



**RETURN BIDS TO:
RETOURNER LES SOUMISSIONS À:**

**Bid Receiving - PWGSC / Réception des
soumissions - TPSGC**

11 Laurier St. / 11, rue Laurier

Place du Portage , Phase III

Core 0B2 / Noyau 0B2

Gatineau

Québec

K1A 0S5

Bid Fax: (819) 997-9776

**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

Title - Sujet DFO AIS Workboat	
Solicitation No. - N° de l'invitation F7044-170035/A	Date 2018-01-23
Client Reference No. - N° de référence du client F7044-170035	
GETS Reference No. - N° de référence de SEAG PW-\$\$MC-031-26655	
File No. - N° de dossier 031mc.F7044-170035	CCC No./N° CCC - FMS No./N° VME
Solicitation Closes - L'invitation prend fin at - à 02:00 PM on - le 2018-03-05	Time Zone Fuseau horaire Eastern Standard Time EST
F.O.B. - F.A.B. Plant-Usine: <input type="checkbox"/> Destination: <input checked="" type="checkbox"/> Other-Autre: <input type="checkbox"/>	
Address Enquiries to: - Adresser toutes questions à: Langdon(031mc), Jeremy	Buyer Id - Id de l'acheteur 031mc
Telephone No. - N° de téléphone (819) 420-2890 ()	FAX No. - N° de FAX () -
Destination - of Goods, Services, and Construction: Destination - des biens, services et construction: Specified Herein Précisé dans les présentes	

Instructions: See Herein

Instructions: Voir aux présentes

Vendor/Firm Name and Address

Raison sociale et adresse du

fournisseur/de l'entrepreneur

Issuing Office - Bureau de distribution

Ship Construction, Refit and Related Services/Construction navale, Radoubs et services connexes

11 Laurier St. / 11, rue Laurier

6C2, Place du Portage

Gatineau

Québec

K1A 0S5

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

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PART 1 - GENERAL INFORMATION

1.1 Introduction

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

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

The Annexes include the Technical Statement of Requirement, the Basis of Payment, the list of Subcontractors and the Bidder Questions and Canada Responses.

1.2 Summary

- 1.2.1 The Department of Fisheries and Oceans (DFO) has a requirement for One 7.2 to 7.4 m Glass Reinforced Plastic (GRP) open boat with center console, hard T-top and Trailer
The boat will perform a variety of roles including aquatic invasive species research and monitoring, search and rescue and other fisheries enforcement duties.

The boat is to be delivered to: Fisheries and Oceans Canada
80 East White Hills Rd.
St. John's, Newfoundland & Labrador
A1C 5X1

- 1.2.2 "The requirement is subject to the provisions of the North American Free Trade Agreement (NAFTA) and the Canadian Free Trade Agreement (CFTA)."

1.3 Debriefings

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

PART 2 - BIDDER INSTRUCTIONS

2.1 Standard Instructions, Clauses and Conditions

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

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

The [2003](#) 2017-04-27 Standard Instructions - Goods or Services - Competitive Requirements, are incorporated by reference into and form part of the bid solicitation.

Subsection 5.4 of [2003](#), Standard Instructions - Goods or Services - Competitive Requirements, is amended as follows:

Delete: 60 days
Insert: 90 days

2.1.1 SACC Manual Clauses

B1000T - Condition of Material, 2014-06-26

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.

Due to the nature of the bid solicitation, **bids transmitted by facsimile to PWGSC will not be accepted.**

2.3 Enquiries - Bid Solicitation

All enquiries must be submitted in writing to the Contracting Authority no later than 10 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 question(s) or may request that the Bidder do so, so that the proprietary nature of the question(s) is eliminated and the enquiry can be answered to all Bidders. Enquiries not submitted in a form that can be distributed to all Bidders may not be answered by Canada.

2.4 Applicable Laws

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

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

2.5 Improvement of Requirement During Solicitation Period

Should bidders consider that the specifications or Statement of Work contained in the bid solicitation could be improved technically or technologically, bidders are invited to make suggestions, in writing, to the Contracting Authority named in the bid solicitation. Bidders must clearly outline the suggested improvement as well as the reason for the suggestion. Suggestions that do not restrict the level of competition nor favour a particular bidder will be given consideration provided they are submitted to the Contracting Authority at least **15** days before the bid closing date. Canada will have the right to accept or reject any or all suggestions.

PART 3 - BID PREPARATION INSTRUCTIONS

3.1 Bid Preparation Instructions

"Due to the nature of the bid solicitation, bids transmitted by epost Connect service and by facsimile will not be accepted."

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

Section I: Technical Bid (3 hard copies).

Section II: Financial Bid (1 hard copy).

Section III: Certifications (1hard copy)

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

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

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

- 1) use 8.5 x 11 inch (216 mm x 279 mm) paper containing fibre certified as originating from a sustainably-managed forest and containing minimum 30% recycled content; and

- 2) use an environmentally-preferable format including black and white printing instead of colour printing, printing double sided/duplex, using staples or clips instead of cerlox, duotangs or binders.

3.2 Section I: Technical Bid

In their technical bid, Bidders should demonstrate their understanding of the requirements contained in the bid solicitation and explain how they will meet these requirements. Bidders should demonstrate their capability and describe their approach in a thorough, concise and clear manner for carrying out the work.

The technical bid should address clearly and in sufficient depth the points that are subject to the evaluation criteria against which the bid will be evaluated. Simply repeating the statement contained in the bid solicitation is not sufficient. In order to facilitate the evaluation of the bid, Canada requests that Bidders address and present topics in the order of the evaluation criteria under the same headings. To avoid duplication, Bidders may refer to different sections of their bids by identifying the specific paragraph and page number where the subject topic has already been addressed.

The technical bid must demonstrate the vessels will be fully seaworthy, operable and fit in all regards for the purposes intended.

In addition to providing the above mentioned documentation/information, Bidders must provide all documentation as requested in the following articles, **3.2.1** to **3.2.6**.

3.2.1 Project Schedule

1. As part of its technical bid, the Bidder must propose its preliminary project schedule, in MS Project or equivalent. The Bidder must provide a preliminary project schedule, in MS Project format or equivalent, indicating the sequence and the completion dates of project milestones, deliverables, and project tasks based on a contract award as "day 0." The project schedule should include the Bidder's work breakdown structure, the scheduling of main activities and milestone events and any potential problem areas involved in completing the Work.
2. The Bidder's schedule must also provide a target date for each of the following significant events for each boat as applicable:
 - (a) hull materials delivered to Contractor and sustained construction commenced;
 - (b) hull and deck completed, but not closed in to allow for full inspection of the structure and welding. The Contractor will be required to supply a hard copy of the material certificates and construction drawings to the Technical/Inspection Authority one week prior to inspection by the Technical/Inspection Authority;
 - (c) outfitting/electrical 75% complete but all equipment and components delivered to the Contractor and available for full inspection. The Contractor will be required to supply a hard copy of the list of equipment and electrical supplies to the Technical/Inspection Authority one week prior to inspection by the Technical/Inspection Authority;
 - (d) technical manuals delivered to Canada for approval (no less than 14 days prior to the planned delivery date);
 - (e) Contractor's tests and trial and final sea trials required by the TSOR;
 - (f) boat and trailer delivered to Canada for approval; and
 - (g) the start and the end of the 12 month warranty period.

Note: Technical Manuals will not be returned once approved.

3.2.2 Preliminary Drawings

The following must be included with the Bids:

- (a) draft stability calculation;
- (b) calculated lightship weight;
- (c) general arrangement;
- (d) structural drawings showing deck plan, a centerline profile and frame station construction details;
- (e) detailed lines plan;
- (f) a drawing of the fuel supply arrangement.

3.2.3 Subcontractors

A list, in the form of the attached **Annex C** of subcontracts for labor and/or material must be included with the Bidder's Proposal, stating the name and address of each subcontractor, and a description (Make, Model No.) of the goods or services to be supplied by each.

3.2.4 Vessel Construction Experience

The Bidder must provide objective evidence that it has a proven capability in the construction of vessels of the size, type and complexity which is the subject to this RFP, by providing a detailed list of at minimum 2 boats built within the last 5 years. Prototype hulls will not be considered for this procurement. The list must include the following detail for each vessel submitted as evidence of construction capability:

- (a) General Arrangement drawings;
- (b) Photographs;
- (c) References;
- (d) Builder's plates (if applicable); and
- (e) Hull identification numbers confirming multiple builds.

3.2.5 Marine Drafting and Engineering Capability

The Bidder must provide objective evidence in the form of a statement, signed by an authorized representative that it has either: a) in-house capabilities for marine drafting and engineering or b) has a written commitment from a supplier to provide marine drafting and engineering services for the duration of the Contract. The supplier must have marine drafting and engineering experience and capabilities on vessel construction projects similar in size, type and complexity to the subject RFP.

3.2.6 Contractor Quality Management System

The Bidder must provide objective evidence that it has a Quality Assurance Program, which must be in place during the performance of the Work, and which addresses the quality control elements below.

The objective evidence may be in the form of a copy of the Bidder's Quality Assurance Manual which addresses these elements. Proof of registration with a recognized quality assurance organization whose system addresses the minimum requirements below, may be submitted for consideration.

The quality control elements must include, as a minimum:

Management Representative

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Quality Assurance Manual
Quality Assurance Program Descriptions
Quality Reporting Organization
Documentation
Measuring and Testing Equipment
Procurement
Inspection and Test Plan
Incoming Inspection
In-Process Inspection
Final Inspection
Special Processes
Quality Records
Non Conformance
Corrective Action

Bidder facilities may be audited by Canada, or its authorized representative, prior to award of contract to ensure that a system is in place in accordance with the foregoing requirement.

The Contractor will be required to submit completed quality assurance documentation with each claim for payment, as applicable.

3.3 Section II: Financial Bid

Bidders must submit their financial bid in accordance with the Basis of Payment in Annex B.

The total amount of Applicable Taxes must be shown separately.

3.3.1 Exchange Rate Fluctuation

C3011T, 2013-11-06 Exchange Rate Fluctuation

3.3.2 Firm Price

Bidders must indicate the Bid price excluding taxes for each of the following Items in **Annex B – Basis of Payment**.

3.3.3 Unscheduled Work

Bidders must provide the information requested in the Basis of Payment, *Part 7, Article 7.6.1.1 - Charge-out Rate / Material Mark-up*.

The unscheduled work rates will be included in the Basis of Payment, however it will not form part of the bid evaluation.

3.4 Section III: Certifications

Bidders must submit the certifications and additional information required under Part 5.

PART 4 - EVALUATION PROCEDURES AND BASIS OF SELECTION

4.1 Evaluation Procedures

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

4.1.1 Technical Evaluation

4.1.1.1 Mandatory Technical Criteria

In order to be compliant, Bidder's proposal must, to the satisfaction of Canada, meet all requirements of the TSOR and provide all information as requested in **PART 3 - BID PREPARATION INSTRUCTIONS, 3.2 Section I - Technical Bid.**

4.1.2 Financial Evaluation

SACC Manual Clause [A0222T](#) (2014-06-26), Evaluation of Price – Canadian / Foreign Bidders

4.1.2.1 Mandatory Financial Criteria

In order to be compliant, Bidder's proposal must, to the satisfaction of Canada, meet all requirements and provide all information as requested in **PART 3 - BID PREPARATION INSTRUCTIONS, 3.3 Section III – Financial Bid.**

4.2 Basis of Selection

4.2.1 Mandatory Technical Criteria

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

A mandatory requirement is described using the words "shall", "must", "will", "is required" or "is mandatory".

PART 5 – CERTIFICATIONS AND ADDITIONAL INFORMATION

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 Integrity Provisions of the Standard Instructions, all bidders must provide with their bid, **if applicable**, the Integrity declaration form available on the [Forms for the Integrity Regime](http://www.tpsgc-pwgsc.gc.ca/ci-if/declaration-eng.html) website (<http://www.tpsgc-pwgsc.gc.ca/ci-if/declaration-eng.html>), to be given further consideration in the procurement process.

5.2 Certifications Precedent to Contract Award and Additional Information

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

5.2.1 Integrity Provisions – Required Documentation

In accordance with the section titled Information to be provided when bidding, contracting or entering into a real procurement agreement of the [Ineligibility and Suspension Policy](http://www.tpsgc-pwgsc.gc.ca/ci-if/politique-policy-eng.html) (<http://www.tpsgc-pwgsc.gc.ca/ci-if/politique-policy-eng.html>), the Bidder must provide the required documentation, as applicable, to be given further consideration in the procurement process.

