

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 2Z4

Title - Sujet HYDROGRAPHIC SURVEY CATAMARAN	
Solicitation No. - N° de l'invitation F7047-130039/A	Amendment No. - N° modif. 003
Client Reference No. - N° de référence du client F7047-130039	Date 2014-06-23
GETS Reference No. - N° de référence de SEAG PW-\$XLV-176-6471	
File No. - N° de dossier XLV-4-37001 (176)	CCC No./N° CCC - FMS No./N° VME
Solicitation Closes - L'invitation prend fin at - à 02:00 PM on - le 2014-07-16	
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: Godin, Andre	Buyer Id - Id de l'acheteur xlv176
Telephone No. - N° de téléphone (250) 363-3152 ()	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

F7047-130039/A

Amd. No. - N° de la modif.

003

Buyer ID - Id de l'acheteur

xlv176

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

F7047-130039

File No. - N° du dossier

XLV-4-37001

CCC No./N° CCC - FMS No/ N° VME

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Solicitation amendment no: 3

- 1) Additions: Annex I - Questions and Answers**

Solicitation amendment No: 2

- 2) Change: Part 2, Article 5, Delivery/ Work period**
3) Additions: Part 3, Section I, Article 2 - Preliminary drawings, addition of G)
4) Change: Part 7, Article 7-6.5, Milestones (ML) Schedule, ratings
5) Change: Annex A- Statement of Work: 8.5-8.9m Alum Hydrographic Survey Catamaran: DFO, Science, Canadian Hydrographic Services. Rev 4. Change in the section 16.1, only.
6) Corrections: Annex G- Financial Bid Presentation, Article G-1, Evaluation of price table, line c.
7) Change: Annex G - Financial Bid Presentation, Article G-3 Boat delivery proposal
8) Additions: Annex I - Questions and Answers
9) Change: Annex J - Evaluation Plan, section 16.1 only.

Solicitation amendment No: 1

- 1) Correction to tables (Format and paragraph numbering sequences)- Annex A- Statement for work**
2) Correction in Annex J- Evaluation plan

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8.5-8.9m Alum Hydrographic Survey Catamaran: DFO, Science, Canadian Hydrographic Services.

PART 1 - GENERAL INFORMATION

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.

2. Summary

1. The Statement of work is as follows:
 - a. To carry out the design, construction, test, trial and delivery of one **8.5-8.9m Aluminum Hydrographic Survey Catamaran** with trailer for the Department of Fisheries and Oceans Canadian Hydrographic Survey 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.

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

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, (2014-03-01) Standard Instructions - Goods or Services, - Competitive Requirements, are incorporated by reference into and form part of the bid solicitation.

2. **Submission of Bids**

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

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

3. **Enquiries - Bid Solicitation**

All enquiries must be submitted in writing to the Contracting Authority no later *than three (5) 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 to all bidders. Enquiries not submitted in a form that can be distributed to all bidders may not be answered by Canada.

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 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.

5. Delivery/Work Period

Delivery of the boats and all other deliverables required by the contract is desired at destination on or before **February 19, 2015**.

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.

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.

8. Tables of Deliverable Requirements

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>Request for Proposal</u> document part 1 page 1 completed and signed;	
2	<u>Technical Bid, Part 3, section I</u>	
3	Completed Annex G <u>Financial Bid Presentation Sheet</u>	
4	Completed Annex H, Information required for the Code of Conduct verification	

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	Proof of good standing with Worker's Compensation Board	6	3		
5	Proof of welding certification	6	4		
6	Preliminary Work Schedule	6	5		
7	ISO Registration Certificate or Quality Assurance Documentation	6	6		
8	Contractor Contacts	7	5		
9	Quality and inspections plan as per Inspection /Quality Section	Annex D	D1		
10	Project Management Team Details	Annex F	F1.4		

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

1. 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

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

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

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 :

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

Section I: Technical Bid

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

The Technical Bid should be concise and address, but not necessarily be limited to, all the mandatory points in the specification against which the bid will be evaluated. Simply repeating the statement contained in the bid solicitation is not sufficient. In order to facilitate the evaluation of the bid, Canada requests that bidders address and present topics in the order of the requirement and under the same headings. See Part 4, article 1.3 for more detail.

To avoid duplication, bidders may refer to different sections of their bids by identifying the specific paragraph and page number where the subject topic has already been addressed. 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:

1. Confirmation of the proposed design:

This vessel is intended to be built based on stock small working or commercial vessel hull forms with a minimum of customization as indicated herein. **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) standard, non- pleasure craft.

2. Preliminary Drawings:

Detailed scaled and dimensioned preliminary drawings for evaluation, including:

- a) Draft stability calculation of the proposed vessel.
- b) Lines Plan with approximately ten sections through hull.
- c) Vessel midship section showing the console / operating position in the deck.
- d) Plan and Profile, general arrangement, which may illustrate some of the systems.
- e) Systems drawings presented on as many sheets as required for clarity covering Bilge, Fuel, Electrical, Fire fighting, and Driveline or mechanical drawing as required.
- f) Drawings required as per Annex J, table J-1 and J-2
- g) Draft calculation as per American Bureau of Shipping (ABS) "Rules for building and classing High-Speed craft 2014", per Part 3, Chapter 2, Sections below;
 - Section 1-3 Primary Hull Strength
 - Section 2-3 Design Pressures
 - Section 3-1 Plating

Section II: Financial Bid

Bidders must submit their financial bid in accordance with the Financial Bid Presentation at 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

4-1 Evaluation Procedures

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

4-1.1 Responses to this Bid solicitation will first be examined to determine their compliance with the mandatory certifications, and the tables of deliverable requirements as detailed in Parts 2 & 5.

4-1.2 The Bidder's Technical Bid will then be examined by the Technical Authority to determine compliance with Mandatory Technical Specification items.

- a. The Technical Bid must also include Annex J, Table 1, completed with verification that the bid meets each mandatory criteria listed and includes the required bid reference information.
- b. The technical bid will then be evaluated and points assigned in accordance with the point-rated evaluation criteria in Annex J.

4-1.3 Technical Evaluation

- (a) **Mandatory Technical Criteria**
Mandatory Technical Criteria are given in Table J-1.0 of Annex J.
- (b) **Point Rated Technical Criteria**
Technical Criteria subject to point rating are given in Table J-2.0 of Annex J.
- (c) Details of the technical evaluation and point rating procedure are given in Annex J, Evaluation Plan.

4-1.4 Financial Evaluation

The price of the bid will be evaluated in Canadian dollars in accordance with Annex B, Customs duties are included and the Goods and Services Tax or Harmonized Sales Tax is extra, if applicable.

4.2 Basis of Selection - Highest Compliant Combined Rating of Technical Merit and Price.

1. To be declared responsive, a bid must:
 - (a) comply with all the requirements of the bid solicitation;
 - (b) meet all mandatory technical evaluation criteria; and
 - (c) obtain the required minimum of **5698 points (70 percent)** overall of the points for the technical evaluation criteria which are subject to point rating. The rating is performed on a scale of **8140 possible points**.
2. Bids not meeting (a) or (b) or (c) will be declared non-responsive.
3. Neither the responsive bid that receives the highest number of technical merit points nor the one that proposed the lowest price will necessarily be accepted. The responsive bid with the highest compliant combined rating of technical merit (70%)

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and price (30%), as calculated at article 4.6 of the Annex J, Evaluation Plan, will be recommended for award of a contract.

