



RETURN BIDS TO:
RETOURNER LES SOUMISSIONS À:
Bid Receiving Public Works and Government
Services Canada/Réception des soumissions
Travaux publics et Services gouvernementaux
Canada
Pacific Region
401 - 1230 Government Street
Victoria, B.C.
V8W 3X4
Bid Fax: (250) 363-3344

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 5.99m Aluminum Boat	
Solicitation No. - N° de l'invitation F7044-170018/A	Date 2017-09-20
Client Reference No. - N° de référence du client F7044-170018	
GETS Reference No. - N° de référence de SEAG PW-\$XLV-166-7329	
File No. - N° de dossier XLV-7-40079 (166)	CCC No./N° CCC - FMS No./N° VME
Solicitation Closes - L'invitation prend fin at - à 02:00 PM on - le 2017-10-31	Time Zone Fuseau horaire Pacific Daylight Saving Time PDT
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: Castle, David G.	Buyer Id - Id de l'acheteur xlvl66
Telephone No. - N° de téléphone (250) 217-6555 ()	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
Public Works and Government Services Canada - Pacific
Region
401 - 1230 Government Street
Victoria, B. C.
V8W 3X4

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 Security Requirements

There is no security requirement associated with this bid solicitation.

1.2 Statement of Work

Canadian Coast Guard – Department of Fisheries has a requirement for the supply and delivery of one (1), 5.99m, Aluminum Boat with trailer in accordance with the Statement of Work at Annex A and inspection as per Annex C - Inspection/Quality Assurance /Quality Control. All deliverables must be delivered on or before January 31, 2018.

1.2.1 There exists an option to acquire one (1) additional boats with trailers.

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 of receipt of the results of the bid solicitation process. The debriefing may be in writing, by telephone or in person.

1.4 Trade Agreements

This requirement is subject to the provisions of the Canadian Free Trade Agreement (CFTA) and the North American Free Trade Agreement (NAFTA).

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-manua> l) issued by Public Works and Government Services Canada.

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

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

2.1.1 SACC Manual Clauses

B3000T, 2006-06-16, Equivalent Products
A9125T, 2007-05-25, Valid Labour Agreement

2.2 Submission of Bids

Bids must be submitted only to Public Works and Government Services Canada (PWGSC) Bid Receiving Unit by the date, time and place indicated on page 1 of the bid solicitation.

2.3 Enquiries - Bid Solicitation

All enquiries must be submitted in writing to the Contracting Authority no later than 4 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

Bidders 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 **British Columbia**.

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.

PART 3 - BID PREPARATION INSTRUCTIONS

3.1 Bid Preparation Instructions

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

- Section I: Technical Bid – Two (2) hard copies and one soft copy on USB memory stick.
- Section II: Financial Bid – One (1) hard copy and one soft copy on USB memory stick
- Section III: Certifications - One (1) hard copy and one soft copy on USB memory stick

Note: Bids in digital format (the soft copies) can be provided on the same USB memory stick.

If there is a discrepancy between the wording of the soft copy and the hard copy, the wording of the hard copy will have priority over the soft copy.

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

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

- (a) use 8.5 x 11 inch (216mm 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 in a thorough, concise and clear manner for carrying out the work.

- 3.2.1** The technical bid must demonstrate that the proposed crafts will be mechanically sound, completely seaworthy, and operable and fit in all respects for the purposes intended.

3.2.2 Bidder's Check List and Technical Confirmation

The Bidders must submit a fully completed **Annex G - BID PACKAGE CHECKLIST** as part of their Technical Bid.

3.2.3 Inspection and Test Plan (ITP)

1. Bidders must provide with their bid the inspection plan and testing procedures that will be used to verify, test and inspect all of the components and systems on the boat from initial construction to completion. The ITP must be in accordance with **Annex C** attached to this RFP.
2. Bidders must outline the process by which they will address and solve problems or delays with the fabrication, various installations, testing and delivery of the boat.

3.2.4 Drawings and Other Documentation

The bidder must submit with their technical bid all of the drawings and other documentation given at Section 2.3 of Annex A, in the number and formats described.

3.2.5 Subcontractors

As part of their technical bid, Bidders must submit a completed **Annex E - Subcontractor List**.

3.2.6 Vessel Construction Experience

As part of their technical bid, the Bidder must provide objective evidence of experience in the construction of vessels of the size, type and complexity which are the subject of this RFP. To demonstrate this experience, the Bidder must provide

- (a) detailed list of such vessels built pursuant to TP 1332, Construction Standards for Small Vessels, Non-pleasure craft latest edition, within the last 5 years;
- (b) photographs of vessels of listed;
- (c) (for listed TP 1332, non-pleasure craft sold within the last 5 years only) purchaser's name and contact information, and the date of sale.

The Bidder must also provide details on how the materials and equipment used in the construction, manufacture of the proposed vessel is suited to the operating and environmental conditions that the vessel may encounter.

3.2.7 Naval Architecture and Engineering

The Bidder must provide objective evidence that it has either in-house capabilities, or has a written commitment for the duration of the Contract from a qualified sub-contractor to provide marine drafting and engineering services. Qualified sub-contractor is defined as having the provided these services on similar vessel construction projects (same size, type and complexity).

3.2.8 Contractor's Quality Management System

1. 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.
2. The objective evidence may be in the form of a copy of the Bidder's Quality Assurance Manual which addresses these elements.
3. The Bidder must also provide a minimum of one (1) samples of completed quality records used on the most recent marine vessel construction at its facility.
4. The quality control elements must include, as a minimum:
Quality Assurance Manual or Quality Assurance Program Descriptions
Inspection and Test Plan
Final Inspection
Quality Records

3.2.9 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 6 - Resulting Contract, Clause 6.19*.

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.

3.2.10 Welding Certification – Bid

1. The Contractor must be 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 (current version), Certification for Companies for Fusion Welding of Aluminum division 2.1.
2. Before contract award and within two (2) calendar days of the written request by the Contracting Authority, the successful bidder must submit evidence demonstrating it or its subcontractor's certification by CWB in accordance with the CSA welding standards.

3.3 Section II - Financial Bid

Bidders must submit their financial bid in accordance with the **Detailed Financial Bid Presentation Sheet at Annex D**.

3.3.1 Exchange Rate Fluctuation

C3011T, 2013-11-06, Exchange Rate Fluctuation

3.3.2 Financial Capability

A9033T, 2012-07-16, Financial Capability

3.3.3 Unscheduled Work

Bidders must provide the information requested in Annex D, Article D-2. The unscheduled work rates will be included in the Basis of Payment but will not form part of the bid evaluation.

3.4 Section III: Certifications

Bidders must submit the certifications required under Part 5.

PART 4 - EVALUATION PROCEDURES AND BASIS OF SELECTION

4.1 Evaluation Procedures

- (a) Bids will be assessed in accordance with the entire requirement of the bid solicitation including the 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, the Bidder's proposal must, to the satisfaction of Canada:

- a) Meet all requirements of the Annex A, SOW; and
- b) Provide all information as requested in PART 3 - BID PREPARATION INSTRUCTIONS

4.1.2 Financial Evaluation

A0222T (2013-04-25), Evaluation of Price.

4.2 Basis of Selection

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

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

The certifications provided by bidders to Canada are subject to verification by Canada at all times. Canada will declare a bid non-responsive, or will declare a contractor in default in carrying out any of its obligations under the Contract, 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 verify the Bidder's certifications. Failure to comply and to cooperate with any request or requirement imposed by the Contracting Authority may render the bid non-responsive or constitute a default under the Contract.

5.1 Certifications Required with the Bid

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

5.1.1 Integrity Provisions - Declaration of Convicted Offences

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

5.2 Certifications Precedent to Contract Award and Additional Information

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

5.2.1 Integrity Provisions – Required Documentation

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

5.2.2 Federal Contractors Program for Employment Equity - Bid Certification

By submitting a bid, the Bidder certifies that the Bidder, and any of the Bidder's members if the Bidder is a Joint Venture, is not named on the Federal Contractors Program (FCP) for employment equity "[FCP Limited Eligibility to Bid](http://www.labour.gc.ca/eng/standards_equity/eq/emp/fcp/list/inelig.shtml)" list (http://www.labour.gc.ca/eng/standards_equity/eq/emp/fcp/list/inelig.shtml) available from [Employment and Social Development Canada \(ESDC\) - Labour's website](#).

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

PART 6 - RESULTING CONTRACT CLAUSES

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

6.1 Security Requirement

There is no security requirement applicable to this Contract.

6.2 Statement of Work

DFO has a requirement for the supply and delivery of one (1), 5.99m, Aluminum Boat and trailer in accordance with the Statement of Work at Annex A and inspection as per Annex C - Inspection/Quality Assurance /Quality Control. All deliverables must be delivered on or before January 31, 2018.

Delivery of unit is per Section 6.4.2

6.2.1 Optional Goods

The Contractor grants to Canada the irrevocable option to acquire up to one (1) additional boats with trailers, as described at Annex A of the Contract under the same conditions and at the prices stated in the Basis of Payment of the Contract. The option may only be exercised by the Contracting Authority and will be evidenced, for administrative purposes only, through a contract amendment.

The Contracting Authority may exercise the option within twelve (12) months after contract award by sending a written notice to the Contractor.

6.3 Standard Clauses and Conditions

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

6.3.1 General Conditions

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

6.3.2 Supplemental General Conditions

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

Conduct of Work. The Supplemental General Conditions 1028, Article 02 (2010-08-16) Conduct of Work, Delete Paragraph 1, entitled "Canadian Labour", in its entirety.

Warranty. The Supplemental General Conditions 1028, Article 12 (2010-08-16) – Warranty, Paragraph 3 is deleted and replaced with the following:

"The warranty periods for the vessel, from the date of its delivery to and acceptance by Canada, are:

- a) Twelve (12) months for the boat propelling machinery and auxiliaries, fittings and equipment of all kinds (excluding Government Supplied Material).
- b) Twenty four (24) months for the vessel hull and welding."

6.4 Term of Contract

6.4.1 Delivery Date

All the deliverables must be received on or before _____.

6.4.2 Delivery Location

Canadian Coast Guard/DFO:
Nanaimo, BC

6.4.3 Shipping Instructions - Delivered Duty Paid

1. Goods must be consigned and delivered to the destination specified in the contract:

Incoterms 2000 "DDP Delivered Duty Paid" to the delivery locations listed under article 6.4.2.

