



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

## REQUEST FOR PROPOSAL DEMANDE DE PROPOSITION

**Proposal 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.

**Proposition 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 sur toute feuille ci-annexée, au(x) prix indiqué(s).

**Comments - Commentaires**

**Vendor/Firm Name and Address**  
**Raison sociale et adresse du**  
**fournisseur/de l'entrepreneur**

**Issuing Office - Bureau de distribution**  
TPSGC/PWGSC  
601-1550, Avenue d'Estimauville  
Québec  
Québec  
G1J 0C7

<b>Title - Sujet</b> Bow Thruster Fort Lennox	
<b>Solicitation No. - N° de l'invitation</b> 5P300-165461/A	<b>Date</b> 2016-12-20
<b>Client Reference No. - N° de référence du client</b> 5P300-165461	
<b>GETS Reference No. - N° de référence de SEAG</b> PW-\$QCL-036-16996	
<b>File No. - N° de dossier</b> QCL-6-39245 (036)	<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 2017-01-31</b>	<b>Time Zone</b> <b>Fuseau horaire</b> Heure Normale du l'Est HNE
<b>F.O.B. - F.A.B.</b> Specified Herein - Précisé dans les présentes <b>Plant-Usine:</b> <input type="checkbox"/> <b>Destination:</b> <input type="checkbox"/> <b>Other-Autre:</b> <input checked="" type="checkbox"/>	
<b>Address Enquiries to: - Adresser toutes questions à:</b> Gagnon, Mathieu	<b>Buyer Id - Id de l'acheteur</b> qcl036
<b>Telephone No. - N° de téléphone</b> (418) 649-2883 ( )	<b>FAX No. - N° de FAX</b> (418) 648-2209
<b>Destination - of Goods, Services, and Construction:</b> <b>Destination - des biens, services et construction:</b> Agence parcs Canada 1899, boulevard de Périgny Chambly Québec J3L 4C3 Canada	

**Instructions: See Herein**

**Instructions: Voir aux présentes**

<b>Delivery Required - Livraison exigée</b> Voir doc.	<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/</b> <b>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:

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

The Annexes include the Requirement, the Basis of Payment and other annexes.

### **1.2 Summary**

- (i) The requirement is:
  - a) To carry out Work, including the supply of equipment, of two bow thrusters on the 'FORT LENNOX' barge during the winter dry-docking at the St-Paul-de-l'Île-aux-Noix, QC winterizing site, in accordance with the associated Technical Specifications detailed in the Requirement attached as Annex A.
  - b) To carry out any approved unscheduled work not covered in paragraph a) above.
- (ii) The requirement is subject to the provisions of the Agreement on Internal Trade (AIT) and the North American Free Trade Agreement (NAFTA).

### **1.3 Debriefings**

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

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## **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 (2016-04-04) Standard Instructions - Goods or Services - Competitive Requirements, are incorporated by reference into and form part of the bid solicitation.

### **2.2 Submission of Bids**

Bids must be submitted only to Public Works and Government Services Canada (PWGSC) Bid Receiving Unit by the date, time and place indicated on page 1 of the bid solicitation. Bidders can also submit their bid by facsimile at (1) 418-648-2209, by the date, time and place indicated on page 1 of the bid solicitation.

### **2.3 Enquiries - Bid Solicitation**

All enquiries must be submitted in writing to the Contracting Authority no later than **seven (7)** calendar days before the bid closing date. Enquiries received after that time may not be answered.

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

### **2.4 Applicable Laws**

Any resulting contract must be interpreted and governed, and the relations between the parties determined, by the laws in force in the Province of Quebec.

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

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## **2.5 Bidders' Conference (Not mandatory)**

A bidders' Conference chaired by the Contracting Authority will be convened at 1840 Bourgogne Street, Chambly, QC, door 28, Champlain Room, at 10:00 AM on January 10<sup>th</sup>, 2017

### **An attendance confirmation is required before 11:00 am, January 6<sup>th</sup>, 2017.**

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

## **2.6 Viewing - Vessel (Not mandatory)**

A site visit will be held immediately after the bidders' conference and it will be held at 1, 61 avenue, Saint-Paul-de-L'Île-aux-Noix (Quebec) J0J 1G0. Please note that the barge is located at approximately 40 km from the Bidders Conference location.

## **2.7 Proposed Work Period**

Work is to commence and be completed as follows:

Start of Work: From Contract award date

End of Work: May 5<sup>th</sup> 2017.

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

## **2.8 Docking Facility (Not used)**

## **2.9 List of Proposed Sub-contractors**

If the bid includes the use of subcontractors, the Bidder agrees, upon written request from the Contracting Authority, to provide a list of all subcontractors including a description of the things to be purchased, a description of the work to be performed by specification section and the location of the performance of that work. The list should not include the purchase of off-the-shelf items, software and such standard articles and materials as are ordinarily produced by manufacturers in the normal course of business, or the provision of such incidental services as might ordinarily be subcontracted in performing the Work, i.e. subcontract work valued at less than \$2000.00.

## **2.10 Quality Plan - Solicitation (Not used)**

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**2.11 Inspection and Test Plan** *(Not used)*

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

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

1. **Services** *(Not used)*
2. **Docking and Undocking** *(Not used)*
3. **Field Service Representatives/Supervisory Services:** include all costs for field service representatives/supervisory services including manufacturers' representatives, engineers, etc.
4. **Removals:** include all costs for removals necessary to carry out the Work and will be the responsibility of the successful Bidder whether or not they are identified in the specifications, except those removals not apparent when viewing the vessel or examining the drawings. The successful Bidder will also be responsible for safe storage of removed items and reinstalling them on completion of the Work. The successful Bidder will be responsible for renewal of components damaged during removal.
5. **Sheltering, Staging, Cranage and Transportation:** include the cost of all sheltering, staging including handrails, cranage and transportation to carry out the Work as specified.

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



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

### **3.1 Bid Preparation Instructions**

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

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

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

Canada requests that bidders follow the format instructions described below in the preparation of their bid:

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

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

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

#### **Section I: Management Bid**

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

#### **Section II: Financial Bid**

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

#### **Section III: Certification Requirements**

Bidders must submit the certifications required under Part 5.

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### **3.1.2      Unscheduled Work and Evaluation Price (Clause C0417T – 2008-05-12)**

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

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

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## PART 4 - EVALUATION PROCEDURES AND BASIS OF SELECTION

### 4.1 Evaluation Procedures

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

#### 4.1.1 Technical Evaluation

Each bid will be reviewed to determine whether it meets the mandatory requirements of the bid solicitation. Any element of the bid solicitation identified with the words "must" or "mandatory" is a mandatory requirement. Bids that do not comply with each and every mandatory requirement will be declared non-responsive and be disqualified.

Mandatory evaluation technical criteria and point rated evaluation technical criteria are included in Tables 4.1.1.2, 4.1.1.3 and 4.1.1.2 below. The mandatory evaluation technical criteria and point rated evaluation technical criteria will be evaluated based on similar projects.

##### Similar projects means:

A project for the ship repair, fabrication or transformation, and the commissioning with a value of \$ 75,000.00 (CAD) or more.

For each similar project, bidders must provide **at least** the following information:

- Title of the project;
- Project Value;
- Project description and the final result;
- Name of the user/customer;
- Exact dates of the project.

A verification with the user of the project in reference to attest the accuracy of the information could be made. If the user is not available within the required delays or refute the information provided by the bidder, the bid will be declared non-responsive.

##### 4.1.1.1 Equivalent product (Clause B3000T – 2006-06-16)

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

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

**Table 4.1.1.2:** Mandatory technical criteria and point rated technical criteria for the assessment of the expertise of the company.

**Minimum required = 15/35 points**

Evaluation Criteria	Mandatory Criteria	Point Rated Criteria
<b>1- Bidder's Relevant Ship Repair Experience</b>	The Bidder must have achieved a minimum of 1 similar projects per year over the past 5 years.	<ul style="list-style-type: none"> <li>- The Bidder has completed <b>5 similar project</b> over the <b>last 5 years = 5 points</b></li> <li>- The Bidder has completed <b>6 to 10 similar projects</b> over the <b>last 5 years = 10 points</b></li> <li>- The Bidder has completed <b>over 10 similar projects</b> over the <b>last 5 years = 15 points</b></li> </ul>
<b>2- Bidder's Relevant Work Experience in collaboration with Transport Canada or a Classification Society Approved by Transport Canada</b>	The Bidder must have achieved a minimum of 1 similar projects in collaboration with Transport Canada or a Classification Society Approved by Transport Canada over the past 3 years.	<ul style="list-style-type: none"> <li>- The Bidder has completed <b>1 to 3 similar projects</b> in collaboration with Transport Canada or a Classification Society Approved by Transport Canada over the <b>last 5 years = 5 points</b></li> <li>- Has completed <b>more than 3 similar projects</b> in collaboration with Transport Canada or a Classification Society Approved by Transport Canada over the <b>last 5 years = 10 points</b></li> </ul>
<b>3- Bidder's Relevant Experience with the Installation of a propulsion system or a Bow Thruster</b>	The Bidder must have completed a minimum of 1 similar project with the installation of a propulsive system or a bow thruster, over the last 7 years.	<ul style="list-style-type: none"> <li>- Has completed <b>1 to 3 similar projects</b> with the installation of a propulsive system or a bow thruster, over the <b>last 7 years = 5 points</b></li> <li>- Has completed <b>more than 3 similar projects</b> with the installation of a propulsive system or a bow thruster, over the <b>last 7 years = 10 points</b></li> </ul>

**Table 4.1.1.3:** Mandatory technical evaluation criteria's for the assessment of bow thruster's equipment functionalities included in the Bid. The criteria of the table below are taken from the Technical Statement of Requirement of Annex A.

TSOR reference	Bow Thruster Equipment description	Mandatory technical evaluation criteria's (equivalence)
<b>Item A of Annex 1</b>	Bow Thruster SM 285TCI 5M 205TCI 24"48Volts Side-Power by Imtra (or equivalent)	Thrust minimum of 285 kg each at 42 Volts
		Thrust minimum of 340 kg each at 48 Volts
		Dual propeller per thruster
		Propeller minimum diameter of 285 mm
		24 V DC Supply voltage
		48 V DC Operating voltage
		Sealed motors with EC approval for machinery safety 2006/42, electromagnetism 89/336 and 2004/108, low voltage equipment 2006/95 EC, and 73/23
		Construction meeting standard ISO 10133 :2000, EN 61000-6-3 :2001, 60533 (1999), IEC 60945, EN 1037 :1995. Eu 98/73 et 97/23
		Machinery test must meet standards ISO 50081-1, 50082-2, EN982 :1996
<b>Item B of Annex 1</b>	Dual Joysticks	24 V DC power supply
<b>Item C of Annex 1</b>	Relay module	325 AMP minimum continuous capacity
		Converting two 24 V DC to 48 V DC supply when either bow thruster is running

**Table 4.1.1.4:** Mandatory technical evaluation criteria's for the assessment of the electrical power generation equipment functionalities included in the Bid. The criteria of the table below are taken from the Technical Statement of Requirement of Annex A.

TSOR reference	Equipment description	Mandatory technical evaluation criteria's (equivalence)
<b>Item A of Annex 2</b>	Solar Panels p-SunWatt260 Pro Series G3 Black Frame, Class #1 260W, 18A @ 14,1V	Minimum capacity of 260 Watts per panel with minimum voltage of 14.0 V at a minimum capacity of 18AMP
		Marine aluminum frame
		-25° C minimum operational temperature
		Maximum voltage 31 Volts with open circuit
		Minimum short-circuit amperage 9.0 amps
		Built-in blocking diode
		Required width 39 in. +/- 2 in
		Required length 65 in. +/- 2 in
		Must withstand up to 130 km/h
		Peak power tolerance 0 to 3 %
		CSA or UL or ULC approval
		Non-reflective glass with minimum 95% efficiency

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<b>Item D of Annex 2</b>	Automatic voltage controller	Maximum Power Point Tracking (MPPT)
		Minimum capacity 40 amps at 24 volts or 1 000 Watts
		Minimum 97% conversion efficiency
		Maximum width of 12 in.
		Maximum length of 12 in.
		4-stage charging algorithm: bulk, absorption, float (maintenance), night (equalization).
<b>Item E Annex 2</b>	Marine batteries	Marine Type
		1 000 AMP Capacity
		120 AMP at 20 hours
		Model 31 SDC

#### 4.1.2 Financial Evaluation

- (a) Bidders must submit their financial bid in accordance with Annex "I", Financial Bid Presentation Sheet.
- (b) The price of the bid will be evaluated in Canadian dollars, Applicable Taxes excluded, FOB destination, Canadian customs duties and excise taxes included.