PART 5 - CERTIFICATIONS

5-1 General

The continuous compliance with the certifications provided by the Contractor in its bid and the ongoing cooperation in providing associated information are conditions of the Contract.

Certifications are subject to verification by Canada during the entire period of the Contract. If the Contractor does not comply with any certification, fails to provide the associated information, or if 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.

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

5-2 Certifications Required Precedent to Contract Award

5-2.1 Integrity Provisions - Associated Information

By submitting a bid, the Bidder certifies that the Bidder and its Affiliates are in compliance with the provisions as stated in Section 01 Integrity Provisions - Bid of Standard Instructions 2003. The associated information required within the Integrity Provisions will assist Canada in confirming that the certifications are true.

5-2.2 Federal Contractors Program for Employment Equity - Bid Certification

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

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

PART 6 - SECURITY, FINANCIAL, AND OTHER REQUIREMENTS

1. Security Requirement.

There is no security requirement associated with the requirement.

2. Financial Capability Requirement

SACC Manual Clause A9033T Financial Capability 2012-07-16

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.

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 certification to the welding Standards.

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. ISO 9001:2008 - Quality Management Systems

Before contract award and within **24 hours** of written notification by the Contracting Authority the Bidder must 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.

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.

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. To carry out the design, construction, test, trial and delivery of one **8.5-8.9 m Aluminium Hydrographic Survey Catamaran** with trailer for the Department of Fisheries and Oceans Canadian Hydrographic Survey, in accordance with the associated Technical Specifications detailed in the Statement of Work and Project Management Services attached as Annexes A and F. 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.

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: <https://buyandsell.gc.ca/policy-and-guidelines/standard-acquisition-clauses-and-conditions-manua>

7-2.1 General Conditions

2030 General Conditions, 2014-03-01, Higher Complexity - Goods , apply to and form part of the Contract. Section 22 is amended in Annex E Warranty.

7-2.2 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 Canada
867 Lakeshore Road
Burlington, Ontario
L7R 4A6

7-3.3 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.

7-3.4 Delivery and Unloading

1. Delivery trucks must be equipped with an unloading device which will permit unloading at sites with no hydraulic, stationary or other type of 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:

Name: Andre Godin
Title: Manager
Organisation: Public Works and Government Services Canada, Pacific Region,
Acquisitions, Marine
Address: 401-1230 Government Street, Victoria, B.C. V8W 3X4
Telephone: 250-363-3152
Facsimile: 250-363-3960
E-mail address: andre.godin3@pwgsc-tpsgc.gc.ca

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

7-4.2 Technical Authority

The Technical Authority for the Contract is:

Name: To be determined

Title:

Organisation:

Address:

Telephone:

Facsimile:

E-mail address:

(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 -Milestone Payments

1. Canada will make milestone payments in accordance with the Schedule of Milestones detailed in the Contract and the payment provisions of the Contract, 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 total amount for all milestone payments paid by Canada does not exceed 80 percent of the total amount to be paid under the Contract;
 - c. all the certificates appearing on form PWGSC-TPSGC 1111 have been signed by the respective authorized representatives;
 - d. all work associated with the milestone and as applicable any deliverable required have been completed and accepted by Canada.
2. The balance of the amount payable will be paid in accordance with the payment provisions of the Contract upon completion and delivery of all Work required under the Contract if the Work has been accepted by Canada and a final claim for the payment is submitted.

7-6.3 Warranty Holdback

A warranty holdback of 3% will be applied to the claim(s) for payment. This holdback is payable by Canada upon the expiry of the 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.

7-6.4 SACC Manual Clauses

C0711C	Time Verification	2008-05-12
C6000C	Limitation of Price	2011-05-16
C2000C	Taxes - Foreign-based Contractor	2006-06-16
A2001C	Foreign Nationals (Foreign Contractor)	2006-06-16
C2604C	Customs Duties, Excise Taxes and Applicable Taxes - Non-resident	2013-04-25
H4500C	Lien -Section 427 of the Bank Act	2010-01-11

7-6.5 Milestones (ML)Schedule

ML No:	ML definition	Rating	ML dates	ML value
1	Hull welded, including cabin if applicable, frames, stiffeners, including the deck lay down. Paint prior outfitting	15%		\$ <u> X </u>
2	Outfitting, Electronics equipments, engine (s), fuel tanks(s), ancillaries system (piping, cabling), including deck,	55%		\$ <u> X </u>
3	Trailer	10%		\$ <u> X </u>
4	Test and trials, documentations, final inspection	20%		\$ <u> X </u>

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 7.6.2 Method of Payment.

7-7.2 Invoicing Address:

Invoices are to be made out and sent to:
 Canadian Coast Guard
 200 Kent Street Mail Station: 7W064
 Ottawa, Ontario K1A 0E6
 Attention: To be determined.

A copy of the original invoice must be forwarded to:

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

7-8. Certifications

7-8.1 Compliance

The continuous compliance with the certifications provided by the Contractor in its bid and the ongoing cooperation in providing associated information are conditions of the Contract. Certifications are subject to verification by Canada during the entire period of the Contract. If the Contractor does not comply with any certification, fails to provide the associated information, or if 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.

7-8.2 Federal Contractors Program for Employment Equity - Default by the Contractor

The Contractor understands and agrees that, when an Agreement to Implement Employment Equity (AIEE) exists between the Contractor and Employment and Social Development

Canada (ESDC)-Labour, the AIEE must remain valid during the entire period of the Contract. If the AIEE becomes invalid, the name of the Contractor will be added to the "FCP Limited Eligibility to Bid" list. The imposition of such a sanction by ESDC will constitute the Contractor in default as per the terms of the Contract.

7-9. Applicable Laws

The Contract must be interpreted and governed, and the relations between the parties determined, by the laws in force in _____. **(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 (2014-03-01) 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

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.

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

ANNEX A - STATEMENT OF WORK

A1.VESSEL: a. 8.5-8.9m Alum Hydrographic Survey Catamaran: DFO, Science, Canadian Hydrographic Services. Rev 4

A2. ABBREVIATIONS

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

A3. LIST OF REFERENCE DOCUMENTS

REFERENCE	TITLE
ASTM F1166	Standard Practice for Human Engineering Design for Marine Systems, Equipment and Facilities
ABS Rules	Guide for building and classing High-Speed Craft, Part 3
TP 1332	Construction Standards for Small Boats
TP 13430	Standard For Tonnage Measurement of Ships
TP 14070	Small Commercial Vessel Safety Guide
ISO 12217	Small Craft – Stability and Buoyancy Assessment and Categorization
ISO 6185	Shipbuilding and Marine Structures – Inflatable Boats
Canada Shipping Act	Small Vessel Regulations
Canada Shipping Act	Collision Regulations (COLREGS)
ABYC	American Boat and Yacht Council Standards
Canadian Standards Association(CSA) W47.2-M1987	Certification of Companies for Fusion Welding of Aluminium
CSA C22.2 No. 183.2-M1983(R1999)	Standards for DC Electrical Installations on Boats

