unit.

11.1.3.4 The Contractor must remove the riveted paneling against the hull to access the zone to be worked; ie the hull up to and including the first stiffener see figure below.

11.1.3.5 The Contractor must wash the area with fresh water.

11.1.3.6 The Contractor must prepare the areas to be recoated to an SSPC-SP-1.

11.1.3.7 The Contractor must note the interference of the pipe that runs the length of the compartment and cannot be removed.

11.1.3.8 The NACE technician must agree on the surface preparation once completed.

11.1.3.9 The Contractor apply the coating

11.1.3.10 Surface tolerant tar free edge retentive epoxy for 2 coats with a DFT of 125 microns

11.1.3.11 The Contractor must apply a stripe coat by brush to edges, welds, crevices, bolt heads, transitions, backs of stiffeners, cut outs, ladders, handrails and other surface irregularities when applying the primer and intermediate coat for surfaces cleaned to bare metal. The stripe coat

may be applied to the surface by spray provided it is immediately and thoroughly worked into these areas by brush.

11.1.3.12 If the application is complete with brush and rollers the Contractor must apply several coats to achieve correct dry film thickness.

11.1.3.13 The Contractor must respect cure times between coats.

11.2 Proof of Performance

11.2.1 The Contractor must examine the coating for blisters, runs, sags, dry spray and foreign material after the last coat has dried and foreign and before is has cured. No coating containing blisters, runs, sags, dry spray or foreign material will be accepted.

11.2.2 The following is a list of inspection hold points. The Contractor must cease operation and obtain approval of the Technical Authority before proceeding. The inspection points are:

11.2.3 Verification of surface cleaning before mechanical preparation

11.2.4 Verification of cleanliness after abrasive blasting and prior on any coating application

11.2.5 Verification of coating quality and thickness after each coat of material prior to application of additional coats.

11.2.6 Deliverable

11.2.6.1 Application Report

Figure 4: Landry Room Hull side

Figure 5: Laundry Room Bilge

Figure 6: Laundry Room bilge

Figure 7: interference

12.0 ANODES

12.1 IDENTIFICATION

12.1.1 The Contractor must replace all wasted and/or defective hull anodes and corrosion protection on the underwater hull of the vessel.

12.2 REFERENCES

12.2.1 Manuals:

12.2.1.1 Hydraulic Thruster (PKK 24 TRAC (24) 75 kw) Installation and Operation

12.2.2 Drawings:

Drawing Number	Drawing Title	Electronic File Name
AF6095-89940-01_01	GENERAL ARRANGEMENT PLAN_1_2	
AF6095-89940-01_01	GENERAL ARRANGEMENT PLAN_2_2	
AF6095-63300-01	Scheme of Cathodic Protection	
6097-O-6330-001	Anodes Plan	
AF6094-25600-02	Sea Chest Arrangement	
	Liste d'anode	Liste d'anode.PDF
PKK 24 TRAC (24) 75 KW	Installation et utilisation du propulseur hydraulique	35989_b_TRAC_HYDRAUL_MANUAL[F].PDF
Trac 2428	TRAC seal change procedure	TRAC 2428 SEAL CHANGE PROCEDURE.PDF

12.2.3 Regulations

12.2.3.1 Canada Shipping Act, 2001 (2001, c. 26) Hull Inspection Regulations (C.R.C., c.1432)

12.2.3.2 Lloyd's Register, Rules & Regulations for the Classification of Special Service Craft

12.3 TECHNICAL

12.3.1 General

12.3.1.1 The Contractor must remove (by grinding or otherwise) all remaining metal from the anode connections to the base metal surface after the anode removals and before the installation of new anodes.

12.3.1.2 The Contractor must protect newly installed anodes if they are installed before the application of the hull coating system.

12.3.1.3 The Contractor must remove all anode protections after the completion of the coating system application.

12.3.1.4 Where anodes are installed after the application of the hull coating system, the hull coating system must be touched up in any areas it is damaged as a result of heat application due to the installation of the new anodes.

12.3.2 Hull Anodes

12.3.2.1 The Contractor must bid on replacing all sacrificial hull anodes MM28AB (20 in total).

12.3.2.2 Replacement hull anodes, type MM 28AB, will be provided by Canada.

12.3.2.3 The Contractor must fit new anodes in the same locations as the removed anodes.

12.3.3 Sea Chest and Sea Bay Anodes

12.3.3.1 The Contractor must replace a total of eight anodes: three anodes, one in each of the three sea chests. One anode in the emergency fire pump sea bay.

12.3.3.2 Replacement anodes, type MM 26AA, will be provided by Canada.

12.3.4 Bow Thruster Tunnel

12.3.4.1 The Contractor must replace all four Bow Thruster Tunnel anodes, two on each side of the propeller.

12.3.4.2 Replacement anodes, type MM 26AA, will be provided by Canada.

12.3.5 Bow Thruster Anodes

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

12.3.5.2 Replacement anodes (Type TRAC 24) will be provided by Canada.

12.3.5.3 The Contractor must install the cone shaped anodes in accordance with drawing INM20TRACHYD from the 24 TRAC ASSY manual.

12.4 PROOF OF PERFORMANCE

12.4.1 Inspection

12.4.1.1 The Contractor must afford the TA and the IA the opportunity to witness the Lloyd's inspection of the anodes prior to, and following all prescribed renewals.

12.4.1.2 The Contractor must afford the TA and the IA the opportunity to verify the installation of the new anodes in the sea chests prior to the closing of the sea chest grating.

12.5 DELIVERABLES

12.5.1 Documentation (Reports/Drawings/Manuals)

12.5.1.1 The Contractor must submit to the TA a detailed list of all of the anodes replaced as described in this Section. The list must be submitted to the TA prior to the close of the Contract.

12.5.1.2 The Contractor must provide a report indicating how the removed anodes are disposed of.

13.0 TANK INSPECTION

13.1 Scope

The purpose of this work is to open and clean the tank for a five year survey inspection of the tank.

13.2 List of Tanks

Table 1: Fuel Tank list

Tank number	Name	Frame aft	Frame fwd	Volume net m3	Estimated volume
Fuel Tank					
TK 1	FO Storage Tank	26.00	31.00	8.835	1.2
Tk 2	FO Service Tk Port	18.00	25.00	10.265	9.2
Tk 3	FO service tank Stbd	18.00	25.00	10.265	7.8
Tk 8A	FO Day tank	8.50	9.00	1.261	1
Tk 9	FO Storage Overflow Tk	2.00	9.00	8.488	
Gasoline					
Tk 13	Gasoline tank Port	1.54	2.96	1.328	.08
Tk 14	Gasoline tank Stbd	1.54	2.96	1.328	.08
Fresh Water					
Tk 11	Fresh water tk Port	26.75	31.00	3.206	2.5
Tk 12	Fresh water tk Stbd	26.75	31.00	3.206	2.5
Lube Oil					
Tk 5	LO Storage Tk ME	14.00	15.00	0.638	.150
Miscellaneous					
Tk 4	Bilge Water Tk	15.00	17.00	1.619	0
Tk 6	Sewage Sludge Tk	12.60	13.00	0.575	0
Tk 7a	Grey Water Tank	9.00	12.00	3.994	0
Tk 7b	Black Water Tk	12.00	12.50	0.629	.02
Tk 15	Dirty Oil & Sludge	13.00	15.00	2.541	0
Ballast Water					
Tk 16	Ballast Water Tk Stbd	Aft	1.00	1.495	0
Tk 17	Ballast Water Tk Port	Aft	1.00	1.495	0
	Emergency Generator tk				

13.3 Optional Non destructive testing

13.3.1 The ultrasonic thickness measurements on chosen structures must be performed under the on site surveyor.

13.3.2 The Contractor must provide the services of a firm specialized in non-destructive (ultrasonic) tests in order to perform the thickness measurements on all spots of the hull plating and the internal structures designated by the classification society. The hired firm must be independent from the Contractor and uses equipment and measurements methods approved by the classification society.

13.3.3 The Contractor must quote for the pressure testing of the tank, this work will be performed if the Lloyd's surveyor request it (this doesn't affect the work requested regarding the tanks where worked is perform according to previous sections of the text).

13.3.3.1 Pressure testing the tank must be witnessed by the Lloyd's surveyor and the technical authority.

13.3.3.2 The Contractor must carry out the pressure test in the tank and in its vent for a one hour period, with the compressed air feed disconnected. A calibrated pressure gauge must be connected to monitor the tank pressure at all time. The maximum test pressure must be of 3 psi.

13.3.3.3 The Contractor must replace every gaskets or joints where a pipe is taken apart during the test related work with new gaskets and joints of Garlock type or equivalent.

13.4 Optional - Fuel Tanks

13.4.1 Scope

13.4.1.1 There are six fuel oil tanks to be cleaned and opened for inspection. This inspection is aimed at verifying the steel condition in the tanks.

13.4.2 Access to tank 1

13.4.2.1 The Contractor must move a desk in the forward cabin on the lower deck. A trap in the deck allows access to the fuel tank. Both Port and Stbd cabins have desk covering the access traps for the manholes to fuel tank no 1.

13.4.3 Access to Tank 2 and 3

13.4.3.1 The Contractor must move desks in the mid cabins on the lower deck to reach the access traps to the manholes. Tank no 2 is accessed through the port cabin and tank no 3 through the stbd cabin.

13.4.4 Access to Tank 8

13.4.4.1 The Contractor can access the manhole for the no 8 in the auxiliary machine room.

13.4.5 Access to Tank 9

13.4.5.1 The Contractor can access the manhole by removing a deck plate in the auxiliary machine room and the steering compartment.

13.4.5.2 The Contractor can access the manhole inside the emergency generator room.

13.4.6 Preparation

13.4.6.1 The contractor must empty and open the tanks. The tanks must be vented and certified safe for entry.

13.4.6.2 The tanks must be wiped clean. The contractor must allow for the amount of liquid stated in Table 1: Fuel Tank list shows the amount, not including the cleaning media used.

13.4.6.3 Ship’s crew can transfer internally the fuel except for the private Robertson where an external storage will be required.

13.4.6.4 The Contractor must account for 100 liters of liquid left in the tank once it is pumped out with the ship’s pump.

13.4.7 Cleaning and Inspection

13.4.7.1 All the internal tank suctions must be cleaned. The striking plate under the sounding tube must be inspected. The contractor must ensure that all vents, suction and filling lines are clear.

13.5 Gasoline Tank

13.5.1 Access to Tank 13 and 14

These are jettisonable tanks on the aft deck.

13.5.2 Preparation

Reference item 8.0 and 17.0

13.5.2.1 The contractor must empty and open the tanks. The tanks must be vented and certified safe for hot work.

13.5.2.2 The tanks must be pressure washed and wiped clean. The contractor must allow for the amount of liquid stated in Table 1: Fuel Tank list to dispose, not including the cleaning media used.