Unless the bid solicitation specifically requires bids to be submitted in Canadian currency, bids submitted in foreign currency will be converted to Canadian currency for evaluation purposes. The rate given by the Bank of Canada in effect on the bid solicitation closing date, or on another date specified in the bid solicitation, will be applied as a conversion factor to the bids submitted in foreign currency.

- (c) Bidders must provide prices DDP (Incoterm 2000). Bids will be assessed on a DDP (Incoterm 2000) basis.
- (d) The total bid price evaluation price will be the price of Total C of the Summary Table available at Annex B - Basis of Payment.

#### 4.1.3 Mandatory Criteria

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

#### 4.1.4 Table of Mandatory Requirements to be met by bid closing

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

Item	Description	Completed and attached
1	Completed Annex "I" – <u>Financial Bid presentation Sheet</u> ;	
2	Completed Appendix 1 to Annex "I" – <u>Price per item sheet</u> ;	
3	Completed Annex "K" – <u>Technical Information Sheets</u> ;	
4	Insurance requirement, as per clause 6.6.13, Part 6	

#### 4.1.5 Table of Requirements to be provided after bid closing

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

Item	Description	Completed and Attached
1	Federal Contractors Program for Employment Equity - Certification, as per clause 5.2.2, Part 5	Prior to contract award
2	Welding Certification, as per clause 6.6.7, Part 6	Prior to contract award

#### 4.1.6 Deliverable after Contract award

Item	Description	Must be supplied after contract award, within
1	Insurance requirement, as per clause 7.11, Part 7	10 calendar days
2	Work Schedule and Reports, as per clause 7.16, Part 7	5 calendar days

## 4.2 Basis of Selection

### 4.2.1 Basis of Selection – Highest Combined Rating of Technical merit and Price, SACC Manual Clause A0027T (2007-07-16)

1. To be declared responsive, a bid must:
  - a. comply with all the requirements of the bid solicitation;
  - b. meet all mandatory technical evaluation criteria; and
  - c. obtain the required minimum of 15 points overall for the technical criteria evaluation for the assessment of the expertise of the company (table 4.1.1.2) which are subject to point rating. The rating is performed on a scale of 35 points.

2. Bids not meeting (a) or (b) or (c) will be declared non-responsive. Neither the responsive bid that receives the highest number of points nor the one that proposed the lowest price will necessarily be accepted. The responsive bid with the lowest evaluated price per point will be recommended for award of a contract.
3. The selection will be based on the highest responsive combined rating of technical merit and price. The ratio will be 40 % for the technical merit and 60 % for the price.
4. To establish the technical merit score, the overall technical score for each responsive bid will be determined as follows:
  - total number of points obtained / maximum number of points available multiplied by the ratio of 40% will be granted for the assessment of the expertise of the company (See Table 4.1.1.2).
5. To establish the pricing score, each responsive bid will be prorated against the lowest evaluated price and the ratio of 60%.
6. For each responsive bid, the technical merit score and the pricing score will be added to determine its combined rating.
7. Neither the responsive bid obtaining the highest technical score nor the one with the lowest evaluated price will necessarily be accepted. The responsive bid with the highest combined rating of technical merit and price will be recommended for award of a contract.

**Example:** (the maximum number of points for the technical competencies is 35,

<b>Highest combined score;</b> - for the financial aspect (60%); - for technical - expertise of the Bidder Table 4.1.1.2 (40%).						
<b>Bidders</b>	<b>A</b>	Pass "Yes" or "No"	<b>B</b>	Pass "Yes" or "No"	<b>C</b>	Pass "Yes" or "No"
Submitted prices	94 000,00 \$		116 000,00 \$		152 000,00 \$	
<b>Technical scores</b> for the assessment of the expertise of the Bidder <b>(Table 4.1.1.2)</b> <b>Minimum required = 15 points</b>	10	<b>No</b>	25	<b>Yes</b>	35	<b>Yes</b>
<b>Calculation</b>	<b>A</b>		<b>B</b>		<b>C</b>	
<b>Score for the prices</b>	<b>Lowest submitted price, divided by the submitted price, multiplied by 60</b>					
	60,00		48,62		37,11	
<b>Technical scores - Expertise of the Bidder (Table 4.1.1.2)</b>	<b>Score, divided by 35, multiplied by 40</b>					
	11,43		28,57		40,00	
<b>Total</b>	71,43		77,19		77,11	
In this example, the Contract would be awarded to Bidder "B" because it is the compliant bidder with the highest combined score. (Bidder "A" does not have the minimum score required for the technical - Expertise of the Bidder (Table 4.1.1.2)						



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## **PART 5 - CERTIFICATIONS**

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

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

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

### **5.1 Certifications Required with the Bid**

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

#### **5.1.1 Integrity Provisions - Declaration of Convicted Offences**

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

### **5.2. Mandatory Certifications Required Precedent to Contract Award**

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

#### **5.2.1 Code of Conduct and Certifications - Related documentation**

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

#### **5.2.2 Federal Contractors Program for Employment Equity - Bid Certification**

By submitting a bid, the Bidder certifies that the Bidder, and any of the Bidder's members if the Bidder is a Joint Venture, is not named on the Federal Contractors Program (FCP) for employment equity "FCP Limited Eligibility to Bid" list available at the bottom of the page of the Employment and Social Development Canada (ESDC) - Labour's website

([http://www.esdc.gc.ca/en/jobs/workplace/human\\_rights/employment\\_equity/federal\\_contractor\\_program.page?&\\_ga=1.229006812.1158694905.1413548969](http://www.esdc.gc.ca/en/jobs/workplace/human_rights/employment_equity/federal_contractor_program.page?&_ga=1.229006812.1158694905.1413548969)).

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

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## PART 6 - SECURITY, FINANCIAL AND OTHER REQUIREMENTS

### 6.1 Security Requirement *(Not used)*

### 6.2 Financial Requirements *(Not used)*

### 6.3 Accommodation *(Not used)*

### 6.4 Parking *(Not used)*

### 6.5 Material and Supply Support *(Not used)*

### 6.6 Workers' Compensation - Letter of Good Standing *(Not used)*

### 6.7 Welding Certification

At bids closing date the Bidder should submit evidence demonstrating its certification to the welding standards in accordance with the following:

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

- (a) CSA W47.1, Certification of Companies for Fusion Welding of Steel, section 2;
- (b) CSA W59, Welded steel construction (metal arc welding).

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

### 6.8 Valid Labour Agreement *(Not used)*

### 6.9 Work Schedule and Reports *(Not used)*

### 6.10 Fueling and De-fueling Crown Vessels *(Not used)*

### 6.11 ISO 9001:2000 - Quality Management Systems *(Not used)*

### 6.12 Environmental Protection *(Not used)*

### 6.13 Insurances Requirements

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

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## PART 7 - RESULTING CONTRACT CLAUSES

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

### 1. Requirement

- a) To carry out Work, including the supply of equipment, of two bow thrusters on the 'FORT LENNOX' barge during the winter dry-docking at the St-Paul-de-l'Île-aux-Noix, QC winterizing site, in accordance with the associated Technical Specifications detailed in the Requirement attached as Annex A.
- b) to carry out any approved unscheduled work not covered in paragraph a) Above.

### 2. Standard Clauses and Conditions

All clauses and conditions identified in the Contract by number, date and title are set out in the *Standard Acquisition Clauses and Conditions* Manual issued by Public Works and Government Services Canada (PWGSC). The Manual is available on the PWGSC Website:  
<http://sacc.pwgsc.gc.ca/sacc/index-e.jsp>.

#### 2.1 General Conditions

2030 (2016-04-04), General Conditions - Higher Complexity - Goods, apply to and form part of the Contract (with the exception of Article 26 which is deleted in its entirety and replace with Article 42 here below).

Section 22 of 2030 is amended in Annex E Warranty.

#### 2.2 Supplemental General Conditions

1029 (2010-08-16) Ship Repairs, excluding section 07 & 09 apply to and form part of the Contract.

### 3. Security Requirement

There is no security requirement associated with this Statement of Work

### 4. Term of Contract

#### 4.1 Contract period

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

#### 4.2 Work period

Work is to commence and be completed as follows:

Start of Work: From Contract award date

End of Work: May 5<sup>th</sup> 2017.

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Client Ref No. – N° de réf. du client  
5P300165461

Amd. No. – N° de la modif.  
File No. – N° du dossier  
QCL-6-39245

Buyer ID – id de l'acheteur  
qcl 036

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

## **5. Authorities**

### **5.1 Contracting Authority**

The Contracting Authority for the Contract is:

Mathieu Gagnon  
Chef aux approvisionnements Marine / Marine Supply Chief  
Travaux publics et Services gouvernementaux Canada / Public Works and Government Services Canada  
Région du Québec/Québec area  
Division marine / Marine Division  
1550, avenue D'Estimauville, Québec, (Québec) G1J 0C4,  
Quebec, Canada  
[mathieu.gagnon@tpsgc-pwgsc.gc.ca](mailto:mathieu.gagnon@tpsgc-pwgsc.gc.ca)  
Téléphone/phone: (418) 649-2883  
Télécopieur/Fax: (418) 648-2209

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

### **5.2 Technical Authority**

The Technical Authority for the Contract is:

*Name will be determined at Contract award*

Telephone: \_\_\_\_ \_\_\_\_ \_\_\_\_  
Facsimile: \_\_\_\_ \_\_\_\_ \_\_\_\_  
E-mail address: \_\_\_\_\_

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

### **5.3 Inspection Authority/Inspector**

The Inspection Authority for the Contract is:

See section 5.2

The Inspection Authority is the Department of Public Works and Government Services Canada, who for the purposes of this requirement is the inspector responsible for inspection of the work and acceptance of the finished work under this requirement. The Inspection Authority will be represented on-site by a designated inspector and such other Government of Canada inspectors who will from time to time be assigned in support of the designated Inspector.

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## **6. Payment**

### **6.1 Basis of Payment - Firm Price**

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

### **6.2 Payment Terms - Progress Payments**

1. Canada will make progress payments in accordance with the payment provisions of the Contract, no more than once a month, for cost incurred in the performance of the Work, up to 90 percent of the amount claimed and approved by Canada if:
  - (a) an accurate and complete claim for payment using form PWGSC-TPSGC 1111, Claim for Progress Payment, and any other document required by the Contract have been submitted in accordance with the invoicing instructions provided in the Contract;
  - (b) the amount claimed is in accordance with the basis of payment;
  - (c) the total amount for all progress payments paid by Canada does not exceed 90 percent of the total amount to be paid under the Contract;
  - (d) all certificates appearing on form PWGSC-TPSGC 1111 have been signed by the respective authorized representatives.
2. The balance of the amount payable will be paid in accordance with the payment provisions of the Contract upon completion and delivery of all work required under the Contract if the Work has been accepted by Canada and a final claim for the payment is submitted.
3. Progress payments are interim payments only. Canada may conduct a government audit and interim time and cost verifications and reserves the rights to make adjustments to the Contract from time to time during the performance of the Work. Any overpayment resulting from progress payments or otherwise must be refunded promptly to Canada.

