

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

SOLICITATION AMENDMENT
MODIFICATION DE L'INVITATION

The referenced document is hereby revised; unless otherwise
indicated, all other terms and conditions of the Solicitation
remain the same.

Ce document est par la présente révisé; sauf indication contraire,
les modalités de l'invitation demeurent les mêmes.

Comments - Commentaires

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

Title - Sujet Fab&Del TwinDieselJet LandingCraft	
Solicitation No. - N° de l'invitation F1705-140131/A	Amendment No. - N° modif. 001
Client Reference No. - N° de référence du client F1705-140131	Date 2015-03-13
GETS Reference No. - N° de référence de SEAG PW-\$XLV-175-6689	
File No. - N° de dossier XLV-4-37264 (175)	CCC No./N° CCC - FMS No./N° VME
Solicitation Closes - L'invitation prend fin at - à 02:00 PM on - le 2015-04-20	
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: Elkington, J.R.	Buyer Id - Id de l'acheteur xlv175
Telephone No. - N° de téléphone (250) 363-3391 ()	FAX No. - N° de FAX (250) 363-3960
Destination - of Goods, Services, and Construction: Destination - des biens, services et construction:	

Instructions: See Herein

Instructions: Voir aux présentes

Delivery Required - Livraison exigée	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

Solicitation No. - N° de l'invitation

F1705-140131/A

Client Ref. No. - N° de réf. du client

F1705-140131

Amd. No. - N° de la modif.

001

File No. - N° du dossier

XLV-4-37264

Buyer ID - Id de l'acheteur

xlv175

CCC No./N° CCC - FMS No/ N° VME

This Amendment is Promulgated to remove some references to Jet propulsion, and assure bidders that the Specification is not a “DRAFT” as appears in some printouts.

In addition the Client information and delivery location have been corrected.

TABLE OF CONTENTS

F1705 140131 10.05 to 10.35 m IB twin diesel Landing Craft CCG

PART 1 - GENERAL INFORMATION

1. Introduction
2. Summary
3. Debriefings

PART 2 - BIDDER INSTRUCTIONS

1. Standard Instructions, Clauses and Conditions
2. Submission of Bids
3. Enquiries - Bid Solicitation
4. Applicable Laws
5. Delivery/Work Period
6. List of Proposed Subcontractors
7. Inspection and Test Plan
8. Tables of Deliverable Requirements

PART 3 - BID PREPARATION INSTRUCTIONS

1. Bid Preparation Instructions

PART 4 - EVALUATION PROCEDURES AND BASIS OF SELECTION

1. Evaluation Procedures
2. Basis of Selection

PART 5 - CERTIFICATIONS

1. General
2. Certifications Precedent to Contract Award
3. Federal Contractors Program

PART 6 - SECURITY, FINANCIAL, AND OTHER REQUIREMENTS

1. Security Requirement
2. Financial
3. Workers' Compensation Certification - Letter of Good Standing
4. Welding Certification
5. Project Schedule
6. ISO 9001:2008 - Quality Management Systems
7. Environmental Protection
8. Insurance Requirements

PART 7 - RESULTING CONTRACT CLAUSES
PART 7 - RESULTING CONTRACT CLAUSES

1. Statement of Work
2. Standard Clauses and Conditions
3. Term of Contract
4. Authorities
5. Contractor Contacts
6. Payment
7. Invoicing
8. Certifications
9. Applicable Laws
10. Priority of Documents
11. Defence Contract
12. Insurance Requirements
13. Sub-contract and Sub-contractor List
14. Project Schedule
15. Insulation Materials - Asbestos Free
16. Trade Qualifications
17. ISO 9001:2008 - Quality Management Systems
18. Welding Certification
19. Environmental Protection
20. Procedures for Design Change or Additional Work
21. Equipment/Systems: Inspection/Test
22. Inspection and Test Plan
23. Pre-Construction Meeting
24. Meetings
25. Outstanding Work and Acceptance
26. Licensing
27. SACC Manual Clauses

LIST OF ANNEXES:

Annex A	Statement of Work
Annex B	Basis of Payment
Annex C	Insurance Requirements
Annex D	Inspection/Quality Assurance/Quality Control
Annex E	Warranty
Appendix 1 to Annex E	Warranty Claim Form
Annex F	Project Management Services
Annex G	Financial Bid Presentation Sheet
Appendix 1 to Annex G	Pricing Data Sheet

PART 1 - GENERAL INFORMATION

1.1 Introduction

The bid solicitation and resulting contract document is divided into seven parts plus annexes as follows:

Part 1 General Information: provides a general description of the Statement of Work;

Part 2 Bidder Instructions: provides the instructions, clauses and conditions applicable to the bid solicitation and states that the Bidder agrees to be bound by the clauses and conditions contained in all parts of the bid solicitation;

Part 3 Bid Preparation Instructions: provides bidders with instructions on how to prepare their bid;

Part 4 Evaluation Procedures and Basis of Selection: indicates how the evaluation will be conducted, the evaluation criteria that must be addressed in the bid, if applicable, and the basis of selection;

Part 5 Certifications: includes the certifications to be provided;

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

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

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

1.2. Summary

1. The Statement of work is as follows:

a. To carry out the design, construction, test, trial and delivery of one (1) **Buoy tending Landing Craft twin diesel powered** in the 10.05 – 10.35 m length range for CCG, in accordance with the associated Technical Specifications detailed in the Statement of Work and Project Management Services attached as Annexes A and H. For any specifications, drawings, test sheets, annexes and appendices not included in this document, bidders are requested to contact the Contracting Authority identified in the bid solicitation.

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

1.3. Debriefings

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

PART 2 - BIDDER INSTRUCTIONS

2.1 Standard Instructions, Clauses and Conditions

All instructions, clauses and conditions identified in the bid solicitation by number, date and title are set out in the *Standard Acquisition Clauses and Conditions* (<http://ccua-sacc.tpsgc-pwgsc.gc.ca/pub/acho-eng.jsp>) Manual issued by Public Works and Government Services Canada.

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

The 2003, (2014-09-25) Standard Instructions - Goods or Services, - Competitive Requirements, are incorporated by reference into and form part of the bid solicitation.

2.2 Submission of Bids

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

2.3 Enquiries - Bid Solicitation

All enquiries must be submitted in writing to the Contracting Authority no later *than three (3) calendar days* before the bid closing date. Enquiries received after that time may not be answered.

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

2.4 Applicable Laws

1. Any resulting contract must be interpreted and governed, and the relations between the parties determined, by the laws in force in British Columbia _____. (*Insert the alternate name of the province or territory.*)
2. Bidders may, at their discretion, substitute the applicable laws of a Canadian province or territory of their choice without affecting the validity of their bid, by deleting the name of the Canadian province or territory specified and inserting the name of the Canadian province or territory of their choice. If no change is made, it acknowledges that the applicable laws specified are acceptable to the bidders.

2.5 Delivery/Work Period

Delivery of the boats and all other deliverables required by the contract is desired at destination on or before **June 30, 2015**.

2.6 List of Proposed Sub-contractors

If the bid includes the use of subcontractors, the Bidder agrees, upon written request from the Contracting Authority, to provide a list of all subcontractors including a description of the things to be purchased, a description of the work to be performed by specification section and the location of the performance of that work. The list should not include the purchase of off-the-shelf items, software and such standard articles and materials as are ordinarily produced by manufacturers in the normal course of business, or the provision of such incidental services as might ordinarily be subcontracted in performing the Work, i.e. subcontract work valued at less than \$500.00.

2.7 Inspection and Test Plan

Before contract award and within 24 hours of written notification by the Contracting Authority the Bidder may be required to provide an example of its Inspection Plans.

2.8 Tables of Deliverable Requirements**2.8.1 Mandatory Deliverable Requirements**

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.

Item	Description	Completed and Attached
1	<u>Invitation To Tender document part 1 page 1 completed and signed;</u>	
2	<u>Technical Bid, PART 4, section 4.1.3.1__</u>	
3	<u>Completed Annex G Financial Bid Presentation Sheet</u>	
4	<u>Completed Appendix 1 to Annex G Pricing Data Sheets</u>	

2.8.2 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 **24 hours** of the written request:

Item	Description	RFP PART No:	PART Article	Completed and Attached	To be forwarded if requested by the CA
1	Changes to Applicable Laws (if any)	2	4		
2	Subcontractor List (if any)	2	6		
3	Inspection and Test Plan	2	7		
4	Technical bids	4	4.1.3.2 and 4.1.3.3		
5	Certifications	5	3		
6	Proof of good standing with Worker's Compensation Board	6	3		
7	Proof of welding certification	6	4		
8	Preliminary Work Schedule	6	5		
9	ISO Registration Certificate or Quality Assurance Documentation	6	6		
10	Contractor Contacts	7	5		
11	Quality and inspections plan as per Inspection /Quality Section	Annex D	D1		
12	Project Management Team Details	Annex F	F1.4		

2.8.3 Supplementary Deliverable Requirements

The following information, which supports the bid, may be requested by the Contracting Authority, and it must be provided within *five (5) days* of the written request:

Item	Description	RFP PART No:	PART Article	Completed and Attached	To be forwarded if requested by the CA
1	Financial Statements and information	6	2		
2	Details of environmental emergency response plans and waste management procedures	6	7		
3	Either proof of insurance coverage, or	7	12		
4	An Insurance letter	6	8		

PART 3 - BID PREPARATION INSTRUCTIONS

3.0 Bid Preparation Instructions

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

Section I:	Technical Bid	Two (2) copies
Section II:	Financial Bid	One (1) copy
Section III:	Certification Requirements	One (1) copy

Prices must appear in the financial bid only. No prices are to be indicated in any other section of the bid. **Any cost differences resulting from modifications proposed by the bidder must only be included in Annex G Appendix I table b.**

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

- use 8.5 x 11 inch (216 mm x 279 mm) paper;
- use a numbering system that corresponds to the bid solicitation; and
- include the certifications as a separate section of the bid.

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

- use paper containing fibre certified as originating from a sustainably-managed forest and/or containing minimum 30% recycled content; and
- 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

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

Section I: Technical Bid

This RFP is based on reconfigured or Option equipped stock production boats, and as a result the bidder is asked to mark, and make notes on the construction specification as requested below.

If the Bidder is of the opinion that any of the required specification items cannot be achieved or the item, as written, would preclude them from submitting a bid, they are to inform the Contracting Authority as per Part 2, Article 3

Technical Bid must include the following:

3.1. Certified copy of the Statement of Work:

a) The Bidder must indicate compliance with all Mandatory Technical requirements by completing the appropriate column(s) and marking with an (X) at each BOLD header signifying that the specification has been read and that any proposal offered will meet, or exceed the required compliance with the written specification, adding any remarks/notations and returning Annex A as part of the Technical Bid. The bidder must agree to comply with the specification even if offering a modification

b) Bidders may make notations in the appropriate column:(For Example "See note 1,2,3, etc.") to refer to any optional modifications that have been entered onto the page(s) at the end of Annex A, Statement of Work. Any cost differences resulting from modifications proposed by the bidder must only be included in Annex G Appendix 1 table b.

3.2. Confirmation of the proposed design:

This vessel is intended to be built based on standard Landing Craft hull forms with a minimum of customization as indicated herein. Prototype hulls will be considered for this procurement.

Bidders must submit:

- a) Brochures of the proposed vessel if available,
- b) Photographs of the proposed vessel or previously similar built vessels,
- c) References, for vessels previously sold, within 5 years, and built to TP 1332, Construction Standards for Small Vessels (2010)

And

- d) HIN (Hull Identification Numbers) for TP1332, Construction Standards for Small Vessels (2010), sisterships of this model.
- e) Compliance notice (plate or label) confirming build to **TP 1332**, Construction Standards for Small Vessels (2010), of this basic model or sistership.

3.3. Preliminary Drawings: Detailed dimensioned preliminary drawings for evaluation, including:

- a) Lines Plan with approximately eight sections through hull.
- b) Vessel midship section showing structure and the console / operating position in the deck.
- c) Plan and Profile, general arrangement, which may illustrate some of the systems
- d) Systems drawings presented on as many sheets as required for clarity covering Bilge, Fuel, Electrical, Fire fighting, and Driveline or mechanical drawing as required.

Solicitation No. - N° de l'invitation

F1705 140131

Client Ref. No. - N° de réf. du client

F1705 140131

Amd. No. - N° de la modif.

File No. - N° du dossier

XLV-4-37181

Buyer ID - Id de l'acheteur

xlv 175

CCC No./N° CCC - FMS No/ N° VME

Section II: Financial Bid

Bidders must submit their financial bid in accordance with the Financial Bid Presentation Sheet Annex I and the detailed Pricing Data Sheet attached as Appendix 1 to Annex G.

Section III: Certification Requirements

Bidders must submit the certifications required in accordance with Part 5. If these certifications do not accompany the bid documents at the time of bid submission, they will be requested by the Contracting Authority as detailed in Part 2.