13.6 Optional - Lube oil Tank

13.6.1 Access to Tank 5

13.6.1.1 The Contractor can reach the manhole for tank no 5 in the bilge in front of the stbd main engine.

13.6.2 Preparation

13.6.2.1 The contractor must store the content in clean containers for the duration of the work and pump it back into the tank after the tank is surveyed by the Lloyd’s surveyor. The Contractor must open the tank. The tanks must be vented and certified safe for entry.

13.6.2.2 The tanks must be wiped clean. The contractor must allow for the amount of liquid stated in Table 1: Fuel Tank list store, not including the cleaning media used.

14.0 THROUGH HULL FITTING SURVEY & ISOLATION KIT INSTALLATION

14.1 IDENTIFICATION

14.1.1 The Contractor must remove, disassemble, clean and layout for Lloyds inspection all storm valves and sea connections.

14.1.2 The Contractor must install new Canada supplied valve isolation kits to those valves identified in this Section.

14.1.3 The Contractor must prepare and execute a test and trials plan for the testing of all through hull fittings.

14.2 REFERENCES

14.2.1 Equipment Data

14.2.1.1 List of Sea Water Valves: (Total 10)

ID #	Description	Location	Diameter (mm)
V256001	Main Isolation Valve (P)	Engine Room FWD	250
V256002	Main Isolation Valve (Stbd.)	Engine Room FWD	250
V256003	FWD Sea Chest Isolation Valve	Bow Thruster RM	100
V256007	Port Sea Chest Circulation Valve	Engine Room FWD	100
V256008	Stbd Sea Chest Circulation Valve	Engine Room FWD	100
V256010	Port Sea Chest Vent	Engine Room FWD	150
V256011	Stbd Sea Chest Vent	Engine Room FWD	150
V256012	FWD Sea Chest Vent Valve	Bow Thruster RM	65
V256013	P Sea Strainer outlet To replace (valve provided by the ship)	Engine Room FWD	250
V256014	Stbd Sea Strainer outlet To replace (valve provided by the ship)	Engine Room FWD	250

14.2.1.2 List of Storm Valves (Total 4)

ID #	Description	Location	Diameter (mm)
V526023	Fuel Oil Spill LCR O/B Discharge		50
V526029	HVAC/DK LCR O/B Discharge		50
V526031	Wet Gear RM O/B Discharge		50
V593091	Sewage Treatment Plant O/B Disc		50

14.2.1.3 List of Overboard Valves: (Total 12)

ID #	Description	Location	Diameter (mm)
V256032	P O/B Discharge	Engine Room	150
V256035	Stbd O/B Discharge	Engine Room	150
V256065	ACU O/B Discharge	Bow Thruster Compt.	65
V256114	Stbd ME Gear Box O/B Discharge	Engine Room	40
V256115	P ME Gear Box O/B Discharge	Engine Room	40
V256131	Cyclone Filter O/B Discharge	Engine Room	25
V520018	Bilge O/B	Engine Room	50
V520019	MMR Bilge O/B	Engine Room	50
V520056	Bilge Eductor O/B	Engine Room	80
V593071	O/B Discharge		32
V530001	R/O Unit O/B Discharge		
V555009	Fire Main Drain Overboard		

14.2.1.4 List of Blow down Air Valves (Total 15)

ID #	Description	Location	Diameter (mm)
V551061	Blow down Air Sea Chest (P)		25
V551062	Blow down Air Sea Chest (Stbd.)		25
V551070	Blow down Air RO Unit		15
V551074	Blow down Air FWD Sea Chest	Bow Thruster Room	25
V551075	Blow down Air Bilge O/B valve		15
V551076	Blow down Air HVAC ACU O/B		15
V551089	Blow down Air Fire Water O/B		15
V551126	Blow down Air Gear Box P O/B		15
V551127	Blow down Air Gear Box Stbd O/B		15
V551128	Blow down Air Cyclone Filter O/B		15
V551073	Blow down Air AMR Bilge O/B	AMR (Port)	
V551071	Blow down Air MMR Bilge O/B	MMR (Port)	
V551068	Blow down Air Sewage O/B	MMR (Port)	
V551063	Blow down Air Port O/B	MMR (Port)	
V551064	Blow down Air Stbd O/B	MMR (Stbd)	

14.2.1.5 Valves Requiring Isolation Kit Installations (20)

ID #	Description	Location	Diameter (mm)
V256007	Port Sea Chest Re-Circulation Valve	Engine Room FWD	100
V256008	Stbd Sea Chest Re-Circulation Valve	Engine Room FWD	100
V256013	Port Sea Strainer Outlet	Engine Room FWD	250
V256014	Stbd Sea Strainer Outlet	Engine Room FWD	250
V256043	Port Main Engine Exhaust	Steering Gear Compt.	65
V256049	Stbd Main Engine Exhaust	Steering Gear Compt	65
V256045	Port Auxiliary Generator Exhaust	Steering Gear Compt	50
V256047	Stbd Auxiliary Generator Eexhaust	Steering Gear Compt	50
V256018	Port Main Engine Cooling Water Supply	Engine Room	200
V256022	Stbd Main Engine Cooling Water Supply	Engine Room	200
V256032	Port ME O/B Discharge	Engine Room	150
V256035	Stbd ME O/B Discharge	Engine Room	150
V256114	Stbd ME Gear Box O/B Discharge	Engine Room	40
V256115	Port ME Gear Box O/B Discharge	Engine Room	40
V256131	Cyclone Filter O/B Discharge	Engine Room	25
V520019	AMR Bilge O/B	Engine Room	50
V520056	Forward Bilge Ejector O/B		80
V256136	Refrigeration Condenser Sea Water Supply		20
V256096	Port ME Sea Water Supply Check Valve		200
V256095	STBD ME Sea Water Supply Check Valve		200

14.2.1.6 Manuals

Manual Number	Manual Name
	Valve co valve isolation installation literature

14.2.2 Drawings

Drawing Number	Description	Electronic File
AF6095-25600-01	As Build Cooling Water System	
AF6095-52000-01	Bilge Drainage & Dewatering System	
AF6095-52600-01	Scuppers and Drains	
AF6095-55100-01	Compressed Air System	
AF6095-59300-02	Black Grey Water & Sanitary System	

14.2.3 Regulations

14.2.3.1 Canada Shipping Act 2001, Hull Inspection Regulations (C.R.C., c. 1432)

14.2.3.2 Lloyd's Register, Rules & Regulations for the Classification of Special Service Craft

14.2.4 Standards

14.2.4.1 N/A

14.2.5 Quality Assurance Standards

14.2.5.1 Fleet Safety Manual Procedure – 7.B.5 Lockout and Tagout

14.3 TECHNICAL

14.3.1 The Contractor must ensure all applicable safety precautions are implemented prior to the start of work, including equipment and system lock outs and tag outs on all machinery and systems affected by the work of this specification item.

14.3.2 The Contractor must ensure that all interference items, equipment and system are recorded prior to the start of disassemble to ensure that all parts are reassembled and reinstalled as per original. Where systems need to be disassembled (if they are interference items) the Contractor must list these and must provide proof of operational tests as part of system recommissioning after this specification work is completed.

14.3.3 The Contractor must remove, disassemble, clean and layout for Lloyd's inspection all hull penetration valves listed in Section 14.2.1. The Contractor must afford the TA and IA the opportunity to partake in this inspection.

14.3.4 The Contractor must visually inspect all removed valves and report by email to the TA and IA all deficiencies as they are identified and make recommendations for remedial actions.

14.3.5 Following inspection, the Contractor must by machining or lapping reseat all original to provide a full line of contact between the valve lid and the valve seat.

14.3.6 The Contractor must reassemble all valves using new Contractor Supplied Material packings and gaskets that are suitable for the intended service of the valve. No gasket sealant Permatex ™ type product to be used.

14.3.7 The Contractor must supply and install new flange gaskets for all flanges disturbed as a result of the valve servicing work. The new flange gasket material must be of a material suitable for the intended service of the system.

14.3.8 The Contractor must install the valve isolation kits (flanges and bolt isolation kits) to the valves identified in Section 14.2.1.5. New isolation kits will be supplied by Canada.

14.4 PROOF OF PERFORMANCE

14.4.1 Inspections

14.4.1.1 The Contractor must afford the TA and the IA the opportunity to view all of the disassembled valves as listed in Section 14.2.1.

14.4.1.2 The Contractor must provide the TA and the IA the opportunity to witness the installation of all valves and the re-installation of all removed interference items prior to the commencements of tests and trials.

14.4.2 Testing/Trials

14.4.2.1 The Contractor must prepare and provide a detailed test and trials plan to the TA and the IA on how all valves listed in Section 14.2.1will be tested.

14.4.2.2 The Contractor must test all valves listed in Section 14.2.1.1 for sealing integrity at their maximum system operating pressures following the reinstallation of valves. All leaks must be repaired at the Contractor's expense prior to the un-docking of the vessel.

14.4.2.3 The Contractor must perform an isolation test on all valves identified in Section 14.2.1.5 to ensure that the valve isolation kits are functioning as intended. Test instrument must be Type Tinker Rasor RF-IT.

14.4.2.4 The Contractor must perform the above listed tests in the presence of the attending Lloyd's Surveyor and provide the TA and IA the opportunity to be present.

14.4.2.5 The Contractor must prepare and provide a detailed test and trials plans to the TA and the IA that lists all of the interference items and systems removed as part of the work of this specification item. The test and trials plan must detail how system integrity will be tested and proven. These tests and trials must be completed in the presence of the TA and IA.

14.4.3 Certification

14.4.3.1 The Contractor must ensure that all replacement valves are Lloyd's certified and certificates are included as part of the procurement cycle. If required by the attending Lloyd's surveyor, the Contractor must also provide material certificates for the gasket materials used in the packings and flanges of the valves.

14.5 DELIVERABLES

14.5.1 Documentation (Reports/Drawings/Manuals)

14.5.1.1 The Contractor must provide a paper and electronic copy in PDF format of all certificates for new valves installed.

14.5.1.2 If required by the attending Lloyd's survey, the Contractor must provide material certificates for the gasket material used for the gasket material in the packing and flanges of the valves. The Contractor must provide one paper copy and one electronic copy in PDF format.

14.5.1.3 The Contractor must provide the TA with a report detailing all work carried out on the valves identified in Section14.2. This report must detail all "As-found" conditions of the valves, any measurements taken on the valves, any machining/lapping performed and the identification

of valves replaced with new units. It must also detail the isolation values of the valves that were fitted with valve isolation kits.