### **6.3 SACC Manual Clauses**

SACC Manual Clause	C6000C (2011-05-16)	Limitation of Price
SACC Manual Clause	H4500C (2010-01-11)	Lien - Section 427 of the Bank Act

## **7. Invoicing Instructions**

### **7.1 Submitting of invoices**

The Contractor must submit invoices in accordance with the information required in Section 13 of 2030, (2016-04-04), General Conditions - Higher Complexity - Goods

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Client Ref No. – N° de réf. du client  
5P300165461

Amd. No. – N° de la modif.  
File No. – N° du dossier  
QCL-6-39245

Buyer ID – id de l'acheteur  
qcl 036

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## **7.2 Invoice**

### **7.2.1 Transmission of invoices**

Invoice to be made to the name of:

[REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]

Electronic copy to be sent for verification to:  
[mathieu.gagnon@tpsgc-pwgsc.gc.ca](mailto:mathieu.gagnon@tpsgc-pwgsc.gc.ca)

## **7.3 Warranty Holdback**

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

## **8. Certifications**

### **8.1 Generality**

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

## **9. Applicable Laws**

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

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## 10. Priority of Documents

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

- (a) the Articles of Agreement;
- (b) the Supplemental General Conditions 1029, (2010-08-16), Ship Repairs;
- (c) General Conditions 2030, (2016-04-04) - Higher Complexity - Goods;
- (d) Annex A, Requirement;
- (e) Annex B, Basis of Payment;
- (f) Annex C, Insurance Requirements;
- (g) Annex E, Warranty;
- (h) the Contractor's bid dated \_\_\_\_\_ .

## 11. Insurance Requirements

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

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

The Contractor must forward to the Contracting Authority within cinq (5) calendar days after the date of award of the Contract a Certificate of Insurance including details of the insurance coverage, exclusions, deductibles and conditions and confirming that the insurance policy complying with the requirements is in force. The Contractor must, if requested by the Contracting Authority, forward to Canada a certified true copy of all applicable insurance policies.

## 12. Financial Security *(Not used)*

## 13. Accommodation *(Not used)*

## 14. Parking *(Not used)*

## 15. Sub-contracts and Sub-contractor List

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

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

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## 16. Work Schedule and Reports

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

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

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

## 17. Insulation Materials - Asbestos Free

All materials used to insulate or re-insulate any surfaces on board the vessel must meet Transport Canada Marine standards, for commercial marine work, and, for all work, be free from asbestos in any form. The Contractor must ensure that all machinery and equipment located below or adjacent to surfaces to be re-insulated are adequately covered and protected before removing existing insulation.

## 18. Loan of Equipment - Marine *(Not used)*

## 19. Trade Qualifications

The Contractor must use qualified, certificated (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

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

## 21. ISO 9001:2000 - Quality Management Systems *(Not used)*

## 22. Quality Control Plan *(Not used)*

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



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

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

**Refer to Annex "D" for further details on the Quality Control Plan requirements.**

### **23. Welding Certification**

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

- (a) CSA W47.1, Certification of Companies for Fusion Welding of Steel, section 2.
- (b) CSA W59, Welded steel construction (metal arc welding).

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

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

### **24. Environmental Protection**

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

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

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

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

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**25. Fueling and De-fueling a Crown Vessel** *(Not used)*

**26. Procedure for Design Change or Additional Work**

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

**26.1 Price Breakdown:**

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

**26.2 Pro-rated Prices:**

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

**27. Equipment/Systems: Inspection/Test** *(Not used)*

**28. Inspection and Test Plan**

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

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

**Refer to Annex "D" for details on Inspection and Test Plan Requirements.**

**29. Vessel Custody** *(Not used)*

**30. Vessel manned Refits**

SACC Manual Clause A0032C (2011-05-16) Vessel Manned Refits

**31. Pre-Refit Meeting**

A Pre-Refit meeting will be convened and chaired by the Contracting Authority at the work site, before the commencement of the work period.

**32. Meetings**

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

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### **33. Outstanding Work and Acceptance**

The Inspection Authority, in conjunction with the Contractor, will prepare a list of outstanding work items towards the end of the vessel Work Period. This list will form the annexes to the formal acceptance document for the vessel. A Contract Completion Meeting will be convened by the Inspector on the work completion date to review and sign off the Acceptance Document. In addition to any amount held under the Warranty Holdback Clause, a holdback of twice the estimated value of outstanding work will be held until completion of said work.

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

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

### **34. Licensing**

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

### **35. Hazardous Waste - Vessels**

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

### **36. Government Site Regulations**

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

### **37. Scrap and Waste Material**

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

### **38. Stability and Weight Management *(Not used)***

### **39. Vessel - Access by Canada *(Not used)***

### **40. Title to Property - Vessel *(Not used)***

### **41. Defence Contract *(Not used)***

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

1. This section applies despite any other provision of the Contract and replaces the section of the general conditions entitled "Liability". Any reference in this section to damages caused by the Contractor also includes damages caused by its employees, as well as its subcontractors, agents, and representatives, and any of their employees.
2. Whether the claim is based in contract, tort, or another cause of action, the Contractor's liability for all damages suffered by Canada caused by the Contractor's performance of or failure to perform the Contract is limited to \$10 million per incident or occurrence to an annual aggregate of \$20 million for losses or damage caused in any one year of carrying out the Contract, each year starting on the date of coming into force of the Contract or its anniversary. This limitation of the Contractor's liability does not apply to nor include:
  - (a) Any infringement of intellectual property rights;
  - (b) Any breach of warranty obligations;
  - (c) Any liability of Canada to a third party arising from any act or omission of the Contractor in performing the Contract; or
  - (d) Any loss for which the policies of insurance specified in the Contract or any other policies of insurance held by the Contractor would provide insurance coverage.
3. Each Party agrees that it is fully liable for any damages that it causes to any third party in connection with the Contract, regardless of whether the third party makes its claim against Canada or the Contractor. If Canada is required, as a result of joint and several liability, to pay a third party in respect of damages caused by the Contractor, the Contractor must reimburse Canada for that amount.
4. The Parties agree that nothing herein is intended to limit any insurable interest of the Contractor nor to limit the amounts otherwise recoverable under any insurance policy. The Parties agree that to the extent that the insurance coverage required to be maintained by the Contractor under this Contract or any additional insurance coverage maintained by the Contractor, whichever is greater, is more than the limitations of liability described in sub article (2), the limitations provided herein are increased accordingly and the Contractor shall be liable for the higher amount to the full extent of the insurance proceeds recovered.
5. If, at any time, the total cumulative liability of the Contractor for losses or damage suffered by Canada caused by the Contractor's performance of or failure to perform the Contract, excluding liability described under subsection 2(a), (b), (c) and (d) exceeds \$40 million, either Party may terminate the Contract by giving notice in writing to the other Party and neither Party will make any claim against the other for damages, costs, expected profits or any other such loss arising out of the termination. However, no such termination or expiry of the Contract shall reduce or terminate any of the liabilities that have accrued to the effective date of the termination but which liabilities are subject to the limitations as specified in sub-article (1) through (4) above.

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6. The date of termination pursuant to this Article, shall be the date specified by Canada in its notice to terminate, or, if the Contractor exercises the right to terminate, in a notice to the Contractor from Canada in response to the Contractor's notice to terminate. The date of termination shall be in Canada's discretion to a maximum of 12 months after service of the original notice to terminate served by either Party pursuant to sub-article 5, above.
  7. In the event of a termination under this Article, the Contract will automatically remain in force subject to all of the same terms and conditions until the date of termination and the Contractor agrees that it will be paid in accordance with the applicable provisions as set out in the Basis of Payment, Annex B and that the Contractor's liability remains as specified in sub-articles (1) through (4), above.
  8. Nothing shall limit Canada's other remedies, including Canada's right to terminate the Contract for default for breach by the Contractor of any of its obligations under this Contract, notwithstanding that the Contractor may have reached any limitation of its liability hereunder.

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**ANNEX A**

**REQUIREMENT - SPECIFICATION**

**See electronic Annex.**

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## ANNEX B

### BASIS OF PAYMENT FIRM PRICE

**Remark to Bidder: Annex B will form the Basis of Payment for the resulting contract and should not be filled in at annex 'I' the bid submission stage.**

#### B1 Contract Firm Price

A)	<b>Known Work</b> For work as stated in Contract Clause 1a), Specified in Annex "A" and detailed in the Price per Item Sheet, Appendix 1 of Annex 1 as well as Pricing Data Sheet, Annex J, for a FIRM PRICE of:	\$ _____
B)	<b>Applicable taxes</b> _____ % :	\$ _____
C)	<b>Total Firm Price :</b>	\$ _____

#### B2 Unscheduled Work

##### Payment for Unscheduled Work:

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

Number of hours (to be negotiated) X \$ \_\_\_\_\_, being the Contractor's firm hourly charge-out labour rate which includes overhead and profit, plus net laid-down cost of materials to which will be added a mark-up of 10 percent, plus Goods and Services Tax or Harmonized Sales Tax, if applicable, calculated at 5 percent of the total cost of material and labour. The firm hourly charge-out labour rate and the material mark-up will remain firm for the term of the Contract and any subsequent amendments.

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

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

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

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### B3 Overtime

No overtime work shall be compensated for under the Contract unless authorized in advance and in writing by the Contracting Authority. Any request for payment must be accompanied by a copy of the overtime authorization and a report containing such details as Canada may require with respect to the overtime work performed. Compensation for authorized overtime will be calculated in the following manner:

- a. For Known Work, the Contractor will be paid the original contract price plus agreed overtime hours paid at the following premium rates; or,
- b. For Unscheduled Work, the Contractor will be paid for agreed overtime hours paid at the firm hourly Charge-out Labour Rate above plus the following premium rates:

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

Premium for Double time: \$ \_\_\_\_\_ per hour

The above premiums rates shall be calculated as follows:

Premium for time and one half:

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

Premium for double time:

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

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

#### 1. B4 Daily Services Fee

- a. Not used

### B5 Cost of all Services is Included in Contract Price

All charges, fees expenses and disbursements incidental to the carrying out of the Work, are included in the Contract Price for the Work, including, without limitation:

1. **Services:** Not used
2. **Docking and Undocking:** Not used
3. **Field Service Representatives/Supervisory Services:** include all costs for field service representatives/supervisory services including manufacturers' representatives, engineers, etc.



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4. **Removals:** include all costs for removals necessary to carry out the Work and will be the responsibility of the Contractor whether or not they are identified in the specifications, except those removals not apparent when viewing the vessel or examining the drawings. The Contractor will also be responsible for safe storage of removed items and reinstalling them on completion of the Work. The Contractor will be responsible for renewal of components damaged during removal.
5. **Sheltering, Staging, Cranage and Transportation:** include the cost of all sheltering, staging including handrails, cranage and transportation to carry out the Work as specified.

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

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## ANNEX C

### INSURANCE REQUIREMENTS

#### C.1 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 the Department of Public Works and Government Services Canada and the Canadian Coast Guard 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.

#### C.2 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 \$10,000,000 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.

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- (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: to protect the Contractor for liabilities arising in the management and administration of statutory and contractual entitlements of its employees.
  - (h) Notice of Cancellation: The Insurer agrees 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 72 hours): To protect the Contractor for liabilities arising from damages caused by accidental pollution incidents.

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## ANNEX D

### INSPECTION/QUALITY ASSURANCE/QUALITY CONTROL

#### D.1 Inspection and Test Plan (ITP):

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

#### 2. Coding:

- (a) Each Inspection and Test Plan (ITP) is to be coded for identification clearly demonstrating a systematic approach similar to the following (Contractor's system should be defined in its Quality Control Plan):
  - (i) Prefixes for Inspections, Test and Trials:  
  
Prefix "1" is a Contractor inspection, i.e. 1H-10-01, 1H-10-02;  
  
prefix "2" is a Contractor post repair test, i.e. 2H-10-01; and  
  
prefix "3" is a Contractor post repair trial, i.e. 3H-10-01.
  - (b) Specification items followed by assigned sequence numbers for inspection processes within each Specification Item; and
  - (c) Cross reference to a verification document number

#### 3. Inspection and Test Plan Criteria:

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

- (a) All ITPs must be prepared by the Contractor in accordance with the above criteria, its Quality Plan, and must provide the following reference information:
  - (i) the ship's name;
  - (ii) the Specification item number;

- (iii) equipment/system description and a statement defining the parameter which is being inspected;
- (iv) a list of applicable documents referenced or specified in the inspection procedure;
- (v) the inspection, test or trial requirements specified in the Technical Specification;
- (vi) the tools and equipment required to accomplish the inspection;
- (vii) the environmental conditions under which the inspections are to be conducted and the tolerances on the inspection conditions;
- (viii) a detailed step-by step procedure of how each inspection is to be performed, conformance parameters, accept/reject criteria and recording of results, deficiencies found and description of corrective action(s) required;
- (ix) name and signature of the person who prepared the plan, date prepared and amendment level; and,
- (x) names and signatures of the persons conducting and witnessing the inspection, test or trial.