5.2.2 Federal Contractors Program for Employment Equity - Bid Certification

By submitting a bid, the Bidder certifies that the Bidder, and any of the Bidder's members if the Bidder is a Joint Venture, is not named on the Federal Contractors Program (FCP) for employment equity "FCP Limited Eligibility to Bid" list available at the bottom of the page of the [Employment and Social Development Canada \(ESDC\) - Labour's](https://www.canada.ca/en/employment-social-development/programs/employment-equity/federal-contractor-program.html#) website (<https://www.canada.ca/en/employment-social-development/programs/employment-equity/federal-contractor-program.html#>).

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.

5.2.3 Additional Certifications Precedent to Contract Award

5.2.3.1 Workers Compensation Certification – Letter of Good Standing

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

The Bidder must provide, **within 5 calendar days** following a request from the Contracting Authority, a certificate or letter from the applicable Workers' Compensation Board confirming the Bidder's good standing account. Failure to comply with the request may result in the bid being declared non-responsive.

5.2.3.2 Welding Certification

1. Welding must be performed by a welder certified by the Canadian Welding Bureau and in accordance with the requirements of the following Canadian Standards Association (CSA) standards:

(a) CSA W47.2-11, Certification of Companies for Fusion Welding of Aluminum 2.1

2. Before contract award and **within 5 calendar days** of the written request by the Contracting Authority, the successful Bidder must submit evidence demonstrating its certification to the welding standards.

PART 6 - SECURITY, FINANCIAL AND OTHER REQUIREMENTS

6.1 Security Requirements

There is no security requirement applicable to this contract.

6.2 Financial Capability

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

6.3 Insurance Requirements

The Bidder must provide a letter from an insurance broker or an insurance company licensed to operate in Canada stating that the Bidder, if awarded a contract as a result of the bid solicitation, can be insured in accordance with the Insurance Requirements specified in **Part 7 - Resulting Contract Clause 7.19**.

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

PART 7 - RESULTING CONTRACT CLAUSES

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

7.1 Requirement

The Contractor must provide for One 7.2 to 7.4 m Glass Reinforced Plastic (GRP) open boat with center console, hard T-top and Trailer in accordance with the Requirement at Annex A and Annex D.

The boat is to be delivered to: Fisheries and Oceans Canada
80 East White Hills Rd.
St. John's, Newfoundland & Labrador
A1C 5X1

7.2 Standard Clauses and Conditions

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

7.2.1 General Conditions

2030 2016-04-04, General Conditions - Higher Complexity - Goods, apply to and form part of the Contract.

7.2.2 Supplemental General Conditions

1028, 2010-08-16 Ship Construction - Firm Price, apply to and form part of the Contract.

Warranty

The Supplemental General Conditions 1028, Article 12 – Warranty, paragraph 3 is deleted and replaced with the following:

The warranty period for the propelling machinery and auxiliaries, fittings and equipment of all kinds (excluding GSM) is 12 months and the warranty period for the hull is 24 months from the date of delivery and acceptance by Canada.

7.3 Security Requirements

7.3.1 There is no security requirement applicable to the Contract.

7.4 Term of Contract

7.4.1 Delivery Date

All the deliverables must be received in by June 28, 2018.

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031mc
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7.4.2 Delivery Points

Delivery of the requirement will be made to:

Fisheries and Oceans Canada
80 East White Hills Rd.
St. John's, Newfoundland & Labrador
A1C 5X1

7.5 Authorities

7.5.1 Contracting Authority

The Contracting Authority for the Contract is:

Name: Jeremy Langdon
Title: Supply Team Leader
Directorate: Acquisitions Branch – Marine Services and Small Vessels Sector
Address: Public Works and Government Services Canada
6C2, Place du Portage, Phase III
11 Laurier Street
Gatineau, QC
K1A 0S5

Telephone: 819-420-2890
E-mail address: Jeremy.langdon@pwgsc.gc.ca

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

7.5.2 Technical Authority

(Information to be provided at contract award)

The Technical Authority for the Contract is:

Name: _____
Title: _____
Organization: _____
Address: _____

Telephone: ____-____-_____
Facsimile: ____-____-_____
E-mail address: _____

The Technical Authority named above is the representative of the department or agency for whom the Work is being carried out under the Contract and is responsible for all matters concerning the technical content of the Work under the Contract. Technical matters may be discussed with the Technical Authority, however the Technical Authority has no authority to authorize changes to the scope of the

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Work. Changes to the scope of the Work can only be made through a contract amendment issued by the Contracting Authority.

7.5.3 Inspection Authority

(Information to be provided at contract award)

The Inspection Authority for the Contract is:

Name: _____
Title: _____
Organization: _____
Address: _____

Telephone: ____-____-_____
Facsimile: ____-____-_____
E-mail address: _____

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

7.5.4 Contractor's Representative

(Information to be provided at contract award)

Name: _____
Title: _____
Organization: _____
Address: _____

Telephone: ____-____-_____
Facsimile: ____-____-_____
E-mail address: _____

7.6 Payment

7.6.1 Basis of Payment

In consideration of the Contractor satisfactorily completing all of its obligations under the Contract, the Contractor will be paid in accordance with the Basis of Payment, Annex B. Customs duties are included and Goods and Services Tax or Harmonized Sales Tax is extra, if applicable.

7.6.1.1 Charge-out Rate / Material Mark-up

For the performance of the Work as a result of approved additional Work including Design or Engineering Change, or change in the scope of Work, the Contractor shall be paid the firm hourly charge-out rate of \$ _____ per hour, GST/HST extra, as per Annex B Basis of Payment Section 5.0. This rate shall be

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a blended rate for all classes of labor, engineering and foreperson and shall include all overheads, supervision and profit.

The firm hourly charge-out labour rate will remain firm for the term of the Contract and any subsequent amendments.

Overtime

Overtime shall not be paid unless authorized in writing by the Contracting Authority and for authorized additional Work only.

The Overtime Rates are as follows:

Time and One-Half Rate: \$ _____ / per person hour

Double Time Rate: \$ _____ / per person hour

Overtime shall be calculated and paid as follows:

Time and One-Half: "Time and One-Half Rate" x *Charge Out Rate*

Double Time: "Double Time Rate" x *Charge Out Rate*

Material for Additional Work including Design or Engineering Change:

For the performance of the Work to procure additional Material as a result of approved additional Work including Design Change or change in the scope of Work, the Contractor shall be paid the Direct Material Cost as defined in Contract Cost Principles 1031-2 plus a firm mark-up of 10% GST/HST extra, as applicable. Other than the 10% mark-up, no additional charges relating to material procurement, insurance, handling, store keeping and activities of this nature, or any other charge whatsoever, will be accepted as part of the additional Work prices.

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

The material mark-up rate will remain firm for the term of the Contract and any subsequent amendments.

7.6.1.2 Shipping Instructions - Delivery at Destination

Goods must be consigned to the destination specified in the Contract and delivered:

- a. Free on Board (Destination) common carrier for shipments from the United States government; or
- b. Delivered Duty Paid (DDP) Incoterms 2010 for shipments from a commercial contractor.

7.6.2 Payment for Fuels, Oils and Lubricants

The Contractor is responsible for the supply and cost of all fuel, lubricating oil, hydraulic oil and other lubricants sufficient for fully charging all systems as required for operating the machinery and other equipment and for performing all tests and trials.

7.6.3 Field Engineering and Supervisory Services

If Field Service Representatives (FSR) and/or Supervisory Services are required for the Work, the cost of all such services is to be included in the price for the Work.

7.6.4 Limitation of Price

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

7.6.5 Milestone Payment

Canada will make milestone payments in accordance with the Schedule of Milestones detailed in the Contract and the payment provisions of the Contract if:

- (a) an accurate and complete claim for payment using 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) all the certificates appearing on form PWGSC-TPSGC 1111 have been signed by the respective authorized representatives;
- (c) all work associated with the milestone and as applicable any deliverable required has been completed and accepted by Canada.

7.6.6 Schedule of Milestones

The schedule of milestones for each vessel for which payments will be made in accordance with the Contract is as follows:

Milestone No.	Description or deliverable(s)	%	Firm Amount
A	Hull materials delivered to Contractor and sustained construction commenced	32%	
B	Boat, trailer and technical manuals delivered and accepted by Canada	65%	
C	End of the 12 month warranty period. Final acceptance	3%	

The milestones shown above must be included and identified in all production schedules.

The payment for the delivery, **Milestone B** must be payable by Canada upon delivery and acceptance of the boat, trailer and manuals by Canada, minus the holdback for double the total estimated value of any outstanding work items.

The holdback for outstanding work must be payable by Canada upon completion of the outstanding work and when the work is accepted by Canada.

The payment for completion of the twelve month warranty period, **Milestone C** must be payable by Canada upon completion of the warranty period of the vessel, minus the total cost of any work undertaken by Canada to repair any defects subject to warranty.

7.6.7 Outstanding Work and Acceptance

The Inspection Authority, in conjunction with the Contractor, will prepare a list of outstanding work items at the end of the work period. This list will form the annexes to the formal acceptance document for the vessel. A contract completion meeting will be convened by the Inspection Authority on the work completion date to review and sign off the form PWGSC-TPSGC 1105, Acceptance. In addition to any amount held under the Warranty Holdback Clause, a holdback of twice the estimated value of outstanding work will be held until that work is completed.

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

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

7.7 Invoicing Instructions

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

Each claim must show:

- (a) all information required on form PWGSC-TPSGC 1111;
- (b) all applicable information detailed under the section entitled "Invoice Submission" of the general conditions;
- (c) the description and value of the milestone claimed as detailed in the Contract;
- (d) Quality assurance documentation when applicable and/or as requested by the Contracting Authority.

2. The Goods and Services Tax or Harmonized Sales Tax (GST/HST), as applicable, must be calculated on the total amount of the claim before the holdback is applied. At the time the holdback is claimed, there will be no GST/HST payable as it was claimed and payable under the previous claims for progress payments.

3. The Contractor must prepare and certify 1 original and 1 copy of the claim on form PWGSC-TPSGC 1111, and forward it to the Contracting Authority identified under the section entitled "Authorities" of the Contract for appropriate certification after inspection and acceptance of the Work takes place.

4. The Contracting Authority will then forward the original of the claim to the Technical Authority for certification and onward submission to the Payment Office for the remaining certification and payment action.

5. The Contractor must not submit claims until all work identified in the claim is completed.

7.8 Certifications and Additional Information

7.8.1 Compliance

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

7.8.2 Welding

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

(a) CSA W47.2-11, Certification of Companies for Fusion Welding of Aluminum 2.1.

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

3. 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 he intends to use in the performance of the Work. The list must identify the CWB welding procedure qualifications attained by each of the personnel listed and must be accompanied by a copy of each person's current CWB welding certification.

7.8.3 Workers Compensation

The Contractor must maintain its account in good standing with the applicable provincial or territorial Workers' Compensation Board for the duration of the Contract.

7.9 Applicable Laws

The Contract must be interpreted and governed, and the relations between the parties determined, by the laws in force in _____. (*Insert the name of the province or territory as specified by the Bidder in its bid, if applicable.*)

7.10 Priority of Documents

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

- (a) the Articles of Agreement;
- (b) the supplemental general conditions 1028, 2010-08-16, Ship Construction Firm Price;
- (c) the general conditions 2030 (2015-07-03) Goods (Higher Complexity);
- (d) Annex A, TECHNICAL STATEMENT OF REQUIREMENT (TSOR)
- (e) Annex B, Pricing;
- (f) Annex C, Subcontractors;
- (g) Annex D, Bidder Questions and Canada Responses; AND
- (h) the Contractor's bid dated _____.

7.11 Defence Contract

SACC Manual clause [A9006C](#) 2012-07-16, Defence Contract

7.12 Post Contract Award/Pre-Production Meeting

Within **3 working days** of the receipt of the contract, the Contractor must contact the Contracting Authority to determine the details of a pre-production meeting. The meeting will be held at the Contractor's plant. Cost of holding such pre-production meeting must be included in the price of the bid. Please note that the travel and living expenses for Government Personnel will be arranged and paid for by the Canada.