14.5.1.4 The Contractor must provide all documentation of Section 14.5 prior to the close of the contract.

15.0 LIMBER HOLES

15.1 Identification

15.1.1 The Contractor is to perform all strip-out, fabrication and installation work required to meet the modifications to the Main Engine Room in accordance with the references listed in Section 15.2 and the Technical Description as detailed in Section 15.4.

15.1.2 A survey of the workboat engine rooms has shown an issue with respect to bilge drainage.

15.1.3 In the Main Engine Room, the bilge water was observed to collect in the longitudinal direction along the outboard side of the main engine girders (port and starboard) from approximately frame 11 to 17. On closer examination these outboard girders do not have any limber holes (rat holes) in the athwartship direction. This means that any water collecting outboard of these girders will not be able to drain to the bilge suctions underneath each main engine. There is a requirement to make a number of limber holes along the outboard side of the main engine girder webs between frames 13 to 15. It should be noted that access to the space where the limber holes are to be installed is very restricted and narrow.

15.2 Reference

Drawing no	Description	Electronic file
AF6095-52000-01	Drainage and Dewatering System	
AF6095-20000-01	Engine Room Arrangement	
15069-800-S-001	Main Engine Room Limber Hole Additions	

15.3 Proof of Performance

15.3.1 The Contractor must ensure that all steel work and removals are within accepted tolerances. The Contractor must ensure that, after the verification of the installation, all stripped out piping, supporting structure, walkways and walkway frames will be returned to the as found condition.

15.4 Technical Description

15.4.1 The Contractor will fabricate and/or supply the installation components in accordance with the drawings and guidance notes referenced.

15.4.2 In addition to the acceptance criteria of section 15.3, the Contractor must ensure that all bilges and spaces within the Main Engine room are to be dry, clean and certificates provided for gas freed spaces prior to any hot work and appropriate fire watches are placed. The pipe sections to be removed are to be isolated, drained and tagged within the appropriate system before removal.

15.4.3 As noted in section 15.3, the Contractor must ensure that, after verification of the modification, any disturbed steelwork, piping, wire conduit, electrical wiring and/or wire fastenings, paint coatings will be returned to the as found condition. All new steelwork, piping, and wire conduit are to be primed and painted with marine paint (two coats).

15.4.4 The Contractor must coat the zones where the limberholes were drilled.

15.4.5 All items removed and identified as items to be re-installed are to be tagged and safely stored for reinstallation. The Contractor is to ensure that all new pipes are to be appropriately identified, recorded and “tagged”.

15.4.6 Equipment components and material to be removed and installed are listed in the following sections.

15.5 REMOVAL

15.5.1 MAIN ENGINE ROOM STRIP-OUT – STARBOARD

15.5.1.1 The Contractor must remove, as a minimum, the following material [Figure 8, Figure 9 and Figure 10] from the outboard side of the starboard engine support girder:

15.5.1.2 Steel floor plate and floor support structure between frame 13 to 16. To be retained for reinstallation.

15.5.1.3 All piping (2” Nom. Dia.) and supports associated with the Sea Water Cooling Line pipe between frame 13 to 14. Flanged pipe must be retained for reinstallation. (Figure 8-Line #3)

15.5.1.4 All piping (1” Nom. Dia.) and supports associated with the Main Engine Pre-Heat Line pipe between frame 13 to 14. Flanged pipe must be retained for reinstallation. (Figure 8- Line #4)

15.5.1.5 All piping (3” Nom. Dia.) and supports associated with the Seawater Cooling Line pipe between frame 13 to 14. Flanged pipe must be retained for reinstallation. (Figure 8-Line #5)

15.5.1.6 All piping (3/4" Nom. Dia.) and supports associated with the Main Engine Pre-Lube Line pipe between frame 13 to 14. Flanged pipe must be retained for reinstallation. (Figure 8- Line #1)

15.5.1.7 All piping (1 1/4" Nom. Dia.) and supports associated with the Main Engine Pre-Lube Line pipe between frame 13 to 14. Flanged pipe must be retained for reinstallation. (Figure 8- Line #2)

15.5.1.8 All piping (3" Nom. Dia.) and supports associated with the Seawater Cooling Line pipe between frame 13 to 14. This pipe will need to be cut out. (Figure 8 & Figure 9 - Line #6)

15.5.1.9 All piping (3" Nom. Dia.) and supports associated with the Seawater Cooling Line pipe between frame 14.5 to 15.5. Flanged pipe must be retained for reinstallation. (Figure 10-Line #6 continued)

15.5.1.10 If new material is required the Contractor must supply.

15.5.2 MAIN ENGINE ROOM STRIP-OUT – PORT

15.5.2.1 The Contractor must remove, as a minimum, the following material [Figure 11and Figure 12] from the outboard side of the port outboard engine support girder:

15.5.2.2 Steel floor plate and floor support structure b/w frame 13 to 15. To be retained for reinstallation.

15.5.2.3 Two (2) Battery packs, battery pack securing frame, steel floor plate and floor support structure b/w frame 13 to 15. To be retained for reinstallation.

15.6 INSTALLATION

15.6.1 MAIN ENGINE ROOM – STARBOARD

15.6.1.1 The Contractor must install three (3) limber holes through the web of the outboard main engine girder.

15.6.1.2 The limber holes are to be drilled through the girder web with the use of a Magnetic Drill. Each limber hole must be located as specified in Drawing 15058-800-S-001. Care must be taken to protect the shell plating IWO each new limber hole.

15.6.1.3 The Contractor must re-install, all items saved for re-installation. These are:

15.6.1.4 • Steel floor plate and floor support structure b/w frame 13 to 16.

15.6.1.5 • All piping (2" Nom. Dia.) and supports associated with the Sea Water Cooling Line pipe b/w frame 13 to 14. (Figure 8- Line #3)

15.6.1.6 All piping (1" Nom. Dia.) and supports associated with the Main Engine Pre-Heat Line pipe b/w frame 13 to 14. (Figure 8- Line #4)

15.6.1.7 • All piping (3" Nom. Dia.) and supports associated with the Seawater Cooling Line pipe b/w frame 13 to 14. (Figure 8- Line #5)

15.6.1.8 • All piping (3/4" Nom. Dia.) and supports associated with the Main Engine Pre-Lube Line pipe b/w frame 13 to 14. (Figure 8- Line #1)

15.6.1.9 • All piping (1 1/4" Nom. Dia.) and supports associated with the Main Engine Pre-Lube Line pipe b/w frame 13 to 14. (Figure 8- Line #2)

15.6.1.10 • All piping (3" Nom. Dia.) and supports associated with the Seawater Cooling Line pipe b/w frame 13 to 14. (Figure 8 and Figure 9 - Line #2) New piping will need to be installed. Connections will be flanged.

15.6.1.11 • All piping (3" Nom. Dia.) and supports associated with the Seawater Cooling Line pipe b/w frame 14.5 to 15.5. (Figure 10- Line #6 continued)

15.6.1.12 If new material is required, the Contractor must supply. There will be a requirement to flange pipes

15.6.1.13 which have been cut to gain access to the foundation. The contractor must identify the piping systems

15.6.1.14 requiring such treatment.

15.6.2 MAIN ENGINE ROOM – PORT

15.6.2.1 The Contractor must install three (3) limber holes through the web of the outboard main engine girder.

15.6.2.2 The limber holes are to be drilled through the girder web with the use of a Magnetic Drill. Each limber

15.6.2.3 hole must be located as specified in Drawing 15058-800-S-001.

15.6.2.4 The Contractor must re-install, all items saved for re-installation. These are:

15.6.2.5 • Steel floor plate and floor support structure b/w frame 13 to 15.

15.6.2.6 • Two (2) Battery packs, battery pack securing frame, steel floor plate and floor support

15.6.2.7 structure b/w frame 13 to 15.

15.6.2.8 If new material is required the Contractor must supply.

15.7 INSPECTIONS, TESTS & TRIALS

15.7.1 Inspections must include inspection by LR. The Contractor is responsible for scheduling LR attendance.

15.7.2 The TA must be afforded the opportunity to witness the completed limber holes prior to the reinstallation of all interference items.

15.7.3 The Contractor must test all systems that have been disturbed in the completion of this specification, to the approval of the TA.

15.8 Deliverables

15.8.1 An installation report must be given to the technical authority.

Limber holes

Figure 8: Main Engine room- outboard view of Stbd Engine (looking aft). Piping to be removed IWO access to outboard web-face of engine support girder

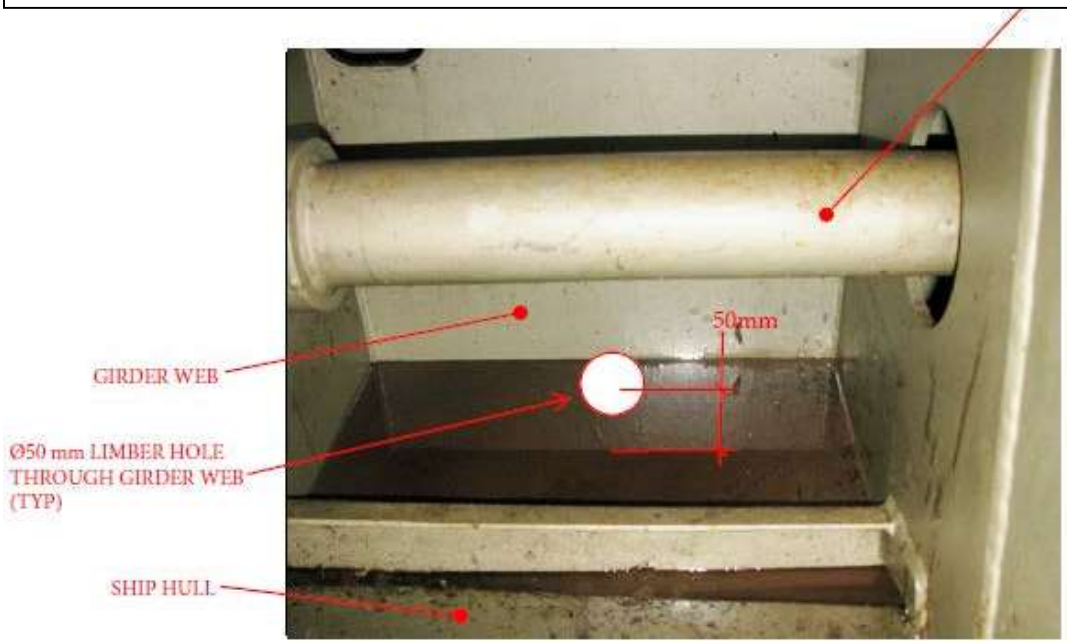

Figure 9: Main Engine room- View of standing water againt outboard engine support girder(Stbd) b/w transverse frame 13 &13.5 (looking port). 3" Seawater Cooling pipe in foreground to be removed to gain working acces to girder web.