4. Contractor Imposed Testing:

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

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

## D.2 Conduct of Inspection

1. Inspections must be conducted in accordance with the ITP.
2. The Contractor must provide its own staff or subcontracted staff to conduct inspections, tests and trials; excepting that Technical Authority or Inspection Authority personnel may be designated in the specifications, in which case the Contractor must ensure that its own staff are provided in support of such inspection/test/trial.
3. The Contractor must ensure that the required conditions stated in the ITP prevail at the commencement of, and for the duration of, each inspection/test/trial.
4. The Contractor must ensure that personnel required for equipment operation and records taking during the inspection/test/trial are briefed and available at the start and throughout the duration of the inspection/test/trial. Tradesmen or FSRs who may be required to effect minor changes or adjustments in the installation must be available at short notice.
5. The Contractor is to coordinate the activities of all personnel taking part in each inspection/test/trial and ensure that safe conditions prevail throughout the inspection/test/trial.

## D.3 Inspection Records and Reports

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

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2. The Contractor's QC representative (and the FSR when required) must sign as having witnessed the inspection, test or trial on the inspection record. The Contractor must forward originals of completed inspection records, together with completed test(s) and/or trials sheets to the Inspection Authority as they are completed.
  3. Unsatisfactory inspection/test/trial results, for which corrective action cannot be completed during the normal course of the inspection/test/trial, will require the Contractor to establish and record the cause of the unsatisfactory condition to the satisfaction of the Inspection Authority. Canada representatives may assist in identification where appropriate.
  4. Corrective action to remove cause of unsatisfactory inspections must be submitted to the Inspection Authority in writing by the Contractor, for approval before affecting such repairs and rescheduling of the unsatisfactory inspection/test/trial. Such notices must be included in the final records passed to the Inspection Authority.
  5. The Contractor must undertake rectification of defects and deficiencies in the Contractor's installation or repair as soon as practicable. The Contractor is responsible to schedule such repairs at its own risk.
  6. The Contractor must reschedule unsatisfactory inspections after any required repairs have been completed.
  7. Quality Control, Inspection and Test records that substantiate conformance to the specified requirements, including records of corrective actions, must be retained by the Contractor for three (3) years from the date of completion or termination of the Contract and must be made available to the Inspection Authority upon request.

#### **D.4 Inspection and Trials Process**

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

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

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

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- (b) The Inspection Authority will inspect the materials, equipment and work throughout the project against the provisions of the Technical Specification and, where non-conformances are noted, will issue appropriate **INSPECTION NON-CONFORMANCE REPORTS**.
  - (c) The Contract requires the implementation of a Quality Assurance/Quality Control system, so the Inspection authority must require that the Contractor provide a copy of its internal inspection report pertaining to a work item before conducting the requested inspection. If third party inspections are required by the Contract (e.g. inspections by a certified CWB 178.2 welding inspector), the reports of these inspections must be required before the Work is inspected by the Inspection Authority.
  - (d) The QA/QC system is a requirement, so if the documentation is presented to the Inspection Authority before an inspection stating that the Work is satisfactory but the Inspection Authority finds that the Work has not been satisfactorily inspected, the Inspection Authority must issue an Inspection Non-conformance Report against the Work and another against the failure of the Contractor's QA/QC system.
  - (e) Before carrying out any inspection, the Inspection Authority must review the requirements for the Work and the acceptance and/or rejection standards to be applied. Where more than one standard or requirement is called up and they are potentially conflicting, the Inspection Authority must refer to the order of precedence in the Contract to determine the standard or requirement to be applied.
3. Inspection Non-conformance report
- (a) An Inspection Non-conformance report will be issued for each non-conformance noted by the Inspection Authority. Each report will be uniquely numbered for reference purposes, will be signed and dated by the Inspection Authority, and will describe the non-conformance.
  - (b) When the non-conformance has been corrected by the Contractor and has been re-inspected and accepted by the Inspection Authority, the Inspection Authority will complete the Report by adding an applicable signed and dated notation.
  - (c) At the end of the project, the content of all Inspection Non-conformance Reports which have not been signed-off by the Inspection Authority will be transferred to the Acceptance Documents before the Inspection Authority's certification of such documents.
4. Tests, Trials, and Demonstrations
- (a) To enable the Inspection Authority to certify that the Work has been performed satisfactorily, in accordance with the Contract and Specifications, the Contractor must schedule, co-ordinate, perform, and record all specified Tests, Trials and Demonstrations required by the Inspection Authority.
  - (b) Where the Specifications contain a specific performance requirement for any component, equipment, sub-system or system, the Contractor must test such component, equipment, sub-system or system to the satisfaction of the Inspection Authority, to prove that the specified performance has been achieved and that the component, equipment, sub-system or system performs as required by the specifications.
  - (c) Tests, trials and demonstrations must be conducted in accordance with a logical, systematic schedule which must ensure that all associated components and equipment are proven before sub-systems demonstration or testing, and that sub-systems are proven before system demonstration or testing.

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



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## ANNEX E

### WARRANTY

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

#### **E.1 Section 22 Warranty**

1. At the discretion of the Minister, the Contractor will replace or make good at its own expense any finished work, excluding Government Issue incorporated therein, which becomes defective or which fails to conform to contract requirements as a result of faulty or inefficient manufacture, material or workmanship.
2. Notwithstanding prior acceptance of the finished work, and without restricting any other term of the Contract or any condition, warranty or provision implied or imposed by law, the Contractor hereby warrants that the following shall be free from all defects and shall conform with the requirements of the contract:

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

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

- (b) All other painting Work for a period of three hundred and sixty-five (365) days commencing from the date of acceptance of the Work;
    - (c) all parts and material provided by the Contractor for a period of three hundred and sixty-five (365) days commencing from the date of acceptance of such parts or material;
    - (d) All other items of Work for a period of ninety (90) days commencing from the date of acceptance of the Work, except that:
      - (i) the warranty on the Work related to any system or equipment not immediately placed in continuous use or service shall extend for a period of ninety (90) days from the date of acceptance of the vessel;
      - ii) for all outstanding defects, deviations, and Work items listed on the Acceptance Document at Delivery, the Warranty will be ninety (90) days from the subsequent date of acceptance for each item.
3. If more than one warranty period applies, in accordance with the above, to any Work, then the warranty shall be for the longest period.
4. The Contractor agrees to pass to Canada, and exercise on behalf of Canada, all warranties on the Materials supplied or held by the Contractor which exceed the periods indicated Above.

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## **E.2 Warranty Procedures**

### **E2.1 Scope**

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

### **E2.2 Definition**

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

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

### **E2.3 Warranty Conditions**

- (a) General Conditions 2030, Higher Complexity - Goods are augmented by clauses incorporated into the subject Contract.
- (b) The warranty periods may be stated in more than one part.
  - (i) 90 days commencing from the day the PWGSC 1205 Acceptance Document is signed for workmanship provided by the contractor for the refit work specified;
  - (ii) 365 days from the date of undocking the vessel for the specified areas of underwater paint and topside painting;
  - (iii) 365 days commencing from the day the PWGSC 1205 Acceptance Document is signed for parts and material provided by the contractor for the refit work specified;
  - (iv) Any other specific warranty periods that may be required in the contract or offered by the Contractor.
- (c) The foregoing does not cover the disposition of other deficiencies that will be directly related to Technical Authority problem areas of the following nature:
  - (i) items becoming unserviceable that were not included in the refit specification;
  - (ii) refit specifications or other related documentation requiring amendments or corrections to increase viability; and
  - (iii) work performed that is directly related to the Technical Authority.

### **E2.4 Reporting Failures With Warranty Potential**

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

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## E2.5 Procedures

- (a) Immediately it becomes known to the Ship's Staff that an equipment/system is performing below accepted standards or has become defective, the procedures for the investigation and reporting are as follows:
  - (i) The vessel advises the Technical Authority when a defect, which is considered to be directly associated the refit work, has occurred.
  - (ii) On review of the Specification and the Acceptance Document, the Technical Authority in consort with Ship's Staff is to complete the Tombstone Data and section 1 of the Warranty Claim Form and forward the original to the Contractor for review with a copy to the PWGSC contracting Authority. If the PWGSC Contracting or Inspection Authority is unable to support warranty action, the Defect Claim Form will be returned to the originator with a brief justification. (It is to be noted that in the latter instance PWGSC will inform the Contractor of its decision and no further action will be required of the Contractor.

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

- (iii) Assuming the Contractor accepts full responsibility for repair, the Contractor completes Section 2 and 3 of the Warranty Claim Form, returns it to the Inspection Authority who confirms corrective action has been completed, and who then distributes the form to the Technical Authority and the PWGSC Contracting Authority.
- (b) In the event that the Contractor disputes the claim as a warranty defect, or agrees to share, the contractor is to complete Part 2 of the Warranty Claim Form with the appropriate information and forward it to the Contracting Authority who will distribute copies as necessary.
- (c) When a warranty defect claim is disputed by the Contractor, the Technical Authority may arrange to correct the defect by in-house resources or by contracting the work out. All associated costs must be tracked and recorded as a possible charge against the contractor by PWGSC action. Material costs and man-hours expended in correcting the defect are to be recorded and entered in Section 5 of the warranty defect claim by the Technical Authority who will forward the warranty defect claim to the PWGSC Contracting Authority for action. Defective parts of equipment are to be retained pending settlement of claim.
- (d) Defective equipment associated with potential warranty should not normally be dismantled until the contractor's representative has had the opportunity to observe the defect. The necessary work is to be undertaken through normal repair methods and costs must be segregated as a possible charge against a contractor by PWGSC action.

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## **E2.6 Liability**

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

## **E2.7 Alongside Period For Warranty Repairs and Checks**

- (a) If at all possible, an alongside period for the vessel is to be arranged just before the expiration of the 90 day warranty period. This alongside period is to provide time for warranty repair and check by the contractor.
- (b) In respect to the underwater paint, should it become defective during the associated warranty period the contractor is only liable to repair to a value determined as follows:

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

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

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## Appendix 1 of Annexe E



Public Works and Government

Services Canada

Travaux publics et Services

gouvernementaux Canada

### Warranty Claim Réclamation De Garantie

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

#### 1. Description of Complaint – Description de plainte

Contact Information – l'information de contact

Name – Nom

Tel. No. - N ° Tél

Signature – Signature

Date

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

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

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

\_\_\_\_\_  
Date of Corrective Action - Date de modalité de reprise

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

\_\_\_\_\_  
Date

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

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\_\_\_\_\_  
Signature – Signature

\_\_\_\_\_  
Date

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**ANNEX F**

**VESSEL CUSTODY**

**(NOT USED)**

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**Annex G**

**SECURITY REQUIREMENTS CHECK LIST**

**(NOT USED)**



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**ANNEX H**

**PROJECT MANAGEMENT SERVICES**

**(NOT USED)**

**ANNEX I**

**FINANCIAL BID PRESENTATION SHEET**

**I1 Price for Evaluation**

<b>A)</b>	<b>Known Work</b> For work as stated in Part 1 Clause 2a, Specified in Annex "A" and detailed in the Price per Item Sheet, Appendix 1 of this Annex, for a FIRM PRICE of:	
		\$
<b>B)</b>	<b>Unscheduled Work</b> Contractor <i>Labour Cost</i> : Estimated labour hours at a firm <i>hourly Charge-out Labour Rate</i> , including overhead and profit for evaluation purpose only: 500 person hours X \$_____ per hour for a PRICE of: <b>See Note I2.1 and I2.2 below.</b>	
		\$
<b>C)</b>	<b>EVALUATION PRICE</b> GST Excluded, [A + B]:  For an EVALUATION PRICE of :	
		\$

**I2 Unscheduled Work**

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

"Number of hours (to be negotiated) X \$\_\_\_\_\_ your firm hourly *Charge-out Labour Rate* which includes *Overhead* and profit, plus net laid-down cost of materials to which shall be added a 10% mark-up, plus 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 thereto."

**I2.1:** Notwithstanding definitions or useage elsewhere in this document, or in the Bidder's Cost Management System, when negotiating *Hours* for unscheduled work, PWGSC will consider only those hours of labour directly involved in the production of the subject work package.