A4. PWGSC SMALL CRAFT SOLICITATION INFORMATION

- | | | | | | | | | | | | | |
|--|----------------|---|---|--------|-------------|--|--------|----------------|--------------------|--------|----------------|--------------------------|
| <p>a. General Information: This vessel is intended to be built based on stock small working or commercial vessel hull forms with a minimum of customization as indicated herein. Prototype hulls will not be considered for this procurement. A number of proven hulls must be shown to have been produced and be in service for the Contractor to indicate suitability of the hull for this procurement. Bidders must submit brochures, photographs, references, builder's plates, hull identification numbers confirming multiple builds, etc. as applicable.</p> | | | | | | | | | | | | |
| <p>b. Annex A Section A5, TECHNICAL SPECIFICATION is divided into four parts:</p> <table><tr><td>Part 1</td><td>Article 1</td><td>General Description of Vessel Role and Function</td></tr><tr><td>Part 2</td><td>Article 2-9</td><td>Contractor Design and Construction Practices</td></tr><tr><td>Part 3</td><td>Articles 10-16</td><td>Vessel Particulars</td></tr><tr><td>Part 4</td><td>Articles 17-20</td><td>Outfitting and Equipment</td></tr></table> <p>Part 1 provides a brief description of the vessel's role and function. Part 2, Contractor Design and Construction Practices provides general information on a wide range of construction practices, standards, vessel shipping and packaging, etc. Part 3, Vessel Particulars, cover the next layer of vessel description, physical construction and arrangement. Part 4, Outfitting and Equipment, covers the vessel's fitted equipment such as electronics, propulsion, steering and trailer (if required).</p> | Part 1 | Article 1 | General Description of Vessel Role and Function | Part 2 | Article 2-9 | Contractor Design and Construction Practices | Part 3 | Articles 10-16 | Vessel Particulars | Part 4 | Articles 17-20 | Outfitting and Equipment |
| Part 1 | Article 1 | General Description of Vessel Role and Function | | | | | | | | | | |
| Part 2 | Article 2-9 | Contractor Design and Construction Practices | | | | | | | | | | |
| Part 3 | Articles 10-16 | Vessel Particulars | | | | | | | | | | |
| Part 4 | Articles 17-20 | Outfitting and Equipment | | | | | | | | | | |

A5. TECHNICAL SPECIFICATION

Table of Contents

- 1.0 General Description of Vessel Role and Functions
- 2.0 General Marine Construction Practices
- 3.0 Material and Construction Technicalities
- 4.0 Warranty Service and Parts
- 5.0 Documentation
- 6.0 Quality Assurance
- 7.0 Test and Trials
- 8.0 Packaging and Shipping
- 9.0 Trailer Information

Vessel Particulars

- 10.0 Physical Characteristics
- 11.0 Operational Performance
- 12.0 Environmental Conditions
- 13.0 Vessel Configuration
- 14.0 Construction Standards
- 15.0 Construction Drawings
- 16.0 Construction and Finish

Outfitting And Equipment

- 17.0 Outfitting Detail
- 18.0 Propulsion
- 19.0 Steering
- 20.0 Trailer

1.0 General Description of Vessel Role and Functions

- 1.1 Mission Statement:** Catamaran vessels are used extensively as Hydrographic Survey laboratory platforms.
1. The primary mission is Hydrographic survey operations, coastal inside waters of central Canada.
 2. The vessel hull and superstructure are of all-welded Aluminium alloy construction. The hulls are of a single hard-chine, planing form, connected by an enclosed bridging structure, and subdivided by watertight transverse bulkheads.
 3. The vessel is powered by twin 250 hp Yamaha outboard engines.

CONTRACTOR DESIGN AND CONSTRUCTION PRACTICES

2.0 General Marine Construction Practises

- 2.1** Unless stated otherwise all components, equipment and material must be Contractor furnished material, (CFM).
- 2.2 Ergonomic Design – General**
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. Human engineering factors considered in design must include accessibility, visibility, readability, crew efficiency and comfort for a range of physiques for individuals from approx. 5 ft. to 6' 5" in height, wearing cold weather clothing and equipment which must be accessible for use, inspection, cleaning and maintenance per ASTM F1166-88.
- 2.3 Vibration**
1. The boat and all components must be free of local vibration that could endanger boat personnel, damage boat structure, machinery or systems, or interfere with the operation or maintenance of boat machinery or systems.
 2. Mounts for movable components, including items moved for stowage, towing or transport must be provided with resilient material as necessary to prevent rattling.
 3. Loosening of fasteners under vibration must be prevented by the use of self-locking fasteners, as applicable.
- 2.4 Equipment Protection:** 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: During construction, all chips, shavings, refuse, dirt and water must be removed at the completion of the work shift or sooner. The Contractor must ensure measures are taken to avoid wear and damage incident to construction, and to prevent corrosion or other deterioration. Equipment subject to freezing must be kept drained, except during test and trials. Equipment must be kept clean and protected from the environment prior to installation.
2.6	Facilities (applicable to GRP lamination, Collar and Painting facilities only): The Contractor must have a shop capable of maintaining temperature and humidity. It should be capable of maintaining temperature between 16°C and 25°C. It should be capable of maintaining relative humidity below 70 percent.
3.0	<u>Material and Construction Technicalities</u>
3.1	Structural Integrity - All structures and components (hull, deck, collar, console, seating, etc.) must be of sufficient strength to withstand, when in a Maximum Load condition per builders' plate , the lateral and vertical impact loading that equates to the conditions of the operational profile and mission requirements.
3.2	Materials – General <ol style="list-style-type: none">1. Environmental Exposure; All materials must be corrosion resistant and suitable for use in a salt-water environment as detailed in the Environmental Conditions portion of the Performance Requirements. All materials normally subjected to sunlight must resist degradation caused by ultraviolet radiation.2. 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.3. Aluminium alloy types 5086, and dual rated 5086/5083 H116/321 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. Transverse bulkheads or lightened plate frames may use type 5052 to facilitate braked tabs. Specialized use of type 6061 T6 plate in fresh water for high strength delta pads is allowed. Non-hull 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 type 5052 or 6063.4. 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.
3.3	Fasteners <ol style="list-style-type: none">1. All fasteners must be of corrosion resistant materials.2. Cadmium plated parts and fasteners, including washers, must not be used.3. Direct attachment of alloys containing copper to aluminium is not permitted except for an electrical bonding strap, with contact bolt and separating isolation washer.4. No fasteners must be directly threaded into aluminium alloys, except with adequate bolt or insert sizes, minimum ¼" diameter, tapped into a suitable alloy type, and thickness,

such as 1/4" 6061, with the use of thread adhesive type material. Aluminium or Stainless steel washers or backing plates must be used as appropriate.

5. Where nuts will become inaccessible after assembly of the vessel, nuts must be captured, or tapped inserts used, 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, and adequate thread showing as required.
6. Fasteners in deck traffic areas must be flush-mounted, flat head or oval head, to eliminate tripping and snagging hazards.

3.4 Construction Procedures: Hulls must be fabricated as per the requirements quoted in Construction Standards and requirements of Vessel Particulars.

