



**RETURN BIDS TO:**

**RETOURNER LES SOUMISSIONS À:**

**Bid Receiving Public Works and Government  
Services Canada/Réception des soumissions  
Travaux publics et Services gouvernementaux  
Canada**  
1713 Bedford Row  
Halifax, N.S./Halifax, (N.É.)  
B3J 1T3  
Bid Fax: (902) 496-5016

**INVITATION TO TENDER**

**APPEL D'OFFRES**

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

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

**Soumission aux: Travaux Publics et Services  
Gouvernementaux Canada**

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

**Comments - Commentaires**

**Vendor/Firm Name and Address**

Raison sociale et adresse du  
fournisseur/de l'entrepreneur

**Issuing Office - Bureau de distribution**

Atlantic Region Acquisitions/Région de l'Atlantique  
Acquisitions  
1713 Bedford Row  
Halifax, N.S./Halifax, (N.É.)  
B3J 3C9  
Nova Scot

<b>Title - Sujet</b> Drydocking - CCGS Alfred Needler	
<b>Solicitation No. - N° de l'invitation</b> F5561-150892/A	<b>Date</b> 2015-11-23
<b>Client Reference No. - N° de référence du client</b> F5561-15-0892	<b>GETS Ref. No. - N° de réf. de SEAG</b> PW-\$HAL-403-9679
<b>File No. - N° de dossier</b> HAL-5-75191 (403)	<b>CCC No./N° CCC - FMS No./N° VME</b>
<b>Solicitation Closes - L'invitation prend fin</b> <b>at - à 02:00 PM</b> <b>on - le 2015-12-16</b>	
<b>Time Zone</b> <b>Fuseau horaire</b> Atlantic Standard Time AST	
<b>F.O.B. - F.A.B.</b>	
<b>Plant-Usine:</b> <input type="checkbox"/> <b>Destination:</b> <input checked="" type="checkbox"/> <b>Other-Autre:</b> <input type="checkbox"/>	
<b>Address Enquiries to: - Adresser toutes questions à:</b> Brow, Theresa	<b>Buyer Id - Id de l'acheteur</b> hal403
<b>Telephone No. - N° de téléphone</b> (902) 496-5166 ( )	<b>FAX No. - N° de FAX</b> (902) 496-5016
<b>Destination - of Goods, Services, and Construction:</b> <b>Destination - des biens, services et construction:</b> DEPARTMENT OF FISHERIES AND OCEANS MARITIMES REGIONAL HQ BLDG 50 DISCOVERY DR - LEVEL 4 DARTMOUTH NOVA SCOTIA B2Y4A2 Canada	

**Instructions: See Herein**

**Instructions: Voir aux présentes**

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

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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, and the basis of selection;

Part 5 Certifications: includes the certifications to be provided;

Part 6 Security, Financial and Other Requirements: includes specific requirements that must be addressed by bidders; and

Part 7 Resulting Contract Clauses: includes the clauses and conditions that will apply to any resulting contract.

The Annexes include the Statement of Work; the Basis of Payment; Insurance Requirements; Warranty; Custody; Project Management Services; Financial Bid Presentation Sheet; Required Certifications; and Information Required for Code of Conduct Certification.

### **1.2 Requirement**

1. The Statement of Work is;
  - a) to carry out the refit of the **Canadian Coast Guard Vessel CCGS ALFRED NEEDLER in accordance with the associated Technical Specifications detailed in the Statement of Work at Annex A** .
  - b) to carry out any approved unscheduled work not covered in paragraph a) above.
2. There is no industrial security requirement associated with this solicitation. Other security requirements are outlined in Part 7, Article 3.
3. 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 Agreement on Internal Trade (AIT) and will be limited to suppliers in Eastern Canada in accordance with Shipbuilding, Refit, Repair and Modernization Policy (1996-12-19).
4. Pursuant to section 01 of Standard Instructions 2003 and 2004, a Consent to a Criminal Record Verification form, must be submitted with the bid, by the bid solicitation closing date, for each individual who is currently on the Bidder Board of Directors.
5. Work period: The proposed work period is 5 January to 22 February 2016.

### **1.3 Debriefings**

After contract award, bidders may request a debriefing on the results of the bid solicitation. Bidders should make the request to the Contracting Authority within 15 working days of receipt of notification that their bid was unsuccessful. The debriefing may be provided in writing, by telephone or in person.

## **PART 2 - BIDDER INSTRUCTIONS**

### **2.1 Standard Instructions, Clauses and Conditions**

All instructions, clauses and conditions identified in the bid solicitation by number, date and title are set out in the Standard Acquisition Clauses and Conditions Manual (<https://buyandsell.gc.ca/policy-and-guidelines/standard-acquisition-clauses-and-conditions-manual>) 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 (2015-09-03) Standard Instructions - Goods or Services - Competitive Requirements, are incorporated by reference into and form part of the bid solicitation.

Section 07(3) of 2003, Standard Instructions - Goods or Services are amended as follows:

Delete: Furthermore, the Bidder must send a written confirmation of the bid within two (2) working days after bid closing, unless specified otherwise in the bid solicitation. All documents confirming bids should bear the word "CONFIRMATION".

### **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 five (5) working days before the bid closing date. Enquiries received after that time may not be answered.

Bidders should reference as accurately as possible the numbered item of the bid solicitation to which the enquiry relates. Care should be taken by bidders to explain each question in sufficient detail in order to enable Canada to provide an accurate answer. Technical enquiries that are of a "proprietary" nature must be clearly marked "proprietary" at each relevant item. Items identified as proprietary will be treated as such except where Canada determines that the enquiry is not of a proprietary nature. Canada may edit the 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**

1. Any resulting contract must be interpreted and governed, and the relations between the parties determined, by the laws in force in **Nova Scotia**.
2. The Bidder may, at its discretion, substitute the applicable laws of a Canadian province or territory of its choice without affecting the validity of its bid, by deleting the name of the Canadian province or territory specified and inserting the name of the Canadian province or territory of its

choice. If no change is made, it acknowledges that the applicable laws specified are acceptable to the Bidder.

## **2.5 Bidders' Conference –**

A Bidders conference will be held at the Maritime Regional Headquarters Building, 50 Discovery Drive, Dartmouth NS Boardroom 508G located on the fifth floor at 10:00am on 09 December 2015.

Bidders are requested to communicate with the Contracting Authority before the conference to confirm attendance. Bidders should provide, in writing, to the Contracting Authority, the names of the person(s) who will be attending and a list of issues they wish to table at least Two (2) working days before the scheduled conference.

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

## **2.6 Optional Site Visit - Vessel**

It is recommended that the Bidder or a representative of the Bidder visit the work site. Arrangements have been made for a tour of the vessel. The visit will be held also on 09 Dec 2015 alongside at BIO. Bidders are requested to communicate with Todd Smith (902-426-2798) two (2) days before the scheduled visit to confirm attendance and provide the name(s) of the person(s) who will attend. Bidders may be requested to sign an attendance form. Bidders who do not attend or send a representative will not be given an alternative appointment but they will not be precluded from submitting a bid. Any clarifications or changes to the bid solicitation resulting from the site visit will be included as an amendment to the bid solicitation.

## **2.7 Work Period - Marine**

1. Work must commence and be completed as follows: [January 5, 2016 to 22 February 2016](#)
2. By submitting a bid, the Bidder certifies that they have sufficient material and human resources allocated or available and that the above work period is adequate to both complete the known work and absorb a reasonable amount of unscheduled work.

## **PART 3 - BID PREPARATION INSTRUCTIONS**

### **3.1 Bid Preparation Instructions**

Canada requests that bidders provide their bid as follows:

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

Prices must appear in the financial bid only. No prices must be indicated in any other section of the bid.

If bids are submitted by facsimile in accordance with 2003 Standard Instructions, Section 07(3), as modified under Part 2, Article 1, then the bid should be provided in the same format as for hard copies.

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) (<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 8.5 x 11 inch (216 mm x 279 mm) 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: Financial Bid**

Bidders must submit their financial bid in accordance with the Financial Bid Presentation Sheet at Annex I and the detailed Pricing Data Sheet, Appendix 1 to Annex I. Bidders must also submit the ITT completed and signed.

### **Vessel Refit, Repair or Docking - Cost**

The following costs must be included in the evaluation price:

1. **Services:** include all costs for ship services such as water, steam, electricity, etc., required for vessel maintenance for the duration of the Contract.  
This price must be firm and is subject to increase only if the period of the Contract is extended with the approval of the Contracting Authority.
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. The cost of services to tie up the vessel alongside and to cast off must be 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. These services must not be an extra charge except where unscheduled work requiring these services is added to the Contract.
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.

## **Section II: Certification Requirements**

Bidders must submit the certifications required in accordance with Part 5.

## **PART 4 - EVALUATION PROCEDURES AND BASIS OF SELECTION**

### **4.1 Evaluation Procedures**

Bids will be assessed in accordance with the entire requirement of the bid solicitation including the technical and financial evaluation criteria.

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

### **4.2 Basis of Selection**

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

### **4.3 Public Bid Opening**

A public bid opening will be held at the Public Works and Government Services Office, 1713 Bedford Row, Halifax, Nova Scotia at 1400 hrs. local on 16 December 2015.

## **PART 5 - CERTIFICATIONS**

### **5.1 General**

Bidders must provide the required certifications to be awarded a contract. Canada will declare a bid non-responsive if the required certifications are not completed and submitted as requested.

Compliance with the certifications bidders provide to Canada is subject to verification by Canada during the bid evaluation period (before award of a contract) and after contract award. The Contracting Authority will have the right to ask for additional information to verify bidders' compliance with the certifications before award of a contract. The bid will be declared non-responsive if any certification made by the Bidder is untrue, whether made knowingly or unknowingly. Failure to comply with the certifications or to comply with the request of the Contracting Authority additional information will also render the bid non-responsive.

#### **5.1.1 Declaration of Convicted Offences**

As applicable, pursuant to subsection Declaration of Convicted Offences of section 01 of the Standard Instructions, the Bidder must provide with its bid, a completed [Declaration Form](http://www.tpsgc-pwgsc.gc.ca/ci-if/formulaire-form-eng.html) (<http://www.tpsgc-pwgsc.gc.ca/ci-if/formulaire-form-eng.html>), to be given further consideration in the procurement process.

### **5.2 Certifications Precedent to Contract Award**

The certifications listed below should be submitted with the bid, but may be completed and submitted afterwards. If any of these required certifications are not completed or submitted as requested, the Contracting Authority will so inform the Bidder and provide the Bidder with a time frame within which to meet the requirement. Failure to comply with the request of the Contracting Authority and meet the requirement within that time period will render the bid non-responsive.

1. Insurance Certification as per Part 6.3 and Annex C
2. Workers compensation letter of good standing as per Part 6.4
3. Welding Certification as per Part 6.5
4. Labour agreement as per Part 6.6
5. Project Schedule as per Part 6.7

6. Safety Measures for Fuel information as per Part 6.8
7. ISO 9001 registration documentation as per Part 6.9
8. Docking facility certification as per Part 6.10
9. Subcontractors list as per Part 6.11
10. Federal Contractors Program for Employment Equity - Certification as per 6.12 and Annex J
11. Code of Conduct Information Required as per 5.4 and Annex K

### **5.3 Certifications Required with the Bid**

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

1. Tender Document completed and signed.
2. Pricing information and pricing data sheets as contained in Annex "I" and Appendix 1 to Annex I.

### **5.4 Code of Conduct Certifications - Certifications Required Precedent to Contract Award**

Bidders should provide, with their bid or promptly thereafter, a complete list of names of all individuals who are currently directors of the Bidder. If such a list has not been received by the time the evaluation of bids is completed, the Contracting Authority will inform the Bidder of a time frame within which to provide the information. Bidders must submit the list of directors before contract award, failure to provide such a list within the required time frame will render the bid non-responsive.

The Contracting Authority may, at any time, request that a Bidder provide properly completed and Signed Consent Forms (Consent to a Criminal Record Verification form - PWGSC-TPSGC 229) (<http://www.tpsgc-pwgsc.gc.ca/app-acq/forms/formulaires-forms-eng.html>) for any or all individuals named in the aforementioned list within a specified delay. Failure to provide such Consent Forms within the delay will result in the bid being declared non-responsive.

## **PART 6 - FINANCIAL, SECURITY AND OTHER REQUIREMENTS**

### **6.1 Security Requirement**

There is no industrial security requirement associated with this requirement.

### **6.2 Financial Capability**

SACC Manual Clause A9033T (2012-07-16) Financial Capability

### **6.3 Insurance Requirements**

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

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

### **6.4 Workers Compensation - Letter of Good Standing**

The Bidder must have an account in good standing with the applicable provincial or territorial Workers' Compensation Board. The Bidder must provide, [within two \(2\) working days](#), following a request from the Contracting Authority, a certificate or letter from the applicable Workers' Compensation Board

confirming the Bidder's good standing account. Failure to comply with the request may result in the bid being declared non-responsive.

### **6.5 Welding Certification**

1. Welding must be performed by a welder certified by the Canadian Welding Bureau and in accordance with the requirements of the following Canadian Standards Association (CSA) standards:
  - (a) CSA W47.1-03, Certification of Companies for Fusion Welding of Steel (*Minimum Division Level 2.1*);
2. Before contract award and within **two (2) working days** of the written request by the Contracting Authority, the successful Bidder must submit provide evidence demonstrating its certification to the welding standards. In addition, welding must be done in accordance with the requirements of the applicable drawings and specifications.

### **6.6 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. Before contract award and within **two (2) working days** of written notification by the Contracting Authority, the successful Bidder must provide evidence of that agreement.

### **6.7 Project Schedule**

Before contract award and within **two (2) working days** of written notification by the Contracting Authority, the successful Bidder must propose its preliminary project schedule, in Gantt chart or detailed bar chart format. The project schedule must include the Bidder's work breakdown structure; the scheduling of main activities and milestone events; and any potential problem areas involved in completing the Work.

### **6.8 Safety Measures For Fueling and Disembarking Fuel**

Fueling and disembarking fuel from Canadian government vessels must be conducted under the supervision of a responsible supervisor trained and experienced in these operations.

Before contract award and within **two (2) working days** of written notification by the Contracting Authority, the successful Bidder must provide details of its safety measures for fueling and disembarking fuel, together with the name and experience of the person in charge of this activity.

### **6.9 ISO 9001:2000 - Quality Management Systems**

Before contract award and within **two (2) working days** of written notification by the Contracting Authority, the successful Bidder must provide its current ISO Registration Documentation indicating its registration to ISO 9001:2000. 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.

### **6.10 Docking Facility Certification**

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

Before contract award and within **two (2) working days** of written notification by the Contracting Authority, the successful Bidder must provide current and valid certification of the capacity and condition of the docking facility to be used for the Work. The certification must be provided by a recognized consultant or classification society and must have been issued within the past two years. Although a dry docking facility may have a total capacity greater than the vessel to be docked, the weight distribution of the vessel may cause individual block loading to be exceeded. While the physical dimensions of a dry docking facility may indicate acceptability for docking of a specific vessel, other limitations such as spacing of rails on a marine railway, concrete piers of abutments adjoining the dry dock may, preclude the facility from being considered as a possible dry docking site and render the bid non-responsive.

#### **6.11 List of Proposed Subcontractors**

If the bid includes the use of subcontractors, the Bidder agrees, within **two (2) working days** of written notification 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 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.

#### **6.12 Inspection and Test Plan**

Before Contract award and within five (5) working days of written notification by the contracting authority, the successful bidder may be required to provide an example of its Inspection Plan.

#### **6.13 Environmental Protection**

Before contract award and within 24 hours of written notification by the contracting authority the successful Bidder must provide the details of its environmental emergency response plans, waste management procedures and/or formal environmental training undertaken by its employees. In addition the successful bidder must submit samples of its processes and procedures pertinent to the completion of the work.

### **PART 7 - RESULTING CONTRACT CLAUSES**

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

#### **7.1 Statement of Work**

The Contractor must:

- a) Carry out the maintenance and alterations of the Canadian Coast Guard Vessel CCGS ALFRED NEEDER in accordance with the associated Technical Specifications detailed in the Statement of Work attached as Annex A; and
- b) Carry out any approved unscheduled work not covered in paragraph (a) above.

#### **7.2 Standard Clauses and Conditions**

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

##### **7.2.1 General Conditions**

2030 (2014-03-01) General Conditions - Goods - Higher Complexity

## **7.2.2 Supplemental General Conditions**

1029 (2010-08-16) Ship Repairs

## **7.3 Security Requirement**

1. There is no industrial security requirement associated with this contract.
2. Access to Port Facilities and Government vessels is controlled. The Contractor must comply with applicable requirements. A system of positive identification, sign-in and out, and wearing of identification badges while within Port facilities or on board Government vessels is required.
3. The Contracting and the Technical Authority reserve the right to direct that Contractors personnel be security cleared as necessary.

## **7.4 Term of Contract**

### **7.4.1 Work Period- Marine**

1. Work must commence and be completed as follows: 05 JAN 2016 TO 22 FEB 2016
2. The Contractor certifies that they have sufficient material and human resources allocated or available and that the above work period is adequate to both complete the known work and absorb a reasonable amount of unscheduled work.

## **7.5 Authorities**

### **7.5.1 Contracting Authority**

The Contracting Authority for the Contract is:  
Theresa Brow, Marine Supply Specialist  
Public Works and Government Services Canada  
Acquisitions Branch, Atlantic Region  
1713 Bedford Row, Halifax, Nova Scotia B3J 3C9

Telephone: (902) 496-5166  
Facsimile: (902) 496-5016  
E-mail address: [theresa.brow@pwgsc-tpsgc.gc.ca](mailto:theresa.brow@pwgsc-tpsgc.gc.ca)

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

### **7.5.2 Inspection Authority**

The Inspection Authority is responsible for inspection of the Work and acceptance of the finished work. The Inspection Authority will be represented on-site by an assigned on-site Inspector and any other departmental inspectors who will from time to time be assigned in support of the designated inspector.

### **7.5.3 Technical Authority**

The on site Technical Authority for the Contract will be named at contract award.

The Technical Authority is the on site representative of the department or agency for whom the Work is being carried out under the Contract and is responsible for day to day on site technical matters. The on site technical authority is the designated authority for work arising including signatory authority for 1379s . Technical matters may be discussed with the Technical Authority; however, the Technical Authority has no authority to authorize changes to the scope of the Work. Changes to the scope of the Work can only be made through a contract amendment issued by the Contracting Authority.

#### **7.5.4 Project Authority**

The Project Authority for the Contract will be named at contract award.

The Project 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 Project Authority; however, the Project Authority has no authority to authorize changes to the scope of the Work. Changes to the scope of the Work can only be made through a contract amendment issued by the Contracting Authority.

#### **7.5.5 Contractor's Representative**

Name:

Title:

Telephone:

Fax:

Email:

### **7.6 Payment**

#### **7.6.1 Basis of Payment - Firm Price or Firm Lot Price**

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

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

#### **7.6.2 Method of Payment - Single Payment**

Canada will pay the Contractor upon completion and delivery of the Work in accordance with the payment provisions of the Contract if:

- a) an accurate and complete invoice and any other documents required by the Contract have been submitted in accordance with the invoicing instructions provided in the Contract;
- b) all such documents have been verified by Canada;
- c) the Work delivered has been accepted by Canada.

### **7.6.3 SACC Manual Clauses**

C6000C (2011-05-16) Limitation of Price  
C0711C (2008-05-12) Time Verification

### **7.7 Invoicing Instructions**

1. The Contractor must submit invoices in accordance with the section entitled "Invoice Submission" of the general conditions. Invoices cannot be submitted until all work identified in the invoice is completed.
2. Invoices must be distributed as follows:
  - (a) The original and one (1) copy must be forwarded to the address shown on page 1 of the Contract for certification and payment.
  - (b) One (1) copy must be forwarded to the Contracting Authority identified under the section entitled "Authorities" of the Contract.

### **7.8 Certifications**

SACC Manual Clause A3015C (2008-12-12) Certifications

### **7.9 Applicable Laws**

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

### **7.10 Priority of Documents**

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

- (a) the Articles of Agreement;
- (b) the general conditions 2030 (2015-09-03) General Conditions - Goods (Higher Complexity);
- (c) the supplemental general conditions 1029 (2010-08-16) Ship Repairs;
- (d) Annex A, Statement of Work;
- (e) Annex B, Basis of Payment;
- (f) Annex C, Insurance Requirements;
- (g) Annex D, Consent to a Criminal Record Verification (PWGSC-TPSGC 229);
- (h) Annex E, Warranty;
- (i) Annex F, Not Used;
- (j) Annex G, Not Used;
- (k) Annex H, Not Used;
- (l) Annex I, Financial Bid Preparation Sheets;
- (m) Annex J, Required Certifications;
- (n) Annex K, Information Required for Code of Conduct Certification; and
- (o) the Contractor's bid dated

### **7.11 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 does not release the Contractor from or reduce its liability under the Contract.

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

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

**7.12 Accommodation – not used**

**7.13 Parking – not used**

**7.14 NOT USED**

**7.15 Sub-Contractors 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 by the Inspection Authority.

**7.16 Work Schedule and Reports**

No later than three (3) Working 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.

The schedules must be revised on a predefined basis. The revised schedules must show the effect of progressed work and approved work arising. Changes in scheduled completion dates due to unscheduled work will not be accepted except as negotiated under Design Change or Additional Work clause.

**7.17 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.

**7.18 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 *three (3) 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.

#### **7.19 Trade Qualifications**

The Contractor must use qualified, certified (if applicable) and competent tradespeople 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 tradespeople. This request should not be unduly exercised but only to ensure qualified tradespeople are on the job.

#### **7.20 NOT USED**

#### **7.21 ISO 9001:2008 - Quality Management Systems**

In the performance of the Work described in the Contract, the Contractor must comply with the requirements of ISO 9001:2000 - Quality management systems - Requirements, published by the International Organization for Standardization (ISO), current edition at date of submission of the Contractor's bid with the exclusion of the following requirement:

##### **Design and development**

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

##### **Assistance for Government Quality Assurance (GQA):**

The Contractor must provide the Inspection Authority 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.

#### **7.22 NOT USED**

#### **7.23 Welding Certification**

1. The Contractor must ensure that welding is performed by a welder certified by the **Canadian Welding Bureau (CWB)** in accordance with the requirements of the following **Canadian Standards Association (CSA)** standards:

(a) CSA W47.1-03, Certification for Companies for Fusion Welding of Steel Structures [Minimum division level 2.0](#);

2. In addition, welding must be done in accordance with the requirements of the applicable drawings and specifications.
3. Prior to 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 he intends to use in the performance of the Work. The list must identify the CWB welding procedure qualifications attained by each of the personnel listed and must be accompanied by a copy of each person's current CWB welding certification.

#### **7.24 Environmental Protection**

The Contractor and its subcontractors engaged in the Work on a Canadian Government 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.

#### **7.25 Supervision of Fueling and Disembarking Fuel**

The Contractor must ensure that fueling and disembarking of fuel from Canadian government vessels are conducted under the supervision of a responsible supervisor trained and experienced in these operations.

#### **7.26 Procedures for Design Change or Additional Work**

The following procedures must be followed for any design change or additional work.

1. When Canada requests design change or additional work:
  - (a) The Technical Authority will provide the Contracting Authority with a description of the design change or additional work in sufficient detail to allow the Contractor to provide the following information:
    - i) any impact of the design change or additional work on the requirement of the Contract;
    - (ii) a price breakdown of the cost (increase or decrease) associated with the implementation of the design change or the performance of the additional work using either the Form PWGSC1686, Quotation for Design Change or Additional Work, or the Form PWGSC 1379, Work Arising or New Work, or any other form required by Canada;
    - (iii) a schedule to implement the design change or to perform the additional work and the impact on the contract delivery schedule.

(b) The Contracting Authority will then forward this information to the Contractor.

(c) The Contractor will return the completed form to the Contracting Authority for evaluation and negotiation. Once agreement has been reached, the form must be signed by all parties in the appropriate signature blocks. This constitutes the written authorization for the Contractor to proceed with the work, and the Contract will be amended accordingly.

2. When the Contractor requests design change or additional work:

(a) The Contractor must provide the Contracting Authority with a request for design change or additional work in sufficient detail for review by Canada.

(b) The Contracting Authority will forward the request to the Technical Authority for review.

(c) If Canada agrees that a design change or additional work is required, then the procedures detailed in paragraph 1 are to be followed.

(d) The Contracting Authority will inform the Contractor in writing if Canada determines that the design change or additional work is not required.

3. The Contractor must not proceed with any design change or additional work without the written authorization of the Contracting Authority. Any work performed without the Contracting Authority's written authorization will be considered outside the scope of the Contract and no payment will be made for such work.

**7.27 NOT USED**

**7.28 NOT USED**

**7.29 NOT USED**

### **7.30 Vessel UnManned Refits**

A0032C (2011-05-06) Vessel Unanned Refits

### **7.31 Pre-Refit Meeting**

A Pre-Refit meeting will be convened and chaired by the Contracting Authority at the Repair facility the first working day of the work period.

### **7.32 Progress 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's attendees at these meetings will, as a minimum, be its Contract (Project) Manager, Production Manager (Superintendent) and Quality Assurance Manager. Progress meetings will generally incorporate technical meetings to be chaired by the Technical Authority.

### **7.33 Outstanding Work and Acceptance**

1. The Inspection Authority, in conjunction with the Contractor, will prepare a list of outstanding work items at the end of the work period. This list will form the annexes to the formal acceptance document for the vessel. A contract completion meeting will be convened by the Inspection Authority upon the work completion date to review and sign off the form PWGSC-TPSGC1205, Acceptance. In addition to any amount held under the Warranty Holdback Clause, a holdback of twice the estimated value of outstanding work will be held until that work is completed.

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

- (a) original to the Contracting Authority;
- (b) one (1) copy to the Technical Authority;
- (c) one (1) copy to the Contractor.

#### **7.34 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.

#### **7.35 Hazardous Waste - Vessels**

SACC Manual Clause A0290C (2008-05-12) Hazardous Waste - Vessels

#### **7.36 Not Used**

#### **7.37 Scrap and Waste Material**

SACC Manual Clause A9055C (2010-08-16) Scrap and Waste Material

#### **7.38 Stability**

The Contractor will be solely responsible for the stability and trim of the ship during the period the vessel is in the Contractor's facility, including docking and undocking. The Contractor must maintain weight change information pertinent to the vessel's stability during the docking period. The Technical Authority will supply the Contractor with cross curves of stability, hydrostatic curves, tank status, location of center of gravity, and other information relevant to the ship's condition upon handing over of the vessel.

#### **7.39 Vessel Access by Canada**

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

#### **7.40 Title to Property - Vessel**

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

#### **7.41 Workers Compensation**

SACC Manual Clause A0285C (2007-05-25) Workers Compensation

**ANNEX A  
STATEMENT OF WORK**

The entire Statement of Work is incorporated into and forms part of this document. It is attached hereto as a separate electronic document entitled:

**CCGS ALFRED NEEDLER  
SPECIFICATION NO. 15-A018-013-1**

**ANNEX B  
BASIS OF PAYMENT**

**THE FOLLOWING WILL BE COMPLETED BY PWGSC PRIOR TO CONTRACT AWARD AND WILL FORM THE BASIS OF PAYMENT FOR THE RESULTING CONTRACT AS PER PART 7, CLAUSE 6.1.**

**B1 Contract Price**

**Firm Price for Known Work** \$ \_\_\_\_\_  
For completion of work specified as per Annex A and detailed in Appendix 1 to Annex A

**HST** \$ \_\_\_\_\_

**Total Contact Price** \$ \_\_\_\_\_

**Firm Hourly Charge-out Labour Rate** \$ \_\_\_\_\_

**Daily Services Fees**

As per article I4

i) working days on drydock = \$

li) non-working days on drydock = \$

ii) working days at berth = \$

iv) non-working days at berth = \$

**B2 Unscheduled Work**

Unscheduled work arising, as authorized by the Minister, will be calculated in the following manner:

Number of hours (to be negotiated) multiplied by your firm hourly *Charge-out Labour Rate* which includes *Overhead* and profit, plus net laid-down cost of materials to which will be added a 10% mark-up, plus Goods and Services Tax or Harmonized Sales Tax as applicable, 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 duration of the Contract and any subsequent amendments.

**B2.1** Notwithstanding definitions or usage elsewhere in this document, or in the Bidders 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 will not be negotiated, but will be compensated for in accordance with 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.

**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* for the purposes of determining the *Charge-out Labour Rate*.

**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. A separate labour component for the purchase and handling of materials or subcontract administration is not allowable.

**B3 Overtime**

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

**B4 Daily Services Fees**

In the event of a delay in the performance of the Work, 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 will be the sole liability of Canada to the Contractor for the delay.

The fees will include administrative support, production services, quality assurance, material support, and all other resources, direct costs, overhead and consumables needed to maintain the Vessel at the Contractor's facility. Daily fees for additional days on dock shall be inclusive of layday charges. These fees are firm and not subject to any additional charges for mark-up or profit.

Ship services as indicated within services (specification item HD-02) will be paid based on unit cost as bid. The daily service fee bid in Annex I will apply to all additional days.

## **ANNEX C INSURANCE REQUIREMENTS**

### **C1 Ship Repairers' Liability Insurance**

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 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 endeavor 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.

### **C2 Commercial General Liability Insurance**

1. The Contractor must obtain Commercial General Liability Insurance, and maintain it in force throughout the duration of the Contract, in an amount usual for a contract of this nature, but for not less than \$2,000,000 per accident or occurrence and in the annual aggregate.
2. The Commercial General Liability Insurance 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 endeavor 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.

(Derived from - Provenant de: G2001C, 2008-05-12)

### **C3. Limitation of Liability**

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 \$10,000,000.00 per incident or occurrence, to an annual aggregate of \$20,000,000 for damages caused in any one year of carrying out of the Contract, each such year starting on the date of coming into force of the Contract or its anniversary, and to a total maximum liability of \$40,000,000.00. This limitation of the Contractor's liability does not apply to:

- (a) any infringement of intellectual property rights; or
- (b) any breach of warranty obligations.

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.

**ANNEX D**  
**Consent to a Criminal Record Verification (PWGSC-TPSGC 229)**

**Available as an attachment via BuyandSell**

## **ANNEX E WARRANTY**

### **D1 2030 (2013-06-27) General Conditions - Goods (Higher Complexity), are hereby amended as follows:**

Delete Section 2030 (22) (2013-06-27) Warranty, and Insert the following:

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 are free from all defects and conform with the requirements of the contract:
  - a. The painting of the underwater portion of the hull for a period of **three hundred 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 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.  
  
All other painting Work for a period of **three hundred sixty five (365) days** commencing from the date of acceptance of the Work;
  - b. All parts and materials supplied for the Work for a period of **three hundred and sixty five (365) days** commencing from the date of acceptance of the Work;
  - c. 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 must 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. The Contractor agrees to pass to Canada, and exercise on behalf of Canada, all warranties on the Materials **and/or labour** supplied or held by the Contractor which exceed the periods indicated above.

### **D2 Warranty Procedures**

#### **1. Scope**

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

#### **2. Definition**

- 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 vendors or manufacturers responsibility for performance of its product is extended for a specific period of time beyond the date at which the title to the product passes to the buyer.

#### **3. Warranty Conditions**

- a. **General Conditions 2030 General Conditions - Goods (Higher Complexity)** are augmented by clauses incorporated into the subject Contract.
- b. The warranty periods may be stated in more than one part:
  - i. 90 days commencing from the day the PWGSC 1205 Acceptance Document is signed for workmanship provided by the contractor for the refit work specified;
  - ii. 365 days from the date of acceptance for the specified areas of painting;

- iii. 365 days commencing from the day the PWGSC 1205 Acceptance Document is signed for parts and material provided by the contractor for the refit work specified;
- iv. Any other specific warranty periods that may be required in the contract or offered by the Contractor.
- c. The foregoing does not cover the disposition of other deficiencies that will be directly related to Technical Authority problem areas of the following nature:
  - i. items becoming unserviceable that were not included in the refit specification;
  - ii. refit specifications or other related documentation requiring amendments or corrections to increase viability; and
  - iii. work performed that is directly related to the [Technical Authority](#).