Elements of Related Labour Costs identified in I2.2 below, will not be negotiated, but will be compensated for in accordance with paragraph I2.2. It is therefore incumbent upon the Bidder to enter values in the above table which will result in fair compensation, regardless of the structure of their Cost Management System.

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

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

### I3 Overtime

No overtime work shall be compensated for under the Contract unless authorized in advance and in writing by the Contracting Authority. Any request for payment must be accompanied by a copy of the overtime authorization and a report containing such details as Canada may require with respect to the overtime work performed. Compensation for authorized overtime will be calculated in the following manner:

- a. For Known Work, the Contractor will be paid the original contract price plus agreed overtime hours paid at the following premium rates; or,
- b. For Unscheduled Work, the Contractor will be paid for agreed overtime hours paid at the firm hourly Charge-out Labour Rate above plus the following premium rates:

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

Premium for Double time: \$ \_\_\_\_\_ per hour

The above premiums rates shall be calculated as follows:

Premium for time and one half:

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

Premium for double time:

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

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

### I4 Daily Services Fee

Not used

### I5 Cost of all Services is Included in Contract Price

All charges, fees expenses and disbursements incidental to the carrying out of the Work, are included in the Evaluation Price for the Work, including, without limitation:

1. **Services:** Not used
2. **Docking and Undocking:** Not used
3. **Field Service Representatives/Supervisory Services:** include all costs for field service representatives/supervisory services including manufacturers' representatives, engineers, etc.

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4. **Removals:** include all costs for removals necessary to carry out the Work and will be the responsibility of the Contractor whether or not they are identified in the specifications, except those removals not apparent when viewing the vessel or examining the drawings. The 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.

#### **I6 Vessel Transfer Costs**

Not used

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### APPENDIX 1 OF ANNEX I

PRICE PER ITEM SHEET		
Item	Description – A) SCHEDULED WORK	Firm Price
1	Mobilisation and demobilisation of worksite	\$ _____
2	Preparatory work for structure modification	\$ _____
3	Fabrication and installation of tubes and plenums, steel work painting of primers	\$ _____
4	Supply and installation of bow thrusters' components, power and control wiring	\$ _____
5	Fabrication and installation of battery boxes	\$ _____
6	Supply and installation of electrical power production system	\$ _____
7	Supply of inspection covers and winterizing balloons, including fabrication and installation of their support	\$ _____
8	Painting finish work	\$ _____
9	Dock and sea trials	\$ _____
A) SCHEDULED WORK - TOTAL FIRM PRICE		\$ _____

#### Remark to Bidders:

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

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**ANNEX J**  
**PRICING DATA SHEETS**

Item	Description – A) SCHEDULED WORK	Firm Price																												
<b>1</b>	<b>Mobilisation and demobilisation of worksite</b> (Overheads fees related to this item and its sub items must be distributed in each sub items.) <table border="1" style="width: 100%; border-collapse: collapse; margin-top: 5px;"> <tr> <td colspan="2">1.1 Contractor's Work (Bidder)</td></tr> <tr> <td style="width: 70%;">               Materials, equipment and consumables = \$ _____                Labour ; \$ _____ /hour X _____ hours = \$ _____             </td><td style="width: 30%;"></td></tr> <tr> <td colspan="2" style="text-align: right;"><b>Total for item 1.1 :</b></td></tr> <tr> <td colspan="2" style="text-align: right;">\$ _____</td></tr> <tr> <td colspan="2">1.2 Main Subcontractor* ( _____ )</td></tr> <tr> <td>               Materials, equipment and consumables = \$ _____                Labour ; \$ _____ /hour X _____ hours = \$ _____             </td><td></td></tr> <tr> <td colspan="2" style="text-align: right;"><b>Total for item 1.2 :</b></td></tr> <tr> <td colspan="2" style="text-align: right;">\$ _____</td></tr> <tr> <td colspan="2">1.3 Secondary Subcontractor* ( _____ )</td></tr> <tr> <td>               Materials, equipment and consumables = \$ _____                Labour ; \$ _____ /hour X _____ hours = \$ _____             </td><td></td></tr> <tr> <td colspan="2" style="text-align: right;"><b>Total for item 1.3 :</b></td></tr> <tr> <td colspan="2" style="text-align: right;">\$ _____</td></tr> <tr> <td colspan="2" style="text-align: right;"><b>Total for item 1 :</b></td></tr> <tr> <td colspan="2" style="text-align: right;">\$ _____</td></tr> </table>	1.1 Contractor's Work (Bidder)		Materials, equipment and consumables = \$ _____ Labour ; \$ _____ /hour X _____ hours = \$ _____		<b>Total for item 1.1 :</b>		\$ _____		1.2 Main Subcontractor* ( _____ )		Materials, equipment and consumables = \$ _____ Labour ; \$ _____ /hour X _____ hours = \$ _____		<b>Total for item 1.2 :</b>		\$ _____		1.3 Secondary Subcontractor* ( _____ )		Materials, equipment and consumables = \$ _____ Labour ; \$ _____ /hour X _____ hours = \$ _____		<b>Total for item 1.3 :</b>		\$ _____		<b>Total for item 1 :</b>		\$ _____		
1.1 Contractor's Work (Bidder)																														
Materials, equipment and consumables = \$ _____ Labour ; \$ _____ /hour X _____ hours = \$ _____																														
<b>Total for item 1.1 :</b>																														
\$ _____																														
1.2 Main Subcontractor* ( _____ )																														
Materials, equipment and consumables = \$ _____ Labour ; \$ _____ /hour X _____ hours = \$ _____																														
<b>Total for item 1.2 :</b>																														
\$ _____																														
1.3 Secondary Subcontractor* ( _____ )																														
Materials, equipment and consumables = \$ _____ Labour ; \$ _____ /hour X _____ hours = \$ _____																														
<b>Total for item 1.3 :</b>																														
\$ _____																														
<b>Total for item 1 :</b>																														
\$ _____																														
<b>2</b>	<b>Hull and Structure</b> (Overheads fees related to this item and its sub items must be distributed in each sub items.) <table border="1" style="width: 100%; border-collapse: collapse; margin-top: 5px;"> <tr> <td colspan="2">2.1 Contractor's Work (Bidder)</td></tr> <tr> <td style="width: 70%;">               Materials, equipment and consumables = \$ _____                Labour ; \$ _____ /hour X _____ hours = \$ _____             </td><td style="width: 30%;"></td></tr> <tr> <td colspan="2" style="text-align: right;"><b>Total for item 2.1 :</b></td></tr> <tr> <td colspan="2" style="text-align: right;">\$ _____</td></tr> <tr> <td colspan="2">2.2 Main Subcontractor* ( _____ )</td></tr> <tr> <td>               Materials, equipment and consumables = \$ _____                Labour ; \$ _____ /hour X _____ hours = \$ _____             </td><td></td></tr> <tr> <td colspan="2" style="text-align: right;"><b>Total for item 2.2 :</b></td></tr> <tr> <td colspan="2" style="text-align: right;">\$ _____</td></tr> <tr> <td colspan="2">2.3 Secondary Subcontractor* ( _____ )</td></tr> <tr> <td>               Materials, equipment and consumables = \$ _____                Labour ; \$ _____ /hour X _____ hours = \$ _____             </td><td></td></tr> <tr> <td colspan="2" style="text-align: right;"><b>Total for item 2.3 :</b></td></tr> <tr> <td colspan="2" style="text-align: right;">\$ _____</td></tr> <tr> <td colspan="2" style="text-align: right;"><b>Total for item 2 :</b></td></tr> <tr> <td colspan="2" style="text-align: right;">\$ _____</td></tr> </table>	2.1 Contractor's Work (Bidder)		Materials, equipment and consumables = \$ _____ Labour ; \$ _____ /hour X _____ hours = \$ _____		<b>Total for item 2.1 :</b>		\$ _____		2.2 Main Subcontractor* ( _____ )		Materials, equipment and consumables = \$ _____ Labour ; \$ _____ /hour X _____ hours = \$ _____		<b>Total for item 2.2 :</b>		\$ _____		2.3 Secondary Subcontractor* ( _____ )		Materials, equipment and consumables = \$ _____ Labour ; \$ _____ /hour X _____ hours = \$ _____		<b>Total for item 2.3 :</b>		\$ _____		<b>Total for item 2 :</b>		\$ _____		
2.1 Contractor's Work (Bidder)																														
Materials, equipment and consumables = \$ _____ Labour ; \$ _____ /hour X _____ hours = \$ _____																														
<b>Total for item 2.1 :</b>																														
\$ _____																														
2.2 Main Subcontractor* ( _____ )																														
Materials, equipment and consumables = \$ _____ Labour ; \$ _____ /hour X _____ hours = \$ _____																														
<b>Total for item 2.2 :</b>																														
\$ _____																														
2.3 Secondary Subcontractor* ( _____ )																														
Materials, equipment and consumables = \$ _____ Labour ; \$ _____ /hour X _____ hours = \$ _____																														
<b>Total for item 2.3 :</b>																														
\$ _____																														
<b>Total for item 2 :</b>																														
\$ _____																														

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PRICING DATA SHEETS		
Item	Description – A) SCHEDULED WORK	Firm Price
3	<b>Fabrication and installation of tubes and plenums, steel work painting of primers</b> (Overheads fees related to this item must be distributed in each sub items.)	
	3.1 Contractor's Work (Bidder)	
	Materials, equipment and consumables = \$ _____ Labour ; \$ _____ /hour X _____ hours = \$ _____	
	<b>Total for item 3.1 :</b>	\$ _____
	3.2 Main Subcontractor* ( _____ )	
	Materials, equipment and consumables = \$ _____ Labour ; \$ _____ /hour X _____ hours = \$ _____	
	<b>Total for item 3.2 :</b>	\$ _____
	3.3 Secondary Subcontractor* ( _____ )	
Materials, equipment and consumables = \$ _____ Labour ; \$ _____ /hour X _____ hours = \$ _____		
<b>Total for item 3.3 :</b>	\$ _____	
<b>Total for item 3 :</b>		\$ _____
4	<b>Supply and installation of bow thrusters' components, power and control wiring</b> (Overheads fees related to this item must be distributed in each sub items.)	
	4.1 Contractor's Work (Bidder)	
	Materials, equipment and consumables = \$ _____ Labour ; \$ _____ /hour X _____ hours = \$ _____	
	<b>Total for item 4.1 :</b>	\$ _____
	4.2 Main Subcontractor* ( _____ )	
	Materials, equipment and consumables = \$ _____ Labour ; \$ _____ /hour X _____ hours = \$ _____	
	<b>Total for item 4.2 :</b>	\$ _____
	4.3 Secondary Subcontractor* ( _____ )	
Materials, equipment and consumables = \$ _____ Labour ; \$ _____ /hour X _____ hours = \$ _____		
<b>Total for item 4.3 :</b>	\$ _____	
<b>Total for item 4 :</b>		\$ _____

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PRICING DATA SHEETS			
Item	Description – A) SCHEDULED WORK	Firm Price	
5	<b>Fabrication and installation of battery boxes</b> (Overheads fees related to this item must be distributed in each sub items.)		
	5.1 Contractor's Work (Bidder)		
	Materials, equipment and consumables = \$ _____ Labour ; \$ _____ /hour X _____ hours = \$ _____		
	<b>Total for item 5.1 :</b>		
	5.2 Main Subcontractor* ( _____ )		
	Materials, equipment and consumables = \$ _____ Labour ; \$ _____ /hour X _____ hours = \$ _____		
	<b>Total for item 5.2 :</b>		
	5.3 Secondary Subcontractor* ( _____ )		
Materials, equipment and consumables = \$ _____ Labour ; \$ _____ /hour X _____ hours = \$ _____			
<b>Total for item 5.3 :</b>	\$ _____		
<b>Total for item 5 :</b>		\$ _____	
6	<b>Supply and installation of electrical power production system</b> (Overheads fees related to this item must be distributed in each sub items.)		
	6.1 Contractor's Work (Bidder)		
	Materials, equipment and consumables = \$ _____ Labour ; \$ _____ /hour X _____ hours = \$ _____		
	<b>Total for item 6.1 :</b>		
	6.2 Main Subcontractor* ( _____ )		
	Materials, equipment and consumables = \$ _____ Labour ; \$ _____ /hour X _____ hours = \$ _____		
	<b>Total for item 6.2 :</b>		
	6.3 Secondary Subcontractor* ( _____ )		
Materials, equipment and consumables = \$ _____ Labour ; \$ _____ /hour X _____ hours = \$ _____			
<b>Total for item 6.3 :</b>	\$ _____		
<b>Total for item 6 :</b>		\$ _____	