PART 4 - EVALUATION PROCEDURES AND BASIS OF SELECTION

4.0 Evaluation Procedures

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

4.1.1 Responses to this Request for Proposal will first be examined to determine their compliance with the mandatory certifications, and the tables of deliverable requirements as detailed in Parts 5 & 2.

- .2 The Bidder's financial bid will then be examined to determine that it is compliant with the requirements of the solicitation.
- .3 Bidder's Technical Bid will then be examined to determine compliance with Mandatory Technical Specification items.

In order for a Bidder's submission to be found responsive, the Bidder must demonstrate in their Technical bid that the products being offered meet or exceed all the technical specifications as stated and list all additional features.

4.2. Basis of Selection

4.2.1 Unscheduled Work and Evaluation Price

In any boat fabrication project, unscheduled work in the form of Design Changes will arise. Since this work is inevitable, the anticipated cost of such work must be taken into account when evaluating the bids. This is done by including a most likely amount of additional person-hours (and/or material) to which a competitive charge-out rate is applied in dollars, and is added to the firm price for the Work.

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

.2 Basis of Selection

SACC Manual Clause A0031T Basis of Selection [2010-08-16](#)

PART 5 – CERTIFICATIONS**5.0 General**

Bidders must provide the required certifications and documentation 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, if any certification made by the Bidder is found to be untrue whether during the bid evaluation period or during the contract period.

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

5.1 Mandatory Certifications Required Precedent to Contract Award**5.1.1 Code of Conduct and Certifications - Related documentation**

By submitting a bid, the Bidder certifies that the Bidder in and its affiliates are compliance with the provisions as stated in Section 01 Code of Conduct and Certifications - Bid of Standard Instructions 2003. The related documentation therein required will assist Canada in confirming that the certifications are true.

.2 Federal Contractors Program for Employment Equity - Bid Certification

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

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

PART 6 - SECURITY, FINANCIAL, AND OTHER REQUIREMENTS

6.1. Security Requirement.

There is no security requirement associated with the requirement.

6.2. Financial Capability Requirement

SACC Manual Clause A9033T Financial Capability 2012-07-16

6.3. Workers' Compensation Certification - Letter of Good Standing

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

The Bidder must provide, within **24 hours** following a request from the Contracting Authority, a certificate or letter from the applicable Workers' Compensation Board confirming the Bidder's good standing account. Failure to comply with the request may result in the bid being declared non-responsive.

6.4. Welding Certification

1. It is desired that welding be performed by a welder certified by the Canadian Welding Bureau (CWB) and in accordance with the requirements of the following Canadian Standards Association (CSA) standards as applicable:
 - a. CSA W47.1-03 (R2008), Certification of Companies for Fusion Welding of Steel (*Minimum Division Level 2.1*); and
 - b. CSA W47.2-M1987 (R2008), Certification of Companies for Fusion Welding of Aluminum (*Minimum Division Level 2.1*).
2. Before contract award and within **24 hours** of the written request by the Contracting Authority, the Bidder must submit evidence demonstrating its employees' certification to the welding Standards, or the CWB shop certification
3. It is not the intent of this article to require that the Contractor must be certified by the CWB, however the Contractor's shop welding standards must address the requirements contained in the CSA standards and be approved by a Professional Engineer. In addition, the Contractor's shop welding standards may be subject to an Evaluation by Canada prior to award of any contract.
4. Bidders who are certified by CWB may be entitled to a reduction of their Price for Evaluation as indicated in the table in Annex G.

6.5. Project Schedule

Before contract award and within **24 hours** of written notification by the Contracting Authority the Bidder must submit to Canada one (1) copy of its preliminary production work schedule.

This schedule is to show the commencement and completion dates for the Work in the available work period, including realistic target dates for significant events. This schedule will be reviewed with the Bidder after Contract Award.

6.6. ISO 9001:2008 - Quality Management Systems

Before contract award and within **24 hours** of written notification by the Contracting Authority the Bidder will have an opportunity to provide its current ISO Registration Documentation indicating its registration to ISO 9001:2008.

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

6.7. Environmental Protection

Before contract award and within **5 days** of written notification by the Contracting Authority, the Bidder must submit details of its environmental emergency response plans, waste management procedures and/or formal environmental training undertaken by its employees. In addition, the Bidder must submit samples of its processes and procedures pertinent to the completion of the Work.

6.8. 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 [Annex C](#) and in Article 14 of 1028 Supplemental General Conditions, Ship Construction, Firm Price.

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

PART 7 - RESULTING CONTRACT CLAUSES

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

7.1. Statement of Work

The Contractor must:

- a. Carry out the design, construction, test, trial and delivery of one (1) **Buoy tending Landing Craft twin diesel powered** in the 10.05 – 10.35 m length range for CCG, in accordance with the associated Technical Specifications detailed in the Statement of Work and Project Management Services attached as Annexes A and H.
- b. To carry out any approved unscheduled work not covered in paragraph a. above.

7.2. Standard Clauses and Conditions

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

7.2.1 General Conditions

2030 General Conditions, 2014-06-26, Higher Complexity - Goods, apply to and form part of the Contract. Section 22 is amended in Annex E Warranty.

.2 Supplemental General Conditions

1028, Ship Construction, Firm Price, 2010-08-16, apply to and form part of the Contract. Section 12 of 1028 is amended in Annex E - Warranty

7.3. Term of Contract**7.3.1 Delivery Date**

1. Delivery of the vessel and all other deliverables under the contract at destination will be on or before _____ (Dates to be entered by Contracting Authority when the Contract is awarded)
2. As the delivery date is an essential part of this contract, except for excusable delays notified in accordance with Article 11 (Excusable Delay) of 2030, failure to communicate any changes to the delivery schedule specified in this contract will prejudice Canada and will, at Canada's discretion, entail either:
 - a. Contract Termination in accordance with General Conditions 2030 Article 10 (Time of Essence) and Article 31 (Default by the Contractor), and the Contractor remains liable to Canada for any amounts, including milestone payments, paid by Canada and for all losses and damages which may be suffered by Canada by reason of the default, including any increase in the cost incurred by Canada in procuring the work from another source.; or

b. Consideration for Contract Amendment. Delivery date(s) will not be extended without consideration being provided by the Contractor in the form of adjustment to the price, warranty, and/or services provided.

3. Any of the above remedies applied will be logged against Contractor performance. Unsatisfactory performance could debar a Contractor for a period of time from bidding on future requirements.

7.3.2 Delivery Address:

Fisheries and Oceans, Canadian Coast Guard

25 Huron St.

Victoria B.C. V8V 4V9

attn: Clinton Hoffman 250 413 2834

.3 Shipping Instructions - Delivery at Destination

1. Goods must be consigned to the destination specified in the Contract and delivered CIP, Carriage and Insurance Paid, to the destination(s) listed in 7.3.2, Incoterms 2000 for shipments from commercial contractor.
2. The Contractor is responsible for all delivery charges from the Contractor's facility to destination, including administration costs, insurance and risk of transport.

.4 Delivery and Unloading

1. Delivery trucks must be equipped with an unloading device which will permit unloading at sites with no unloading facility.
2. When making deliveries, sufficient personnel must be provided to permit unloading of any type of vehicle without the assistance of federal government personnel.

7.4. Authorities

7.4.1 Contracting Authority

The Contracting Authority for the Contract is:

J.R. Elkington, Supply Team Leader

Public Works and Government Services Canada

401-1230 Government Street

Victoria, B.C. V8W 3X4

Telephone: 250-363-3391

Facsimile: 250-363-3960

E-mail address : JR.Elkington@pwgsc.gc.ca

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

7.4.2 Technical Authority

The Technical Authority for the Contract is:

(To be completed by the Contracting Authority at Contract Award)

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

7.4.3 Inspection Authority

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

Any communication with a Contractor regarding the quality of the Work performed pursuant to this Contract shall be undertaken by official correspondence through the Contracting Authority.

7.5. Contractor Contacts

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: _____

7.6. Payment**7.6.1 Basis of Payment - Firm Price . Firm Unit Price(s) or Firm Lot Price (s)**

In consideration of the Contractor satisfactorily completing all of its obligations under the Contract, the Contractor will be paid a firm price as specified in Annex B. Customs duties are included and applicable taxes are extra.

7.6.2 Method of Payment - Progress Payment

SACC Manual Clause H1003C Progress Payment 2010-01-11

1. Canada will make progress payments in accordance with the payment provisions of the Contract, no more than once a month, for cost incurred in the performance of the Work, up to 80 percent of the amount claimed and approved by Canada if:
 - a. an accurate and complete claim for payment using form [PWGSC-TPSGC 1111](#), Claim for Progress Payment, and any other document required by the Contract have been submitted in accordance with the invoicing instructions provided in the Contract;
 - b. the amount claimed is in accordance with the basis of payment;
 - c. the total amount for all progress payments paid by Canada does not exceed 80 percent of the total amount to be paid under the Contract;
 - d. all certificates appearing on form [PWGSC-TPSGC 1111](#) have been signed by the respective authorized representatives.
2. The balance of the amount payable will be paid in accordance with the payment provisions of the Contract upon completion and delivery of the item if the Work has been accepted by Canada and a final claim for the payment is submitted.
3. Progress payments are interim payments only. Canada may conduct a government audit and interim time and cost verifications and reserves the rights to make adjustments to the Contract from time to time during the performance of the Work. Any overpayment resulting from progress payments or otherwise must be refunded promptly to Canada.

.3 Warranty Holdback

A warranty holdback of 3% may be applied to the final claim for payment. This holdback is payable by Canada upon the expiry of the 90 day warranty period(s) applicable to the Work. Goods and Services Tax or Harmonized sale Tax (GST/HST), as appropriate, is 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.

.4 SACC Manual Clauses

SACC Manual Clause C0711C Time Verification 2008-05-12

SACC Manual Clause C6000C Limitation of Price 2011-05-16

7.7. Invoicing Instructions

- 7.7.1 The Contractor must submit invoices in accordance with the information required in Section 13 of 2030 General Conditions Higher Complexity Goods, article 6.2 Method of Payment.

. Invoicing Address:**Invoices are to be made out and sent to:**

Fisheries and Oceans, Canadian Coast Guard

25 Huron St.

Victoria B.C. V8V 4V9

attn: Clinton Hoffman

A copy of the original invoice is to be forwarded to:

Public Works and Government Services Canada
 Acquisitions, Marine
 401 - 1230 Government Street
 Victoria, B.C., V8W 3X4 Attention: J.R. Elkington

7.8. Certifications

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

7.9. Applicable Laws

The Contract must be interpreted and governed, and the relations between the parties determined, by the laws in force in _____. **(To be completed by the Contracting Authority at Contract Award)**

7.10. Priority of Documents

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

- a. the Articles of Agreement;
- b. the Supplemental General Conditions 1028 (2010-08-16), Ship Construction - Firm Price, as amended in Annex E;
- c. the General Conditions 2030 (2014-06-26) Higher Complexity - Goods as amended in Annex E;
- d. Annex A, Statement of Work;
- e. Annex B, Basis of Payment;
- f. Annex C, Insurance Requirements;
- g. Annex D, Inspection/Quality Assurance/Quality Control;
- h. Annex E, Warranty;
- i. Annex F, Project Management Services and
- j. the Contractor's bid dated _____ (*insert date of bid*), as amended _____ (*insert date(s) of amendment(s) if applicable*)

7.11. NOT USED - Defence Contract

7.12. Insurance Requirements

The Contractor must comply with the insurance requirements specified in the Supplemental General Conditions 1028 (2010-08-16), Ship Construction - Firm Price section 14 and Annex "C". The Contractor must maintain the required insurance coverage for the duration of the Contract. Compliance with the insurance requirements does not release the Contractor from or reduce its liability under the Contract.

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

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

7.13. Sub-contracts and Sub-contractor List

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

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

7.14. Project Schedule

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

The Contractor must provide a detailed work schedule showing the commencement and completion dates for the Work in the available work period, including realistic target dates for significant events.

During the work period the schedule is to be reviewed on an ongoing basis by the Inspection Authority and the Contractor, updated when necessary, and available in the Contractor's office for review by Canada's authorities to determine the progress of the Work.

Production work schedules must be revised and must show the effect of progressed work and approved work arisings. Changes in scheduled completion dates due to unscheduled work will not be accepted except as negotiated under article 20 Procedures for Design Change or Additional Work.

7.15. Insulation Materials - Asbestos Free

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

7.16. Trade Qualifications

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

7.17. ISO 9001:2008 - Quality Management Systems

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

ISO 9001:2008 - Quality management systems - Requirements, published by the International Organization for Standardization (ISO), current edition at date of submission of Contractor's bid with the exclusion of the following requirement:

7.3 Design and development

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

Assistance for Government Quality Assurance (GQA):

The Contractor must provide the Inspection Authority with the accommodation and facilities required for the proper accomplishment of GQA and must provide any assistance required by the Inspection Authority for evaluation, verification, validation, documentation or release of product.