#### 4. Reporting Failures With Warranty Potential

- a. The initial purpose of a report of a failure is to facilitate the decision as to whether or not to involve warranty and to generate action to effect repairs. Therefore in addition to identification, location data, etc. the report must contain details of the defect. Warranty decisions as a general rule are to be made locally and the administrative process is to be in accordance with procedures as indicated.
- b. These procedures are necessary as invoking a warranty does not simply mean that the warrantor will automatically proceed with repairs at his expense. A review of the defect may well result in a disclaimer of responsibility, therefore, it is imperative that during such a review the Department is directly represented by competent technical authority qualified to agree or disagree with the warrantors assertions.

#### 5. Procedures

- a. Immediately it becomes known to the Ship's Staff that an equipment/system is performing below accepted standards or has become defective, the procedures for the investigation and reporting are as follows:
  - i. The vessel advises the Technical Authority when a defect, which is considered to be directly associated with 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 Appendix 1 to Annex E 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 contractors representative has had the opportunity to observe the defect. The necessary work is to be undertaken through normal repair methods and costs must be segregated as a possible charge against a contractor by PWGSC action.

#### 6. Liability

- a. Agreement between the Contracting Authority, Inspection Authority, Technical Authority and the Contractor will result in one of the following conditions:
  - i. The contractor accepts full responsibility for costs to repair or overhaul under the warranty provisions of the contract;
  - ii. The Technical Authority accepts full responsibility for repair and overhaul of item concerned; or
  - iii. The Contractor and the Technical Authority agree to share responsibility for the costs to repair or overhaul the unserviceable item, in such cases the PWGSC Contracting Authority will negotiate the best possible sharing arrangement.

- b. In the event of a disagreement as in paragraph 5c, PWGSC will take necessary action with the contractor while the Technical Authority informs its Senior Management including pertinent data and recommendations.
- c. The total cost of processing warranty claims must include accommodation and travel costs of the contractors 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.

**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 sixty five (365)** days and multiplied by the number of days remaining in the 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 to ANNEX D**



Public Works and Government Services Canada

Travaux publics et Services gouvernementaux  
Canada

**Warranty Claim      Rclamation De Garantie**

Vessel Name / Nom de navire	File No. / N de dossier	Contract No. - N de contrat
Customer Department / Ministre client		Warranty Claim Serial No. Numro de srie de rclamation de garantie
Contractor / Entrepreneur		<b><u>Effect on Vessel Operations</u></b> <b><u>Effet sur des oprations de navire</u></b> Critical    Degraded    Operational    Non-operational

**1. Description of Complaint / Description de plainte**

Contact Information / l'information de contact

\_\_\_\_\_ Name / Nom \_\_\_\_\_ Tel. No. - N / TI \_\_\_\_\_

Signature / Signature \_\_\_\_\_ Date \_\_\_\_\_

**2. Contractors Investigative Report / Le rapport investigateur de l'entrepreneur**

**3. Contractors Corrective Action / La modalit de reprise de l'entrepreneur**

Contractors Name and Signature / Nom et signature de l'entrepreneur \_\_\_\_\_ Date of Corrective Action - Date de modalit de reprise \_\_\_\_\_

Client Name and Signature - Nom et signature de client \_\_\_\_\_ Date \_\_\_\_\_

**4. PWGSC Review of Warranty Claim Action / Examen d'action de rclamation de garantie par TPSGC**

Signature / Signature \_\_\_\_\_ Date \_\_\_\_\_

**5. Additional Information / Renseignements supplémentaires**



**ANNEX F  
NOT USED**

**ANNEX G**  
Not used

**ANNEX H**  
Not Used

**ANNEX I**

**FINANCIAL BID PRESENTATION SHEET**

**I.1 Evaluation of Price**

The price of the bid will be evaluated in Canadian dollars, the Goods and Services Tax or the Harmonized Sales Tax excluded.

<b>a)</b>	<b>Known Work</b> For work as stated in Annex A and detailed in the attached Pricing Data Sheet Annex I, Appendix 1 a FIRM PRICE of:	\$ _____
<b>b)</b>	<b>Unscheduled Work</b>  Estimated labour hours at a firm Charge-out Labour Rate, including overhead and profit:  1000 person hours X \$ _____ per hour for a PRICE of: Hours in excess of 500 will also be charged at this rate.  Bidders are to include any premiums / surcharges or fees that are applicable to the hourly rate.	\$ _____
<b>c)</b>	<b>Daily Services Fees</b> As per article I4  i) five (5) working days on drydock X \$ _____ = \$ _____  ii) two (2) non-working days on drydock X \$ _____ = \$ _____  iii) three (3) working days at berth X \$ _____ = \$ _____  iv) two (2) non-working days at berth X \$ _____ = \$ _____	\$ _____
<b>d)</b>	<b>Vessel Transfer Cost</b> As per article I5:	\$ _____
<b>e)</b>	<b>EVALUATION PRICE</b> HST or GST Excluded, [a + b + c + d]: For an EVALUATION TOTAL of :	\$ _____

**I.2 Unscheduled Work**

Unscheduled work arising, as authorized by the Minister, will be 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 will be added a 10% mark-up, plus Goods and Services Tax or Harmonized Sales Tax as applicable, 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 duration of the Contract and any subsequent amendments."

**I.2.1** Notwithstanding definitions or usage elsewhere in this document, or in the Bidders 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 I.2.2 will not be negotiated, but will be compensated for in accordance with I.2.2. 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.

**I.2.2** 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 Table I.1 above.

**I.2.3** 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. A separate labour component for the purchase and handling of materials or subcontract administration is not allowable.

**I.3 Overtime Fees**

Compensation for authorized overtime will be calculated in the following manner:

- a. For Known Work, the contract price plus agreed overtime hours paid at the following premium rates; or,
- b. For Unscheduled Work, agreed overtime hours at the quoted *Charge-out Labour Rate* plus the following premium rates:

For Time and one half:      \$ \_\_\_\_\_ per hour; or,

For Double time              \$ \_\_\_\_\_ per hour

**I.4 Daily Services Fees**

Daily services fees are to be provided by the Bidder and entered in the table at I.1. In the event of a delay in the performance of the Work, and if such delay is recognized and agreed upon by the Contracting Authority as being attributable to Canada. These fees will be the sole liability of Canada to the Contractor for the delay.

The fees will include administrative support, production services, quality assurance, material support, and all other resources, direct costs, overhead and consumables needed to maintain the Vessel at the Contractor's facility. Daily fees for additional days on dock shall be inclusive of layday charges. These fees are firm and not subject to any additional charges for mark-up or profit.

Ship services as indicated within services (specification item HD-02) will be paid based on unit cost as bid. The daily service fee bid in Annex I will apply to all additional days.

The number of days included in I1 are estimates for evaluation purposes only, but the rates will apply to all additional days

**I.5 Vessel Transfer Costs**

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

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

Proposed shipyard/ship repair facility: \_\_\_\_\_

Applicable vessel transfer cost: \_\_\_\_\_.

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

The Contracting Authority will confirm to the Bidder, in writing, at least 5 calendar days before the bid closing date, the location of the shipyard/ship repair and the applicable vessel transfer cost.

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

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

Vessel: \_\_\_\_\_

Home port: \_\_\_\_\_

Transfer costs in the case of vessels transferred using a government delivery crew include the fuel cost at the vessel's most economical speed of transit and for unmanned refits only, crew transportation costs for the delivery crew based on the location of the vessel's home port and the shipyard/ship repair facility. Crew transportation costs do not include any members of the delivery crew who remain at the shipyard/ship repair facility in order to discharge project responsibilities related to the vessel being transferred.

Transfer costs in the case of vessels transferred unmanned by either commercial towing, railway, highway or other suitable means of transportation must be: (i) included as part of the Bidder's financial bid in the case where the Bidder is responsible for the transfer; or (ii) identified as the applicable vessel transfer cost, as given in the list below, in the case when Canada is responsible for the transfer.

Vessel transfer Costs:

COMPANY	LOCATION	COSTS
AF Theriault	Methegan, NS	\$6,669.00
Shelburne Ship Repair	Shelburne, NS	\$4,008.00
LIFE	Lunenburg, NS	\$1,659.00
Abco	Lunenburg, NS	\$1,659.00
CME Marine	Sambro, NS	\$587.00
Aecon Fabco	Pictou, NS	\$7,809.00
Samson Enterprises	Arichat, NS	\$4,734.00

CME Marine	N. Sydney	\$18,935.00
Industries Ocean Inc.	Quebec	423,427.00

**Appendix 1 to Annex H  
Detailed Pricing Data Sheet**

Pricing Data sheet will be provided in a separate electronic document with the Bidders Conference conference minutes.

## ANNEX j REQUIRED CERTIFICATIONS

**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](http://www.labour.gc.ca/eng/standards_equity/eq/emp/fcp/list/inelig.shtml)" list ([http://www.labour.gc.ca/eng/standards\\_equity/eq/emp/fcp/list/inelig.shtml](http://www.labour.gc.ca/eng/standards_equity/eq/emp/fcp/list/inelig.shtml)) available from Human Resources and Skills Development Canada (HRSDC) - Labour's website

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](http://www.labour.gc.ca/eng/standards_equity/eq/emp/fcp/list/inelig.shtml)" list at the time of contract award.

Canada will also have the right to terminate the Contract for default if a Contractor, or any member of the Contractor if the Contractor is a Joint Venture, appears on the "[FCP Limited Eligibility to Bid](http://www.labour.gc.ca/eng/standards_equity/eq/emp/fcp/list/inelig.shtml)" list during the period of the Contract.

[The Bidder must provide the Contracting Authority with a completed annex j Federal Contractors Program for Employment Equity - Certification](#), before contract award. If the Bidder is a Joint Venture, the Bidder must provide the Contracting Authority with a completed annex j Federal Contractors Program for Employment Equity - Certification, for each member of the Joint Venture.

### FEDERAL CONTRACTORS PROGRAM FOR EMPLOYMENT EQUITY - CERTIFICATION

I, the Bidder, by submitting the present information to the Contracting Authority, certify that the information provided is true as of the date indicated below. The certifications provided to Canada are subject to verification at all times. I understand that Canada will declare a bid non-responsive, or will declare a contractor in default, if a certification is found to be untrue, whether during the bid evaluation period or during the contract period. Canada will have the right to ask for additional information to verify the Bidder's certifications. Failure to comply with such request by Canada will also render the bid non-responsive or will constitute a default under the Contract.

[For further information on the Federal Contractors Program for Employment Equity visit HRSDC-Labour's website.](#)

Date: \_\_\_\_\_ (YYYY/MM/DD) (If left blank, the date will be deemed to be the bid solicitation closing date.)

Complete both A and B.

A. Check only one of the following:

- A1. The Bidder certifies having no work force in Canada.
- A2. The Bidder certifies being a public sector employer.
- A3. [The Bidder certifies being a federally regulated employer being subject to the \*Employment Equity Act\*.](#)
- A4. The Bidder certifies having a combined work force in Canada of less than 100 employees (combined work force includes: permanent full-time, permanent part-time and temporary employees [temporary employees only includes those who have worked 12 weeks or more during a calendar year and who are not full-time students]).
- A5. The Bidder has a combined workforce in Canada of 100 or more employees; and

A5.1. [The Bidder certifies already having a valid and current Agreement to Implement Employment Equity \(AIEE\) in place with HRSDC-Labour.](#)

OR

- A5.2. [The Bidder certifies having submitted the Agreement to Implement Employment Equity \(LAB1168\) to HRSDC-Labour.](#)  
As this is a condition to contract award, proceed to completing the form Agreement to Implement Employment Equity (LAB1168), duly signing it, and transmit it to HRSDC-Labour.

B. Check only one of the following:

- B1. The Bidder is not a Joint Venture.

OR

- B2. The Bidder is a Joint venture and each member of the Joint Venture must provide the Contracting Authority with a completed annex Federal Contractors Program for Employment Equity - Certification. (Refer to the Joint Venture section of the Standard Instructions)

**ANNEX K  
INFORMATION REQUIRED FOR CODE OF CONDUCT CERTIFICATION**

Please provide list of names of the following entities, according to the ownership nature of the company

1. For a Corporation - each current member of the Bidder's Board of Directors;

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2. For a Partnership, General Partnership or Limited Partnership - the names of all current partners;

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3. For a Sole Proprietorship or an individual doing business under a firm name - the name of the sole proprietor or individual;

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4. For a Joint Venture - the names of all current members of the Joint venture;

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5. For an individual - the full name of the person

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## CANADIAN COAST GUARD



### REFIT SPECIFICATION CCGS ALFRED NEEDLER

**SPECIFICATION NO. 15-A018-013-1**

**JANUARY 5 – FEBRUARY 22, 2016**



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## GENERAL NOTES

The **CCGS Alfred Needler** is an Offshore Fisheries Science vessel operated by the Canadian Coast Guard.

### **VESSEL PARTICULARS:**

Year Built	1982
Yard	Ferguson Industries Limited, Pictou, N.S.
Length, Overall	165.00'
Length, Between Perpendiculars	144.67'
Breadth, Moulded	36'
Depth, Moulded	14.75'
Rake of Keel	3.90'
Mean Draft, Extreme	13.20'
Displacement, Extreme	1123 L. Tons
Gross Tonnage	925.03

1. **ON-SITE PROJECT OFFICER:**

All the specified work, as well as all work arising, shall be completed to the satisfaction of the On-site Project Officer who, unless otherwise advised, will be the vessel's **Chief Engineer**, or his/her designated representative. Upon completion of each item of the specification, the Chief Engineer shall be notified so that he/she may inspect the work prior to the complete closing up of any work. Failure to give notification does not absolve Contractor of the responsibility of providing Chief Engineer the opportunity to inspect any item. Inspection of any item by the Chief Engineer does not substitute for any required inspection by Transport Canada Marine Safety Branch (TCMSB), Public Works and Government Services Canada (PWGSC) or Health Canada (HC).

2. **SAFETY:**

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

3. **SUB-CONTRACTORS:**

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

4. **SCHEDULE:**

At the Pre-Refit Meeting, the successful Contractor shall provide a Production Gantt Chart or Schedule showing commencement and completion dates for each item in this specification. This document shall highlight any critical dates and be capable of showing the effects of late completion date of the work package. Contractor shall provide updated Production Schedules to the Chief Engineer, Vessel Maintenance Manager and PWGSC Inspector immediately at any point the schedule is revised.

## GENERAL NOTES

### 5. **SAFE WORK CERTIFICATES:**

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

### 6. **WELDING:**

All hotwork and welding procedures shall be done in accordance with Canadian Coast Guard Welding Specification:

- Document # **CT-043-EQ-EG-001-E** (English), or **CT-043-EQ-EG-001-F** (French)

Contractor must ensure that welding is performed by a welder certified by the Canadian Welding Bureau (CWB) in accordance with the requirements of the following Canadian Standards Association (CSA) standards:

- CSA W47.1, Certification for Companies for Fusion Welding of Steel Structures (Minimum division level 2.0); and**
- CSA W47.2-M1987 (R2003), Certification for Companies for Fusion Welding of Aluminum (Minimum division level 2.1).**

### 7. **HOTWORK & FIRE WATCHES:**

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

### 8. **SERVICE CONDITIONS:**

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

In areas that are exposed to the elements:

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

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

## GENERAL NOTES

9. **SECURITY WATCHES:**

During the contract period, 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 patrollers 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.

10. **TURNOVER:**

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

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

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

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 Chief Engineer.

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

11. **ENCLOSURES AND HEATING:**

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

12. **RELOCATIONS:**

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

## GENERAL NOTES

### 13. HOTWORK VENTILATION AND CONTAINMENT:

During all known work and work arising that involve hotwork Contractor shall ensure that all dust, debris, gas and smoke generated by the work is evacuated from the vessel by the most direct method possible.

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

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

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

### 14. LIGHTING:

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

### 15. CLEANUP:

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

### 16. INSPECTION:

Contractor shall be responsible for calling in the services of TCMSB, PWGSC and HC Inspectors when and as required for survey and inspection items. All TCMSB surveyors called in by Contractor are to sign-off the Chief Engineer’s Inspection Log Book for all items surveyed.

## GENERAL NOTES

17. **CORRESPONDANCE & REPORTS:**

Unless otherwise agreed upon, all correspondence with CCG vessel maintenance personnel shall be in English. All reports shall be typewritten, and provided in **English**. Duplicate copies may be submitted in French. All reports shall be completed in a timely manner and provided to the Chief Engineer immediately following their completion, and shall continue as required throughout each component's respective specification of work. Upon delivery of the vessel, a compilation of all reports and correspondence shall be provided on a CD or DVD to Vessel Maintenance Manager.

18. **PAINTING:**

Unless specified otherwise, replacement and/or disturbed steelwork shall be given a minimum of two (2) coats of Intershield 300 Aluminum Pure Epoxy, each coat to be of contrasting colour. **Lead-based paints shall not be used under any circumstance.** Prior to painting, all new and disturbed steelwork shall be power tool cleaned to SSPC.SP3 standard as a minimum standard of surface preparation. Contractor shall arrange for the PWGSC Inspector shall be notified after the first coat of paint is fully cured so that it may be inspected prior to the application of the second coat. Failure to do so shall result in another coat being applied at the Contractor's expense.

19. **MATERIALS & TOOLS:**

All materials, unless otherwise specified, shall be supplied by the Contractor. Contractor is to supply all necessary tools and equipment to perform the specified work. Special, ship-specific tools, as required, will be issued by and returned to Chief Engineer. Contractor shall be responsible for removing the tools from their stored location aboard the vessel, and returning them and securing them in place when finished. Otherwise, ship's tools and equipment will not be available for Contractor's use.

20. **MEASUREMENTS:**

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

21. **CO-OPERATION:**

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

22. **SMOKING:**

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

## GENERAL NOTES

23. **ACCESS:**

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

24. **INSPECTION & GUIDANCE:**

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

25. **ASBESTOS:**

There may be locations having asbestos containing materials (ACM). The latest Asbestos Assessment Report is available upon request.

## SERVICES

1. **GENERAL:**

All services as described in this section shall be supplied, fitted and/or connected upon formal handover to Contractor, maintained throughout the period that the ship is under Contractor's control, and removed upon return to CCG Custody.

Contractor shall supply all material to point of onboard connection and all cranes/scaffolding required for connection/disconnection. Contractor shall be responsible for any additional disconnections and re-connections required if and when the ship is moved between dock, slipway and any berth at Contractor's premises.

2. **CARE AND CUSTODY:**

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

3. **PRICES:**

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

4. **BERTHAGE:**

During refit, while not in dry- dock, the vessel shall be berthed at the Contractor's wharf at a safe and secure berth with adequate water at extreme low tide to ensure that the vessel will not touch bottom. The Contractor shall include in quote all costs for initial tying up, any movement of the vessel during refit and slipping of lines from Contractor's wharf on departure of vessel from yard upon completion of the refit.

5. **GANGWAYS:**

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

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

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

6. **ELECTRICAL POWER:**

Contractor shall connect and quote on supplying electrical power on one (1) service at 460 VAC, 3 PH, 60 Hz at 200 Amp rating upon ship's arrival at Contractor's facilities. The ship's shore power shall not be used. The cost of all required connections and disconnections shall be included in the quote.

## SERVICES

The cost of all required connections and disconnections shall be included in the quote. Contractor shall bid on the supply of 3000 kWh per day for refit period, plus a unit kWh rate for adjustment purposes. Final costs shall be pro-rated up or down by PWGSC 1379 based on actual consumption as indicated by vessel's kWh meter. The power meter shall be read and recorded by the Chief Engineer and Contractor's Representative together at the start and end of the contract period.

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

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

7. **STAGING & CRANAGE:**

Contractor shall provide all necessary staging, shoring, and rigging that will be required to carry out all specified work as well as the transportation of all materials that are required. All staging and rigging shall be removed from the vessel on completion of work. Bidders shall allow 5 lifts in the bid for crantage, for loading and unloading ships stores.

In addition, Contractor shall quote an hourly rate for crantage, and a per lift rate. This rate shall include the crane, operator and all other required personnel. Final cost shall be increased or decreased to suit actual usage at refit completion via PWGSC 1379 action.

8. **POTABLE & SANITARY WATER:**

Potable fresh and sanitary water at 415 kPa (60 PSI) constant pressure shall be connected to the ship's system. Connection is to be complete with pressure regulator and shut-off valves, and attached at the ship's fresh water filling connection located on the fwd. starboard side corner of the Trawl deck. Approximately 350 cubic meters shall be supplied for duration of the contract by the contractor. This volume of water shall NOT be used for the flushing and filling of the freshwater tanks by the contractor as per the fresh water tank specifications.

Contractor shall also supply and connected a water meter to the ship's inlet line.

Contractor shall quote a unit rate for PWGSC 1379 adjustments, and include all connection / disconnection costs in bid price.

Contractor shall make arrangements to prevent the potable water supply piping/hoses are protected against freezing.

Contractor shall provide to Chief Engineer at the Pre-Refit Meeting a certificate of potable water quality before water service is connected to the vessel with a current date of testing and its' source.

9. **WASTE MANAGEMENT:**

A garbage dumpster/container shall be provided on the Well Deck for ship's garbage only. Refuse shall be removed daily from the ship; quotation shall indicate a per-diem charge for garbage removal only.

## SERVICES

Provisions shall be made for any recycling mandated by local authorities; any receptacles specifically required to meet these requirements shall be provided by the Contractor at no cost; the Contractor shall quote removal costs only. The Contractor shall also quote on removal costs (per unit volume/quantity) for:

- Newsprint/bond paper
- Corrugated cardboard
- Beverage containers

10. **FIRE MAIN:**

During the dry-docking period only, Contractor shall provide shore water connections to ship's 2½" diameter fire main, at a minimum pressure of 415 kPa (60 PSI). Two independent & separate connections shall be supplied at extremities of the vessel, as directed by the Owner's representative.

A pressure-reducing valve with pressure gauge shall be fitted before the connection valve at the Contractor's hydrant. The Contractor shall ensure that there is no interruption of service to the ship's fire main at any time.

11. **PROTECTION:**

Contractor shall supply and fit 1/8" inch (3 mm) thick Masonite to protect the ship's interior decks for the duration of the refit. Placement of Masonite shall be as directed by the Owner's representative. At a minimum, the areas that shall be protected will include all interior passageways and stairs, the Control Lab, the Bridge, and the Chief Engineer's Cabin. It shall also include decking and stair treads in the corresponding sections of the stair tower, and the lower 125cm of all bulkheads.

Contractor shall bid on supplying and installing 1000m<sup>2</sup> and provide unit cost for the supply and installation per m<sup>2</sup>. All seams and edges shall be duct taped in place to prevent movement of the sheets and the ingress of dirt. Upon completion of all work, the Contractor shall remove all Masonite and clean the areas that were covered by the Masonite.

Bulkheads and deckheads in the accommodation areas shall be protected where temporary services are run or where there is a possibility of damage as a result of the performance of contracted work.

12. **TELEPHONE SERVICE:**

Two independent and private telephone lines shall be supplied and connected to the ship's integrated communications system. The cost of connection, unlimited local service and removal shall be included in bid price. All telephones shall be active 24 hours a day for the duration of the contract, and shall have long distance dialing capabilities. The cost of long-distance calls shall be dealt with using PWGSC 1379 action. Contractor shall be responsible for giving notice for connection/disconnection times to the Telephone Company as required for any ship movements during the dry-docking period.

Contractor shall supply a listing of shipyard contacts, fire, police and emergency telephone numbers to Chief Engineer when vessel arrives at Contractor's facilities. Contractor shall ensure

## SERVICES

the Chief Engineer is notified of any “on call personnel” and their contacts during non-working hours and days.

13. **FLUIDS REMOVAL**

Contractor shall bid on the removal and disposal, in accordance with provincial requirements, of 10,000 oily water mixtures from the ship’s waste oil tanks and bilges. Also quote unit cost per each additional removal and disposal of 2,500 litres.

Contractor is responsible for the disposal of all grey and black water according to provincial regulations.

14. **COOLING WATER:**

Contractor shall provide a 30 psi SW or FW cooling for the duration of the refit for the auxiliary machinery cooling. Contractor may use the temporary fire main supply as a feed for the sea water or fresh water. Approximately 75 cubic metres of water per day shall be supplied via the cooling water supply connection.

15. **OVERBOARD DISCHARGE:**

Connections shall be made to the black and grey water overboard discharge hull penetrations, and directed to suitable drains.

Contractor shall include the cost of disposal for 5 cubic meters per day and provide a unit cost per cubic meter for adjustment purposes.

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

16. **CLEANING:**

Contractor shall ensure that all spaces, compartments and areas of the ship where work has been carried out, or Shipyard staff has used for transit routes, are “as clean as found” when work is completed. The cost of clean-up work shall be included in the quote for each specification item.

17. **PARKING:**

Sufficient parking for DFO/CCG and PWGSC representatives shall be provided conveniently close to the berthed or docked vessel. Contractor shall provide three (3) clearly designated “for DFO/CCG and PWGSC use only” parking spaces for the duration of the docking period.

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Jan. 5th – Feb. 22nd, 2016 Dry-Docking Refit  
**3 – Production Chart & Subcontractors Allowances**

**1: SCOPE:**

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

**2: TECHNICAL DESCRIPTION:**

2.1 General

1. Contractor shall supply three copies of a detailed gantt chart showing the planned work schedule for the ship's refit.
2. This bar chart shall show, for each spec. item, the start date, the manpower loading, the duration and the completion date. The chart shall also highlight any critical paths.
3. The production chart shall be updated weekly and for each production meeting to reflect the actual production on the refit and changes to the anticipated completion dates of each individual item.
4. The production chart shall clearly indicate the arrival/departure dates of any Subcontractors/Field Service Representatives.
5. The production chart shall include the status and production on each 1379 arising.
6. Three copies of the production chart shall be given to the Chief Engineer the day prior to each Production Meeting. A copy shall be emailed to the Vessel Maintenance Manager (VMM), Todd Smith ([todd.smith@dfm-mpo.gc.ca](mailto:todd.smith@dfm-mpo.gc.ca)) the day prior as well.
7. A copy of the original bar chart shall be provided via email to the PWGSC contracting Officer and VMM before the close of business on the day of the ships arrival at the Contractors premises.
8. The results shall be tabulated in an excel spreadsheet clearly indicating the Subcontractor, date(s), hours worked and hourly rate for the hours worked.
9. The update is to be emailed to, PWGSC Contracting Officer and VMM the day prior to the weekly scheduled Progress Meeting.

2.2 Location

N/A

2.3 Interferences

N/A

**3: REFERENCES:**

3.1 Guidance Drawings/Nameplate Data

N/A

CCGS Alfred Needler  
Jan. 5th – Feb. 22nd, 2016 Dry-Docking Refit  
**3 – Production Chart & Subcontractors Allowances**

3.2 Standards and Regulations

N/A

3.4 Owner Furnished Equipment

N/A

**4: PROOF OF PERFORMANCE:**

4.1 Inspection

N/A

4.2 Testing

N/A

4.3 Certification

N/A

**5: DELIVERABLES:**

5.1 Reports, Drawings, and Manuals

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

5.2 Spares

N/A

5.3 Training

N/A

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Jan. 5th – Feb. 22nd, 2016 Dry-Docking Refit  
**HD-01 – Docking & Undocking**

**1: SCOPE:**

The intent of this specification item is to dock the ship in a safe and timely manner while providing access to all work areas required by other specifications of this refit.

**2: TECHNICAL DESCRIPTION:**

2.1 General

1. Contractor shall refer to the vessel's Docking Plan included in the bid package.

VESSEL PARTICULARS:

Length, Overall: 165.00'

Length, Between Perpendiculars: 144.67'

Breadth, Moulded: 36'

Depth, Moulded: 14.75'

Rake of Keel: 3.90'

Mean Draft, Extreme: 13.20'

Displacement, Extreme: 1123 L. Tons

Gross Tonnage: 925.03

2. Dry docking shall be under the direct supervision of a Certified Docking Master. Prior to docking the vessel, Contractor shall present to Canadian Coast Guard their plan to effect a safe docking. This will include, but not be limited to, an explanation of block loading, dock preparation, tide-wind-tug issues, manpower arrangements and communications. Contractor shall provide reasonable notice to CCG prior to undocking the vessel and make similar presentations regarding safe undocking and for the vessel's on dock period. Vessel's crew will be present for scheduled docking and undocking.
3. Vessel shall be docked such that all docking plugs, transducers, anodes and sea inlet grids are clear and accessible. Contractor shall note that CCGS ALFRED NEEDLER has a Bar Keel, as well as Bilge Keels P&S. Contractor shall ensure blocks are installed in such a manner as to avoid damage to these structures.
4. Contractor's Docking Master shall note the position of all equipment noted above, and ensure the keel blocks are arranged in such a manner as to avoid damage or obstruction. If any hull fittings are covered or damaged, Contractor shall be responsible for all labour and materials required for making corrective action.
5. At least one week prior to the vessel's arrival at Contractor's facility, Contractor shall provide CG TA with trim requirements for successful docking.
6. Contractor shall supply the services of divers to confirm that the vessel is setting evenly on the bilge and keel blocks.
7. Contractor shall quote a unit daily service day cost on dock. This cost shall form part of the overall quote. This quote shall include any tug and/or pilotage service cost.

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**HD-01 – Docking & Undocking**

8. Docking shall be undertaken during the first day of refit. If necessary, Contractor shall prepare the dock in advance of the ship's arrival and the official start date of the contract period. If premium time is required for evening shifts or weekend work to meet this objective, Contractor shall identify this and include all costs in their quotation.
9. Ship's personnel will be responsible for line handling aboard the vessel only during the docking and undocking operations. Contractor shall supply personnel on the tug and dock walls and ashore for all line handling.
10. Contractor shall ensure that docking blocks are clear of transducer faces, sea bay access covers, and docking plugs.
11. A minimum clearance of four feet (4') shall be available between the keel and the dock floor.
12. Vessel shall not share a dry dock with any other ship for any part of the contract period in such a way that will interfere with its scheduled re-floating.
13. Contractor shall prepare blocks and necessary shoring to maintain true alignment of vessel's hull and machinery throughout the dry-docking period. Contractor shall dock and undock vessel and allow sufficient time to complete both the work described in this specification as well as a margin of time to cover work arising.
14. Contractor shall be responsible for the safe transfer of the ship between its pre/post-docking berth and its docking blocks. During docking of the ship, radio contact shall be maintained between the vessel's Commanding Officer and Contractor's Docking Officer. Contractors shall include, but show separately, the price of any tug and/or pilot services required.
15. Adequate and safe access to the vessel shall be provided, complete with safety nets and rails, throughout the docking period.
16. Within two (2) hours of docking completion, Contractor shall commence cleaning the ship's entire hull and appendages by high-pressure fresh water jetting to remove all salt deposits and marine growth (Class 1: 10,000 to 25,000 psi maximum for growth removal). This work is required to be completed as soon as possible in preparation for initial hull inspection by CG TA.

**TANK SOUNDINGS**

17. Prior to docking, all tanks will be sounded and the contents recorded.
  - a. Prior to undocking all tanks will be returned to the same levels as at the time of the original docking. When this has been completed, the tanks shall be sounded and recorded.
  - b. In each case, a Ship Condition Report shall be prepared by Contractor and signed-off by Commanding Officer (or his representative), Chief Engineer and Contractor's Docking Master. In each case, two (2) copies of the signed-off Ship Condition Report shall be given to Chief Engineer, and one (1) copy shall be given to the PWGSC Inspector.

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**HD-01 – Docking & Undocking**

- c. During the docking period all fluid movements will be noted and recorded. This record will be kept by Chief Engineer, and signed by Chief Engineer and a representative of the Contractor as events occur. At all times, Contractor shall give Chief Engineer a minimum of four (4) hours' notice of movement of fluids to/from ship's tanks.
18. Contractor shall be responsible to remove or relocate any items of ship's gear that are required to be moved or removed to obtain the necessary displacement, draft or trim to suit his facilities during docking or undocking. Contractor shall be responsible for the safekeeping of all removed and relocated items. All items shall be refitted in their original locations after vessel has been undocked.
19. TRANSDUCER FACES: All transducer faces shall be suitably protected from damage during the entire docking period unless they are being worked on. Prior to re-floating, all transducers shall be washed off with a mild liquid detergent & water solution to rid them of all contaminants and marine growth. After washing they shall be rinsed with clean fresh water to remove all soap residues.
20. Contractor shall note that DFO/CCG technical staff may be required to work on the transducers during the refit. Chief Engineer will coordinate activities to see that Contractor is not inconvenienced by the activities of DFO/CCG personnel.
21. Upon completion of work, vessel shall be undocked and moved to a safe berth.
22. Vessel will require tugs for this movement. Contractor shall include all costs for this safe transfer in his bid.