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PRICING DATA SHEETS		
Item	Description – A) SCHEDULED WORK	Firm Price
7	<b>Supply of inspection covers and winterizing balloons, including fabrication and installation of their support</b> (Overheads fees related to this item must be distributed in each sub items.)	
	7.1 Contractor's Work (Bidder)	
	Materials, equipment and consumables = \$ _____ Labour ; \$ _____ /hour X _____ hours = \$ _____	
	<b>Total for item 7.1 :</b>	\$ _____
	7.2 Main Subcontractor* ( _____ )	
	Materials, equipment and consumables = \$ _____ Labour ; \$ _____ /hour X _____ hours = \$ _____	
	<b>Total for item 7.2 :</b>	\$ _____
8	7.3 Secondary Subcontractor* ( _____ )	
	Materials, equipment and consumables = \$ _____ Labour ; \$ _____ /hour X _____ hours = \$ _____	
	<b>Total for item 7.3 :</b>	\$ _____
	<b>Total for item 7 :</b>	\$ _____
	<b>Painting finish work</b> (Overheads fees related to this item must be distributed in each sub items.)	
8	8.1 Contractor's Work (Bidder)	
	Materials, equipment and consumables = \$ _____ Labour ; \$ _____ /hour X _____ hours = \$ _____	
	<b>Total for item 8.1 :</b>	\$ _____
	8.2 Main Subcontractor* ( _____ )	
	Materials, equipment and consumables = \$ _____ Labour ; \$ _____ /hour X _____ hours = \$ _____	
	<b>Total for item 8.2 :</b>	\$ _____
	8.3 Secondary Subcontractor* ( _____ )	
Materials, equipment and consumables = \$ _____ Labour ; \$ _____ /hour X _____ hours = \$ _____		
<b>Total for item 8.3 :</b>	\$ _____	
<b>Total for item 8 :</b>	\$ _____	

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PRICING DATA SHEETS		
Item	Description – A) SCHEDULED WORK	Firm Price
9	<b>Painting finish work</b> (Overheads fees related to this item must be distributed in each sub items.)	
	9.1 Contractor's Work (Bidder)	
	Materials, equipment and consumables = \$ _____ Labour ; \$ _____ /hour X _____ hours = \$ _____	
	<b>Total for item 9.1 :</b>	
	\$ _____	
	9.2 Main Subcontractor* ( _____ )	
	Materials, equipment and consumables = \$ _____ Labour ; \$ _____ /hour X _____ hours = \$ _____	
	<b>Total for item 9.2 :</b>	
\$ _____		
9.3 Secondary Subcontractor* ( _____ )		
Materials, equipment and consumables = \$ _____ Labour ; \$ _____ /hour X _____ hours = \$ _____		
<b>Total for item 9.3 :</b>		
\$ _____		
<b>Total for item 9 :</b>		\$ _____
<b>A) TOTAL FIRM PRICE =</b>		\$ _____

### Remark to Bidders:

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

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## ANNEX K

### TECHNICAL INFORMATION SHEETS

All shaded area shall be completed. (One sheet for each submitted project)

<b>Evaluation criteria #1 Bidder's Ship Repair Relevant Experience</b>		<b>Project #</b>	
<b>Project Title:</b>			
<b>Project Value:</b>			
<b>User/Client's References:</b>	<b>Name of the organization to which the system was sold (Bidder's customer):</b>		
	<b>User/Client's representative:</b>		
	<b>User/Client's representative:</b>		
	<b>User/Client's Email:</b>		
<b>Project dates:</b>	<b>Start date</b>	<b>End date</b>	
<b>Project description:</b>		<b>Bid Reference Page</b>	

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## ANNEX K

### TECHNICAL INFORMATION SHEETS

All shaded area shall be completed. (One sheet for each submitted project)

<b>Evaluation criteria #2</b> <b>Bidder's Relevant Work Experience with transport Canada or a Classification Society Accepted by Transport Canada</b>		<b>Project #</b>	
<b>Project Title:</b>			
<b>Project Value:</b>			
<b>User/Client's References:</b>	<b>Name of the organization to which the system was sold (Bidder's customer):</b>		
	<b>User/Client's representative:</b>		
	<b>User/Client's representative:</b>		
	<b>User/Client's Email:</b>		
<b>Project dates:</b>	<b>Start date</b>	<b>End date</b>	
<b>Project description:</b>		<b>Bid Reference Page</b>	

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## ANNEX K

### TECHNICAL INFORMATION SHEETS

All shaded area shall be completed. (One sheet for each submitted project)

<b>Evaluation criteria #3</b> <b>Bidder's Relevant Experience with the installation of a propulsion system or a bow thruster</b>		<b>Project #</b>	
<b>Project Title:</b>			
<b>Project Value:</b>			
<b>User/Client's References:</b>	<b>Name of the organization to which the system was sold (Bidder's customer):</b>		
	<b>User/Client's representative:</b>		
	<b>User/Client's representative:</b>		
	<b>User/Client's Email:</b>		
<b>Project dates:</b>	<b>Start date</b>	<b>End date</b>	
<b>Project description:</b>		<b>Bid Reference Page</b>	

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## ANNEX K

### TECHNICAL INFORMATION SHEETS

All shaded area shall be completed.

TSOR Reference	Description of bow thruster's equipment	Mandatory technical evaluation criteria's	Bid Reference Page
Item A of Annex 1	Bow Thruster SM 285TCI 5M 205TCI 24"48Volts Side-Power by Imtra (or equivalent)	Thrust minimum of 285 kg each at 42 Volts	
		Thrust minimum of 340 kg each at 48 Volts	
		Dual propeller per thruster	
		Propeller minimum diameter of 285 mm	
		24 V DC Supply voltage	
		48 V DC Operating voltage	
		Sealed motors with EC approval for machinery safety 2006/42, electromagnetism 89/336 and 2004/108, low voltage equipment 2006/95 EC, and 73/23	
		Construction meeting standard ISO 10133 :2000, EN 61000-6-3 :2001, 60533 (1999), IEC 60945, EN 1037 :1995. Eu 98/73 et 97/23	
Item B of Annexe 1	Dual Joysticks	Machinery test must meet standards ISO 50081-1, 50082-2, EN982 :1996	
		24 V DC power supply	
Item C of Annex 1	Relay module	325 AMP minimum continuous capacity	
		Converting two 24 V DC to 48 V DC supply when either bow thruster is running	

## ANNEX K

### TECHNICAL INFORMATION SHEETS

All shaded area shall be completed.

TSOR Reference	Description of the electrical power generation equipment	Mandatory Technical Evaluation Criteria's (Equivalence)	Bid Reference Page
Item A of Annex 2	Solar Panels p-SunWatt260 Pro Series G3 Black Frame, Class #1 260W, 18A @ 14,1V	Minimum capacity of 260 Watts per panel with minimum voltage of 14.0 V at a minimum capacity of 18AMP	
		Marine aluminium frame	
		-25° C minimum operational temperature	
		Maximum voltage 31 Volts with open circuit	
		Minimum short-circuit amperage 9.0 amps	
		Built-in blocking diode	
		Required width 39 in. X 65 in. +/- 2 in	
		Required length 65 in. +/- 2 in	
		Must withstand up to 130 km/h	
		Peak power tolerance 0 to 3 %	
		CSA or UL or ULC approval	
		Non-reflective glass with minimum 95% efficiency	
Item D of Annex 2	Automatic voltage controller	Maximum Power Point Tracking (MPPT)	
		Minimum capacity 40 amps at 24 volts or 1 000 Watts	
		Minimum 97% conversion efficiency	
		Maximum width of 12 in.	
		Maximum length of 12 in.	
		4-stage charging algorithm: bulk, absorption, float (maintenance), night (equalization).	
Item E of Annex 2	Marine batteries	Marine Type	
		1 000 AMP Capacity	
		120 AMP at 20 hours	
		Model 31 SDC	

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# 1 GENERAL INFORMATION

## 1.1 APPLICABLE LAWS AND REGULATIONS

This document has been produced in accordance with the following regulations:

- TRANSPORT CANADA, Marine Machinery Regulations, 2009.
- TRANSPORT CANADA, Hull Construction Regulations, 2015.
- TRANSPORTS CANADA, Ships Electrical Standards, 2007.

## 1.2 REFERENCE DOCUMENTS

The following reference documents have been made available by the ship-owner:

- Naval Architecture Raymond Daoust Inc. *Plans des formes / Lines Plan (1 sheet)*, 1989.
- Naval Architecture Raymond Daoust Inc. *Structure diverses (nouvelles) / Miscellaneous Structures (new) (1 sheet)*, 1989.
- Naval Architecture Raymond Daoust Inc. *Assèchement des fonds et lutte contre incendie / Bilge Pumping and Fire-Fighting Systems (1 sheet)*, 1989.
- Naval Architecture Raymond Daoust Inc. *Livret de stabilité / Stability Booklet*, 1991.

## 1.3 MAIN CHARACTERISTICS

Ship's Name	M.B. Fort Lennox
Vessel Type	Motorized Barge
Port of Registry	Montreal
Home Port	Saint-Paul-de-l'Île-aux-Noix
Official Number	20 D 2992
Total Crew	2
Overall Length	64'-0"
Moulded Beam	21'-0"
Moulded Depth	4'-4"
Maximum Draft	3'-0"
Light Draft	15 ½"
Bow Freeboard (loaded)	1'-4"
Stern Freeboard (loaded)	1'-4"
Light Displacement (approx)	35 tonnes
Displacement (at max draft)	98.5 long tons

Class of Service	Minor Water II
Construction	Welded steel
Owner	Parks Canada
Operator	Parks Canada

#### 1.4 DEFINITIONS AND ADDRESSES

The following definitions and addresses apply to the entire specification unless specified otherwise:

- The Owner and its representatives:  
Parks Canada, Government of Canada,  
3 Passage du Chien-d'Or,  
Quebec QC, G1R 3Z8
- The Contractor:  
The bidder selected to carry out the work
- Regulatory Agency (representing the national authority):  
Transport Canada Marine Safety (TCMS),  
401-1550 Estimauville Avenue,  
Quebec QC, G1J 0C8
- Naval Architecture Consultant:  
Navtech Inc.  
105, Côte de la Montagne, Suite 701  
Quebec QC, G1K 4E4

#### 1.5 PRECEDENCE OF DOCUMENTS

The documents take precedence in the following order:

- The Specification takes precedence over the Plans;
- Quoted dimensions take precedence over measurements derived from scale drawings;
- Large-scale drawings take precedence over small-scale drawings.

## **2 GENERAL CONSIDERATIONS**

It is understood that the work will be carried out at the barge's present location, which is St-Paul-de-l'Île-aux-Noix, province of Quebec.

### **2.1 INFORMATION ABOUT THE WORK**

- 2.1.1 The work consists of installing two bow thrusters on the barge FORT LENNOX. A solar-panel-based electricity power plant is to be installed to maintain the charge of batteries that power the electric motors that drive the bow thrusters. See plan 2627-16-001 *Arrangement général / General Configuration, sheets 1 and 2 of 2*. The Contractor must provide the necessary equipment to fully install the bow thrusters.
- 2.1.2 All equipment installed must be new and meet current requirements of Transport Canada Marine Safety (TCMS).
- 2.1.3 The work will be subject to progress checks at various stages and will be inspected by the Owner's representatives.
- 2.1.4 The work will be monitored and inspected on an ongoing basis by TCMS.
- 2.1.5 The Contractor must provide the labour, technical support, tools, materials and all equipment required to carry out the work and to install the components. It must also provide all services and machining required to carry out all structural work on the hull and to install the components.
- 2.1.6 The Contractor will be responsible for transporting and handling all equipment and materials required for the work, and for disposing of debris.