The Inspection Authority must have the right of access to any area of the Contractor's or Subcontractor's facilities where any part of the Work is being performed. The Inspection Authority must be afforded unrestricted opportunity to evaluate and verify Contractor conformity with Quality System procedures and to validate product conformity with contract requirements. The Contractor must make available, for reasonable use by the Inspection Authority, the equipment necessary for all validation purposes. Contractor personnel must be made available for operation of such equipment as required.

When the Inspection Authority determines that GQA is required at a subcontractor's facilities, the Contractor must provide for this in the purchasing document and forward copies to the Inspection Authority, together with relevant technical data as the Inspection Authority may request.

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

7.18. Welding Certification

(The wording of this article will depend upon the qualifications of the bidder as determined during the bid evaluation process.)

Either

1. The Contractor must ensure that welding is performed by a welder certified by the Canadian Welding Bureau (CWB) in accordance with the requirements of the following Canadian Standards Association (CSA) standards:
 - a. [CSA W47.1-03 \(R2008\)](#), Certification for Companies for Fusion Welding of Steel (Minimum division level 2.1); and
 - b. [CSA W47.2-M1987 \(R2008\)](#), Certification for Companies for Fusion Welding of Aluminum (Minimum division level 2.1).
2. In addition, welding must be done in accordance with the requirements of the applicable drawings and specifications.
3. Before the commencement of any fabrication work, and upon request from the Inspection Authority, the Contractor must provide approved welding procedures and/or a list of welding personnel he intends to use in the performance of the Work. The list must identify the CWB welding procedure qualifications attained by each of the personnel listed and must be accompanied by a copy of each person's current CWB welding certification.

Or

1. The Contractor must ensure that welding is performed by a welder certified by the accepted Certification Authority and that all welding is carried out in accordance with the Contractor's approved welding procedures. (These procedures must have been approved by a Professional Engineer and weld supervisor retained by the Contractor).
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 welding procedure qualifications attained by each of the personnel listed and must be accompanied by a copy of each person's current welding certification.

7.19. Environmental Protection

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

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

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

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

- 7.20. Procedures for Design Change or Additional Work:** SACC Manual Clause B5007C, Procedures for Design Change or Additional Work [2010-01-11](#).
- 7.21. Equipment/Systems: Inspection/Test:** Refer to Annexes [A](#) and [D](#) for details on equipment and systems inspections and testing requirements.
- 7.22. Inspection and Test Plan:** The Contractor must implement an approved Inspection and Test Plan (ITP).
The Contractor must provide at no additional cost to Canada, all applicable test data, all Contractor technical data, test pieces and samples as may reasonably be required by the Inspection Authority to verify conformance to contract requirements. The Contractor must forward at his expense such technical data, test data, test pieces and samples to such location as the Inspection Authority may direct.
- 7.23. Pre-Construction Meeting**
A Pre-construction meeting [may](#) be convened and chaired by the Contracting Authority at the Contractor's facility [up to two weeks](#) before the commencement of the work period.
- 7.24. Meetings**
Meetings, chaired by the Contracting Authority, will take place at the Contractor's facility as and when required. Contractor attendees at these meetings will, as a minimum, be its Contract (Project) Manager, Production Manager (Superintendent) and Quality Assurance Manager.
- 7.25. Outstanding Work and Acceptance**
1. The Inspection Authority, in conjunction with the Contractor, will prepare a list of outstanding work items at the end of the vessel's construction period. This list will form the annexes to the formal acceptance document for the vessel. A vessel acceptance meeting 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. In addition to any amount held under the Warranty Holdback Part 7, article 6.3, a holdback of twice the estimated value of outstanding work will be held until that work is completed.
 2. The Contractor must complete each of the above forms in three (3) copies, which will be distributed by the Inspection Authority as follows:
 - a. original to the Contracting Authority;
 - b. one copy to the Technical Authority;
 - c. one copy to the Contractor.

7.26. Licensing

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

7.27. SACC Manual Clauses

SACC Manual Clause	A9055C	Scrap and Waste Material	2010-08-16
SACC Manual Clause	A9047C	Title to Property - Vessel	2008-05-12
SACC Manual Clause	A0285C	Workers Compensation	2007-05-25

Solicitation No. - N° de l'invitation

F1705 140131

Client Ref. No. - N° de réf. du client

F1705 140131

Amd. No. - N° de la modif.

File No. - N° du dossier

XLV-4-37181

Buyer ID - Id de l'acheteur

xlV 175

CCC No./N° CCC - FMS No/ N° VME

ANNEX A - STATEMENT OF WORK

The entire Statement of Work is available in a separate Electronic Document named:

[F1705 140131 P R Barge - E SOW - March 2015 .pdf](#)

ANNEX B - BASIS OF PAYMENT

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

B.1 Contract Price

a.	Known Work For work as stated in Part 7 article 1, and Specified in Annex A for a FIRM PRICE of:	\$ _____ X _____
b.	Delivery to destination CCG base Huron St. Victoria B.C. for a FIRM PRICE of:	\$ _____ X _____
c.	Total Firm Price for a FIRM PRICE of:	\$ _____ X _____
Customs duties are included and applicable taxes are extra.		

B 2 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:

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.

B 2.1 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 B2.2, will not be negotiated, but will be compensated for in accordance with B2.2.

- B 2.2** Allowance for *Related Labour Costs* such as: Management, Direct Supervision, Purchasing and Material Handling, Quality Assurance and Reporting, First Aid, Gas Free Inspecting and Reporting, and Estimating will be included as *Overhead* for the purposes of determining the *Charge-out Labour Rate* set out in clause B2.
- B 2.3** The 10% mark-up rate for materials will also apply to subcontracted costs. The mark-up rate includes any allowance for material and subcontract management not allowed for in the Chargeout Labour Rate. The Contractor will not be entitled to a separate labour component for the purchase and handling of materials or subcontract administration.

ANNEX C - INSURANCE REQUIREMENTS**C1 Commercial General Liability**

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 \$5,000,000 per accident or occurrence and in the annual aggregate.
2. The Commercial General Liability Insurance policy must include the following:
 - a. Additional Insured: Canada is added as an additional insured, but only with respect to liability arising out of the Contractor's performance of the Contract. The interest of Canada should read as follows: Canada, as represented by Public Works and Government Services Canada.
 - b. Bodily Injury and Property Damage to third parties arising out of the operations of the Contractor.
 - c. Personal Injury: While not limited to, the coverage must include Violation of Privacy, Libel and Slander, False Arrest, Detention or Imprisonment and Defamation of Character.
 - d. Cross Liability/Separation of Insureds: Without increasing the limit of liability, the policy must protect all insured parties to the full extent of coverage provided. Further, the policy must apply to each Insured in the same manner and to the same extent as if a separate policy had been issued to each.
 - e. Blanket Contractual Liability: The policy must, on a blanket basis or by specific reference to the Contract, extend to assumed liabilities with respect to contractual provisions.
 - f. Employees and, if applicable, Volunteers must be included as Additional Insured.
 - g. Employers' Liability (or confirmation that all employees are covered by Worker's compensation (WSIB) or similar program)
 - h. Notice of Cancellation: The Insurer will endeavor to provide the Contracting Authority thirty (30) days written notice of policy cancellation.
 - i. If the policy is written on a claims-made basis, coverage must be in place for a period of at least 12 months after the completion or termination of the Contract.
 - j. Owners' or Contractors' Protective Liability: Covers the damages that the Contractor becomes legally obligated to pay arising out of the operations of a subcontractor.
 - k. Sudden and Accidental Pollution Liability (minimum 120 hours): To protect the Contractor for liabilities arising from damages caused by accidental pollution incidents.

ANNEX D - INSPECTION/QUALITY ASSURANCE/QUALITY CONTROL**D1 Inspection and Test Plan (ITP):**

1. The Contractor must prepare an Inspection and Test Plan (ITP) for this project.. The ITP must be submitted to the Inspection Authority for review and amended by the Contractor to the satisfaction of the Inspection Authority.
2. **NOT USED** - Coding:
3. **NOT USED** - Inspection and Test Plan Criteria:
4. Contractor Imposed Testing:
Tests and trials in addition to those given in the Specification must be approved by the Inspection Authority.

D2 Conduct of Inspection

1. Inspections will be conducted in accordance with the ITP and as detailed in D4.
2. The Contractor must provide its own staff or subcontracted staff to conduct inspections, tests and trials; excepting that Technical Authority or Inspection Authority personnel may be designated in the specifications, in which case the Contractor must ensure that its own staff are provided in support of such inspection/test/trial.
3. 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.
4. The Contractor must ensure that personnel required for equipment operation and records taking during the inspection/test/trial are briefed and available at the start and throughout the duration of the inspection/test/trial. Tradesmen or FSRs who may be required to effect minor changes or adjustments in the installation must be available at short notice.
5. The Contractor is to coordinate the activities of all personnel taking part in each inspection/test/trial and ensure that safe conditions prevail throughout the inspection/test/trial.

D3 Inspection Records and Reports

1. The Contractor on the inspection record, test or trials sheets as applicable must record the results of each inspection. The Contractor must maintain files of completed inspection records.
2. The Contractor's QC representative (and the FSR when required) must sign as having witnessed the inspection, test or trial on the inspection record. The Contractor must forward originals of completed inspection records, together with completed test(s) and/or trials sheets to the Inspection Authority as they are completed.
3. Unsatisfactory inspection/test/trial results, for which corrective action cannot be completed during the normal course of the inspection/test/trial, will require the Contractor to establish and record the cause of the unsatisfactory condition to the satisfaction of the Inspection Authority. Canada representatives may assist in identification where appropriate.
4. Corrective action to remove cause of unsatisfactory inspections must be submitted to the Inspection Authority in writing by the Contractor, for approval before affecting such repairs and rescheduling of the unsatisfactory inspection/test/trial. Such notices must be included in the final records passed to the Inspection Authority.

5. The Contractor must undertake rectification of defects and deficiencies in the Contractor's installation or repair as soon as practicable. The Contractor is responsible to schedule such repairs at its own risk.
6. The Contractor must reschedule unsatisfactory inspections after any required repairs have been completed.
7. Quality Control, Inspection and Test records that substantiate conformance to the specified requirements, including records of corrective actions, must be retained by the Contractor for three (3) years from the date of completion or termination of the Contract and must be made available to the Inspection Authority upon request.

D4 Inspection and Trials Process

1. Drawings and Purchase Orders
 - a. Upon receipt of two (2) copies of each drawing or purchase order, the designated Inspection Authority will review its content against the provisions of the specification. Where discrepancies are noted, the Inspection Authority will formally advise all concerned, in writing. The resolution of any such discrepancy is a matter for consultation between the Contractor and other Government of Canada Authorities. **The Inspection Authority is NOT responsible for the resolution of discrepancies.**
2. Inspection
 - a. Upon receipt and acceptance of the Contractor's ITP, inspection will consist of a number of Inspection Points supplemented by such other inspections, tests, demonstrations and trials as may be deemed necessary by the Inspection Authority to permit him to certify that the work has been performed in compliance with the provisions of the 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 must be required before the Work is inspected by the PWGSC 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. 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 as required by Part 7, article 17.
- b. Where the Specifications contain a specific performance requirement for any component, equipment, sub-system or system, the Contractor must test such component, equipment, sub-system or system to the satisfaction of the Inspection Authority, to prove that the specified performance has been achieved and that the component, equipment, sub-system or system performs as required by the specifications.
- c. Tests, trials and demonstrations must be conducted in accordance with a logical, systematic schedule which must ensure that all associated components and equipment are proven before sub-systems demonstration or testing, and that sub-systems are proven before system demonstration or testing.
- d. Where the Specifications do not contain specific performance requirements for any component, equipment, sub-system or system, the Contractor must demonstrate such component, equipment, sub-system or system to the satisfaction of the Inspection Authority.
- e. The Contractor must submit their Inspection and Test Plan as required in D1.
- f. The Contractor must co-ordinate each test, trial and demonstration with all interested parties, including the Inspection Authority; Contracting and Technical Authorities; regulatory authorities; Classification Society; Sub-contractors; etc. The Contractor must provide the Inspection Authority and other Government of Canada Authorities with a minimum of five working days notice of each scheduled test, trial, or demonstration.
- g. The Contractor must keep written records of all tests, trials, and demonstrations conducted required by Article Part 7, article 17.
- h. The Contractor must in all respects be responsible for the conduct of all tests and trials in accordance with the requirements of the Contract.
- i. The Inspection Authority and the Technical Authority reserve the right to defer starting or continuing with any sea trials for any reasonable cause including but not limited to adverse weather, visibility, equipment failure or degradation, lack of qualified personnel and inadequate compliance with safety standards.