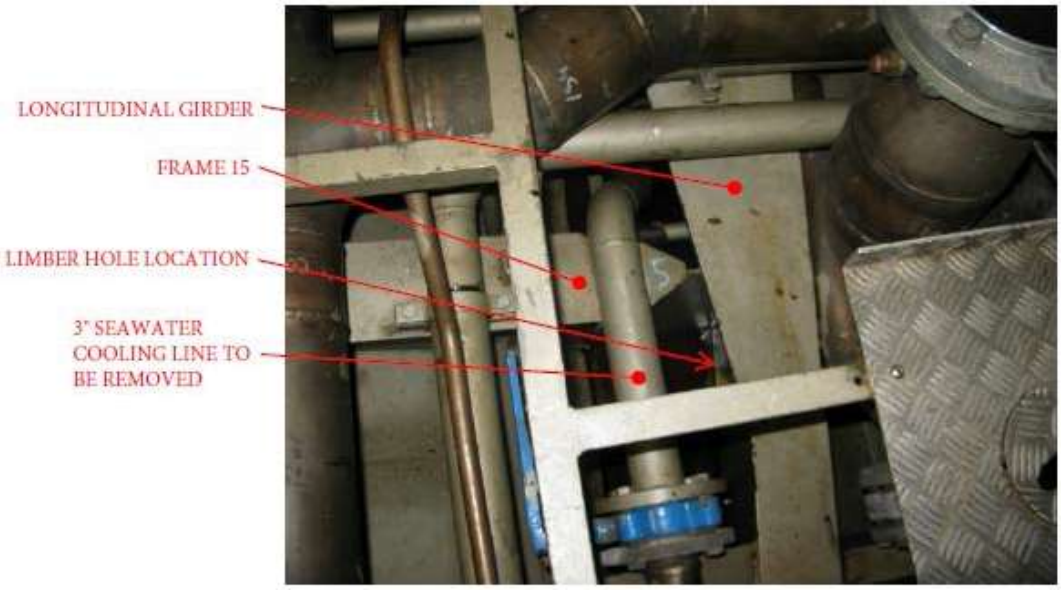

Figure 10: Main Engine- View of outboard engine support girder (Stbd) & frame 15 (looking aft). 3" Seawater Cooling pipe in foreground to be removed to gain working access to girder web.

Figure 11: Main Engine Room- View of outboard (Port) engine support girder (looking aft)

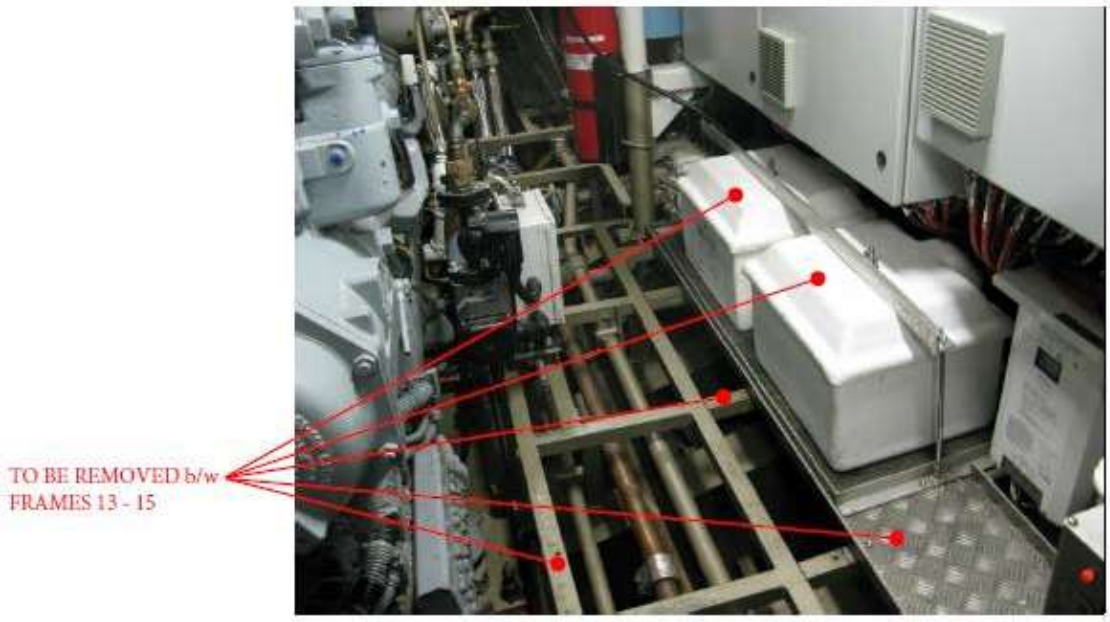

Figure 12: Main Engine Room- view of outboard (Port) engine support girder. Battery packs, steel floor plate and floor support structure to be removed.

16.0 KAEBLE RUDDER, RUDDER BEARINGS & SKEG INSPECTIONS

16.1 IDENTIFICATION

16.1.1 The Contractor must prepare both rudders, their associated rudder stocks and rudder bearings for a Lloyd's survey.

16.2 REFERENCES

16.2.1 Manual

NO.	Description
1	Jastram Steering System Installation and Service Manual

16.2.2 Drawings

Drawing Number	Description	Electronic File
AF6095-56100-02	Steering System Schematic of the Hydraulic System	
AF6095-56100-03	Steering Gear Room Arrangement Plan	
AF6095-10000-11	Rudders construction Plan Sheet 1 of 2	
AF6095-10000-11	Rudders construction Plan Sheet 2 of 2	
TG-28380	Thordon SXL Steering wear pads assembly	

16.2.3 Regulations

16.2.3.1 Canada Shipping Act, 2001: Marine Machinery Regulations (SOR/90-264)

16.2.3.2 Lloyd's Register, Rules & Regulations for the Classification of Special Service Craft

16.2.3.3 Canadian coast Guard welding standard 5.6.8.2

16.3 TECHNICAL

16.3.1 The Contractor must ensure all applicable safety precautions including equipment lock outs and tag outs are implemented prior to the start of work.

16.3.2 Rudder, Rudder Stock and Rudder Bearing Carrier Inspections

16.3.2.1 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.

16.3.2.2 The Contractor must ensure, prior to the start of disassembly, that precautions are taken to ensure the reassembly and reinstallation of all system and equipment components as per original and in accordance with manufacturer's specifications.

16.3.2.3 The Contractor must report by email all deficiencies as they are identified, to the TA and make recommendations for their prompt remedial action.

16.3.2.4 The Contractor must take and record all rudder bearing clearances prior to removal of rudder the stocks.

16.3.2.5 The Contractor must disconnect and remove the two rudders and rudder stock assemblies. These must be laid out for a Lloyd's survey.

16.3.2.6 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. This test must be witnessed by attending Lloyd's surveyor and the TA. The PSPC 1379 process must be used to deal with any repairs to the rudders.

16.3.2.7 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.

16.3.2.8 The Contractor must inspect the rudder stock key and keyway for any defects using NDT LP Level. All findings must be recorded and delivered to the TA as soon as practical.

16.3.2.9 The Contractor must visually inspect the top rudder bearings and bearing fasteners of both rudders for any defects and the findings must recorded and submitted to the Lloyd's surveyor and the TA. The PSPC 1379 process must be used to deal with any repairs necessary.

16.3.2.10 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 Lloyd's surveyor and the TA. If any unplanned work is required, it must be negotiated using from PSPC 1379, as applicable.

16.3.2.11 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.

16.3.2.12 Before installation of the rudders, the Contractor must replace the Nylon protection plates on the rudders. The Contractor must note that the plate in place are held in by Sikaflex in addition to the fasteners. 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 adjusting 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. The Thordon SXL plate is supply by Canada, the Contractor must supply all other installation material.

16.3.2.13 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.

16.3.2.14 The Contractor must ensure that the tiller achieves a proper fit and that the tiller nut is hardened up in the presence of the TA.

16.3.2.15 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.

16.3.3 Rudder Skeg Inspections

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

16.3.5 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 Lloyd's surveyor and the TA.

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

16.3.7 The Contractor must supply an adaptor to perform the float coat on both skeg.

16.4 PROOF OF PERFORMANCE

16.4.1 Inspections

16.4.1.1 The Contractor must afford the attending Lloyd's surveyor and the TA the opportunity to inspect all disassembled components following disassembly and cleaning.

16.4.2 Testing/Trials

16.4.2.1 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.

16.4.2.2 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.

16.4.2.3 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.

16.4.2.4 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.

16.5 DELIVERABLES

16.5.1 Documentation (Reports/Drawings/Manuals)

16.5.1.1 The Contractor must prepare and submit to the TA prior to the close of the contract and in accordance with Section 1.11 a comprehensive report of all inspections including all findings, recommendations, test results and recorded measurements.

17.0 INSTALLATION OF LEVEL INDICATORS IN THE JETTISONABLE TANKS

17.1 Identification

A level indicator must be installed in each Port and Starboard of the two jettisonable tanks. The gauges is to read levels in the gasoline tanks no 13 and 14.

17.2 Reference

Drawing Number	Drawing Title	Electronic File
6094-5400-02	Gasoline Storage Tank drawing	
	Gasoline Tank Drawing.pdf	
	Img-419115801-001	
	Sounding point for gasoline tanks	
	Normes de soudure de la garde côtière	

17.3 Technical

17.3.1 The Contractor must remove the deck panels that cover the gasoline tanks. See section 8.0 on the removal of the jettisonable tanks for painting.

17.3.2 Before starting the removal, the Contractor must take the steps reassemble the systems and equipment according to their original

17.3.3 The Contractor must remove the manholes, open and vent the tanks. The contractor must gas free for hot work.

17.3.4 The Contractor must weld an adaptor piece to the bracket already in place in the tank. Details on the drawing Gasoline tank Drawing.pdf.

17.3.5 The gauge, the adaptor and the level indicator, Bestobell are supplied by Canada.

17.3.6 The Contractor must do a pressure test at a pressure of no more than 3 psi for an hour on both Port and Stbd tanks without the level indicator in the tank, the test is to test the tank integrity. The Contractor must give the Lloyd’s surveyor the opportunity to attend the pressure test.

18.0 ANCHOR, CHAIN & CHAIN LOCKER INSPECTIONS

18.1 IDENTIFICATION

18.1.1 The Contractor must range the anchor and anchor chain for a Lloyd's survey.

18.1.2 The Contractor must clean and prepare the chain locker for a Lloyd's structural inspection.

18.1.3 The chain is galvanized and is of a length of 7 (shots of 90')

18.2 REFERENCES

18.2.1 Drawing

Drawing Number	Drawing Title	Electronic File
AF6095-58100-01	Anchor System Arrangement Plan	

18.2.2 Regulation

18.2.2.1 Canada Shipping Act, 2001: Marine Machinery Regulations (SOR/90-264)

18.2.2.2 Lloyd's Register, Rules & Regulations for the Classification of Special Service Craft

18.2.3 Standard

Canadian Coast Guard Standard EKME#3049715v3A

18.3 TECHNICAL

18.3.1 Anchor and Anchor Chain Inspections

18.3.1.1 The Contractor must arrange for the lowering and raising of the anchor and chain without hydraulic power being available for operating the anchor winch.