### **2.2 RESPONSIBILITIES**

- 2.2.1 The Contractor will be responsible for all dismantled equipment from start to finish of work.
- 2.2.2 The Contractor will be responsible for all equipment and supplies that have to be incorporated into the barge, until all work is completed.
- 2.2.3 Any damage during the work to the surfaces or structure of the barge, equipment, fittings or accessories caused by the Contractor or any of its subcontractors must be repaired at the Contractor's cost and to the Owner's satisfaction.
- 2.2.4 The Contractor will be responsible for any damage or inconvenience it causes to barge operations.

## **2.3 GENERAL REQUIREMENTS**

The following factors must be considered and included in the price submitted by the Contractor for the work specified in this specification, without exception:

- 2.3.1 All dimensions, drawings and specifications provided to or obtained by the Contractor must be verified by the Contractor on board before execution. All discrepancies and interferences must be reported to the Owner for clarification before execution.
- 2.3.2 The Contractor shall make no changes to any drawings or specifications, or undertake any additional work, without the prior written consent of the Owner's representative. The consent must indicate the type of work, the agreed deadlines if necessary, and any additional costs, if applicable.
- 2.3.3 The Contractor must do a structural inspection of the proposed work areas. Any structural damage found in these areas not specified in the drawings or specification must be reported to the Owner's representative. This would be subject to an additional work procedure, which will have to meet all the terms and conditions of this specification.
- 2.3.4 The Contractor must ensure that areas adjacent to the work are protected. Any damage to adjacent areas must be remedied by the Contractor, at its cost, to the Owner's satisfaction.
- 2.3.5 Existing steel that may be affected by the work must be prepared, primed and painted in accordance with the same specifications that apply to the new metal installed.
- 2.3.6 Fire patrols by the Contractor in the areas close to the repair areas must comply with applicable regulations.
- 2.3.7 The Contractor's bid must include all costs for services such as rental of equipment, lighting, ventilation, removal and reinstallation or replacement of equipment interfering with the work identified in this specification. The Contractor must provide all the necessary tools and equipment to install the bow thrusters.
- 2.3.8 The Contractor must clean and degrease all structures that have to be welded or painted.

## **2.4 WORK ENVIRONMENT**

- 2.4.1 The Contractor must do the work while the ship is hauled ashore. The Owner will put dry the ship in the fall of 2016. The barge will be hoisted by the Owner and will rest on wooden cages at least 1 metre off the ground. The barge will be covered by a light shelter for the winter season. The

shelter will be installed by the Owner. See Photo 1 to Photo 3 of ANNEXE 3. The Owner will dismantle the winter shelter and refloat the barge in the spring of 2017.

- 2.4.2 The Contractor must not use any of the ship's equipment at any time during the work.
- 2.4.3 The Contractor must provide sanitary facilities for its employees.
- 2.4.4 The Contractor must take the necessary steps to ensure that the area where the welding and painting work will be done is kept at an appropriate temperature and environment. Temporary shelters are to be created if necessary, including heating as required.
- 2.4.5 A certified chemist or qualified person must provide a confined space certificate for any enclosed space before any work is done inside it.
- 2.4.6 Any person having to enter the hull structure must comply with applicable regulations governing entry into confined spaces.
- 2.4.7 The Contractor must ensure reasonable ventilation for the areas and sections affected by the work while the work is being done.
- 2.4.8 All hot work must be carried out in accordance with applicable regulations and all hot-work permits must be provided to the Owner's representative on request.
- 2.4.9 Cleaning must be performed on a regular basis and any accumulation of debris or substances that are harmful or affect the safety of the place shall not be tolerated on board or at the worksite, failing which the Owner may clean the place at the Contractor's cost.

### 3 STRUCTURAL WORK

- 3.1 Structural modifications will be needed to install the bow thrusters. The intention is to prefabricate a complete unit including two thrusters with their plenums and then slide the unit under the hull for installation, without the mechanical components for installation, by raising it to put it in place. The Contractor must provide the necessary materials to install the bow thrusters.
- 3.2 Preparatory work for structural modification and connection will be complementary. Accordingly, an opening will be made in the bottom of the barge between frame 4 and 5. See plan no. 2627-16-500 *Positionnement / Positioning*. The shop-prefabricated unit will then be inserted into the hull bottom structure. To compensate for the stresses created by the opening in the bottom of the barge, reinforcements and modifications to the adjoining structure will be required as shown in plan no. 2627-16-500 *Positionnement / Positioning*. A template of the unit must be created so it can be used to mark the hull cutout.

Two ventilated metal boxes must be built in the contractor shop then placed on the deck at the bow on port and starboard sides of the barge to house the batteries. See plan no. 2627-16-002 *Position source d'énergie / Position of Energy Source*, Photo 4 and Photo 5 of ANNEXE 1. The boxes must each house four 31SDC batteries on two levels. The circuit-breaker and the fuse-holder for each of the boxes must be mounted on the outside of the boxes and must be lockable and protected. Detailed drawings must be submitted to the Owners and TCC for approval before fabrication. The boxes must each be ventilated and have a drain. Electrical cable runs must be protected. A 3-inch airspace must be provided underneath the boxes. They must be fitted with natural ventilation grilles to ensure cooling and ventilation.

- 3.3 All sharp edges must be ground smooth to prevent the onset of corrosion.
- 3.4 Installing the battery boxes port and starboard at the bow will require moving the towing lugs used to drydock the barge. These lugs will have to be removed and relocated on the outside to permit the battery boxes to be installed and not interfere with them. The affected surfaces will have to be repaired, ground, smoothed and painted. The new position of the lugs must be agreed upon with the representatives of the Owner and Transport Canada before the lugs are removed.
- 3.5 The following general notes regarding steel apply:
- 3.5.1 All steel to be installed must be new and grade CSA G40.21-44W.
- 3.5.2 The Contractor must provide copies of the certificates of each structural element.

- 3.5.3 All new steel installed, before being transported on board, must be sanded, cleaned and pre-painted. After installation, a coat of paint must be applied in the colours, and in accordance with the practices, of the Owner.
- 3.5.4 In the event that the surface coat is damaged during welding, the affected areas must be repaired, the coat removed or ground away, and recoated in accordance with the original specifications.
- 3.5.5 When steel is removed, the edges must be smoothed and prepared in accordance with the welding details necessary for subsequent work. The bottom plate must be cut out with the aid of a template representing the prefabricated unit, once the welding on the unit is completed.
- 3.5.6 All damage caused by extracting the plates and/or stiffeners must be repaired. Steel scrap produced by the extraction must be disposed of by the Contractor for recycling.
- 3.5.7 Before proceeding with the work, the Contractor must submit the projected work method in writing along with a detailed completion timeline.
- 3.5.8 After all structural work has been completed, said work will have to be inspected by the representatives of the Owner and TCMS and all identified faults will have to be repaired to the satisfaction of TCMS and the Owner.
- 3.5.9 The edges of all openings, holes, slots, etc., cut out during the work must be smoothed to remove all jaggedness and incipient cracks.

## **4 WELDING REQUIREMENTS**

- 4.1 The selected Contractor must prepare and submit to the TCMS and the Owner representatives for approval, all its welding procedures in a document signed and sealed by a professional engineer member of the Ordre des ingénieurs du Québec no later than 10 days before work starts.
- 4.2 The Contractor must provide a copy of the company's and welders' certifications in accordance with the welding standards specified in CSA W47.1 (Fusion Welding of Steel Structures Division 2). These must be

provided to the TCMS representative and to the Owner before work starts. The welders' laminated certificates must include a photo.

- 4.3 The welds must comply with CSA W59 (Welded Steel Construction – Metal Arc Welding).
- 4.4 The Contractor must carry out the welding in a way that minimizes residual internal stresses and prevents deformation due to thermal stress. The Contractor's welding procedure must clearly demonstrate the associated stress alleviation measures for both prefabrication and onboard installation.
- 4.5 The Contractor must prepare the steel plates in accordance with the TCMS representative's requirements. Should there be a disagreement between these two parties, the TCMS representative shall prevail.
- 4.6 On the whole, welding must start at the fixed end of the pieces and work toward the free end or centre, as the case may be, to avoid deformation.
- 4.7 Temporary welds must be kept to a minimum and must in no way restrict structural movement during the final welding.
- 4.8 Any weld found deficient in terms of recognized acceptance criteria will have to be entirely redone solely at the Contractor's cost in accordance with a method to be approved in advance by all standards bodies concerned with weld quality on this project.
- 4.9 All electrodes used for the work must be approved in accordance with the welding procedure approved prior to start of work.
- 4.10 Any deformations must not exceed the tolerances of the International Association of Classification Societies (IACS).



## 5 BOW THRUSTERS

- 5.1 Two (2) bow thrusters (Side-Power or equivalent model SM285TCi 24V/48V) with dual counter-rotating propellers with a thrust of 340 kg each must be installed in front of the front bulkhead between frames 4 and 5. See plans no. 2627-16-500 *Positionnement / Positioning* and 2627-16-502 *Tubes de propulseurs et pléniums / Thruster Tubes and Plenums*. The Contractor must buy the equipment required to install the bow thrusters.
- 5.2 The bow thrusters will each be fitted with a 15kW DC, reversible electric motor. The electric motors will have a 48V DC power supply via a control module, from 24V DC battery sets. The control module must be compatible with, and supplied by the manufacturer of the bow thrusters, and be dedicated solely to this equipment. See the list of main components in ANNEXE 1. All required components must be supplied by a single manufacturer, including the controls, their control wiring and connections, and must be compatible with the thrusters. Commissioning and testing must be supervised by the manufacturer's approved supplier. The entire installation must have a marine certification recognized by Transport Canada.
- 5.3 The thrusters must be installed in tubes positioned in parallel leading to plenums used for shared suction and discharge to be installed in the bottom of the barge. The geometry of the installation must be an upside-down wide V-shape necessitated by the very slight draft of the barge.
- 5.4 The thrusters must be mounted on the tubes to be made of steel and installed in accordance with plan no. 2627-16-502 *Tubes de propulseurs et pléniums / Thruster Tubes and Plenums*. A rubber trim must insulate the base of the cast-bronze mount from the steel tube. The mounting bolts must be 316L stainless steel. The average gap between the thruster propeller diameter and the inside of the tube must be no more than 8 mm. At no point along the circumference may the gap vary by more than 50% from the average. Tubes must be fabricated in accordance with these specifications. The tubes may be made of spiralled steel with smoothed interior welds, or 12-inch diameter schedule-40 pipe that meets the tube/propeller gap specifications.
- 5.5 The control module must be attached to bulkhead no. 5 in a way that minimizes the length of the electric cable. The batteries must be located in boxes on the port and starboard side of the deck at the bow. See plan no. 2627-16-002 *Position source d'énergie / Position of Energy Source*, Photo 4 and Photo 5 of ANNEXE 3. The joysticks must be installed in the

wheelhouse. See plan no. 2627-16-001 *Arrangement général / General Configuration* and Photo 6 of ANNEXE 3.

- 5.6 The installation of the bow thrusters must comply in all aspects with the manufacturer's directives.
- 5.7 The fibreglass tubes usually used for this type of installation will not be required because the tubes for this project will be made of steel. The tubes may be purchased from the manufacturer of the bow thrusters, or made by the Contractor, but must be a minimum 0.25 inch thick.
- 5.8 Four (4) inspection covers for access to the propellers must be with false bottom to permit better hydrodynamic flow. See plan no. 2627-16-502 *Tubes de propulseurs et pléniums / Thruster Tubes and Plenums*.
- 5.9 Installing the prefabricated unit will require relocating or modifying the bilge suction in front of bulkhead no. 4. The relevant details will have to be agreed upon onsite with the representatives of the Owner and TCMS.

## **6 ELECTRICITY PRODUCTION SYSTEM**

- 6.1 The batteries will be recharged normally, mainly by three 260W solar panels installed on the wheelhouse roof. A 24V DC, 30 amp secondary battery charger will be available for occasional use.
- 6.2 The battery charging, supply and control systems are shown in the wiring diagram on plan no. 2627-16-200 *Électricité schéma unifilaire / Electricity Wiring Diagram*
- 6.3 Control panels PN1, PN2 and PN3 will be installed in the wheelhouse in accordance with plan no. 2627-16-001 *Arrangement général / General*

*Configuration* and Photo 7 of ANNEXE 3. The voltage controller will also be installed in the wheelhouse.