2.2 Location

N/A

2.3 Interferences

N/A

**3: REFERENCES:**

3.1 Guidance Drawings/Nameplate Data

1. Drawing # 24-01 – Docking Plan
2. Drawing # 181/01 – Location of Sacrificial Anodes

3.2 Standards and Regulations

N/A

3.3 Owner Furnished Equipment

N/A

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Jan. 5th – Feb. 22nd, 2016 Dry-Docking Refit  
**HD-01 – Docking & Undocking**

**4: PROOF OF PERFORMANCE:**

4.1 Inspection

N/A

4.2 Testing

N/A

4.3 Certification

N/A

**5: DELIVERABLES:**

5.1 Reports, Drawings, and Manuals

Docking plan placement of blocks

5.2 Spares

N/A

5.3 Training

N/A

CCGS Alfred Needler  
Jan. 5th – Feb. 22nd, 2016 Dry-Docking Refit  
**HD-02 – Butts & Seams**

**1: SCOPE:**

In conjunction with spec item for Dry-docking and for Underwater Hull Cleaning and Painting, entire hull will be given an inspection by Coast Guard Technical Authority (CG TA) and attending Transport Canada Marine Safety Bureau (TCMSB) Inspector.

**2: TECHNICAL DESCRIPTION:**

2.1 General

1. Contractor shall be responsible for all inspections and shall consult with TCMSB, prior to commencement of work, to determine an inspection schedule. At each inspection point, Contractor shall advise CGTA, in advance, to allow his/her attendance.
2. Any required staging shall be covered under section HD-03. Areas requiring detailed examination shall be determined at the time of initial inspection by TCMS. In lieu of staging, Contractor may provide the use of a certified man-lift (with operator) for the duration of inspection and repairs, as required.
3. Seams and butts selected for repair shall be marked, cleaned to sound metal by air arc gouging or grinding, and brought up to original level by TCMS approved welding techniques and materials. Contractor shall use welding rods suitable for use with GRADE 'A' steel. All work shall be completed to approval of TCMSB and CG TA.
4. Contractor shall quote on preparation and welding 200 linear feet for butt and seam repairs on ship's hull. Each linear foot to be repaired shall be quoted as being adequately gouged out, and receive five passes on Grade "A" steel, using 5/32" rod, for a total of 1,000 linear feet of weld. This quote shall include any staging or man lifts required for the repairs.
5. Contractor shall provide a quotation per linear foot of gouging and welding as defined above, including any staging or man lifts required for the repairs. This combined unit cost shall be used for PWGSC 1379 adjustment upon matching the total amount of repair welds performed for this specification.
6. Any gas-freeing, certification as Gas Free, personnel Safe for Entry, fuel residue removal and Safe for Hot Work required in a tank that will not be otherwise accessed during this refit shall be by PWGSC 1379 action.
7. Contractor shall not apply any underwater hull coatings until TCMS surveyor has completed the required inspection and repairs are completed. Contractor shall notify CG TA and TCMSB Surveyor prior to the application of any coatings.

2.2 Location

1. Underwater Hull

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Jan. 5th – Feb. 22nd, 2016 Dry-Docking Refit  
**HD-02 – Butts & Seams**

2.3 Interferences

1. No known interferences. It is Contractor's responsibility to identify any interference items for the known scope of work during the vessel's bidder's meeting.

**3: REFERENCES:**

3.1 Guidance Drawings/Nameplate Data

1. Drawing # 108-01 - Shell Expansion & Framing

3.2 Standards and Regulations

1. Welding Standards as defined in General Notes

3.3 Owner Furnished Equipment

N/A

**4: PROOF OF PERFORMANCE:**

4.1 Inspection

1. All work shall be carried out to the satisfaction of CG TA and attending TCMSB Inspector.

4.2 Testing

1. Contractor shall include the cost of 10 non-destructive tests on the new welds; these tests shall be as directed by attending TCMSB Inspector. Contractor shall provide a unit cost for each additional x-ray and the cost shall include travel expenses for NDT testing company.

4.3 Certification

1. Contractor shall contact TCMSB and arrange for all required inspections in order to grant a credit for Division 3 survey item 3LL040.

**5: DELIVERABLES:**

5.1 Reports, Drawings, and Manuals

1. A computer generated report shall be provided in digital format to CG TA. This report shall include a listing of all welds performed, number of passes and locations, and results of all tests performed.

5.2 Spares

N/A

5.3 Training

N/A

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Jan. 5th – Feb. 22nd, 2016 Dry-Docking Refit  
**HD-03 – Underwater Hull Painting**

**1: SCOPE:**

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

**2: TECHNICAL DESCRIPTION:**

2.1 General

1. As noted in Section 2.1, paragraph 16 of Specification Item HD-01 Docking & Undocking, Contractor shall clean the ship's entire hull and appendages by high-pressure fresh water jetting to remove all salt deposits and marine growth (Class 1: 10,000 to 25,000 psi maximum for growth removal). **NOTE:** This item is not to be quoted twice.
2. Hull painting shall extend from the underside of the keel to a level line that is 15'-4" above it at mid-ships. Including the centerline skeg, propeller nozzle and rudder, the hull area to this level is calculated to be 8100 square feet (ft<sup>2</sup>).
3. After completion of cleaning, the underwater hull area is to be inspected for loose paint and bare areas, and Contractor is to arrange for TCMSB to survey the hull.
4. Contractor shall include an allowance of \$10,000 to cover expenses of an International Paint Representative (FSR). The FSR shall be reimbursed by the Contractor from this allowance for their services, authorized travel, and living expenses reasonably and properly incurred in the performance of this work. This allowance shall form part of the overall bid and shall be adjusted by PWGSC 1379 action upon proof of final invoice.
5. All hull-mounted equipment such as anodes, echo sounders, speed log, transducers, etc. shall be suitably protected against damage during cleaning of the hull and application of the coatings. The Contractor shall be responsible for repair/replacement of any such damaged items.
6. The Contractor shall take measures to ensure that no damage, unnecessary cleaning or repairs, accrue from the sand or grit blasting and/or the application of coatings. Grit used for blast cleaning shall not be permitted to enter into any part of the vessel or its equipment. Contractor shall ensure that each and every opening into the vessel where sand or grit may gain ingress and cause damage shall be suitably protected. Any cleaning required due to failure to comply will be at Contractors expense.
7. Measures shall also be taken to ensure that application of coatings does not take place to surfaces or equipment other than those areas specified, and that any inlets or discharges in the shell shall not be blocked by the coating. All deck machinery shall be protected against grit, dust and coatings.
8. The Contractor shall plug deck scuppers and discharges or take any measures necessary to prevent water or other liquids from contaminating the areas of plating being coated or prepared for coating.

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Jan. 5th – Feb. 22nd, 2016 Dry-Docking Refit  
**HD-03 – Underwater Hull Painting**

9. All hull areas containing loose paint and/or bared steel shall be abrasive blasted to bare steel (SSPC-SP10). Edges of intact paint shall be feathered back to a minimum of 150 mm, and blown clean with compressed air. The surface profile shall have a minimum roughness of 3 mils (75 microns).
10. All shell areas containing intact coatings are to have the present antifouling system removed and the underlying epoxy shall be profiled by sweep blasting for subsequent application of new coatings. All prepared surfaces are to be blown clean with compressed air.
11. Contractors shall bid on abrasive blasting to bare steel and re-coating 50% of the underwater hull up to the 15.33 ft. waterline (4,050 ft<sup>2</sup>). For adjustment purposes, Contractors shall provide a unit rate for blasting to bare steel and painting underwater hull surfaces.
12. The remainder of the underwater hull (4,050 ft<sup>2</sup>) shall be prepared as described in paragraph 13. For adjustment purposes, Contractor shall provide a unit rate for sweep blasting and painting intact coating areas of the underwater hull.
13. All underwater hull surfaces are to be degreased by solvent cleaning to SSPC-SP1 standard prior to application of coatings.
14. Upon completion of the specified surface preparations, the affected areas are to be surveyed by the International Paints FSR and the Chief Engineer. The surface areas of bared steel and intact coatings are to be agreed upon, recorded by the Contractor and signed-off by all parties with copies of the document for each.
15. The Contractor is to "cut-in" a straight line of paint at the top of the underwater hull coatings and is to prevent overspray of these coatings onto the above water hull area.
16. Application of underwater hull coatings are to be as follows:
  - First coat:** Contractor to quote on applying one (1) coat of "INTERSHIELD ENA 300V", abrasion resistant epoxy, aluminum, at 125 microns D.F.T. to bared steel areas.
  - Second coat:** Contractor to quote on applying one (1) coat of "INTERSHIELD ENA 300V" abrasion resistant epoxy, bronze, at 125 microns D.F.T. to bared steel areas.
  - Third coat:** Contractor to quote on applying one (1) coat of "INTERGARD 263" epoxy tie coat, light gray, at 100 microns D.F.T. to the entire underwater hull area as described in this Specification Item.
  - Fourth coat:** Contractor to quote on applying one (1) coat of "INTERSPEED BRA 640" TIN-FREE ANTIFOULING, RED, at 125 microns D.F.T. to the entire underwater hull area as described in this Specification Item.
17. New coatings are to be applied in full compliance with manufacturer's requirements to provide a finished coat of no less than 475 microns D.F.T. overall. Any shelters and heating required to meet the coating manufacturer's specifications are to be supplied by the Contractor and included in the bid price.

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Jan. 5th – Feb. 22nd, 2016 Dry-Docking Refit  
**HD-03 – Underwater Hull Painting**

18. All draught marks, load line marks, and other underwater hull markings (e.g.: Transverse Bulkhead Frame Numbers) are to be given a coat of white paint, INTERFINE 979 or equal.
19. Contractor shall remove from the vessel all traces of sand and/or grit used for blast cleaning. Contractor shall be responsible and liable for ensuring that the hull is clear and clean, prior to, during and immediately after the application of coatings.
20. After completion of all specified hull preparation and coating, as well as all other work specified in way of sea intakes, intake grid securing screw holes are to be tapped out and grids are to be reinstalled. Securing screws are to be tack welded in place as per original arrangement. Contractor to quote separately cost of replacing, with new, sixty (60) grid securing screws, if required. Screws are "UNC X 3 1/2" stainless steel slotted, flat head machine screws.
21. New coatings shall be applied with atmospheric and steel conditions acceptable to paint manufacturer and Chief Engineer. Application conditions shall be recorded by Contractor and/or paint manufacturer's representative for inclusion in Report to be submitted to Chief Engineer

## 2.2 Location

1. Underwater Hull

## 2.3 Interferences

1. No known interferences. It is Contractor's responsibility to identify any interference items for the known scope of work during the vessel's bidder's meeting.

## **3: REFERENCES:**

### 3.1 Guidance Drawings/Nameplate Data

1. Drawing # 108-01 - Shell Expansion & Framing
2. Recommended FSR: Nicole Hart, Technical Sales  
AkzoNobel Coatings, Ltd.  
(902) 468-1401  
nicole.hart@akzonobel.com

### 3.2 Standards and Regulations

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

### 3.3 Owner Furnished Equipment

1. All staging, crantage, screens, lighting and any other support services, equipment, paint and materials necessary to carry out these specifications shall be Contractor-supplied. If, due to steel and air temperature, enclosures and forced air heaters are required, the Contractor shall allow \$15,000 to supply and install/remove, which will be adjusted up or down by 1379 action.

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2. Unless otherwise specified, all labour, materials, and equipment required to complete all tasks required in this specification shall be Contractor supplied.

#### **4: PROOF OF PERFORMANCE:**

##### 4.1 Inspection

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

##### 4.2 Testing

1. Contractor and/or paint manufacturer's representative shall take sixty (60) wet film thickness measurements; thirty (30) per side, in areas where hull has been cleaned to bare steel. The measurements shall be witnessed by the PWGSC Inspector and recorded with locations referenced to the attached shell expansion drawing. Unwitnessed measurements shall not be accepted.
2. Using a calibrated DFT gauge, fifteen (15) measurements per 100 square ft. shall be taken and recorded, at an agreed upon consistency with the Chief Engineer.

##### 4.3 Certification

1. Contractor shall provide certification for all hull coatings applied.

#### **5: DELIVERABLES:**

##### 5.1 Reports, Drawings, and Manuals

1. Contractor shall maintain a Quality Assurance reporting program, which shall at minimum include the following points:
  - a. The areas on the ice belt and above waterline hull that were repaired.
  - b. Which areas were blasted and indicate the blast media type and air pressure
  - c. Which areas were coated, with what product, and the volume of coating used.
  - d. Provide a list of batch numbers with corresponding dates of manufacture.
  - e. Record the quantity and type of any solvent added.
  - f. Measure and record all ambient conditions (Temperature, Humidity, Barometric pressure).
  - g. Hull temperature
  - h. Record all details of spray tips and pressures.
  - i. All WFT and DFT readings taken as prescribed in section 4.2 of this specification.
2. All recorded information shall be typewritten in English and three (3) copies shall be given to the Chief Engineer.

##### 5.2 Spares

N/A

##### 5.3 Training

N/A

## HD-04 – Hull Anodes

### 1: SCOPE:

The intent of this specification item is to renew ship's underwater hull sacrificial anodes.

### 2: TECHNICAL DESCRIPTION:

#### 2.1 General

1. Contractor shall renew and install sixty-three (63) sacrificial hull anodes with 22 lb. pure zinc anodes (Z-22). Contractor shall quote a unit price to renew one (1) anode for 1379 PWGSC adjustment purposes.
2. Contractor is responsible for supplying any staging or crange required to gain access to all anodes.
3. Any anodes deemed by CG TA not needing renewal, shall be temporarily protected from new hull coating applications. These anodes shall be recorded by Contractor and update reference drawing 181/01 Position of Sacrificial Anodes.
4. Replacement anodes shall be placed in the same location as removed anodes using the same securing arrangements.
5. Two anodes located on hull Port side, underneath CTD winch boom shall be removed and secured to hull in an area where they will not interfere with future deployment/recovery of CTD rosette.
6. Areas of weld, where old anodes were, shall be ground smooth prior to installation of replacement anodes and application of hull coatings.
7. All welds used for new securing straps shall be dressed smooth of all slag and spatter prior to surface preparation and touch-up coatings.
8. New anode securing straps shall be primed and painted with the same coatings as Underwater Hull (Refer to specification item HD-03, "UNDERWATER HULL").
9. All sacrificial anodes and securing straps shall be effectively protected while the underwater hull is being blasted and painted. Protective materials shall be removed upon completion of painting.
10. All work shall be completed to satisfaction of CG TA.

#### 2.2 Location

Underwater Hull

#### 2.3 Interferences

N/A

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**3: REFERENCES:**

3.1 Guidance Drawings/Nameplate Data

1. Drawing 181/01 Position of Sacrificial Anodes

3.2 Standards and Regulations

1. Welding Standards as defined in General Notes section of Specification.

3.4 Owner Furnished Equipment

N/A

**4: PROOF OF PERFORMANCE:**

4.1 Inspection

1. Visual inspection by CG TA

4.2 Testing

N/A

4.3 Certification

N/A

**5: DELIVERABLES:**

4.1 Reports, Drawings, and Manuals

1. Updated reference drawing on how many anodes were changed and their location

5.2 Spares

N/A

5.3 Training

N/A

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**HD-05 – Ballast Tanks**

## **1: SCOPE:**

The intent of this specification item shall be to open up the following tanks for cleaning, inspection, testing and to cover the continuous survey for Transport Canada Marine Safety Bureau (TCMSB). These tanks are considered as confined spaces under the Coast Guard's Safety Management System.

## **2: TECHNICAL DESCRIPTION:**

### 2.1 General

1. Contractor shall provide a method to have all tanks identified gas freed, and certified Safe for Entry for personnel to enter and Safe for Hot Work. Certificates shall be forwarded to CGTA and a copy shall be posted in a conspicuous location near the entrance to each tank.
2. Tanks will be pumped down as low as possible by ship's staff. Approximately eight (8) tonnes total residue will remain in the tanks, which shall be removed and disposed by Contractor. All docking plugs and locking bars for the above tanks shall be removed by Contractor to permit the draining of ballast tanks listed below. All plugs shall be given to Chief Engineer until required for reinstallation. Tanks without docking plugs shall be pumped down by Contractor. Contractor shall supply all pumps, hoses, hardware, and personnel to carry out these operations.
3. Manhole covers shall be removed. Contractor shall provide each tank with a mechanical ventilation/extraction system, vented to outside of the ship. Good ventilation must be provided and any blowers/extractors must ensure good air movement and solvent vapour removal from the lowest point in the tanks. Vapours as well as airborne dust and debris shall not be allowed to enter the vessel.
4. Tanks shall be thoroughly water jet cleaned; all scale, dirt and debris shall be removed ashore and disposed of by Contractor. Cleaning shall be carried out using freshwater hydro blasting at 5,000 psi minimum. Tank internals shall be inspected by CGTA and TCMSB Inspector.
5. After each tank has been hydro blasted, Contractor and CGTA shall enter each tank and agree upon an area to be prepared and painted. The agreed upon area shall be adjusted up or down by PWGSC 1379 action.
6. All rusty and bare areas shall be power tool cleaned to SSPC-SP3 standard, and sufficiently feathered to existing coatings. These areas shall be coated with two coats of Intershield 300 (Bronze) at 11 mil DFT and a final coating of Intershield 300 (Aluminum) of 5 mil DFT.
7. Contractor shall provide a unit cost for preparing and painting one square meter of tank in accordance with paragraph 2.1.6. This per unit cost shall include all equipment, materials, and personnel to complete this task. The evaluated bid shall include 100M<sup>2</sup> per tank based on this unit cost.
8. Contractor shall quote on supply and installation, complete with brackets, M24 sacrificial zinc anodes. Total shall be 10 anodes per each tank in the list below for a total of 30 anodes. Anodes

## HD-05 – Ballast Tanks

shall be affixed in locations as per CG TA's instructions. Contractor shall provide a quote for supply and installation of one anode for PWGSC 1379 Adjustment purposes.

9. Contractor shall ensure all debris is removed from each tank. Sounding pipes, suction pipes, and vents shall be proven clear; blockage removals shall be considered unscheduled work.
10. CGTA (or designate) shall be present when the manhole covers are reinstalled. Contractor shall clean the sealing surfaces around the manhole and cover and install the cover using new ¼ inch thick neoprene gaskets. Anti-seizing compound shall be used on all threads. Contractor shall quote separately the unit cost per stud to replace any broken manhole securing studs.
11. Docking plugs and locking bars shall be installed upon completion of draining. Each docking plug shall be installed using new packing. All locking bars shall be welded in place and adjacent areas shall be wire brushed, primed, and painted as per the hull coating.

### 2.2 Location

FIELD #	TANK	LOCATION	CPTY(M3)	AREA(M2)
3L004	#12 Ballast Tk	Frs 49-58 Center	24.51	150
3L012	#14 Ballast Wing Tk	Frs 17-27 Port	32.68	200
3L013	#13 Ballast Wing Tk	Frs 17-27 Stbd	32.68	200

### 2.3 Interferences

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

## 3: REFERENCES:

### 3.1 Guidance Drawings/Nameplate Data

1. Drawing # 120/004 – Tank Plan
2. Drawing # 532/02 – List of Manholes
3. Drawing # 703/04 – Manhole Cover

### 3.2 Standards and Regulations

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

### 3.4 Owner Furnished Equipment

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

## HD-05 – Ballast Tanks

### 4: PROOF OF PERFORMANCE:

#### 4.1 Inspection

1. Contractor shall be responsible for all inspections and shall consult with TCMS, prior to commencement of work, to determine an inspection schedule; at each inspection point, the Contractor shall advise CG TA, in advance, to allow his/her attendance.
2. Upon completion of all repairs and testing, Contractor and CGTA (or designate) shall conduct a final inspection and ensure all tanks, covers, vents and piping connections have been returned to operating conditions and attending TCMSB Inspector has completed all inspections.

#### 4.2 Testing

1. The attending TCMSB Inspector shall determine the test method. All tests shall be witnessed by attending TCMSB Inspector and CGTA.
2. Each ballast tank shall be pressed up as per TCMSB Inspector requirement for “Test” Credit. Air testing.
3. For bidding purposes, Contractor shall bid on the pneumatic testing of each individual tank at 2.5 psi shall be bid on per tank but a hydro Press testing may be required by TCMS via extension on sounding tube, vent head or by overflowing at air vents. Contractor shall provide a cost for hydrostatic testing if required. This cost will be used for PWGSC 1379 adjustment to replace pneumatic testing if TCMSB Inspector determines hydrostatic testing is preferred.
  - a. The cost for each method shall include the installation of blanks for suctions, overflow pipes, removal and blanking vent heads, and blanking additional tank openings.
  - b. The cost shall also include returning all back to its original condition upon completion of testing.

#### 4.3 Certification

1. Contractor is responsible to ensure TCMSB Inspector signs off all surveyed tanks in the vessel’s Hull and Machinery Survey Record Book and Division 3 report under the field numbers as specified for the above for each tank Inspection and Test Credits.

### 5: DELIVERABLES:

#### 5.1 Reports, Drawings, and Manuals

1. Contractor shall supply the product data sheets and MSDS sheets on all products used in the course of this work (cleaning, preparing and coatings).
2. Contractor shall provide a copy of all paint and environmental measurements taken during this work and given to CG TA.
3. Safety Management System forms and checklists shall be provided to CG TA.

#### 5.2 Spares

N/A

#### 5.3 Training

N/A

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**HD-06 – Rudder Gland Packing**

**1: SCOPE:**

The intent of this specification item is to re-pack the rudder gland with new CFM packing, and inspect rudder stock surface.

**2: TECHNICAL DESCRIPTION:**

2.1 General

1. Prior to any disassembly, the rudder stock shall be centered midships locally in the steering gear compartment. Rudder position shall then be checked for corresponding alignment with the ship's hull by sighting and measuring outside the ship. The Chief Engineer or his representative shall be present on both these occasions and a written statement shall be made up, by the Contractor, of the results, with a copy given to the CG TA.
2. Hydraulic steering cylinders shall be released from tiller head and swung clear or removed. All tiller head position feed-back linkages are to be carefully released and swung clear. Steering cylinders and feedback links are to be supported and/or stored safely clear of further work on carrier bearing. Any damage or misalignment of these components, or any other equipment in steering gear compartment will be repaired by the Contractor.
3. Rudder stock to be suitably rigged to allow tiller head nut to be released and removed.
4. Tiller head to be rigged and moved clear of carrier bearing.
5. Rudder carrier bearing to be released and lifted clear of seat, all components shall be completely degreased and cleaned for inspection. Bearing plate thickness shall be measured at four equally spaced points around its diameter. Carrier bushing I.D. shall be measured in two directions, top and bottom. Tiller head lower surface and carrier bearing upper surfaces to be inspected.
6. Rudder stock packing gland ring and all turns of packing material shall be removed. Packing gland, rudder stock and packing ring shall be cleaned for inspection.
7. Any repairs to the rudder stock or associated components shall be conducted through PWGSC 1379 action.
8. Rudder stock gland shall be repacked with new CFM Chesterton 329 Stern-Ion square packing material. For bidding purposes, eight turns of 5/8" material will be required. Packing gland thread surfaces shall have marine grade anti-seize compound applied prior to reassembly. Contractor is to ensure this is the proper packing prior to ordering.
9. Carrier bearing and tiller head shall be secured. Steering rams and feedback links shall be reconnected. All wearing surfaces shall be adequately lubricated, with CFM supplied grease, at reassembly.

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**HD-06 – Rudder Gland Packing**

10. After the assembly of all components, hydraulic steering gear shall be operated and rudder swung Port to Stbd several times, full travel to be witnessed and operation to be to the satisfaction of CG TA.

#### 2.2 Location

Steering Gear Compartment

#### 2.3 Interferences

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

### **3: REFERENCES:**

#### 3.1 Guidance Drawings/Nameplate Data

1. Drawing: No. 501/01 (Rudder)
2. Drawing : No. 502/02 (Rudder Carrier Bearing),
3. Drawing: No. 502/01 1of2 & 2of2 (Steering Gear Seats, Rudder Stock & Details)

#### 3.2 Standards and Regulations

N/A

#### 3.3 Owner Furnished Equipment

1. Rudder Carrier Bearing nut wrench.
2. All materials and equipment needed shall be Contractor supplied.

### **4: PROOF OF PERFORMANCE:**

#### 4.1 Inspection

1. Rudder Gland shall be inspected for leaks once ship is afloat. Any leaks shall be repaired by the Contractor.
2. Visual inspection of rudder stock for wear/pitting.
3. Visual inspection of gland ring.
4. Rudder Carrier bearing measurements.

#### 4.2 Testing

1. After the assembly of all components, hydraulic steering gear shall be operated and rudder swung Port to Starboard several times, full travel to be witnessed and operation to be to the satisfaction of CG TA.

#### 4.3 Certification

N/A

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**HD-06 – Rudder Gland Packing**

**5: DELIVERABLES:**

5.1 Reports, Drawings, and Manuals

1. Contractor shall supply CG TA with two copies of all measurements taken.

5.2 Spares

1. Contractor shall supply ship with 2 extra rows of packing material.

5.3 Training

N/A

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**HD-07 – Fuel Tanks Survey**

**1: SCOPE:**

Contractor shall open several fuel tanks for cleaning, TCMSB inspection, and testing. These tanks are considered as confined spaces under the Coast Guard's Safety Management System.

**NOTE:** Fuel Tank #1 shall be completed in conjunction with Specification Item H-11 - #1 Fuel Tank Vent Renewal

**2: TECHNICAL DESCRIPTION:**

2.1 General

1. The fuel tanks shall be pumped as low as possible by ship's staff, leaving approximately twelve cubic meters of residue total, which shall be removed and disposed of by Contractor, in accordance with Provincial regulations. Contractor shall quote a rate per cubic meter of disposal, for PWGSC 1379 adjustment purposes.

**NOTE:** No hot work shall be conducted on the ship during fuel transfer operations.

2. Contractor shall open up tanks by removing manhole covers. Inside of manhole covers and mating flanges shall be power-tool-cleaned (SSPC-SP3). Manhole studs shall be examined and defects brought to the attention of CG TA. Contractor shall include the cost to replace 10 studs and shall quote unit cost for PWGSC 1379 adjustment purposes.
3. Tanks shall be mechanically ventilated with equipment approved for explosive atmospheres. Tanks shall be ventilated to atmosphere and **not** to areas inside the vessel under any circumstances. Contractor to supply, operate, and maintain fans.
4. Gas-free certificates shall be distributed as directed in the GENERAL NOTES before entry in the tanks is allowed. Contractor shall maintain the tanks in a gas-free state by maintaining adequate ventilation and re-testing as required by regulations for the duration of the work.
5. All sludge and residue from tanks, as indicated in Section 2, shall be removed ashore for disposal in compliance with provincial regulations. All drain holes in the tanks' structure shall be cleared of any obstruction so as to allow free flow of liquids. Contractor shall ensure that tank outlets, inlets and sounding tubes are free of any dirt, debris, and obstructions.
6. All tanks and affected piping shall be hot water cleaned to ensure biological contaminants are killed (**Minimum Water Temperature Required is 80° C**).

## HD-07 – Fuel Tanks Survey

7. Tanks shall be flushed with fresh water and certified gas-free for entry. Copies of the gas-free certificates shall be given to Chief Engineer and conspicuously posted to each tank entrance.
8. All tanks shall be wiped dry with clean, lint-free rags.
9. Tanks shall be thoroughly cleaned to Hand Tool SSPC-SP2 standard. Any rusty areas shall be power tool cleaned to SSPC.SP3 standard. All scale, dirt and debris shall be removed ashore and disposed of by Contractor.
10. All tanks shall be inspected by CG TA and attending TCMSB Inspector.
11. Following completion of the above work and TCMSB inspections, all tanks shall be closed up and hydrostatically tested with Fresh Water to TCMSB requirements (CG TA may request an Air Test at 2.5 psi). If an Air Test is requested by CG TA, Contractor shall bid separately for an Air Test on each tank for PWGSC 1379 Adjustments.
12. All overflow, fill, drain, sensor openings, sounding and vent lines shall be closed by a plug or blank flange prior to testing, and opened following completion. All blanks or plugs required for hydrostatic testing shall be supplied, installed and later removed by Contractor. Contractor shall notify Chief Engineer a minimum of two (2) hours prior to filling of each tank.
13. After fresh water hydrostatic testing is complete, affected tanks shall be emptied & wiped dry with clean, lint-free rags prior to closing up.
14. All fluids used for cleaning & testing purposes shall be disposed of in accordance with provincial and federal regulations by Contractor.
15. CG TA shall be given the opportunity to inspect the tanks prior to final closing-up.
16. All tank manholes shall be secured using new gaskets and o-rings, consisting entirely of materials compatible with installation in Fuel Oil tanks. All manhole fasteners shall be secured with anti-seize compound applied.
17. All work shall be completed to satisfaction of CG TA.

### 2.2 Location

<u>FIELD #</u>	<u>TANK</u>	<u>LOCATION</u>	<u>CPTY(M3)</u>
3L002	#1 Fuel Tank	Frs 58-65	28.8
3L007	E/R Wing Tank (Sett) Port	Frs 27-37	28.7
3L008	E/R Wing Tank (Sett) Stbd	Frs 27-37	28.7
3L009	Flume Stability Tank	Frs 27-30	52.0
3L021	Day Tank	Frs 48-50	6.0

### 2.3 Interferences

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

## HD-07 – Fuel Tanks Survey

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

### 3: REFERENCES:

#### 3.1 Guidance Drawings/Nameplate Data

1. Drawing# 120/004 Tank Capacity Plan
2. Drawing # 532/02 List of Manholes
3. Drawing # 703/04 Manhole Cover

#### 3.2 Standards and Regulations

1. The following Coast Guard Standards and or Technical Bulletins must be adhered to in the course of executing this specification. Copies of these standards and bulletins can be obtained from the CCG Technical Authority.
  - a. Canadian Coast Fleet Safety Manual (DFO 5737)
  - b. Coast Guard ISM Lock Out/Tag Out Procedures
  - c. Coast Guard ISM Confined Space Entry Procedures

#### 3.4 Owner Furnished Equipment

N/A

### 4: PROOF OF PERFORMANCE:

#### 4.1 Inspection

1. Contractor shall be responsible for coordination of all inspections with TCMSB Inspector, and produce an inspection schedule prior to commencement of work.
2. Contractor shall provide CG TA a minimum of four hours' notice of each inspection, to allow his/her attendance.
3. Upon completion of all repairs and testing, Contractor and CG TA (or designate) shall conduct a final inspection and ensure all tanks, covers, vents and piping connections have been returned to operating conditions and attending TCMSB Inspector has completed all inspections for credit.

#### 4.2 Testing

1. Attending TCMS Surveyor along with CG TA shall determine the test method. All tests shall be witnessed by attending TCMSB Inspector and CG TA.
2. For bidding purposes, Contractor shall bid on hydrostatic testing of each individual tank, and provide a unit price each tank. The quote shall include the installation and removal of blanks for suction, overflow pipes, removal and blanking vent heads, and blanking additional tank openings. Tank drainage (including the disposal of water and the wiping down of the tank internals) shall also be included in this quote.
3. If required, a Bid separately shall be applied for pneumatic testing of 2.5 psi on each tank shall be used for PWGSC 1379 Adjustments (no Fresh Water added or drained and no wiping required).

#### 4.3 Certification

## HD-07 – Fuel Tanks Survey

1. Contractor is responsible to ensure the TCMSB Inspector signs off all surveyed tanks in the vessel's Hull and Machinery Survey Record Book and Division 3 report under the field numbers specified above.

### **5: DELIVERABLES:**

#### 5.1 Reports, Drawings, and Manuals

1. Contractor shall supply the product data sheets and MSDS sheets on all products used in the course of this work (cleaning, coating, sterilizing and neutralizing).
2. Contractor shall provide a copy of all test certificates to CG TA.
3. Safety Management System forms and checklists shall be provided to the CG TA.

#### 5.2 Spares

N/A

#### 5.3 Training

N/A

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**HD-08 – Ultrasonic Thickness Measurements**

**1: SCOPE:**

The intent of this Specification item is to complete an Ultrasonic Thickness Measurement report on ship's traverse section including longitudinals and girders, and exposed deck areas to satisfy TCMSB Deficiency.