18.3.1.2 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.

18.3.1.3 The Contractor must disconnect 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 Lloyd's 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 Lloyd's surveyor and the TA.

18.3.1.4 Optional-The Contractor must inspect the anchor eye and anchor shackles using liquid dye penetrant testing performed by a NDT LPT Level II certified Technician according to the Canadian Coast Guard welding specification section 5.6.8.2). The PSPC 1379 process must be used to deal with any necessary repairs.

18.3.1.5 Optional- 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.

18.3.1.6 Optionel-Following all repairs, replacements, and anchor shot swaps the anchor chain must be painted and marked as follows:

- All shot joining shackles must be painted red;
- 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.

18.3.1.7 The Contractor must reconnect the bitter end of the chain once the work in section 18.3.2has been completed. Following this, the Contractor must stow the anchor chain and anchor.

18.3.2 Chain Locker Inspection

18.3.2.1 The Contractor must open the chain locker and it must be ventilated and certified for entry. The certificate of entry must be valid for entry for the duration of the work and the survey.

18.3.2.2 The Contractor must pressure wash the chain locker interior with a minimum of 5000 psi. The Contractor must bid on removing and disposing of ashore in accordance with federal and provincial regulations 100 liters of liquid waste and 10 liters of sludge. This must not include the water used for the cleaning of the chain locker which must be the responsibility of the Contractor.

18.3.2.3 The Contractor must clean the chain locker bilge suction after removing the bottom perforated plate of the chain locker.

18.3.2.4 If, following the Lloyd's survey, there is a need to make structural repairs in the chain locker these must be done using the PSPC 1379 process to deal with any necessary repairs.

18.3.2.5 The Contractor must bid on replacing 5 m² of the chain locker coating. The Contractor must follow the coating system

An abrasion resistant pure epoxy coating pigmented with aluminum

DFT 125 microns

An abrasion resistant pure epoxy coating pigmented with aluminum

DFT 125 microns

18.3.3 The Contractor must apply a coating compatible with the existing coating system. The existing coating system is two coats of intershield 300.

18.3.3.1 The Contractor must apply a stripe coat by brush to edges, welds, crevices, bolt heads, transitions, backs of stiffeners, cut outs, ladders, handrails and other surface irregularities when applying the primer and intermediate coat for surfaces cleaned to bare metal. The stripe coat may be applied to the surface by spray provided it is immediately and thoroughly worked into these areas by brush.

18.3.3.2 If the application is complete with brush and rollers the Contractor must apply several coats to achieve correct dry film thickness.

18.3.3.3 The Contractor must respect cure times between coats.

18.4 Proof of Performance

18.4.1 The Contractor must examine the coating for blisters, runs, sags, dry spray and foreign material after the last coat has dried and foreign and before is has cured. No coating containing blisters, runs, sags, dry spray or foreign material will be accepted.

18.4.2 The following is a list of inspection hold points. The Contractor must cease operation and obtain approval of the Technical Authority before proceeding. The inspection points are:

18.4.3 Verification of surface cleaning before mechanical preparation

18.4.4 Verification of cleanliness after abrasive blasting and prior on any coating application

18.4.5 Verification of coating quality and thickness after each coat of material prior to application of additional coats.

18.4.5.1 The Area of coating system renewal in the chain locker must be prorated using the PSPC 1379 process in case the surface are needs to be adjusted up or down.

18.4.5.2 The Contractor must supply and install a new manhole cover gasket of the same performance as the one removed before the final closing of the chain locker.

18.4.6 Inspections

18.4.6.1 The Contractor must schedule a survey of the anchor and anchor chain by the attending Lloyd’s surveyor and afford the TA the opportunity to witness the inspection. The Lloyd’s inspection must be to obtain a survey credit for the anchor and anchor chains.

18.4.6.2 The Contractor must schedule a survey of the chain locker by the attending Lloyd's surveyor and afford the TA the opportunity to witness the inspection in order to determine if any structural or coating repairs are required. The Lloyd's inspection must be to obtain a survey credit for the chain locker space.

18.4.7 Testing/Trials

18.4.7.1 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 Lloyd's surveyor and the TA the opportunity to witness the test.

18.4.8 Certification

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

18.5 DELIVERABLES

18.5.1 Documentation (Reports/Drawings/Manuals)

18.5.1.1 The Contractor must prepare and submit a 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. This report must be available before the end of the contract in accordance with Section 1.11

19.0 PROPELLER HUBS, SHAFT CLEARANCES & SHAFT SEALS

19.1 IDENTIFICATION

19.1.1 The Contractor must open up the Port and Starboard shaft seals for a Lloyd's survey.

19.1.2 The Contractor must take the wear down readings for the Port and Stbd stern tube bearings, the intermediate bearings and the aft spectacle frame bearings.

19.1.3 The Contractor must remove the PORT and STBD shafts for inspection by the attending Lloyd's surveyor.

19.1.4 This specification section must be done in conjunction with Section 10 – Rudder, Rudder Bearing & Skeg Inspections.

19.2 REFERENCES

19.2.1 Manuals

NO.	Description	Electronic File
1	Kamewa CP-A D Installation Manual (10Sooo239/49341-E)	
2	Simplan Seal Manual	

19.2.2 Drawings

Drawing Number	Drawing Title	Electronic File
6097-24300-01_1	Shaft Line arrangement	

19.2.3 Regulations

19.2.3.1 Canada Shipping Act, 2001: Marine Machinery Regulations (SOR/90-264)

19.2.3.2 Lloyd's Register, Rules & Regulations for the Classification of Special Service Craft.

19.3 TECHNICAL

19.3.1 Propeller Shaft Seals

19.3.1.1 The Contractor must ensure that all applicable safety precautions including equipment lock outs and tag outs are implemented prior to the start of work.

19.3.1.2 The Contractor must ensure that, prior to the start of disassembly, precaution are taken to ensure the reassembly and reinstallation of all system and equipment must be as per original and in accordance with manufacturer's specification.

19.3.1.3 The Contractor must release the inboard side of the PORT and STBD shaft seals. The Contractor must protect the sealing surfaces of the shaft seals as described in the Simplan Seal Manual.

19.3.1.4 The Contractor must renew the parts on the mechanical seal that must be renewed for a 5 year inspection. Including the following parts

Pneumostop (6).
Constant-Pressure seal Body (14)
Sealing Ring (9) et O-Ring.(10)
O-rings (20) et (23)
The numbers in brackets refer to the simplan shaft seal drawing in the manual.
The parts are supplied by Canada.

19.3.1.5 The Contractor must perform a 5 year inspection and inspection including and inspection of part (24) counter Ring and (1) packing and other surfaces of the mechanical seal.

19.3.1.6 The Contractor must engage the services of a FSR from Simplex Americas LLC to dismantle the shaft seals, take the required measurements and reassemble the shafts seals after the Lloyd's survey and dock and sea trials. The Contractor must include all costs related to the Simplex FSR in the bid proposal.

19.3.1.7 The Simplex FSR must re-install the PORT and STBD shaft seals after the necessary work in this specification has been completed. The FSR must record measurements and must tension the shaft seals in accordance with the Simplan Manual.

19.3.2 Propeller Shaft Clearances

19.3.2.1 The Contractor must take the clearance reading between shaft and FWD Stern Tube Bearings while the shaft seal is dismantled. Bearing clearance readings must be taken at four places for both the PORT and STBD shafts as follows:

- Top (12 o'clock position);
- Bottom (6 o'clock);
- Port (9 o'clock positon);
- Stbd (3 o'clock position);

19.3.2.2 The Contractor must open the Aft Stern Tube Bearing covers from PORT and STBD sides. Bearing Clearance readings must be taken in four places for both the PORT and STBD shafts as follows:

- Top (12 o'clock position);
- Bottom (6 o'clock);
- Port (9 o'clock positon);
- Stbd (3 o'clock position);

19.3.2.3 The Contractor must reinstall the Aft Stern Tube Bearing covers on the PORT and STBD shaft lines after the readings have been taken. The

Contractor must lock the screws in their original position using the original screw lock style.

19.3.2.4 The Contractor must remove the Rope Guards with Net Cutters from PORT and STBD sides of the AFT Bracket Bearing. Bearing clearance readings must be taken at four places for both the PORT and STBD shafts as follows:

- Top (12 o'clock position);
- Bottom (6 o'clock);
- Port (9 o'clock positon);
- Stbd (3 o'clock position);

19.3.3 Propeller Shaft Removals and Inspections

19.3.3.1 The Contractor must measure the run out of the propeller shafts before any work begins on the shafts. (list 1)

19.3.3.2 The Contractor must provide the services of an FSR to provide oversight of all work being performed on the shafting systems. Final system performances must be verified by the FSR and must be signed-off attesting that the systems has been services in accordance with Rolls Royce requirements. The FSR must have a good working knowledge of the specific shafting systems installed on the CCGS Caporal Kaeble V.C.

19.3.3.3 The Contractor must remove the propeller rope guards from the aft stern tube bosses on both sides. This must include the removal of the rope cutters.

19.3.3.4 The Contractor must label and mark the shaft grounding system fitted to the shafts. This system must be disconnected and removed from the shaft line. This must include the removal of the bushes and brush holders as space will be required for the removal of the shaft seal.

19.3.3.5 The Contractor must label and mark the shaft speed measuring system fitted to the shafts. The system must be disconnected and removed from the shaft line. This must include the proximity sensors for the speed signal. The Contractor must measure the distance between the proximity sensors to the electrical pic-ups. This distance must be recorded and provided to the TA.

19.3.3.5.1 The Contractor must clean the shafts of all corrosion and all debris after the removal of items in Sections 19.3.3.3and 19.3.3.4 to facilitate the removal of the SKF Coupling.

19.3.3.6 The Contractor must follow the disassembly procedures provided in the SKF Installation manual for the removal of the shaft coupling. Care must be taken to ensure that all necessary measurements are recorded to ensure that the coupling is re-installed in the correct position and provided with the correct pressure upon re-installation.

19.3.3.6.1 The coupling must be slid aft to allow for the disconnection of the inner tube of the CPP system.

19.3.3.7 The Contractor must follow the disassembly procedure provided in the Rolls Royce Shaft Installation manual to disconnect the inner tubes of the CPP systems. Every effort must be made to recover the oil that will drain from the systems at this point. The oil must be disposed of ashore and disposal certificates must be presented to the TA proving that the oil was disposed of in accordance with Federal, Provincial and municipal regulations. Oil spilled into the bilges must be cleaned-up at the Contractor's expense. The contactor can expect about 55 galon per side to be present in the system.