ANNEX E - WARRANTY

E1 2030 (2014-06-26) General Conditions Higher Complexity Goods, are hereby amended as follows: Delete Section 22 Warranty

E1.1 Supplemental General Conditions 1028 (2010-08-16) Ship Construction - Firm Price are amended as indicated below:

Section 12 Warranty

The Contractor must warrant the hull, propelling machinery and auxiliaries, fittings, and equipment of all kinds, for a full period of twelve (12) months after delivery to and acceptance of the vessel by Canada, excluding any time or times in excess of one (1) month upon any single occasion during which the vessel may be out of service while undergoing repair pursuant hereto, against all defects of design, material and workmanship, and undertakes that any part or parts of the vessel which may be found defective or show signs of weaknesses or undue wear within such period, owing to faulty design, material or workmanship, must be repaired or removed and replaced and all such defects remedied and made good at the sole cost and expense of the Contractor. An immediate notice in writing must be given by the Minister to the Contractor of the discovery of any such defects, weakness or undue wear, and the Contractor agrees to deliver the necessary part or parts and to fit, complete and make good the defective part or parts at the Contractor's yard at: **(To be completed by the Contracting Authority at Contract Award)**

Company Name _____

Contact Name _____

Telephone/E-Mail _____

but if the vessel is not brought to the Contractor's yard for repairs or replacement of a defective part or parts and such repairs or replacements are made elsewhere, the Contractor must pay Canada such sums as are equivalent to the cost of supplying the necessary part or parts and doing the Work at the yard of the Contractor. The Contractor will not be held responsible for fair wear and tear, or for breakage and defects arising through the negligence or carelessness of any person or persons employed on board the vessel during the warranty period, except the negligence or carelessness of the Contractor's representative if any. The Contractor will not be held responsible for or be under any obligation for consequential damages and delays to the vessel or her cargo.

E2 Warranty Procedures**1. Scope**

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

E2.2. Definition

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

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

E2.3. Warranty Conditions

a. Supplemental General Conditions 1028, Ship Construction - Firm Price contain the warranty conditions that apply to this contract.

E2.4. Reporting Failures With Warranty Potential

a. The initial purpose of a report of a failure is to facilitate the decision as to whether or not to involve warranty and to generate action to effect repairs. Therefore in addition to identification, location data, etc. the report must contain details of the defect. Warranty decisions as a general rule are to be made locally and the administrative process is to be in accordance with procedures as indicated.

b. These procedures are necessary as invoking a warranty does not simply mean that the warrantor will automatically proceed with repairs at his expense. A review of the defect may well result in a disclaimer of responsibility, therefore, it is imperative that during such a review the Department is directly represented by competent technical authority qualified to agree or disagree with the warrantor’s assertions.

E2.5. Procedures

a. Immediately it becomes known to the Ship's Staff that an equipment/system is performing below accepted standards or has become defective, the procedures for the investigation and reporting are as follows:

i. The vessel advises the Technical Authority when a defect, which is considered to be directly associated with the construction or outfit of the vessels, has occurred.

ii. On review of the Specification and the Acceptance Document, the Technical Authority in consort with Ship's Staff is to complete the Tombstone Data and section 1 of the Warranty Claim Form Appendix 1 to Annex E and forward the original to the Contractor for review with a copy to the PWGSC contracting Authority.

If the PWGSC Contracting or Inspection Authority is unable to support warranty action, the Defect Claim Form will be returned to the originator with a brief justification. (It is to be noted that in the latter instance PWGSC will inform the Contractor of its decision and no further action will be required of the Contractor.

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

iii. Assuming the Contractor accepts full responsibility for repair, the Contractor completes Section 2 and 3 of the Warranty Claim Form, returns it to the Inspection Authority who confirms corrective action has been completed, and who then distributes the form to the Technical Authority and the PWGSC Contracting Authority.

b. In the event that the Contractor disputes the claim as a warranty defect, or agrees to share, the contractor is to complete Part 2 of the Warranty Claim Form with the appropriate information and forward it to the Contracting Authority who will distribute copies as necessary.

c. When a warranty defect claim is disputed by the Contractor, the Technical Authority may arrange to correct the defect by in-house resources or by contracting the work out. All associated costs must be tracked and recorded as a possible charge against the contractor by PWGSC action. Material costs and manhours expended in correcting the defect are to be recorded and entered in Section 5 of the warranty defect claim by the Technical Authority who will forward the warranty defect claim to the PWGSC Contracting Authority for action. Defective parts of equipment are to be retained pending settlement of claim.

d. Defective equipment associated with potential warranty should not normally be dismantled until the contractor's representative has had the opportunity to observe the defect. The necessary work is to be undertaken through normal repair methods and costs must be segregated as a possible charge against a contractor by PWGSC action.

E2.6. Liability

a. Agreement between the Contracting Authority, Inspection Authority, Technical Authority and the Contractor will result in one of the following conditions:

i. The contractor accepts full responsibility for costs to repair or overhaul under the warranty provisions of the contract;

ii. The Technical Authority accepts full responsibility for repair and overhaul of item concerned; or

iii. The Contractor and the Technical Authority agree to share responsibility for the costs to repair or overhaul the unserviceable item, in such cases the PWGSC Contracting Authority will negotiate the best possible sharing arrangement.

b. In the event of a disagreement as in paragraph 5c, PWGSC will take necessary action with the contractor while the Technical Authority informs its Senior Management including pertinent data and recommendations.

c. The total cost of processing warranty claims must include accommodation and travel costs of the contractor's employees as well as equipment/system down time and operational constraints. Accordingly, the cost to remediate the defect, in manhours and material, will be discussed between the Contracting/Inspection Authorities and the Technical Authority to determine the best course of action.

E2.7. Alongside Period For Warranty Repairs and Checks

a. If at all possible, an out of service period for the vessel is to be arranged just before the expiration of the **365** day warranty period. This out of service period is to provide time for warranty repair and check by the contractor.

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

Solicitation No. - N° de l'invitation
F1705 140131
Client Ref. No. - N° de réf. du client
F1705 140131

Amd. No. - N° de la modif.
File No. - N° du dossier
XLV-4-37181

Buyer ID - Id de l'acheteur
xlv 175
CCC No./N° CCC - FMS No/ N° VME

APPENDIX 1 to ANNEX E

Public Works and Government
Services Canada



Travaux publics et Services
gouvernementaux Canada

Warranty Claim Réclamation De Garantie

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

1. Description of Complaint – Description de plainte

Contact Information – l'information de contact

Name – Nom

Tel. No. - N ° Tél

Signature – Signature

Date

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

Solicitation No. - N° de l'invitation

F1705 140131

Client Ref. No. - N° de réf. du client

F1705 140131

Amd. No. - N° de la modif.

File No. - N° du dossier

XLV-4-37181

Buyer ID - Id de l'acheteur

xlV 175

CCC No./N° CCC - FMS No/ N° VME

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

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

Date of Corrective Action - Date de modalité de reprise

Client Name and Signature - Nom et signature de client

Date

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

Signature – Signature

Date

5. Additional Information – Renseignements supplémentaires

Canada

PWGSC-TPSGC

ANNEX F - PROJECT MANAGEMENT SERVICES

Contractor's Project Management Services

1. Intent
 - a. Job titles used in this Annex are for clarity within this document only. The Contractor is free to choose job titles that suit their organization.
 - b. The Contractor, through their Project Management Team, is responsible to discharge the duties and supply the deliverables required in the Contract and the Specifications.
 - c. Project Management is considered to encompass the direction and control of such functions as engineering, planning, purchasing, manufacturing, assembly, overhauls, installations and test and trials.
2. Project Manager
 - a. The Contractor must supply an experienced Project Manager (PM) dedicated to this project and delegate to him/her full responsibility to manage the project.
3. Project Management Team
 - a. Other than the Project Manager, the Contractor may assign and vary other job descriptions to suit their organization; provided however that the collective resume of their Project Management Team must provide for effective control of the project elements including but not limited to:
 - i. Project Management
 - ii. Quality Assurance
 - iii. Material Management
 - iv. Planning and Scheduling
 - v. Subcontracts Management
4. Reports
 - a. The following Management Reports and Documentation are to be prepared and maintained by the Contractor and submitted to the Crown in accordance with the Contract or upon request by the Contracting Authority:
 - i. Production Work Schedule
 - ii. Inspection Summary Report
5. Bid Solicitation Deliverables
 - a. Names, brief resumes, and a list of duties for each of the team members that ensures that each of the project elements listed in article 3 above have been addressed.

ANNEX G - FINANCIAL BID PRESENTATION SHEET**G0 Proposed Work Location:** () Contractor's Facility**G1 Evaluation of Price**

The price of the bid will be evaluated in Canadian dollars, customs duties are included and applicable taxes are extra, *CIP (Incoterms 2000) to destination: Victoria B.C.*

a.	Known Work For work as stated in Part 1 article 1.2, specified in Annex A, for a FIRM PRICE of: \$ _____	
b.	Requested Options For all options listed in Table G-4, for a FIRM PRICE of: \$ _____	
c.	Delivery CIP (Incoterms 2000) to destination: CCG base Huron St. Victoria B.C. for a FIRM PRICE of: \$ _____	
d.	Unscheduled Work <i>Labour Cost:</i> Estimated labour hours at a firm <i>Charge-out Labour Rate</i> , including overhead and profit: 50 person hours X \$ _____ per hour for a PRICE of: \$ _____ See articles G2.1 and G2.2 below.	
e.	SUB-TOTAL GST/HST Excluded, [a + b + c + d], for a FIRM PRICE of: \$ _____	
f.	Adjustment Bidders certified by CWB to the CSA W47.2-M1987 (R2008) Fusion Welding of Aluminum (Minimum Division Level 2.1) Standard in Part 6, article 4 to deduct 5% of e. (Non-certified bidders to enter \$0.00)	(\$ _____)
g.	EVALUATION PRICE [e - f] For an EVALUATION PRICE of: \$ _____ (customs duties are included and applicable taxes are extra)	

G 2 Unscheduled Work

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

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

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

G 2.1 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 G-2.2 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.

G 2.2 Allowance for *Related Labour Costs* such as: Management, Direct Supervision, Purchasing and Material Handling, Quality Assurance and Reporting, First Aid, Gas Free Inspecting and Reporting, and Estimating must be included as *Overhead* for the purposes of determining the *Charge-out Labour Rate* entered in line G-1c and Article G-2 above.

G 2.3 The 10% mark-up rate for materials will also apply to subcontracted costs. The mark-up rate includes any allowance for material and subcontract management not allowed for in the Chargeout Labour Rate. A separate labour component for the purchase and handling of materials or subcontract administration is not allowable.

G 3 Boat delivery proposal

While delivery of the boat and all other deliverables required by the solicitation is

June 30, 2015, the best delivery that we can offer is _____ weeks after Receipt of Order (ARO).

G 4 Pricing of Requested Options

The total price for all of the following requested options must be included in the Evaluation Price, however, these options may or may not be included in the Contract.

Spec Item	Description	Cost differences (indicate + or -)
		\$ _____
		\$ _____
		\$ _____
20.1	Trailer	\$ _____
TOTAL	Total of all requested options (transfer to line b of Table G-1)	\$ _____

G 5 Proposed Modifications and offered prices:

The proposed modifications and prices offered in the table below will not be included in the Evaluation Price, however, if the evaluation team accepts any of the Items offered by the bidder, these changes will be included in the Contract.