3.4.1 Main Hull and Appendages - Hull Form and flotation.

1. Hull shape must not impede water flow to the propulsion units and must direct spray and waves away from onboard personnel.
2. Watertight and Tank Bulkheads: The hull design must be such that a sufficient number of compartments, or amount of flotation, including hull compartments, and / or low smoke and flame spread flotation foam, or fire retardant flotation, or flotation devices, will allow for adequate stability and positive buoyancy in a flooded condition. See references to vessel certification, re: TP 1332 / ISO testing.
3. **Stowage :** Weather tight stowage for small items of equipment must be provided in void spaces beneath seats, and where practicable, inside console(s). All exterior stowage compartments must be lockable, secured by positive means and operable by gloved or insensitive hands.

3.5 Painting and Preservation

1. Finish colour(s) as per Vessel Particulars Sec. 16.
2. Aluminium components must have a Clear coat painted finish on all specified exterior and interior surfaces, comprised of suitable etch, primers, and topcoat per the Vessel Particulars. Typical single coat paint systems can be applied in the 5 to 7-mil thickness range per coating set. Typical system components would be: a) etch-primer; b) two coats of primer; and c) minimum two topcoats.
3. Prior to delivery the Contractor must ensure that all non-painted exposed aluminium is free of cosmetic blemishes, including all construction marks, scratches, gouges and stains.

3.6 Propulsion

1. Unless otherwise specified, propulsion motor(s) will be supplied and installed, per Outfitting section 18.
2. **Run-in operation:** The Engines must be installed and operated in accordance with the engine manufacturer's recommendations. The use of engine manufacturer's approved accessories and equipment is required except for outboard motor control cables (which must be heavy duty Morse 33C Supreme Red-Jacket® cables, with manufacturer's cable ends installed, or manufacturer's best quality cable sets). Equipment and components must not be used, or trials performed on the engines that would, in any way, void the engine manufacturer's warranties.
3. **Warranty:** All components of the propulsion system must be warranted by the original equipment manufacturer for the standard term, sourced by GSM or as Contractor Furnished Material (CFM).

4. Propellers: Unless otherwise specified, propeller(s) must be stainless steel. See Sec 18 Contractor must inform the Technical Authority of appropriate pitch and diameter to meet the Performance Requirements as determined by the Contractor developed design check. Propellers must be CFM.

3.6.5 Steering Systems

1. Steering system must be remote hydraulic with self-contained oil reservoir, and replaceable seals on the rams, unless propulsion system builder requires alternate steering arrangement per Section 19.
2. Hydraulic hoses must be of sufficient size and length to prevent pulsing. Hoses must be suitable for use in an exposed marine environment complete with stainless steel fittings.

3.7.0 Electrical System

1. The electrical system design, component selection and installation must be in accordance with Canadian Standards Association C22.2 NO. 183.2-M1983 (R1999) "Standards for D.C. Electrical Installations on Boats", or ABYC 'E' as referenced by TP1332. All electrical equipment and hardware must be installed in accordance with the manufacturer's specifications. AC systems will be called up in sec. 17, Outfitting.
2. All fitted electrical equipment must be capable of operating simultaneously with any other fitted electronics equipment without causing interference to any electronic equipment or to the magnetic compass.
3. Galvanic corrosion is to be controlled by installation of an effective bonding and grounding systems with galvanic isolation. Cathodic protection is to be effected by installation of sufficient anodes positioned so as to minimise cathodic currents per ABYC and TP1332.

3.7.1 Twelve (12) volt DC distribution system must be provided to power the engine starting and boat service loads including:

1. Navigation, interior, and exterior lighting.
2. Electrical equipment.
3. Instrumentation.
4. Bilge Pumps.

3.7.2 Batteries and Switches

1. Batteries must be marine grade, 12 V, deep cycle maintenance free, and with the ability to cross connect for twin-engine start up of either engine from either battery. Some engine packages may require larger capacity for injection systems, see Sec.17, Outfitting.
2. Battery switch must be Certification Agency, (CE, CSA, USCG, etc.) approved and must be mounted to prevent snagging or accidental switching.
3. Battery compartment must be weather tight and fitted with a suitable means of gas venting including for 'sealed' batteries.

3.7.3 Power Distribution: Cables for all electrical distribution must be ample in size for the particular service, of marine grade tinned boat cable.

3.7.4 Cabling Installation

1. Cables must be grouped into wiring harnesses wherever possible. All wiring harnesses must be routed below deck. All below deck cabling must be through conduit pipe.
2. Cabling / conductors passing through watertight boundaries, decks, bulkheads or other

exposed surfaces must be installed to maintain watertight integrity of the structure. Cable entry into watertight enclosures must be through watertight marine glands of suitable size. All electrical equipment must be readily accessible for performing maintenance.

3. Cables and conductors must be supported with clamps or straps at least every 18 inches on horizontal runs and every 14 inches on vertical runs.
4. Cabling / conductors passing through structures without watertight glands, must be protected against chafing by the use of abrasive resistant grommets.
5. Routing cables through foamed spaces must be avoided wherever possible. Cables that must be routed through foamed spaces must be run in PVC conduit pipe. The pipe must be arranged in a manner that prevents water from becoming entrapped in the pipe.

3.7.5 Control and Monitoring Systems: Gauges and Indicators: Dimensions and Mounting

1. Unless otherwise specified, gauges must be Engine Manufacturers' digital equipment. Gauges must be sized and installed so they are readily visible by the operator while operating the boat.
2. All gauges must be backlit with an adjustable dimmer. Lighting for gauges and lighting for compass must use separate dimmers.
3. Propulsion control system installation must include single-lever combined engine control, for each engine, to be located at the operator's position on the starboard side of the control station. Controls must conform to engine manufacturer's recommendations for commercial use.
4. The Operator's position must be fitted with a lanyard style emergency shut down switch which is attached to the operator and must shut down the engine if the lanyard is pulled from the switch, as well as the following:
5. Bilge Pump operation/ indication for each compartment so equipped.
6. High water alarm for the engine installation space, which could be the 'pod' for outboards, and every other space serviced by a bilge pump.
7. Engine space heat rise for inboard installation, with required fire system alarm.
8. Allowance for at least one additional input, if a single integrated alarm panel used.

3.7.6 Piping Systems

1. Flexible Connections - Where flexible connections are required for steering and fuel systems, suitable hose with permanently crimped, detachable reusable type fittings must be used.
2. Fuel Tanks must be hydrostatically tested, or air tested to 3.5 p.s.i. and be labelled per the requirements of TP1332.
3. Fittings and clamps must be stainless steel. Bolts used in all fittings must be Type 316 stainless steel.
4. Each watertight Hull compartment is to have its own 12V DC bilge pump, plumbed to discharge overboard from the compartment, as per TP1332.

3.8 Reserved for Fire Suppression - Inboard Engine Configuration

3.9 Navigation Equipment (COLREGS)

<http://www.tc.gc.ca/acts-regulations/GENERAL/C/csa/regulations/010/csa014/csa14.html>

1. Navigation lighting fixtures must be of such a design as to resist the effects of vibration and moisture and must be provided with adequate protection from damage.

2. Particular COLREGS rules to note (vessels under 12 M.); Rules 22, 23, and Annex 1, rules 2, 9, and 10. (**NOTE:** The lights must be installed parallel to the "Normal Load" waterline that often may not be parallel to the deck.)
3. The navigation lights must be mounted so as not to interfere with vision of the operator.
4. The navigation lights must be permanently mounted.
5. The Contractor must supply and install an electric horn that ensures the requirements of the Collision Regulations, Rule 32 are met, i.e. with a standard small vessel 'horn' audible 0.5 NM. The horn must be installed on the vessel exterior with the 'horn' facing forward. (See Section 13.6.)
6. A Magnetic Compass must be mounted on the centreline of the helm station, in easy view of the operator when facing forward. Deviation card development is an Owner responsibility.