19.3.3.7.1 The Contractors must remove the shafts aft and care must be taken to avoid damaging the intermediate and aft bearing surfaces as well as the propeller blades by providing sufficient support when the propeller shafts clear the individual bearing surfaces.

19.3.3.8 The Contractor must remove the SKF couplings and sling them out of the way once the shafts has been withdrawn the required distance to allow for the removal of the shaft couplings.

19.3.3.9 The Contractor must inspect the shafts and shaft bearings as detailed in Section 19.4.1.

19.3.4 Propeller Shaft Inspection

19.3.4.1 The Contractor must perform a spark test on coating for the propeller shaft.

19.3.4.2 Optional - The Contractor must perform a liquid penetrant test on the propeller shaft by a qualified technician according to the Canadian Coast Guard Welding Specification on the shaft in lieu of the transition areas.

19.3.5 Repair to shaft coating

19.3.6 The Contractor must perform a repair to the Thorcoat on one shaft. The zone to be repaired is estimated to 10 square centimeter to be prepared and rebuilt with Thorcoat.

19.3.7 Propeller Hubs and Blade Removal

19.3.7.1 The Contractor must remove eight blades from the propeller hubs and its associated hardware for the inspection by the attending Lloyd's surveyor. The propeller blades must be removed under the direction of the Rolls Royce FSR. The Contractor must dispose of all oil that is drained from the propeller hubs in accordance with federal and provincial regulations.

19.3.7.2 The Contractor must take an oil sample from the center part of the hub. The sample must be given to the coast guard representative.

19.3.7.3 The Contractor must inspect the blade bolts

19.3.7.4 The Contractor must carry out NDT for all 8 (eight) propeller blades on Port and STBD propellers. Roots and flanges of all 8 blades and blade to boss securing arrangements must be inspected by a certified NDT Level II inspector using Dye Penetrant, Magnetic Particle or Ultrasound inspection technique to determine if the there are any surface cracks. The Contractor must provide the attending Lloyd's surveyor, TA and IA the opportunity to witness the test to obtain credit.

19.3.7.5 The Contractor must reinstall the propeller blades of each propeller hub with new Contractor supplied O-rings and in accordance with the directions in the manual and the guidance of the FSR.

19.3.7.6 The Contractor must inspect the marking on the propeller hub against the pitch indicator on the OD-box (oil distribution box).

19.3.8 Controlable Pitch Propeller inspection

19.3.8.1 The Contractor must perform a pressure test of the propeller hub.

19.3.8.2 The Contractor must drain the hydraulic system. The hydraulic unit and the gravity tank.

19.3.8.3 The contractor must clean and inspect the hydraulic unit and its tanks.

19.3.8.4 The Contractor must clean and inspect the gravity tanks. The Coast Guard representative must see the tanks before the Contractor closes it with new Contractor supplied joints. Those tanks are on the main deck and interference items to reach the tanks include a fan and fan trunking and other small objects to reach the tanks.

19.3.8.5 The Contractor must inspect all hydraulic hoses. Replacement will be using the PSPC 1379 process

19.3.9 Optional OD Box inspection

19.3.9.1 Drain and inspect the OD box

19.3.9.2 The Contractor must perform an operational test of the OD box.

19.3.9.3 The Contractor must perform a pressure test of the OD box.

19.3.9.4 The Contractor must adjust the OD-Box scale.

19.3.9.5 The Contractor must inspect the bushes in the feedback box for cracks.

19.3.10 Propeller Shaft Installations

19.3.10.1 The Contractor must reinstall the shaft couplings on the shafts and then proceed to reconnect the shaft lines as per the installation manual, while exercising care to ensure that the shaft line bearings are not damaged during the insertion of the shafts back into the vessel.

19.3.10.2 The Contractor must protect the inner tube threaded ends of each shaft line from damage as they form part of the mechanical seal for the hydraulic system.

19.3.10.3 The Contractor must assemble the inner tubes and connect the shafts as per the installation instructions in the manual.

19.3.10.4 The Contractor must re-install the SKF coupling after the inner tubes of the shaft system have been reconnected and torqued. The Contractor must verify the position of the SKF coupling in relation to the measurements taken and recoded prior to the removal of the SKF coupling. Installation must be as per the supplied SKF Manual.

19.3.10.5 The Contractor must reinstall the shaft grounding systems as per the manual and must reconnect the system as per the documentation recorded prior to disassembly.

19.3.10.6 The Contractor must reinstall the speed measuring system and must ensure that all proximity sensors are adjusted to the correct distance from the shafting based on the recorded measurements prior to disassembly.

19.3.10.7 The Contractor must reinstall the aft propeller hub seals to the aft liners and once the propeller shafts are refitted into the vessel the Contractor must install the Spurs™ rope cutters on each aft stern frame. See drawing SP-160302 Spurs for Hero Class Vessels.

19.3.10.8 The Contractor must supply the oil to fill the CPP system MOBIL GEAR 600XP 68.

19.3.10.9 The Contractor must filter the oil before filling to obtain a cleanliness of at least 18/16/13 according to ISO 4406:1999. The result of the filtration must be provided to the Technical Authority.

19.3.10.10 The Contractor must refill the CPP system with new Contractor supplied oil. The Contractor must follow the instructions in the installation manual ensuring that all air is bled from the system and must set to work the system, ensuring that system pressures are normal and that the propeller blades rotate in the ahead and after directions as required.

19.4 PROOF OF PERFORMANCE

19.4.1 Inspections

19.4.1.1 The Contractor must take the bearing clearance readings of Section in the presence of the attending Lloyd's surveyor and must afford the TA the opportunity to witness the taking of these readings. Readings must be taken within 48 hours of docking the vessel.

19.4.1.2 The Contractor must clean and inspect the PORT and STBD shafts for any defects. These must be noted and provided to the attending Lloyd's surveyor and the TA and IA. Shaft diameter measurements must be taken at the front and back of each bearing surface and the measurement must be taken in four places at each location. Measurements must be recorded and provided to the TA and IA.

19.4.1.3 The Contractor must inspect the PORT and STBD stern tube bearings, the intermediate bearings and the AFT Bracket Bearings. All finding must be recorded and provided to the TA and IA.

19.4.1.4 The Contractor must remove the aft seals between the aft liner and the propeller hub flange. This area must be inspected by a certified NDT Level II inspector using Magnetic Particle or Ultrasound inspection technique to determine if the there are any surface cracks in propeller shaft flange area.

19.4.1.5 The Contractor must inspect the liners of the propeller shafts for any anomalies and proper sealing at of the liners at all ends.

19.4.1.6 The Contractor must provide the attending Lloyd's surveyor the opportunity to witness the internals of propeller hubs and the removed blade of each shaft line. Where required by the FSR, the Contractor must take and record readings and provide these to the TA and the IA.

19.4.2 Test and Trials

19.4.2.1 The Contractor must develop a test and trials plan that will test all aspects of the propeller shafting systems. The test and trials plan must be submitted to the IA and TA prior to the undocking of the vessel.

19.4.2.2 The Contractor must notify the IA upon completion of the work in this specification item and must afford the IA the opportunity to witness all completed work prior the undocking of the vessel.

19.4.2.3 The Contractor must complete all set to work requirements as directed by the Rolls Royce FSR in order to validate the proper calibration, function and operational readiness of the CPP systems. Tests must include operational pressure tests in the dry dock to validate there are no leaks in the propeller hubs, the proper movement of the propeller blades, and that the correct pitch angles are displayed on the instrumentation. Sea trials must be conducted to test the CPP systems

through their full range of adjustments for pitch and power transmission from the gearboxes to the controllable pitch propellers and that all pressures and temperatures are normal.

19.4.2.4 The Contractor must complete all set to work requirements as directed by the Simplex Americas LLC FSR in order to validate the shaft seals water tightness during a dock trial where the ship's crew will rotate the propellers at a moderate speed, determined by the TA in agreement with the Contractor, with the objective of finding any water leaks and overheating.

19.4.2.5 The Contractor must complete a sea trial with 100% engine load for one hour to verify that all systems operate within the equipment manufacturer's standards.

19.5 DELIVERABLES

19.5.1 Documentation (Reports/Drawings/Manual)

19.5.1.1 The Contractor must prepare and submit a report to the TA of all work done, all measurements taken and all "AS LEFT" measurements for the SKF Couplings, the shaft seals and shaft bearing clearances before the end of the contract in accordance with Section 1.11.

20.0 BOW THRUSTER GEAR OIL AND SEAL CHANGE

20.1 IDENTIFICATION

20.1.1 The Contractor must change the bow thruster gear oil and the propeller shaft seals.

20.2 REFERENCES

20.2.1 Manuals

No.	Description	Electronic File
1	Hydraulic Thruster (PKK 24 TRAC (24)	
3	TRAC Shaft Seal Change Procedure	

20.2.2 Drawings

Drawing Number	Drawing Title	Electronic File Name
INM2428TRACHYD	Thruster Installation	
REF 32277	TRAC 24/28 Seal Change	

20.2.3 Regulation

20.2.3.1 Canada Shipping Act, 2001: Marine Machinery Regulations (SOR/90-264)

20.2.3.2 Lloyd's Register, Rules & Regulations for the Classification of Special Service Craft

20.3 TECHNICAL

20.3.1 The Contractor must ensure that all applicable safety precautions including equipment lock outs and tag outs are implemented prior to the start of work.

20.3.2 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 as per original and in accordance with manufacturer's specification.

20.3.3 The Contractor must report, by email, all deficiencies as they are identified to the TA and IA and make recommendations for their remedial action.

20.3.4 The Contractor must remove the bow thruster grates to access the thruster unit.

20.3.5 The Contractor must notify the IA when the oil will be drained from the bow thruster unit such that the IA 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.

20.3.6 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 Canada.

20.3.7 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.

20.3.8 The Contractor must clean the tank. A coast guard representative must inspect the tank before it is closed with a new contractor supplied gasket.

20.4 PROOF OF PERFORMANCE

20.4.1 Testing/Trials

20.4.1.1 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 operating pressure.

20.4.1.2 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.

20.4.1.3 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.

20.4.2 Certification

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

20.5 DELIVERABLES

20.5.1 Documentation (Reports/Drawings/Manuals)

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

21.0 SEWAGE SLUDGE TANK, BLACK WATER TANK, BILGE WATER TANK, GREY WATER TANK, DIRTY OIL & SLUDGE TANK, LUBE OIL TANK

21.1 IDENTIFICATION

21.1.1 The Contractor must open, clean and present the Sewage Sludge tank(#6), the Black Water tanks (#7b) and the Dirty Oil & Sludge tanks (#15)for inspection by the attending Lloyd's surveyor.