Spec Item	Description	Cost differences (indicate + or -)
Note 1		\$ _____
Note 2		\$ _____
Note 3		\$ _____
Note 4		\$ _____
Note 5		\$ _____



Fisheries and Oceans
Canada

Pêches et Océans
Canada



CANADIAN COAST GUARD AW2W1 WORLD-CLASS AtoN PROJECT

ANNEX A

Statement of Work

Provision of Quantity one (1), 10.0 to 10.4m Aluminum Self-Propelled Barge

Revision 5, March 4, 2015

TRANSPORT CANADA MARINE SAFETY BRANCH (TCMSB)
TP1332 APPROVED CONSTRUCTION

Document Control



Record of Amendments

#	Date	Description	Initials
0	February 22, 2015	Original Issue	KT
1	March 4, 2015	Incorporation of final Q & A	BD

DRAFT

TABLE OF CONTENTS

1.0.....	OVERVIEW	3
1.1 GENERAL		3
1.2 REQUIREMENT		3
2.0.....	DESIGN AND CONSTRUCTION REQUIREMENTS	3
2.1 GENERAL		3
2.2 ERGONOMIC DESIGN		3
2.3 VIBRATION		4
2.4 EQUIPMENT PROTECTION		4
2.5 SITE CLEANLINESS		4
2.6 QUALITY CONTROL		4
2.7 STRUCTURAL STRENGTH		5
2.8 LAUNCHING		5
2.9 HULL		5
2.10 DECK		5
2.11 STANDARDS, CLASSIFICATION AND REGULATIONS		6
2.12 ALUMINUM WELDING CERTIFICATION		6
2.13 MATERIALS		7
2.14 FASTENERS		7
2.15 FACILITIES		7
3.0.....	OPERATIONAL REQUIREMENTS	8
3.1 GENERAL		8
3.2 STEERING		8
3.3 ENVIRONMENTAL CONDITIONS		8
4.0.....	PHYSICAL CHARACTERISTICS	8
4.1 BARGE PARTICULARS		8
AS PER DRAWINGS IDENTIFIED IN APPENDIX A		8
5.0.....	BARGE CONFIGURATION	8
5.1 STRUCTURE		8
5.2 GENERAL		9
5.3 WELDING		9
5.4 IDENTIFICATION LABELS		9
6.0.....	BARGE OUTFIT	9
6.1 GUNWALES		9
6.2 BOW RAMP		9
6.3 TOWING POST		10
6.4 LIFTING LUGS		10
6.5 FENDERS		10
7.0	FUEL TANK	10
8.0.....	DECKHOUSE	10
9.0	NAVIGATION EQUIPMENT	11
10.....	MACHINERY	11
10.1 ENGINES		11
10.2 DECK HYDRAULICS		112
10.3 PROPULSION CONTROLS		12
10.4 ELECTRICAL		13
10.5 LIFE SAVING AND SAFETY EQUIPMENT		16
10.6 ENGINE ROOM FIRE SUPPRESSION		16
10.7 FIRE EXTINGUISHERS		16
11.0	TESTS & TRIALS	16
11.1 TESTS - GENERAL		17
11.2 SEA TRIALS - GENERAL		17
12.0.....	DOCUMENTATION	18
12.1 GENERAL		18
12.2 NATIONAL ASSET CODE		18

12.3 BUILDER'S PLATE	18
12.4 TECHNICAL PUBLICATIONS	19
12.5 ADDITIONAL DELIVERABLE DOCUMENTATION	20
13.0 SHIPPING AND DELIVERY	21
13.1 GENERAL	21
APPENDIX A	22
APPENDIX B	25

1.0 OVERVIEW

1.1 GENERAL

1.1.1 The Department of Fisheries and Oceans (DFO) buys, manages and operates numerous small craft in support of its Departmental programs and other missions.

1.2 REQUIREMENT

1.2.1 The Contractor must fabricate and supply quantity one (1) Aluminum Self-Propelled Barge based the requirements of this TSOR. Construction will be completed based on the current Transport Canada Marine Safety (TCMSB) Marine Safety Publication TP 1332 “Construction Standards for Small Vessels” 2010 or latest edition (hereinafter referred to as TCMSB TP 1332) [specifically the section listing the SVR clause 713.2.a, “the vessel is constructed in accordance with the recommended practices and standards for the type of vessel. This is a reference for using a classification society like ABS rules for aluminum construction for developing or verifying, the scantlings of the vessel. This will also make weight calculations more straightforward so that preliminary stability can be checked with the vessel and loads modeled to verify floating trim, freeboards to working deck, and facilitate production of the Trim and Stability book referenced in specification section 12.4.7.1](#)

1.2.2 The primary role of this barge will be Canadian Coast Guard NavAids tending operations in the Western Region.

1.2.3 This barge will be shore-based, launched and recovered by crane, but will also be trailerable.

2.0 DESIGN AND CONSTRUCTION REQUIREMENTS

2.1 GENERAL

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

2.1.2 CHOICE OF EQUIPMENT

2.1.2.1 Reference to trade names and catalogue numbers are indicative of the quality and performance of the article. Substitutions may be made with Technical Authority’s written approval provided they are equivalent and do not impact hull construction or other installed equipment or systems.

2.2 ERGONOMIC DESIGN

2.2.1 Hazardous operating conditions must be prevented by arranging machinery and equipment in a safe manner; providing guards for all electrical, mechanical and thermal hazards to personnel; and providing guards or covers for any controls that might accidentally be activated by contact of personnel.

2.2.2 The barge must be designed and constructed to accommodate both male and female crew from approx. 5’ to 6’ 4” (1.52m to 1.93m) in height, wearing cold weather clothing and equipment in accordance with ASTM F1166-07 Standard Practice for Human Engineering Design for Marine Systems, Equipment, and Facilities.

- 2.2.3** Human engineering factors considered in design must include accessibility, visibility, readability, crew efficiency and comfort. All equipment must be accessible for use, inspection, cleaning and maintenance.
- 2.2.4** Equipment must be accessible for use, inspection, cleaning and maintenance as per ASTM F1166-07.

2.3 VIBRATION

- 2.3.1** The barge and all components must be free of local vibration that could endanger barge personnel, damage barge structure, machinery or systems, or interfere with the operation or maintenance of barge machinery or systems.
- 2.3.2** Mounts for movable components, including items moved for stowage, towing or transport must be provided with resilient material as necessary to prevent rattling.
- 2.3.3** Loosening of fasteners under vibration must be prevented by the use of self-locking fasteners.

2.4 EQUIPMENT PROTECTION

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

2.5 SITE CLEANLINESS

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

2.6 QUALITY CONTROL DURING CONSTRUCTION

The contractor is required to demonstrate that the company has in place a system that incorporates a formal mechanism to deal with Quality Control practices and procedures. The contractor is required to provide the following information with the bid.

- 2.6.1** Control of Suppliers: The contractor shall provide a description of the system that will be used to coordinate the sourcing, ordering, delivery and receipt of the various components required for the fabrication of the complete barge. This would include a list of the various components and items and show suppliers and delivery times for each component.
- 2.6.2** Production Schedule: The contractor shall supply a production schedule for the construction, testing and delivery of the barge.
- 2.6.3** Inspection: The contractor shall outline the inspection and testing plan that the contractor will use to verify, test and inspect all the various components, systems and the complete barge.
- 2.6.4** Problem Solving: The contractor shall outline the process that will be used to address problems or delays with the fabrication, component installation, testing and delivery of the barge.

2.6.5 Project Management: The contractor shall outline the general plan for construction of the barge including; how and where the major components will be assembled; how moving of the barge will be performed; where and how sea trials will be performed; how many employees will be used during the various stages; how the aluminium components will be shaped and cut; and where the finished components will be stored.

2.6.6 Workforce: The Contractor shall provide a list of the following individuals and a short listing of the individual's qualifications and experience.

2.6.6.1 Welding Supervisor

2.6.6.2 Logistical Supervisor

2.6.6.3 Mechanical Supervisor

2.6.6.4 Electrical Supervisor

2.6.6.5 Drawing Supervisor

2.6.6.6 Inspection and Testing Supervisor

2.6.6.7 Overall Project Manager

2.6.7 Subcontractors: The Contractor shall supply a list of any subcontractors that will be used and a description of the scope of work required from each contractor.

2.7 STRUCTURAL STRENGTH

2.7.1 All structures and components (hull, deck, seating, etc.) must be of sufficient strength to withstand when in the Fully Loaded Condition, the lateral and vertical impact-loading that equates to the conditions of the operational requirements. Must meet all Transport Canada TP 1332 standards, including TP 1332 section 3.2 "Structural Strength" which references the SVR section 713.2.a, as noted in Specification section 1.2.1 above.

2.8 LAUNCHING

2.8.1 The barge must be capable of being launched, recovered shore based crane or by ship based davit as identified herein, or by truck and trailer.

2.9 HULL

2.9.1 Hull Form, Single Chine. Modified V-hull to mitigate slamming in the sea states referenced and at the speeds required.

2.9.2 Construction, Transverse web frames, and longitudinal stringers and girders

2.9.3 Material, Welded aluminum hull, decks, ramp and deckhouse.

2.10 DECK

2.10.1 Aluminum checker plate deck, minimum 1/4" (6mm) material.

2.10.2 All deck hatches to be fitted with flush mounted, watertight, quick hinged access hatches. Bolt down access hatches are not acceptable.

2.10.3 Self-bailing deck with "non-return" auto scuppers.

2.10.4 1/2" (13mm) loop tie downs every 2 ft (600mm) on both sides, recessed into deck.

2.10.5 8 inch (202mm) cast aluminum "tie-up" cleats, 4 per side, mounted on gunwhale. 2 mounted at transom, 2 at bow, 2 one foot (300mm) forward of cabin, and 2 halfway between cabin and bow.

2.10.6 Hydraulic pump for front gate shall be engine mounted direct drive, remotely operated with Power Take Off switch located in wheelhouse.

- 2.10.7 20 feet (6.1m) working deck length at the **deck**. From front of cabin to base of ramp, when ramp is closed.
- 2.10.8 8 feet (2.4m) working deck width inside gunwales at the **deck** at vessels widest point
- 2.10.9 24"x14"x ½" (600x350x13mm) backing plate, welded to underside of deck, mid-ships, 2 feet (600mm) forward of cabin. 24"x14"x ½" (600x350x13mm) topping plate, welded on topside of deck, directly over backing plate. Below deck "stringers" to be installed within 6 inches (150mm) of all 4 sides of backing plate extra strength to allow for future installation of winch or other machinery
- 2.10.10 Boarding ladder on stern. Permanent with foldable bottom section to clear waterline
- 2.10.11 Cabin to be 8 feet wide by 8 feet (2.4m) long situated on vessel to allow for a 2 foot (600mm) wide access deck behind the cabin. This deck shall be flush at 30 inch(750mm) gunwale height with additional 36 inch (900mm) high handrails

2.11 STANDARDS, CLASSIFICATION AND REGULATIONS

- 2.11.1 Barges constructed under this SOW must be fabricated in accordance with the current TCMSB TP 1332 "Construction Standards for Small Vessels"
- 2.11.2 Transport Canada's Ship Electrical Standards – 2008 (TP 127E). An electronic version is available at: <http://www.tc.gc.ca/marinesafety/tp/tp127/menu.htm>
- 2.11.3 The Contractor must construct this barge as per this SOW and where this SOW interferes or contravenes the above standard; the above TCMSB TP 1332 standard will take precedence
- 2.11.4 The Contractor must arrange for Technical/Contracting Authority site visits, during all phases of the barge's construction. The site visits are required to insure that all barges constructed under this TSOR comply with each standard addressed in this TSOR. The Contractor must supply an electronic copy and two (2) hard copies of all as-fitted drawings for the barge design to the Technical Authority.
- 2.11.5 The Contractor must supply a signed letter insuring the barge complies with TCMSB TP 1332 and **applicable fields** completed **in the** Small vessel Compliance Form (available from the TCMSB web site), to ensure compliance with the current TCMSB requirements.
- 2.11.6 To facilitate proper inspection of material and workmanship, the Technical Authority / Inspection Authority must be permitted access, to the Contractor's facility at any time during construction.
- 2.11.7 The construction, outfit, machinery, equipment, fittings, systems, testing and trials must be to the satisfaction and approval of the Inspection Authority.

2.12 ALUMINUM WELDING CERTIFICATION AND DOCUMENTATION

- 2.12.1 This construction contract requires that the primary Contractor be currently certified by the Canadian Welding Bureau (CWB) to standard CSA W47.2M, Division I, II or III - Certification of Companies for Fusion Welding of Aluminum.
- 2.12.2 The Contractor must provide a current letter of validation from the CWB indicating compliance with standard CSA W47.2M 1987, Division I, II or III.

2.12.3 The Contractor will be required to provide approved procedure data sheets for each type of joint and welding position that will be involved in this construction to the Inspection Authority.

2.12.4 The Contractor will be required to supply a current Welders Certification for each individual welder that will be involved in this construction.

2.13 MATERIALS

2.13.1 All materials must be corrosion resistant and suitable for use in a salt water environment as detailed in the Operational Requirements. All materials normally subjected to sunlight must resist degradation caused by ultraviolet radiation. Galvanized materials are unacceptable.

2.13.2 Dissimilar Metals: Direct contact of electrolytically dissimilar metals is not allowed. Electrolytic corrosion must be prevented by insulating dissimilar materials from each other with gaskets, washers, sleeves, or bushings of suitable insulating material.

2.13.3 Aluminium: Aluminium alloy types 5086 / 5083-H32 must be used for plate; aluminium alloy 6061-T6 (anodized grade), suitable for type 5356 filler alloy, must be used for extruded shapes and welded tubing and pipe. Non-structural items of trim and outfit such as hatch frames, castings, consoles, and hardware items may be of other aluminium alloys suitable for commercial saltwater marine use such as dual rated 5083 / 86 or 5052 or 6063-T54.

2.13.4 Stainless Steel: Stainless steel type 316L or 316 must be used for all stainless steel applications except as noted. Alloy 316L must be used in any welded underwater components.

2.13.5 Unless specified otherwise, fittings and clamps must be stainless steel. Bolts used in all fittings must be Type 316 stainless steel.