2. The contractor is responsible for all delivery charges from the Contractor's facility to destination, including administration costs, insurance and risk of transport.

6.5 Authorities

6.5.1 Contracting Authority

The Contracting Authority for the Contract is:

Dave Castle
Supply Specialist, Acquisitions, Marine
Public Works and Government Services Canada
Suite 401 - 1230 Government Street, Victoria B.C. V8W 3X4
Telephone: 250-217-6555
E-mail address: david.castle@pwgsc-tpsgc.gc.ca

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

6.5.2 Technical Authority

The Technical Authority for the Contract is provided upon contract award

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

6.5.3 Inspection Authority

The Inspection Authority for the Contract is provided upon contract award

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

6.5.4 Contractor's Representative

Name and telephone numbers of the person responsible for:

General Enquiries:

Name: _____ Telephone Number: _____

Facsimile Number: _____ E-mail address: _____

Delivery Follow-up:

Name: _____ Telephone Number: _____

Facsimile Number: _____ E-mail address: _____

6.6 Payment

6.6.1 Basis of Payment

In consideration of the Contractor satisfactorily completing all of its obligations under the Contract, the Contractor will be paid a firm price of \$ _____. Customs duties and Applicable Taxes are extra, if applicable.

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

6.6.2 Charge-out Labour Rate / Material Mark-up

The following rates are included in the Basis of Payment and must remain valid for the duration of the contract:

Charge-out Labour Rate: _____

Mark-up on Materials and Sub-Contracts: 10%

6.6.3 Unscheduled Work:

a) Price Breakdown:

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

b) Pro-rated Prices:

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

c) Payment for Unscheduled Work:

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

- 6.6.3.1 Number of hours (to be negotiated) X \$_____, being the Contractor's firm hourly charge-out labour rate which includes overhead and profit, plus net laid-down cost of materials to which will be added a mark-up of 10 percent, customs duties are included and applicable taxes are extra. The firm hourly charge-out labour rate and the material mark-up will remain firm for the term of the Contract and any subsequent amendments.
- 6.6.3.2 Notwithstanding definitions or usage elsewhere in this document, or in the Contractor's Cost Management System, when negotiating *Hours* for unscheduled work, PWGSC will consider only those hours of labour directly involved in the production of the subject work package. Elements of *Related Labour Costs* identified in 6.3.3.3, will not be negotiated, but will be compensated for in accordance with 6.3.3.3.
- 6.6.3.3 Allowance for *Related Labour Costs* such as: Management, Direct Supervision, Purchasing and Material Handling, Quality Assurance and Reporting, First Aid, Gas Free Inspecting and Reporting, and Estimating will be included as *Overhead* for the purposes of determining the *Charge-out Labour Rate* set out in clause 6.6.2
- 6.6.3.4 The 10% mark-up rate for materials will also apply to subcontracted costs. The mark-up rate includes any allowance for material and subcontract management not allowed for in the 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.

6.6.4 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.

6.6.5 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.

6.6.6 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.

6.6.7 Method of Payment - Multiple Payment

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

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

6.7 Invoicing Instructions

The Contractor must submit invoices in accordance with the information required in Section 13 of 2030 General Conditions Higher Complexity Goods.

Invoices are to be made out and sent to:
Canadian Coast Guard
-200 Kent Street,
Mail Station:7W064,
Ottawa, Ont K1A 0E6
Attention: Kenneth Aker

A copy of the original invoice must be forwarded to the Contracting Authority identified in section 6.5.1.

6.7.1 Warranty Holdback

A warranty holdback of 3% will be applied to the claim(s) for payment. This holdback is payable by Canada upon the expiry of the warranty holdback period of 90 days applicable to the Work. Goods and Services Tax or Harmonized Sales Tax (GST/HST), as appropriate, are to be calculated and paid on the total amount of the claim before the 3 percent holdback is applied. At the time that the holdback is released, there will be no GST/HST payable, as it was included in the previous payments.

6.7.2 Outstanding Work Holdback

In addition to any amount held under the Warranty Holdback Clause, a holdback of twice the estimated value of outstanding work will be held until completion of the Work. Applicable Taxes will be calculated on this outstanding work holdback amount and paid at the time that the outstanding work holdback is released.

6.8 Certifications

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.

6.9 Welding Certification – Contract

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-M1987 (R2003), Certification for Companies for Fusion Welding of Aluminum division 2.1.
- 1.1 All welding must be in compliance with the Canadian Coast Guard Welding Specification, CT-043-EQ-EG-001-E, latest revision.
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.

6.10 Project Schedule

1. The Contractor must provide a detailed project schedule in MS Project format or equivalent to the Contracting Authority and the Technical Authority **5 days after award of Contract**. 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 SOW;
- (f) boat and trailer delivered to Canada for approval;
- (g) the start and the end of the twelve (12) month warranty period.

Note: Technical Manuals will not be returned once approved.

2. 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.

6.11 Progress Reports

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 two (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 a clarification.
 - (b) PART 2: A narrative report, brief, yet sufficiently detailed to enable the Technical Authority to evaluate the progress of the Work, containing as 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) reasons for any variation from the schedule.

6.12 SACC Manual Clauses

B9035C - Progress Meetings	2008-05-12
B5007C - Procedures for Design Change or Additional Work	2010-01-11
D3015C - Dangerous Goods/Hazardous Products	2007-11-30
D0018C - Delivery and Unloading	2007-11-30
C0711C - Time Verification	2008-05-12

6.13 Trade Qualifications

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

6.14 Quality Management Systems

1. The Contractor must have in place a Quality Assurance Program approved by the Inspection Authority during the performance of the Work which addresses the quality control elements below.
2. The quality control elements must include, as a minimum:
 - Quality Assurance Manual or Quality Assurance Program Descriptions

Inspection and Test Plan
Final Inspection
Quality Records

3. The Contractor's facilities may be audited by Canada, or its authorized representative, during the performance of the Work to ensure that the approved system is in place and in accordance with the foregoing requirement.
4. The Contractor will be required to submit completed quality assurance documentation with each claim for payment as applicable.

6.15 Post Contract Award/Pre-Production Meeting

Within three (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 or via telephone or video conference. The Cost of holding such a 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.

6.16 Manuals

1. 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 must provide two (2) complete copies in accordance with and as specified in the **Annex A, Appendix I**.
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 whole or in part, an item of Work completed in accordance with such manual, nor does it mean such an item of Work meets the requirements of the SOW.

6.17 Inspection, Test & Trials

1. During Construction of the vessel, the Contractor must arrange for regular inspections and upon completion of the construction of the vessel, the Contractor must arrange trials. All Inspections and test and trials performed must be in accordance with the SOW and the **Annex C - Inspection/Quality Assurance/Quality Control**. The Inspection Authority must approve any additional testing not specified in the SOW.
2. The Contractor must update as required the Inspection and Test Plan (ITP) provided with its bid and submit to the Contracting Authority and the Inspection Authority seven (7) days after contract award for review and approval.
3. Once approved, any modification to the ITP must be pre-approved by the Inspection Authority. A revised ITP will be required should any modification be made.

6.18 Government Supplied Material (GSM)

As per the TSOR, Article 7.1.1, the Contractor must install, as per the manufacturer's recommendations, the following GSM:

One (1) 115 HP Yamaha Outboard.

Note: The engine will be ordered and shipped immediately after contract award.

6.19 Insurance Requirements

The Contractor must comply with the insurance requirements specified in **Articles 6.19.1** and **6.19.2** 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.

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

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

6.19.1 Commercial General Liability Insurance

1. The Contractor must obtain Commercial General Liability Insurance, and maintain it in force throughout the duration of the Contract, in an amount usual for a contract of this nature, but for not less than \$2,000,000 per accident or occurrence and in the annual aggregate.
2. The Commercial General Liability policy must include the following:
 - (a) Additional Insured: Canada is added as an additional insured, but only with respect to liability arising out of the Contractor's performance of the Contract. The interest of Canada should read as follows: Canada, as represented by Public Works and Government Services Canada.
 - (b) Bodily Injury and Property Damage to third parties arising out of the operations of the Contractor.
 - (c) Products and Completed Operations: Coverage for bodily injury or property damage arising out of goods or products manufactured, sold, handled, or distributed by the Contractor and/or arising out of operations that have been completed by the Contractor.
 - (d) Personal Injury: While not limited to, the coverage must include Violation of Privacy, Libel and Slander, False Arrest, Detention or Imprisonment and Defamation of Character.
 - (e) Cross Liability/Separation of Insureds: Without increasing the limit of liability, the policy must protect all insured parties to the full extent of coverage provided. Further, the policy must apply to each Insured in the same manner and to the same extent as if a separate policy had been issued to each.
 - (f) Blanket Contractual Liability: The policy must, on a blanket basis or by specific reference to the Contract, extend to assumed liabilities with respect to contractual provisions.
 - (g) Employees and, if applicable, Volunteers must be included as Additional Insured.
 - (h) Employers' Liability (or confirmation that all employees are covered by Worker's compensation (WSIB) or similar program).
 - (i) Broad Form Property Damage including Completed Operations: Expands the Property Damage coverage to include certain losses that would otherwise be excluded by the standard care, custody or control exclusion found in a standard policy.
 - (j) Notice of Cancellation: The Insurer will endeavour to provide the Contracting Authority thirty (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.

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- (m) **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.

6.19.2 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 Department of Fisheries and Oceans 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 thirty (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.

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- (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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For other provinces and territories, send to:

Senior General Counsel, Civil Litigation Section, Department of Justice
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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.

6.20 Applicable Laws

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

6.21 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.

1. The Articles of Agreement;
2. The Supplemental General Conditions **1028, 2010-08-16**, Ship Construction - Firm Price;
3. The General Conditions **2030, 2016-04-04**, Goods (Higher Complexity);
4. Annex A - Statement of Work;
5. Annex B, Questions and Answers;
6. Annex C – Inspection/Quality Assurance/Quality Control
7. Annex D – Financial Presentation Sheet
6. The Contractor's bid dated _____.