**2: TECHNICAL DESCRIPTION:**

2.1 General

1. This specification item shall be completed continuing the work completed by TEAM Industrial Services, Inc. on August 24-28, 2015. A copy of this report can be found in Appendix D – TEAM UTM Survey Aug. 2015.
2. Contractor shall complete a UTM survey of the ship's hull, exposed decks, framing, and bulkheads in areas where TEAM Industrial failed to collect readings. These areas are notably:
  - a) Engine Room Bulkhead No. 49
  - b) Port and Starboard Fresh Water Tank Bulkheads and Framing
  - c) Cofferdam Starboard side
  - d) Shaft Tunnel frames 16-30

**NOTE:** Shaft tunnel framing is filled with approx. 45 tons of steel punches covered by 6" of concrete. There is also a small layer of concrete below steel punches. Any items removed/disturbed shall be placed in original position. Any disturbed concrete shall be removed from ship and disposed of; new concrete shall be poured as originally fitted.

3. Contractor shall provide the necessary personal to remove interference items as needed and ensure access for compressive readings to be obtained to the satisfaction of CG TA and TCMSB.
4. Areas which are not listed or contained in the TEAM report may require additional testing based on the requirements of TCMSB and CGTA.
5. Contractor shall include in the bid the cost for 8 hours use of person lift & operator in order to test ship's hull if required. Contractor shall also include in their bid the cost per hour for use of person lift & operator for adjustment purposes.
6. Contractor shall include in their bid the cost for two (2) certified UTM technicians for 16 hours of work per person. Contractor shall also include in the bid the cost per 8 hours for one (1) certified technician for price adjusting purposes.

2.2 Location

Various locations throughout the ship, but notably the Engine Room and Shaft Tunnel.

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**HD-08 – Ultrasonic Thickness Measurements**

2.3 Interferences

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

**3: REFERENCES:**

3.1 Guidance Drawings/Nameplate Data

1. Drawing: 182-01 Ballast Plan

3.2 Standards and Regulations

N/A

3.3 Owner Furnished Equipment

N/A

**4: PROOF OF PERFORMANCE:**

4.1 Inspection

1. Areas where testing is completed may be inspected by TCMSB and CG TA.

4.2 Testing

1. Ultrasonic Thickness Measurement devices are to be properly calibrated with certificates.

4.3 Certification

1. Contractor shall provide a copy of UTM report to TCMSB for certification of ship's underwater hull & structure.

**5: DELIVERABLES:**

5.1 Reports, Drawings, and Manuals

1. Two (2) copies of the UTM report shall be given to the CG TA along with two digital copies supplied on two separate USB sticks.
2. One (1) copy of the UTM report shall be given to TCMSB.

5.2 Spares

N/A

5.3 Training

N/A

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**HD-09 – Fresh Water Tank Repairs**

**1: SCOPE:**

The intent of this specification item is to renew corroded and damaged steel plating on the starboard fresh water tank and have it signed off by TCMSB for its five year survey credit.

**2: TECHNICAL DESCRIPTION:**

2.1 General

1. Contractor shall complete this task in conjunction with Specification item HD-10 Frames Renewal.
2. Contractor shall close, isolate and lock out the tank suction & fill valves.
3. Contractor shall remove any water remaining in tank following discharge of the contents. The amount is estimated to be approx. 2 cubic meters. Contractor shall quote a cost per 1000 liters of waste fluid removal for adjustment purposes by PWGSC 1379 action.
4. Contractor shall remove tank manhole cover.
5. Tank shall be certified safe for personnel to enter prior to any work being carried out internally. Contractor shall arrange for a certified Marine Chemist to visit the ship, test the tank, and certify that tank is “Safe for Entry” for personnel to enter and “Safe for Hot Work”. Copies of certificates shall be given to CGTA and posted outside manhole cover in a conspicuous location and one copy to be provided to CGTA. Tank shall be constantly ventilated & tested daily.
6. Contractor shall note the tank is fitted with PSM tank level and overflow sensors and shall suitably protect transducers when carrying out this work. Proper functioning of these sensors shall be proven before and after completion of work.
7. Contractor shall protect tank surfaces that do not need steel work from excessive welding/grinding/cutting debris & contamination.
8. Contractor shall carry out steel repair work as described in Lengkeek Vessel Engineering Specification for Structural Repair of Corrosion Damage.
9. All tank internal and external areas of coating loss, breakdown, or blistering, as identified by CGTA and Contractor, shall be scaled and mechanically cleaned to SSPC-SP3 standard. All prepared areas shall extend and feather out to sound, intact coating, tightly adhered to steelwork. Intact coating around perimeter edges of prepared areas shall be generously feathered. Tank then shall be thoroughly cleaned and wiped down to remove any and all grit, dirt, debris, and any other solid or liquid contamination that may be present, prior to coating application. CGTA shall perform an additional inspection of tank prior to application of repair coatings. Contractor shall be responsible for disposing of all removed paintwork, scale, dirt, etc. in an environmentally safe manner.
10. Contractor shall apply Royal Coatings “Easy Prep” (see Appendix “A” for product data sheet) by airless sprayer to all internal surfaces of the tanks and let stand 20 to 30 minutes. Apply 8,000-

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**HD-09 – Fresh Water Tank Repairs**

10,000 psi water blasting to all internal surfaces then remove wash down liquid and debris and ventilate tank until dry.

11. Upon completion of water jet blasting, all residue and debris shall be cleaned and removed from the tanks. Contractor shall ensure that all sounding and suction pipes are free and clear as well as all limber holes in the floors, stringers and webs so as to allow for proper drainage. Upon completion of all cleaning, CG TA shall thoroughly inspect tank internals.
12. Contractor shall bid on price to re-coat 117 m<sup>2</sup> of internal tank surface. Contractor shall provide a Unit Cost per square meter to re-coat tank surfaces for adjustment purposes by PWGSC 1379 action.

Suggested supplier: Royal Coatings - EasyPrep, EasyPrime and EasyFlex is:  
Barry Schnare – Manager, Marine and Industrial Coatings  
K&D Pratt  
55 Akerley Blvd,  
Dartmouth, NS  
B3B 1M3  
DL: (902) 480-3011 C: (902) 456-9238  
[Barry.schnare@kdpratt.com](mailto:Barry.schnare@kdpratt.com)     [www.kdpratt.com](http://www.kdpratt.com)

13. Before application, coatings (EasyPrime and EasyFlex) must be above 22° C prior to mixing. See Appendix “A” for EasyPrime and EasyFlex product data sheets.
14. Contractor shall note that application conditions must provide a substrate temperature greater than 3°C and rising while air temperature must be greater than 4°C. Relative humidity shall be lower than 90% during application. Contractor shall be responsible to supply and maintain heating/dehumidifying equipment required to ensure proper environment
15. All disturbed areas and new plate shall be coated with one coat to 3-4mils of Royal’s EasyPrime to all prepared steel. Any sharp edges within the prepared areas shall be stripe coated with EasyFlex. Apply one top coat of EasyFlex to all primed areas to a wet film thickness of 12-14mils. Runs and sags in the applied coating should be left alone. Allow the coating to cure for 48hours @ 20°C or above. At lower temperatures let cure for 72 hours. When coating is thoroughly cured, tank to be inspected by CG TA and local accredited health inspector. Coating adhesion and condition must be acceptable to CG TA and local accredited health inspector. Contractor shall obtain verbal approval from CGTA prior to closing this sensitive tank.
16. Manhole cover inside shall be given the same cleaning, prep and paint treatment as tank internals.
17. Paint scheme on Exterior of Stbd Potable Water tank and manhole shall be two contrasting coats International Intergard 264, or equivalent, epoxy coatings.
18. Upon completion of above work and to satisfaction of CG TA and accredited health inspection representative, tank shall be wiped clean with lint-free rags. Sounding pipes, suction pipes and vents shall be proven clear prior to filling the tank with potable water. All debris shall be

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removed ashore tank closed up in good order. CG TA shall examine each tank prior to final closing. Manhole covers shall be installed using new gaskets/O-ring as fitted. Anti-seize compound (marine grade) shall be applied to the fasteners of the manhole covers. No use of power tools shall be permitted to tighten the fasteners.

19. Upon completion of all work tank shall be filled with certified potable water. Vent shall be removed and each tank shall be filled to overflowing for a hydrostatic test on tank to the satisfaction of CG TA. Vent shall be installed with new gaskets and SS fasteners upon completion of all work.
20. Tank shall be filled with certified potable water and calculated amount of Sodium hypochlorite 5% solution to attain 50mg/L of free chlorine for the purpose of superchlorination of the tank. Contractor shall supply enough 5%~sodium hypochlorite solution to provide a mixing ratio of 1liter solution/ 1 m3 water within tank. Tank shall rest in this condition for a period of 24hrs. The solution shall be circulated by ship's personnel as required.
21. Super-chlorinated water shall then be run through various potable water piping systems onboard the vessel for at least one hour. Testing shall be carried out to ensure that the super-chlorinated solution is flowing through each tap. Contractor shall test various locations to prove this.
22. Upon completion of super-chlorination process, tank solutions shall be neutralised using 35% hydrogen peroxide. Contents of tank water shall be tested to determine that chlorine has been neutralised. Once this has been achieved, Contractor shall dispose of the water in accordance with the Provincial Regulations. Contractor shall submit a report to CG TA showing the results of the various tests during the super-chlorination /de-chlorination process.
23. Tank shall receive another complete fill and flush operation with certified potable water. All water used in the flushing process shall be disposed of by Contractor.
24. Contractor shall fill the tank with certified potable water. Contractor shall dose and test tank contents until a free chlorine maintenance level of 0.2-0.5 mg/l of free chlorine has been attained.
25. Tank shall have a water sample taken once step 28 is completed AND after it has rested in the tank for a period of three (3) days. Contractor shall include an allowance of \$1,500.00 to retain the services of an accredited Potable water sampling company. Samples shall be collected in approved containers by a representative of accredited company and then tested at their laboratory facility. The water shall be certified acceptable as a potable source. CG TA shall receive the report and final analysis of potable water samples for posting onboard of the vessel.
26. Contractor shall arrange and co-ordinate the visits required for Provincial Health Inspector or accredited testing authority.

## 2.2 Location

Engine room, frames 38-48, Capacity 20.82m<sup>3</sup>, Surface Area 117m<sup>2</sup>

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### 2.3 Interferences

1. Contractor is responsible for the identification of any interference items, their temporary removal and storage and refitting to the vessel.
2. Contractor is responsible for protecting surrounding area and equipment while carrying out this work.
3. HD-10 Frame Renewal Spec Item

## **3: REFERENCES:**

### 3.1 Guidance Drawings/Nameplate Data

Lengkeek Vessel Engineering Frame Renewal Spec *J15057-R01, rev0*

Drawing # 120/004 Tank Capacity Plan

Drawing # 532/02 List of Manholes

Drawing # 703/04 Manhole Cover

### 3.2 Standards and Regulations

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

### 3.3 Owner Furnished Equipment

N/A

## **4: PROOF OF PERFORMANCE:**

### 4.1 Inspection

1. Contractor shall allow adequate time and availability for inspection whenever required by this specification.
2. Contractor shall follow the manufacturer's paint application processes.
3. Contractor shall obtain the services of an independent certified NACE International (NACE) inspector with a minimum certification of Coating Inspector Program Level 2, to verify the work as specified throughout the process and can provide assurance to the CCG Technical Authority

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that the Contractor has followed the correct application procedures. Copy of the NACE inspector qualifications shall be given to the CGTA and PWGSC.

4. In the overall quote, Contractor shall allow \$5,000 for services of a certified NACE inspector Field Service Representative. This FSR allowance shall cover travel and living expenses only. The FSR shall be reimbursed for the authorized travel and living expenses reasonably and properly incurred in the performance of the work at cost without any allowance for overhead or profit. The final cost shall be adjusted accordingly by PWGSC 1379 action upon receipt of invoice. Contractor shall make all necessary arrangements for the procurement of the FSR's services.
5. Contractor shall ensure that all new equipment be used for the application of the coating, including but not limited to: hoses, spray guns, brushes, etc. This requirement is important to ensure zero contamination from solvents, which may be introduced inadvertently by used equipment that has subsequently been cleaned with solvents of any kind.
6. Contractor shall be responsible for coordination of all inspections with TCMS Surveyor, and produce an inspection schedule prior to commencement of work.
7. Contractor shall provide the Owner's representative a minimum of four hours' notice of each inspection, to allow his/her attendance.
8. Upon completion of all repairs and testing, the Contractor and the Owner's representative (or designate) shall conduct a final inspection and ensure all tanks, covers, vents and piping connections have been returned to operating conditions and the attending TCMS Surveyor has completed all inspections.

#### 4.2 Testing

##### WATER QUALITY TESTING:

1. After the final fill of the tanks, three (3) water samples shall be collected and labelled for laboratory testing. The collection of the potable water samples (one from tank, one from galley tap, one from chief scientist cabin tap) for laboratory testing shall be witnessed by CG TA. To maintain the bacteriological validity of the collected samples, they shall be immediately transported to the qualified laboratory facility in thermally insulated outer containers.
2. Contractor shall ensure that the water testing has a baseline of 28 parameters for the water quality test, and shall be performed as per section 7.A.12 of the Fleet Safety Manual. After the super chlorination procedures, and in addition to the Fleet Safety Manual, another 28 parameter test shall be performed three days after the baseline test with the water in the tank remaining stagnant.
3. All costs associated with all the water sampling, containers, testing, shipping, and reporting fees shall be Contractor's responsibility. The cost shall be included in the overall bid.
4. A total of six (6) water tests (28 parameter) shall be completed throughout the scope of this work.

##### TANK TESTING FOR SURVEY PURPOSES:

1. The attending TCMSB Inspector shall determine the test method. All tests shall be witnessed by the attending TCMSB Inspector and the CGTA.
2. For bidding purposes, Contractor shall bid on the pneumatic testing of each individual tank, and provide a unit price for hydrostatic testing each tank. The quote shall include the installation and removal of blanks for suction, overflow pipes, removal and blanking vent heads, and blanking additional tank openings. Tank drainage (including the disposal of water and the wiping down of the tank internals) shall also be included in this quote.

##### SENSOR TESTING:

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1. Tank level sensor accuracy shall be verified by CG TA while filling the tank at end of repairs.

#### 4.3 Certification

1. **WATER:** Contractor shall expeditiously provide to the Owner test certificates of water samples (chemistry and bacteriological) from a Provincially H&W approved laboratory that certifies that the water in the tanks is “fit to drink”. The tests shall be carried out for bacteria as per the Canadian Drinking Water Guidelines. The Chemistry Testing shall examine all parameters as per the Guidelines for Canadian Drinking Water Quality including pH, TDS, Elements and Organic Compounds
2. **TANK:** Contractor is responsible to ensure the TCMS Surveyor signs off all surveyed tanks in the vessel’s Hull and Machinery Survey Record Book and Division 3 report under the field numbers specified above

### **5: DELIVERABLES:**

#### 5.1 Reports, Drawings, and Manuals

1. Contractor shall supply the product data sheets and MSDS sheets on all products used in the course of this work (cleaning, coating, sterilizing and neutralizing).
2. Contractor shall provide 2 copies of all test certificates to CG TA.
3. A paint report shall be prepared, and provided to VMM and CG TA.
4. Safety Management System forms and checklists shall be provided to CG TA.
5. All water test reports shall be provided to VMM and CG TA.
6. Contractor shall provide 2 reports to CG TA of all steel work completed.

#### 5.2 Spares

N/A

#### 5.3 Training

N/A

## HD-10 – Frames Renewal

### 1: SCOPE:

The intent of this specification item is to repair damaged framing in the engine room as per Lengkeek Vessel Engineering specification.

### 2: TECHNICAL DESCRIPTION:

#### 2.1 General

1. Contractor shall complete this task in conjunction with Specification item HD-09 Stbd Fresh Water Tank Repairs.
2. Contractor shall pump out, clean & certify gas free “Safe for Hot Work” in bilge area and in Workshop / Sewage tank areas where work shall take place in this spec and as described in **Appendix B - Lengkeek Specification for Structural Repairs**
3. Contractor shall carry out steel repairs as described in **Appendix B - Lengkeek Specification for Structural Repairs**.
4. Contractor shall also take another 200 Ultrasonic Thickness measurements on watertight bulkhead Frame 50 back to including frame 46 for further analysis of wastage in this area. Contractor shall bid on 6 m<sup>2</sup> of steel plate (3/8”) on lowest end of watertight bulkhead. Contractor shall renew steel bulkhead frames and stiffeners in this lower area from hull to first 18’ vertically.
5. Contractor shall also remove Port and Stbd sea strainers and disassemble. Sea strainers shall be 100% grit-blasted and coated as per hull coating specs HD-03. Approximate area of both strainers interior and exterior is approximately 4 m<sup>2</sup>. Contractor shall install new fasteners and gaskets on sea strainers and isolation valves.
6. This work shall also include four isolation sweater valves plus two recirculation valves for completed overhaul and lapping of seats and new gaskets and valve packing.
7. Any disturbed paintwork and new metal shall be prepared and painted with two contrasting coats International Intergard 264, or equivalent, epoxy coatings.
8. Contractor shall install all new fasteners on pipe flanges and brackets. Contractor shall apply anti-seize paste on all fasteners.

#### 2.2 Location

As described in Appendix B - Lengkeek Specification for Structural Repairs

#### 2.3 Interferences

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

## HD-10 – Frames Renewal

### 3: REFERENCES:

#### 3.1 Guidance Drawings/Nameplate Data

1. Appendix B - Lengkeek Specification for Structural Repairs
2. Drawing: Structural Repairs 1 of 1

#### 3.2 Standards and Regulations

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

#### 3.3 Owner Furnished Equipment

N/A

### 4: PROOF OF PERFORMANCE:

#### 4.1 Inspection

1. Contractor shall allow adequate time and availability for inspection whenever required by this specification.
2. The attending TCMSB inspector shall determine the test method. All tests shall be witnessed by the attending TCMSB inspector and the CGTA

#### 4.2 Testing

1. The attending TCMSB inspector shall determine the test method. All tests shall be witnessed by attending TCMSB inspector and CGTA

#### 4.3 Certification

1. Contractor shall ensure TCMSB inspector approves all repairs conducted & signs off any related documents in Ships DIV III Report.

### 5: DELIVERABLES:

#### 5.1 Reports, Drawings, and Manuals

1. Contractor shall supply CG TA with 2 copies of final report detailing all steel work repaired.
2. Contractor shall supply CG TA with 2 copies of weld test results.

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5.2 Spares

N/A

5.3 Training

N/A

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**HD-11 – Cathodic System**

**1: SCOPE:**

The intent of this specification item is to renew all of the Impressed Current system anodes (5 in total).

**2: TECHNICAL DESCRIPTION:**

2.1 General

1. The ship is fitted with two (2) each 'Cathelco' marine growth (MG) and trap corrosion (TC) impressed current anodes, one each fitted to port and starboard Sea Chests, Frames 48 - 49: four (4) anodes in total. There is also one (1) combination anode fitted in Aft Sea Chest located at Frame 12. Contractor shall bid on renewing all five (5) of these anodes. New anodes (GSM) will be Coast Guard supply.
2. Before docking, while the ship is still afloat at Contractor's dock, all five (5) anodes shall have galvanic voltage, resistance (system off) and voltage/amp readings (system on) measured and recorded by a qualified person, **identified by Contractor in his bid**. Three (3) copies of these readings shall be passed to Chief Engineer within one working day of their measurements being taken.
3. Removal and installation of anodes shall be scheduled so that abrasive blasting and painting of Underwater Hull Spec Item HD-03 is completed with anodes removed.
4. Contractor is to transport CCG-supplied replacement anodes (GSM) from ship's store to dock floor for installation as required.
5. All removed used anodes shall be turned over to CGTA or disposed of as directed by him/her.
6. Contractor shall isolate, lock out and tag power supply to the five (5) anodes. Contractor shall disconnect and label each anode at its local connection. Anodes shall be removed from sea chests, disconnected from their mounting assemblies and marked MG and TC to ensure proper replacement.
7. All anodes shall be renewed and installed as per manufacturer's instructions, reference drawing No. A1669/A/4973. 'O'-rings, seals and gaskets shall be renewed on re-assembly, not GSM. CGTA shall witness assembly of each anode before it is re-installed. **NOTE:** A special anode removal and installation tool is to be used. This tool will be supplied by the indicated Cathelco representative.
8. All connections shall be proven water tight on re-assembly, and verified during floating of the vessel.
9. After re-assembly and with ship afloat, galvanic voltage, resistance (system off), and voltage/amp (system on) measured and recorded by a qualified person, **identified by Contractor in his bid**. Three (3) copies of these readings are to be passed to CGTA within one working day of their being taken. Cathodic system shall be proven to be

## HD-11 – Cathodic System

correctly operating and readings checked to be within expected value ranges.

10. Contractor shall arrange to have a 'CATHELCO' representative (FSR) on site to oversee activities, while this work is being performed. Potential Contractors shall quote \$5,000.00 for services of 'CATHELCO' representative. Final FSR costs will be negotiated with PWGSC to whom Contractor shall supply copies of all related documentation to verify all actual expenses.

Suggested: 'CATELCO' representative can be contacted as follows:

Jastram Technologies Limited  
214 Wright Avenue  
Dartmouth, Nova Scotia, B3B 1R6  
Tel.: 902 - 468 - 6450  
Fax: 902 - 468 - 6901  
E-mail: [jastramtech@ns.aliantzinc.ca](mailto:jastramtech@ns.aliantzinc.ca)

### 2.2 Location

As stated in Technical Description

### 2.3 Interferences

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

## 3: REFERENCES:

### 3.1 Guidance Drawings/Nameplate Data

1. Drawing No. A1669/A/4973
2. Eastern Canadian Representative for Corrintec / Cathelco is:  
Jastram Technologies Ltd., 22 Trider Crescent, Dartmouth, Nova Scotia,  
Attn: Mark Starratt, Telephone: 902-468-6450, Fax: 902-468-6901, e-mail:  
[jastramtech@ns.aliantzinc.ca](mailto:jastramtech@ns.aliantzinc.ca).

### 3.2 Standards and Regulations

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

### 3.3 Owner Furnished Equipment

1. All five (5) cathodic anodes.

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**4: PROOF OF PERFORMANCE:**

4.1 Inspection

1. Final assembly of the anodes to ensure they are secure and that wiring is tight.
2. Once the ship is afloat all connection shall be checked to ensure they are water tight.
3. Final readings of voltage & resistance with system off as well as voltage & amperage with system on once ship is afloat are within OEM specifications.

4.2 Testing

1. As above in Inspection

4.3 Certification

N/A

**5: DELIVERABLES:**

5.1 Reports, Drawings, and Manuals

1. Three copies of the report is to be provided with all the readings taken on the system prior to dry docking and post dry docking with the system on & off.

5.2 Spares

N/A

5.3 Training

N/A

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**HD-12 – ADCP Removal**

**1: SCOPE:**

The intent of this specification item is to completely crop out the ADCP & replace it with hull plating matching the current hull shape/form.

**2: TECHNICAL DESCRIPTION:**

2.1 General

1. Contractor shall be responsible for cleaning & gas freeing bilge area in way of repairs.
2. Contractor shall complete this task in conjunction with specification item HD-03 Underwater Hull.
3. Any disturbed paintwork and new metal shall be painted as described in Specification item HD-03. Care shall be taken as not to have to paint this area twice if possible.
4. Contractor shall complete this task as described in **Appendix C - Lengkeek Specification for ADCP Transducer Renewal**

2.2 Location

See Appendix C - Lengkeek Specification for ADCP Transducer Renewal

2.3 Interferences

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

**3: REFERENCES:**

3.1 Guidance Drawings/Nameplate Data

1. Appendix C - Lengkeek Specification for ADCP Transducer Renewal
2. Drawings: ADCP Transducer Removal 1 of 2 & 2 of 2

3.2 Standards and Regulations

See Appendix C - Lengkeek Specification for ADCP Transducer Renewal

3.3 Owner Furnished Equipment

N/A

**4: PROOF OF PERFORMANCE:**

4.1 Inspection

1. Contractor shall allow adequate time and availability for inspection whenever required by this specification.

## HD-12 – ADCP Removal

2. The attending TCMSB inspector shall determine the test method. All tests shall be witnessed by the attending TCMSB inspector and the CGTA

### 4.2 Testing

1. The attending TCMSB inspector shall determine the test method. All tests shall be witnessed by the attending TCMSB inspector and the CGTA.

### 4.3 Certification

1. Contractor shall ensure TCMSB inspector approves all repairs conducted & signs off any related documents in Ships DIV III Report

## 5: DELIVERABLES:

### 5.1 Reports, Drawings, and Manuals

1. Contractor shall supply CG TA with 2 copies of final report detailing all steel work repaired.
2. Contractor shall supply CG TA with 2 copies of weld test results

### 5.2 Spares

N/A

### 5.3 Training

N/A

## H-01 – Berthing

### 1: SCOPE:

During the contract period at Contractor's facilities, while not in dock, the vessel shall be berthed at Contractor's wharf at a safe and secure berth with adequate water at extreme low tide to ensure that the vessel will not touch bottom.

### 2: TECHNICAL DESCRIPTION:

#### 2.1 General

1. The vessel will be delivered to the Contractor's facility under its own power.
2. Contractor shall include in the overall quote, all costs for initial tying up, any movement of the vessel during refit, and letting go of lines from Contractor 's wharf on departure after completion of contract.
3. Maneuvering of the vessel into and out of Contractor's docking facilities shall be done under the direction of Contractor. Costs for tugs and pilots required for any movements of the vessel during the contract period shall be included in the bid price quoted, but shown separately as well.
4. Contractor shall include in their bid the cost of a tug if required for movement of the vessel while tying up at the contractor facilities before and after and the docking.
5. One gangway shall be supplied and set up by Contractor while alongside the Contractor's jetty. The gangway shall be set up and rigged from the wharf onto the Foc'sle deck. The gangway shall be complete with safety net. Gangway shall be safe, well lit and structurally sufficient to support passage of Contractor's workmen and ship's crew.

#### 2.2 Location

N/A

#### 2.3 Interferences

N/A

### 3: REFERENCES:

#### 3.1 Guidance Drawings/Nameplate Data

##### 1. Vessel Particulars:

Length Overall	165.00'
Length B.P.	144.67'
Breadth Moulded	36.00'
Depth Moulded	14.75'
Draft (Mean)	13.20'
Displacement	925 tons

#### 3.2 Standards and Regulations

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N/A

3.4 Owner Furnished Equipment

N/A

**4: PROOF OF PERFORMANCE:**

4.1 Inspection

N/A

4.2 Testing

N/A

4.3 Certification

N/A

**5: DELIVERABLES:**

5.1 Reports, Drawings, and Manuals

N/A

5.2 Spares

N/A

5.3 Training

N/A

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**H-02 – Emergency Boat Davit Inspection**

**1: SCOPE:**

The intent of this specification is to survey Schat Harding Lifeboat Davit system, for a Marine Safety quadrennial inspection and testing. In addition, shepparding boat shall receive an annual inspection as per Schat's recommendations.

**2: TECHNICAL DESCRIPTION:**

2.1 General

**NOTE:** For clarification, the role of SCHAT FSR (Harding Safety Canada) is to (1) provide guidance on the correct disassembly / reassembly, and removal / installation of davit; (2) examine and measure all components as part of condition assessment of davit; (3) report findings and recommendations in a written inspection report; (4) oversee required repairs (to be treated as part of the 1379 work arising); (5) interact with TCMSB; (6) witness the functional and load testing of the davit; and (7) produce the specified service report. **All other labour and services required for the removal, transport, disassembly, repair, reassembly, installation and testing of the davit shall be provided by the Contractor or his Sub-Contractor.**

1. SCHAT Emergency Boat Davit, Type MOB 350/3.65/10E, located aft on "D" Deck (Forcsle) at Frames 35 - 37, Portside, is a hand-cranked slewing, fixed-height, crane-type davit that is due for TCMS quinquennial survey.
2. Davit inspection includes a requirement for a condition assessment to be performed during the disassembly specified herein. The condition assessment shall be conducted by an authorized SCHAT service agent (FSR) who will provide a written Inspection Report to Contractor, CG TA and PWGSC Contracting Authority. The report shall include records of all measurements taken, note all findings, and state any additional repairs not included in the inspection requirements below.
3. Shepparding boat shall be removed by Contractor for storage. Contractor shall provide all equipment, manpower, etc. to remove and land Shepparding boat ashore and place it Contractor supplied boat chocks ashore. Contractor shall store Shepparding boat in a location in Contractor facility where it will not be damaged or painted by overspray from painting and/or grit-blasting. Contractor is responsible for any damage to Shepparding boat. Contractor is also responsible for placing Shepparding boat back on ship when necessary.
4. Contractor shall include an allowance of \$10,000 to cover work of Schat FSR. FSR provider will be reimbursed for actual costs reasonably incurred in the performance of this work. Travel and living expenses shall be billed at cost without added overhead or profit. The \$10,000 allowance shall form part of the overall bid, and shall be adjusted by PWGSC 1379 action upon receipt of final Schat FSR invoice supported by copies of all related documentation to verify actual expenses.
5. Scheduling of FSR shall be responsibility of Contractor, and will be discussed with CG TA to determine duration and scope of work, including any additional FSR requirements. The intent is to

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**H-02 – Emergency Boat Davit Inspection**

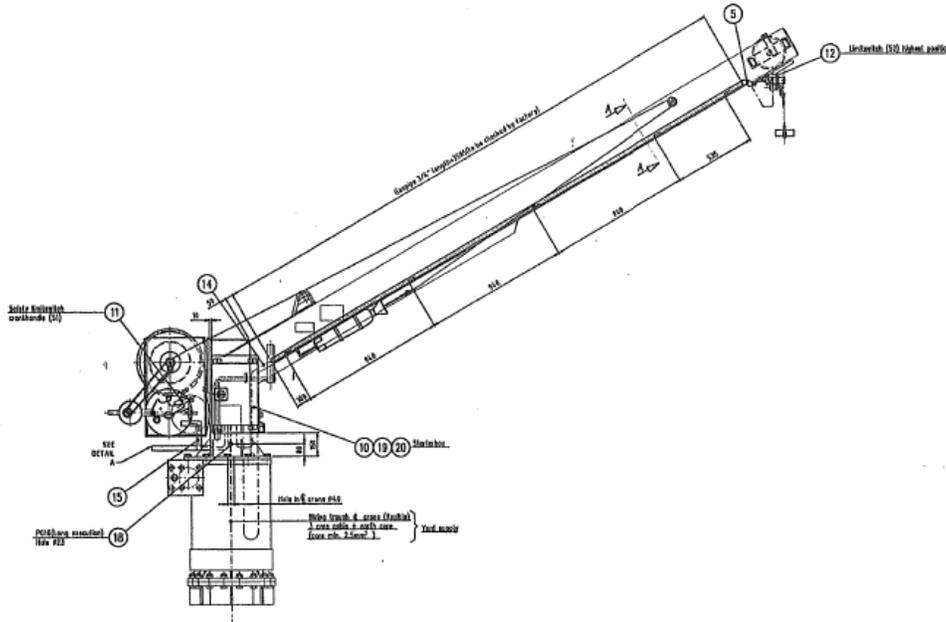
ensure that there is little to no idle time for FSR in order to progress the work as quickly and efficiently as possible for the funds being expended. It is expected that Contractor will schedule all work in the most efficient and continuous manner possible.

6. Contractor shall call TCMS inspection services when required. CG TA shall be notified in advance when inspections are to be completed.
7. Chief Engineer shall be allowed to monitor work of Schat FSR who shall contact the Chief Engineer each day that he is working on this requirement and keep him advised on findings and progress.
8. RRH 15 Emergency Boat Release shall be removed and replaced by a new GSM supplied unit.
9. Mounting bolts where davit column is bolted to focsle deck seat shall be removed and cleaned for inspection and measurement.
10. Contractor shall remove wire rope from davit winch for TCMS inspection. After inspection, wire rope shall be coiled and safely stored, so that it is protected from dirt and damage.
11. Contractor shall ensure that power to electric winch motor is shut off and prominently tagged on Emergency Switchboard (H-02-2.11) prior to commencement of work. Before start of work and after completion, megger, volts and amperage readings shall be taken for electric winch motor. Readings shall be recorded and witnessed by CG TA.
12. Winch motors shall be electrically and mechanically disconnected, and removed to a certified Electric Motor Service Specialist who shall open, clean and inspect all components. Contractor shall identify their Electric Motor Service Specialist in their bid.
13. Stator windings shall be cleaned using an approved method and dried. Insulation shall be inspected for cracking, softening, oil saturation, breaks or signs of overheating. Megger test readings of insulation resistance values shall be taken; minimum acceptance is 100 Meg $\Omega$ s.
14. Upon successful completion of the above tests, and any necessary repairs, stator windings shall be given a thin coat of air drying varnish, **GE 1202** or approved equal.