7.13 Project Schedule

1. The Contractor must provide an updated detailed project schedule in MS Project format or equivalent to the Contracting Authority and the Technical Authority **5 days after award of Contract**.
2. This schedule must highlight the specific dates for the events listed below.
 - a. hull materials delivered to Contractor and sustained construction commenced;
 - b. hull and deck completed, but not closed in to allow for full inspection of the structure and welding. The Contractor must supply a hard copy of the material certificates and construction drawings to the Technical/Inspection Authority one week prior to inspection by the Technical/Inspection Authority;
 - c. outfitting/electrical 75% complete but all equipment and components delivered to the Contractor and available for full inspection. The Contractor must supply a hard copy of the list of equipment and electrical supplies to the Technical/Inspection Authority one week prior to inspection by the Technical/Inspection Authority;
 - d. technical manuals delivered to Canada for approval (no less than 14 days prior to the planned delivery date);
 - e. Contractor's tests and trial and final sea trials required by the TSOR;
 - f. boat and trailer delivered to Canada for approval;
 - g. the start and the end of the 12 month warranty period

Note: Technical Manuals will not be returned once approved.

3. The schedule is to be regularly updated and available in the Contractor's office for review by Canada's authorities to determine the progress of the Work.

7.14 Progress Report

1. The Contractor must submit monthly reports on the progress of the Work in an electronic format to the Technical Authority and to the Contracting Authority.
2. The progress report must contain 2 Parts:
 - a. PART 1: The Contractor must answer the following three questions:
 - i. is the project on schedule?
 - ii. is the project within budget?
 - iii. is the project free of any areas of concern in which the assistance or guidance of Canada may be required?

Each negative response must be supported with an explanation.

- b. PART 2: A narrative report, brief, yet sufficiently detailed to enable the Technical Authority to evaluate the progress of the Work, containing at a minimum:
 - i. a description of the progress of each task and of the Work as a whole during the period of the report. Sufficient sketches, diagrams, photographs, etc., must be included, if necessary, to describe the progress accomplished.
 - ii. an explanation of any variation from the schedule.

7.15 Progress Meeting

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

7.16 Progress Review Meetings

Progress review meeting shall encompass total project status as of the review date. The Contractor, at a minimum, must report on the following:

1. Progress to date;
2. Variation from planned progress and the corrective action to be taken during the next reporting period;
3. A general explanation of foreseeable problems and proposed solutions, including an assessment of their impact on the contract in terms of schedule, technical performance and risk. The proposed solution should include the effort involved and the consequences to the schedule (Risk Register);
4. Proposed changes to the schedule;
5. Progress on action items, problems or special issues;
6. Deliverables submitted prior to PRM;
7. Milestones (technical and financial);
8. Activities planned for the next reporting period;
9. Status of Intellectual Property (IP) agreements, International Traffic in Arms Regulations (ITAR), Technical Assistance Agreements (TAA), Controlled Technology Access and Transfer (CTAT) or other agreements;
10. Status of any change notifications and requests;
11. Any changes to the PMP; and
12. Other business as mutually agreed to by CANADA and the Contractor.

7.17 SACC Manual clauses

A1009C – Worksite Access, 2008-05-12
B3000T – Equivalent Products, 2006-06-16
B5001C – Procedures for Design Change/Deviations:

The Contractor must follow these procedures for any proposed design change/deviation to contract specifications.

The Contractor must complete Part 1 of form [PWGSC-TPSGC 9038 \(PDF 241 KB\)](#) - ([Help on File Formats](#)), Design Change/Deviation, and forward 2 copies to the Technical Authority and 1 copy to the Contracting Authority.

B9028C – Access to Facilities and Equipment, 2007-05-25

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D0018C – Delivery and Unloading, 2007-11-30
D2000C – Marking, 2007-11-30
D2001C – Labelling, 2007-11-30
D9002C – Incomplete Assemblies, 2007-11-30
H4500C – Lien - Section 427 of the Bank Act, 2010-01-11

7.18 Manuals

1. No later than 14 calendar days prior to delivery of each boat, the Contractor must obtain and deliver to the Technical Authority for approval all Data Books, Operating Instruction Books, Maintenance Manuals and Spare Parts Lists (including part numbers and ordering instructions) for all machinery and equipment fitted on the Vessel as required. Once approved by the TA, the Contractor will provide 2 complete copies in accordance with and as specified in the TSOR.
2. Where manuals are examined by Canada, such examination does not relieve the Contractor of any responsibility under the Contract for ensuring the correctness of all details and adequacy of performance of the Vessel, nor does it obligate Canada to accept, in part or in whole, an item of Work completed in accordance with such manual, nor does it mean such an item of Work meets the requirements of the TSOR.

7.19 Insurance Requirements

1. The Contractor must comply with the insurance requirements specified in **Articles 7.19.1 and 7.19.2** below. The Contractor must maintain the required insurance coverage for the duration of the Contract. Compliance with the insurance requirements does not release the Contractor from or reduce its liability under the Contract.
2. The Contractor is responsible for deciding if additional insurance coverage is necessary to fulfill its obligation under the Contract and to ensure compliance with any applicable law. Any additional insurance coverage is at the Contractor's expense, and for its own benefit and protection.
3. The Contractor must forward to the Contracting Authority within 10 days after the date of award of the Contract, a Certificate of Insurance evidencing the insurance coverage and confirming that the insurance policy complying with the requirements is in force. Coverage must be placed with an Insurer licensed to carry out business in Canada. The Contractor must, if requested by the Contracting Authority, forward to Canada a certified true copy of all applicable insurance policies.

7.19.1 General Commercial Insurance

1. The Contractor must obtain Commercial General Liability Insurance, and maintain it in force throughout the duration of the Contract, in an amount usual for a contract of this nature, but for not less than \$2,000,000 per accident or occurrence and in the annual aggregate.
2. The Commercial General Liability policy must include the following:
 - (a) Additional Insured: Canada is added as an additional insured, but only with respect to liability arising out of the Contractor's performance of the Contract. The interest of Canada should read as follows: Canada, as represented by Public Works and Government Services Canada.
 - (b) Bodily Injury and Property Damage to third parties arising out of the operations of the Contractor.

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(c) Products and Completed Operations: Coverage for bodily injury or property damage arising out of goods or products manufactured, sold, handled, or distributed by the Contractor and/or arising out of operations that have been completed by the Contractor.

(d) Personal Injury: While not limited to, the coverage must include Violation of Privacy, Libel and Slander, False Arrest, Detention or Imprisonment and Defamation of Character.

(e) Cross Liability/Separation of Insureds: Without increasing the limit of liability, the policy must protect all insured parties to the full extent of coverage provided. Further, the policy must apply to each Insured in the same manner and to the same extent as if a separate policy had been issued to each.

(f) Blanket Contractual Liability: The policy must, on a blanket basis or by specific reference to the Contract, extend to assumed liabilities with respect to contractual provisions.

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

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

(i) Broad Form Property Damage including Completed Operations: Expands the Property Damage coverage to include certain losses that would otherwise be excluded by the standard care, custody or control exclusion found in a standard policy.

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

(k) If the policy is written on a claims-made basis, coverage must be in place for a period of at least 12 months after the completion or termination of the Contract.

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

(m) Non-Owned Automobile Liability - Coverage for suits against the Contractor resulting from the use of hired or non-owned vehicles.

(n), (o), (p), (q) not used.

(r) Litigation Rights: Pursuant to subsection 5(d) of the Department of Justice Act, S.C. 1993, c. J-2, s.1, if a suit is instituted for or against Canada which the Insurer would, but for this clause, have the right to pursue or defend on behalf of Canada as an Additional Named Insured under the insurance policy, the Insurer must promptly contact the Attorney General of Canada to agree on the legal strategies by sending a letter, by registered mail or by courier, with an acknowledgement of receipt.

For the province of Quebec, send to:

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

For other provinces and territories, send to:

Senior General Counsel,
Civil Litigation Section,

Department of Justice
234 Wellington Street, East Tower
Ottawa, Ontario K1A 0H8

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

7.19.2 Marine Liability Insurance

1. The Contractor must obtain Protection & Indemnity (P&I) insurance that must include excess collision liability and pollution liability. The insurance must be placed with a member of the International Group of Protection and Indemnity Associations or with a fixed market in an amount of not less than the limits determined by the Marine Liability Act, S.C. 2001, c. 6. Coverage must include crew liability, if it is not covered by Worker's Compensation as detailed in paragraph (2.) below.
2. The Contractor must obtain Worker's Compensation insurance covering all employees engaged in the Work in accordance with the statutory requirements of the Territory or Province or state of nationality, domicile, employment, having jurisdiction over such employees. If the Contractor is assessed any additional levy, extra assessment or super-assessment by a Worker's Compensation Board, as a result of an accident causing injury or death to an employee of the Contractor or subcontractor, or due to unsafe working conditions, then such levy or assessment must be paid by the Contractor at its sole cost.
3. The Protection and Indemnity 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 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 National Defence and Public Works and Government Services Canada for any and all loss of or damage to the watercraft however caused.
 - (c) Notice of Cancellation: The Insurer will endeavour to provide the Contracting Authority 30 days written notice of cancellation.
 - (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) Litigation Rights: Pursuant to subsection 5(d) of the Department of Justice Act, S.C. 1993, c. J-2, s.1, if a suit is instituted for or against Canada which the Insurer would, but for this clause, have the right to pursue or defend on behalf of Canada as an Additional Named Insured under the insurance policy, the Insurer must promptly contact the Attorney General of Canada to agree on the legal strategies by sending a letter, by registered mail or by courier, with an acknowledgement of receipt.

For the province of Quebec, send to:

Director Business Law Directorate,
Quebec Regional Office (Ottawa),

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Department of Justice,
284 Wellington Street, Room SAT-6042,
Ottawa, Ontario, K1A 0H8

For other provinces and territories, send to:

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

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

7.20 Inspection and Acceptance

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

7.21 Acceptance

1. Canada's provisional acceptance for delivery of the vessel must occur with the execution of a certificate in accordance with form **PWGSC 1105** upon satisfactory completion of the vessel and all trials. The execution of the certificates must in no way relieve the Contractor of any obligations under the Contract.
2. It is understood and agreed that where the work has been substantially completed and the parties have agreed upon the terms and conditions for the Contractor to make good any deficiencies, the certificate referred to above may be executed with a statement attached concerning the rectification of the deficiencies by the Contractor.
3. Canada's final acceptance must occur upon completion of the 12 month warranty period and settlement of all accounts between the parties in relation to the Contract.

7.22 Government Supplied Material

The following equipment will be Government Supplied Material (GSM) and must be installed, mounted, set-up, fully functional and in accordance with the manufacturer's installation recommendations:

Twin 175 HP Yamaha gasoline Outboard Engines.

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ANNEX A

TECHNICAL STATEMENT OF REQUIREMENT

Attached as a separate document

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ANNEX B

PRICING

B1.1: One 7.2 to 7.4 m Glass Reinforced Plastic (GRP) open boat with center console, hard T-top built in accordance with the requirements at Annex A and Annex D.

\$ _____ (CAD)

B2.1: 1 trailer built in accordance with Annex A and Annex D

\$ _____ (CAD)

B3.1: Transportation cost for delivery of 1 boat and trailer FOB to:

Fisheries and Oceans Canada
80 East White Hills Rd.
St. John's, Newfoundland & Labrador
A1C 5X1

\$ _____ (CAD)

TOTAL WITHOUT GST/HST (B1.1 + B2.1 + B3.1):

\$ _____ (CAD)

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ANNEX C

SUBCONTRACTORS

Specification Item	Description of Goods/Services (Incl. Make, Model Number as applicable)	Name of Supplier	Address of Supplier

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ANNEX D

BIDDER QUESTIONS AND CANADA RESPONSES

Completed and updated during the solicitation process.