21.1.2 The Contractor must bid on renewing part of the tank coating system in each tank.

21.2 REFERENCES

21.2.1 Drawings

Drawing number	Description	Electronic File
AF6095-89940-02	Tank Arrangement, Capacity Plan	
6094-61100-01	Bottom plug Diagram	

21.2.2 Manual and Photos

NO.	Description	Electronic File
1	MSPV International Coatings Maintenance Plan OBM	
2	Pdf A Leblanc Access to Dirty Oil tank	

21.3 TECHNICAL

21.3.1 Tank Cleaning

21.3.1.1 The Contractor must stop and lock-out the ship's sanitary water system.

21.3.1.2 The Contractor must remove the Dirty Oil & Sludge Tank (Tank #15) docking plug, drain the tank and dispose of the oil and sludge remaining in the tank.

21.3.1.3 The Contractor must contain the dirty oil and sludge and must dispose of these contents in accordance with Federal and provincial regulations in effect. The Contractor must provide disposal certificates.

21.3.1.4 For bidding purposes, the Contractor must bid on the removal of 200 liters of liquid waste and 20 liters of solid waste for an estimated total of 220 liters from the tank. The PSPC 1379 process must be used to prorate this quantity if required.

21.3.1.5 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) and the Black Water tanks for the duration of the work inside these tanks.

21.3.1.6 The Contractor must remove the Sewage Sludge Tank docking plug, drain the tank and dispose of the liquid and sludge remaining in the tank (Tank #6) in accordance with federal and provincial regulations in effect.

21.3.1.7 For bidding, the Contractor must bid on the removal and disposal of 100 liters of liquid waste and 20 liters of solid waste for an estimated total of 120 liters from the tank. The PSPC 1379 process must be used to prorate this quantity if required.

21.3.1.8 The Contractor must open the manhole cover to the Sewage Sludge Tank, pump dry, clean, ventilate the tank and certify it safe for entry and safe passage to the Black Water Tank for the duration of the work inside.

21.3.1.9 The Contractor must remove the Black Water Tank docking plug, drain the tank and dispose of the liquids and solids remaining in the tank (Tank #7b) in accordance with federal and provincial regulations in effect.

21.3.1.10 For bidding, the Contractor must bid on the removal and disposal of 100 liters of liquid waste and 15 liters of solid waste for an estimated total of 115 liters from the tank. The PSPC 1379 process must be used to prorate this quantity if required.

21.3.1.11 For bidding, the Contractor shall bid on the removal and disposal of 100 liters of liquid waste and 15 liters of solid waste for an estimated total of 115 liters from the tank. The PSPC 1379 process will be used to prorate this quantity if required.

21.3.1.12 The Contractor shall open the manhole cover of the Grey Water Tank (#7a) giving access to the Black Water Tank (#7b), pump dry, clean, ventilate the tank and certify it safe for entry for the duration of the work inside.

21.3.1.13 The Contractor shall remove the Black Water Tank (#7b) docking plug, drain the tank and dispose of the liquid and sludge remaining in the tank in accordance with Federal and Provincial regulations in effect.

21.3.1.14 For bidding, the Contractor shall bid on the removal and disposal of 100 liters of liquid waste and 20 liters of solid waste for an estimated total of 120 liters from the tank. The PSPC 1379 process will be used to prorate this quantity if required.

21.3.1.15 The Contractor shall remove the Bilge Water Tank (#4) docking plug, drain the tank and dispose of the liquid and sludge remaining in the tank in accordance with Federal and Provincial regulations in effect.

21.3.1.16 The Contractor must open the manhole cover of the Black Water Tank giving access to the tank (Tank #7b), pump dry, clean, ventilate the tank and certify it safe for entry for the duration of the work inside.

21.3.1.17 The Contractor must clean the three tanks mentioned above with a pressure wash system of at least 5000 psi.

21.3.1.18 The six tanks must be inspected by the Lloyd's surveyor and the TA for structural damage and the quality of each tank's coating system.

21.3.1.19 The Contractor must remove the suction pipe from each of the five tanks.(except Lube oil Tank) 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. The PSPC 1379 process must be used to deal with any structural repairs inside the tanks if required.

21.3.1.20 The Contractor must reinstall the three suction pipes with new Garlock style gaskets.

21.3.1.21 Once all work inside the tanks is complete the Contractor must reinstall the five docking plugs and must supply and install the manhole covers with new manhole gaskets, nuts and washers. All replacement materials must be stainless 316.

21.3.2 Coating System Touch-Up Dirty Oil Tank (#15)

21.3.2.1 If required and after any required structural work, the Contractor must prepare the surfaces 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 solvent free phenolic tank coating Buff with a Dry Film Thickness of 150 microns and on 1 coat of solvent free phonolic tank coating white with a DFT of 150 microns.

The PSPC 1379 Process must be used to prorate the actual area recoated.

21.3.2.2 The Contractor must apply a coating compatible with the existing coating system. The existing coating system is two coats of interline624.

21.3.2.3 The Contractor must apply a stripe coat by brush to edges, welds, crevices, bolt heads, transitions, backs of stiffeners, cut outs, ladders, handrails and other surface irregularities when applying the primer and intermediate coat for surfaces cleaned to bare metal. The stripe coat

may be applied to the surface by spray provided it is immediately and thoroughly worked into these areas by brush.

21.3.3 Coating System Touch-Up (#4,6,7a,7b)

21.3.3.1 If required and after any required structural work, the Contractor must prepare the surfaces 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 of surface area in the Sewage Sludge Tank the Black Water Tank , Grey Water Tank, Bilge Water Tank, Dirty Oil & Sludge Tank. The Contractor must apply 2 coats of a heavy duty solvent free epoxy tank lining. The PSPC 1379 Process must be used to prorate the actual area recoated.

21.3.3.2 The Contractor must apply a coating compatible with the existing coating system. The existing coating system is two coats of interline 925.

21.3.3.3 The Contractor must apply a stripe coat by brush to edges, welds, crevices, bolt heads, transitions, backs of stiffeners, cut outs, ladders, handrails and other surface irregularities when applying the primer and intermediate coat for surfaces cleaned to bare metal. The stripe coat may be applied to the surface by spray provided it is immediately and thoroughly worked into these areas by brush.

21.4 PROOF OF PERFORMANCE

21.4.1 Inspections

21.4.1.1 The Contractor must advise the Lloyd’s Surveyor and the TA when the tanks and their coating systems s are ready for inspection and survey credit must be obtained for the tanks.

21.4.1.2 The Contractor must examine the coating for blisters, runs, sags, dry spray and foreign material after the last coat has dried and foreign and before is has cured. No coating containing blisters, runs, sags, dry spray or foreign material will be accepted.

21.4.1.3 The following is a list of inspection hold points. The Contractor must cease operation and obtain approval of the Technical Authority before proceeding. The inspection points are:

21.4.1.4 Verification of surface cleaning before mechanical preparation

21.4.1.5 Verification of cleanliness after abrasive blasting and prior on any coating application

21.4.1.6 Verification of coating quality and thickness after each coat of material prior to application of additional coats.

21.4.2 Testing and Trials

21.4.2.1 The Contractor must hydrostatically pressure test the tanks to a head of 2.44 meters above the crown of the tank for a duration of 1 hour. This pressure test must be witnessed by the TA and IA.

21.4.2.2 The Contractor must be responsible for the water for the hydrostatic test and its disposal following the test.

21.4.2.3 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 IA.

21.5 DELIVERABLES

21.5.1 Documentation

21.5.1.1 The Contractor must provide the TA with a copy of all gas free and entry certificates for the tanks.

21.5.1.2 The Contractor must provide the TA with a copy of all disposal certificates for the liquids and sludge quantities removed from the 3 tanks.

21.5.1.3 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. This report must be in accordance with Section 1.11.

22.0 POTABLE WATER TANKS

22.1 IDENTIFICATION

22.1.1 The Contractor must open, clean and prepare the potable water tanks for a Lloyd's inspection and obtain a survey credit.

22.1.2 The Contractor must provide the services of a NACE inspector to determine the extent of the area to be recoated.

22.2 REFERENCES

22.2.1 Equipment Data

Tank	Location	Volume	Area
PORT Pot. Water Tank	Frames 27 – 31	3.2 cubic meters	180m²
STBD Pot. Water Tank	Frames 27 – 31	3.2 cubic meters	180m2

22.2.1.1 The existing tank coating system is International Paint Interline 975P and this product must be used for repairs.

22.2.1.2 Manuals and documentation

Name	Description	Electronic File
	MSPV International Coatings Maintenance Plan OBM	
CCG Technical Bulletin 2015-01	Potable water tank epoxy based surface coatings update, etc	
7.A.12	Fleet Safety manual Section 7.A.12-Potable Water Quality	
http://www.hc-sc.gc.ca/ewh-semt/pubs/water-eau/sum_guide-res_recom/index-eng.php	Health Canada Guidelines for Canadian Drinking water Quality	
International Paint	On-board Maintenance Plan for Hero Class Vessels	
Interline 975P	Application Guidelines Potable Water Tanks Interline 975P	

22.2.2 Drawings

Drawing No	Description	Electronic File
AF6095-89940-02	Tank Arrangement and Capacity plan	

AF6095-53000-02	Sanitary Fresh Water System	
AF6095-63100-01	Paint Schedule	
6094-61100-01	Bottom Plug Diagram	

22.2.3 Regulations

22.2.3.1 N/A

22.2.4 Standards

22.2.4.1 7.A.12 Potable Water Quality – Fleet Safety Manual

22.2.4.2 NSF 61 Coating Quality Standard

22.3 TECHNICAL

22.3.1 Tank Cleaning

22.3.1.1 The Contractor must isolate the potable water tanks from the potable water system via his lock-out tag-out system.

22.3.1.2 The Contractor must remove the manhole cover to each tank, empty the tanks using portable pumps and must ventilate the tanks such that they can be certified safe for entry. The Contractor must provide the necessary safe for entry permit for the duration of the work in the tanks.

22.3.1.3 The Contractor must clean all tank surfaces to SP-1, removal all of all debris and sludge and the tanks must be wiped dry. All debris must be removed ashore and disposed of by the Contractor. When entering the tanks, the Contractor must take care to protect the tank coating system and must ensure that no oil or other foreign substances are introduced into the tanks.

22.3.1.4 For bidding, the Contractor must quote on removing 0.5 cubic meters of standing water from each tank. The PSPC 1379 process must be used to prorate this quantity.