2.13.6 Where flexible connections are required for steering and fuel systems, suitable hose with permanently crimped, detachable reusable type fittings must be used.

2.13.7 All materials and equipment must be stored installed and tested in accordance with the manufacturer's guidelines, recommendations and requirements.

2.14 FASTENERS

2.14.1 All fasteners must be of corrosion resistant materials.

2.14.2 Cadmium plated parts and fasteners, including washers, must not be used.

2.14.3 Direct attachment of alloys containing copper to aluminium is not permitted except for an electrical bonding strap.

2.14.4 Aluminium or Stainless steel washers or backing plates must be used as appropriate.

2.14.5 Where nuts will become inaccessible after assembly of the barge, nuts must be captured or anchored to allow reassembly and prevent backing off. Unless otherwise specified, self-locking nuts must be installed to prevent loosening of fasteners due to shock and vibration.

2.14.6 Fasteners in deck traffic areas must be flush-mounted to eliminate tripping and snagging hazards.

2.15 FACILITIES

2.15.1 The Contractor must have a shop capable of maintaining temperature and humidity as per CWB Standards

3 OPERATIONAL REQUIREMENTS

3.1 GENERAL: Requirements have been identified in section 8.0, Test and trials.

3.2 STEERING

3.2.1 Capable of steering 15° from heading, in Sea State 5, with seas from any direction.

3.2.2 Steer and manoeuvre effectively at 3 knots in Sea State 5.

3.2.3 Maintain course, made good over ground, when proceeding at 3 knots with relative crosswind of 35 knots.

3.2.4 Capable of turning in its own length in Sea State 5 at bare steerage

3.3 ENVIRONMENTAL CONDITIONS

3.3.1 Capable of operating day or night in the following conditions:

3.3.1.1 Average ambient air temperature range: -15° C to +30° C

3.3.1.2 Average water temperature: 0° C to +20° C.

3.3.1.3 Wave heights of 8'-2" (2.5 m) to 13'-0" (4 m) (WMO Sea-State 5).

3.3.1.4 Wind speeds of 30 knots minimum.

3.4 Carrying Capacity

The deck is to be capable of carrying a minimum of 4000 lbs (17.8kN) uniformly distributed.

4 PHYSICAL CHARACTERISTICS

4.1 BARGE PARTICULARS

Photos (Appendix A) of existing 28 foot barge and simple sketch as guidance and concept.

[This is a](#) larger version, approx. 33-34 feet long x 9 feet wide, required as identified in this SOW.

5 BARGE CONFIGURATION

5.1 STRUCTURE

5.1.1 The Contractor shall supply certificates / mil test reports for the aluminum used in the construction of the barge.

5.1.2 All aluminum plate shall be new 5086 H116 or 5083 H116 plate, Extrusions and shapes and checkered plates shall be new 6061 Aluminum.

5.1.3 The main deck shall have a non-skid surface - aluminum checkered deck plating. The plate thickness, excluding raised material, shall be as per structural requirements.

5.1.4 All bare aluminum surfaces on the exterior of the vessel shall have an AA-M32, medium satin finish, in accordance with Aluminum Association Inc., Publication #45, Table 1.

5.1.5 The Contractor shall ensure that the towing post, and mooring lugs are excluded from this surface finish and left with a smooth mill finish.

5.1.6 The Contractor shall ensure that all aluminum surfaces which are to be left bare are kept as clean as practical during construction and welding.

5.1.7 Grinding, blasting, and any other process that might cosmetically alter the aluminum's natural finish shall be kept to a minimum.

5.1.8 Aluminum surfaces which might be used for hand holds, footings, handrails, and deck areas not covered with checker plate shall have an AA-M44, coarse matte finish, in accordance with Aluminum Association Inc., Publication #45, Table 1.

5.2 GENERAL

- 5.2.1** All lugs or brackets welded to the hull for construction purposes shall be cut-off proud of the plate surface and the stub shall be ground flush when the work is complete. Every effort shall be made to avoid surface damage to the plating. If such damage should occur, the area in question shall be replaced with new material.
- 5.2.2** Fairness of hull, deck and cabin plating shall be maintained. Bulkheads, deck plates, bottom plates and side plating shall be fair and flat without buckling (tolerance \pm three millimeters).

5.3 WELDING

- 5.3.1** All hull, deck and bulkhead welding shall be continuous welding. All longitudinal structure, web frames, girders and additional engine skid support structure shall be double continuous fillet welding. Transverse stiffening shall be welded with four inch eight staggered intermittent welds. All other welding shall be continuous.
- 5.3.2** The Contractor shall arrange a welding inspection from an organization currently certified to the latest CSA Standard W178.1. The Contractor shall be required to obtain up to 10 radiographs per barge. The location of radiographs shall be determined by the Inspection Authority. Radiography shall meet the requirements of the ASTM Standard E142, with acceptance criteria as per the CSA S157 Welding Standard.
- 5.3.3** The cost of radiographs (x-rays) and all other cost associated with the inspection organization shall be included in the Contractor's bid.

5.4 IDENTIFICATION LABELS

- 5.4.1** All compartment vents, fuel and hydraulic fill and vents, lubrication and grease points, Compartment access hatches, electrical switches, Engine and thruster controls and bilge piping discharges shall be clearly identified with a permanently attached label or sign located adjacent to the item. The label shall be engraved or stamped and fabricated of non-corroding material. Riveted, glued or even adhesive labels are acceptable.

6 BARGE OUTFIT

- 6.1 Gunwales** to be 30 inches (750mm) above work deck, plus 6 inch (150mm) removable handrail for a total height of 36 inches (900mm).

6.2 BOW RAMP

- 6.2.1** The ramp shall be six feet wide, designed and fabricated to safely carry a 1000-pound (4.4kN) load, must be Certified and tested to 150% of this load by the contractor when the ramp is horizontal and supported by the outboard end. In addition the ramp must be capable of withstanding all sea loads when located in the stowed position.
- 6.2.2** Hinges shall be fitted in a recess at the bow to (so that provide) ensure that the ramp top is inline (parallel) with the main deck when in the horizontal position. Ramp lugs and hinge plates shall have stainless steel grommets in way of the stainless steel hinge pins. Lugs and hinges shall be robust and connected by full penetration welding. A grease fitting shall be fitted at each lug.
- 6.2.3** Raising and lowering of the aluminum bow ramp shall be completed via hydraulic pump and ram system, with manual back-up.

- 6.2.4 The bow ramp shall be fitted with a watertight gasket, which seals the door against the hull when the door is fully closed. Locking pins shall be supplied and installed port and starboard to positively lock the ramp in its closed position.
- 6.2.5 24 inch (600mm) fold-over extension **is required**. (see attached photo)

6.3 TOWING POST

- 6.3.1 The Contractor shall supply and install a towing post of heavy duty 6 inch (150mm) Schedule 80 aluminum pipe mounted on the stern, midships.
- 6.3.2 A 1½-inch (38mm) solid round crossbar shall be fitted at mid height of the tow post. Towing post and substructure shall be designed for 6000 lbs(26.7kN) towing capacity, must be Certified and tested to 150% of this load by the contractor. SWL to be stamped on the top of the post.

6.4 LIFTING LUGS

- 6.4.1 Lifting lugs shall be incorporated in the hull structure so as to safely support the maximum barge with full fuel, no cargo, no personnel
 - 6.4.1.1 Certified for ship board and shoreside lifting by qualified lifting authority with certificates.
- 6.4.2 The lifting lugs shall be fitted with stainless Steel grommets.
- 6.4.3 The Contractor shall supply certified “4 point” lifting slings (nylon soft slings), spreader-bar and shackles for barge. The Contractor shall provide test certificates for each sling, the spreader bar and the shackles.

6.5 FENDERS

Two high density rubber compound rub-rails (3 ¼” x 3” (82x75mm) D rubber) mounted inside pre-mounted aluminum channeling. One shall be mounted along the gunwhale, the lower secured along the deck. These shall run the length of the vessel on both sides as well as across the front ramp. **Fender material must not contain waste rubber with metal fillings.**

7 FUEL TANK

- 7.2 Fuel capacity allowing for 250 nautical mile range at a cruising speed of 25-30 knots.
- 7.3 Multiple fuel tanks with filtration system
- 7.4 Cross feed system
- 7.5 Fuel tanks shall be constructed as per TP 1332 section 7.3 with sufficient strapping to prevent any movement. Tanks should be installed as far forward as possible
- 7.6 Fuel hoses to be routed through conduit pipe
- 7.7 Bolted access hatches allowing access to inspect/repair sending units

8 DECKHOUSE

- 8.1 Shock wave bucket seat for driver
 - 8.1.1 Cushioned bench seating (with storage underneath) for 7.
 - 8.1.2 **Power steering, and dual lever dual binnacle controls.**
 - 8.1.3 Fly by wire control system is preferred and in use by several CCG vessels in our fleet.
 - 8.1.4 Trim tab controls

- 8.1.5 Bus heater (from engine cooling system) with defrost system (provide heat for cabin)
- 8.1.6 Diesel Wabato 5000 BTU heater, plumbed for defrost on front and side windows
- 8.1.7 Cabin, and engine box /hatch sound dampening to industry standards to reduce engine noise in cabin (COHS Part VII – Levels of Sound)
- 8.1.8 8ft long See attached drawing
- 8.1.9 Full width of the vessel, between side decks (8 feet (2.4m) at the deck) no walk around on working deck.
- 8.1.10 6 feet 8 inches (2.0m) height inside cabin to allow extra clearance for crew wearing hard hats and PPE.
- 8.1.11 Windows all around forward of tow post, helm is offset so center mullion ok
- 8.1.11 Windows shall be to TP 1332 section 3.3.2 and 3.3.3
Two aft windows to slide open
- 8.1.12 Full size, centre mounted sliding door. Door shall be fitted with a keyed latch.
- 8.1.12 Door shall also be fitted with a fixed window.
- 8.1.11 Two windshield wipers – self parking. With fresh water washer
- 8.1.14 Interior lighting – 2 LED fixtures (each equal wattage to 60 watt incandescent bulbs)
- 8.1.15 Carbon monoxide detector (battery powered independent of vessels' electrical system)
- 8.1.16 Roof access ladder on stern (welded)
- 8.1.17 Grab rails on roof, on sides and rear of cabin roof
- 8.1.18 Navigation lights, displaying the arc and range as defined in the Canada Shipping Act Collision regulations
- 8.1.19 Cables shall be grouped into wiring harnesses. Harnesses shall be routed below deck.
Below deck cabling shall be through conduit pipe.
- 8.1.20 Power steering

9 NAVIGATION EQUIPMENT

The Contractor shall supply and install following navigation equipment:

- 9.1 SIMRAD Navigation package (see attached document – Annex A)
 - 9.1.1 VHF Radios (2): ICOM M604
 - 9.1.2 Loud hailer: Standard Horizon VLH-3000 or equivalent
 - 9.1.3 Compass: Ritchie Explorer complete with separate dimmer control and non-white light illumination

10 MACHINERY INSTALLATION

10.1 ENGINES

- 10.1.1 The contractor shall supply and install Twin – 8 or 6 cylinder diesel engines and reverse/reduction gears (Tier 3 compliant) Yanmar or equivalent
- 10.1.2 minimum 370 MHP each
- 10.1.3 Compatible with “out-drives”
- 10.1.4 Bravo 2 inboard/outboard legs, or suitable alternative, capable of handling loads.
- 10.1.5 Single prop legs, one counter rotating. (no dual props!!)
- 10.1.6 Supporting approx. 20 inch propellers

10.1.7 Legs must be “trimmable”

10.1.8 Engine selection must be serviceable in Prince Rupert. British Columbia

10.1.9 Must be capable of 0 – 35/40 knots, with a cruising speed of approx. 30 knots

10.1.10 Must be capable of minimum **high sub-planing speed** on 1 engine (light load)

10.1.11 4 Kw Diesel Generator (tier 3 or highest available tier) in engine room (operates from main fuel tanks) exhausted away from cabin windows

10.1.12 Full instrumentation for generator **must be** in wheelhouse

10.1.13 Must have “hot-start” plug in for winter starting

10.1.14 Must have 4 batteries (1 for **each** engine, 1 for generator, 1 house battery)

10.1.15 (110 volt power capability)

10.1.16 Wet exhaust

10.1.17 Approved TCMS fire suppression system

10.1.18 Sealed hatches allowing for complete access to engines under cabin deck

10.1.19 Closed cooling system

10.1.20 Engine mounting pads for elastic suspension consisting of anti vibration pads with adjustable anchorage plates for dampening of sound and vibration

10.1.21 Oil cooler for main engines

10.1.22 120 V AC thermostatically controlled Jacket water heater, which is permanently wired into a breaker on the 120 VAC Distribution Panel.