6.22 Acceptance

1. The Inspection Authority, in conjunction with the Contractor, will prepare a list of outstanding work items at the end of the vessel's construction period. This list will form the annexes to the formal acceptance document for the vessel. A vessel acceptance meeting or telephone conference will be convened by the Inspection Authority on the work completion date of the vessel to review and sign off the form PWGSC-TPSGC 1105, Contractor's Certification.
2. The Inspection Authority must complete the above form and obtain the signatures of the Contractor and the Contracting Authority. The form will then be distributed by the Inspection Authority as follows:
 - a. one copy to the Contracting Authority;
 - b. one copy to the Technical Authority;
 - c. one copy to the Contractor.

Solicitation # F7044-170018

DEPARTMENT OF FISHERIES AND OCEANS

ANNEX A
Technical Statement of Requirements
Requisition number F7044-170018

For the provision of:

**One (1), 5.99 Aluminum
Boat and trailer**

June 3, 2017 Revision 0

**TRANSPORT CANADA MARINE SAFETY BRANCH (TCMS)
TP1332 APPROVED CONSTRUCTION**

A2. ABBREVIATIONS

ABYC	American Boat and Yacht Council
AC	Alternating Current
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
GSM	Government Supplied material
ISO	International Organization for Standardization
PVC	Polyvinylchloride
TA	Technical Authority (As defined by the Contract)
TCMS	Transport Canada Marine Safety
UV	Ultraviolet
VHF	Very High Frequency
IAW	In accordance with
IWO	In Way Of
WMO	World Meteorological Organization

LIST OF REFERENCE DOCUMENTS

REFERENCE	TITLE
ASTM F1166-07	Standard Practice for Human Engineering Design for Marine Systems, Equipment and Facilities
TP 1332	Construction Standards for Small Vessels
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
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 Aluminum
Canadian Standards Association (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

1. OVERVIEW

1.1. REQUIREMENT

- 1.1.1. The Contractor shall design, fabricate and deliver to the Pacific Biological Station, 3190 Hammond Bay Road, BC, one (1) 5.75 to 5.99 metre Open Aluminum Boat, and trailer. Powering shall be a single 125 hp Yamaha engine.
- 1.1.2. The primary role for this boat will be to support Fisheries and Oceans Nitinat River Hatchery in brood stock capture on Nitinat Lake. Deployment is expected to include assisting in brood stock collection and will be primarily used to push adult transport pens from our “Ark” lake site to various seine boats and push full transport pens back to the “Ark” site. Other tasks will be to help haze fish towards seine nets, set various nets itself and also carry crew and equipment around Nitinat Lake to various sites.
- 1.1.3. The operational areas include large lakes, offering wind driven waves, and various river conditions including shallow braided channels and/or fast flowing rapids. The vessel is therefore required to be capable of operating in up to class III Swiftwater (International River Rating) and in shallows (i.e. 6 inches and less).
- 1.1.4. This boat will be shore-based, launched and recovered by trailer from typical launching ramps.

2. DESIGN AND CONSTRUCTION REQUIREMENTS

2.1. ERGONOMIC & OTHER DESIGN CONSIDERATIONS

- 2.1.1. The vessel must be designed and constructed for durability, ease of maintenance and repair, and be easily supportable by local commercial facilities and suppliers.
- 2.1.2. Hazardous operating conditions must be prevented by arranging machinery and equipment in a safe manner; providing guards for all electrical, mechanical and thermal hazards; and providing guards or covers for any controls that might be inadvertently activated by contact with personnel. Human engineering factors considered in design must include accessibility, visibility and readability, as well as:
 - 2.1.2.1. Crew comfort and efficiency for a range of physiques of individuals from approximately 5’ 3” to 6’ 4” in height; and also that,
 - 2.1.2.2. Crew will at times be wearing cold weather clothing and equipment belts which they must be able to access.
- 2.1.3. Ergonomic design criteria must be in accordance with ASTM F1166-07.

2.2. STRUCTURAL STRENGTH & VIBRATION

- 2.2.1. Structural strength: All structural components (hull, deck, seatings, etc.) must be of sufficient strength and rigidity to withstand the lateral and vertical impact-loading due to the operational requirements given in [section \[3\]](#).

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- 2.2.2. Vibration: The vessel and all components must be free of local vibration that could endanger personnel or damage the structure, machinery or systems, or interfere with the operation of the vessel, machinery or systems.
 - 2.2.3. Resilient mounts: Equipment subject to vibration and also equipment which requires to be moved or relocated for stowage or transportation must be resiliently mounted to prevent vibration or rattling.

2.3. STANDARDS

- 2.3.1. The vessel must be designed, constructed, inspected, and certified to meet the requirements of the following standards, regulations and codes:
 - 2.3.1.1. Transport Canada Marine Safety Branch TP 1332 (current edition) Construction Standards for Small Vessels. This standard references ISO, ABYC and other standards covering structure, fuel, electrical, stability and drainage requirements;
 - 2.3.1.2. CSA C22.2 No. 183.2-M1983 (R1999) Standards for DC Electrical Installations on Boats and ABYC 'E' Electrical Standards; and,
 - 2.3.1.3. CT-034-EQ-EG-001-E Canadian Coast Guard Welding Specification, however additional standards, regulations and codes may be applicable, as noted elsewhere within this TSOR.
- 2.3.2. In the event that there is a discrepancy in requirement between this TSOR and the TP 1332, then the higher standard will apply.

2.4. EQUIPMENT PROTECTION

- 2.4.1. The Contractor is responsible for the care of all equipment in their custody. All parts, especially those having working surfaces or passages intended for lubricating oil, must be kept clean and protected during manufacture, storage and assembly, including after installation. Equipment must at all times be kept clean, 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. Removal and disposal of copper wire cuttings in particular must be monitored. Equipment subject to freezing must be kept drained, except during test and trials.

2.6. MATERIALS, GENERAL

- 2.6.1. Unless stated otherwise, all components, equipment and material must be contractor furnished (CFM).
- 2.6.2. All materials must be corrosion resistant and suitable for use in a salt water environment, however:
 - 2.6.2.1. Galvanized materials are unacceptable, unless specified; and,
 - 2.6.2.2. Cadmium plate materials are unacceptable in any case.

-
- 2.6.3. Stainless steel type 316 or 316L must be used for all stainless steel applications, unless otherwise specified.
 - 2.6.3.1. Alloy 316L must be used for any welded underwater components.
 - 2.6.3.2. Some commercially manufactured marine fittings are available only in alloys 18-8 or 304, which will be acceptable only in the event that type 316 fittings are not available and that such fittings must not be fitted under water.
 - 2.6.4. Where flexible connections are required for steering and fuel systems, suitable hose with permanently crimped, detachable reusable type fittings must be used.
 - 2.6.5. All materials which are normally subjected to sunlight must be resistant to degradation caused by ultraviolet radiation.
 - 2.6.6. All materials and equipment must be stored, installed and tested in accordance with the manufacturer's guidelines, recommendations and requirements.

2.7. FASTENERS

- 2.7.1. All fasteners, clamps and fittings, must be stainless steel, excepting:
 - 2.7.1.1. If otherwise specified within this TSOR; or,
 - 2.7.1.2. If otherwise required by the equipment manufacturer; provided that,
 - 2.7.1.3. Where stainless steel is not used; fasteners, washers, fittings and parts must be of corrosion resistant material other than cadmium plate or galvanized.
- 2.7.2. No fastener may be directly threaded into aluminum. Separate washers, nuts and/or backing plates must be used as appropriate.
- 2.7.3. Fasteners subject to loosening under vibration must be secured, as applicable, by either: self-locking nuts, lock nuts, wired nuts or lock washers. Where nuts will become inaccessible after assembly of the vessel they must be captured or anchored to prevent backing off and to facilitate maintenance and reassembly.
- 2.7.4. Direct attachment of alloys containing copper to aluminum is not permitted except for a single electrical bonding strap.
- 2.7.5. Excepting the bonding strap [2.7.4], direct contact of electrolytically dissimilar metals is not permitted and must be prevented by insulating dissimilar materials from each other with gaskets, washers, sleeves, or bushings of suitable insulating material.
- 2.7.6. Fasteners in deck traffic areas must be flush or countersunk to eliminate tripping and snagging hazards.

3. OPERATIONAL REQUIREMENTS

3.1. PERFORMANCE

- 3.1.1. Unless noted otherwise, performance is stated for the Normal Loading Condition operating in salt water, calm sea state and no wind.

The boat is expected to have a service life of at least 12 years, with an expected usage of between 400 and 500 hours per year and to meet the following minimum operational requirements:

-
- 3.1.2. Maximum speed, not less than: 25 knots;
 - 3.1.3. Cruising speed: 19 to 22 knots;
 - 3.1.4. Capable of steering within 15° from any heading in the maximum wind force and maximum sea state given at section [3.2] below.
 - 3.1.5. Steer and manoeuvre effectively on any heading at 3 knots in calm water and wind of 16 knots;
 - 3.1.6. Operation in water depths of 1.0 metre; and
 - 3.1.7. Manoeuvring carefully in water depths of 0.5 metre.

3.2. ENVIRONMENTAL CONDITIONS

- 3.2.1. The vessel must be capable of operating day or night in the following conditions:
- 3.2.2. Average ambient air temperature range: -5°C to + 30°C
- 3.2.3. Average water temperature: 0°C to +20°C.
- 3.2.4. Wave heights of up to 1.5 meters (Beaufort Force 4).
- 3.2.5. Wind speeds of 17 - 21 knots (Beaufort Force 5).

3.3. LAUNCHING, RECOVERY & TRANSPORTATION

- 3.3.1. The vessel must be readily road transportable on a trailer and must be able to be launched and recovered using the trailer at typical launching ramps.

3.4. BEACHING

- 3.4.1. Capable of beaching on soft (sand, earth or clay) surfaces at a speed of up to 5 knots without damage to the hull.
- 3.4.2. Capable of beaching on hard (stone or concrete) surfaces at speeds of up to 3 knots without damage to the hull.

4. VESSEL CONFIGURATION

4.1. VESSEL PARTICULARS

- 4.1.1. Maximum length overall: 5.99 metres (including swim grid, if any)
- 4.1.2. Hull length, from stem to transom: 5.75 to 5.99 metres
- 4.1.3. Maximum breadth: 2.44 metres
- 4.1.4. Hull bottom width at chines: 2.15 to 2.35 metres.
- 4.1.5. Minimum hull side height above cockpit sole: 760 mm.
- 4.1.6. Sheer line must rise to bow a minimum 150 mm.