- 6.4 The two (2) bow thrusters must be capable of being activated simultaneously as needs require. Electrical loads and amperages must take this double simultaneous load into account.
- 6.5 The major components of the electricity production system are listed in ANNEXE 2.
- 6.6 Precautions must be taken to avoid galvanic effects between metals. Electrically non-conductive trim, such as semi-hard rubber, must be installed to avoid galvanic effects. Nuts and bolts must be 316L stainless steel.
- 6.7 Power supply to all accessories and components must be via two conductors: one positive, one negative. The ship's hull must under no circumstances serve as conductor. Therefore, the ground wire must under no circumstances serve as the return conductor. Nevertheless all components must be connected to the ground at a minimum number of connection points, one in the wheelhouse and one in front near the control module on a secondary structural member of the bulkhead and not to a plate. A bolt welded to the structure will serve as the ground terminal.
- 6.8 All electrical cabling and wiring must meet applicable TCMS standards. Electrical cables must be kept in place by supports insulated from the cabling. Supports must be no further apart than 20 times the diameter of the smallest wire for cables unsupported by cable trays. All cables to be positioned under the main deck must be supported by light-coloured cable trays made of galvanized steel or fireproof fibreglass. Control cables must be sufficiently far from power cables. Deck and bulkhead openings for cabling must be fitted with approved waterproof conduits. Deck cable-openings must be fitted with a 1-inch nominal diameter steel tube welded to each side of the deck plate and extending vertically at least 20 cm above the deck or either side of a bulkhead.
- 6.9 All cable sizes must be approved before ordering to ensure maximum voltage loss of 5% at 40°C ambient temperature at the required amperage. Electrical cables must be when placed horizontally, at least 40 cm from the deck plate, supported on cable trays. The cables must be attached to the cable trays. Cabling must in all respects correspond to the requirements of TCMS and be of approved type.
- 6.10 The solar panels must be placed on the wheelhouse roof. See plan no. 2627-16-001 *Aménagement général / General Configuration*. The panels must be mounted on supports (to be made) to provide 25 cm clearance between the underside of the solar panels and the top of the roof, for panel ventilation and roof maintenance purposes. The solar panels, whose frames must be made

of aluminum, must be electrically insulated from their supports (to be made) by rubber trim. These supports must be attached with 316L stainless steel bolts. The supports must each be able to support, without being distorted, a snow load of 160 kg/m<sup>2</sup> vertically and 80 kg horizontally in each direction transversally and longitudinally.

6.11 The exact positioning of the battery boxes will be agreed upon with the Owner's representative.

6.12 All components must have marine certification from a body recognized by Transport Canada.

## **7 WINTERIZATION**

- 7.1 For wintering afloat, four additional steel inspection covers with watertight gaskets, without hydrodynamic guides, must be provided with six balloons similar to bulwark fenders. These balloons will, for wintering, be inserted in the vertical inspection cylinders to absorb ice expansion in winter. The balloons must be as large-diameter as possible.
- 7.2 Supports must be built onto bulkhead no. 5 on the starboard side at the bow for storing the four covers and six wintering balloons as well as the four false bottom covers for operation. These supports must be able to hold the equipment in place using a retention system. The bolting patterns of the four inspection shafts and eight covers must be identical and interchangeable. An additional four watertight gaskets must be supplied.

## **8 WATERTIGHTNESS CHECK**

- 8.1 During prefabrication in the contractor shop, the Side-Power units or equivalent must be temporarily installed and their adequacy checked in the presence of the Owner's representative.
- 8.2 Before and after installing the prefabricated unit into the hull, the welds must be checked to ensure they conform and are watertight.
- 8.3 After refloating, the watertightness of the entire assembly must be checked under light conditions as well as fully loaded at maximum draft. In the event that rewelding is required, the unit will have to be removed in drydock and then the barge refloated, and the appropriate tests redone, all at the Contractor's expense until a satisfactory conclusion. The Contractor must provide a heavy vehicle to load onto the barge to achieve the maximum draft representing a usual load to be defined in conjunction with the Owner.

## **9 TRIALS**

- 9.1 After the components of the system are installed, dockside trials and open-water trials will have to be carried out to demonstrate that the system works properly and reasonably. All components must be demonstrated to work properly. The Contractor must provide the trial procedures to the Owner at least one month in advance for review, comments and approval. Trial requirements must include operating the two thrusters simultaneously for an uninterrupted period of 35 seconds and monitoring changes in voltage at 5-second intervals, without the contribution of the solar panels or the battery

chargers. This test must be performed twice, 15 minutes apart. Batteries can be recharged during the interval.

- 9.2 During the trials, infrared readings must be taken of the temperature of battery connections, motors, voltage controllers and circuit breakers. The temperature must not exceed 50°C. If it does, the necessary adjustments must be made.
- 9.3 The trials must be carried out to the satisfaction of the representatives of Parks Canada and TCMS. The Owner will provide the crew and fuel required to operate the ship for trials.

## ANNEXE 1 BOW THRUSTERS TECHNICAL EQUIVALENCE DESCRIPTION

Identification	Item No.	Description
A	SM 285TCI	Bow Thrusters 5m 205TCI 24"48Volts Side-Power by Imtra
B	SM8940	Joystick
C	Relay	Relay 24V DC to 48V DC at 325 amps
D	SM 13016	Steel tunnel
E	SMAMLHOLD-C	Fuse-holder
F	SMAML325	Fuse
G	SM 61277-22	Control cable
H	SIDBS 9003 EB	Battery switch

A: Two identical certified bow thrusters with minimum thrust of 285 kg each at 42 Volts and 340 kg at 48 Volts with dual propellers per thruster with 285 mm minimum diameter. Power 15kW. System supply voltage 24V DC and operating voltage 48V DC. Sealed motors with EC approval or equivalent for machinery safety 2006/42; electromagnetism 89/336 and 2004/108, low voltage equipment 2006/95 EC, and 73/23; construction meeting standards ISO 10133:2000; EN 61000-6-3:2001; EN 60533 (1999); IEC 60945; EN 1037:1995, EU 98/37 and 97/23. Machinery tests must meet standards ISO 50081-1; 50082-2; EN 982:1996.

B Dual joysticks compatible with the bow thruster control module to be supplied by the manufacturer of the bow thruster. Fitted with two start buttons and one stop button. One joystick per thruster with Left, Stop, Right commands, automatically returning to Stop. 24V DC power supply from the control module. Power-on LED indicator.

C Relay module 24V DC to 48V DC at 325 amps minimum continuous capacity converting two 24V DC to 48V DC supply when either bow thruster is running. The module must be produced by the manufacturer of the bow thrusters. Must be compatible with the bow thrusters and joysticks.

D Steel tunnel. The Contractor may at its discretion make the steel tunnels or buy them from the manufacturer of the bow thrusters. They must be compatible with the required bow thrusters. The minimum tube thickness is 0.25 inches and the tubes must be made of marine steel approved by Transport Canada.

E Fuse holders. The fuse holders must be compatible with the bow thrusters, certified for continuous power specific to the bow thrusters.

F Fuse. See E above for equivalence criteria.

G Control cable. All cabling for the bow thruster control system must be supplied by the manufacturer of the bow thrusters and fitted with geometrically differentiated quick-connectors.

H Battery switches. Battery switches must have a rating compatible with the bow thrusters and supplied by the manufacturer of the bow thrusters.



## ANNEXE 2 TECHNICAL EQUIVALENCE DESCRIPTION / ELECTRICAL ENERGY PRODUCTION SYSTEM

Identification	Item No.	Description
A	p-SunWatt260	Pro Series G3 Black Frame, Class #1 260W, 18A @ 14.1V
B	Kit Mh-4	Mounting Kit 4 brackets + screws
C	28426	Ultra flexible and sunlight resistant sealer, clear
D	MPPT/SR-MT 4860	Solar panel controller 48 volts 60 amps
E	31SDC	Battery "Sceller" 1000A AC and 120A @ 20 hours
F	93-24305SP-A-30 Charles 5000 SP	Marine battery charger, 24V DC at 30 Amp, 3 outputs

A: Rigid solar panels with a minimum capacity of 260 Watts each with minimum voltage of 14.0V at minimum capacity of 18 Amps, Class I, 3rd-generation. Extruded marine aluminum frame, tempered glass. Snow load capacity 110 lb/sq.ft. Minimum operating temperature -25°C. Maximum voltage 31 Volts with open circuit. Minimum short-circuit amperage 9.0 amps. Built-in blocking diode. Required dimensions: 39 in. wide x 65 in. high with tolerance plus or minus 2 in. Must withstand wind up to 130 km/h. Peak power tolerance 0 to 3%. CSA or UL or ULC approval. Non-reflective glass with minimum 95% efficiency.

B: Mounting kit made of marine aluminum or 316L stainless steel. To be purchased from the manufacturer of the solar panels.

C: Sikaflex 295 UV white marine grade UV-resistant Sealant. Minimum stretch strength 10% two hours after application: application temperature 4°C to 25°C or equivalent.

D: Maximum Power Point Tracking (MPPT) automatic voltage controller. Algorithm analyzes the MPPT to adjust the duty ratio with no manual input by the user. Surplus power is converted to increased amperage. Minimum capacity 40 amps at 24 volts or 1000 watts. Minimum 97% conversion efficiency. Maximum dimensions 12 in. x 12 in. 4-Stage charging algorithm: Bulk, Absorption, Float (maintenance), Night (equalization). Operating temperature - 25°C to + 75°C. Overload protection and automatic reset. Polarity reversal protection.

E Marine batteries 1000 amp CA and 120 amp at 20 hours. Model 31 SDC.

F: 24V DC battery charger 30 amp continuous at 60 Hz 120V AC. UL marine approved, anodized aluminum box. Selection of battery types. Digital output ammeter, fuses at input and output. 3 DC outputs. Internal circuits comply with MiL-1-46058C. No significant EMI/RFI interference. Minimum standard U5CA-33 CFR 183.410. Automatic load adjustment based on ambient conditions.

Corrosion resistant construction to withstand extremes of heat, humidity and salt air. Automatic cooling fan at peak load. Load algorithm for automatic adjustment from Bulk to Night-time equalization. Filtered output with neither DC noise nor AC contamination. Obvious Kill Switch on the front of or near the box.

## ANNEXE 3 PHOTOS



Photo 1: Barge drydocked for wintering, rear view.



Photo 2: Barge drydocked for wintering, front view.



Photo 3: Temporary wintering shelter.



Photo 4: Location of portside battery box.

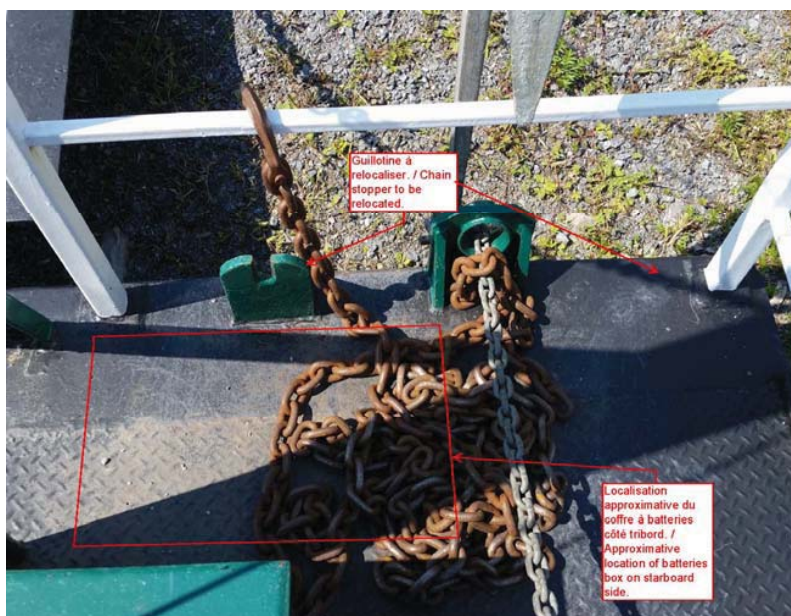


Photo 5: Location of starboard battery box.



Photo 6: Position of joysticks.





**Photo 7: Installation location of panels PN1, PN2, PN3, and voltage regulators.**