Fisheries and Oceans
Canada

Pêches et Océans
Canada

DEPARTMENT OF FISHERIES AND OCEANS

ANNEX A

Technical Statement of Requirements Requisition Number F7044-170035 for One (1) 7.2 to 7.4 m Glass Reinforced Plastic (GRP) open boat with center console, hard T-top and Trailer

January 4, 2018, Revision 1

**TRANSPORT CANADA MARINE SAFETY BRANCH (TCMSB)
TP 1332 APPROVED CONSTRUCTION**

Canada

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ABBREVIATIONS

ABYC	American Boat and Yacht Council
ABS	American Bureau of shipping
AC	Alternating Current
AIS	Aquatic Invasive Species
ASTM	American Society for Testing and Materials
CFM	Contractor Furnished Material
CSA	Canadian Shipping Act
CSA	Canadian Standards Association
COLREGS	Collision Regulations
DC	Direct Current
GPS	Global Positioning System
GRP	Glass Reinforced Plastic
GSM	Government Supplied Material
ISO	International Organization for Standardization
PVC	Polyvinylchloride
TA	Technical Authority (As defined by the Contract)
TCMS	Transport Canada Marine Safety
TSOR	Technical Statement of Requirements
UV	Ultraviolet
VHF	Very High Frequency
WMO	World Meteorological Organization

LIST OF REFERENCE DOCUMENTS

REFERENCE	TITLE
ASTM F1166	Standard Practice for Human Engineering Design for Marine Systems, Equipment and Facilities
TP 1332	Construction Standards for Small Boats
TP 13430	Standard For Tonnage Measurement of Ships
TP 14070	Small Commercial Vessel Safety Guide
ISO 12217	Small Boat – Stability and Buoyancy Assessment and Categorization
ISO 12215	Small Boat – Hull Construction and Scantlings
Canada Shipping Act	Small Vessel Regulations
Canada Shipping Act	Collision Regulations (COLREGS)
ABYC	American Boat and Yacht Council Standards
Canadian Standards Association (CSA) CSA W47.2-M1987	Certification of Companies for Fusion Welding of Aluminium
(CSA) C22.2 No. 183.2-M1983 (R1999)	Standards for DC Electrical Installations on Boats
CT-043-EQ-EG-001-E	Canadian Coast Guard Welding Specification, August 2017

1 OVERVIEW

1.1 Requirement

- 1.1.1 The Contractor shall design, fabricate and supply quantity one (1) 7.2 – 7.4 metre Glass Reinforced Plastic (GRP) Center Console Monohull with Heavy Duty T-Top and a Trailer based on the current Transport Canada Marine Safety Branch (TCMSB) Marine Safety Publication TP 1332 “Construction Standards for Small Vessels” (hereinafter referred to as TCMSB TP 1332). The boat shall be a twin (2) 175hp Yamaha outboard configuration: One (1) LF175XCA and one (1) F175XCA both with 25” shafts.
- 1.1.2 The primary role of this vessel will be a working platform for the Aquatic Invasive Species (AIS) research and monitoring program in Newfoundland. The vessel will be used in coastal regions across the province of Newfoundland as well as offshore work between bays and travel locations. Operations will be conducted from early spring to late fall.
- 1.1.3 The secondary roles of the vessel must be search and rescue and other fisheries enforcement duties such as boarding and surveillance duties within the reasonable capabilities for this type and size of craft.
- 1.1.4 This boat must be shore-based and launched and recovered by trailer.

2 DESIGN AND CONSTRUCTION REQUIREMENTS

2.1 General

- 2.1.1 Unless stated otherwise all components, equipment and material must be contractor supplied.

2.2 Ergonomic Design – General

- 2.2.1 Hazardous operating conditions must be prevented by arranging machinery and equipment in a safe manner; providing guards for all electrical, mechanical and thermal hazards to personnel; and providing guards or covers for any controls that might accidentally be activated by contact of personnel.
- 2.2.2 The boat must be designed and constructed to accommodate both male and female crew from approx. 5’ to 6’ 5” in height, wearing cold weather clothing and equipment in accordance with ASTM F1166-07 Standard Practice for Human Engineering Design for Marine Systems, Equipment, and Facilities.

2.2.3 Human engineering factors considered in design must include accessibility, visibility, readability, crew efficiency and comfort. All equipment must be accessible for use, inspection, cleaning and maintenance.

2.2.4 Equipment must be accessible for use, inspection, cleaning and maintenance as per ASTM F1166-07.

2.3 Vibration

2.3.1 The boat and all components must be free of local vibration that could endanger boat personnel, damage boat structure, machinery or systems, or interfere with the operation or maintenance of boat machinery or systems.

2.3.2 Mounts for movable components, including items moved for stowage, towing or transport must be provided with resilient material as necessary to prevent rattling.

2.3.3 Loosening of fasteners under vibration must be prevented by the use of self-locking fasteners.

2.4 Equipment Protection

2.4.1 The Contractor is responsible for the care of all equipment. All parts, especially those having working surfaces or passages intended for lubricating oil, must be kept clean and protected during manufacture, storage, assembly and after installation. Equipment must at all times be protected against dust, moisture or foreign matter and must not be subject to rapid temperature changes or extremes in temperature.

2.5 Site Cleanliness

2.5.1 During construction, all chips, shavings, refuse, dirt and water must be removed at the completion of the work shift or sooner. The Contractor must ensure measures are taken to avoid wear and damage incident to construction, and to prevent corrosion or other deterioration. Equipment subject to freezing must be kept drained, except during test and trials. Equipment must be kept clean and protected from the environment prior to installation.

2.6 Facilities (Applicable to GRP Lamination, Collar and Painting Facilities Only)

2.6.1 Contractor must have a shop capable of maintaining temperature and humidity. It must be capable of maintaining temperature between 16°C and 25°C. It must be capable of maintaining relative humidity below 70 percent.

2.7 Structural Strength

2.7.1 All structures and components (hull, deck, seating, etc.) must be of sufficient strength to withstand the lateral and vertical impact-loading that equates to the conditions of the operational requirements.

2.8 Standards

2.8.1 The boat must be designed, constructed, inspected, and certified to meet the requirements of the following standards, regulations and codes:

2.8.1.1 Transport Canada Marine Safety Regulation TP 1332 (current edition) Construction Standards for Small Boats. This standard references ISO and ABYC standards covering structure, fuel, electrical, stability and drainage requirements;

2.8.1.2 GRP Scantlings must be designed based off of the International Organization for Standardization Regulation ISO 12215-5 for Small Craft;

2.8.1.3 CSA C22.2 No. 183.2-M1983 (R1999) Standards for DC Electrical Installations on Boats and ABYC 'E' Electrical Standards; and

2.8.1.4 CT-043-EQ-EG-001-E Canadian Coast Guard Welding Specification, August 2017.

2.8.2 The Contractor must supply the boat as per this TSOR and where this TSOR interferes or contravenes the above standard; the above TCMSB TP 1332 and ISO 12215-5 standards must take precedence.

2.8.3 The Contractor must supply a certificate of approval insuring the proposed boat complies with TCMSB TP 1332, to ensure compliance with the current Canadian Coast Guard, Maritime Services Policies.

2.9 Materials

2.9.1 Glass Reinforced Plastics and Resins:

2.9.1.1 The boat constructed under this TSOR must be fabricated of GRP composite construction;

- 2.9.1.2 Good lamination practises must be followed throughout, eg. overlap distances, resin control, air removal from laminates, laminate repair and preparation for subsequent laminations and part bonding / secondary bonding;
- 2.9.1.3 Minimum laminating material specification must include gel coats and skin-out of isothalic resins, which can be laid in Vinylester resins;
 - 2.9.1.3.1 No DCPD (Dicyclopentadiene) resins are to be used.
- 2.9.1.4 Fibre materials to be standard mat / roving's, or `stitch' combined materials, some of which may use Carbon or Kevlar strands; and
 - 2.9.1.4.1 No `chopper' materials to be used in the hull.
- 2.9.1.5 GRP components must have a colored gel-coat finish unless stated otherwise (DFO Grey: RAL7042).
- 2.9.2 Items of trim and outfit such as hatch frames, castings, consoles and hardware items may be of other aluminium alloys suitable for commercial saltwater marine use such as type 5052 or 6063.
- 2.9.3 Fittings and clamps must be stainless steel. Bolts used in all fittings must be Type 316 stainless steel.
- 2.9.4 All materials must be corrosion resistant and suitable for use in a salt water environment as detailed in the Operational Requirements. All materials normally subjected to sunlight must resist degradation caused by ultraviolet radiation. Galvanized materials are unacceptable.
- 2.9.5 Direct contact of electrolytically dissimilar metals is not allowed. Electrolytic corrosion must be prevented by insulating dissimilar materials from each other with gaskets, washers, sleeves, or bushings of suitable insulating material.
- 2.9.6 Where flexible connections are required for steering and fuel systems, suitable hose with permanently crimped, detachable reusable type fittings must be used.
- 2.9.7 All materials and equipment must be stored installed and tested in accordance with the manufacturer's guidelines, recommendations and requirements.

2.10 Fasteners

- 2.10.1 All fasteners must be of corrosion resistant materials.
- 2.10.2 Cadmium plated parts and fasteners, including washers, must not be used.
- 2.10.3 Direct attachment of alloys containing copper to aluminium is not permitted except for an electrical bonding strap, with contact bolt and separating isolation washer.
- 2.10.4 No fastener must be directly threaded into GRP. Aluminium or Stainless steel washers or backing plates must be used as appropriate.

- 2.10.5 Where nuts must become inaccessible after assembly of the boat, nuts must be captured or anchored to allow reassembly and prevent backing off.
- 2.10.6 Unless otherwise specified, self-locking nuts must be installed to prevent loosening of fasteners due to shock and vibration.
- 2.10.7 Fasteners in deck traffic areas must be flush-mounted to eliminate tripping and snagging hazards.
- 2.10.8 All GRP composite penetrations must have their exposed inner core areas protected / coated to prevent deterioration or de-lamination of the core.

3 OPERATIONAL REQUIREMENTS

3.1 General

- 3.1.1 Unless otherwise stated, performance must be for conditions of zero sea state and no wind, salt water with Normal Load and complement. The boat must be designed and constructed for ease of maintenance and repair, long life, and to be easily supportable by local commercial facilities and suppliers. The boat is expected to have a service life of at least 12 years, with an expected usage of between 350 and 500 hours per year.
- 3.1.2 Must meet the following requirements:
 - 3.1.2.1 ISO design category "C";
 - 3.1.2.2 Maximum speed: 30 to 40 knots (at normal load condition);
 - 3.1.2.3 Cruising speed: 18 knots; and
 - 3.1.2.4 Endurance: 30 knots for 7 hours, 18 knots for 20 hours.

3.2 Steering

- 3.2.1 Capable of steering 15° from heading, in Beaufort Force 5, with seas from any direction;
- 3.2.2 Steer and manoeuvre effectively at 3 knots in Beaufort Force 5;
- 3.2.3 Maintain course, made good over ground, when proceeding at 3 knots with relative cross wind of 21 knots;
- 3.2.4 Operate carefully in depths of 1.0 meter with outboards lowered; and
- 3.2.5 Vessel must be able to manoeuvring in depths of 0.8 meters with outboards in a partially raised position.

3.3 Environmental Conditions

- 3.3.1 Capable of operating day or night in the following conditions:
- 3.3.2 Average ambient air temperature range: -15°C to +35°C
- 3.3.3 Average water temperature: 0°C to +20°C
- 3.3.4 Wave heights of up to 2.0 metres (Beaufort Force 5).

- 3.3.5 Wind speeds of 17-21 knots (Beaufort Force 5).
- 3.3.6 Operate in freezing spray or freezing rain with accumulations of up to 6.0 mm while maintaining stability to allow for safe transit in Beaufort Force 5.

3.4 Launching, Recovery & Transportation

- 3.4.1 The boat must be readily road transportable on a trailer, must be able to be launched and recovered using the trailer at launch ramps.
- 3.4.2 The maximum length, width and height of the vessel on its trailer must fall within Newfoundland and Labrador regulations for maximum road dimensions without an oversized load permit.

3.5 Beaching

- 3.5.1 The following defines the beaching capabilities of the vessel:
 - 3.5.1.1 Capable of beaching on soft (sand, earth or clay) surfaces at speeds of up to 5 knots without damage to the hull;
 - 3.5.1.2 Capable of beaching on hard (stone or concrete) surfaces at speeds of up to 3 knots without damage to the hull;
 - 3.5.1.3 Capable of trimming up the engine completely out of the water; and
 - 3.5.1.4 Capable of limited operation in forward or reverse with the engine partially trimmed up (shallow water operations).

4 PHYSICAL CHARACTERISTICS

4.1 Vessel Particulars

- 4.1.1 Length overall – between 7.2 and 7.4 metres
- 4.1.2 Breadth overall – maximised to 2.6 metres
- 4.1.3 Maximum draft (outboard motor lowered) - between 0.4 and 0.5 metres
- 4.1.4 Displacement (in lightship condition) - between 1500kg and 2000kg
- 4.1.5 Normal load condition:
 - 4.1.5.1 Crew of 4 = 340 kg;
 - 4.1.5.2 Fuel = 454 liters (335 kg);
 - 4.1.5.3 Crew Equipment and Gear = 400 kg; and
 - 4.1.5.4 Payload Capacity = Maximum 100 kg.
- 4.1.6 Vessel stern configured to accommodate – twin (2) 175hp Yamaha outboard configuration: One (1) LF175XCA and one (1) F175XCA both with 25” shafts – Government Supplied Material (GSM) and installed by the Contractor.