4.2. DISPLACEMENT & LOADING

- 4.2.1. Displacement approximately: 1800 to 2000kg, in the Normal Load Condition.
- 4.2.2. **Normal Load Condition:**

-
- 4.2.2.1. Crew: 2 x 100 kg = 200 kg
 - 4.2.2.2. Fuel: 6 x 22.66 litre = 101 kg
 - 4.2.2.3. Equipment and supplies: 200 kg

4.3. HULL FORM

- 4.3.1. The hull is to be "V" style monohull, having a 10 to 12 degree deadrise at the transom, with deadrise constant to about $\frac{1}{2}$ L and then increasing to the stem.
- 4.3.2. Hull shape must not impede water flow to the propulsion unit(s) and must direct spray and waves away from onboard personnel.
- 4.3.3. A "delta" plate must be arranged on centerline aft to provide horizontal, none turbulent flow of water to the propeller
- 4.3.4. Main chine must be configured with a 4 to 6 degree reverse flat between 3 to 6 inches wide, depending on experience of the Contractor and as agreed with the TA, and running out at the stem.
- 4.3.5. The hull bottom must be fitted with either 1 or 2 spray strakes per side, running from near the stem to the transom on the outboard strake and to about $\frac{1}{4}$ L (from aft) on the inboard strake, depending on the experience of the Contractor and as approved by the Technical Authority.

4.4. GENERAL ARRANGEMENT

The vessel must be an open aluminum outboard boat, fitted with a center-forward console/windscreen.

- 4.4.1. Bow shall be "snub nosed" for pushing, see [5.2.16].
- 4.4.2. A fore-deck must be fitted from the stem to about 16 inches aft.
- 4.4.3. A fore-peak step/locker must be provided, with weather tight cover. Height 15 to 18 inches; length 24" fore & aft; and running full available breadth. Low profile hand grabs must be provided P&S surmounting the gunwale top.
- 4.4.4. Console and windscreen, shall be installed $\frac{3}{4}$ forward, see [6.2].
- 4.4.5. Operator seating shall be a single pedestal seat.
- 4.4.6. A radar arch or other superstructure is not required, however a mast-staff is required for navigation lights, see [8.5].
- 4.4.7. Cockpit sole must be self-draining.
- 4.4.8. Work will be conducted over the sides and transom, therefore side deck height above the cockpit sole must be not less than 760 mm in compliance with TP 1332 (3.5.2.5) for workboats.
- 4.4.9. Utility rails must be provided P&S below gunwales, see [6.4.2].
- 4.4.10. A removable tow post must be fitted on centerline aft, see [6.5.4].
- 4.4.11. The transom bulwark must be an enclosed weather tight space providing for mechanical/electrical components and also ventilated stowage for the portable fuel tanks.

-
- 4.4.12. Aft of the bulwark the stern must be configured to accommodate a single outboard motor [7.1] on a full breadth engine step.

5. STRUCTURE

5.1. STRUCTURAL MATERIALS, ALUMINUM

All structural aluminum must be marine grade, corrosion resistant and suitable for application in salt water.

- 5.1.1. Plating generally must be 5083 H116/321, 5086 H116/321 or 5456 H116/321.
- 5.1.2. Interior bulkheads and flanged plate stiffeners may be 5052 H322.
- 5.1.3. Special application of higher strength 6061 T6 plate may be approved by the Technical Authority.
- 5.1.4. All extrusions must be 6063 T6.
- 5.1.5. Weld filler material must be compatible with the alloys to be joined, typically grade 5356, or as specified by the Contractor's Welding Engineer in accordance with their CSA W47.2 certification and approved by the TA.
- 5.1.6. Mill certificates for all structural aluminum must be provided to the satisfaction of the Inspector prior to commencement of fabrication.

5.2. HULL STRUCTURE

The Contractor must comply with the structural arrangement described below unless otherwise approved by the Technical Authority.

- 5.2.1. Hull Strength: The finished hull structure, particularly the bottom structure, must be sufficiently strong to withstand impact forces associated with the operational requirements given in section [3].
- 5.2.2. Minimum acceptable thickness of any hull structural component is 1/8 inch.
- 5.2.3. Bottom Plate: Hull bottom and chine plating must be minimum 1/4" plate. The reverse chine must be a formed part of the hull, not an external attachment.
- 5.2.4. Delta Plate: A "delta" plate is to be fitted at the stern as noted at [4.3], minimum 3/8" plate.
- 5.2.5. Hull Stringers/Girders: The hull bottom shell must be stiffened by full length girders, a minimum of three (3) as follows:
- 5.2.5.1. A center vertical keel not less than 1/4" plate not less than 5" deep with flanged or fabricated edge stiffening; bracketed at each main transverse member; and,
- 5.2.5.2. One (1) full depth 3/16" girder per side, supporting both the bottom shell and cockpit sole, to be fitted with lightening holes where feasible. If surmounting a longitudinal shell stiffener, the girder thickness may be reduced by 1/32".
- 5.2.6. Bottom shell stiffening: The bottom shell must be locally stiffened with adequate longitudinal members not less than 3/16" thick spaced not greater than 10.5 inches, and must be suitably supported by main transverse structure.

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- Channel or top-hat sections must be utilized.
- 5.2.7. Transverse Bottom Structure: Full depth floors, or web frames, must be fitted to support the longitudinal girders, bottom shell and cockpit sole plating, spaced 36 to 42 inches, not less than 3/16" thick. NWT floors should be fitted with lightening holes, web frames must be suitably edge stiffening.
 - 5.2.8. Side Plating: Must be minimum 3/16" and must be suitable stiffened, either with embossed strakes or with attached stiffeners and/or stringers.
 - 5.2.9. The upper edge of the side plating must be suitable supported throughout its entirety and fully welded to either a deck or gunwale extrusion.
 - 5.2.10. Bulkheads: NOT REQUIRED.
 - 5.2.11. Main side frames: Must be closed sections such as top hats or channels or webbed frames with "T" edge stiffening having well rounded edges, aligned and bracketed to main underdeck transverses.
 - 5.2.12. Transom: Plating must be minimum 1/4" and well reinforced with stiffeners which should generally be integrated into the bottom stringers and engine mounts.
 - 5.2.13. In way of the engine(s) or engine pod:
 - 5.2.13.1. Transom plating must be increased to not less than 3/8", or greater to suit higher powered engines, and stiffening must be suitable for mounting the selected engine(s); or,
 - 5.2.13.2. A sandwich style construction may be proposed for acceptance by the TA.
 - 5.2.13.3. If the engine(s) is/are to be mounted on a cut away transom, then seaworthiness must be maintained by the installation of a suitably sized engine well forward of the transom, to the height of the side decks or bulwark, as approved by the TA.
 - 5.2.14. Beaching Shoe: An aluminum beaching shoe is required, minimum 3/16" thick and 6" wide on centerline (3" P & S) from just below the bow eye forward to the transom, or Delta plate, if so fitted.
 - 5.2.15. Spray chines/plating strakes: Must be fabricated from suitably sized angle extrusions, must be fitted to the bottom shell where noted at [4.3].
 - 5.2.16. The stem must be terminated with a 3/8" plate snub nose, as per [4.4.1]. Sized not less than 12" wide by 16 to 20 inches in depth, well rounded into the stem line such that there will be no abrupt corner, and reinforced with an internal stem bar.

5.3. DECKS

5.3.1. Main Deck

Deck plating must be fully welded to either the sheer plate or a gunwale extrusion (if so fitted), and configured as follows:

- 5.3.1.1. Foredeck 1/4 plate, fitted from stem to about 16" aft of stem, fitted with edge stiffening and CL bracketing to the stem bar.

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- 5.3.1.2. Gunwale/bulwark cap must be a closed section 2.5" x 1.5" x 0.875" (or better).
 - 5.3.1.3. Aft deck, bulwark top across the transom, must be 3/16 or better, fitted with edge stiffening. Must be horizontal across its width, about 16" wide (to accommodate mechanical/electrical equipment and portable fuel tanks).
 - 5.3.1.4. Decks/bulwark tops must be smooth, free of obstructions and snagging hazards, excepting specified fittings.

5.3.2. **Cockpit Sole**

A full length cockpit sole plate must be provided running from the fore-peak locker to the aft bulwark. The sole plate must be minimum 3/16" plating, but may require to be increased to minimize vibration, IAW [2.2], or for other reasons.

- 5.3.2.1. The sole plate must be self draining, but should be as low as practicable to enhance stability and safety, and must be water tight to the extent practicable.
- 5.3.2.2. Deck plating must be supported by main structure, as described at sections [5.2.5] & [5.2.7], and locally stiffened either longitudinally or transversely.
- 5.3.2.3. Removable access plates, bolted in place on gaskets, must be provided to facilitate inspection and repairs of below decks equipment including any tanks.
- 5.3.2.4. Freeing ports: Must be provided at low points (if any) and P&S aft, not less than 8 in² each, running through the aft bulwark to transom, fitted with non-return closers.

5.4. **STRUCTURAL OUTFIT**

General: The following items must generally be welded into the structure, unless otherwise noted, however bolted alternatives may be proposed for acceptance by the Inspector.

This list is not exhaustive of all weld-on components. Additional items may be detailed elsewhere in this TSOR, or otherwise be required to complete the vessel.

- 5.4.1. Bow Eye: A recessed eye must be designed and incorporated into the stem about 6 inches above the waterline. Minimum 1/2" plate pierced and reinforced with a stainless steel grommet suitable for either the towline or trailering hook.
- 5.4.2. Stern eyes: Two (2) eyes must be mounted on the transom, minimum 3/8" plate pierced and reinforced with a stainless steel grommet, suitable for trailer tie-downs.
- 5.4.3. Consoles: The Contractor must design, fabricate and install a console, located on centerline, 3/4 forward.
Console may be either welded or bolted to the cockpit sole.
For further design requirements see [6.2].
- 5.4.4. Fore-peak locker/step must be installed as per [4.4.3].

5.5. WELDING

- 5.5.1. The Contractor and any subcontractor performing welding must be certified to the Canadian Standards Association CSA W47.2-M1987, latest revision.
- 5.5.2. All welding must be in compliance with the Canadian Coast Guard Welding Specification, CT-043-EQ-EG-001-E, latest revision.