## H-02 – Emergency Boat Davit Inspection

15. Davit column and arm (refer to below attached Davit Drawing) shall be cleaned up and examined for corrosion. Contractor shall quote on performing twenty (20) ultrasonic thickness measurements in way of observed corrosion plus ten (10) shots in areas of sound steel for comparison purposes, for a total of thirty (30) shots. Contractor shall also quote a rate per shot for 1379 PWGSC adjustment purposes.
16. Corrosion of davit column and arm shall be prepared, primed and painted according to SCHAT approved procedures. Top coat shall match the existing colour scheme. For bidding purposes, Contractors shall quote on preparing and painting 10 ft<sup>2</sup> of steel, plus a Unit rate for 1379 PWGSC adjustment purposes.
17. Winch gearbox oil shall be drained and disposed of according to federal and provincial regulations.
18. After removal of inspection cover plate, slewing gear shall be inspected by Schat FSR in presence of CG TA and TCMS Surveyor.
19. After removal of inspection cover plate, winch gearbox shall be inspected by FSR in the presence of CG TA and TCMS. Condition of lubricating oil shall be checked by sending out an Oil Analysis to a certified oil Laboratory.
20. Brake assembly shall be dismantled for inspection. All components shall be cleaned, measured, and laid out for FSR, CG TA and TCMS Surveyor.
21. Head sheave shall be dismantled for inspection. Sheave, pin, and bushing bore shall be cleaned, measured and made ready for inspection.
22. Remote control sheaves shall be cleaned, inspected, lubricated and proven to rotate freely.
23. All grease-ways and fittings shall be proven clear. All grease points shall be greased using EP2 lithium grease.
24. All limit switches (over-hoist and slewing) shall be checked for correct operation.
- 25. All defects or additional repairs required shall be addressed by PWGSC 1379 procedures.**
26. Davit and its components shall be re-assembled in good working order. If it has been removed from the ship, it shall be re-installed. Gearbox is to be refilled with Spartan EP 150 oil.
27. A new GSM supplied wire rope is to be installed.
28. All work shall be completed to satisfaction of Schat FSR, CG TA and TCMS Surveyor.

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H-02 – Emergency Boat Davit Inspection



**SCHAT-HARDING TYPE MOB 350/3.65/10E DAVIT**

2.2 Location

“D” Deck (Focsle), Port Side Frames 35-37

2.3 Interferences

None

**3: REFERENCES:**

3.1 Guidance Drawings/Nameplate Data

SCHAT Installation, Operation & Maintenance Manual

Type: FME 194 H

Order No. 2009191

Serial No. 1158/01

Certificate No. BGN0100078

Type Appr. No. SAS S010033

TM: 2.91kNm

SWM: 1.94kNm

3.2 Standards and Regulations

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

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**H-02 – Emergency Boat Davit Inspection**

- b. Coast Guard ISM Lock Out/Tag Out Procedures
- 2. Contractor shall refer to General Notes for any other relevant standards and regulations.

### 3.3 Owner Furnished Equipment

- 1. Emergency Boat Release Hook
- 2. Wire Rope

## **4: PROOF OF PERFORMANCE:**

### 4.1 Inspection

All inspections of parts to be done by Schat FSR, TCMS Surveyor & CG TA.

### 4.2 Testing

- 1. Upon completion of all work Contractor shall carry out operational testing and system load testing. Contractor shall supply certified weights as well as all appliances, hardware, and manpower necessary to load test the system using certified weights. All test equipment used, as well as weights, shall have verification and applicable test certificates and Contractor shall show these to Schat FSR, TCMS Surveyor or Chief Engineer as requested. Equipment, materials, etc not having applicable certification shall not be used, and testing shall not proceed until as such time as FSR authentication can be provided.
- 2. Prior to load testing, davit system shall be proven operational.
- 3. It shall be functionally tested and load tested in the presence of Schat (Harding Safety Canada) FSR, Chief Engineer and TCMS Surveyor as follows:

Safe Working Load (SWL) = 10 KN = 2,248 lbs.  
Static Test Load = 2,810 lbs. (125% of SWL)  
Dynamic Test Load = 2,472.8 lbs. (110% of SWL)

### 4.3 Certification

TCMS to sign off unit in ships blue book for Div III reports.

## **5: DELIVERABLES:**

### 5.1 Reports, Drawings, and Manuals

- 1. A detailed report including all work carried out, shall be provided to CG TA.
- 2. A paint quality assurance report shall be provided for each layer of paint applied.
- 3. A test report shall be provided to CG TA indicating all tests performed, time of test, weights used, and duration of tests.

### 5.2 Spares

Old Wire Rope and Emergency Boat Release Hook shall be returned to CG TA.

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H-02 – Emergency Boat Davit Inspection

5.3 Training  
N/A

## H-03 – HIAB

### 1: SCOPE:

The intent of this scope is to have the Starboard HIAB 201-2 crane removed, overhauled and inspected, reinstalled, and tested for TCMSB 5 year inspection.

### 2: TECHNICAL DESCRIPTION:

#### 2.1 General

**NOTE:** For clarification, the role of the HIAB FSR is to (1) provide guidance on the correct disassembly/reassembly, and removal/installation of the crane; (2) examine and measure all components as part of the condition assessment of the crane; (3) report findings and recommendations in a written inspection report; (4) oversee required repairs (to be treated as part of the 1379 work arising); (5) interact with TCMSB; (6) witness the functional and load testing of the crane; and (7) produce the specified service report. **All other labour and services required for the removal, transport, disassembly, repair, reassembly, installation and testing of the crane shall be provided by the Contractor or his Sub-Contractor.**

1. Contractor shall include an allowance of \$10,000 to cover the work of the FSR. FSR provider will be reimbursed for actual costs reasonably incurred in the performance of the work. Travel and living expenses shall be billed at cost without added overhead or profit. The \$10,000 allowance shall form part of the overall bid, and shall be adjusted by PWGSC 1379 action upon receipt of the final FSR invoice supported by copies of all related documentation to verify actual expenses.
2. The scheduling of the FSR shall be the responsibility of Contractor, and will be discussed with the CGTA to determine duration and scope of work including any additional FSR requirements. The intent is to ensure that there is little to no idle time for the FSR in order to progress the work as quickly and efficiently as possible for the funds being expended. It is expected that Contractor will schedule all work in the most efficient and continuous manner possible.
3. HIAB Cranes are sold in Canada by Atlas Polar Company Ltd. of Toronto (Toll-Free: 1-888-799-4422) which has a country-wide network of sales and service dealers (See [www.atlaspolar.com](http://www.atlaspolar.com)).
4. The crane's hydraulic power pack shall be inspected by a certified hydraulic technician who shall report all findings in writing to the Contractor, CGTA and PWGSC. Inspection Report shall note all findings and state any additional repairs required.
5. CGTA shall be allowed to monitor the work of the FSR who shall contact CGTA each day that he is working on this requirement and keep him advised on findings and progress.
6. Mounting bolts where the crane base is bolted to the pedestal and where the pedestal is bolted to the deck seat shall be removed and cleaned for inspection and measurement.
7. Contractor is to arrange for a TCMSB inspector to be present when required, and CGTA is to be notified prior to TCMSB inspections being done.
8. Luffing cylinder heel and head pins shall be removed.

## H-03 – HIAB

9. Boom extension system shall be disassembled, and all wearing parts shall be cleaned for inspection with measurements taken and recorded.
10. Crane boom sections shall be cleaned and examined for corrosion. This includes the inner boom and the three (3) outer boom sections.
11. Contractor is to quote on performing forty (40) ultrasonic thickness measurements in way of observed corrosion plus ten (10) shots in areas of sound steel for comparison purposes, for a total of fifty (50) shots. The Contractor shall also quote a rate per ten (10) shots for adjustment purposes.
12. Observed corrosion of the boom sections shall be prepared, and painted according to HIAB-approved procedures for ship-mounted cranes. Top coat shall match the existing colour scheme. For bidding purposes, Contractors shall quote on preparing and painting 20 ft<sup>2</sup> of steel, plus a unit rate for adjustment purposes.
13. All HIAB markings including SWL shall be renewed on crane after painting. Markings shall be OEM equivalent using CFM.
14. Hydraulic ram arrangement is to be let-go and removed for dismantling, cleaning and inspection. All ram seals shall be renewed.
15. Boom pivot shaft is to be removed and cleaned for inspection and measurement.
16. The pin securing the boom head sheave shall be removed and cleaned for inspection and measurement.
17. Slewing ring gear is to be inspected.
18. All greaseways and fittings are to be proven clear.
19. All dismantled components shall be cleaned, measured, and laid out for TCMSB inspection. All shaft and pin bores and through-ways shall be cleaned, measured and made ready for inspection.
20. All defects or additional repairs required shall be addressed by PWGSC 1379 procedures.
21. The crane and its components shall be re-assembled in good order. If it has been removed from the ship, it shall be re-installed. The installed crane shall be functionally tested in the presence of the CGTA and HIAB FSR.
22. HIAB crane shall be fitted with new GSM wire complete with hook attached and a snatch block. A new CFM head pin and hook will also be installed.
23. Following reassembly and successful completion of the functional testing, the crane shall be Proof Load Tested (5960 lbs.) in the presence of a TCMSB Inspector, CGTA and HIAB FSR.

### 2.2 Location

Foc'sle deck aft, starboard side, frames 7-10

## H-03 – HIAB

### 2.3 Interferences

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

## 3: REFERENCES:

### 3.1 Guidance Drawings/Nameplate Data

1. HIAB 201-2  
Serial # S201000039  
Manual is available on ship upon request

### 3.2 Standards and Regulations

1. Canada Shipping Act, 2001, Part III of the Cargo, Fumigation and Tackle Regulations

### 3.3 Owner Furnished Equipment

1. CG will supply a new wire c/w hook attached and a snatch block. All other parts including head pin and hook to be contractor supplied.

## 4: PROOF OF PERFORMANCE:

### 4.1 Inspection

1. All work shall be inspected and completed to the satisfaction of CGTA, HIAB FSR and TCMSB.

### 4.2 Testing

1. The crane shall be Proof Load Tested (5690 lbs.) in the presence of a TCMSS Surveyor, CGTA and HIAB FSR.

### 4.3 Certification

1. HIAB FSR to provide certification certificate.
2. HIAB crane is to pass requirements of Canada Shipping Act, 2001, in Particular Part III of the Cargo, Fumigation and Tackle Regulations.

## 5: DELIVERABLES:

### 5.1 Reports, Drawings, and Manuals

1. Upon completion of all work Contractor shall produce a Service Report that includes records of all repairs performed & measurements taken. Three (3) copies of the Service Report shall be provided to CGTA.
2. HIAB FSR shall provide a written Inspection Report to Contractor, CGTA and PWGSC. The report shall include records of all measurements taken, note all findings, and state any additional repairs not included in the inspection requirements

## H-03 – HIAB

3. Form T2 (Certificate of Test and Thorough Examination of Lifting Appliances) from TCMSB for the re-installed and inspected crane shall be provided to CGTA.

### 5.2 Spares

1. Removed wire, hooks, snatch block and head pin shall be returned to CG TA.

### 5.3 Training

N/A

CCGS Alfred Needler  
Jan. 5th – Feb. 22nd, 2016 Dry-Docking Refit  
**H-04 – Fixed Fire Extinguishing Systems**

**1: SCOPE:**

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

**2: TECHNICAL DESCRIPTION:**

2.1 General

1. Contractor shall arrange to have all the ship's fixed fire extinguishing systems (FM-200, CO2, and Dry Chemical) inspected, tagged and dated by a service agency certified by Underwriters Laboratory of Canada (ULC), and approved by the System Manufacturer.
2. **NOTE:** This work shall be carried out during the last three (3) weeks of the contract period.
3. Contractor shall refer to the table in section 2.2 for a list of fire protection zones. Each of these zones shall be tested and certified.
4. Cylinders shall be individually weighed. All weights, levels, and pressures of cylinders shall be measured and recorded.
5. All rotating beacons and flashing lights shall be tested and proven in good working order.
6. All audible alarms shall be tested and proven in good working order.
7. All wires and cables shall be proven in good working order.
8. The FM-200 Nitrogen Drivers shall be proven in good working order.
9. All piping and nozzles shall be proven clear.
10. Any required repairs identified as a result of the inspections shall be brought to the attention of CGTA before commencing any repair work. All repairs shall be addressed via PWGSC 1379 action.
11. All cylinders shall be properly secured in their original location after inspection.

2.2 Location

1. Each of the cylinders are either located in the space covered, or just outside.

<b>Location</b>	<b>Type</b>
Engine Room + Workshop + Store	KIDDE FM-200 (390 lbs. x2)
Emergency Generator Room	KIDDE CO2 (50 lbs.)
Paint Locker/Refrig. Mach'y. Comp't.	KIDDE CO2 (75 lbs.)
Winch Control Room	KIDDE CO2 (25 lbs.)
Galley	Wet Chemical (25 lbs.)

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**H-04 – Fixed Fire Extinguishing Systems**

2.3 Interferences

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

**3: REFERENCES:**

3.1 Guidance Drawings/Nameplate Data

1. Drawing # LI-7746201-01 – 3 sheets

3.2 Standards and Regulations

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

3.3 Owner Furnished Equipment

1. Unless otherwise stated, all materials, labour, and equipment required to complete all requirements of this specification shall be Contractor Supplied.
2. Contractor shall be responsible for the cleaning of dust of debris when working on the vents and areas affected as a result of the work.

**4: PROOF OF PERFORMANCE:**

4.1 Inspection

1. Contractor is responsible for arranging Transport Canada Marine Safety for all firefighting and fire detection system inspections.

4.2 Testing

1. As described above in Technical Description

4.3 Certification

1. TCMS shall sign off on ship's DIV III report.

**5: DELIVERABLES:**

5.1 Reports, Drawings, and Manuals

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

CCGS Alfred Needler  
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**H-04 – Fixed Fire Extinguishing Systems**

5.2 Spares

N/A

5.3 Training

N/A

CCGS Alfred Needler  
Jan. 5th – Feb. 22nd, 2016 Dry-Docking Refit  
**H-05 – Fire Detection System**

**1: SCOPE:**

The intent of this specification item is to complete the annual inspection of ship's Notifier AFP-200 Fire Detection System.

**2: TECHNICAL DESCRIPTION:**

2.1 General

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

2.2 Location

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

2.3 Interferences

N/A

**3: REFERENCES:**

3.1 Guidance Drawings/Nameplate Data

1. Drawing # 880/02 General Alarm Arrangement
2. Drawing # E-1 Fire Alarm Renovations

3.2 Standards and Regulations

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

3.3 Owner Furnished Equipment

N/A

CCGS Alfred Needler  
Jan. 5th – Feb. 22nd, 2016 Dry-Docking Refit  
**H-05 – Fire Detection System**

**4: PROOF OF PERFORMANCE:**

4.1 Inspection

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

4.2 Testing

1. A functional test of entire system is required, as described in Technical Description.

4.3 Certification

1. Fire Detection System shall be signed off in Ships Blue book DIV III report by TCMS Surveyor.

**5: DELIVERABLES:**

5.1 Reports, Drawings, and Manuals

1. Two copies of inspection report shall be provided to CG TA.
2. A list of all defects and replacements shall be provided to CG TA.

5.2 Spares

N/A

5.3 Training

N/A

CCGS Alfred Needler  
Jan. 5th – Feb. 22nd, 2016 Dry-Docking Refit  
**H-06 – Liferaft Annual Inspection**

**1: SCOPE:**

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

**2: TECHNICAL DESCRIPTION:**

2.1 General

1. Contractor shall remove all Liferrafts and their hydrostatic releases from their stowed positions on the vessel and transport them via commercial bonded carrier to and from the sub-contractor's premises for servicing.
2. Contractor shall subcontract annual inspection and recertification of Liferrafts by an Approved Transport Canada service facility that meets OEM certification.
3. An allowance of \$12,000 shall be provided for shipping and the sub-contractors work. This allowance shall be adjusted up or down via PWGSC 1379 action upon proof of invoices.
4. Contractor shall be responsible for ensuring Liferrafts are witnessed by TCMS Surveyor as required and for providing certificates to CG TA for the life rafts as appropriate.
5. Contractor shall return Liferrafts and their hydrostatic releases to the stowed position on the vessel.

2.2 Location

1. See references section.

2.3 Interferences

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

**3: REFERENCES:**

3.1 Guidance Drawings/Nameplate Data

DESCRIPTION	CAPACITY	SERIAL #	LOCATION
MK2	12	2047220300011	Foc'sle
Surviva	25	S5542	Foc'sle
Surviva	25	2045620300051	Foc'sle
Surviva	25	B-06287	Foc'sle

CCGS Alfred Needler  
Jan. 5th – Feb. 22nd, 2016 Dry-Docking Refit  
**H-06 – Liferaft Annual Inspection**

3.2 Standards and Regulations

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

3.4 Owner Furnished Equipment

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

**4: PROOF OF PERFORMANCE:**

4.1 Inspection

1. Contractor shall subcontract the annual inspection and recertification of all Liferafts by an Approved Transport Canada service facility that meets OEM certification.

4.2 Testing

1. Inspection and testing required for certification is sub-contractor's responsibility.

4.3 Certification

1. Sub-Contractor shall provide all test certificates, and endorsement of safe operation required by TCMS for certification in vessel's Division III Report.

**5: DELIVERABLES:**

5.1 Reports, Drawings, and Manuals

1. Contractor shall provide a listing of the work that was performed including 'as found and as left condition'.
2. Certificates and work description are provided to vessel Commanding Officer.

5.2 Spares

N/A

5.3 Training

N/A

CCGS Alfred Needler  
Jan. 5th – Feb. 22nd, 2016 Dry-Docking Refit  
**H-07 – Fuel Pipe Replacement**

**1: SCOPE:**

The intent of this specification item is to renew three sections of corroded fuel oil piping located in the shaft tunnel.

**2: TECHNICAL DESCRIPTION:**

2.1 General

1. Contractor shall close & lock out the following three (3) Fuel Oil Tank Suction/Discharge valves via extended spindles: #9 Port Aft, #10 Stbd Aft and # 11 Centre Aft (all tanks located between frames 2-11). Contractor shall also close & lock out the six (6) fuel oil filling & suction valves for these three tanks at engine room fuel manifolds.
2. Contractor shall replace three sections of piping in shaft tunnel. Fuel piping to be renewed is the first section of piping from each isolation valve to the next flange leading from the isolation valves.
3. Contractor shall dispose of residual fuel in piping in an environmentally friendly manner coinciding with provincial regulations.
4. Contractor shall remove the defined sections of piping and install CFM blank flanges with CFM gaskets on each end of the removed sections (6 blanks in total). The blank flanges are to remain in place until new piping is made up and ready to install.
5. Contractor shall fabricate three identical pipes with flanges to the ones removed. New piping shall be made of 2" SMLS. STL. ASTM A52 GRA SCH 40 pipe.
6. Contractor shall ensure that new piping is clean and free of loose slag, welding & grinding debris before installation.
7. Contractor shall install new pipes using new gaskets & stainless steel fasteners.
8. Once new piping is installed, Contractor shall unlock all nine (9) valves and open the 3 extended spindle valves & check for leaks. Any leaks found in the disturbed area of piping shall be repaired by Contractor at their expense.

2.2 Location

1. Corroded pipes are located in aft section of Shaft Tunnel.

2.3 Interferences

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

CCGS Alfred Needler  
Jan. 5th – Feb. 22nd, 2016 Dry-Docking Refit  
**H-07 – Fuel Pipe Replacement**

**3: REFERENCES:**

3.1 Guidance Drawings/Nameplate Data

Drawings: 120/004 Tank Capacity Plan

3.2 Standards and Regulations

1. The following Coast Guard Standards and or Technical Bulletins must be adhered to in the course of executing this specification. Copies of these standards and bulletins can be obtained from CCG Technical Authority.
  - a. Canadian Coast Fleet Safety Manual (DFO 5737)
  - b. Coast Guard ISM Lock Out/Tag Out Procedures
2. Any necessary welding shall be performed to CWB 47.1 and visually inspected by a qualified welding supervisor

3.3 Owner Furnished Equipment

1. Contractor shall provide all materials, labour & equipment required to perform all tasks identified in this specification.

**4: PROOF OF PERFORMANCE:**

4.1 Inspection

1. Visual inspection for leaks & proper fit to be conducted by CG TA.

4.2 Testing

1. All welds shall be dye tested to ensure no leaks through welds. Any leaks detected shall result in a failing mark and be re-welded at Contractor's expense.
2. If there is no fuel in the tank, ship's crew shall transfer fuel to tank to check for fuel leaks in piping or at flanges. Any leaks found shall be repaired by Contractor at their expense.

4.3 Certification

N/A

**5: DELIVERABLES:**

5.1 Reports, Drawings, and Manuals

1. A welding report shall be provided including all welds performed and test results.

5.2 Spares

N/A

5.3 Training

N/A

CCGS Alfred Needler  
Jan. 5th – Feb. 22nd, 2016 Dry-Docking Refit  
**H-08 – #1 Fuel Tank Vent Renewal**

**1: SCOPE:**

The intent of this specification item is to renew the stand pipes on the #1 Fuel Tank Vents located on the Port & Starboard sides of the bow.

**2: TECHNICAL DESCRIPTION:**

2.1 General

1. Contractor shall carry out this task in conjunction with specification item HD-07 – Fuel Tanks.
2. Once the tank has been opened up & certified gas free and “Safe for Hotwork”, the port and starboard fuel tank vents located on the ship’s bow shall be cut off at deck level.
3. The old stand pipes shall be unbolted from the vent heads and the vent heads re-used with the new stand pipes.
4. Prior to installation, the vent heads shall be disassembled, grit blasted, reassembled, and painted in accordance with the coatings outlined for the above water hull scheme.
5. The renewed vent heads are to be fitted with new Contractor supplied flame trap screens.
6. Contractor shall supply and install new stand pipes constructed from schedule 40 seamless steel pipe, complete with mating flanges compatible with the current vent flanges.
7. New Stand pipes shall be cleaned of any welding and grinding debris prior to pressure testing the tank for TCMSB credit.
8. After obtaining TCMSB credit, the stand pipes shall be painted in accordance with the coatings outlined for the above water hull scheme.
9. Vent heads shall be secured to the new stand pipes using new CFM gaskets & stainless steel fasteners.
10. Contractor is to ensure that any dirt or debris resulting from this work is cleaned and removed from the #1 Fuel Tank prior to it being closed up for specification item HD-07 – Fuel Tanks.

2.2 Location

Upper Deck forward, Port & Starboard sides.

2.3 Interferences

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

CCGS Alfred Needler  
Jan. 5th – Feb. 22nd, 2016 Dry-Docking Refit  
**H-08 – #1 Fuel Tank Vent Renewal**

**3: REFERENCES:**

3.1 Guidance Drawings/Nameplate Data

N/A

3.2 Standards and Regulations

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

3.3 Owner Furnished Equipment

N/A

**4: PROOF OF PERFORMANCE:**

4.1 Inspection

Inspections to be conducted by TCMSB and CG TA.

4.2 Testing

Pressure test is to be completed on the tank, in conjunction with specification item HD-07 – Fuel Tanks, once stand pipes are welded as per TCMSB requirements.

4.3 Certification

Contractor is responsible to ensure the TCMSB Inspector signs off the tank inspection in the vessel's Hull and Machinery Survey Record Book and Division 3.

**5: DELIVERABLES:**

5.1 Reports, Drawings, and Manuals

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

5.2 Spares

N/A

CCGS Alfred Needler  
Jan. 5th – Feb. 22nd, 2016 Dry-Docking Refit  
**H-08 – #1 Fuel Tank Vent Renewal**

5.3 Training  
N/A

CCGS Alfred Needler  
Jan. 5th – Feb. 22nd, 2016 Dry-Docking Refit  
**H-09 – Cable Transit Repairs**

**1: SCOPE:**

The intent of this specification item is to renew 17 cable transits on the trawl deck.

**2: TECHNICAL DESCRIPTION:**

2.1 General

1. Contractor shall identify and electrically isolate & lock out each of the 17 cables passing through transits requiring replacement.
2. Contractor shall disconnect the equipment or source (Contractors choice as to which is easiest) of each cable passing through the 17 specified cable transits on the trawl deck and pull the cables through the existing transits. Contractor shall ensure each cable and wire is appropriately labelled as to where it was fitted and shall note which transit it was passed through to ensure correct reconnection.
3. Contractor shall crop each of the cable transits flush at deck level.
4. The deck area surrounding the 10 transits around frame 5 starboard shall be cropped out with a radius of no less than 12" from any transit. A new plate shall be installed, matching the original plate thickness and grade.
5. Contractor shall fabricate a box, measuring approximately 16"h x 12"w x 12"l. This box shall be fitted with a "Roxtec S" type frame (4x1) to the aft side of the box. A 9" x 9" hole shall be cut on the forward end of the box, and fitted with a bolt-on gasketed cover, to allow easy access for cable installation. This box shall be welded to the deck in the original location of the 10 removed transits. The bottom of this box and the deck area under the box shall be left open to allow cable passage.
6. Contractor shall cover the affected areas and tape edges to ensure no areas are left open to the elements unless that section is actively being worked on.
7. All cables passing through the 10 removed transits shall pass through the new Roxtec arrangement. Contractor shall install all required fixtures to properly seal the transit in accordance with manufacturer recommendations. Each of the cables shall be reconnected to its original termination point.
8. All remaining cable transits (7 total, various locations), shall be replaced with new steel pipe of similar dimensions and grade as original. New transits shall be fitted with new watertight metallic cable glands (approved for outdoor marine use) on either end. Contractor shall pass existing cable through the new transits and reconnect to their original termination point.
9. Contractor shall feather out damaged areas of paint coatings.

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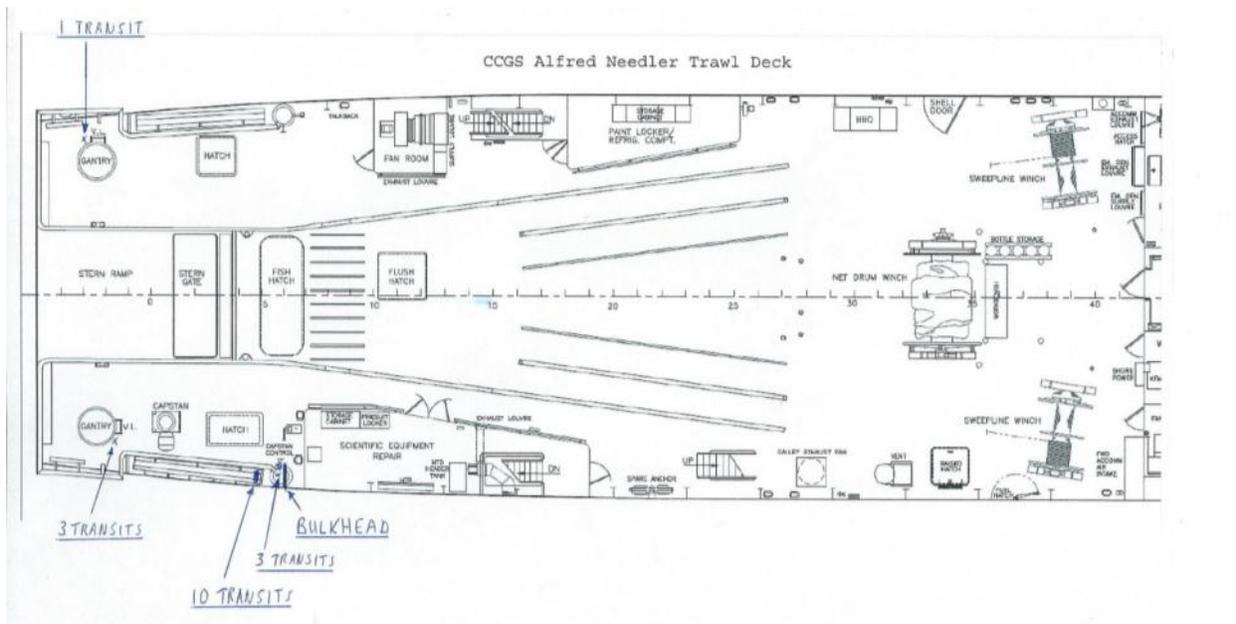
10. Contractor shall paint affected deck surfaces as follows:

- a. First Coat: Intershield 300, Abrasion Resistant Aluminum Pure Epoxy, Colour = Aluminum, 5 mils D.F.T. in way of bared steel.
- b. Second Coat: Intershield 300, Abrasion Resistant Aluminum Pure Epoxy, Colour = Bronze, 5 mils D.F.T. in way of all areas.
- c. Third Coat: Intershield 9G, High Solids Epoxy Non-Skid Deck Coating, Colour = Dark Grey, 30 mils D.F.T. at thinnest point, Roller-Applied in a ridged pattern.

11. Contractor shall paint transits and the new transit box by applying one coat of primer followed by two coats of marine enamel. The first application of topcoat shall be of different color than the existing coating, followed by a finish coat of black enamel.

## 2.2 Location

1. Trawl Deck, see image below for locations:



## 2.3 Interferences

1. Contractor is responsible for the identification of any interference items, their temporary removal and storage and refitting to the vessel. This includes any items in way of providing a proper fire watch on all affected spaces.
2. Contractor is responsible for protecting surrounding area and equipment while carrying out this work.

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**H-09 – Cable Transit Repairs**

**3: REFERENCES:**

3.1 Guidance Drawings/Nameplate Data

1. See attached drawing above.
2. Ship will provide Contractor with a copy of Electrical Reference book.

3.2 Standards and Regulations

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

3.3 Owner Furnished Equipment

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

**4: PROOF OF PERFORMANCE:**

4.1 Inspection

1. After completion of all installation, contractor shall demonstrate to CGTA and TCMS that all welds and installations are watertight, in accordance with paragraph 4.2. Any deficiencies noted shall be repaired at Contractor's expense.

4.2 Testing

1. All deck penetrations and cable transits shall be tested as required by attending TCMS.
2. Contractor shall use perform dye penetrant tests to all new welds to ensure watertight integrity.
3. All cable transits shall be hose tested to ensure watertight integrity.
4. All electrical equipment disturbed by this scope of work shall be fully tested for correct operation.

4.3 Certification

1. All weld procedures shall be approved by TCMS prior to work commencing.
2. TCMS shall inspect the completed installation as part of the vessel's Division 3 certification.

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**H-09 – Cable Transit Repairs**

**5: DELIVERABLES:**

5.1 Reports, Drawings, and Manuals

1. Contractor shall provide CGTA with two copies of results from dye penetrant testing.

5.2 Spares

N/A

5.3 Training

N/A

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**H-10 – Wet Lab Drain Piping**

**1: SCOPE:**

The intent of this specification item is to renew a small section of corroded drain piping from the Wet Lab leading into in the Laundry Room.

**2: TECHNICAL DESCRIPTION:**

2.1 General

1. Contractor shall cut out & renew existing section of drain piping in Laundry Room coming from Wet Lab Deck Drain. Section of piping to be renewed is from the deck drain to the 1<sup>st</sup> 'Roust-A-Bout' in Laundry Room.
2. New piping section shall be made galvanized steel threaded NPT 2" except through the deck where a weld deck penetration is required. Contractor shall renew the 2" tee and one end shall extend beyond ducting minimum of 4". Extension shall be plugged with a NPT plug, existing bell reducer is not required. Plug allows for a clean-out of the pipes.

2.2 Location

The location of the floor drain is in the Wet Lab just aft of the conveyor used to discard fish overboard. The drain piping is in the Laundry Room outboard of the aft section of washers/dryers.

2.3 Interferences

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

**3: REFERENCES:**

3.1 Guidance Drawings/Nameplate Data

N/A

3.2 Standards and Regulations

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

3.3 Owner Furnished Equipment

N/A

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**H-10 – Wet Lab Drain Piping**

**4: PROOF OF PERFORMANCE:**

4.1 Inspection

A visual inspection of the completed work shall be done by CG TA.