4.2 Hull Form & Structure

- 4.2.1 The vessel must be a deep “V” style monohull with each hull having a 20 degree dead rise at transom and a 35 degree dead rise at 25% aft of the stem.
- 4.2.2 Hull shape must not impede water flow to the propulsion units and must direct spray and waves away from onboard personnel.
- 4.2.3 Construction:
 - 4.2.3.1 The hull and scantlings are to be constructed based on ISO standard 12215, *Hull Construction and Scantlings*. This standard must be followed as a minimum with modifications for intended service identified within this TSOR.
- 4.2.4 Aluminum or stainless steel chafe plates are required on the keel and chine edges to protect from beaching.
 - 4.2.4.1 Chafe plates on keel should start at the top of the stem and continuing to amidships.
 - 4.2.4.2 Shall not detract from performance or sea keeping capabilities, and it shall be capable of withstanding the horizontal and vertical impact loading associated with the boats operational requirements. (See SECTION 3.4 Operational Performance - Beaching).

5 VESSEL CONFIGURATION

5.1 General

- 5.1.1 The vessel must be a Glass Reinforced Plastic (GRP) Center Console Monohull. The primary working deck must be aft of the center console and the secondary working deck must be forward of the center console. Center of helm must be amidships.

5.2 Deck Arrangement

- 5.2.1 Open deck, length of entire deck space to be minimum 5.6 metres, self-bailing deck with at least two (2) “non-return” auto scuppers.
- 5.2.2 Center console helm with walk around access on port and starboard sides.
- 5.2.3 Open aft working deck to be maximised to meet the design of the vessel, minimum 1.5 metres long.
 - 5.2.3.1 Aft deck must include a dive door in the starboard bulwark.

5.3 Center Console – Structure

- 5.3.1 Console must include one (1) forward facing windshield that is mounted as far forward as possible. Windshield must be ISO Category B certified and sized to maximize visibility.
- 5.3.2 Console must include a heavy duty T-top that provides adequate protection for the operator while underway:
 - 5.3.2.1 Must be made of marine-grade canvas;
 - 5.3.2.2 Must be designed so there is 195.5 centimetres of headroom internal clearance (6' 5") on centerline; and,
 - 5.3.2.3 T-top must be mounted with an aluminium or stainless steel tubing frame that is fastened to both the center console and the main deck of the vessel.
- 5.3.3 There must be grab handles positioned as follows:
 - 5.3.3.1 One (1) mounted vertically on the port side of the center console.
 - 5.3.3.2 One (1) mounted vertically on the starboard side of the center console.
- 5.3.4 There must be one (1) footrest for the operator.

5.4 Center Console – Outfit

- 5.4.1 This boat must be equipped with one (1) marine seat for the operator to work in relation with the center console:
 - 5.4.1.1 The seat must be made with ballistic nylon or other durable upholstery and as a minimum must meet the requirements of the Grammer MSG85/722 seats with arm rests, head rests, rotation and slide functions:
 - 5.4.1.2 The seat must remain forward facing and be mounted on a pedestal to allow for storage below it.
- 5.4.2 Helm Station:
 - 5.4.2.1 The helm station must be on the starboard side of the center console, with controls on starboard;
 - 5.4.2.2 The helm must incorporate a steering system, capable of handling the horsepower of the vessel, with manufactures' engine controls designed for the power unit;
 - 5.4.2.3 There must be a console mounted magnetic compass;
 - 5.4.2.4 All lights switches and breakers must be within easy reach of the operator; and
 - 5.4.2.5 There must be provision for an array of control gauges and electronic equipment at the helm position, see SECTION 7.4.

5.4.2.6 Center console must be fitted with space adequate for one VHF radio and a lockable storage compartment. These items may either be mounted into the helm station or mounted overhead, however if mounted overhead they must not protrude into the headroom of the operator.

5.5 UTILITY Lighting

5.5.1 All lighting is to be LED power management is critical due to the volume of electronics

5.5.2 There must be two (2) flood lights fitted on the T-top that are mounted on the centerline and facing forward. These lights must be Hella model 1GB-998-541-001 or equal.

5.5.3 There must be one (1) remote control spotlight must be mounted on the forward starboard side of the T-top. This light must be Guest Model SPL 12W or equal.

6 OUTFIT GENERAL

6.1 Hull Outfit

6.1.1 Bulwark:

6.1.1.1 Must be a minimum of 0.2 metres wide the along the port and starboard sides; and,

6.1.1.2 Stern of the vessel does not require a bulwark but will require a railing to prevent falling.

6.1.1.3 Top of bulwarks around the vessel must be flat across their whole width.

6.1.2 Dive Tank Rack:

6.1.2.1 Dive tank rack must be mounted to the starboard bulwark on the aft deck.

6.1.2.2 Must collapsible against the bulwark when not in use

6.1.2.3 Must not interfere with operation of dive door

6.1.2.4 Must hold a minimum of four (4) dive tanks

6.1.3 Vessel must be outfitted with aluminium protective pipe bracket guards, which extend around the outside of the outboard motors. The guards must be fabricated so as to be easily removed for maintenance access to the outboard engines.

6.1.4 The boat must be equipped with spring-line cleats, three (3) on the port side and three (3) on the starboard side.

- 6.1.5 Top of bulwark must be outfitted with hand railing as follows:
 - 6.1.5.1 Two (2) tall railings (12" above bulwark) starting in line with helm seating and continuing forward 1.0 to 1.1 metres
 - 6.1.5.1.1 One (1) railing on port side and one (1) railing on starboard side
 - 6.1.5.2 Two (2) short railings (6" above bulwark) beginning after tall railings and continuing forward 1.4 to 1.5 metres
 - 6.1.5.2.1 One (1) railing on port side and one (1) railing on starboard side
- 6.1.6 There must be an engine well that runs the width of the transom that provides sufficient room for the engines to tilt during transport.
- 6.1.7 The outboard side of the bulwark must be outfitted with 1 to 2 inch D-rubber to protect the hull from damage during docking. This must be included in the 2.60 metre overall breadth.

6.2 Deck Outfit

- 6.2.1 There must be a minimum of four (4) recessed deck tie downs on the aft deck;
- 6.2.2 Removable Winch:
 - 6.2.2.1 Removable winch must be outfitted to the port bulwark to assist in surveying and other research operations.
 - 6.2.2.1.1 Winch will lift straight up.
 - 6.2.2.2 Winch must be a Thern Model M4032PB or equivalent.
 - 6.2.2.3 Winch must be able to lift and hold a maximum of 35 kg.
- 6.2.3 Anchor and Storage: A locker for one (1) anchor (Fortress FX11 model or equivalent) with storage for chain and rope is to be incorporated into the bow of the vessel.

6.3 Lifesaving & Emergency Equipment

- 6.3.1 The following items must be provided with appropriate stowage / securing arrangements (as appropriate for each item). All fittings, contractor supplied, must be heavy duty, corrosion resistant 316 stainless steel fittings. All items must also be readily accessible:
 - 6.3.1.1 One (1) Fire extinguisher (Class B1, marine type);
 - 6.3.1.2 Two (2) paddles;
 - 6.3.1.3 One (1) manual bilge pump (built in), for the hull, Whale Gusher type;
 - 6.3.1.4 One (1) life buoy with heaving line not less than 15 meters;
 - 6.3.1.5 One (1) watertight flashlight;
 - 6.3.1.6 Pyrotechnics Type A Qty: 3, Type B or C Qty: 3;
 - 6.3.1.7 First Aid Kit;
 - 6.3.1.8 One (1) Air horn;
 - 6.3.1.9 Boat hook, 8 feet long (retractable);

- 6.3.1.10 One (1) Transport Canada approved radar reflector;
- 6.3.1.11 Anchor (Fortress FX11 model or equivalent) with 200 feet of ¾ line and a 5 meter galvanized chain;
- 6.3.1.12 Drogue sea anchor and 100 feet of 1/2 " braided nylon line; and
- 6.3.1.13 Mooring lines, four (4) X 20' X 5/8" braided nylon line with eye spliced into one end.

7 SYSTEMS GENERAL

7.1 Propulsion

- 7.1.1 Outboard motors must be Government Supplied Materiel (GSM) twin (2) 175hp Yamaha outboard configuration: One (1) LF175XCA and one (1) F175XCA both with 25" shafts. The Contractor must install the outboards, supply and install the controls for the outboards.
- 7.1.2 The engines must be installed, mounted and operated in accordance with the engine manufacturer's recommendations by the Contractor. The Contractor must supply and install the engine manufacturer's approved accessories and equipment. Equipment and components must not be used, or trials performed on the engines that would, in any way, void the engine manufacturer's warranties.

7.2 Propeller(s)

- 7.2.1 Four (4) identical propellers (two (2) spares) must be provided by the contractor (CFM) for the vessel built.
- 7.2.2 Propeller(s) must be properly sized and contractor installed.
- 7.2.3 The Contractor must inform the Technical Authority of appropriate pitch and diameter to meet the Performance Requirements as determined by the contractor developed design check.
- 7.2.4 The propellers must be of stainless steel.

7.3 Controls

- 7.3.1 Propulsion control system installation must include a dual binnacle engine controls located on the starboard side of the helm console. The controls must conform to engine manufacturer's recommendations and must not interfere with any of the other controls.
- 7.3.2 Engine package must incorporate a lanyard style automatic shutdown feature (kill switch) for the engines, to be mounted near the ignition switch.

7.4 Alarms

7.4.1 Monitoring system for the engines must include the following alarms:

- 7.4.1.1 Oil level gauge, for the remote tank;
- 7.4.1.2 Coolant flow alarm, if applicable; and,
- 7.4.1.3 Engine overheat/high temperature alarm.

7.5 Verification of Installation

7.5.1 Installation of the motors, controls, lubrication and fuel systems, manometers, battery connections, are to be verified by an authorized technician. The motors are to be started by the authorized technician, who must provide a written report with a copy for the Technical Authority.

7.6 Engine Break-In

7.6.1 The Contractor is to respect the engine manufacturer's break-in procedures and must have the appropriate authorized technician present during the break in period to resolve any issues.

7.7 Steering

- 7.7.1 Steering system must be remote hydraulic with self-contained oil reservoir, and replaceable seals on the rams, unless propulsion system builder requires alternate steering arrangement.
- 7.7.2 Hydraulic hoses must be of sufficient size and length to prevent pulsing. Hoses must be suitable for use in an exposed marine environment complete with stainless steel fittings.
- 7.7.3 Steering systems must be hydraulic with a maximum of 4.0 turns from hard over to hard over. (The SeaStar® and / or DayStar steering systems, depending on vessel horsepower, from Teleflex meet this requirement).
- 7.7.4 All hydraulic steering hoses must be routed in such a manner that they are protected from physical damage and so that there are no pinch-points or chafing points on the hoses.
- 7.7.5 The wheel / console connection must be of robust construction, to eliminate fore and aft or lateral movement of wheel / steering shaft fixture.
- 7.7.6 The steering wheel must be stiff enough that during rough water operations there is no flexing of the wheel and the wheel must be padded to provide a comfortable non-slip surface for the operator to grip. Momo Marine steering wheels meet these requirements.

7.8 Protection of Controls

- 7.8.1 All control cables, electrical wiring for the motors and the steering hydraulic hoses are to be installed in UV resistant plastic pipes (LOOM) or equal. These pipes are to be installed in such a manner as to ensure that no cable is immersed in water.

7.9 Fuel System

- 7.9.1 The complete fuel systems must be supplied, installed, labeled and tested in accordance with Section 7 of TCMSB TP 1332 and ABYC specifications.
- 7.9.2 The fuel system must include two (2) Racor filter/separators with see-thru bowls, suitable for fuel supply to the twin gasoline outboard motors.
- 7.9.3 All fuel valves must be readily accessible and labeled as per TCMSB TP 1332.
- 7.9.4 Locking Fuel filler must be located in an accessible watertight / vented compartment designed to catch fuel from over filling or blow back, so that the fuel does not enter the vessel as per TCMSB TP 1332 requirements.
- 7.9.5 Remote fuel shutoff maintenance valves are to be installed at filter/ manifold system and be easily accessible by vessel operators.
- 7.9.6 Shut-off valves must be installed in accordance with TP1332 and ABYC requirements, remote from the fuel tanks and engine compartments. Labeled as per TCMSB TP 1332 requirements.
- 7.9.7 All fuel tanks must be equipped with an anti-siphon valve installed on each suction.
- 7.9.8 Fuel tank vent pipes are to be equipped with a non-return check valve.