6. HULL OUTFIT

6.1. WINDOWS, DOORS & HATCHES

- 6.1.1. Windscreen is described at [6.2].
- 6.1.2. Doors/hatches: There are no man doors or man hatches.
- 6.1.3. Equipment and inspection hatches are described elsewhere.

6.2. CONTROL STATION

The console must be installed on centerline, 3/4 forward, maximizing the cockpit area while leaving comfortable "walk around" space forward of the console. The structure must be sufficiently robust and vibration free for the installation of all relevant equipment.

Width must be not less than 38 inches, controls must be arranged for "stand-up" operation.

The Contractor must consider the impact of ergonomic design factors [2.1] when preparing their design, however, the console and windscreen are to be optimized to suit a 5'-10" tall standing operator.

The Contractor must provide accurate drawings of the Console, for approval of the Inspector, prior to commencement of fabrication.

6.2.1. Description:

- 6.2.1.1. The windscreen must be fixed to the console and wrap to half way on each side of console, designed to deflect the wind. The windscreen must be fitted with proven manufacturers' aluminium framed windows. Forward window must be 5/16" laminated tempered safety glass. Side windows may be minimum 1/4" thick safety glass.
- 6.2.1.2. Windscreen must be fitted with a pantograph style variable speed wiper.
- 6.2.1.3. Grab handles must be fitted on the aft vertical frames of the side screens.
- 6.2.1.4. Exterior grab rails must be fitted on the forward face and on both of the outward facing sides of the console at 36" height.
- 6.2.1.5. Weathertight/lockable access hatch(s) must be provided in either the aft or forward lower panels of the console for servicing equipment.
- 6.2.1.6. An open shelf must be provided 4" below the console top on the port side.
- 6.2.1.7. A storage space (glove box) about 1/2 cubic foot, with weather tight closure, must be provided below the shelf.
- 6.2.1.8. Navigation sidelights are to be installed on the console sides, recessed to protect them from damage and shield the operator's night vision, [8.5].

6.2.1.9. Navigation all-round light must be installed on a light staff mounted on the wind screen top, and must be sufficiently tall and effectively shielded to protect the operator's night vision, [8.5]. Staff must be ratchet mounted or otherwise easily detachable for trailering.

6.2.2. **Equipment:**

The console must be fitted with equipment detailed in sections [7] & [8] as follows:

- 6.2.2.1. Steering wheel: must be mounted on centerline [7.7];
- 6.2.2.2. Magnetic compass: must be mounted as near to centerline as practicable, and with best all-around sighting [8.6];
- 6.2.2.3. Engine controls: must be mounted to the starboard side of the wheel [7.3];
- 6.2.2.4. Engine gauges package: generally to be mounted above and/or to each side of the wheel [7.4];
- 6.2.2.5. The following controls and lighting switches must be located conveniently for the helmsman:
 - 6.2.2.5.1. Horn;
 - 6.2.2.5.2. Compass light and dimmer;
 - 6.2.2.5.3. Gauge lighting and dimmer;
 - 6.2.2.5.4. Navigation lighting;
 - 6.2.2.5.5. Bilge pump switch and high level alarm;
 - 6.2.2.5.6. Windshield de-fogger controls (if so fitted);
 - 6.2.2.5.7. Windshield wiper and washer (if so fitted);
 - 6.2.2.5.8. Spot lights (if so fitted); and,
 - 6.2.2.5.9. Any interior or exterior lighting affecting the helmsman's night vision.
- 6.2.2.6. The Console must be fitted with lighting and power points as per [8.4.3 & 8.4.4].
- 6.2.2.7. Provision must be made for main breaker panel and any additional equipment, if required by either of sections [7] or [8], to be located conveniently to the helmsman or spotter.

6.2.3. **Console chair:**

The console/control station must include one (1) robust, suspension mounted, marine seat, suitable for an exterior environment. Features must include:

- 6.2.3.1. Pedestal mount;
- 6.2.3.2. 6" slide adjustment;
- 6.2.3.3. Flip up adjustable arm rests;
- 6.2.3.4. Upholstery to be charcoal grey; and,
- 6.2.3.5. Must be provided with a foldable, adjustable foot rest, mounted on the face of the console. Must latch in stowed position.

Note: Bostrom "Pacifica" seat complies with the above requirements.

- 6.2.3.6. Seat/pedestal must be installed such that stand-up operation will be comfortable with the seat slide at its rearmost position.

6.2.4. **Canvas Cover**

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- 6.2.4.1. A canvas stowage cover must be provided which covers the console, sind screen and seat.

6.3. INTERIOR OUTFIT

- 6.3.1. NOT USED

6.4. EXTERIOR OUTFIT

- 6.4.1. Foredeck grab rails: Foredeck must be fitted with permanent low profile hand rails, surmounting the gunwales P&S, IWO the fore-peak locker, as per [4.4.3].
- 6.4.2. Bulwark utility rails: Utility rails, 1-1/2" diameter, running full length P&S from the fore-peak locker to the aft bulkwark, about 2" below the underside of the gunwale extrusion, as per [4.4.9].
- 6.4.3. The aft bulwark must be enclosed and weather tight, excepting for required fuel tank stowage and fuel system, which must be open (freely ventilating).

6.5. ANCHORS, MOORING & DECK EQUIPMENT

- 6.5.1. Anchor: One (1) 10 pound, pivoting fluke, galvanized steel anchor: Fortress model FX16 (or equivalent) must be supplied together with:
 - 6.5.1.1. Anchor rode comprising: suitable crown shackle; 5 metres 5/16" plain link galvanized steel chain with connecting shackle if required; 10 metres 3/8" twisted nylon rope with hard eye spliced in place and connecting shackle.
- 6.5.2. Mooring lines: four (4) - 20 feet 3/8" braided nylon line with spliced eye.
- 6.5.3. Mooring Bitts: One (1) 6" weld-on cleat or similarly robust shop fabricated Bitts suitable for 5/8" fibre rope is required. Intended for either anchoring, mooring or towing. Must be installed on the foredeck about 9" aft of the bow, in fore/aft orientation if a cleat. Installation must include reinforcement below decks.
- 6.5.4. Tow Post: A removable tow post rated for 1500 lb SWL must be installed on the forward side of the aft bulwark on the center line. Post must be proof tested in situ to 150% of the rated load, and the SWL stamped into the head of the post.
- 6.5.5. Working Deck Tie-downs: Eight (8) in total recessed eyes must be attached to the side frames or deck in the working area in such a manner that they do not pose a tripping or snagging hazard when not in use.

6.6. LIFESAVING & EMERGENCY EQUIPMENT

- 6.6.1. The following items (see TP14070 Tables 5-1 & 5-2 for regulatory details) must be supplied and provided with stowage or securing arrangements appropriate for each item. All fittings must be heavy duty, corrosion resistant stainless steel. All items must be readily accessible:
 - 6.6.1.1. One (1) Marine emergency first aid kit;
 - 6.6.1.2. One (1) Reboarding device;
 - 6.6.1.3. One (1) Lifebuoy attached to buoyant heaving line at least 15 metres long;
 - 6.6.1.4. One (1) Watertight flashlight complete with spare batteries and bulb;
 - 6.6.1.5. Three (3) Flares, Type C;
 - 6.6.1.6. Two (2) Paddles;

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- 6.6.1.7. One (1) Manual bilge pump (built in to evacuate the hull below deck), Whale Gusher type;
 - 6.6.1.8. One (1) Air horn;
 - 6.6.1.9. One (1) Fire extinguisher (Class 1A; 5B: C), "marine listed";
 - 6.6.1.10. One (1) Boat hook, 8 feet long, retractable; and,
 - 6.6.1.11. One (1) Transport Canada approved radar reflector.

(Note: The final 2 items are not from TP14070)

- 6.6.2. See [6.5] for the anchor; [8.5] for navigation lights]; and [8.6] for the compass.
- 6.6.3. Lifejackets will be provided GSM by the end users.

6.7. FLOATATION

- 6.7.1. Sufficient floatation must be fitted into the hull to comply with TP 1332 (4.4.2).

7. PROPULSION & MECHANICAL SYSTEMS

7.1. PROPULSION

- 7.1.1. Powering will be a single (1) 115 hp Yamaha engine. The engine will be Government Supplied Materiel (GSM). Scope of GSM will be the engine, supplied with a standard power leg, but not including any external or accessory components.
- 7.1.2. Engine rigging: The Contractor must determine and supply all related components and subsystems which are required, including:
 - 7.1.2.1. Engine manufacturer's approved accessories and equipment,
 - 7.1.2.2. Engine controls, alarm and steering systems,
 - 7.1.2.3. Installation hardware, and the
 - 7.1.2.4. Consumables.
- 7.1.3. Installation: The engine and all related gear must be installed, mounted and connected by the Contractor, all in accordance with the engine manufacturer's recommendations.
- 7.1.4. Equipment and components must not be used, or trials performed on the engines that would, in any way, void the engine manufacturer's warranty.

7.2. PROPELLERS

- 7.2.1. Contractor must supply and install manufacturer approved propeller(s), selected to optimize performance in terms of both speed and efficiency, provided however that the engine(s) must achieve the manufacturers specified RPM.
- 7.2.2. After trials and confirmation that the selected propeller is the best match for the vessel, the Contractor must inform the TA of the propeller characteristics (pitch, diameter, make etc.).
- 7.2.3. Contractor must provide two (2) identical propellers for each engine, one fitted and one suitably boxed for shipping and storage.
- 7.2.4. Propellers must be stainless steel.

7.3. CONTROLS

- 7.3.1. Propulsion control system installation must include a single lever engine control binnacle to be 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. Contractor must provide the standard engine gauges package recommended by the engine manufacturer.
- 7.4.2. Monitoring system for the engines must include the following alarms:
 - 7.4.2.1. Oil level gauge, for the remote tank;
 - 7.4.2.2. Coolant flow alarm, if applicable;
 - 7.4.2.3. Engine over heat/high temperature alarm.