4.2 Testing

Testing shall be done by pouring a large amount of water in the drain and checking it for leaks. Any leaks shall be repaired by Contractor at their expense.

4.3 Certification

N/A

**5: DELIVERABLES:**

5.1 Reports, Drawings, and Manuals

N/A

5.2 Spares

N/A

5.3 Training

N/A

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**E-01 – Anchor Windlass**

**1: SCOPE:**

The intent of this specification item is to remove the Anchor Windlass from the ship and complete a 5 year TCMSB survey on it.

**2: TECHNICAL DESCRIPTION:**

2.1 General

1. The HEPBURN anchor windlass, including gearbox, wildcat clutches and warping heads shall be disassembled, and laid out for inspection by the CG TA and TCMSB.
2. Forward anchor windlass is a double wildcat, horizontal type. Two warping drums are fitted, one on each end of the main spindle. It is driven by an electric motor, through a totally enclosed, oil bath lubricated, triple reduction gearbox.
3. Prior to being disabled, the motor shall be tested as per section 4.2 of this specification.
4. Electric motor shall be electrically isolated, locked out and tagged at MCC breaker and disconnected at motor terminal box.
5. Anchor chains shall be removed from the ship as specified in Specification Item E-02.

**NOTE:** The costs associated with removal & re-installation of the Anchor Chains shall not be included in this specification item.

6. The entire Anchor Windlass assembly shall be unbolted & removed from the ship for disassembly & inspection by Contractor.
7. Deck area under windlass and windlass base shall be cleaned to SSPC-SP10 standard (Approximately 70ft<sup>2</sup>).
8. Contractor shall renew five cable stand pipes located aft of anchor windlass base. Each new standpipe shall be of equal size and grade as original, and be fitted with a metallic watertight cable gland. Contractor shall ensure all cables are undamaged during this process, and ensure/verify watertight and electrical integrity of the completed installation.
9. After Anchor Windlass is removed, Contractor shall perform twenty ultrasonic thickness measurements in a grid pattern on the deck surface where windlass was attached. Thickness readings shall form part of the deliverables described in section 5.1 of this specification.
10. If deck plating is determined by CG TA to be too thin, plating renewals shall be completed by PWGSC 1379 action.
11. Cleaned deck area shall have the following painting schedule supplied & applied by Contractor:
  - a. **First Coat:** Intershield 300, Abrasion Resistant Aluminum Pure Epoxy, Colour = Aluminum, 5 mils D.F.T. in way of bared steel.

## E-01 – Anchor Windlass

- b. **Second Coat:** Intershield 300, Abrasion Resistant Aluminum Pure Epoxy, Colour = Bronze, 5 mils D.F.T. in way of all areas.
  - c. **Third Coat:** Intershield 9G, High Solids Epoxy Non-Skid Deck Coating, Colour = Red, 30 mils D.F.T. at thinnest point, Roller-Applied in a ridged pattern.
12. Gearbox shall be drained of all oil, inspection cover removed and back lash between gears shall be measured and witnessed by CG TA. These measurements shall be taken and recorded before removal of the electric motor. These measurements shall form part of the deliverables as described in section 5.1 of this specification. CG TA shall give approval prior to the electric drive motor being removed for overhaul.
13. Windlass is powered by a Siemens -1PB1-200 3 speed electric motor, rated at 10kW. Motor is fitted with an electromagnetic disc brake (Model 2LM2-028). The motor and brake assembly shall be electrically and mechanically disconnected and removed from the vessel / workshop for full overhaul and inspection.
- NOTE:** If any Contractor does not have an electrical shop on site, they shall indicate the identity of their electrical sub-contractor as part of their bid.
14. Contractor is responsible for all aspects of motor removal, return and re-installation as per original, including removals and re-installations of interference items. Contractor shall take note of, identify and retain all shims which are present in way of the motor mount.
15. Motor shall be completely dismantled, cleaned with suitable approved solvents and lint-free rags, baked, and laid out for inspection. All insulation shall be inspected for cracking, softening, oil saturation, breaks, and signs of overheating. Stator windings shall be given a thin coat of motor winding varnish, GE # 1202 or equivalent.
16. After motor has been cleaned, insulation tests shall be taken on stator windings. Results of these tests shall form part of the deliverables as described in section 5.1 of this specification. A minimum value of 100 mega-ohms will be accepted.
17. Bearings and shafts in way of the running surfaces shall be inspected for wear and defects. Measurements shall be taken in both the horizontal and vertical planes, and shall form part of the deliverables as described in section 5.1 of this specification.
18. All bearings and gaskets shall be renewed.
19. Any defects shall be brought to the attention of CG TA. Any unspecified repairs and parts required shall be obtained through PWGSC 1379 action. Full information regarding all Contractor-supplied replacement parts shall be provided to the CG TA.
20. Once motor parts and components are ready for inspection, Contractor shall notify the CG TA and TCMSS so that a survey inspection can be performed.
21. When approvals have been completed, motor shall be reassembled in good order.

## E-01 – Anchor Windlass

22. Both wildcat brake assemblies shall be let go and removed from the windlass for inspection and cleaning. All hinge pins, fulcrums and shafts shall be freed up, cleaned and grease ways proven clear. Contractor shall be required to supply and install new asbestos-free brake linings on brake bands. Contractor shall supply and fit new brass fasteners to hold the linings in place.
23. Clutch actuating levers shall be disconnected and removed for inspection and cleaning. All hinge pins and fulcrums shall be freed up and grease ways proven clear.
24. Warping drums shall be pulled from output shaft, cleaned up and their mounting surfaces, keys and keyways inspected.
25. Top cover of gear case shall be removed and main output shaft bearing halves shall be opened for inspection. Care shall be taken to positively identify all bearing components at time of removal to insure they are returned to their original positions at reassembly.
26. Outer support bearing caps shall be removed and top bearing halves inspected. Care shall be taken to positively identify all bearing components at time of removal to insure they are returned to their original positions at reassembly.
27. Output shaft shall be raised clear of bearing housings and fully supported. Bottom bearing halves shall then be inspected. Measurements shall be taken of shaft diameter at each bearing surface, in two directions, and recorded. Bearing halves shall be cleaned up and inside diameters measured at three locations (each half) and recorded. Bearing to shaft clearance to be determined and recorded. Two type written copies of all recorded measurements shall be passed to CG TA. CG TA shall be made aware of any excess wear or deficiencies with bearings as soon as possible once noted.
28. Reduction gear train shall be completely disassembled. All roller bearings (4) shall be removed and replaced with new CFM bearings. Interior of gearbox shall be wiped clean using lint free rags.
29. After inspection of gear train by CG TA and TCMS, Contractor shall supply and install anti-friction roller bearings, similar to those removed. Bearings and gears shall be installed in the gear case in good order.
30. When assembled, the gearing shall be rotated at least one full revolution by hand to prove gearing is running true and not binding. Contractor shall provide a type written list of specific bearing requirements for each location in gearbox to CG TA.
31. Anchor chain wildcats shall be removed from output shaft, cleaned up and their bearings and bearing surfaces inspected and measured.
32. Dog clutches shall be removed from shaft, cleaned up and their bearings and bearing surfaces inspected and measured. All measurements to be recorded and two type written copies passed to CG TA.
33. Main driving gear shall be cleaned up and carefully inspected for any sign of wear or damage.
34. All grease passages shall be proven clear and operational to satisfaction of CG TA.

## E-01 – Anchor Windlass

35. After approval from CG TA and final inspection by TCMS, clutches, gypsies and warping drums to be reassembled onto output shaft in good order. Contractor shall ensure a sufficient quantity of lubrication is applied to all bearing surfaces prior to reassembly.
36. Output shaft bottom bearing halves shall be fitted into their respective positions and shaft lowered into position. Contractor is to ensure proper meshing of drive gear with intermediate gearing. Bearing top halves shall be fitted into their caps, bearing caps positioned and torqued down in their appropriate places. Shaft bearings and clutches shall be fully greased.
37. The output shaft shall be rotated a minimum of two (2) full rotations to prove the proper meshing of gearing and that the unit is free of binding, to satisfaction of CG TA.
38. Overhauled electric motor shall be reinstalled on windlass and full set of backlash readings shall be taken recorded. Two type written copies of backlash measurements shall be handed to the CG TA.
39. The entire windlass exterior shall be Commercial Blast SSPC-SP6 to remove all accumulated paint build up, rust, scale and debris. Contractor shall ensure all components of windlass are adequately protected from ingress of any debris resulting from cleaning. Any damage caused by such ingress shall be repaired at Contractor's expense.
40. Anchor Windlass base & five new stand pipes shall have the following painting schedule supplied & applied by Contractor:
  - a. **First Coat:** Intershield 300, Abrasion Resistant Aluminum Pure Epoxy, Colour = Aluminum, 5 mils D.F.T. in way of bared steel.
  - b. **Second Coat:** Intershield 300, Abrasion Resistant Aluminum Pure Epoxy, Colour = Bronze, 5 mils D.F.T. in way of all areas.
  - c. **Third Coat:** Intergard 377, Abrasion Resistant Epoxy, Colour = Black, 5 mils D.F.T. in way of all areas.
41. All working threads, pins, bearing ends and grease fittings requiring routine lubrication in service, shall be protected from paint application.
42. Once reassembly is complete Contractor shall place anchor windlass on its base and torque it down using new CFM Grade 8 fasteners.
43. After re-installation on deck, CG TA shall witness backlash readings and given his approval, gearbox cover shall be reinstalled. Contractor shall supply and install new oil-proof jointing for top cover. Flange bolts shall be re-secured, using anti-seize compound on threads.
44. Contractor shall refill the gear case with new gear oil to the working level. Oil shall be Contractor supply – 62 litres ESSO SPARTAN EP 220 or CCG approved equivalent.
45. Brake bands and clutch actuating levers are then to be reinstalled and demonstrated to be in good working order. All threads and pivot points shall be running free and lubricated.
46. Contractor shall wire up electric motor as originally installed & remove active lock outs.

## E-01 – Anchor Windlass

47. Anchor chains shall be installed on the wildcats once Specification Item E-02 is completed. Windlass shall be trialed again to ensure satisfactory operation of clutches and wildcats. A final test shall be done by lowering and raising each anchor and chain to the satisfaction of CG TA, again with motor current load being recorded.
48. Contractor shall advise TCMSB of work in progress and shall schedule inspections as required. Contractor shall include sufficient time for any additional testing required by TCMSB inspectors.

### 2.2 Location

Bow, upper deck forward

### 2.3 Interferences

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

## 3: REFERENCES:

### 3.1 Guidance Drawings/Nameplate Data

1. A copy of Hepburn Manual may be borrowed from Chief Engineer.
2. A copy of the Siemens electric motor (1PB1-200) and brake (2LM2-028) manual may be borrowed from Chief Engineer.
3. Contractor shall refer to International Paint specifications for proper application specifications. In the event of conflict between this specification and International Paint specifications, International Paint specification shall be followed.

### 3.2 Standards and Regulations

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

### 3.3 Owner Furnished Equipment

1. Unless otherwise stated, all required materials shall be Contractor supply.

## 4: PROOF OF PERFORMANCE:

### 4.1 Inspection

As described in Technical Description

### 4.2 Testing

## E-01 – Anchor Windlass

1. The windlass shall be test run before disassembly, and again after complete reassembly. Final results shall be compared, and any deficiencies or degraded conditions shall be investigated and repaired at contractor's expense.
  - a. Contractor shall take amperage readings of the motor. Starting current and the full load currents on each phase shall be recorded.
  - b. Insulation Resistance (Megger) readings shall be taken on motor while it is electrically disconnected, and mounted to the base.
  - c. Vibration analysis of the motor shall be performed. This shall be done with the system warm and motor running in a no-load condition.
2. Once windlass is installed, and before installation of anchor chains; windlass shall be run in each direction for a minimum of 15 minutes, with electric current draw on each of three phases being recorded. All bearings shall be monitored for signs of overheating. A load test shall be performed by using the warping drums to pull on a dock bollard, with motor current load being recorded. Testing shall be witnessed by CG TA and TCMS.

### 4.3 Certification

1. TCMSB is to sign off Anchor Windlass in Ships Survey Record Book and DIV III report.

## 5: DELIVERABLES:

### 5.1 Reports, Drawings, and Manuals

1. A copy of all test results shall be provided to Chief Engineer within 24 hours of any test taking place. This documentation may be in the form of photocopied handwritten notes.
2. A computer generated report shall be provided, containing all test results, paint application reports, and inspection results.
3. As described in Technical Description, any renewed components and sub-component parts or reference numbers shall be recorded and provided

### 5.2 Spares

N/A

### 5.3 Training

N/A

## E-02 – Anchors & Chains

### 1: SCOPE:

The intent of this specification item is to sandblast, inspect, and paint the vessels anchors & chains and to have them inspected by TCMSB for credit.

### 2: TECHNICAL DESCRIPTION:

#### 2.1 General

1. Port and Starboard anchors and mooring chains shall be removed from ship for inspection and maintenance.
2. After lowering the anchors (2250lbs each) the bitter ends of both mooring chains shall be disconnected in the chain lockers and all chain shall be lowered and ranged. Chains are 28mm dia. (6 shots Port, 7 shots Starboard = 1171 feet total)
3. This work shall be carried out in conjunction with the Specification Items E-01 Anchor Windlass, E-03 Chain Locker, and if required, E-07 Bitter End Modifications.
4. Anchors and chains shall be thoroughly cleaned by high pressure fresh water wash (3000 psi minimum)
5. Once pressure washed, the anchors and cables shall be cleaned by abrasive sweep blasting to SSPC-SP7 standard
6. Once blasting is completed, anchors and chains shall be blown clear of all grit and debris, and kept in a clean and dry work area (area where elements are not affecting chain or painting process).
7. The first shot of chain currently connected to the anchor shall be unshackled from the anchor and the rest of the chain. That shot of chain is to be shifted and rejoined to the rest of the anchor chain at the bitter end. Contractor to include the price of removing and installing joining shackles.
8. Contractor shall take a complete set of measurements of the chain and provide them to CG TA and TCMS before inspection. Measurements should be random links equally spaced out over the shot with four (4) measurements per shot of chain. Measurements are to be average diameter of the chain as taken by measuring horizontally and vertically the link, then dividing the sum of the two measurements by two (2). Measurements taken are to be presented in a table to CG TA as part of the inspection of the chain.
9. Prior to painting, the Contractor shall arrange for TCMSB to inspect the anchors and chains, in the presence of the CG TA.
10. Contractor shall quote on repairing six (6) slack studs plus a unit rate for adjustment purposes. Swivels shall be cleaned, inspected for smoothness of operation, and properly lubricated.

## E-02 – Anchors & Chains

11. Joining Shackles shall be painted red with equal number of white-painted links on either side. The number of white-painted links shall correspond to the number of shots from the anchor joining shackle. The outer end links of each white-painted set shall be marked by seizing wire, close hitched around the link stud. The number of turns of seizing wire should also correspond to the number of shots that they are marking. Painting shall be done shortly after completion of abrasive blasting, before chain can rust, and conditions shall comply with paint manufacturer's specifications.
12. Chains to be given two (2) coats of DEVOE Bar-Rust 235. Each coat to be of contrasting colour with the second coat being gloss black. Between each coat, cable is to be rolled 180 degrees.
13. Both anchors shall be given two (2) coats of DEVOE Bar-Rust 235. Each coat to be of contrasting colour with the second coat being gloss black.
14. Bitter ends of the chain shall be re-secured to bitter end connection points, while free ends are to be re-secured to anchors with Babbitt pellets. Center shackle pins shall be sealed with lead.
15. Anchors and Chains shall be re-stored in good order upon completion of all related specified work.

### 2.2 Location

Chain Locker, bow and engine room workshop.

### 2.3 Interferences

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

## 3: REFERENCES:

### 3.1 Guidance Drawings/Nameplate Data

Drawings:

511/03 Bitter End Details

511/04 1of2 & 2of2 Anchoring Arrgt & Details

### 3.2 Standards and Regulations

1. Acceptable wear of the chain as per Hull Inspection Regulations allows for a minimum diameter of 24.75mm on a 28mm chain.

### 3.3 Owner Furnished Equipment

Unless otherwise specified, all materials, labour and crange are to be Contractor supplied.

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**E-02 – Anchors & Chains**

**4: PROOF OF PERFORMANCE:**

4.1 Inspection

1. Inspections are to be carried out to the satisfaction of TCMSB and CG TA inspectors

4.2 Testing

1. Measurements of the anchor chains are to be taken as described in step #8 of the Technical Description.

4.3 Certification

1. Contractor is responsible to ensure TCMSB signs off all surveyed Anchors & Chains in the vessel's Survey Record Book and DIV III report.

**5: DELIVERABLES:**

5.1 Reports, Drawings, and Manuals

1. Contractor shall submit a report with all measurements as described in Technical Description step #8
2. Contractor shall supply the product data sheets and MSDS sheets on all products used during the course of this work (cleaning, coating, etc.).

5.2 Spares

N/A

5.3 Training

N/A

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**E-03 – Chain Locker**

**1: SCOPE:**

The intent of this specification item is to clean, inspect, and re-coat the chain locker to obtain TCMSB credit.

**2: TECHNICAL DESCRIPTION:**

2.1 General

1. Contractor shall open up the Chain Lockers (Frames 58 - 61) for TCMSB Inspection and survey.
2. This work shall be carried out in conjunction with the following Specification Items: E-02 – Anchors & Chains, and E-07 Bitter End Modification.
3. Contractor shall provide all crantage, scaffolding, equipment, and transportation necessary to accomplish this work.
4. Prior to entering or working in the chain lockers, the Contractor shall obtain the necessary gas-free certificates for entry or hot work as appropriate. These certificates are to be renewed in compliance with the CG FSM regulations. At all times, copies of the certificates are to be posted at the point of entry to the chain lockers with a second copy given to the CG TA.
5. The false bottoms of the chain lockers shall be removed and relocated as necessary to provide access to the work area. These shall be re-stowed in good order on completion of the inspection and any re-coating.
6. All internal surfaces of the Chain Lockers, including false bottom plates, shall be cleaned using high pressure fresh water washing (3000 psi minimum). Contractor to ensure that the sounding tube bottom is water washed in order to properly inspect it for wear. Chain Lockers to be pumped dry and wiped down with clean lint-free rags. All liquids, mud and debris shall be removed ashore by the Contractor.
7. All loose rust and loose scale shall be removed from all internal surfaces, including false bottom plates, to SSPC-SP3 standard. All debris shall be removed ashore by Contractor. All internal surfaces shall be vacuumed & wiped clean.
8. All internal steel surfaces & covers, prepared as described in paragraphs 6 and 7, shall be coated as follows:
  - a. **First (Primer) Coat** – Amercoat Pre-Primer 167, 40 microns D.F.T.;
  - b. **Second Coat** – Amercoat Bar-Rust 235, buff colour, 125 microns D.F.T.;

## E-03 – Chain Locker

- c. **Third (Stripe) Coat** – Amercoat Bar-Rust 235, 125 microns D.F.T., to be applied according to manufacturer’s recommendations to all edges, welds, and difficult to reach areas, colour to be contrasting to the second and fourth coats;
  - d. **Fourth (Top) Coat** – Amercoat Bar-Rust 235, off-white colour, 125 microns D.F.T.
9. An independent NACE inspector shall be subcontracted to inspect and certify all aspects of paint preparation in this space. This NACE inspector may be used for other paint work as required during this refit.
10. Contractor shall contact TCMSB inspector when required. CG TA shall be notified at least 4 hours in advance of when inspections are to be done.

### 2.2 Location

1. The chain locker is located between frames 58-61. Access is through the Engine Room Workshop.

### 2.3 Interferences

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

## 3: REFERENCES:

### 3.1 Guidance Drawings/Nameplate Data

1. Drawing # 120/004 Tank Capacity Plan
2. Drawing # 532/02 List Of Manholes
3. Drawing # 703/04 Manhole Cover
4. Appendix A – Amercoat 235 Application Specification

### 3.2 Standards and Regulations

1. The following Coast Guard Standards and or Technical Bulletins must be adhered to in the course of executing this specification. Copies of these standards and bulletins can be obtained from the CCG Technical Authority.
  - a. Canadian Coast Fleet Safety Manual (DFO 5737)
  - b. Coast Guard ISM Lock Out/Tag Out Procedures
  - c. Coast Guard ISM Confined Space Entry Procedures

### 3.3 Owner Furnished Equipment

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

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**E-03 – Chain Locker**

**4: PROOF OF PERFORMANCE:**

4.1 Inspection

1. Contractor shall be responsible for the co-ordination of all inspections with TCMSB Surveyor, and produce an inspection schedule prior to commencement of work.
3. Upon completion of all repairs and testing, Contractor and CG TA shall conduct a final inspection and ensure chain locker, covers, and vents have been returned to operating conditions and the attending TCMSB Inspector has completed all inspections.

4.2 Testing

1. The attending TCMS Inspector shall determine the test method. All tests shall be witnessed by the attending TCMS Inspector and the CGTA.

4.3 Certification

1. Contractor is responsible to ensure the TCMSB Inspector signs off surveyed chain locker in the vessel's Hull and Machinery Survey Record Book and Division 3 report.

**5: DELIVERABLES:**

5.1 Reports, Drawings, and Manuals

1. Contractor shall supply the product data sheets and MSDS sheets on all products used in the course of this work (cleaning, coating).
2. Contractor shall provide a copy of all test certificates to CG TA.
3. Safety Management System forms and checklists shall be provided to CG TA

5.2 Spares

N/A

5.3 Training

N/A

CCGS Alfred Needler  
Jan. 5th – Feb. 22nd, 2016 Dry-Docking Refit  
**E-04 – Ventilation Cleaning**

**1: SCOPE:**

The intent of this specification item is to clean the accommodation and Galley ventilation ducting at the end of refit period.

**2: TECHNICAL DESCRIPTION:**

2.1 General

1. Contractor shall clean the following ventilation systems as close to the end of the Refit Period as possible:
  - a) Forward accommodation
  - b) Aft accommodation
  - c) Forward washrooms exhaust
  - d) Aft washrooms and laundry exhaust
  - e) Galley Exhaust Duct Cleaning
2. Contractor shall be responsible for the removal/installation of any deck heads in order to gain access to the ventilation trunking. Any items disturbed to gain access to certain areas shall be reinstalled in good order in its original location and condition.
3. Prior to commencing any work, Contractor shall lock and tag out each system supply/exhaust fan set. Contractor shall supply and install their own locking devices and keep possession of all keys during the scope of this work.
4. Contractor is responsible for the cleaning of all spaces, furniture, equipment, etc. that is contaminated or soiled during the work.
5. Presently some diffusers have been physically blocked with stuffing, etc. in various cabins and spaces. This has been carried out by various personnel without approval or knowledge of the spec writer. Contractor shall remove all blanks or plugs as they are encountered, and provide documentation to CG TA identifying all blockages encountered. These blanks shall not be replaced, such that all spaces will be served by ventilation and exhaust flow as applicable.
6. Contractor shall provide the services of a qualified HVAC representative to chemically and mechanically clean the vessel's ducting. All ducting shall be thoroughly cleaned of dust, dirt, debris, scale, rust, etc. These items shall be disposed of by Contractor.
7. With regards to dryer ducting it shall be cleaned starting at the dryer itself. There are 3 dryers located in laundry room and Contractor shall be responsible for gaining access to ducting and returning dryers to their original stowed position.
8. With regards to the Galley Exhaust Duct Cleaning:

## E-04 – Ventilation Cleaning

- a) Contractor shall open up and clean galley exhaust plenum.
- b) Contractor is responsible for the removal of all coverings in the galley to gain access to the trunking. The length of plenum runs from Galley plenum is located on trawl deck, starboard side. Run is about 5 feet, as the galley and stove is located directly below it.
- c) Contractor is responsible for any rigging or scaffolding that maybe required.
- d) Contractor is responsible for the cleanliness of immediate area during and after work is complete. Contractor is responsible for the removal of all cleaning materials and debris.
- e) Range Hood and trunking shall be chemically and/or steam cleaned. All dirt, grease, debris, and cleaning fluids shall be trapped and shall be removed ashore and disposed of by Contractor
- f) The range hood filter screens shall be removed and steam cleaned
- g) Contractor is responsible for closing and resealing air tight all access covers disturbed during ducting cleaning and inspection, upon completion of work.

9. All work shall be completed to satisfaction of CG TA.

### 2.2 Location

1. Access to the ventilation system is throughout all areas of the ship.

### 2.3 Interferences

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

## 3: REFERENCES:

### 3.1 Guidance Drawings/Nameplate Data

Drawings: 761/02 (1 of 2 & 2 of 2)

### 3.2 Standards and Regulations

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

### 3.3 Owner Furnished Equipment

N/A

CCGS Alfred Needler  
Jan. 5th – Feb. 22nd, 2016 Dry-Docking Refit  
**E-04 – Ventilation Cleaning**

**4: PROOF OF PERFORMANCE:**

4.1 Inspection

1. Contractor shall notify CG TA upon starting and completing each ventilation system. This will allow for verification that each system has been completed and any deficiencies in the cleaning of duct work can be addressed.
2. Visual inspection of ducting by CG TA prior to final 'closing up'.

4.2 Testing

N/A

4.3 Certification

N/A

**5: DELIVERABLES:**

5.1 Reports, Drawings, and Manuals

1. Contractor shall provide a report of Duct Cleaning when the job is completed, summarizing the date and time each duct was cleaned, and the workers who were performing the task. The locations of any blockages encountered shall be identified in this report

5.2 Spares

N/A

5.3 Training

N/A

CCGS Alfred Needler  
Jan. 5th – Feb. 22nd, 2016 Dry-Docking Refit  
**E-05 – Bitter End Modifications**

**1: SCOPE:**

The intent of this specification is to modify the anchor chain bitter ends to allow for a quick release of either anchor chain in case of emergency.

**2: TECHNICAL DESCRIPTION:**

2.1 General

1. Contractor shall complete this task in conjunction with Specification items: E-01, E-02 & E-03
2. Contractor shall modify current bitter end arrangement to allow for a quick release of port or stbd anchor chains in case of emergency. The new arrangement shall allow for either anchor chain to be released while the other stay secured.
3. Contractor shall design a watertight box with a hinged lid & gasket which shall house both bitter anchor chain ends. This box shall be mounted directly between current bitter ends in workshop to allow for both ends to be housed in same box.
4. Box shall be designed so that once lid is opened it allows for easy access to bitter end release mechanisms.
5. If emergency escape ladder is in way of new bitter end arrangement it shall be modified by Contractor to allow easy access to escape hatch for ship's crew.
6. If old bitter end boxes are not in way of new arrangement they shall be closed up with new gaskets and left in place.
7. Final design of new bitter end arrangement shall be approved by CG TA & TCMSB. Drawings of the design shall be approved by TCMSB.
8. All disturbed paintwork shall be feathered in & one coat of primer & one coat of paint (white) applied in workshop. Disturbed paintwork inside chain locker shall be feathered in and painted according to painting requirements detailed in specification item E-03 Chain Lockers, ensuring work is completed only once.

2.2 Location

1. The anchor chain bitter ends may be accessed from the engine room workshop and the chain locker.

2.3 Interferences

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

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Jan. 5th – Feb. 22nd, 2016 Dry-Docking Refit  
**E-05 – Bitter End Modifications**

**3: REFERENCES:**

3.1 Guidance Drawings/Nameplate Data

1. Drawing: 511/03 Bitter End Details

3.2 Standards and Regulations

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

- a. Canadian Coast Fleet Safety Manual (DFO 5737)
- b. Coast Guard ISM Lock Out/Tag Out Procedures
- c. Coast Guard ISM Confined Space Entry Procedures
- d. Coast Guard Hot Work Procedures

3.3 Owner Furnished Equipment

N/A

**4: PROOF OF PERFORMANCE:**

4.1 Inspection

1. Contractor shall be responsible for coordination with TCMSB & CG TA for inspection of final installation.

4.2 Testing

1. Functional test of bitter end modification to ensure it allows the securing arrangement to drop & release the anchor chains.
2. All welding done on bulkhead shall have NDT testing completed to ensure no leaks.
3. Gasket sealing faces shall be chalk tested to ensure a proper sealing surface is achieved.

4.3 Certification

1. Prior to work commencing, TCMSB shall approve overall design & drawings of new arrangement.
2. TCMSB shall inspect the installed configuration in order to lift the current deficiency.

**5: DELIVERABLES:**

5.1 Reports, Drawings, and Manuals

1. Contractor shall supply two copies of all welding test reports to CG TA and one copy to TCMSB.
2. Contractor shall supply CG TA with two paper copies of new bitter end arrangement & release box detail drawings, as well as two digital copies on two separate USB sticks.

5.2 Spares

N/A

CCGS Alfred Needler  
Jan. 5th – Feb. 22nd, 2016 Dry-Docking Refit  
E-05 – Bitter End Modifications

5.3 Training  
N/A

CCGS Alfred Needler  
Jan. 5th – Feb. 22nd, 2016 Dry-Docking Refit  
**E-06 – #1 SSG Engine Rebuild**

**1: SCOPE:**

The intent of this specification item is to complete an overhaul & 5 Year Survey to the prime mover for #1 Ship's Service Generator (Port).

**2: TECHNICAL DESCRIPTION:**

2.1 General

1. Contractor shall carry out a complete overhaul to the prime mover for Port ship service generator set. The diesel engine is a CATERPILLAR 3306-C Serial No. 85Z-08458. Rated at 210 KW at 1800 rpm
2. Contractor is required to engage the services of a qualified CATERPILLAR Field Service Representative in order to oversee this overhaul. For bidding purposes, an allowance of forty thousand dollars (\$40,000) shall be provided for services provided by the FSR. This allowance shall be adjusted upward or downward by PWGSC 1379 action based on FSR invoices.
3. Contractor shall isolate and lock out the 24 volt, start air, fuel & sea water supplies to #1 SSG prior to any work being started.
4. Contractor shall separate engine from alternator. This coupling shall be re-secured after rebuild.
5. The engine shall be completely opened up for survey and inspection. The CATERPILLAR service manual shall be adhered to and its instructions carried out for a complete (12,000 hr.) Overhaul. The work is subject to survey by TCMSB and CG TA. Contractor shall notify TCMS & CG TA as work progresses.
6. The rebuild shall include but not be limited to replacing the following parts with new or remanufactured units: cylinder head, cylinder packs, jacket water pump, sea water pump, oil pump, oil cooler, injectors, turbo cartridge, bearings (mains, rods, thrusts), gaskets, misc. seals & hardware, thermostat & hoses, engine oil & coolant, fuel and air filters.
7. Contractor shall open up sea water cooler and have the tube bundle dipped in muriatic acid. Sea water cooler shall be re-assembled using new gaskets/o-rings and be pressure tested to ensure it has no leaks.
8. Contractor shall clean & test aftercooler.
9. Contractor shall arrange for TCMSB & CG TA to view engine and it's components during various stages of rebuild.
10. Contractor shall verify and record all sensor outputs with calibrated test equipment; i.e. Jacket water probes, lube oil probes, overspeed, low lube oil level, low coolant level, fuel pressure gauges, etc.
11. Following all required tests, inspections, and overhauls, the engine shall be reassembled and reinstalled and aligned to the previously removed alternator.

CCGS Alfred Needler  
Jan. 5th – Feb. 22nd, 2016 Dry-Docking Refit  
**E-06 – #1 SSG Engine Rebuild**

## 2.2 Location

Engine room, port side

## 2.3 Interferences

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

## **3: REFERENCES:**

### 3.1 Guidance Drawings/Nameplate Data

Reference Manuals: Caterpillar 3306 Manuals

Engine Data:

- Make: Caterpillar
- Model: 3306
- Serial # 85Z-08458
- Arrangement: 1W 3818

### 3.2 Standards and Regulations

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

### 3.3 Owner Furnished Equipment

N/A

## **4: PROOF OF PERFORMANCE:**

### 4.1 Inspection

Inspection of all parts shall be completed by Caterpillar FSR.

### 4.2 Testing

Engine shall be run up and place on load for at least an hour & checked for proper performance according to FSR, TCMSB & CG TA. Engine shall be checked for fluid leaks, any leaks shall be repaired at Contractors expense.

### 4.3 Certification

Contractor shall ensure TCMSB signs off engine on 5 year survey in Ship's Survey Record Book and DIV III Report.