7.10 Fuel Tank

- 7.10.1 The vessel must be fitted with one (1) fuel tank(s) with baffles as necessary.
- 7.10.2 The tank(s) must be aluminum and fitted below the deck on the centerline.
- 7.10.3 The total fuel capacity must be a minimum of four hundred liters (425) liters.
- 7.10.4 Fuel tank(s) must be hydrostatically tested, or air tested to 3.0 p.s.i. and be labelled per the requirements of TP1332.
- 7.10.5 Fuel tank(s) must be fitted with fuel level/capacity sender unit and a gauge on the dash of the console for the operator.
- 7.10.6 Fuel tank(s) is (are) to be equipped with anti-siphon valve(s) installed on motor inlet if flow rate meet the manufacturer's requirement.

7.11 Electrical System

- 7.11.1 The electrical system design, component selection and installation must be in accordance with Canadian Standards Association C22.2 NO. 183.2-M1983 (R1999) "Standards for D.C. Electrical Installations on Boats", and TP1332 and/or ABYC 'E' as referenced by TP1332. All electrical equipment and hardware must be installed in accordance with the manufacturer's specifications.
- 7.11.2 Twelve Volt (12V) DC distribution system must be provided to power the engine starting and boat service loads including:
 - 7.11.2.1 Navigation lights;
 - 7.11.2.2 Exterior Lighting;
 - 7.11.2.3 Navigational equipment;
 - 7.11.2.4 Instrumentation;
 - 7.11.2.5 Bilge Pumps;
 - 7.11.2.6 Ancillary Items;
 - 7.11.2.7 Electronics; and
 - 7.11.2.8 Communications
- 7.11.3 All electrical equipment must be readily accessible for performing maintenance.
- 7.11.4 One (1) 12 VDC power point is required at the console for the operator. This power point must include a 12V auxiliary power outlet and USB charging receptacle combo.
- 7.11.5 There must be one (1) shore power 110V receptacle, 30-amp connections, on aft exterior bulkhead of cabin to service the vessel.
- 7.11.6 One (1) shore power connection must be fitted as identified in SECTION 5.4.7, complete with a marine grade service rated 30-ft shore power cable, capable of supplying 120V AC, 30 ampere, single-phase service on the boat.

7.12 Batteries, Cables and Charging Systems

- 7.12.1 Two (2) dedicated starting batteries, type M30MF for the outboard motors. Dual-battery system, minimum 1000 cranking amps with dual-battery selector switch mounted in a recessed position that conforms to engine manufacturer's specifications.
- 7.12.2 Twelve (12) volt DC distribution system must be provided to power the engine starting and boat service loads including:
 - 7.12.2.1 Navigation, interior, and exterior lighting;
 - 7.12.2.2 Electrical equipment;
 - 7.12.2.3 Instrumentation; and
 - 7.12.2.4 Bilge pumps and alarms.

- 7.12.3 Batteries must be marine grade, 12 V, deep cycle maintenance free glass mat or gel type (no custom batteries), and with the ability to cross connect for inboard or outboard start-up of either engine from either battery where the system has a house battery in addition to the start batteries, the house battery shall be able to be joined to the start batteries if necessary.
- 7.12.4 Battery switches must be Certification Agency, (CE, CSA, USCG, etc.) approved and must be mounted to prevent snagging or accidental switching.
- 7.12.5 Battery compartment must be weather tight and fitted with a suitable means of gas venting including for 'sealed' batteries.
- 7.12.6 Cables for all electrical distribution must be ample in size for the particular service, of marine grade tinned boat cable.
- 7.12.7 The electrical system design, component selection and installation must be in accordance with TP1332 and/or ABYC 'E' as referenced by TP1332. All electrical equipment and hardware must be installed in accordance with the manufacturer's specifications.
- 7.12.8 Breaker panels to be appropriately sized for the equipment detailed in this TSOR with a minimum of two (2) spares.
- 7.12.9 All fitted electrical equipment must be capable of operating simultaneously with any other fitted electronics equipment without causing interference to any electronic equipment or to the magnetic compass.
- 7.12.10 All operation switches for equipment must be labelled.

7.13 Cabling Installation

- 7.13.1 Protection of Controls:
 - 7.13.1.1 All control cables, electrical wiring for the motor and the steering hydraulic hoses are to be installed in UV resistant plastic pipes (LOOM) or equal. These pipes are to be installed in such a manner as to ensure that no cable is immersed in water.
 - 7.13.1.2 Cables for all electrical distribution must be ample in size for the particular service, of marine grade tinned boat cable.
 - 7.13.1.3 Cables must be grouped into wiring harnesses wherever possible. All wiring harnesses must be routed through protective conduit pipe. Where impractical cables and conductors must be supported with clamps or straps at least every 18" on horizontal runs and every 14" on vertical runs.

- 7.13.1.4 Cabling / conductors passing through watertight boundaries, decks, bulkheads or other exposed surfaces must be installed to maintain watertight integrity of the structure. Cable entry into watertight enclosures must be through watertight marine glands of suitable size.
- 7.13.1.5 Cabling / conductors passing through structures without watertight glands must be protected against chafing by the use of abrasive resistant grommets.
- 7.13.1.6 Routing cables through foamed spaces must be avoided wherever possible. Cables that must be routed through foamed spaces must be run in PVC conduit pipe. The pipe must be arranged in a manner that prevents water from becoming entrapped in the pipe.

7.14 Navigation Lighting

- 7.14.1 LED lighting must be used where available
- 7.14.2 Navigation lights must be permanently fitted to boat with protected wiring and must be waterproof. All around mast /anchor light ratchet mast mounting is acceptable.
- 7.14.3 The fixtures must be of such a design as to resist the effects of vibration and must be provided with adequate protection from damage that may occur when lying alongside a vessel or a pier. The Hella NaviLED Series of lights, including the NaviLED 360 all-round light, and NaviLED side lights meet this requirement.
- 7.14.4 Non-white lighting must be wired together on a separate breaker of the 12 volt DC electrical system. All around Mast /Anchor light showing clear above the radar scanner as per TP 1332. One three way rocker switch, labelled "NAV" which turns on all Nav lights. When switched to the "ANC" side, only the anchor light is on.

7.15 Electronic & Navigation Equipment

- 7.15.1 The Contractor must supply and install the following electronics. All antennas must be mounted on cabin top with fold down connections for road travel. All cable penetrations must pass through a watertight gland:
 - 7.15.1.1 Simrad NSS9 EVO 3, c/w GPS, Sonar and radar capabilities. The system must be able to interface with Regulus II BSB charts;
 - 7.15.1.2 4G Broadband Radar for Simrad NSS series includes Scanner, scanner cable 20m (66 ft), R110 interface box, Yellow Ethernet cable-1.8m (6ft);

- 7.15.1.3 Simrad BSM-1 Sounder module with Airmar Xsonic B150M tilted element (20 deg) thru Hull transducer;
- 7.15.1.4 Simrad GO7 XSR with HDI transducer;
- 7.15.1.5 Navionics MSD/NAV+CAD chart card;
- 7.15.1.6 GS-25 antenna/N2k Kit (for radar overlay);
- 7.15.1.7 One (1) Standard Horizon GX 5500S VHF with DSC capabilities radio. Complete with loud hailer/intercom function plumbed to Radio. VHF must be connected to GPS via NMEA to complete DSC capabilities;
- 7.15.1.8 Antenna, specification is Comrod AV51P-4 and Shakespeare 4187 - HD SS ratchet mount and 408 stand-off bracket;
- 7.15.1.9 The Contractor must provide and install a direct read compass with light on the boat. The magnetic compass must be mounted on the centreline of the operator stations, in easy view of the operator when facing forward. Deviation card development is an Owner responsibility. (The Ritchie Explorer meets this requirement.); and
- 7.15.1.10 The Contractor must supply and install an electric horn that meets the requirements of the Canadian Standards Association (CSA) Collision Regulations. The horn must be operated by a spring-loaded switch located on the operator's console.

7.16 Drainage & Bilge Systems

- 7.16.1 Electric bilge pump with 2000 gph capacity must be fitted in the largest hull compartment as well as a fixed manual operated bilge pump of the diaphragm type. The bilge pump(s) must be located so that they take suction from the lowest point of the hull. Piping must be installed which must allow the bilge pump(s) to discharge directly overboard. Any additional watertight division of the hull must be serviced by a bilge pump of 1500 GPH capacity. The wire gauge for all bilge pumps must be a minimum of 10 gauge.
- 7.16.2 All bilge pumps must be wired direct to battery, so that it is constantly active as per TCMSB TP 1332 requirements.
- 7.16.3 An automatic level sensor control must be fitted that turns on the electric bilge pump (Non-Pedal type) when water is present in the bilge. The electric bilge pump control switch must be located on the operator's console, with settings for 'momentary on', 'off', and 'automatic' operation. An indicator light must be provided at the control that lights when the bilge pump is operating.

- 7.16.4 There must be a high water alarm installed for the engine installation space and every other space serviced by a bilge pump.
- 7.16.5 One (1) brass or stainless steel threaded plug must be installed in the lowest point to drain the hull when out of the water.
- 7.16.6 Valves and handles must be made of non-corroding materials and must be located where they are readily accessible for operation, maintenance or removal.
- 7.16.7 Any forward water retaining compartment without pump must have a piped drain to the aft bilge with a stainless steel ball valve. The valve must be readily accessible for testing or draining the forward bilge to the aft pump.

7.17 Painting & Corrosion Protection

- 7.17.1 Hull above waterline and deck of the vessel must have a colored gel-coat finish (DFO Grey: RAL7042).
 - 7.17.1.1 Underwater hull must be covered with an anti-fouling paint system, approved for use in Canada and applied to a thickness as recommended by the manufacturer. The color must be black.
- 7.17.2 Upholstery on the seats must be black.
- 7.17.3 Aluminium components not identified for paint must have a clear coat painted finish on all specified exterior and interior surfaces, comprised of suitable etch, primers, and topcoat.
- 7.17.4 Contractor must follow the preparation and application requirements defined by the paint supplier. Typical single coat paint systems can be applied in the 5 to 7-mil thickness range per coating set. Typical system components would be: a) etch-primer; b) two coats of primer; and c) minimum two topcoats.
- 7.17.5 Exterior Decks and top of bulwarks (around the perimeter of the boat): Anti-slip, Sure-Foot grey.
- 7.17.6 Prior to delivery, the Contractor must ensure that all non-painted interior or exposed surfaces are free of cosmetic blemishes, including all construction marks, scratches, gouges and stains.

8 TRAILER

8.1 General

- 8.1.1 The Contractor must supply a tandem axle trailer to fit the boat, aluminum I beam construction and be rated at least 20% over the anticipated 'Normal Load Condition' weight of the boat. The trailer must be certified commercial requirements in accordance with Department of Transport regulations for towing the vessel, and be constructed and equipped with the following:

- 8.1.1.1 Tandem axle trailer, aluminum I beam construction with spare tire on rim (mounted to front of trailer), safety chains and positive pressure air tight bearing protection with grease nipples and an access ladder to the bow of the boat.
- 8.1.1.2 Brake and turn signal submersible style LED lighting, with 7-prong flat wiring connector. (Note requirement for other connector if required for the equipment listed for trailer).
- 8.1.1.3 Stainless steel calipers, mounting brackets and rotors with appropriate brake pads.
- 8.1.1.4 Electric/Hydraulic, jurisdiction compliant braking system.
- 8.1.1.5 Manual two speed bow winch assembly with winch strap and non-corroding snap hook, bow chock, and swivel tongue jack, with wheel. The winch must be of adequate size to launch and recover the vessel and fitted with anti-reverse mechanism;
- 8.1.1.6 Heavy-duty 'stand-on' diamond plate step fenders with mud flaps and hitch to accommodate a 2-5/16" ball;
- 8.1.1.7 Bunks and wheel mounted spare tire and carrier, with lug wrench; and six removable attachment points. Bunks must be lined with a protector.
- 8.1.1.8 Trailer to be supplied with four (4) ratchet tie down straps with hooks securing boat to trailer aft. Turnbuckle to be provided for securing boat to trailer forward.
- 8.1.1.9 The trailer must be fitted with a drop leg, side wind jack with caster wheel with anti-reversing mechanism sized to meet the normal load condition of the vessel.
- 8.1.1.10 Class III weight distributing hitch compliant.
- 8.1.1.11 Radial tires approved for trailers on solid galvanized rims, with an equivalent sized spare on a high mount bracket. The tires must have a capacity equal or superior to the load capacity of the trailers.
- 8.1.2 The contractor must record the trailer sales and registration information and provide the information in each vessel manual.