7.5. VERIFICATION OF INSTALATION

- 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. The steering system must be remote hydraulic with self-contained oil reservoir and have replaceable seals on the rams, unless the engine manufacturer requires some alternate steering arrangement. The system must be capable of handling the horsepower of the vessel [7.1].
- 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 3.5 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 below deck and all hoses must be routed so that there are no pinch 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 robust enough that during rough water operations there is no flexing of the wheel and the wheel should 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 system must be supplied, installed, labeled and tested in accordance with Section 7 of TCMSB TP 1332 and ABYC specifications.
- 7.9.2. System must comply with CEPA requirements.
- 7.9.3. The fuel system must include a separate Racor filter/separator with see-thru bowl for each engine, suitable for the volume rate of flow of the engine(s).
- 7.9.4. All fuel valves must be readily accessible and labeled as per TCMSB TP 1332.
- 7.9.5. Two (2) fuel tank suction hoses must be provided, 1 P & 1S.

7.10. FUEL TANKS

- 7.10.1. The contractor must provide six (6) identical portable fuel tanks, capacity 6 USG, compliant with CEPA regulations. West Marine Model # 13854211 or equivalent.
- 7.10.2. Fuel Tank Installation: Four (4) fuel tanks must be installed in an open space provided P&S within in the aft bulwark. A securing arrangement must be provided for these tanks.
- 7.10.3. The remaining two (2) tanks will be spare, but should be provided space within the aft bulwark if possible, with securing arrangement.

7.11. BILGE DRAINAGE & PUMPS

- 7.11.1. GENERAL: 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.
- 7.11.2. An electric bilge pump with 2000 gph capacity must be fitted in the main hull or largest watertight division 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 will allow the bilge pump(s) to discharge directly overboard. Any additional watertight division of the hull will be serviced by a bilge pump of 1500 GPH capacity. The wire gauge for all bilge pumps must be a minimum of 10 gauge.
- 7.11.3. 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.

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- 7.11.4. High water alarm for the engine installation space and every other space serviced by a bilge pump.
 - 7.11.5. Hull drainage: A stainless steel threaded plug must be provided in the lowest point to drain the hull when out of the water.
 - 7.11.6. Valves and handles must be made of non-corroding materials and must be located where they are readily accessible for operation, maintenance or removal.
 - 7.11.7. A separate manual bilge pump must be installed as per [6.6].

7.12. VENTILATION

- 7.12.1. Powered ventilation must be provided to enclosed spaces in compliance with TP 1332 (6).

8. ELECTRICAL & ELECTRONIC SYSTEMS

8.1. GENERAL

- 8.1.1. 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
- 8.1.2. Twelve Volt (12V) DC distribution system must be provided to power the engine starting and service loads including:
 - 8.1.2.1. Navigation lights;
 - 8.1.2.2. Exterior Lighting;
 - 8.1.2.3. Navigational equipment;
 - 8.1.2.4. Instrumentation;
 - 8.1.2.5. Bilge Pumps;
 - 8.1.2.6. Electronics; and
 - 8.1.2.7. Communications
 - 8.1.2.8. Ancillary Items
- 8.1.3. All electrical equipment must be readily accessible for performing maintenance.
- 8.1.4. All electrical equipment and switches must be labelled.
- 8.1.5. All electrical conductors and ground wires must be labelled at both ends.

8.2. BATTERIES, CABLES & CHARGING SYSTEMS

- 8.2.1. Batteries must be marine grade, 12 V, deep cycle maintenance free, glass mat or gel type (no custom batteries).
 - 8.2.1.1. One (1) dedicated starting battery must be provided for each engine, sufficient to the engine manufacturer's specifications.
 - 8.2.1.2. House batteries must be sized to suit the service loads on the vessel, but sufficient to start the largest engine.

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- 8.2.2. Batteries must be cross connected with selector/disconnect switches permitting any engine to be started from any combination of batteries.
 - 8.2.3. Battery switches must be Certification Agency, (CE, CSA, USCG, etc.) approved and must be mounted to prevent snagging or accidental switching.
 - 8.2.4. Battery compartment must be weather tight and fitted with a suitable means of gas venting including for 'sealed' batteries.
 - 8.2.5. Cables for all electrical distribution must be ample in size for the particular service, of marine grade tinned boat cable.
 - 8.2.6. Breaker panels to be appropriately sized for the equipment detailed in this TSOR with a minimum of two (2) spares.
 - 8.2.7. 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.
 - 8.2.8. Batteries must be charged from the engine only, no shore power system is to be installed.

8.3. CABLING INSTALLATION

- 8.3.1. PROTECTION OF CONTROLS: As per [7.8].
- 8.3.2. Cables for all electrical distribution must be ample in size for the particular service, of marine grade tinned boat cable.
- 8.3.3. Cables must be grouped into wiring harnesses wherever possible. All wiring harnesses must be routed through protective conduit pipe. Where practical, cables and conductors must be supported with clamps or straps at least every 18 inches on horizontal runs and every 14 inches on vertical runs.
- 8.3.4. 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.
- 8.3.5. Cabling / conductors passing through structures without watertight glands, must be protected against chafing by the use of abrasive resistant grommets.
- 8.3.6. 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.

8.4. LIGHTING AND POWER SYSTEMS

- 8.4.1. LED lighting must be used where available.
- 8.4.2. All lighting must have individual switches, unless otherwise stated.
- 8.4.3. The console must be equipped with overhead LED red/white lights mounted on the windscreen frame.
- 8.4.4. The console must be equipped with:

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- 8.4.4.1. One(1) remote 12V marine grade accessory plug; and,
 - 8.4.4.2. One(1) USB charging port.

8.5. NAVIGATION LIGHTING

- 8.5.1. Vessel must be provided with permanently fitted navigation lights in compliance with the Collision Regulations, as applicable to the class and size of vessel, as follows:
 - 8.5.1.1. Masthead light;
 - 8.5.1.2. Sidelights; and,
 - 8.5.1.3. Sternlight,

The masthead light and sternlight are to be combined into a single all-round light.
- 8.5.2. Navigation lights are to be mounted on the console and light staff, see [6.2.1].
- 8.5.3. Lights must be located such that they do not affect the operator's night vision and such that they are not vulnerable to damage or pose a snagging hazard.
- 8.5.4. 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.)
- 8.5.5. 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.

8.6. NAVIGATION EQUIPMENT & ELECTRONICS

- 8.6.1. Compass: Ritchie Helmsman 70 series, or equal.
- 8.6.2. Horn (electric): In compliance with the Collision Regulations, Rule 32, must be audible at 0.5 NM. Must be installed on the exterior of the console facing forward and operated by a spring-loaded switch at the helm station. Either Signaltone or Ongaro or equal.
- 8.6.3. A portable radio, if required, will be provided GSM by the end users.

9. PAINTING AND CORROSION PROTECTION

- 9.1.1. Aluminum 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. 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:
 - 9.1.1.1. etch-primer;
 - 9.1.1.2. two coats of primer; and

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- 9.1.1.3. a minimum two topcoats.
 - 9.1.2. The standard color of the console of each boat must be international F000, Mist grey. All upholstery must be grey.
 - 9.1.3. Hull above the water line and cabin: DFO Slate Grey (RAL7042).
 - 9.1.4. Fore-deck; Fore-peak step; Cockpit sole; and Aft bulwark top: Anti-slip, Sure-Foot, colour Grey.
 - 9.1.5. Underwater hull antifouling: Aluminum Trilux II, colour Black.

10. TESTS & TRIALS

10.1. GENERAL

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.

10.2. TESTS

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 boats:

- 10.2.1.1. Weight;
- 10.2.1.2. Construction Quality;
- 10.2.1.3. Lifting Gear;
- 10.2.1.4. Propulsion Engines, including starting;
- 10.2.1.5. Steering System;
- 10.2.1.6. Fuel System;
- 10.2.1.7. Electrical System; and
- 10.2.1.8. Electronics.

10.3. SEA TRIALS

Sea trials must be conducted by the Contractor to demonstrate the vessel(s) 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 vessel(s) during sea trials. The minimum acceptable sea trial is identified in Appendix A.

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- 10.3.1. 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.
- 10.3.2. 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(s) must operate in the Normal Loaded Condition. As a minimum, the following trials must be conducted for each boat:
- 10.3.2.1. 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;
- 10.3.2.2. Endurance Trial -The boat(s) 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);
- 10.3.2.3. Astern Propulsion - The boat(s) 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,
- 10.3.2.4. 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 each boat meets the stated requirements. Manoeuvring trials must be conducted in the Normal Load Condition and repeated in the Full Load Condition.
- 10.3.3. The Contractor must provide the completed Tests & Trials Sheets (Appendix A) for each vessel and include these sheets in the Manual (see section 9.4).
- 10.3.4. 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 will witness and attend the sea trials. Sea trial results must be forwarded to the Technical Authority prior to the delivery of the boat(s).
- 10.3.5. At the conclusion of sea trials, each vessel 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(s) or ancillary equipment resulting from sea trials to the satisfaction of Canada.
- 10.3.6. 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 Vessel Particulars, section 4.1.
- 10.3.7. Final Inspection must not be performed until all tests have been satisfactorily completed with data available for review. The boat(s) 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.
- 10.3.8. Stability examination per TP1332, with ISO Design Category "C", will further 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 each vessel produced as per Section 9.4.4.

- 10.3.9. Final Inspection - Upon delivery, the Technical Authority, or a representative of the Technical Authority will 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(s) or equipment resulting from shipping to the satisfaction of Canada.

11. DOCUMENTATION

All documentation described in this section must be provided in both official languages (French and English).

11.1. NATIONAL ASSET CODE

The National asset code for this vessel is **VZF25**. The Contractor must include this five (5) character code to the builder's plate of the boat with the prefix "National Asset Code".

11.2. BUILDER'S PLATE

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.

- 11.2.1. The plate must be made of a weather resistant material compatible with that to which it is affixed.
- 11.2.2. The dimensions of the plate must be not less than 200mm x 125mm
- 11.2.3. The plate must contain the following information, permanently etched:
- 11.2.3.1. National Asset Code;
 - 11.2.3.2. Builder;
 - 11.2.3.3. Hull Number;
 - 11.2.3.4. Year of Construction; and
 - 11.2.3.5. Lightship Weight in kilograms.
- 11.2.4. Builder must comply with Section 1 of TP1332 (Hull Serial Numbers).
- 11.2.5. Builder must comply with Section 2 of TP1332 (Compliance Notices).

11.3. OWNER/OPERATOR MANUAL

Herein referred to as the "Manual".