10.1.23 Engine panel for console mounting which includes start/stop switch; engine oil temperature and pressure; Jacket water temperature and Pressure; Engine tachometer and hour meter; instrument lights.

10.1.24 14V / 100A marine alternator.

10.1.25 Charging regulator with battery meter

10.1.26 12 Volt Electric Starting motor.

10.1.27 Manual pump for changing oil. Engines and generator

10.1.28 The Contractor shall include in the bid price the cost of a visit from an authorized engine representative who is to view the installation and provide a written certificate that the engine is installed in accordance with the manufacturer’s instructions and is operating correctly.

10.2 DECK HYDRAULICS

10.2.1.1 The engine-driven pump and clutch shall be rated for the full load engine rpm of the engine. Control switch in deckhouse.

10.2.1.2 Hydraulic filters shall be contractor supplied and installed as per manufacturer’s requirements.

10.2.1.3 All fittings and connections shall be stainless steel with hydraulic pipe wrap

10.2.1.4 A hydraulic system pressure gauge shall be installed in the pilothouse.

10.3 PROPULSION CONTROLS

10.3.1 Fly by wire system

10.4 ELECTRICAL:

10.4.1 GENERAL

- 10.4.1.1 The Barge shall be fitted with a 12 volt DC electrical system to suit onboard operations and a 120 V AC shore power supply to suit shipboard requirement when secured alongside, or when stored onboard a larger vessel in its davits.
- 10.4.1.2 Cables that exit or enter exterior surfaces shall be fitted with an approved marine watertight gland. All cables shall be secured with cable straps or run in cableways. All cables shall be protected from chaffing on any plate edges.

10.4.2 ALTERNATOR

- 10.4.2.1 The DC alternator shall be supplied with the main engine package suitable for an output to 14V and a rating of 100 amps. The alternator shall be suitable for charging onboard batteries (starting and service) and running all electrical components.
- 10.4.2.2 Electromagnetic suppression shall be incorporated to prevent interference with shipboard electronics.
- 10.4.2.3 Alternator shall be easily removable to facilitate maintenance purposes.

10.4.3 BATTERIES

- 10.4.3.1 The barge shall be fitted with four batteries. One starting battery for each engine, one starting battery for the generator and one "house" battery. All batteries to be fitted with battery isolation selector switch.
- 10.4.3.2 The batteries shall be marine grade, deep cycle with a minimum CCA as recommended by engine manufacturer.
- 10.4.3.3 An ammeter shall be installed in the deckhouse.
- 10.4.3.4 Battery condition gauge(s) shall be fitted in the deckhouse.

10.4.4 AC SHORE POWER

- 10.4.4.1 The shore power cable shall not be permanently connected to the AC shore supply panel. The system shall comprise of a Marine Grade 30A watertight male connector receptacle (Marinco Easy Lock 301EL-8 or equivalent) mounted in a location easily accessible with all doors and covers in a closed position. Doors and/or covers shall be of watertight construction.

10.4.5 AC DISTRIBUTION PANEL

- 10.4.5.1 The Contractor shall supply and install one 120-volt AC distribution panel to provide the following 120 VAC services: Each circuit shall be provided with a breaker to suit the required current rating and the panel shall be fitted with a main breaker. All receptacles shall be GFI rated for use in wet exterior environment.

Circuits:

1. Engine room receptacle
2. Jacket water heater
3. Battery charger
4. Engine room heater
5. Pilot House Heater
6. Receptacles in wheelhouse (4)

7. Exterior receptacles 2 fore and 2 aft.

10.4.5.2 The Contractor shall supply and install all the wiring and fittings for each circuit. Electrical components shall be robust and have recognized marine standard and supply. Deck, bulkhead and deck head penetrations and cable transits shall be via watertight glands.

10.4.6 BATTERY CHARGER

10.4.6.1 The contractor shall supply and install a 120 v AC Marine Grade Electronic Controlled Battery Charger such as the Guest 2630 Charge Pro or Equivalent. The Charger shall have fully automatic operation (float / trickle), has the ability to charge multiple batteries, automatic reset overload protection and shall have an indicator of charging function.

10.4.7 DC DISTRIBUTION PANEL

10.4.7.1 The Contractor shall supply and install one 12 VDC distribution panel to provide the following 12 VDC services: Each circuit shall be provided with a breaker to suit the required current rating plus the panel shall have a main breaker.

Circuits:

1. Two window wipers and windshield wash systems (fwd and aft windows), Two fan/heater units.
2. Two outside deck lights.
3. Electric bilge pump No. 1 and Electric bilge pump No. 2
4. Navigation lights - One interior deckhouse light, one compass light, Port Navigation Light, Starboard Navigation Light, Masthead Light, Stern Light, one searchlight.
5. Navigational equipment: Two VHF radios, one depth sounder, one differential GPS/chart plotter, one horn
6. Marine radar ([See Sec 9 for electronics](#))
7. Two lights in engine room
8. One 12 VDC Auxiliary socket - mounted in deckhouse.
9. Power Take Off
10. One spare circuit.
11. One spare circuit.

10.4.7.2 The Contractor shall supply and install all the wiring and fittings for each circuit. Electrical components shall be robust and have recognized marine standard and supply. Deck, bulkhead and deck head penetrations and cable transits shall be via watertight glands.

10.4.8 SEARCH LIGHT

10.4.8.1 The Contractor shall supply and install a 12v DC searchlight on the deckhouse top. The searchlight shall be a minimum 100,000 candlepower, 12V 50W (Rayline 135 RL Remote Control Search Light or equivalent.) and shall be electronically controlled with a remote control panel located inside the deckhouse.

10.4.9 WINDSHIELD WIPERS

- 10.4.9.1 The Contractor shall supply and install two 12V DC marine windshield wiper on the deckhouse front windows. Each shall be complete with heavy-duty stainless steel motor arm, and wiper blade.
- 10.4.9.2 Each windshield wiper shall be fitted with a wash system complete with storage bottle and 12V electric pump.

10.4.10 FAN/HEATER

- 10.4.10.1 The Contractor shall supply and install two 12V DC marine fan / heater units in the deckhouse for de-misting and de-frosting of windows. Units shall have built-in heater coil and be capable of turning in all directions. Units shall be mounted overhead and positioned to blow air onto each window.

10.4.11 HORN

- 10.4.11.1 The contractor shall supply and install one single tone 12V DC to meet TP 1332 marine horn on the deckhouse top, operated by a button/switch mounted on the deckhouse console

10.4.12 BILGE PUMPS

- 10.4.12.1 The Contractor shall supply and install all components for the bilge pumping system including:
 - 10.4.12.1.1 One electric Rule 3000 bilge pump (or equivalent) installed in all void spaces or water-tight compartments
 - 10.4.12.1.2 One emergency hand operated bilge pump for each watertight compartment. Shall be mounted at the bulwark rail. The pump shall be supplied complete with handle and means to secure in place.
 - 10.4.12.1.3 Each electric pump shall be controlled by a float switch and shall be operated from a Rule 3 Way bilge pump panel (or equivalent) located in the deckhouse which allows for manual and automatic operation and shall be fitted with a spring return "off" from the manual position and the panel shall have indicator light and fuse holder.
 - 10.4.12.1.4 Each overboard discharge shall be fitted with a non-return or check valve to prevent back flooding through the discharge line.
 - 10.4.12.1.5 The bilge pumping arrangement shall allow for the bilge pumps to discharge to a fitting so that the bilge contents can be pumped either directly overboard or to a shore or ship based external recovery tank via a separate connected hose.

10.4.12.2 DECK LIGHTS

- 10.4.12.2.1 The Contractor shall supply and install two forward facing 12V, LED deck spotlights (minimum 3500 lumens) (complete with adjustable mounts fitted at the exterior of the deckhouse (must be marine grade waterproof)
- 10.4.12.2.2 The Contractor shall supply and install two forward facing 12V, LED deck headlights (minimum 3500 lumens) complete with adjustable mounts fitted at the bow of the vessel so as not to interfere with the use of the bow ramp (must be marine grade waterproof)

10.4.12.3 NAVIGATION LIGHTS

- 10.4.12.3.1 The Contractor shall supply and install navigation lights and the installation shall comply with the Collision Regulations.
- 10.4.12.3.2 Lights shall be installed on cabin roof. Masthead light and stern light can be combined into a single light mounted on a pole complete with ratchet mount.

10.4.12.4 SYSTEM GROUNDING

- 10.4.12.4.1 The entire DC system including main and auxiliary engine components shall not be grounded to the vessel hull. The 12V DC distribution system shall be a complete two-wire system with the negative wires returning to a common "negative bus" which is completely isolated from the vessel hull.
- 10.4.12.4.2 The barge shall be fitted with a battery isolator such as the Guest model 1-130-2 or equivalent and shall be fitted with a galvanic isolator such as the Guest model 2433

10.5 LIFE SAVING AND SAFETY EQUIPMENT

10.5.1 LIFE RAFT

- 10.5.1.1 The Contractor shall supply and install an eight-person life raft complete with cradle, lashings and hydrostatic release. Mounted on cabin roof. The life raft shall have an inspection date that will not expire before six months after delivery of the barges.

10.5.2 LIFE RINGS

- 10.5.2.1 The Contractor shall supply and install one life ring with 50 foot (15m) line. This life ring shall be installed on the forward outside of the cabin complete with support cradle. Life rings shall be Transport Canada, Marine Safety approved in size and type for this class of vessel.

10.6 ENGINE ROOM FIRE SUPPRESSION

- 10.6.1 The Contractor shall supply and install a fixed fire suppression system for engine room fire protection. The system shall be automatically triggered if an abnormal rise of heat occurs.
- 10.6.2 The system shall be capable of being discharged manually from the deckhouse and shall have an indication in the deckhouse of the operational status of the system.

10.7 FIRE EXTINGUISHERS

- 10.7.1 The Contractor shall supply three 10-pound (4.5kg) dry chemical fire extinguishers - two for the engine room and one for the cab. The fire extinguishers shall be serviceable and of an approved size and type for this class of vessel.

11 TESTS & TRIALS

The Contract Authority and Technical Authority must be notified no less than 2 weeks prior to sea trials. The Technical Authority will witness and attend the sea trials. Sea trial results must be forwarded to the Technical Authority prior to delivery of the barge. For the purpose of the trials, Normal Loaded Condition must be considered to be the basic barge, fitted with all normal equipment, full fuel, with complement and loads per Barge Particulars.

11.1 TESTS - GENERAL

11.1.1 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 barge:

- 11.1.1.1 Weight
- 11.1.1.2 Construction Quality
- 11.1.1.3 Lifting Gear, if applicable
- 11.1.1.4 Propulsion Engines, including starting and ancillary systems
- 11.1.1.5 Propulsion Controls
- 11.1.1.6 Steering System
- 11.1.1.7 Fuel System
- 11.1.1.8 Electrical System
- 11.1.1.9 Electronics

11.2 SEA TRIALS - GENERAL

11.2.1 Sea trials must be conducted by the Contractor to demonstrate the barge machinery and its 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 barge during sea trials. Upon completion of sea trials fuel tanks must be pressed full prior to delivery of the barge.

11.2.2 All Sea Trial instrumentation and equipment must be furnished and operated by the Contractor. Trial instrumentation, where applicable, must not replace the barge's instruments (e.g., engine tachometer, pressure gauges, and thermometers). The Contractor must furnish all necessary hardware and fittings and must install the measuring devices. After satisfactory completion of the trials, all instrumentation must be removed and all systems restored to their original condition. The Contractor must provide two (2) copies of the calibration data certifying the accuracy of the instrumentation for the tests and include it in the technical publications

11.2.3 The Contractor must submit a Test & Trials Plan, including a description of all of the acceptance trials to be performed. As a baseline, Using Appendix B, with modifications to suit this particular barge. The following trials must be conducted: (the barge must operate in the Normal Load Condition.)

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

11.2.3.2 Endurance Trial - The barge must operate at maximum speed for a minimum of ten (10) minute intervals in the Fully Loaded Condition over one (1) hour period considering the break in procedures of the equipment. During the endurance trials, it must be demonstrated that all parts of the propulsion system are in full operation. All systems must be operated to check for proper lubrication, control and alignment. Fuel consumption must be recorded for the one-hour trial

11.2.3.3 Astern Propulsion - The barge 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. In order to demonstrate astern performance of the engines in an emergency stop and to test the strength of the foundations, the engine must be subjected to two stops from full power ahead at maximum speed to dead in the water using reverse thrust. Time required to perform this trial must be recorded.