9 TESTS & TRIALS

9.1 General

- 9.1.1 The Contractor must conduct their own inspections, tests and trials to verify successful completion of the Work in accordance with this TSOR and the proper operation of the vessel and all associated equipment. The requirements for inspections, tests and trials and associated deliverable documentation are defined in the Contract and Annexes to the contract including any test, trials or sample reports attached thereto. All discrepancies identified through the inspection, test and trials processes must be corrected prior to delivery.

9.1.2 The Contractor must inspect and test the following items, as a minimum, for adherence to the contract requirements and proper operation (proper operation means that the equipment can be started, operated, connected together and demonstrated to function in a normal fashion, as applicable). All discrepancies must be corrected prior to delivery. The required inspections and tests are minimums and are not intended to supplant any controls, examinations, inspections or tests normally employed by the Contractor to assure the quality of the boat:

- 9.1.2.1 Weight;
- 9.1.2.2 Construction Quality;
- 9.1.2.3 Lifting Gear;
- 9.1.2.4 Propulsion Engines, including starting;
- 9.1.2.5 Steering System;
- 9.1.2.6 Fuel System;
- 9.1.2.7 Electrical System; and
- 9.1.2.8 Electronics.

9.2 Sea Trials - General

9.2.1 Sea trials must be conducted by the Contractor to demonstrate the boat and their equipment conform to the requirements as stated in the contract. All expenses incident to the trials must be borne by the Contractor, including fuel unless otherwise specified. A crew provided by the Contractor must operate the boat during sea trials. The minimum acceptable sea trial is identified in Appendix A.

9.2.2 All Sea Trial instrumentation and equipment must be furnished and operated by the Contractor. Trial instrumentation, where applicable, must not replace the boat's instruments.

9.2.3 The Contractor must submit a Test & Trials Plan, including a description of all of the acceptance trials to be performed for each boat. The boat must operate in the Normal Loaded Condition. As a minimum, the following trials must be conducted for each boat:

9.2.3.1 Speed Trials - The speed trials must be done over a course at least one (1) nautical mile in length. Two (2) runs must be made over the course, one (1) in each direction with the speeds for the two (2) runs averaged. The use of GPS data (averaged) is acceptable;

9.2.3.2 Endurance Trial -The boat must operate in the Normal Loaded Condition, at maximum speed for no more than the maximum time allowed if it has not operated for the minimum break-in period (typically five (5) hours);

9.2.3.3 Astern Propulsion - The boat must be operated and manoeuvred using astern propulsion to establish the astern performance. During the backing performance tests the throttles must be set to provide 1/3 of the rated engine horsepower; and

- 9.2.3.4 Steering Gear - Tests must be conducted on the steering gear to demonstrate the adequacy of the steering system under all operations. Manoeuvring tests must be performed to ensure that the boat meets the stated requirements. Manoeuvring trials must be conducted in the Normal Load Condition and repeated in the Full Load Condition.
- 9.2.4 The Contractor must provide a Tests & Trials Sheet, (Appendix A) for the boat and include this sheet in the technical publications (see SECTION 9.4).
- 9.2.5 The Contractor must notify the Contracting Authority and the Technical Authority Canada no less than two (2) weeks prior to sea trials. At a minimum, the Technical Authority must witness and attend the sea trials. Sea trial results must be forwarded to the Technical Authority prior to the delivery of the boat.
- 9.2.6 At the conclusion of sea trials, the boat must be thoroughly cleaned and inspected. Engine cooling systems must be flushed through with fresh water. The Contractor must repair any damage to the boat or ancillary equipment resulting from sea trials to the satisfaction of Canada.
- 9.2.7 For the purpose of the trials, Normal Loaded Condition must be considered to be the basic boat, fitted with all normal equipment, full fuel, with complement and loads per Boat Particulars, SECTION 4.1.
- 9.2.8 Final Inspection must not be performed until all tests have been satisfactorily completed with data available for review. The boat must be ready for delivery in all respects, except for final preparation for shipment. The Contractor must provide personnel, as required, to resolve questions and to demonstrate equipment operation maintenance accessibility, removal and installation.
- 9.2.9 Stability examination per TP1332, with ISO Design Category "C" further must require the Contractor to record all stability calculations and assessment utilizing ISO 12217-1, ISO 11812 and ISO 12216 with all detailed calculation worksheets, providing a copy for the boat produced as per SECTION 9.4.1.
- 9.2.10 Final Inspection - Upon delivery, the Technical Authority, or a representative of the Technical Authority must conduct the final delivery inspection. The Contractor must document the results of the delivery and provide these results to the Technical Authority and the Contracting Authority for Acceptance as per the Contract. The Contractor must repair any damage to the boat/equipment resulting from shipping to the satisfaction of Canada.

10 DOCUMENTATION

10.1 General

10.1.1 All documentation to be included in the Technical Publications must be provided in both official languages (French and English).

10.2 National Asset Code

10.2.1 The National asset code for this vessel is **VZA91**. The Contractor must add this five (5) character code to the builder's plate of the boat with the prefix "National Asset Code".

10.3 Builder's Plate

10.3.1 A Builder's plate must be affixed to the vessel and trailer in a readily visible location, e.g. for a boat, in way of the operator position, for a trailer on the left side of the tongue.

10.3.2 The plate must be made of a weather resistant material compatible with that to which it is affixed.

10.3.3 The dimensions of the plate must be not less than 200mm x 125mm

10.3.4 The plate must contain the following information, permanently etched:

10.3.4.1 National Asset Code;

10.3.4.2 Builder;

10.3.4.3 Hull Number;

10.3.4.4 Year of Construction; and

10.3.4.5 Lightship Weight in kilograms.

10.4 Technical Publications

10.4.1 The Contractor must provide, upon delivery of the boat, complete set of technical publications of a comprehensive owner/operator manual that provides a physical and functional description of the boat, it's machinery and equipment, AC and DC electrical system schematics as well as delivery testing and sea trial results (Appendix A) including stability calculation documentation.

10.4.2 The Contractor is to provide copies of the technical publications as follows:

10.4.2.1 One (1) complete hard copy and one (1) electronic copy of technical publications to be delivered with the boat.

10.4.2.2 One (1) complete hard copy and one (1) electronic copy of technical publications to be delivered to the Technical Authority.

11 SHIPPING AND DELIVERY

11.1 General

- 11.1.1 Prior to shipping, the boat is to be cleaned, appropriately protected and covered in accordance with the instructions specified in this section.
- 11.1.2 Prior to shipping, the boat must be secured on their respective trailers, cleaned, preserved and covered in accordance with this section. All areas of the boat are to be cleaned prior to covering for shipping. Bilges are to be dry and free of oil and debris and the fuel tanks must be full with fuel stabilizer added.
- 11.1.3 The propulsion systems must be preserved in accordance with the manufacturer's recommendations for storage of up to one year in an environment that must be subjected to freezing temperatures.
- 11.1.4 The batteries are to be disconnected. A warning plate is to be tied to the steering wheel with a wire indicating that the boat has been protected for shipping and storage and must not be started until the propulsion machinery has been reactivated.
- 11.1.5 All contact points with the boat are to be padded. A shrink wrap cover is to be provided to protect the boat during shipping and storage.
- 11.1.6 Means of Delivery: The Contractor must deliver the vessel/trailer combination; the trailer supplied for the boat must not be utilized as means of delivery.

12 WARRANTY AND SERVICE PROVISIONS

12.1 Components and Equipment Support

- 12.1.1 All components and all mechanical, auxiliary, electronic and electrical equipment installed on the boat must be supportable by parts and service in Canada within 30 days.

12.2 Spare Parts

- 12.2.1 No additional, except as identified in this TSOR.

APPENDIX A
SMALL BOAT / VESSEL TESTS & TRIALS SHEET
CONTRACT #F7044-170035

Small Boat / Vessel Builder:			
Small Boat / Vessel Description:			
Hull Identification Number:			
National Asset Code:			
Date of Trials:			
Personnel in Attendance:			
Builder			
PWGSC			
DFO			
DFO			
Time: _____ hrs Departing from			
Small Boat / Vessel Weights:	Dry Weight of Hull with cabin:		_____ lbs/ _____ kg
	Furnishings & Fittings:		_____ lbs/ _____ kg
	Engines & Equipment:		_____ lbs/ _____ kg
	Fuel: _____ Imp gal	Fuel: _____ Litres	_____ lbs/ _____ kg
	Total Weight of Small Boat/Vessel:		_____ lbs/

		_____ kg
	Number of Crew_____and operating equipment:	_____ lbs/ _____ kg
	Test Total Laden Weight:	_____ lbs/ _____ kg
	Trailer weight:	_____ lbs/ _____ kg
	Boat & Trailer weight:	_____ lbs/ _____ kg
Motors: Starting - Operation "IDENTIFY INBOARD/OUTBOARDS"	Port	<input type="radio"/> Immediate, Yes / No
	Starboard	<input type="radio"/> Immediate, Yes / No
Propellers/Impellers	Pitch	_____
	Diameter	_____
	No. of Blades	_____
	Stainless Steel or Aluminum	<input type="radio"/> S/S ___ AL
Static Attitude & Trim:		
Weather Conditions: Refer to attached Beaufort Wind Scale. BWS No. _____		
Speed Trials	Speed Required _____ - _____ knots	
	Cruising Speed: measured mile 1 way	_____ kts @ _____ rpm
	Cruising Speed: measured mile return	_____ kts @ _____ rpm

	Averaged Cruising Speed:	_____ kts @ _____ rpm
	Maximum Speed: measured mile 1 way	_____ kts @ _____ rpm
	Maximum Speed: measured mile return	_____ kts @ _____ rpm
	Average Maximum Speed _____ kts @ _____ rpm	
Full Throttle	From dead stop to plane	_____ seconds
	From dead stop to 30 knots	_____ seconds
Astern Propulsion:	Straight line to 2000 rpm	<input type="radio"/> Issues, Yes / No
	Hard a-port	<input type="radio"/> Issues, Yes / No
	Hard a-starboard	<input type="radio"/> Issues, Yes / No
	Emergency stop	_____ seconds
Tubes (if applicable)	No. of Chambers	_____
	Semi-auto fill system	<input type="radio"/> Yes / No
	Time to fill all chambers	_____ seconds
Endurance Trials: X = gallons or Litres	Fuel consumption	
	Port & Starboard Motor: at cruise:	_____ X/hr @ _____ rpm
	Port & Starboard Motor: at full throttle:	_____ X/hr @ _____ rpm
Steering: Acceptable Y /N	Straight line	<input type="radio"/> Yes / No
	Hard-Port radius of turn. Full Throttle	_____ feet

	Hard-Starboard radius of turn. Full Throttle	_____ feet
	Lock to lock = 35 degrees pt. & starboard	<input type="radio"/> Yes / No
	Effective steering 0-5 knots	<input type="radio"/> Yes / No
	5-10 knots	<input type="radio"/> Yes / No
	20-30 knots	<input type="radio"/> Yes / No
	Full speed	<input type="radio"/> Yes / No
Outboard/Inboard Leg Trim Control:	From fully raised to fully lowered.	<input type="radio"/> Acceptable Yes / No
Trim Tab Operation:	Fully raised, fully lowered.	<input type="radio"/> Acceptable Yes / No
Engine Controls:	Start	<input type="radio"/> Issues, Yes / No
	Shift	<input type="radio"/> Issues, Yes / No
	Throttle	<input type="radio"/> Acceptable Yes / No
Engine Gauges:	Tachometer	<input type="radio"/> Acceptable Yes / No
	Fuel gauges	<input type="radio"/> Acceptable Yes / No
	Trim gauges	<input type="radio"/> Acceptable Yes / No
	Oil pressure	<input type="radio"/> Acceptable Yes / No
Engine Gauges:	Voltmeter	_____ volts
Cabin Sound Levels:	Cruising speed- door & windows closed	_____ dbA @ _____ rpm
	Cruising speed- door & windows open	_____ dbA @ _____ rpm
	Full speed- door & windows closed	_____ dbA @

		_____rpm
	Full speed- door and windows open	_____dbA @ _____rpm
Outboard/Inboard engine operation:	Starting	<input type="radio"/> Acceptable Yes / No
	Shifting	<input type="radio"/> Acceptable Yes / No
	Throttle	<input type="radio"/> Acceptable Yes / No
	Raise	<input type="radio"/> Acceptable Yes / No
	Lower	<input type="radio"/> Acceptable Yes / No
Loaded Vessel Drop Test:	If applicable	<input type="radio"/> Acceptable Yes / No
Lifting Bridle Certified:	If applicable	<input type="radio"/> Acceptable Yes / No
Rollover test	If applicable	<input type="radio"/> Acceptable Yes / No