11.3.1. Requirement

The Contractor must provide, upon delivery of the boat(s), two (2) complete set(s) of a comprehensive owner/operator Manual. This Manual must provide both a physical and functional description of the boat(s) including all machinery, equipment, piping systems, AC and DC electrical systems, and other technical information including supplier publications, as described at sections 9.4.2

through 9.4.6 below. This Manual must be provided in the following formats and quantities:

- 11.3.1.1. One (1) complete hard copy and one (1) electronic copy of all technical publications to be delivered with each vessel.
- 11.3.1.2. One (1) complete hard copy and one (1) electronic copy of all technical publications to be delivered to the Technical Authority for each vessel.
- 11.3.1.3. Hard copies of the Manual, excepting technical drawings, must be in 8 ½ x 11 inch format.
- 11.3.1.4. Hard copies of technical drawings must be in 11 x 17 inch format. Diagrams included within the body of the Manual may be 8 ½ x 11 inch, provided they are sufficiently legible at that size.

11.3.2. **General Information**

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

- 11.3.2.1. Index to the Manual(s)
- 11.3.2.2. Operating procedures;
- 11.3.2.3. Basic operating characteristics (such as temperatures, pressures, flow rates);
- 11.3.2.4. Installation criteria and drawings, assembly and disassembly instructions with comprehensive illustrations showing each step;
- 11.3.2.5. Recommended planned maintenance; and
- 11.3.2.6. Complete troubleshooting procedures.

11.3.3. **Drawings**

The Contractor must provide, as a minimum, the following “as fitted” technical drawings in both hard copy (11 x 17 inch) and electronic (.dwg and .pdf) formats:

- 11.3.3.1. General Arrangement (profile, plan & sections)
- 11.3.3.2. Lines Plan (profile, plan & sections)
- 11.3.3.3. Structural Arrangement (profile, plan, sections & details)
- 11.3.3.4. Bilge System Schematic
- 11.3.3.5. Fuel System Schematic
- 11.3.3.6. Electrical One-line Diagram(s) (including AC & DC)
- 11.3.3.7. Console arrangement
- 11.3.3.8. Special Systems as required (for example power steering)

11.3.4. **Naval Architecture Information**

The Contractor must provide:

- 11.3.4.1. Certified Weight Certificate and estimated Center of Gravity calculation
- 11.3.4.2. Final Stability Information in accordance with [10.3.8]

11.3.5. **Supplier Manuals**

The Contractor must provide Supplier Manuals for all purchased equipment including the trailer.

11.3.6. Record of Tests and Trials

The Contractor must provide:

- 11.3.6.1. Test and Trials results, Appendix A, in typed format; and,
- 11.3.6.2. Contractor test and trials record sheets.

11.4. ADDITIONAL DELIVERABLE DOCUMENTATION

- 11.4.1. The following additional documentation must be supplied in the manuals delivered (defined in[11.3]) for each vessel:

- 11.4.1.1. Tonnage Registration Certificate in accordance with TP 13430 - <http://www.tc.gc.ca/eng/marinesafety/svcp-gt-3948.htm> ;
- 11.4.1.2. Registration to the Small Vessel Compliance Program (SVCP) Website: <http://www.tc.gc.ca/eng/marinesafety/svcp-menu-3633.htm> ;
- 11.4.1.3. Two (2) sets of Bill of Sales, one (1) for the vessel and one (1) for the trailer, one set to be supplied in each Manual delivered, (one delivered with the boat and one delivered to the Technical Authority;
- 11.4.1.4. Test & Trial results as required by Appendix A;
- 11.4.1.5. Acceptance Certificates, i.e. life-saving appliances, lifting appliances, engine test reports, calibration certificates, extinguishers, etc;
- 11.4.1.6. A valid Motor Vehicle Registration Certificate for the relevant Province, for the trailer; and,
- 11.4.1.7. All testing check sheets utilized by the Contractor during the construction process.

11.5. PRELIMINARY DOCUMENTATION

- 11.5.1. The following Preliminary Documentation must be provided when requested by the Contracting Authority for verification of the design, prior to commencement of fabrication:
 - 11.5.1.1. General Arrangement (profile, plan & sections)
 - 11.5.1.2. Lines Plan (profile, plan & sections)
 - 11.5.1.3. Structural Arrangement (profile, plan, sections & details)
 - 11.5.1.4. Bilge System Schematic
 - 11.5.1.5. Fuel System Schematic
 - 11.5.1.6. Electrical One-line Diagram(s) including AC & DC
 - 11.5.1.7. Console arrangement
 - 11.5.1.8. Special Systems (if any)
 - 11.5.1.9. Weight estimate and preliminary stability calculation
 - 11.5.1.10. Estimated range at cruising speed with 10% of fuel remaining
 - 11.5.1.11. Tonnage calculation
 - 11.5.1.12. Sample certificate of approval from a previous similar vessel demonstrating that the proposed vessel(s) will comply with the current TP 1332.

12. SHIPPING AND DELIVERY

- 12.1.1. Prior to shipping, the boat is to be cleaned, appropriately protected and covered in accordance with the instructions specified in this section.

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- 12.1.2. 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.
 - 12.1.3. The propulsion systems must be preserved in accordance with the manufacturer's recommendations for storage of up to one year in an environment that will be subjected to freezing temperatures.
 - 12.1.4. 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.
 - 12.1.5. 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.
 - 12.1.6. 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.

13. WARRANTY AND SERVICE PROVISIONS

13.1. COMPONENTS AND EQUIPMENT SUPPORT

- 13.1.1. 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.

13.2. SPARE PARTS

- 13.2.1. To facilitate replacement and inter-changeability of parts, as well as maintenance procedures and operator training, wherever practicable the Contractor must standardize on selection of equipment, fittings and fabrication methods within all boats supplied.

14. TRAILER

14.1. REQUIREMENT

- The Contractor must supply a tandem axle trailer properly equipped and adjusted to fit the boat.
- 14.1.1. Trailer must be of galvanized steel construction, either welded or bolted, rated at least 20% over the 'Normal Load Condition' weight of the boat, certified to commercial requirements in accordance with Department of Transport regulations for towing the vessel. The trailer must be equipped with:
 - 14.1.1.1. Four (4) radial tires, approved for trailers, mounted on solid galvanized rims, having a capacity equal or superior to the load rating of the trailer. An equivalent wheel mounted spare tire must be provided, high mounted forward;
 - 14.1.1.2. A lug wrench for the wheels;
 - 14.1.1.3. Axle bearing protection, grease nipple and flush-out kit;

-
- 14.1.1.4. Heavy duty "stand on" fenders and mud flaps;
 - 14.1.1.5. Safety chains;
 - 14.1.1.6. Class III weight distributing hitch compliant; and,
 - 14.1.1.7. Hitch must be 2-5/16 inch ball.
 - 14.1.2. The trailer must be fitted with a drop leg, side wind jack with caster wheel and anti-reversing mechanism, sized to meet the normal load condition of the vessel.
 - 14.1.3. Braking system must be electric/hydraulic with stainless steel calipers, mounting brackets and rotors, complete with appropriate brake pads. Must be jurisdiction compliant for the point of delivery.
 - 14.1.4. Brake and turn signals must be submersible style LED lighting, with 7-prong flat wiring connector.
 - 14.1.5. To safely support, launch and recover the vessel the trailer must be fitted with:
 - 14.1.5.1. Side loading guides mounted aft;
 - 14.1.5.2. Bunks and bow chock, properly adjusted to fit the vessel and suitably lined;
 - 14.1.5.3. A manual two speed bow winch assembly, with winch strap and non-corroding snap hook. The winch must be of adequate size to launch and recover the vessel and fitted with anti-reverse mechanism;
 - 14.1.5.4. A strap, turnbuckle and hook(s) for securing the boat forward;
 - 14.1.5.5. Four (4) ratchet tie down straps with hooks for securing the boat aft;
 - 14.1.5.6. Six (6) removable attachment points; and,
 - 14.1.5.7. An access ladder mounted forward.

14.2. DOCUMENTATION

- 14.2.1. The trailer must be provided with a manufacturer's plate affixed to the tongue.
- 14.2.2. The Contractor must include in their Manual, the technical manuals and documentation applicable to the trailer and its equipment [11.3].
- 14.2.3. The contractor must record and provide the trailer sale and registration information within the Manual for each vessel [11.4].

TSOR APPENDIX A
SMALL CRAFT / VESSEL TESTS & TRIALS SHEET
CONTRACT # F7044-170018

Small Craft / Vessel Builder:			
Small Craft / Vessel Description:			
Hull Identification Number:			
National Asset Code:			
Date of Trials:			
Personnel in Attendance:			
Builder			
PWGSC			
DFO			
DFO			
Time: _____ hrs Departing from _____			
Small Craft / Vessel Weights:	Dry Weight of Hull with cabin:		_____ lbs/ _____ kg
	Furnishings & Fittings:		_____ lbs/ _____ kg
	Engines & Equipment:		_____ lbs/ _____ kg
	Fuel:	Fuel:	_____ lbs/ _____ kg
	_____ Imp gal	_____ Litres	
	Total Weight of Small Craft/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-Stbd radius of turn. Full Throttle	_____ feet
	Lock to lock = 35 degrees pt. & stbd	<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

<u>NOTES</u>

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.
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 (3.3FT); RIPPLES WITH THE APPEARANCE OF SCALES, BUT WITHOUT FOAM CRESTS



BEAUFORT FORCE 2
WIND SPEED: 4-6 KNOTS
SEA: WAVE HEIGHT 2.5M (8.2 FT); SMALL WAVELETS, CRESTS HAVE A GLASSY APPEARANCE AND DO NOT BREAK



BEAUFORT FORCE 4
WIND SPEED: 11-16 KNOTS
SEA: WAVE HEIGHT 1.15M (3.8 FT); SMALL WAVES BECOMING LONGER; FAIRLY FREQUENT WHITE HORSES



BEAUFORT FORCE 5
WIND SPEED: 17-21 KNOTS
SEA: WAVE HEIGHT 2.25M (7.4 FT); 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 (9.8-13 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 (13.1-18 FT); SEA HEAPS UP; WHITE FOAM FROM BREAKING WAVES BEGINS TO BE BLOWN IN STREAMS ALONG THE WIND DIRECTION



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



BEAUFORT FORCE 9
WIND SPEED: 41-47 KNOTS
SEA: WAVE HEIGHT 7-10M (23-33 FT); HIGH WAVES; DENSE STREAMS 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 (29-41 FT); VERY HIGH WAVES WITH LONG OVERHANGING CRESTS; THE RESULTING FOAM, IN GREAT PATCHES, IS BLOWN IN DENSE WHITE STREAMS 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 11.5-16M (37-53 FT); 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 PATCHES



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

ANNEX B - QUESTION & ANSWER

Section | Specification No.