CCGS Alfred Needler  
Jan. 5th – Feb. 22nd, 2016 Dry-Docking Refit  
**E-06 – #1 SSG Engine Rebuild**

**5: DELIVERABLES:**

5.1 Reports, Drawings, and Manuals

Two copies of report on the engine rebuild from the FSR shall be provided to the CG TA and one copy provided to TCMSB.

5.2 Spares

N/A

5.3 Training

N/A

CCGS Alfred Needler  
Jan. 2 – Feb. 22, 2016 Dry-Docking Refit  
**E-07 – #1 Fire & General Service Pump Survey**

**1: SCOPE:**

The intent of this Specification Item is to open, clean and inspect the #1 Fire and General Service pump for TCMSB credit. The electric motor associated with this pump is also to be overhauled.

**2: TECHNICAL DESCRIPTION:**

2.1 General

1. Contractor shall isolate the pump both electrically and mechanically prior to commencing any work. Any piping removed shall be suitably blanked with solid blank flanges fitted with appropriate gaskets. Upon completion of piping isolation, Contractor is required to immediately notify the Chief Engineer to verify.
2. Contractor is to ensure that the piping is isolated in such a way to ensure the vessels fire main can still be used in the event of an emergency.
3. Contractor shall remove the pumping unit. This pump is fitted with a split mechanical seal Contractor shall disconnect all sea water pipes to the mechanical seal and disassemble as per manufacture instructions. Contractor shall supply and install a new version of this seal during reassembly.
4. Contractor shall note orientation of stub shaft and coupling before disassembly, along with the placement of any balancing weights. These must be followed during reassembly.
5. Pump shall be stripped out, cleaned and inspected. Pump shaft and casing are to be examined for corrosion/erosion and wear. All wear components are to be measured to ensure they are within manufacture's requirements. Any defects are to be brought to the attention of the Chief Engineer.
6. Contractor shall contact TCMSB inspector to arrange for inspection of the pump when it is completely disassembled and laid out. Contractor must provide advanced notice of the scheduled inspection to CG TA.
7. Electric motor shall be removed from the vessel and taken to an accredited electric motor service/repair facility. Motor is to be megger tested and readings recorded before removal.
8. The motor is to be completely opened for inspection and cleaning. All internals are to be wiped clean using an approved cleaning solvent. The motor is to be steam cleaned, baked and new insulating material applied to the windings as required. If during or after the cleaning process it is determined that there is some winding work required, the Chief Engineer is to be notified prior to commencement of repairs.
9. Contractor shall reassemble pumping unit using new gaskets, O-rings, and mechanical seal.

## E-07 – #1 Fire & General Service Pump Survey

10. Contractor shall supply and install new motor shaft bearings. Bearings shall be OEM equipment or equal. Bearings shall be carefully installed on the rotor shaft using proper techniques to preclude the possibility of damage to bearings and/or shaft.
11. Motor is to be re-assembled in good order with meggar testing of insulation performed and recorded once again. Motor is to be returned to the vessel and installed to the pump unit.
12. Precision alignment to each coupling shall be checked and adjusted as required using a dial indicator. Acceptable tolerance is within 0.002”.
13. Contractor shall remove all blanks and re-install any removed piping using new gaskets once the pumping unit is reassembled.
14. Pump will be tested as per the testing requirements and all work must be completed to the satisfaction of CG TA and TCMSB.

### 2.2 Location

1. The #1 Fire and General Service Pump is located in the starboard forward area of engine room.

### 2.3 Interferences

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

## 3: REFERENCES:

### 3.1 Guidance Drawings/Nameplate Data

1. Machinery Manuals are available from the vessel upon request.

### 3.2 Standards and Regulations

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

### 3.3 Owner Furnished Equipment

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

## 4: PROOF OF PERFORMANCE:

### 4.1 Inspection

1. While the pump is disassembled, all components shall be laid out for inspection by CGTA and TCMSB.

CCGS Alfred Needler  
Jan. 2 – Feb. 22, 2016 Dry-Docking Refit  
**E-07 – #1 Fire & General Service Pump Survey**

4.2 Testing

1. The completed pump unit is to be test run for a period of one half hour, under load, to prove proper operation. During the load test, current readings and temperatures of the motor are to be recorded at 5 minute intervals. On successful completion of the test run, an additional set of megger readings shall be taken and recorded.

4.3 Certification

1. TCMSB certification under Division 3 Field # 3H026 is required for this specification to be considered complete.

**5: DELIVERABLES:**

5.1 Reports, Drawings, and Manuals

1. Contractor shall provide a written report detailing all measurements and readings recorded, as well as all work completed on the pumping unit.

5.2 Spares

N/A

5.3 Training

N/A





# EasyPrime



MARINE - INDUSTRIAL

## FLEXIBLE EPOXY PRIMER

- ◆ 100% solids - no VOCs
- ◆ OPS compatible
- ◆ Non flammable
- ◆ Very Low odor after mixing
- ◆ Forever flexible
- ◆ Surface tolerant
- ◆ Strong Wetting capability
- ◆ Excellent water resistance
- ◆ Penetrates porous surfaces
- ◆ DFT 75-100 microns (3-4 mils) or higher until the surface is saturated
- ◆ Compatible with most shop primers



DRINKING WATER SYSTEM COMPONENTS  
ANSI/NSF 61  
5N16, 6N21

EasyPrime is designed to be a low viscosity epoxy primer that wets out most surfaces. Its excellent flexibility allows it to virtually eliminate reverse impact damage common to most brittle curing epoxies. EasyPrime's chemistry allows it to penetrate a clean tight rusty surface. Since EasyPrime does not contain solvents there will not be any chance for solvent entrapment.

EasyPrime was primarily designed for use in ballast tanks of ships and barges. It should always be top coated with a second coat of EasyPrime or with EasyFlex. For potable water use top coat with EasyFlex

### **SURFACE PREPARATION:**

EasyPrime is designed to go over a minimum ST-2 or SP-2 prepared surface. All mill scale, sheet scale, grease, loose rust, dust and excess moisture must be removed. Well adhering paints may be left if they cannot be removed.

Always wash the surface with fresh water to remove soluble salts before applying the EasyPrime.

Ventilate at anytime the working area ensuring safe conditions and dry surfaces.

### **HANDLING:**

Do not store in direct sunlight. Mix Part A and Part B for three minutes with slow agitation. The mixture will get noticeably thinner. Apply with a brush, roller or airless sprayer. As EasyPrime is not fully pigmented, thin applications will appear transparent or hazy in color. As film thickness increases the color will appear as a solid bright blue green.

### **APPLICATION CONDITIONS:**

Substrate minimum temperature should not be lower than 3°C (39°F). Air temperature should not be lower than 4°C (40°F). Relative humidity should be lower than 95% EasyPrime product temperature should not be lower than 22°C (72°F).

## SAFETY INFORMATION:

Keep paint containers away from open flames. Always avoid prolonged contact with skin. In confined spaces always use a full-face shield with an organic cartridge and completely cover all exposed skin. The use of a poly-coated jumpsuit is recommended. Refer to safety analysis report by EFEH & Associates and EasyPrime's MSDS.

### Physical Data:

Finish	Haze to bright blue green color
Curing Mechanism	Chemical reaction
Volume Solids	100%
VOC	0
WFT recommended	75 – 125 microns ( 3 – 5 mils)
DFT recommended	75 – 125 microns ( 3– 5 mils)
Theoretical Coverage	20 – 13 M <sup>2</sup> /liter (800 – 500 sg.ft/gal)
Pot Life	@ 20°C/68°F – 80-90 minutes @ 35°C/95°F – 45 minutes
Dry to Touch at 20°C	8 Hours
Thinning	Do not thin
Flash Point Closed Cup	
Part A	above 100°C - 212°F
Part B	above 100°C – 212°F
Application Method	Brush, roller, airless (US 15-19/metric 0.381-.584) and adjust pressure as required. Apply in a cross hatch way ensuring good wetting of the rough steel surfaces.
Packaging Size	10 liters mixed material
UN Shipping	Non hazardous, non regulated
Shelf Life	36 Months
Recoat Window	@24° C (75°F) - 21 days @35°C (95°F) - 10 days

### Performance

2000 Hour Salt Fog – ASTM B117	Pass
Adhesion Pull Test – ASTM D4541	1700 psi
Exudation or Amine Blush	Pass
Conical Mandrel Bend –ASTM D522	>34%
Water Absorption – ASTM D570	0.9%
Water Vapor Transmission ASTM D1653	.0026 Perm inches (.0043 Perm Cm)
Heat Resistance Continuous	150°C (302°F)

## CAUTION:

We cannot assume any responsibility for surface preparation and application if not supervised by our authorized inspectors.

Manufactured by: ROYAL COATINGS INC. BELLE CHASSE, LA 70037 USA  
Phone: 504-392-8811 Fax: 504-392-2173  
Email: info@royalcoatings.net  
www.royalcoatings.net

# Easy Prep



## WATER BASED SURFACE CONDITIONER

Easy Prep is highly recommended when grit blasting is not possible. When properly used, Easy Prep leaves a super clean surface. It will dramatically improve the recoatability of aged epoxies and other paints.

### INSTRUCTIONS:

**Dilute Easy Prep about 1:1 or 2:1 with fresh water.**

Apply liberally to the old coatings and let stand 15-20 minutes. High pressure water wash with rotating nozzle only or vigorous scrubbing with hard bristle brush and make sure all the Easy Prep is removed.

Hand scrubbing will assist in removing heavier deposits of dirt. Use full strength on areas with visible residue and repeat the pressure washing.

### Technical Data

Packaging	5 Gal (19 liter) plastic pails
Color	Clear
Flash Point	None
Ph	11 -12
Biodegradability	Complete
Hazardous Content	None

### CAUTION:

Easy Prep is an alkaline cleaner and care should be taken to prevent eye contact or prolonged skin contact. Wear protective eye shields and waterproof gloves. See the MSDS for information.

For further information contact: Royal Coatings, Inc.  
2705 Concord Road  
Belle Chasse, LA 70037 USA  
Phone: (504)392-8811 Fax: (504) 392-2173

# EasyFlex



## FLEXIBLE EPOXY PAINT COATING

- 100% Solids – No VOCs
- OPS compatible
- Colors – light beige or grey
- Non-flammable
- Very low odor after mixing
- Forever flexible
- Surface tolerant
- Low temperature cure without additives
- Good chemical resistance
- Long term water resistance
- Excellent abrasion resistance



DRINKING WATER SYSTEM COMPONENTS  
ANSI/NSF 61  
5N16, 6N21

EasyFlex is designed for use as a multipurpose epoxy or wherever a flexible epoxy may be needed. It is suitable for use in ballast tanks, drinking water, dry cargo, engine rooms, hulls and deck coatings. EasyFlex should be applied over our EasyPrime epoxy.

### SURFACE PREPERATION

For new building, most shop primers are acceptable after sweep blasting SA1.0. Always apply Royal's EasyPrime first. Soluble salts, fat and all other foreign matter shall be removed enhancing long term performance. Sharp edges and rough welds should be broken or smoothed so that EasyFlex will cover 100% of the steel surfaces. For older surfaces hydro-blasting is usually sufficient. See EasyPrime data sheet for further information.

### HANDLING:

Do not store in direct sunlight. Mix Part A and Part B for three minutes with slow agitation. The mixture will get noticeably thinner. Apply with a brush, roller or airless sprayer(56:1). Heavier film builds may require multiple coats when brushing or rolling only. Before mixing the paint temperature should be 72°F or 22°C at a minimum

### APPLICATIONS CONDITIONS:

Substrate minimum temperature should not be lower than 3°C(38°F). Air temperature should not be lower than 4°C(40°F) and rising. Relative humidity should be lower than 90%.

### SAFETY INFORMATION:

Keep Paint containers away from open flames.  
Always avoid prolong contact with exposed skin.  
In confined spaces always use a full-face shield with an organic cartridge and completely cover all exposed skin.  
Refer to safety analysis report by EFEH & Associates, EasyFlex's MSDS and Royal's Safety Recommendations for confined space use.

### POTABLE WATER USE ONLY:

Let cure 48 hours @ 20°C (68°F) or above. At lower temperatures let cure 72 hours. Rinse the tanks with fresh water before use.

## Physical Data

Finish	Light Beige or Grey
Curing Mechanism	Chemical reaction
Volume Solids	100%
VOC	0
WFT	200 - 300 microns (8 - 12 mils)
DFT	200 - 300 microns (8 - 12 mils)
Theoretical Coverage	5.0 – 3.3M <sup>2</sup> /liter (200 – 133 sq./U.S. Gal)
Pot Life	@20°C/68°F - 60 minutes @35°C/95°F - 45 minutes
Dry to Touch at 20°C	8 – 10 Hours
Thinning	Do Not Thin
Flash Point Closed Cup	
Part A	>100°C (212°F)
Part B	>100°C (212°F)
Application Method	Brush, roller, airless (US 17-23/Metric 0.432-.584) And adjust pressure as required. 56:1 minimum required; apply in a cross hatch way ensuring good wetting of the rough steel surfaces if any
Packaging Size	10 liters mixed material
UN Shipping	Non hazardous, non regulated
Shelf Life	36 Months
Recoat Window	@24°C (75°F) – 10 days @35°C (95°F) - 5 days

## Performance

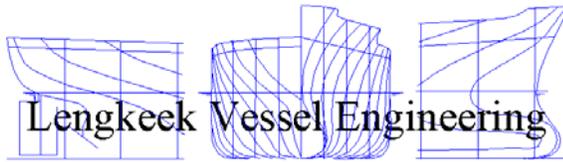
Adhesion Pull Test	ASTM-D4541	76.7KG/cm <sup>2</sup> (1090 psi)
Reverse Impact	ASTM-D2794	3.05 Joules (27 inch pounds)
Elongation	ASTM-D522	>34%
Exudation of Amine Blush		None
Weight Gain (30 day immersion)		
Diesel		Less than 0.5%
Crude Oil		Less than 0.5%
Heat Resistance Continuous		150°C (302°F)
90 Day Salt Water Immersion @ 50°C		No Effect

### CAUTION:

We cannot assume any responsibility for surface preparation and application if not supervised by our authorized inspectors.

Manufactured by: ROYAL COATINGS INC. , BELLE CHASSE, LA 70037 USA  
Phone: 504-392-8811 Fax: 504-392-2173 E-mail: info@royalcoatings.net  
www.royalcoatings.net

Provisional Tech Data Sheet: EasyFlex –07/12



**“CCGS Alfred Needler”  
Specification for  
Structural Repair of Corrosion Damage**

for  
**Department of Fisheries & Oceans /  
Canadian Coast Guard**  
Dartmouth, Nova Scotia



*Prepared By:*  
**Lengkeek Vessel Engineering Inc.**  
*Report Number: J15057-R01, rev 0*  
*Date: 12/Oct/2015*

<i>Prepared By:</i>	<i>D. Careless</i>
<i>Checked By:</i>	<i>B. Halverson</i>
<i>LVE Form 72, rev0</i>	

**Revision Matrix**

<i>Rev</i>	<i>Brief description of revisions made</i>	<i>Issued to client</i>
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## 1 SPECIFICATION DETAILS

### SCOPE OF WORK

This specification covers work to be completed onboard the CCGS “Alfred Needler” to affect repairs to areas determined to be sufficiently corroded as to warrant immediate attention. There are further areas that will require remedial work at a later date, and these are included here also, as additional thickness measurements and survey work will be needed to be undertaken during the same refit period that the areas requiring immediate attention are being dealt with.

The areas that require immediate consideration are known to be as follows:

1. Shaft Tunnel (web and flange of frame 12 (Port and Stbd)
2. Fresh Water Tank (Stbd) - Inboard Bulkhead Plating (approx.. frame 44-48)
  - Web frame (Stbd) Frames 47 and 48

The specification also covers additional survey work in the form of further thickness measurements to be taken, during the refit period, particularly in areas of concern that were difficult to access during the initial survey, in order to determine if further remedial work will need to be carried out with respect to steel replacement.

### GENERAL INSTRUCTIONS

- .1 This specification shall be read in conjunction with the guidance drawing provided outlining several details of the repair work to be undertaken, and the use and location of specific materials.
- .2 Wherever the words “approved by”, “equivalent” or similar phrases are used in this specification they shall be understood to mean the material, process, or item referred to shall require the written approval of the manufacturer.
- .3 Approval from the DFO/CCG is required if the Contractor wishes to deviate from any of the specified methods or recommended materials.

## 2 REFERENCES

- .1 CSA W47.1-03, Certification of Companies for Fusion Welding of Steel
- .2 CSA W59-03, Welded Steel Construction (Metal Arc Welding)
- .3 CSA 17, Canada Shipping Act - Tackle Regulations

- .4 CSA 28, Canada Shipping Act - Hull Construction Regulations
- .5 CSA 33, Canada Shipping Act – Marine Machinery Regulations
- .6 CSA 29, Canada Shipping Act - Hull Inspection Regulations
- .7 CSA 57, Canada Shipping Act – Safe Working Practices Regulations
- .8 MOSHR, Canada Labour Code – Marine Occupational Safety and Health Regulations
- .9 TP 127E, Transport Canada Marine Safety – Ship Electrical Standards
- .10 IEEE STD 45 – 1998 Recommended Practice for Shipboard Electrical Installations
- .11 IACS – No. 47 Part B – Repair Quality Standard for Existing Ships
- .12 Note: In case of conflict between any of the standards, then the most stringent requirements will prevail.

### **3 GENERAL NOTES**

#### **3.1 ON-SITE PROJECT OFFICER:**

All work to be completed to the satisfaction of the On-site Project Officer who, unless otherwise advised, will be the Chief Engineer of the ship, or his designated representative.

Upon completion of each item of the specification, the Chief Engineer shall be notified so that he may inspect the work prior to the complete closing up of any work.

Failure to give notification does not absolve the Contractor of the responsibility of providing the Chief Engineer the opportunity to inspect any item.

Inspection of any item by the Chief Engineer does not substitute for any required inspection by Transport Canada Marine Safety (TCMS), Public Works and Government Services Canada (PWGSC) or Health Canada (HC).

#### **3.2 SAFETY**

- .1 All contracted work shall be carried out in conjunction with Fleet Safety Manual Requirements outlined in document DFO 5737, “FLEET SAFETY MANUAL” that are applicable to contracted refit and dry-docking situations.
- .2 All contracted work shall be conducted in compliance with the requirements of the Canada Labour Code, Part 2.

- .3 Potential Contractors shall include with their bids the name of their Safety Manager or Supervisor who will ensure that these requirements for workplace safety are met
- .4 NOTE: Under the Canada Labour Code, Part 2, the Coast Guard has an obligation to exercise due diligence to ensure the safety of Contractors' workers as well as the ship's crew.

### **3.3 SUB-CONTRACTORS**

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

### **3.4 CHEMIST'S CERTIFICATES**

The Contractor shall supply the Chief Engineer with Marine Chemist's Certificates in accordance with TCMS TP 3177E before any cleaning, painting or hot work is commenced in confined spaces or machinery compartments.

Certificates shall clearly state the type of work permitted and shall be renewed as required by the regulations.

The Contractor and his sub-Contractors are advised that any work carried out in confined spaces as defined by the Canada Labour Code (CLC) and relevant provincial legislation must fully comply with all provisions therein.

### **3.5 DURATION OF SCHEDULED WORK**

- .1 The Contractor shall provide sufficient personnel, material, and equipment resources to complete the specified work, within the period of the contract.
- .2 Extra effort required due to the Contractor's failure to maintain his production schedule will not be paid for by CCG.

### **3.6 PROTECTION**

The Contractor shall provide adequate temporary protection for any equipment or areas affected by his work.

The Contractor shall take proper precautions to maintain in a proper state of preservation any machinery, equipment, fittings, stores or items of outfit which might become damaged by exposure, movement of materials, paint, sand, grit or shot blasting, airborne particles from sand, grit or shot blasting, welding, grinding, burning, gouging and painting.

Any damage shall be the responsibility of the Contractor.

### **3.7 WELDING**

The Contractor shall be currently certified by the Canadian Welding Bureau in accordance with Standard W47.1-03 "Certification of Companies for Fusion Welding of Steel Structures," Division 1, 2.1 or 2.2.

All personnel performing welding shall be approved by the Canadian Welding Bureau.

Welding materials to CSA W59-03.

### **3.8 AUXILIARY SERVICES**

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

### **3.9 SERVICE CONDITIONS**

All materials supplied and work carried out by the Contractor shall be adequate to meet service conditions of outside air temperature of minus (-) 40<sup>0</sup> C to plus (+) 35<sup>0</sup> C; for exterior installations.

All materials supplied and work carried out by the Contractor shall be adequate to meet service conditions of wind velocity of 50 knots; for exterior installations.

All materials supplied and work carried out by the Contractor shall be adequate to meet service conditions of water temperature of minus (-) 2<sup>0</sup> C to plus (+) 30<sup>0</sup> C; for exterior installations.

All materials supplied and work carried out by the Contractor shall be adequate to meet service conditions of shock loading of 2.5g horizontal, 1.5g vertical; for all installations.

### **3.10 HOT WORK & FIRE WATCHES**

- .1 Any item of work involving the use of heat in its execution requires that the Contractor advises the Chief Engineer prior to starting such heating and upon its completion.
- .2 The Contractor shall provide sufficient suitable fire extinguishers and a fire watch during any heating and until the work has cooled.
- .3 Ship's extinguishers are not to be used except in an emergency.

### **3.11 RELOCATIONS**

Any piping, manholes, parts and/or equipment requiring removal to carry out specified work and/or to gain access shall be refitted upon completion with new jointing, anti-seize compound, clamps and brackets as applicable (Contractor supply).

### **3.12 TEMPORARY LIGHTING & VENTILATION**

Temporary lighting and/or temporary ventilation required by the Contractor to carry out any item of this specification shall be supplied, installed and maintained in safe working condition by the Contractor and removed on completion of the related work.

### **3.13 VESSEL CLEANUP**

The principal work areas, as defined by this specification, shall be cleaned to "as new condition" on completion of the contracted work.

The Contractor shall ensure that all spaces, compartments and areas of the ship outside of the principal areas of work are "as clean as found" when work is completed.

### **3.14 MATERIALS & TOOLS**

All materials, unless otherwise specified, to be supplied by the Contractor.

Contractor to supply all necessary tools to perform specified work.

Ship's tools and equipment will not be available for Contractor's use except for specialty tools that will be issued by and returned to the Chief Engineer in good condition.

### **3.15 FIRE SAFETY SYSTEMS**

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

### **3.16 SMOKING**

The Public Service Smoking Policy forbids smoking in Government ships in all areas inside the ship where Contractor personnel will be working.

Contractor shall inform workers of the smoking policy and ensure that it is complied with in all cases.

### **3.17 ACCESS**

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

Contractors to ensure that no workers bring meals onboard the ship.

### **3.18 DFO/CCG FACILITIES**

The refit period will take place at a shipyard yet to be determined.

If the Contractor does not have access to washroom facilities off the ship, a designated washroom on board will be open during regular working hours for Contractor's use. If the cleanliness of the washroom is adversely affected by this usage, Coast Guard reserves the right to stop Contractor use of the facility.

Contractors are advised that normal working hours for ship's personnel during alongside refit periods are from 0800 hours to 2000 hours, seven (7) days a week, excluding statutory holidays. Permission to work outside of these hours on the ship must be obtained by the Contractor from the Chief Engineer in advance.

Contractor machinery located on the ship or the dock can only be run from 0700 hours to 1900 hours, Monday to Saturday. Contractor to ensure that any equipment used meets the current noise abatement regulations.

### **3.19 DOCKSIDE CLEANUP**

The Contractor is responsible for the complete cleanup of adjacent dock areas used by his personnel and/or equipment during and after completion of the contracted work. This shall include, but not be limited to the following; 1) Removal of all dirt, grit and debris; 2) Removal of all staging, containers and equipment; 3) Immediate cleanup and legal disposal of any leaked oils, solvents or other hazardous materials.

## 4 STRUCTURE

### 4.1 RELEVANT DOCUMENTS

Drawings

Drawing No: J15057-S01 Structural Repair of Corroded Steel Work

References

CSA 28 Canada Shipping Act - Hull Construction Regulations

CSA 33 Canada Shipping Act – Marine Machinery Regulations

CSA 29 Canada Shipping Act - Hull Inspection Regulations

CSA 57 Canada Shipping Act – Safe Working Practices Regulations

MOSHR Canada Labour Code – Marine Occupational Safety and Health Regulations

### 4.2 MATERIAL REQUIREMENTS

Equipment/Material Required

All new steel plate and shapes shall be minimum Lloyd’s Grade ‘A’ or equivalent.

The Contractor shall supply all material required, including any material required to complete the work which is not explicitly identified in this specification. See also applicable structural guidance drawings for material requirements.

### 4.3 AREAS FOR PLATE REPLACEMENT

#### Shaft Tunnel

According to the survey report of UT Measurements carried out by Team Industrial Services, thickness measurements have shown that the web and flange at frame 12, the frame immediately forward of the aft bulkhead of the Shaft Tunnel (frame 11-30) is depleted more than the other frames throughout the length of the space.

However, based on the guidelines available through Lloyd’s Register for Permissible Diminution Levels for a Category 3 ship, which is the category into which the “Alfred Needler” falls, the percentage of diminution recorded is still within acceptable levels.

With 25% wastage allowable on the web and flange at this location, as per Lloyd’s Register Rules, the minimum thicknesses allowable would be 0.328” on the web, and

0.375” on the flange. At no point on the framing structure within the space were the thicknesses recorded equal to or less than this limiting criteria. Further ultrasonic testing should be carried out on the framing within this space to determine if any plate replacement is required.

### **Fresh Water Tank (Starboard)**

Corrosion is evident at the forward end of the inboard bulkhead of the Starboard Fresh Water Tank, 6’-0” off centreline, between frames 45 and 48. According to the report of the survey carried out at that area, the corrosion occurs at various locations on the bulkhead, from the base of the bulkhead where it intersects the hull to approx. 30” up from the base. To affect a repair, the deteriorated plating will need to be cut out, and replaced. The horizontal cut shall need to be made approx. 32” from the base of the bulkhead, at frame 48, and shall run from the transverse bulkhead at that location back to an existing vertical plate seam at the bulkhead, approx. 6” aft of frame 44.

In order to replace the area of corroded bulkhead plating, the existing web frames at frames 44-48 shall need to be cut free from the bulkhead plating in order that it can be cut out and replaced.

Likewise, the existing 3”x2”x5/16” angle bar vertical stiffeners on the bulkhead shall have to be cut loose in way of the area of plating to be replaced. These will need to be cleaned up where they have been removed from the plating, and re-welded to the new bulkhead plating once it has been installed. A notch will have to be made in the stiffeners in way of the new horizontal weld seam, as shown in the accompanying guidance drawing, Dwg. No. J15057-S01 “Structural Repair of Corroded Steelwork.”

The frames at 48 and 49 are corroded and holed at a point several inches back from the bulkhead. This section of the web and flange at both frame locations needs to be cut out completely, as far back as the severe corrosion occurs, and replaced with new steel. The section of web and flange shall need to be removed down to the hull plating, and the edges of the web and flange tidied up in readiness for the welding in of a replacement section. The hull plating at both locations needs to be ground smooth in order to accept the new sections of bottom framing.

The framing at frame 46 is also noted in the Team Industrial Services report as being heavily corroded; further thickness measurements should be taken during the vessel refit to determine if any section of the framing at this location has deteriorated to a level where replacement should be considered.

At any locations where a piece of plating is to be inserted into an existing deck, bulkhead or frame, it is imperative that no square corners can occur where a replacement section of plating is welded into an existing plate, where square corners can lead to concentrations of stress and subsequent cracking. All such cuts should be adequately radiused, as per the IACS NO47 Part B – Repair Quality Standard for Existing Ships; the radius where

applicable shall be 5 x the plate thickness, or a minimum of 4" radius. See the reference drawing J15057-S01 for a representative detail.

The new insert pieces that need to be welded into the main frames and the web frames where required shall be welded with a full penetration weld. The welding of the new insert pieces and new frame sections to the shell plating shall be welded with a continuous fillet weld on each side.

#### **4.4 ADDITIONAL SURVEY AND THICKNESS MEASUREMENT REQUIREMENTS DURING REFIT**

Certain areas of the vessel were unavailable for survey when the initial UT measurements were obtained by Team Industrial Services in August, 2015. As a result, these areas warrant further survey work and additional thickness measurements to be carried out during the upcoming refit, to assess whether or not they warrant inclusion in the programme to replace corroded steelwork. These areas are outlined below.

##### **Bulkhead Frame 49**

During the initial survey, it was noted that there was no access to the transverse bulkhead at frame 49, due to piping and machinery. However, heavy corrosion was noted visibly at the lower section of the bulkhead, on the aft, or Engine Room, side. The piping and machinery will need to be temporarily removed in order that this area can be properly surveyed, and some accurate thickness measurements taken.

According to the survey report, the forward side of the bulkhead accommodates the vessel's Sewage Tank. This would need to be emptied and certified gas free before access in order to be able to inspect the bulkhead visually and carry out a series of thickness measurements.

##### **Fresh Water Tank (Starboard)**

Further to the corrosion as outlined in Section 4.3, the web frame at frame 46 is known to have suffered some wastage, and requires additional thickness measurements be taken to better ascertain its condition. Also, at the time of the initial survey, there was poor and difficult access to the remainder of the longitudinal bulkhead plating aft of frame 45. The bulkhead needs to be properly accessed and additional thickness measurements taken wherever corrosion is evident, aft of the plate replacement area already noted in Section 4.3. This may require the temporary removal of some existing pipework, as well as any portable structures that may be found in this space.

##### **Fresh Water Tank (Port)**

According to the initial survey report, there is less corrosion at the port tank bulkhead than at the starboard one, and photographs show that it looks to be in reasonably good condition. However, the bulkhead still needs to have some further thickness measurement readings taken during the refit period, particularly between frames 42 to 45 wherever any corrosion is seen to be present. The area is not readily accessible, due to a considerable

amount of ship's piping present on the bulkhead. A determination shall have to be made whether or not to disturb that piping once a comprehensive visual survey of the bulkhead has been carried out.

There is noticeable corrosion of the web frames at frames 47 and 48. Thickness measurements should be taken at these locations during the vessel refit period to determine whether any steelwork replacement is necessary.

### **Cofferdam**

The aft bulkheads of the Fresh Water tanks port and starboard were surveyed and found to be in good condition, with acceptable thickness measurement readings. The hull plating thickness measurements at the port cofferdam indicate that the hull plating is also in acceptable condition. The hull plating at the starboard cofferdam, however, was inaccessible due to wooden planking, when the initial survey was carried out. During the upcoming refit, the wooden planking, if still in place, will need to be removed so that thickness measurements can be carried out on the starboard hull plating.

### **Trawl Deck**

The thickness measurements taken on the Trawl Deck at the initial survey indicate that there are areas on the starboard side of the deck outboard of the railing in the area where conduit passes through the deck that have suffered quite heavy corrosion, and have been subject to considerably heavy peeling of paint. These areas should be looked at in more detail during the upcoming refit, to determine just how much, if any, of the steelwork needs to be replaced.

There are areas of wear found on the deck, on the outboard side of the net guide tracks. A determination will need to be made to clarify the extent of any repair required, based on further thickness measurements being taken. If it is determined that no deck replacement is required, then consideration should be given to scraping and grinding the area clear of rust and peeling paint, and priming and repainting the affected steelwork.

### **Fuel Oil Tanks**

The fuel oil tanks between frames 30-37 port and starboard have had a series of thickness measurements taken on the inboard bulkheads. Although all the measurements taken are above the allowable limits of diminution, it was noted in the original survey report that there were certain areas that had poor access due to an existing cat walk, and piping between the bilge space and the cat walk. During the upcoming refit, additional thickness measurements should be taken at these areas that were difficult to access, to ensure that there is no significant corrosion that needs to be addressed.

#### **4.5 NEW STRUCTURAL INSTALLATION**

All work shall be consistent with Lloyd's Register and Transport Canada Marine Safety standards, and all applicable standards as listed in the References section of this Technical Statement of Requirement. Work shall be consistent with good shipbuilding practice where standards are not applicable. The work shall be conducted to the satisfaction of the designated approval authority.

All new steel work shall be sandblasted and shop primed with a primer compatible with the vessel's existing paint system. On completion of welding, all damaged paintwork shall be wire brushed to remove loose material.