4.0 Warranty and Service Provisions:

4.1 Components and Equipment Support

All components and all mechanical, auxiliary, electronic and electrical equipment installed on the boat, with the exception of the collar, must be supportable by parts and service in Canada within 30 days. A collar, if any, must be supportable by parts and service in Canada within 30 days. All components and equipment must be current models.

4.2 Spare Parts

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

4.3 Parts and Service Depot(s)

Contractor's parts depots must be capable of efficiently supplying all British Columbia with spare parts for all components of the vessel and warranty service for all components of the vessel. It is recognized that many equipment items will have their own manufacturer's warranty cards for owner registration. Contractors must have a factory authorized service representative capable of call back response in all regions of Canada within **5 business days** of receiving a service call.

5.0 Documentation

5.1 Technical Publications General: The Contractor must provide one hardcopy and one CD copy, to be delivered with the vessel, one (1) copy per vessel produced, plus one hardcopy and one CD copy for the regional client representative, and one hardcopy and one CD copy for the National TA: of a comprehensive owner/operator manual that provides a physical and functional description of the craft, its machinery and equipment, as well as delivery testing and sea-trial result documentation. The manual should include but not be limited to sections such as: General Information, Technical Information, and an Initial Spare Parts List.

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

1. Operating procedures.
2. Basic operating characteristics (such as temperatures, pressures, flow rates, etc.)
3. Installation criteria and drawings, assembly and disassembly instructions with

	comprehensive illustrations showing each step. 4. Recommended planned maintenance. 5. Complete troubleshooting procedures.
5.3	Technical Information Section: The technical manual should include a complete set of detailed owner / operator instructions, drawings (Section 15), parts lists and supplemental data for all components of the boat (whether acquired from external sources or custom-manufactured). 1. 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. 2. Hull; including hull data, TEST and TRIAL results, serial or manufacturer's numbers, and equipment warranty cards. 3. Engine(s) and equipment: including engine and propulsion serial numbers. 4. Electronics, (if applicable): including model and serial numbers. 5. Regulatory and Stability information: as required per TP 1332, which references ISO12217.
5.4	Initial Spare Parts List: The Technical manual must also include a list of recommended initial onboard spare parts to be stocked for the craft. At a minimum this list must include the following items (as applicable): 1. Propulsion: Propeller / impeller, filters, water pump impeller, starting battery, throttle and shift cables, any special engine tools. 2. Electrical: fuses, light bulbs, electrical panel breakers; 3. Boat Structures and Fittings: Miscellaneous commonly used fasteners.
6.0	<u>Quality Assurance</u> The basic reference to ISO 9001 compliance is as per the contract document.
7.0	<u>Test and Trials:</u>
7.1	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 boat: 1. Weight 2. Construction Quality 3. Lifting Gear 4. Propulsion Engines including Starting and Controls 5. Steering System 6. Fuel System 7. Electrical System 8. Electronics
7.2	Sea Trials – General The Technical/Inspection Authority must be notified no less than Two (2) weeks prior to sea trials. The Technical/Inspection Authority reserves the right to witness or decline

attendance of sea trials. Absence of the Technical/Inspection Authority at sea trials does not relieve the Contractor of its responsibility to conduct and record sea trials. Sea trial results must be forwarded to the Technical/Inspection Authority prior to delivery of the vessel. Appendix A is to be used as a baseline document for collection of Sea Trial data, the contractor must identify to the Technical/Inspection Authority any additional information that is required for the small craft under construction.

7.3 Sea trials must be conducted by the Contractor to demonstrate the boat and its equipment conform to the requirements as stated in the Contract and the Performance Requirements. All expenses incident to the trials must be borne by the Contractor, including fuel unless otherwise specified. A crew provided by the Contractor must operate the vessel during sea trials. Residual fuel, if not drained for shipping, must be delivered in its tank with the boat.

1. All Sea Trial instrumentation and equipment must be furnished and operated by the Contractor. Trial instrumentation, where applicable, is not to replace the boat's instruments (e.g., engine tachometer, pressure gauges, 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. The Contractor must provide calibration data certifying the accuracy of the instrumentation for the tests.
2. The Contractor is required to run the vessel during builders trials until the engine(s) have accumulated the operation hours sufficient for the initial engine service by the engine supplier, and to have the manufacturers' service agent perform the service and provide an initial service report.

7.4 The Contractor must submit a Test & Trials Plan, including a description of all of the acceptance trials to be performed and as identified in Appendix A. As a minimum, the following trials must be conducted: The vessel must operate in the Normal Loaded Condition, per Sec 10..

1. Speed Trials - The speed trials must be done over a course at least one nautical mile in length. Two runs must be made over the course, one in each direction with the speeds for the two runs averaged. The use of GPS data (averaged) is acceptable.
2. Endurance Trial - 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 installation. Fuel consumption can be calculated using manufacturers' data.
3. Astern Propulsion - The vessel 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 approximately 1/3 of the rated engine horsepower.
4. Steering Gear; Tests must be conducted on the steering gear to demonstrate the adequacy of the steering system under all operations. Manoeuvring tests must be performed to ensure that the boat meets the stated Basic Performance requirements, per Sec 11. Manoeuvring trials must be conducted in the Normal Operating Condition.
5. Lifting Gear Load Test; Vessel and bridle or lift frame may be tested at 150% of normal load condition, as specified in the Vessel Particulars; to lift and hold without deformation of the lift points or associated hull. Lift points to be recessed flush with deck, and certified for load.
6. Stern towing arrangement: Testing bollard pull to design capacity in a direct astern load.

<p>7. At the conclusion of sea trials each boat must be thoroughly cleaned and inspected. Outboard engines cooling systems must be flushed through with fresh water. The Contractor must repair any damage to the vessel or ancillary equipment resulting from sea trials, to the satisfaction of the Technical/Inspection Authority.</p> <p>8. For the purpose of the trials, Normal Loaded Condition is to be considered to be the basic boat, fitted with all normal equipment, full fuel, with complement and loads per Vessel Particulars, section 10.</p>
<p>7.5 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 boat must be ready for delivery in all respects, except for final preparation for shipment. The Contractor must provide personnel, as required, to resolve questions and to demonstrate equipment operation maintenance accessibility, removal and installation. The Contractor must document the results of the final inspection and submit these results to the Technical/Inspection Authority; a copy of the trial results must be shipped with the deliverables for each boat, per 7.6/ 7.7.</p>
<p>7.6 Stability examination per TP1332 (from ISO standards 12217-1) requires the Contractor to record all stability/ structural, calculation and trial results and provide a copy for each boat produced, to be placed in the technical manual. See Sec. 14 Standards. The trial of the first of a series of vessels can be used for all vessels.</p>
<p>7.7 Trial Records - The Contractor must maintain records of testing for each boat for a minimum of two years. The Contractor must prepare a trials check sheet that certifies that each test has been completed. The check sheet must indicate the actual weight of the boat in Light Condition, per section 10. The check sheet must also indicate the Normal Loaded weight and the date for the 150% load lifting gear test, if required. This check sheet must be included with the deliverables of each vessel.</p>
<p>7.8 Standard Deliverables with each completed vessel, one manual per vessel delivered plus one for the Technical Authority: Annex "A" may call for additional copies.</p> <ol style="list-style-type: none">1. A detailed operator manual must be provided for all equipment, and systems, per Sec 5.2. Sea Trial results with a completed Appendix A, and shop testing sheets, including fuel tank test report, per Sec 8.8.6.3. Acceptance Certificates, and compliance sheets or certificates distributed with equipment i.e. life saving appliances, lifting appliances, engine test reports, calibration certificates, navlight certificates, fire suppression material certificates, flotation foam rating sheets (if any).4. A completed copy of the Stability information/calculations as per the requirements of section 7.6 of this SOW.5. A Tonnage Registration Certificate in accordance with TP 13430 - http://www.tc.gc.ca/eng/marinesafety/svcp-gt-3948.htm6. 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 vessel.7. A Bill of Sale; one for the vessel and one for the trailer.8. A valid Motor Vehicle Registration Certificate for the relevant Province, for the trailer