22.3.1.5 Should structural repairs be required, these must be dealt with using the PSPC 1379 process.

22.3.1.6 Tanks must be inspected as per Section 22.4.1.

22.3.1.7 The Contractor must change the pipe support in the potable water tanks. The Contractor must bid on 8 support per tank.

Figure 13: Fresh water tank pipe support

22.3.2 Tank Coating System Touch-Up

22.3.2.1 The Contractor must inspect the tanks with the TA and the NACE technician to determine the areas of the coating system that require maintenance and what this total surface area is.

22.3.2.2 For bidding, the Contractor must quote on touch up and repair of 10 square meters of surface are between the two tanks and this area must include the feathered areas into the existing coating system. The PSPC 1379 process must be used to prorate this area if needed.

22.3.2.3 The Contractor must prepare the identified areas by power tooling to SP-11, and the edges to be feathered as per the onboard maintenance plan for Hero Class Vessels Specification. Note: "Area" includes the feathering zone.

22.3.2.4 The Contractor must apply a coating that is compatible with the coating system in place: International 975P. The Contractor must apply a solvent free heavy duty tank lining certified NSF61 for small tanks. Ship's tanks are 3.2 cubic meter per tank.

22.3.2.5 The Contractor must follow the application procedures stated on the product information sheet for its application in potable water tank of in consultation with the coating system FSR. The use of thinners is not permitted; all curing between coats and ventilation requirements must be adhered to. New hoses must be used for the application of paint in the Potable Fresh Water Tanks. Hoses must not be flushed with thinner and then reused for the potable water tank coating application. The work schedule for tank coating system application must provide drying times and substrate temperatures consistent with the coating system manufacturer's recommendations for the product application. All

environmental parameters must be recorded and provided in the final report from the Contractor, including, air temperature, dew point, substrate temperature, all before, during and after application of the coating system.

22.3.2.6 The Contractor to supply two air heaters for each water tank in order to maintain air temperature above 15C to ensure proper curing process for the coating.

22.3.2.7 The potable water tanks must not be sealed and filled with any liquid until the coating system has fully cured. Failure of the Contractor to ensure that tank coatings are fully cured and are no longer off gassing remains the Contractor's responsibility

22.3.2.8 The Contractor must close all tank access covers after final inspection by the TA. The Contractor must replace all tank access cover gaskets with new 1/8 inch thick fiber reinforced neoprene gaskets suitable for potable water service

22.4 PROOF OF PERFORMANCE

22.4.1 Inspection

22.4.1.1 Once all work has been completed and the tanks are cleaned of all debris and work by-products, the Contactor must arrange for inspection and survey of the potable water tank by the Lloyd's surveyor and the TA.

22.4.2 Testing/Trials

22.4.2.1 Once the tanks have been closed, the Contractor must perform a hydrostatic test on the potable water tanks using hyper-chlorinated water to a head of 2.44 meters. The Contractor must connect a manometer to the tank to measure the 2.44 meter head which must be maintained for 1 hour with no appreciable drop in manometer level. The Contractor must either use clean fresh potable water for the test or he may use the hyper-chlorinated water to be used for the hyper-chlorination process.

22.4.2.2 The potable water tanks and the ship's fresh water system must be hyper-chlorinated in accordance with the procedures laid out in the Coast Guard Fleet Safety Manual procedure 7.A.12 – Potable Water Quality. On completion of hyper-chlorination the tanks must be drained and flushed twice before being subjected to the potable water testing. The Contractor must be responsible for the disposal of all water used to treat the fresh water tanks including de-chlorination of the super-chlorinated water.

22.4.2.3 The Contractor must arrange for testing of the potable water from each

tank and the potable water system in accordance with the Annual Testing of Potable Water as specified in the Canada Drinking Water Guidelines as prescribed by Health Canada. To verify this, the following procedure must be followed for each tank:

22.4.2.4 The Contractor must fill the fresh water tanks with fresh water, hyper-chlorinated, de-chlorinated and then drained in accordance with the CCG Fleet Safety Manual (FSM) Potable Water Quality Guidelines contained in section 7.A.12 prior to filling for testing. If the Contractor uses calcium hypochlorite to produce the hyper-chlorinated potable water, the water must be filtered to remove all calcium before it is introduced into the potable water tanks.

22.4.2.5 The Contractor must also hyper-chlorinate the potable water distribution system as per FSM. The main charcoal media filter must be bypassed and locked out while system super chlorination takes place. Refer to AF6095-53000-02, Sanitary Fresh Water system.

22.4.2.6 The Contractor must fill the tanks with potable water to approximately fifty percent of the working volume of each tank.

22.4.2.7 The tanks must be allowed to remain stagnant for 48 hours before water samples are taken for testing.

22.4.2.8 The Contractor must collect 1 water sample from the freshwater supply line used to fill the tanks.

22.4.2.9 The Contractor must collect 2 water samples from the water inside each tank.

22.4.2.10 The Contractor must take samples from the distribution system in accordance with FSM procedure.

22.4.2.11 The Contractor must prepare, correctly package and send the above listed water samples to an accredited laboratory for analysis. The water samples must be tested for the 28 parameters described in the Fleet Safety Manual paragraph 3.6F of 7.A.12 .Results must be provided immediately to the TA. All parameters must be within the Health Canada Guidelines for Canadian Drinking Water Quality.

22.4.2.12 The Contractor must return the water level in the tanks to that of when the vessel was docked.

22.4.3 Certification

22.4.3.1 The Contractor must obtain water test reports from the laboratory indicating that the water quality meets the specifications.

22.5 DELIVERABLES

22.5.1 Documentation

22.5.1.1 The Contractor must provide waste and hyper-chlorinated water disposal certificates to the TA prior to the completion of the contract.

22.5.1.2 The Contractor must provide copies of all tank entry certificates to the TA prior to the completion of the contract.

22.5.1.3 The Contractor must provide the potable water laboratory reports to the TA prior to the close of the contract.

22.5.1.4 The Contractor must provide a detailed report from the coating FSR including the required parameters identified in Section 22.3.

23.0 BALLAST WATER TANK INSPECTIONS

23.1 IDENTIFICATION

23.1.1 The following ballast and void tanks must be opened and cleaned and submitted for inspection by the attending LR surveyor to obtain a survey credit

23.2 REFERENCES

23.2.1 Equipment Data

Tank #	Location	Size
PORT Ballast Tank	FR AFT to FR 1	1.495 m³
STBD Ballast Tank	FR AFT to FR 1	1.495 m³
VOID FWD	FR 36.5 to 38	
VOID FWD	FR 38 to FR 41	
VOID Aft Port	FR 0 to FR1	Foam Filled
VOID Aft Center	FR 0 to FR1	Foam Filled
VOID Aft STBD	FR 0 to FR1	Foam Filled

23.2.2 Drawings

Drawing No	Description	Electronic File
AF6095-89940-02	Tank Arrangement & Capacity Plan	
6094-61100-01	Bottom plug Diagram	

23.3 TECHNICAL

23.3.1 Tank Cleaning

23.3.1.1 The Contractor must remove the docking plugs for the PORT and STBD ballast water tanks and must drain the tanks.

23.3.1.2 The Contractor must remove the docking plugs for the AFT and FWD void spaces. Once the docking plugs are removed the spaces must be observed for any water drainage. If there is water draining from the void spaces, the PSPC 1379 process must be used to investigate the ingress of water into the void spaces.

23.3.1.3 The Contractor must remove the manhole cover to each ballast tank and must ventilate the tanks such that they can be certified safe for entry. The Contractor must provide the necessary safe for entry permit for the duration of the work in the tanks.

23.3.1.4 The Contractor must clean all tank surfaces of all debris and sludge and the tanks must be wiped dry. All debris must be removed ashore and disposed of by the Contractor.

23.3.1.5 For bidding, the Contractor must quote on removing 0.5 cubic meters of standing water from each tank. The PSPC 1379 process must be used to prorate this quantity.

23.3.1.6 Should structural repairs be required, these must be dealt with using the PSPC 1379 process.

23.3.1.7 Tanks must be inspected as per Section 23.4.1

23.3.2 Tank Coating System Touch-Up

23.3.2.1 The Contractor must inspect the tanks with the TA and the NACE technician to determine the areas of the coating system that require maintenance and what this total surface area is.

23.3.2.2 For bidding, the Contractor must quote on touch up and repair of 5 square meters of surface are between the two ballast tanks and this area must include the feathered areas into the existing coating system. The PSPC 1379 process must be used to prorate this area if needed.

23.3.2.3 The Contractor must prepare the identified areas by power tooling to SP-11, and the edges to be feathered into the existing coating system. Note: “Area” includes the feathering zone.

23.3.2.4 The Contractor must apply two coats of solvent free epoxy phenolic tank coating dft 150 microns. The Contractor must adhere exactly to the application procedures stated on the product information sheet for its application. The work schedule for tank coating system application must provide drying times and substrate temperatures consistent with the coating system manufacturer’s recommendations for the product application.

23.3.2.5 The ballast water tanks must not be sealed and filled with any liquid until the coating system has fully cured. Failure of the Contractor to ensure that tank coatings are fully cured and are no longer off gassing remains the Contractor’s responsibility

23.3.2.6 The Contractor must close all tank access covers after final inspection by the TA. The Contractor must replace all tank access cover gaskets with new 1/8 inch thick fiber reinforced neoprene gaskets suitable for water service

23.4 PROOF OF PERFORMANCE

23.4.1 Inspection

23.4.1.1 Once all work has been completed and the tanks are cleaned of all debris and work by-products, the Contactor must arrange for inspection and survey of the ballast water tank by the Lloyd's surveyor and the TA.

23.4.2 Testing/Trials

23.4.3 Optional- Hydro test

23.4.3.1 Once the tanks have been closed, the Contractor must perform a hydrostatic or pneumatic test on the ballast water tanks. The Contractor must isolate the tanks from the ballast system, blank off the vent and fill lines and connect a U-tube manometer to the sounding pipe. The U-tube manometer must show a maximum height of 2.44 meters head of water above the crown of the tank. Head pressure must be maintained for at least 1 hour when the tanks are filled with Contractor supplied water. Following the hydrostatic test the Contractor must drain the tanks to achieve the tank levels when the vessel entered the dry dock.

23.4.4 Optional – Pneumatic test

23.4.4.1 Once the tanks have been closed, the Contractor must perform a pneumatic test on the ballast water tanks. The Contractor must blank off the vent and fill lines and connect a U-tube manometer to the sounding pipe. The U-tube manometer must show a maximum height of 2.44 meters head of water above the crown of the tank. Pressure must be maintained for at least 1 hour with the air supply disconnected.

23.4.4.2 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 Technical Authority.

23.4.5 DELIVERABLES

23.4.6 Documentation

23.4.6.1 The Contractor must provide copies of all tank entry certificates to the TA prior to the completion of the contract.