Question/Answer

ANNEX C - INSPECTION/QUALITY ASSURANCE/QUALITY CONTROL

1. Conduct of Inspection

- (a) Inspections will be conducted in accordance with the ITP provided and accepted by the Inspection Authority and as detailed in this Annex.
- (b) The Contractor must provide its own staff or subcontractors to conduct inspections, tests and trials; excepting that Technical Authority or Inspection Authority personnel may be designated in the specifications, in which case the Contractor must ensure that its own staff are provided in support of such inspection/test/trial.
- (c) As applicable, the Contractor must ensure that the required conditions stated in the specification prevail at the commencement of, and for the duration of, each inspection/test/trial.
- (d) The Contractor must ensure that personnel required for equipment operation and records taking during the inspection/test/trial are briefed and available at the start and throughout the duration of the inspection/test/trial. Tradesmen or FSRs who may be required to effect minor changes or adjustments in the installation must be available at short notice.
- (e) The Contractor is to coordinate the activities of all personnel taking part in each inspection/test/trial and ensure that safe conditions prevail throughout the inspection/test/trial.

2. Inspection Records and Reports

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

3. Inspection and Trials Process

3.1 Drawings and Purchase Orders

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

3.2 Inspection

- (a) Upon receipt and acceptance of the Contractor's ITP, inspection will consist of a number of Inspection Points supplemented by such other inspections, tests, demonstrations and trials as may be deemed necessary by the Inspection Authority to permit him to certify that the work has been performed in compliance with the provisions of the specification. The Contractor must be responsible for notifying the designated Inspection Authority of when the work will be available for inspection, sufficiently in advance to permit the designated Inspection Authority to arrange for the appropriate inspection.
- (b) The Inspection Authority will inspect the materials, equipment and work throughout the project against the provisions of the specification and, where non-conformances are noted, will issue appropriate INSPECTION NON-CONFORMANCE REPORTS.
- (c) The Contract requires the implementation of a Quality Assurance/Quality Control system, so the Inspection authority must require that the Contractor provide a copy of its internal inspection report pertaining to a work item before conducting the requested inspection. If third party inspections are required by the Contract (e.g. inspections by a certified CWB 178.2 welding inspector), the reports of these inspections are required before the Work is inspected by the Inspection Authority.
- (d) The QA/QC system is a requirement, so if the documentation is presented to the Inspection Authority before an inspection stating that the Work is satisfactory but the Inspection Authority finds that the Work has not been satisfactorily inspected, the Inspection Authority must issue an Inspection Non-conformance Report against the Work and another against the failure of the Contractor's QA/QC system.
- (e) Before carrying out any inspection, the Inspection Authority must review the requirements for the Work and the acceptance and/or rejection standards to be applied. Where more than one standard or requirement is called up and they are potentially conflicting, the Inspection Authority must refer to the order of precedence in the Contract to determine the standard or requirement to be applied.

3.3 Inspection Non-conformance report

- (a) An Inspection Non-conformance report will be issued for each non-conformance noted by the Inspection Authority. Each report will be uniquely numbered for reference purposes, will be signed and dated by the Inspection Authority, and will describe the non-conformance.
- (b) When the non-conformance has been corrected by the Contractor and has been re-inspected and accepted by the Inspection Authority, the Inspection Authority will complete the Report by adding an applicable signed and dated notation.
- (c) At the end of the project, the content of all Inspection Non-conformance Reports which have not been signed-off by the Inspection Authority will be transferred to the Acceptance documents before the Inspection Authority's certification of such documents.

3.4 Tests, Trials, and Demonstrations

- (a) To enable the Inspection Authority to certify that the Work has been performed satisfactorily, in accordance with the Contract and specifications, the Contractor must schedule, co-ordinate, perform, and record all specified tests, trials and demonstrations required by the Inspection Authority and the

Specifications and any additional tests and trials performed by the Contractor required by the Inspection Authority.

- (b) Where the specifications contain a specific performance requirement for any component, equipment, sub-system or system, the Contractor must test such component, equipment, sub-system or system to the satisfaction of the Inspection Authority, to prove that the specified performance has been achieved and that the component, equipment, sub-system or system performs as required by the specifications.
- (c) Tests, trials and demonstrations must be conducted in accordance with a logical, systematic schedule which must ensure that all associated components and equipment are proven before sub-systems demonstration or testing, and that sub-systems are proven before system demonstration or testing.
- (d) Where the Specifications do not contain specific performance requirements for any component, equipment, sub-system or system, the Contractor must demonstrate such component, equipment, sub-system or system to the satisfaction of the Inspection Authority.
- (e) The Contractor must co-ordinate each test, trial and demonstration with all interested parties, including the Inspection, Contracting and Technical Authorities; regulatory authorities; Classification Society; Sub-contractors; etc. The Contractor must provide the Inspection Authority and other Government of Canada Authorities with a minimum of ten (10) working days notice of each scheduled test, trial, or demonstration.
- (f) The Contractor must keep written records of all tests, trials, and demonstrations conducted required by the QA System.
- (g) The Contractor must in all respects be responsible for the conduct of all tests and trials in accordance with the requirements of the Contract.
- (h) The Contracting Authority and the Inspection/Technical Authority reserve the right to defer starting or continuing with any sea trials for any reasonable cause including but not limited to adverse weather, visibility, equipment failure or degradation, lack of qualified personnel and inadequate compliance with safety standards.

ANNEX D - DETAILED FINANCIAL BID PRESENTATION SHEET

D-1 Proposed Work Location:

Contractor's Facility _____

D-2 Evaluation of Price

The price of the bid will be evaluated in Canadian dollars, customs duties are included and applicable taxes are extra, Incoterms 2000 Delivered Duty Paid (CIP) to destination.

a.	Known Work – (1 boat, 1 trailer) With included delivery Incoterms 2000 DDP to: DFO Nanaimo, BC CCGS Base. As per 6.4.2	\$ _____
b.	Unscheduled Work <i>Labour Cost:</i> Estimated labour hours at a firm <i>Charge-out Labor Rate</i> , including overhead and profit: 50 person hours X \$ _____ per hour for a PRICE of: See articles D-3 and D3.1 below.	\$ _____
c.	EVALUATION PRICE [a + b] For an EVALUATION PRICE of: (customs duties are included and applicable taxes are excluded)	\$ _____

D-3 Unscheduled Work

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

"Number of hours (to be negotiated) X \$ _____ your firm hourly *Charge-out Labour Rate* which includes *Overhead* and profit, plus net laid-down cost of materials to which will be added a 10% mark-up, plus Goods and Services Tax or Harmonized Sales Tax as applicable, of the total cost of material and labour.

The firm hourly *Charge-out Labour Rate* and the material mark-up will remain firm for the duration of the Contract and any subsequent amendments."

D-3.1 Notwithstanding definitions or usage elsewhere in this document, or in the Bidder's Cost Management System, when negotiating *Hours* for unscheduled work, PWGSC will consider only those hours of labour directly involved in the production of the subject work package.

Elements of *Related Labour Costs* identified in D-3.2 will not be negotiated, but must be included within the *Charge-out Labour Rate*. It is therefore incumbent upon the Bidder to enter values in the above table which will result in fair compensation, regardless of the structure of their Cost Management System.

D-3.2 Allowance for *Related Labour Costs* such as: Management, Direct Supervision, Purchasing and Material Handling, Quality Assurance and Reporting, First Aid, Gas Free Inspecting and Reporting, and Estimating must be included as *Overhead* for the purposes of determining the *Charge-out Labour Rate* entered in line D-2b and Article D-3 above.

D-3.3 A 10% mark-up rate will be allowed for materials and this 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*. A separate labour component for the purchase and handling of materials or subcontract administration is not allowable.

D-4 Boat Delivery Proposal

All deliverables are mandatory to be received on or before January 31, 2018.

ANNEX E - SUBCONTRACTOR LIST

Specification Item	Description of Goods/Services (Including Make, Model Number as	Name of Supplier	Address of Supplier

ANNEX F - INFORMATION REQUIRED FOR THE VERIFICATION OF INTEGRITY PROVISIONS

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

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

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

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

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

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

ANNEX G – BID PACKAGE CHECKLIST

Instruction to Bidders: Table G-1 is a check list for self-verification purposes.

Table G-1 Bidder's Bid Package Check List

G1.1

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

No	Part	Article	Description	Condition	Document provided
<u>Section I- Technical Bid</u>					
1		Front page	Request for Proposal document part 1 page 1 completed and signed;	Mandatory with the bid	<input type="checkbox"/>
2	3	3.2 Entirely including all sub paragraphs	Section 1 – Technical Bid	Mandatory with the bid	<input type="checkbox"/>
<u>Section II- Financial Bid</u>					
6	Annex D	All	Annex D- Detailed Financial Bid Presentation Sheet	Mandatory with the bid	<input type="checkbox"/>

G1.2 Supporting Deliverable Requirements

If the following information which supports the bid is not submitted with the Bid; it will be requested by the Contracting Authority, and it must be provided within 48 hours of the written request:

No	Part	Article	Description	Condition	Document provided
<u>Section I- Technical Bid</u>					
1	6	6.5.4	Contractor representative	48 hrs of written request	
<u>Section II- Certification</u>					
7	6	6.9	Welding certification	48 hrs of written request	<input type="checkbox"/>
8	5	5.2.1	Annex F Information required for the Verification of Integrity Provisions	48 hrs of written request	<input type="checkbox"/>
10	6	6.20	Applicable laws	48 hrs of written request	<input type="checkbox"/>

G1.3 Contract Deliverable Requirements

The following information may be requested by the Contracting Authority, and it must be provided within the conditions stated in the table below of the written request:

No	Part	Article	Description	Condition	Document provided
<u>Other documentation after contract award (Reminder)</u>					
1	6	6.10	Project Schedule	5 days after contract award	
2	6	6.17	Inspection and Test Plan	7 days after contract award	
3	6	6.19	Insurance certificate	10 days after contract award	