supplied.	
8.0	<u>Packaging and Shipping:</u> Shipping other than Towing on Trailer
8.1	Prior to shipping, the boat must be cleaned throughout, preserved and covered (shrink wrap), secured on the boat trailer if any, or chocked as required, in accordance with this section.
8.2	Bilges must be dry and free of oil and debris and the fuel tanks must be drained.
8.3	The propulsion system must be preserved in accordance with the manufacturer's recommendations for storage of up to one year in an environment that will be subjected to freezing temperatures.
8.4	The battery must be disconnected.
8.5	A durable warning tag must be wire tied to the steering wheel indicating that the boat has been preserved for shipping and storage and should not be started until the propulsion machinery has been reactivated.
8.6	Lengthy shipping arrangements must protect the boat hull from deformation from road irregularities producing, due to repeated bouncing, dents in hulls supported on roller assemblies, by the insertion of a temporary bunk to distribute loads.
8.7	Towed Delivery on the boats' trailer: In local short haul trips in non-freezing weather, only the cleaning and covering provisions may be required, with the approval of the Technical/Inspection Authority.
9.0	Trailer Information: (See Annex 'I' pricing sheet for requested pricing, if any, and section 20 at the end of Vessel Particulars for specific trailer information)

<u>SPECIFICATION: VESSEL PARTICULARS</u>	
<u>SPECIFICATION FOR ; 8.5 – 8.9M. Hydrographic Survey Catamaran with Trailer</u>	
<u>10.0 Vessel Particulars</u>	
Length overall between 8.5 and 8.9 meters.	
Breadth overall, maximum 3.353 meters	
Design draft, 0.5-0.6 meters	
Depth moulded, midships 1.6 – 1.7 meters	
Cabin style ; full beam with 360 degree access on top of bulwark	
Catamaran Hull with primary working deck aft, cabin to be as far forward as practical to meet the requirements of this SOW.	
Normal Load conditions: Weight of empty vessel to be reported by bidder _____	
- Crew of 3	= 300 kg
- Fuel	= 750 litres in two tanks(534 kg) + one tank 100 litres(71 kg) Generator
- Equipment & supplies	= 500 kg

- Payload capacity to be minimum 800 kg, / 1760 lb. in addition to full fuel

11.0 Operational Performance

Unless otherwise stated, performance must be for conditions of zero sea state and no wind, in salt water with Normal Load and complement. The craft must be designed and constructed for ease of maintenance and repair, long life, and to be easily supportable by local commercial facilities and suppliers. The craft is expected to have a service life of at least 12 years, with an expected usage of between 350 and 500 hours per year.

1. Maximum speed: 30 knots (at normal load condition).
2. Cruising speed: 18 knots. 95% of operations at <10 knots.
3. Endurance: maximum speed for 2 hours. Run at 10 knots for 12 hours.
4. Capable of steering 15° from heading, in Beaufort Force 6, with seas from any direction.
5. Steer and manoeuvre effectively at 3 knots in Beaufort Force 6.
6. Maintain course, made good over ground, when proceeding at 3 knots with relative cross wind of 25 knots.

11.1 Depth under Keel

1. Operate carefully in depths of 1.0 meter with outboard motors lowered.
2. Basic manoeuvring in depths of 0.7 meters with outboard motors in the partially raised position.

12.0 Environmental Conditions: Capable of operating day or night in the following conditions:

1. Average ambient air temperature range: -15°C to + 35°C
2. Average water temperature: 0°C to +20°C.
3. Wave heights of up to 4 meters (Beaufort Force 6).
4. Wind speeds of 22 - 27 knots.
5. Operate in freezing spray or freezing rain with accumulations of up to 6.0 mm while maintaining stability to allow for safe transit in Beaufort Force 6.

13.0 Catamaran Hull with Cabin

The following items will be supplied as GSM:

1. Sonar, Sonar cable, Sonar Processing Unit with manuals.
2. Survey Navigation and motion sensor (POS MV 320) with manuals
 - a. MRU (IMU), controlled good, dimensions and weight provided
 - b. POS controller (rack mount unit) here on in "PCS"
 - c. MRU Cable (run from IMU to PCS)
 - d. 2 GPS Antennas
 - e. GPS Coax
3. Two Operator computers and three monitors
4. Moving vessel profiler (MVP)
 - a. Winch
 - b. Hanging overboard Swivel Sheave
 - c. Winch Control box
 - d. Rack mounted controller unit
 - e. All associated cables.
5. Sound velocity Sensor and associated RS 232 Cables.
6. All RS232 cables, Ethernet cables required for interfacing all the required equipment.
7. Supply all interfacing cables and diagrams. Cable lengths to be determined after contract award by the contractor and these lengths will be supplied as GSM.

13.1 General Deck Arrangement – See Appendix B for Concept Plan View

1. Large open Aft deck to be maximised, length of working space to be minimum 3.0 meters.
2. Primary operations on the aft deck will utilize an MVP30 (GSM) with "Outer hanging overboard sheave" and B_J Davit frame (17.4) for deployment of a Fish (data collection device) on the port side of the vessel, see section 17.2 and Appendix C for details.
3. A generator must be contractor supplied and installed in a below deck compartment on the aft deck, STBD side. The generator is a Kohler Marine, Model 10EGD-low CO, gasoline fuelled 60hz, the exhaust must be ported above deck and overboard on the stbd side of the vessel. An electrical Load analysis must be completed as per TP 127 to verify that the generator identified will meet the requirements in this SOW.
4. The contractor will construct and install one stowage locker on the aft deck, STBD side. The minimum size of the locker must be 1.0m L x 0.61m D x 0.90m H.
5. Primary operations on the forward deck will utilize a contractor supplied sonar ram mount, see section 17.1 for further details. The sonar ram mount must be capable of mounting a Kongsberg EM2040 Sonar (GSM) and a Motion Reference Unit (MRU).
6. The contractor will construct and install two stowage lockers on the forward deck, one Port and one STBD. The minimum size of each stowage locker must be 1.22m L x 0.45m D x 0.90m H.
7. Top of bulwarks around the perimeter of the vessel must be flat across their whole width.
8. There will be at least 6 tie up points, 3 Port and 3 Starboard from bow to transom. In addition there will be 2 cleats aft at transom corners.
9. Vessel must be fitted with aluminium protective pipe bracket guards, which extend around the outside of each outboard motor. The guards must be fabricated so as to be easily removed for maintenance access to the outboard engines.
10. Both hulls of the vessel must be equipped with securing eyes fitted to the outside of the

transom used for trailer tie downs and bow eyes for towing and trailer tie downs.