Notes:

Beaufort Wind Scale Identifier

Force	Wind Speed		Descriptive Term	Effects Observed at Sea	Effects Observed on Land
	Km/h	Knots			
0	Less than 1	Less than 1	Calm	Sea surface like a mirror, but not necessarily flat.	Smoke rises vertically.
1	1 - 5	1 - 3	Light air	Ripples with the appearance of scales are formed, but without foam crests.	Direction of wind shown by smoke drift, but not wind vanes.
2	6 - 11	4 - 6	Light breeze	Small wavelets, still short but more pronounced. Crests do not break. When visibility good, horizon line always very clear.	Wind felt on face. Leaves rustle. Ordinary vane moved by wind.
3	12 - 19	7 - 10	Gentle breeze	Large wavelets. Crests begin to break. Foam of glassy appearance. Perhaps scattered whitecaps.	Leaves and small twigs in constant motion. Wind extends light flag.
4	20 - 28	11 - 16	Moderate breeze	Small waves, becoming longer. Fairly frequent whitecaps.	Raises dust and loose paper. Small branches are moved.
5	29 - 38	17 - 21	Fresh breeze	Moderate waves, taking a more pronounced long form. Many whitecaps are formed. Chance of some spray.	Small trees with leaves begin to sway. Crested wavelets form on inland waters.
6	39 - 49	22 - 27	Strong breeze	Large waves begin to form. The white foam crests are more extensive everywhere. Probably some spray.	Large branches in motion. Whistling heard in telephone wires. Umbrellas used with difficulty.
7	50 - 61	28 - 33	Near gale	Sea heaps up and white foam from breaking waves begins to be blown in streaks along the direction of the wind.	Whole trees in motion. Inconvenience felt in walking against wind.
8	62 - 74	34 - 40	Gale	Moderately high waves of greater length. Edges of crests begin to break into the spindrift. The foam is blown in well-marked streaks along the direction of the wind.	Breaks twigs off trees. Generally impedes progress. Walking into wind almost impossible.
9	75 - 88	41 - 47	Strong gale	High waves. Dense streaks of foam along the direction of the wind. Crests of waves begin to topple, tumble and roll over. Spray may affect visibility.	Slight structural damage occurs, e.g. roofing shingles may become loose or blow off.
10	89 - 102	48 - 55	Storm	Very high waves with long overhanging crests. Dense white streaks of foam. Surface of the sea takes a white appearance. The tumbling of the sea becomes heavy and shock-like. Visibility affected.	Trees uprooted. Considerable structural damage occurs.
11	103 - 117	56 - 63	Violent storm	Exceptionally high waves. Sea completely covered with long white patches of foam. Visibility affected.	Widespread damage.

Force	Wind Speed		Descriptive Term	Effects Observed at Sea	Effects Observed on Land
	Km/h	Knots			
12	118 - 133	64 - 71	Hurricane	Air filled with foam and spray. Sea entirely white with foam. Visibility seriously impaired.	Rare. Severe widespread damage to vegetation and significant structural damage possible.



BEAUFORT FORCE 0
WIND SPEED: LESS THAN 1 KNOT
SEA: SEA LIKE A MIRROR



BEAUFORT FORCE 1
WIND SPEED: 1-3 KNOTS
SEA: WAVE HEIGHT .1M (.25FT), RIPPLES WITH THE APPEARANCE OF SCALES, BUT WITHOUT FOAM CRESTS



BEAUFORT FORCE 2
WIND SPEED: 4-6 KNOTS
SEA: WAVE HEIGHT .2-3M (.5-1FT), SMALL WAVELETS, CRESTS HAVE A GLASSY APPEARANCE AND DO NOT BREAK



BEAUFORT FORCE 4
WIND SPEED: 11-16 KNOTS
SEA: WAVE HEIGHT 1-1.5M (3.5-5FT), SMALL WAVES BECOMING LONGER, FAIRLY FREQUENT WHITE HORSES



BEAUFORT FORCE 5
WIND SPEED: 17-21 KNOTS
SEA: WAVE HEIGHT 2-2.5M (6-8FT), MODERATE WAVES TAKING MORE PRONOUNCED LONG FORM, MANY WHITE HORSES, CHANCE OF SOME SPRAY



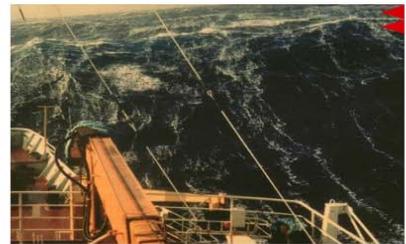
BEAUFORT FORCE 6
WIND SPEED: 22-27 KNOTS
SEA: WAVE HEIGHT 3-4M (9.5-13 FT), LARGER WAVES BEGIN TO FORM, SPRAY IS PRESENT, WHITE FOAM CRESTS ARE EVERYWHERE



BEAUFORT FORCE 7
WIND SPEED: 28-33 KNOTS
SEA: WAVE HEIGHT 4-5.5M (13.5-19 FT), SEA HEAPS UP, WHITE FOAM FROM BREAKING WAVES BEGINS TO BE BLOWN IN STREAKS ALONG THE WIND DIRECTION



BEAUFORT FORCE 8
WIND SPEED: 34-40 KNOTS
SEA: WAVE HEIGHT 5.5-7.5M (18-25FT), MODERATELY HIGH WAVES OF GREATER LENGTH, EDGES OF CREST BEGIN TO BREAK INTO THE SPINDRIFT, FOAM BLOWN IN WELL MARKED STREAKS ALONG WIND DIRECTION.



BEAUFORT FORCE 9
WIND SPEED: 41-47 KNOTS
SEA: WAVE HEIGHT 7-10M (23-32FT), HIGH WAVES, DENSE STREAKS OF FOAM ALONG DIRECTION OF THE WIND, WAVE CRESTS BEGIN TO TOPPLE, TUMBLE, AND ROLL OVER, SPRAY MAY AFFECT VISIBILITY.



BEAUFORT FORCE 10
WIND SPEED: 48-55 KNOTS
SEA: WAVE HEIGHT 9-12.5M (29-41FT), VERY HIGH WAVES WITH LONG OVERHANGING CRESTS, THE RESULTING FOAM, IN GREAT PATCHES, IS BLOWN IN DENSE WHITE STREAKS ALONG WIND DIRECTION, ON THE WHOLE, SEA SURFACE TAKES A WHITE APPEARANCE, TUMBLING OF THE SEA IS HEAVY AND SHOCK-LIKE, VISIBILITY AFFECTED.



BEAUFORT FORCE 11
WIND SPEED: 56-63 KNOTS
SEA: WAVE HEIGHT 11.5-18M (37-59FT), EXCEPTIONALLY HIGH WAVES, SMALL-MEDIUM SIZED SHIPS MAY BE LOST TO VIEW BEHIND THE WAVES, SEA COMPLETELY COVERED WITH LONG WHITE PATCHES OF FOAM LYING ALONG WIND DIRECTION, EVERYWHERE, THE EDGES OF WAVE CRESTS ARE BLOWN INTO FROTH.



BEAUFORT FORCE 12
WIND SPEED: 64 KNOTS
SEA: SEA COMPLETELY WHITE WITH DRIVING SPRAY, VISIBILITY VERY SERIOUSLY AFFECTED, THE AIR IS FILLED WITH FOAM AND SPRAY

APPENDIX B
Final Deliverable Data Package

The Final Data Package which must be delivered to Canada is as defined in the Contract, but must include, as a minimum the technical publications identified in this appendix.

1.0 Comprehensive Owner/Operator Manuals

1.1 Deliverables

1.1.1 One (1) complete hard copy and one (1) complete USB stick electronic copy set of the manuals per vessel delivered for the operator of each vessel, to be delivered with the vessel.

1.1.2 One (1) complete hard copy and one (1) complete USB stick electronic copy set of the manuals per vessel delivered for the Technical Authority, to be delivered to the same address identified for invoices.

1.2 Content

The manuals must provide a physical and functional description of the craft, it's machinery and equipment, as well as delivery testing and sea trial result documentation. The manuals must include as a minimum the following three sections and as detailed below:

- General Information
- Technical Information
- Spare Parts List

1.2.1 GENERAL INFORMATION SECTION

The General Information Section must include a description of the arrangement and function of all structures, systems, fittings and accessories that comprise the boat, with illustrations as appropriate:

1.2.1.1 Operating procedures;

1.2.1.2 Basic operating characteristics (such as temperatures, pressures, flow rates)

1.2.1.3 Installation criteria and drawings, assembly and disassembly instructions with comprehensive illustrations showing each step;

1.2.1.4 Recommended planned maintenance; and

1.2.1.5 Complete troubleshooting procedures.

1.2.2 TECHNICAL INFORMATION SECTION

The Technical Information Section a complete set of detailed owner / operator instructions, drawings (Section 15), parts lists and supplemental data for all components of the boat (whether acquired from external sources or custom-manufactured).

1.2.2.1 "As Fitted", dimensioned drawings must be produced for manuals to record the vessel particulars:

1.2.2.1.1 Calculated lightship weight;

1.2.2.1.2 General arrangement, Plan Profile section views;

- 1.2.2.1.3 Structural drawings showing deck plan, a centerline profile and frame station construction details;
- 1.2.2.1.4 Detailed lines plan;
- 1.2.2.1.5 Drawing of the fuel and propulsion supply arrangement; and,
- 1.2.2.1.6 Drawing of the electrical supply and functions of the vessel.
- 1.2.2.2 Parts list must include the name, part number and serial number if applicable of the parts, items or components and must indicate the supplier (name, address, phone number, email address) of this part, equipment or component and in which part of the specification the item appears.
- 1.2.2.3 Hull Serial Number (HIN), copy of builders plate, TEST and TRIAL results as per completed Attachment 1 of Appendix II, serial or manufacturer's numbers, and equipment warranty cards.
- 1.2.2.4 Engine(s) and equipment: including engine and propulsion serial numbers.
- 1.2.2.5 If applicable, collars; including collar material and glue materials and procedures necessary for onboard repair of the collar.
- 1.2.2.6 Acceptance Certificates, and compliance sheets or certificates distributed with equipment i.e. life-saving appliances, lifting appliances, engine test reports, calibration certificates, Nav light certificates, Fire suppression material certificates, flotation foam rating sheets
- 1.2.2.7 Pre-trial shop Testing Check Sheet.
- 1.2.2.8 Electronics, (if applicable): including model and serial numbers.
- 1.2.2.9 Regulatory and Stability documentation: as required per TP 1332, which, references ISO12217 or ISO 6185 for RIBs (if applicable).

1.2.3 SPARE PARTS LIST SECTION

The Spare Parts List section must include a list of recommended initial onboard spare parts to be stocked for the vessel. The list must include the name, part number and serial number if applicable of the parts, items or components and must indicate the supplier (name, address, phone number, email address) of this part, equipment or component and in which part of the TSOR the item appears. At a minimum this list must include the following items (as applicable):

- 1.2.3.1 Propulsion: Propellers, filters, water pump impeller, batteries, throttle and shift cables, special engine tools.
- 1.2.3.2 Electrical: panel breakers, fuses, light bulbs;
- 1.2.3.3 Boat Structures and Fittings: Miscellaneous commonly used fasteners.

2.0 ADDITIONAL DELIVERABLE DOCUMENTATION

2.1.1 The following additional documentation must be supplied in both sets of Technical publication manuals delivered (defined in 8.4.2):

- 2.1.1.1 Tonnage Registration Certificate in accordance with TP 13430 - <http://www.tc.gc.ca/eng/marinesafety/svcp-gt-3948.htm> ;
- 2.1.1.2 Registration to the Small Vessel Compliance Program (SVCP)

Website: <http://www.tc.gc.ca/eng/marinesafety/svcp-menu-3633.htm>

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- 2.1.1.3 Two (2) Bill of Sales, one (1) for the vessel and one (1) for the trailer;
- 2.1.1.4 Test & Trial results as required by Appendix A;
- 2.1.1.5 Acceptance Certificates, i.e. life-saving appliances, lifting appliances, engine test reports, calibration certificates, extinguishers, etc;
- 2.1.1.6 A valid Motor Vehicle Registration Certificate for the relevant Province, for the trailer; and
- 2.1.1.7 All testing check sheets created and completed by the builder.