### **5 INSPECTION**

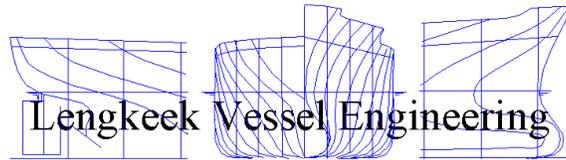
#### **5.1 GENERAL**

The work shall be carried out to the satisfaction of the vessel's Chief Engineer and the Project Manager from Department of Fisheries and Canadian Coast Guard.

#### **5.2 INSPECTIONS**

Inspections shall be carried out by the Chief Engineer and/or the Project Manager from Department of Fisheries and Canadian Coast Guard. The representative shall conduct a final inspection to determine acceptance of the work. The work shall also be inspected by the Contractor to ensure the methods of installation and workmanship conform to the drawings and specification.

A physical inspection of all welding shall be carried out by the Contractor to ensure that all welds are satisfactory and contain no visible defects or deficiencies.



**“CCGS Alfred Needler”  
Specification for Removal of Redundant  
ADCP Transducer**

for  
Department of Fisheries & Oceans /  
Canadian Coast Guard  
Dartmouth, Nova Scotia



*Prepared By:*  
**Lengkeek Vessel Engineering Inc.**  
*Report Number: J15057-R02, rev 0*  
*Date: 05/Nov/2015*

<i>Prepared By:</i>	<i>D. Careless</i>
<i>Checked By:</i>	<i>B. Halverson</i>
<i>LVE Form 72, rev0</i>	

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## 1 SPECIFICATION DETAILS

### SCOPE OF WORK

This specification covers work to be completed onboard the CCGS “Alfred Needler” to remove the existing ADCP transducer from the vessel, and to restore the structure in way of the removal.

The specification is to be read in conjunction with the guidance drawing produced to show the structural modifications as described, J15057-S02, “Structural Modifications in way of Removed ADCP Transducer.”

### GENERAL INSTRUCTIONS

Wherever the words “approved by”, “equivalent” or similar phrases are used in this specification they shall be understood to mean the material, process, or item referred to shall require the written approval of the manufacturer.

Approval from the DFO/CCG is required if the Contractor wishes to deviate from any of the specified methods or recommended materials.

## 2 REFERENCES

- .1 CSA W47.1-03, Certification of Companies for Fusion Welding of Steel
- .2 CSA W59-03, Welded Steel Construction (Metal Arc Welding)
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- .10 IEEE STD 45 – 1998 Recommended Practice for Shipboard Electrical Installations
- .11 IACS – No. 47 Part B – Repair Quality Standard for Existing Ships
- .12 Note: In case of conflict between any of the standards, then the most stringent requirements will prevail.

### 3 GENERAL NOTES

#### 3.1 ON-SITE PROJECT OFFICER

- .1 All work to be completed to the satisfaction of the On-site Project Officer who, unless otherwise advised, will be the Chief Engineer of the ship, or his designated representative.
- .2 Upon completion of each item of the specification, the Chief Engineer shall be notified so that he may inspect the work prior to the complete closing up of any work.
- .3 Failure to give notification does not absolve the Contractor of the responsibility of providing the Chief Engineer the opportunity to inspect any item.
- .4 Inspection of any item by the Chief Engineer does not substitute for any required inspection by Transport Canada Marine Safety (TCMS), Public Works and Government Services Canada (PWGSC) or Health Canada (HC).

#### 3.2 SAFETY

- .1 All contracted work shall be carried out in conjunction with Fleet Safety Manual Requirements outlined in document DFO 5737, "FLEET SAFETY MANUAL" that are applicable to contracted refit and dry-docking situations.
- .2 All contracted work shall be conducted in compliance with the requirements of the Canada Labour Code, Part 2.
- .3 Potential Contractors shall include with their bids the name of their Safety Manager or Supervisor who will ensure that these requirements for workplace safety are met
- .4 NOTE: Under the Canada Labour Code, Part 2, the Coast Guard has an obligation to exercise due diligence to ensure the safety of Contractors' workers as well as the ship's crew.

#### 3.3 SUB-CONTRACTORS

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

#### 3.4 CHEMIST'S CERTIFICATES

- .1 The Contractor shall supply the Chief Engineer with Marine Chemist's Certificates in accordance with TCMS TP 3177E before any cleaning, painting or hot work is commenced in confined spaces or machinery compartments.
- .2 Certificates shall clearly state the type of work permitted and shall be renewed as required by the regulations.

- .3 The Contractor and his sub-Contractors are advised that any work carried out in confined spaces as defined by the Canada Labour Code (CLC) and relevant provincial legislation must fully comply with all provisions therein.

### **3.5 DURATION OF SCHEDULED WORK**

- .1 The Contractor shall provide sufficient personnel, material, and equipment resources to complete the specified work, within the period of the contract.
- .2 Extra effort required due to the Contractor's failure to maintain his production schedule will not be paid for by CCG.

### **3.6 PROTECTION**

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

### **3.7 WELDING**

- .1 The Contractor shall be currently certified by the Canadian Welding Bureau in accordance with Standard W47.1-03 "Certification of Companies for Fusion Welding of Steel Structures," Division 1, 2.1 or 2.2.
- .2 All personnel performing welding shall be approved by the Canadian Welding Bureau.
- .3 Welding materials to CSA W59-03.

### **3.8 AUXILIARY SERVICES**

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

### **3.9 SERVICE CONDITIONS**

- .1 All materials supplied and work carried out by the Contractor shall be adequate to meet service conditions of outside air temperature of minus (-) 400 C to plus (+) 350 C; for exterior installations.
- .2 All materials supplied and work carried out by the Contractor shall be adequate to meet service conditions of wind velocity of 50 knots; for exterior installations.

- .3 All materials supplied and work carried out by the Contractor shall be adequate to meet service conditions of water temperature of minus (-) 20 C to plus (+) 300 C; for exterior installations.
- .4 All materials supplied and work carried out by the Contractor shall be adequate to meet service conditions of shock loading of 2.5g horizontal, 1.5g vertical; for all installations.

### **3.10 HOT WORK & FIRE WATCHES**

- .1 Any item of work involving the use of heat in its execution requires that the Contractor advises the Chief Engineer prior to starting such heating and upon its completion.
- .2 The Contractor shall provide sufficient suitable fire extinguishers and a fire watch during any heating and until the work has cooled.
- .3 Ship's extinguishers are not to be used except in an emergency.

### **3.11 RELOCATIONS**

- .1 Any piping, manholes, parts and/or equipment requiring removal to carry out specified work and/or to gain access shall be refitted upon completion with new jointing, anti-seize compound, clamps and brackets as applicable (Contractor supply).

### **3.12 TEMPORARY LIGHTING & VENTILATION**

- .1 Temporary lighting and/or temporary ventilation required by the Contractor to carry out any item of this specification shall be supplied, installed and maintained in safe working condition by the Contractor and removed on completion of the related work.

### **3.13 VESSEL CLEANUP**

- .1 The principal work areas, as defined by this specification, shall be cleaned to "as new condition" on completion of the contracted work.
- .2 The Contractor shall ensure that all spaces, compartments and areas of the ship outside of the principal areas of work are "as clean as found" when work is completed.

### **3.14 MATERIALS & TOOLS**

- .1 All materials, unless otherwise specified, to be supplied by the Contractor.
- .2 Contractor to supply all necessary tools to perform specified work.
- .3 Ship's tools and equipment will not be available for Contractor's use except for specialty tools that will be issued by and returned to the Chief Engineer in good condition.

### **3.15 FIRE SAFETY SYSTEMS**

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

### **3.16 SMOKING**

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

### **3.17 ACCESS**

- .1 The following areas are out of bounds to Contractor's personnel except to perform work as required by the specifications: all cabins, offices, Wheelhouse, Control Room, public washrooms, cafeteria, dining room and lounge areas.
- .2 Contractors to ensure that no workers bring meals onboard the ship.

### **3.18 DFO/CCG FACILITIES**

- .1 The refit period will take place at a shipyard yet to be determined.
- .2 If the Contractor does not have access to washroom facilities off the ship, a designated washroom on board will be open during regular working hours for Contractor's use. If the cleanliness of the washroom is adversely affected by this usage, Coast Guard reserves the right to stop Contractor use of the facility.
- .3 Contractors are advised that normal working hours for ship's personnel during alongside refit periods are from 0800 hours to 2000 hours, seven (7) days a week, excluding statutory holidays. Permission to work outside of these hours on the ship must be obtained by the Contractor from the Chief Engineer in advance.
- .4 Contractor machinery located on the ship or the dock can only be run from 0700 hours to 1900 hours, Monday to Saturday. Contractor to ensure that any equipment used meets the current noise abatement regulations.

### **3.19 DOCKSIDE CLEANUP**

- .1 The Contractor is responsible for the complete cleanup of adjacent dock areas used by his personnel and/or equipment during and after completion of the contracted work. This shall include, but not be limited to the following; 1) Removal of all dirt, grit and debris; 2) Removal of all staging, containers and equipment; 3) Immediate cleanup and legal disposal of any leaked oils, solvents or other hazardous materials.

## 4 STRUCTURE

### 4.1 RELEVANT DOCUMENTS

Drawing No: J15057-S02 Structural Modifications in way of Redundant ADCP Transducer  
(2 sheets)

### 4.2 MATERIAL REQUIREMENTS

All new steel plate and shapes shall be minimum Lloyd's Grade 'A' or equivalent.

The Contractor shall supply all material required, including any material required to complete the work which is not explicitly identified in this specification. See also applicable structural guidance drawings for material requirements.

### 4.3 STRUCTURAL STRIP-OUT

The existing ADCP transducer is redundant and is currently capped off. Once the vessel is out of the water, the transducer and its related infrastructure can be removed. The transducer sits inside a 26" diameter pipe which penetrates the hull. The bolted top plate on the transducer pipe can be removed, which then allows for unbolting of the transducer from inside the pipe. Likewise, the polycarbonate plastic window at the bottom of the transducer well can also be unbolted and removed, before any hot work is undertaken to remove the transducer pipe from the vessel.

The 26" transducer pipe is welded to the shell plating at its perimeter, and to the existing transverse floor structure at frame 34. Also, in order to stiffen the pipe in the longitudinal direction, additional ½" plate brackets with a flat bar flange were installed when the transducer was fitted.

In order to remove the transducer pipe, the shell plating and the supporting structure as described will need to be cut loose from the pipe so that it can be withdrawn from the vessel.

The sniped ends of the flanges of the floor at frame 34 shall need to be removed, in order that new sections of deep brackets and flanges can be installed once the transducer pipe has been removed.

The longitudinal ½" plate flanged brackets fitted at 3'-6" off centreline, fwd and aft of the transducer pipe, need to be removed in their entirety.

Also, there is a ¼" thick steel fairing plate attached to the underside of the ship's bottom plating in way of the transducer, for protection and to deflect the water past the transducer without causing undue turbulence. This fairing plate will need to be cut loose from the shell plating and removed from the vessel. See Sheet 2 of the guidance drawing for details.

When the existing structure to be removed is cut free, and the transducer pipe withdrawn, the edges left are to be ground smooth in readiness for any new stiffening structure to be attached,

and for recoating where applicable. The bottom plating in way of the removed fairing plate is to be ground smooth in way of the old weld attachment, in readiness for recoating.

#### **4.4 NEW STRUCTURAL INSTALLATION**

New steelwork shall be installed at the vessel at the location of the removed transducer pipe.

The ship's bottom plating at this location is of 7/16" thickness. A new circular piece of plating will need to be fitted at the ship's bottom, at the location where the transducer pipe has been removed. The edge of the new circular section of plating shall be bevelled as per the details as shown on the guidance drawing, J15057-S02.

The transverse deep floor at frame 34 will need to be reinstated, with new structure replacing the gap in the floor left by the removal of the transducer pipe. The new steelwork shall consist of a 1/2" plate deep bracket, with a 6" x 1/2" flange on the top, fitted in between the sections of existing floor plating.

All scallops where necessary shall be 1" radius, unless shown otherwise.

All work shall be consistent with Lloyd's Register and Transport Canada Marine Safety standards, and all applicable standards as listed in the References section of this specification. Work shall be consistent with good shipbuilding practice where standards are not applicable. The work shall be conducted to the satisfaction of the designated approval authority.

All new steel work shall be sandblasted and shop primed with a primer compatible with the vessel's existing paint system. On completion of welding, all damaged paintwork shall be wire brushed to remove loose material before touch-up is carried out.

## **5 INSPECTION**

### **5.1 GENERAL**

The work shall be carried out to the satisfaction of the vessel's Chief Engineer and the Project Manager from Department of Fisheries and Canadian Coast Guard.

### **5.2 INSPECTIONS**

Inspections shall be carried out by the Chief Engineer and/or the Project Manager from Department of Fisheries and Canadian Coast Guard. The representative shall conduct a final inspection to determine acceptance of the work. The work shall also be inspected by the Contractor to ensure the methods of installation and workmanship conform to the drawings and specification.

A physical inspection of all welding shall be carried out by the Contractor to ensure that all welds are satisfactory and contain no visible defects or deficiencies.

CA4973

IN-SERVICE INSTRUCTIONS    Sea Chest Mounted Anodes

Description

Once the System has been installed it will perform two functions:-

a) Eliminate marine growth and reduce the corrosion rate in the seawater service lines.

b) The System uses impressed current sacrificial anodes which are designed to last 3 years. Once in service the anodes will require renewal every 3 years. Renewal can be carried out with the vessel in drydock. Please ensure a reasonable despatch time when ordering replacement anodes.

You will require the following:-

2 only MGS (Copper) Anodes 120 dia x 610 lg

2 only TCS (Aluminium) Anodes 120 dia x 610 lg

Please quote Drg No. A1669/A/4973 when ordering replacement anodes

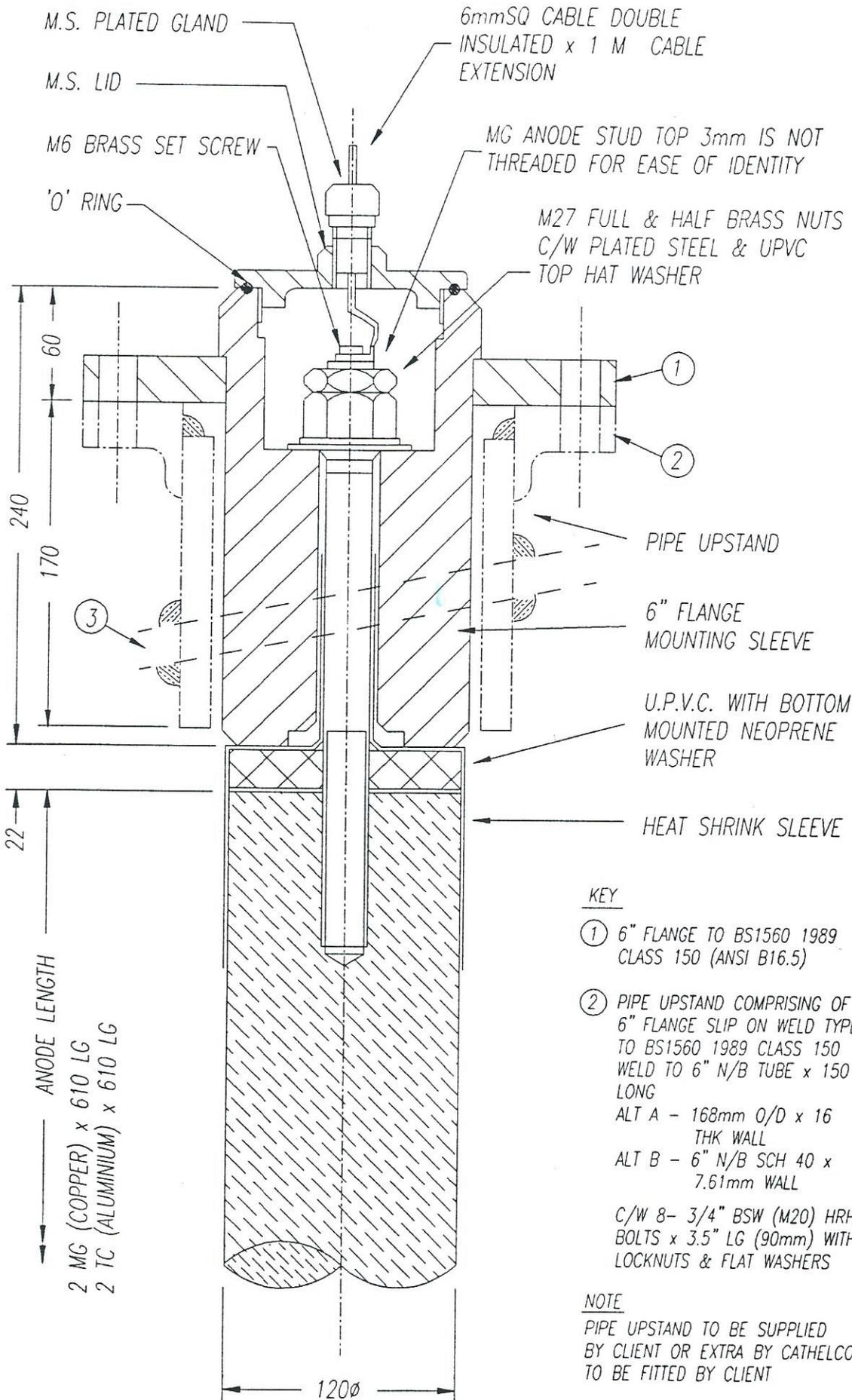
Adjustments

The control panel is fully automatic and therefore does not require any adjustments in service.

Checking

We suggest that as a matter of course the Control Panel be checked every two (2) weeks.

When checking, see that all the bar graph ammeters are working, this will determine all is correct. When the anodes have nearly wasted, the bar graph above the corresponding anode will start to fall. When this happens, turn the anode current knob back to zero and leave it until the anode renewal. Reset once again at sea after renewal to current settings given previously.



240  
170  
60  
22

ANODE LENGTH  
2 MG (COPPER) x 610 LG  
2 TC (ALUMINIUM) x 610 LG

120ø

KEY

- ① 6" FLANGE TO BS1560 1989 CLASS 150 (ANSI B16.5)
- ② PIPE UPSTAND COMPRISING OF 6" FLANGE SLIP ON WELD TYPE TO BS1560 1989 CLASS 150 WELD TO 6" N/B TUBE x 150 LONG  
ALT A - 168mm O/D x 16 THK WALL  
ALT B - 6" N/B SCH 40 x 7.61mm WALL  
C/W 8- 3/4" BSW (M20) HRH BOLTS x 3.5" LG (90mm) WITH LOCKNUTS & FLAT WASHERS

NOTE

PIPE UPSTAND TO BE SUPPLIED BY CLIENT OR EXTRA BY CATHELCO TO BE FITTED BY CLIENT

③ SEA CHEST TOP PLATE:

CLIENT TO CUT HOLE IN TOP PLATE & WELD TUBE IN AS SHOWN

FINISH  
UNPAINTED MOUNTING SLEEVE TO BE COATED TO SAME SPECIFICATION AS SEA CHEST TOP PLATE BY CLIENT

PA NO: 4973		DATE: 25:10:94	SCALE: 1:3
DRAWN: NKG		TECH MAN: DRG	NO: A1669/A/4973
TITLE: DETAIL OF 1200 TYPE S ANODE ASSEMBLY WITH 6" FLANGED MOUNTING SLEEVE & PIPE UPSTAND FOR M.V. "A.J. NEEDLER"			
REV: A	DATE: 25:10:94	RE-DRAWN: NKG	MODIFICATION: SIG:
HELCO LIMITED HOUSE, 18 HIPPER STREET SOUTH, FIELD, DERBYSHIRE, S40 1SS, UK.			

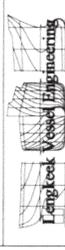
TANK CAPACITIES AND CENTERS OF GRAVITY

Tank Description	Location (Frame)	Capacity 100% (m <sup>3</sup> )	Density (lbs/m <sup>3</sup> )	L.C.G. from $\bar{x}$ (m)	V.C.G. B.L. (m)	F.S. MOM Max. (m <sup>4</sup> )
NO. 1 FUEL OIL (C)	58-65	27,398	0.870	17,4127	3,002	26,98
NO. 2 FUEL OIL (P)	27-27	28,013	0.870	1,3334	1,343	18,49
NO. 3 FUEL OIL (S)	27-27	28,013	0.870	1,3334	1,343	18,49
NO. 4 FUEL OIL (S)	27-27	28,013	0.870	1,3334	1,343	18,49
NO. 5 FUEL OIL (S)	17-27	28,013	0.870	8,1306	3,206	2,88
NO. 6 FUEL OIL (P)	2-11	21,862	0.870	17,6304	3,085	10,03
NO. 7 FUEL OIL (S)	2-11	21,862	0.870	17,6304	3,085	10,03
NO. 8 FUEL OIL (S)	2-11	21,862	0.870	17,6304	3,085	10,03
NO. 9 FUEL OIL (S)	2-11	21,862	0.870	17,6304	3,085	10,03
NO. 10 FUEL OIL (S)	2-11	21,862	0.870	17,6304	3,085	10,03
NO. 11 FUEL OIL (S)	2-11	21,862	0.870	17,6304	3,085	10,03
NO. 12 WATER BALLAST (C)	62-60	17,76	9,216	5,633	1,25	-
NO. 13 WATER BALLAST (C)	49-58	24,507	1,025	12,2507	1,459	73,88
NO. 14 WATER BALLAST (P)	17-27	32,881	1,025	7,8204	1,370	44,92
NO. 15 WATER BALLAST (S)	17-27	32,881	1,025	7,8204	1,370	44,92
NO. 16 FLAME DUMP (S)	17-27	32,881	1,025	7,8204	1,370	44,92
NO. 17 FLAME DUMP (S)	28-30	8,124	1,025	4,1006	1,151	2,56
NO. 18 FLAME (C)	27-30	92,148	1,025	3,8879	3,277	219,42
NO. 19 FLAME (P)	53-56	1,250	0,800	13,2477	3,505	-
NO. 20 FRESH WATER (P)	35-46	1,250	0,800	13,2477	3,505	-
NO. 21 FRESH WATER (S)	35-46	1,250	0,800	13,2477	3,505	-
NO. 22 DRAIN (S)	38-48	20,817	1,000	5,2506	1,440	14,08
NO. 23 DRAIN (S)	11-17	7,794	1,025	12,9118	1,812	8,52
NO. 24 DRAIN (S)	11-17	7,794	1,025	12,9118	1,812	8,52

NOTE FOR L.C.G. LOCATIONS, "P" DENOTES AFT AND "T" DENOTES FWD.

NOTICE:  
THIS DRAWING WAS DEVELOPED FROM THE ORIGINAL  
HAND DRAWING NO. 120/004, REV. D FROM FERGUSON  
INDUSTRIES, L.D. PICTOU, N.S.

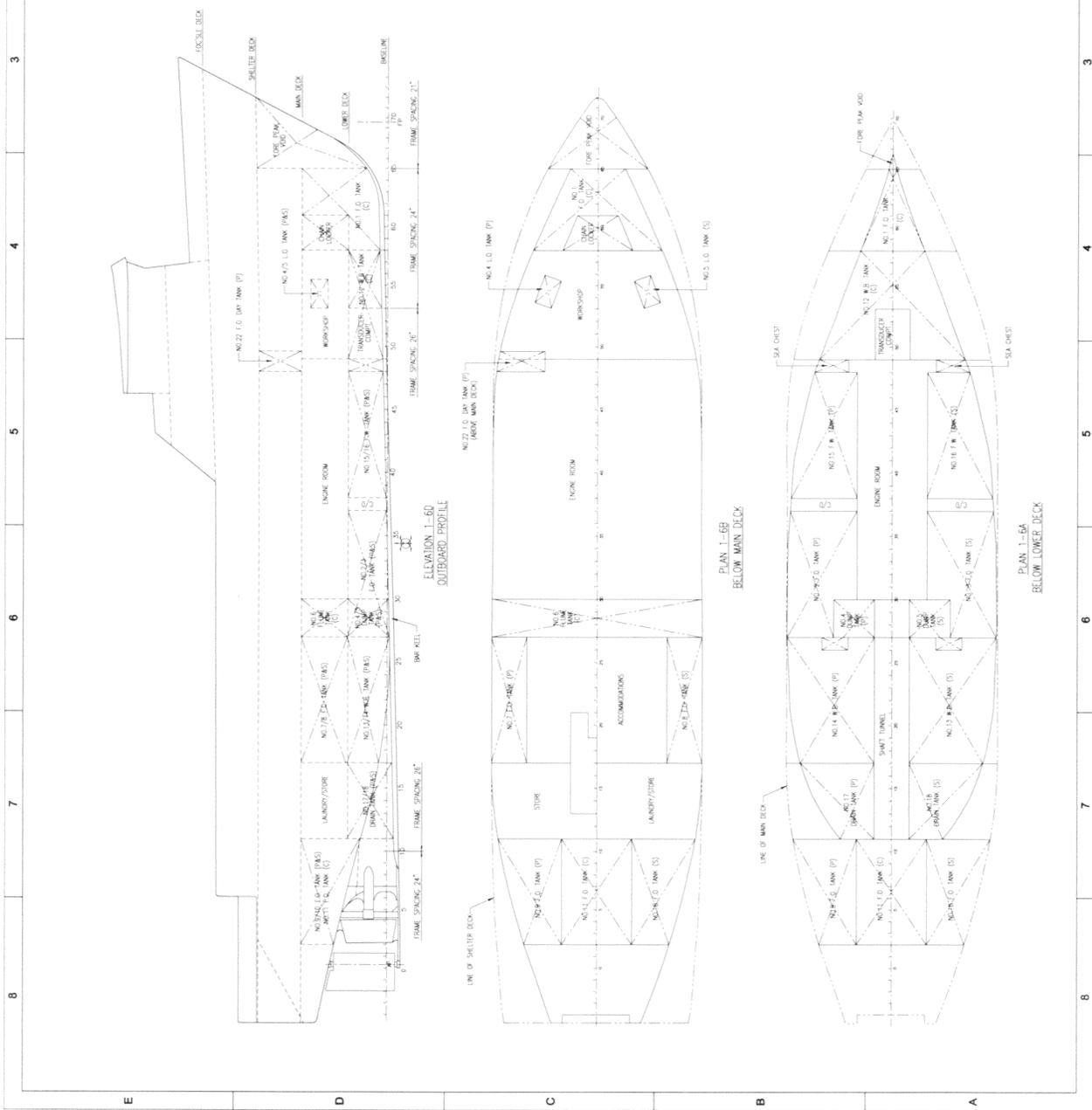
1 100000 TN RETURNED IN CLO WITH RENT TANK DATA

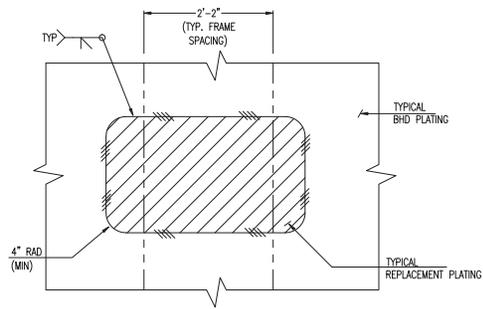


Client: C.C.G.S. "ALFRED NEEDLER"  
Title: TANK CAPACITY PLAN

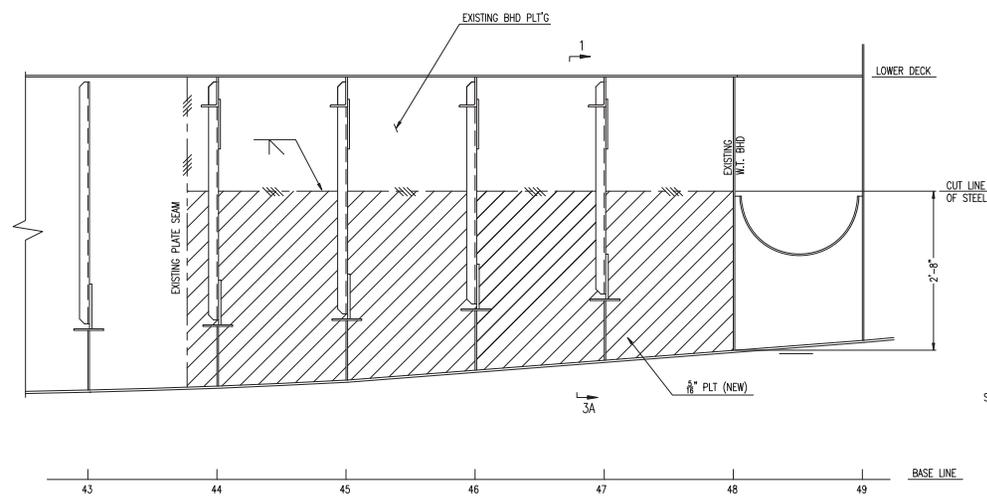
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Approved By: [Signature]  
Client Name: 120 / 004

Page 1 of 1

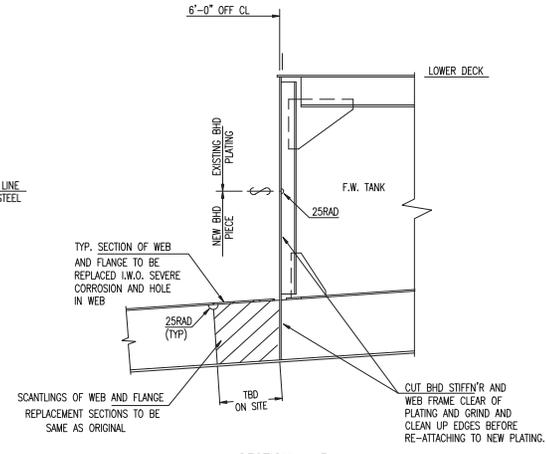




**DETAIL 1-7D**  
TYPICAL LAYOUT OF REPLACEMENT  
PLATE IN BULKHEAD OR DECK  
SCALE 1" = 1'-0"



**ELEVATION 1-6A**  
FRESH WATER TANK  
(STBD INBOARD BHD)  
LOOKING TO PORT  
SCALE 1" = 1'-0"



**SECTION 1-3A**  
TYP. AT FRAMES 47 & 48 (STBD)  
LOOKING FWD  
SCALE 1" = 1'-0"

**REFERENCE PLANS:**

No.	Dwg No.	DESCRIPTION

**GENERAL NOTES:**

1. ALL DIMENSIONS ARE IN FEET/INCHES UNLESS NOTED OTHERWISE.
2. FRAME SPACING 26" UNLESS NOTED OTHERWISE.
3. ALL NEW PLATE AND SHAPES TO BE MINIMUM LLOYD'S GRADE A OR EQUIVALENT. NEW STEELWORK SHALL BE FREE OF RUST, SCALE, DIRT AND GREASE, GIVEN TWO COATS OF SUITABLE SHOP PRIMER, FINISH COATINGS SHALL BE TO OWNER'S SPECIFICATION.
4. ANY EXISTING PAINTWORK AND/OR STEELWORK DAMAGED BY BURNING OR WELDING SHALL BE REPAIRED TO THE OWNERS SATISFACTION AND REPAINTED UTILIZING A SYSTEM COMPATIBLE WITH THE SHIP'S EXISTING PAINT SYSTEM.
5. ALL WELDING OF WATERTIGHT STRUCTURE OPEN TO THE SEA SHALL BE FULL PENETRATION WELDS UNLESS NOTED OTHERWISE.
6. \*\* ALL DIMENSIONS TO BE CHECKED/VERIFIED AT SHIP PRIOR TO FABRICATION.
7. STRUCTURAL REPAIRS ARE TO BE CARRIED OUT TO JACS-N047 PART B - REPAIR QUALITY STANDARD FOR EXISTING SHIPS.
8. AT LOCATIONS WHERE EXISTING STRUCTURE IS TO BE REPLACED, THE FILLET WELD OF THE EXISTING STRUCTURE EITHER SIDE OF THE REMOVED PLATING IS TO BE RELEASED FOR A MIN. DIST. OF 150MM PRIOR TO THE WELDING OF THE NEW INSERT PLATE.

Rev	Date	By	Remarks

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Client: **CCG/DFO**

Title: **CCGS 'ALFRED NEEDLER' STRUCTURAL REPAIR OF CORRODED STEELWORK**

Drawn By: <b>DC</b>	Date: <b>08/10/15</b>
Checked By: <b>BM</b>	Scale: <b>AS NOTED</b>
Approval/Rev:	Rev: <b>0</b>
Client: <b>J15057-S01</b>	
Class:	
Flag:	