13.2 Cabin - General

1. The cabin inside length must be a minimum of 3.20m, to meet the requirements of this SOW.
2. There must be two center line sliding weathertight access doors, one on the forward end of the cabin and one on the aft end of the cabin for walkthrough access to both the forward deck and aft deck. The doors must have a vertical sliding/locking aluminum framed window. The doors must have positive retention in the open position and lockset. All locks and hardware must be of stainless steel construction. Aft door to slide to STBD and forward door to slide to Port.
3. The cabin will have 196 centimeters of headroom internal clearance,(6' 5").
4. The cabin must be fitted with proven manufacturers' aluminum framed windows (with screens) of Laminated-Tempered Safety glass and sized to maximize visibility, as follows;
 - a. One (1) forward fixed window, raked forward starting at midpoint of outside cabin height in way of the pilot position.
 - b. One (1) forward fixed window, in way of the navigation position.
 - c. Two (2) side sliding window assemblies forward in cabin sides in way of the pilot (stbd side) and navigator (port side) positions. The windows must open a minimum of 0.4m. For the pilot the window must take into consideration the raked forward bulkhead to maximize visibility.
 - d. Two (2) fixed windows on the port side.
 - e. One (1) fixed window on the stbd side.
 - f. One (1) aft fixed window on the port side.
5. The operator's console must have a watertight forward face access hatch below the console dash for electrical equipment and console electronics access.
6. An overhead console must be fitted with space adequate for two VHF radios, which must not protrude into the headroom of operators.
7. Three coat hooks must be installed in the cabin.

13.3 Cabin – Interior/Exterior Outfit

1. This vessel must be equipped with three marine seats in the cabin, one operators seat and two work station seats with ballistic nylon or other durable upholstery. As a minimum the seats must meet the requirements of the Grammer MSG85/722 seats with arm rests, head rests and slide functions. The two work station seats must swivel 360 degrees, however the operator's seat will remain forward facing and be mounted on a pedestal to allow for storage below it. The work station seat closest to the electronics rack must be capable of easy removal for access to the cabling conduit.
2. A water closet must be fitted in the cabin, located on the stbd side at the extreme aft of the cabin and will consist of a 12VDC marine grade toilet, privacy bulkheads, door, vent and light. A holding tank with easy access pump out is to be installed. Supply water to the toilet must be fitted with an easily accessible shut off valve. Sewage system and capacity must meet Transport Canada Vessel Pollution and Dangerous Chemicals Regulation section 90 (1).
3. A foldable table is to be provided behind the operator's seat, mounted to the water closet exterior bulkhead. The height of the table must be suitable for personnel during stand up work. The table must have positive retention in both operational and folded positions.

4. An 'L' shaped fixed desktop will be fitted on the forward port side at a height suitable for personnel during sit down work.
5. A hinged or removable desktop will be fitted just aft of the 'L' shaped desktop at a height suitable for personnel during sit down work. This desktop is hinged or removable in order to gain easy access to the cabling conduit behind the electronics racks.
6. Two electronics racks (R1 and R2) with shock mounts must be supplied and located on the port side, to the aft end of the cabin. The racks must be mounted side by side with a 152mm conduit for cabling on the outboard side. The racks required for mounting of electronic equipment is Schroff brand, Part number 15230-021. Dimensions of the racks are identified in Appendix B. Rack components will be supplied as GSM and must be mounted by the contractor on shelves with rack sliders. List of items to be rack mounted:
 - a. Electronics Rack R1
 - i. Sonar processing unit, size 447mmLx178mmHx345mmD, Weight= 15kg.
 - ii. POS controller , size 482mmL x 44mmH x 352mmD, Weight= 4 kg.
 - iii. MVP controller, size 482mmL x 133mmH x 432mmD, Weight= 10 kg.
 - iv. Spare Sliding shelf.
 - b. Electronics Rack R2
 - i. Rack mount computer 1, size 480mmLx178Hx 510D, Weight= 24kg.
 - i. Rack mount computer 2, size 480mmLx178Hx 510D, Weight= 24kg.
 - ii. 2 Spare Sliding shelves.
7. A table (chart) must be mounted on top of the electronics racks sized to the perimeter of both racks and extending to the cabin bulkhead.
8. Three computer monitors (110v) will be supplied as GSM and must be mounted by the contractor, as follows;
 - a. 24-27" monitor, mounted on desk for work station operator at the 'L' shaped desk, screen will face aft.
 - b. 19" monitor, mounted on desk for work station operator at the 'L' shaped desk, screen will face inboard.
 - c. 17" monitor, mounted on an adjustable arm from deck head for the vessel operator, screen will face aft.
9. This vessel must be equipped with an Air conditioning unit suitable to maintain the temperature at a manageable level, mounted to the top of the cabin. The unit must also be capable of producing heat and have a condensation collection pan for discharge overboard. The SeaMach A/C Unit with Van-Pan will meet this requirement, capable of Cooling capacity 13,500 BTUH and a Heating capacity of 5,600 BTUH.
10. Grab Handles : There must be grab handles positioned as follows:
 - a. Three (3) overhead in way of the seats in the cabin. Locate over foot space ahead of seats.
 - b. Two (2) at the aft door exterior one vertical on port side of door opening and one at the door opening under the cabin top.
 - c. Two (2) at the forward door exterior one vertical on stbd side of door opening and one horizontal at the door opening under the cabin top.
 - d. Grab handles are required around the exterior perimeter on cabin top.
11. Flooring: All interior floor covering must be non-slip approx 3/8" shock and sound absorbing rubber with embossed tread pattern.
12. Interior Finish: The interior of the vessel must be in a speckled grey colour, Zolotone

“Granite” or equal. All rough edges and sharp angled corners must be rounded and ergonomically adapted. The space between screwed on interior lining plates, and exterior plate, must be insulated between frames with thermal insulation. Frame faces must have thermal barrier strip isolating interior panels.

13. Foot Rests; There must be three footrests, one for the operator and two foldable footrests for the work station seats.