- 11.2.3.4 Steering Gear - Tests must be conducted on the steering gear to demonstrate the adequacy of the steering system under all operations. Manoeuvring tests must be performed to ensure that the barge meets the stated requirements. Manoeuvring trials must be conducted in the Normal Load Condition and repeated in the Full Load Condition.
- 11.2.3.5 The engine and transmission shall be operated at various speeds including full engine rpm for a period of 30 minutes to ensure that all components are operating within their parameters.
- 11.2.3.6 When the barge is in the unloaded condition, the barge must float such that the propeller is fully submerged and the barge shall float upright with no Port or Stbd List.
- 11.2.4** Final Inspection and Acceptance (PWGSC Acceptance Document) for delivery Final Inspection must not be performed until all tests have been satisfactorily completed with data available for review. The barge 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. The Contractor must document the results of the Final inspection and provide these results to the Technical Authority.
- 11.2.4.1 Final Acceptance upon delivery, the Technical Authority, or a representative of the Technical Authority will conduct the final delivery inspection. The Contractor must repair any damage to the barge or ancillary equipment resulting from shipping, to the satisfaction of the Technical Authority.

12 DOCUMENTATION

12.1 GENERAL

12.1.1 All documentation must be provided in both official languages (French and English)

12.2 NATIONAL ASSET CODE

12.2.1 The National Asset Code for this BARGE is VYA61. The contractor must add this 5 character code to the builder's plate of each barge with the prefix "National Asset Code".

12.3 BUILDER'S PLATE

12.3.1 A Builder's Plate must be affixed to each asset in a readily visible location, e.g. for a barge, in way of the helm position, for a trailer on the left side of the tongue.

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

12.3.3 The dimensions of the plate must be not less than 8 inches by 5 inches (200mm x 125mm)

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

12.3.4.1 National Asset Code;

12.3.4.2 Naval Architect/Designer;

12.3.4.3 Builder;

- 12.3.4.4 Hull Number;
- 12.3.4.5 Year of Construction;
- 12.3.4.6 Call Sign (if applicable); and
- 12.3.4.7 Lightship Weight in kilograms.

12.4 TECHNICAL PUBLICATIONS

12.4.1 Contractor must provide, upon delivery of the barge, complete sets of technical publications of a comprehensive owner/operator manual that provides a physical and functional description of the barge, it's machinery and equipment, as well as delivery testing and sea trial result documentation. The cost of these manuals must be included in the Contractor's bid. The manuals must include but not be limited to sections: **General Information, Technical Information, Spare Parts List, Shop and Sea trial Data, Stability Booklet and Acceptance Certificates.**

12.4.2 The contractor is to provide copies of the technical publications as follows:

- 12.4.2.1 one (1) complete hard copy and one (1) complete CD electronic copy set of technical publications per barge produced for the operator of the barge, to be delivered with the barge.
- 12.4.2.2 one (1) complete hard copy and one (1) complete CD electronic copy set of technical publications per barge produced for the Technical Authority, to be delivered to the same address identified for invoices.

12.4.3 GENERAL INFORMATION SECTION

- 12.4.3.1 The General Information Section must include a description of the arrangement and function of all structures, systems, fittings and accessories that comprise the barge, with illustrations as appropriate:
 - 12.4.3.1.1 Operating procedures;
 - 12.4.3.1.2 Basic operating characteristics (such as temperatures, pressures, flow rates)
 - 12.4.3.1.3 Installation criteria and drawings, assembly and disassembly instructions with comprehensive illustrations showing each step;
 - 12.4.3.1.4 Recommended planned maintenance; and
 - 12.4.3.1.5 Complete troubleshooting procedures.

12.4.4 TECHNICAL INFORMATION SECTION

- 12.4.4.1 The Contractor must supply three copies each of the following documents for the barge to the Technical Authority. The cost of these manuals must be included in the Contractor's bid.
 - 12.4.4.1.1 Engine Instruction Manual
 - 12.4.4.1.2 Transmission Instruction Manual
 - 12.4.4.1.3 Thruster Instruction Manual
 - 12.4.4.1.4 Hydraulic Winch Instruction Manual
 - 12.4.4.1.5 Navigation Equipment Manuals
 - 12.4.4.1.6 Electrical system Manuals
 - 12.4.4.1.7 Engine room Fire suppression System Manual.
- 12.4.4.2 These manuals must be the original manufacturer's manuals and must be contained in a binder. Each binder must contain a data page which lists all the pertinent data for the barge and components including but not limited to: Barge serial number: Barge

particulars such as length, breadth: Engine model and serial number: Thruster model and serial number: Transmission model and serial number: Hydraulic pumps and clutches: Hydraulic Winch models and serial numbers: Navigation Equipment models and serial numbers (depth sounder, VHF radio, DGPS): Battery types; Battery charger model and serial number: Propeller model and serial number: Deck hatch models: Engine room fire suppression system.

- 12.4.4.3 The binder must include a written description of the operation of the main systems such as: Engine operation (starting, stopping): Engine alarm signals: Hydraulic system operation including operation of any clutches, PTO's and alarms: Electrical system operation including description of shore power charging, single and dual battery operation and position of battery switches: Thruster Operation including a description of the steering system mechanism and controls. Stern Roller operation, maintenance and removal procedure: Procedure for removal of engine room hatch: Procedure for removal of wooden decking: Engine room fire system description and operation: Bilge pumping system description and operation.

12.4.5 SPARE PARTS LIST

- 12.4.5.1 The list must include the name, part number and serial number if applicable of the parts, items or components and must indicate the supplier (name, address, phone number, email address) of this part, equipment or component and in which part of the specification the item appears.

12.4.6 SHOP AND SEA TRIAL DATA

- 12.4.6.1 Pre-trial shop Testing Check Sheets.
12.4.6.2 Completed Sea Trial results as per Appendix B.

12.4.7 STABILITY BOOKLET

- 12.4.7.1 The contractor must produce a stability booklet for the completed barge. The stability booklet must comply with the requirements described in Transport Canada publication TP 7301 Stability, Subdivision and Load Line Standards and indicate the Intact and Damages Stability for the constructed barge.

12.4.8 ACCEPTANCE CERTIFICATES

- 12.4.8.1 Compliance sheets or certificates distributed with equipment i.e. life- saving appliances, lifting appliances, engine test reports, calibration certificates, Navigation light certificates, Fire suppression material certificates, flotation foam rating sheets

12.5 ADDITIONAL DELIVERABLE DOCUMENTATION

12.5.1 The following additional documentation must be delivered with each barge:

- 12.5.1.1 Tonnage Registration Certificate in accordance with TP 13430 - <http://www.tc.gc.ca/eng/marinesafety/svcp-gt-3948.htm>
- 12.5.1.2 Contractor must complete the applicable portion of the Small Vessel Compliance Program (SVCP) spreadsheet as per the SVCP Website: <http://www.tc.gc.ca/eng/marinesafety/svcp-menu-3633.htm>
Sign the form and provide a pdf copy with the original spreadsheet for the operator of the Barge.

12.5.1.3 A Bill of Sale for the Barge.

13 SHIPPING AND DELIVERY

13.1 GENERAL

Prior to shipping, the barge is to be cleaned, appropriately protected and covered with shrink wrap to provide optimum protection during transport.

13.1.1 Compartments, bilges, decks and machinery spaces throughout the barge must be thoroughly cleaned of all dirt and residue prior to the acceptance of barge.

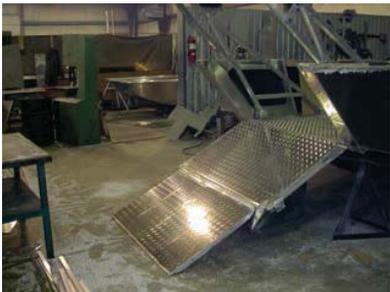
13.1.2 The barge must be delivered address with all fuel, hydraulic oil, lube oil, and systems full and in operating order.

13.1.3 Prior to or at the time of acceptance of the barge, the Contractor must supply the Technical Authority with all documents, drawings, manuals, certification and papers pertaining to the barge as required in this specification.

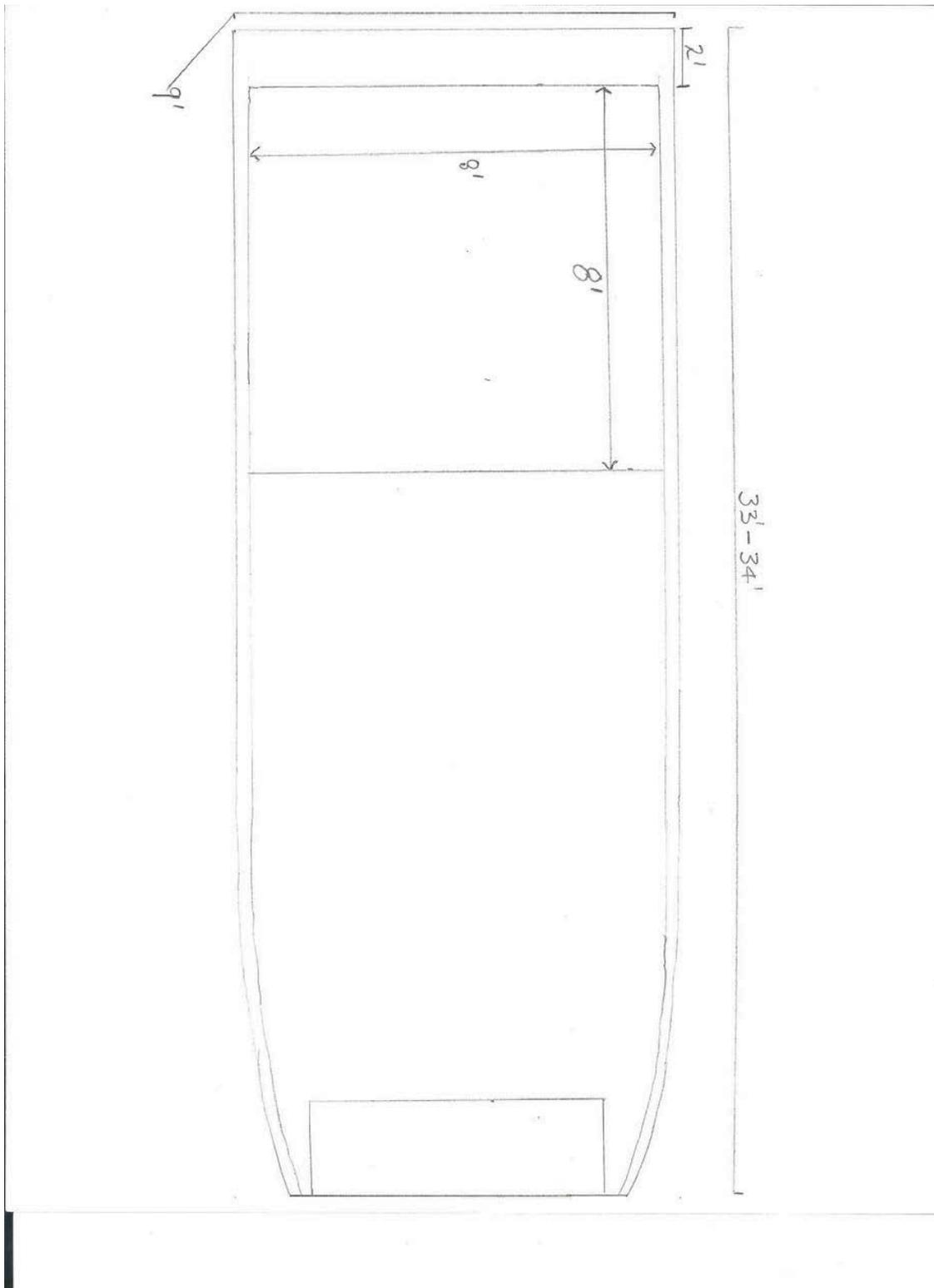
13.1.4 Delivery of the barge is to the Canadian Coast Guard Base in 25 Huron Victoria, British Columbia. The Contractor's bid must include all the costs for transport, and unloading at destination.

APPENDIX A

Concept photos and sketch



SIMRAD equipment
for RHIB install.pdf



APPENDIX B

Tests and Trials Sheet

APPENDIX B
SMALL CRAFT / VESSEL TESTS & TRIALS SHEET
CONTRACT # F7047-130037

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 - _____ Port		<input type="radio"/> Immediate, Yes / No	

Operation "IDENTIFY INBOARD/OUTBOARDS"	Starboard	<input type="radio"/> Immediate, Yes / No
	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 (.25FT), RIPPLES WITH THE APPEARANCE OF SCALES, BUT WITHOUT FOAM CRESTS



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



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



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



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



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



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



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



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



BEAUFORT FORCE 11
WIND SPEED: 56-63 KNOTS
SEA: WAVE HEIGHT 11.5-16M (37-52FT), EXCEPTIONALLY HIGH WAVES, SMALL-MEDIUM SIZED SHIPS MAY BE LOST TO VIEW BEHIND THE WAVES, SEA COMPLETELY COVERED WITH LONG WHITE PATCHES OF FOAM LYING ALONG WIND DIRECTION. EVERYWHERE, THE EDGES OF WAVE CRESTS ARE BLOWN INTO FROTH.



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