14. An exterior ladder must be installed for access to the cabin top.

13.4 Lighting/Utilities

1. Lighting interior, all lights must have individual switches;
 - a. The interior cabin must be equipped with two rows of three overhead LED white lights, on P&S sides.
 - b. One LED white light over each work station
 - c. Three chart lamps on flexible goosenecks, one for the chart table, one for the folding table behind the operator and one for the operator.
2. Exterior lighting; there must be four flood lights fitted on the cabin top, two are facing the bow and two facing the stern, Hella model 1GB-998-541-001 or equal. In addition two remote control spotlights to be mounted on cabin top, one is facing the bow and one facing the stern, Guest Model SPL 12W or equal .
3. Three 12 VDC power points required, one at the console for the operator and one for each of the work stations.
4. This vessel must be equipped with a 3.0 kW power charger / inverter that is tied to one (1) deep cycle large capacity marine house battery and a start battery per engine.
5. An isolation transformer and galvanic isolators must be integrated into the vessels electrical system.
6. There must be four 110 VAC power receptacles in the main cabin in way of the two work station positions and one area 110 VAC power receptacles in way of operators position.
7. There must be two shore power 110v receptacle, 30-amp connections, on aft exterior bulkhead of cabin. One will service the block heaters and battery charger and the second will service the survey gear and cabin.
8. A Uninterruptable Power Supply (UPS) must be supplied, Eaton Ferrups model FE 1.4 is acceptable or equal.
9. Ducts from the SeaMach AC/Heater must be located in the cabin, at the operator and work station positions near the deck, and the window supply plenum(s) port and starboard.
10. A front windshield defroster(s) must have a variable three-speed fan and be ducted to multiple outlets to be capable of clearing the entire front windshield area of the vessel.
11. The front windshield defroster must be capable of blowing both cold and heated air.
12. The cabin must have at least two variable speed fans capable of circulating the air in the cabin. A positive pressure intake fan with ‘dorade’ type intake protection must supply air to the cabin.
13. Two wipers with pantograph arms must be installed on the port and starboard fore windows. A variable speed switch located on the operator’s console must activate wipers individually.

13.5 Deck Finish exterior:

Non-skid paint system, SURE-FOOT GRAY or Equal must cover the entire deck except

waterways and fittings.

13.6 Console Finish: The console of the vessel must be painted in a speckled grey colour, Zolotone “Granite” or equal.

13.7 Hull finish below waterline: AWLGRIP paint system or equal. Bottom will be protected with an epoxy water barrier and covered with 2 coats of black Tri-Lux II anti-fouling.

13.8 Helm Station

1. The Helm station will be on the stbd side of the console, with controls on stbd.
2. The helm will incorporate a steering system, capable of handling the horsepower of the vessel, with manufacturers’ engine controls designed for the power units.
3. There will be provision for an array of control gauges and electronic equipment at the helm position, see electronics section 17.6 and 18.1.
4. In addition, if not included with above gauge package, outboard trim gauges, and fuel level gauge(s) will be installed.
5. There will be a console mounted magnetic compass, see 13.8 following.
6. All lights switches and breakers must be within easy reach of the helmsmen.
7. In addition to the factory supplied individual propulsion leg trim controls there will be a SYNCRO trim switch to integrate the outboard controls on one switch.
8. Space required for future additional installations, e.g. for trim tab controls.

13.9 Navigation Lighting and Equipment: LED options must be used where available

1. The Contractor must supply and install an electric horn that meets the requirements of the Collision Regulations. The horn must be operated by a spring-loaded switch located on the operators’ console. The “Signaltone”, or Ongaro electric horns meet this requirement.
2. Navigation lights must be permanently fitted to the cabin Top with protected wiring and must be waterproof. All around mast /anchor light ratchet mast mounting is acceptable.
3. The fixtures must be of such a design as to resist the effects of vibration and must be provided with adequate protection from damage that may occur when lying along side a vessel or a pier. (The Hella NaviLED Series of lights, including the NaviLED 360 all-round light , and NaviLED side lights meet this requirement.)
4. Non-white lighting must be wired together on a separate breaker of the 12 volt DC electrical system. All around Mast /Anchor light showing clear above the radar scanner as per TP 1332. Two switches to be provided, labelled: Nav masthead / anchor and Nav sidelights.

Magnetic Compass: The Contractor must provide and install a direct read compass, with light and dimmer switch . (The Ritchie Helmsman 70 series meets this requirement.)

13.10 Exterior Equipment

1. Transom deck drainage scuppers /freeing ports will be of a size to allow sufficient drainage of forward and aft deck surfaces per TP 1332 and ISO.
2. Locking bilge access in below deck stowage, forward.
3. Locking fuel filler access.
4. All storage lockers to have swing up hatches, (storage and access) to be held open by gas lift shocks.

14.0 Construction Standards

1. Transport Canada Marine Safety Regulation TP 1332 “Construction Standards for Small Vessels”, which incorporate references to **ABYC** standards for equipment such as fuel tanks and fuel systems, as well as tank space ventilation, and ISO standards for stability.
<http://www.tc.gc.ca/MarineSafety/Directorate/TP/tp1332/tp1332e.htm>
2. Canadian Standards Association (CSA)
3. CSA W47.2-M1987; Certification of Companies for Fusion Welding of Aluminium.
4. Canadian Standards Association C22.2 NO. 183.2-M1983 (R1999) “Standards for D.C. Electrical Installations on Boats **and ABYC ‘E’ electrical standards.**”
5. Transport Canada TP 127, Ships electrical Standards.

15.0 Construction Drawings and Data

1. The following, “As Fitted”, dimensioned drawings must be produced for manuals to record the vessel particulars.
2. a. Lines Plan with minimum 8 sections through hull, plus deadrise angles as indicated in 16.2.
b. General arrangement Plan, Profile and sections to record primary dimensions, and equipment.
c. Console layout diagram and an Electronics Racks diagram.
d. Lifting arrangement profile to be shown as part of the GA profile.
e. Vessel midship structural section showing the console / operating position in the deck, view forward from aft of the Operator seating.
f. Systems drawings presented on as many sheets as required for clarity covering Bilge, Fuel, Electrical, and Driveline or mechanical drawing as required.
g. An electrical Load analysis as per TP 127.

16.0 Hull and Deck: Construction and Finish:

Hull and Deck: The hull, and deck, must be constructed of Aluminium per Materials section 3.2. Mil Certificates are required for all aluminium used in the fabrication. The Exterior of the vessel will be painted with clear sealer only above the waterline. Non-skid adhesive strips to be applied to the cabin top, top of bulwarks.

16.1 The hull is to be Catamaran Twin hull. Scantlings must be per the American Bureau of Shipping (ABS) Rules “Rules for building and classing High-Speed Craft 2014, Part 3, Hull construction and equipment Class Rules” as a minimum (Class approval is not required, however the Technical Authority/ Inspection Authority will verify that the scantlings meet the minimum requirements of ABS, Part 3 Class rules as applicable to this hull form) with modifications for intended service identified within this SOW. Deck hatches to be arranged in way of fuel tanks and stowage, as well as quick accesses as required by TP1332 for utilities.

16.2 Deck: Deck wells must be self-draining, by means of non-return freeing ports in the transom, aft and fore decks.

16.3 Windows are to be laminated tempered glass, and carry the manufacturers’ marks confirming construction. Forward windows are to be minimum 3/8” laminated safety

<p>glass. Smaller side windows can be minimum 1/4" thick laminated, safety glass.</p>
<p>16.4 Stowage, Lifting and Trailer Securing Points:</p> <ol style="list-style-type: none">1. Arrangements must be provided for safe, secure and accessible stowage of an anchor and cable, and other equipment in bow / anchor locker.2. Tie Downs: Port and Starboard trailering tie down points to be incorporated in transom. <p>Lifting: The vessel must be equipped with a four-(4) leg, webbing lifting bridle, which may require a spreader bar. The location and arrangement of lifting gear must be such that it does not pose a safety hazard to the operator or crew nor interfere with boat operation. Four All bridle lifting lugs must be reinforced and proof tested in accordance with CSA Tackle Regulations. Lifting points must not be located below the deck or within lockers or compartments. Lifting points must be located so that the bridle does not snag on the boat structure, outfit or machinery. Lifting slings provided must be webbing strap type certified to safely lift the vessel in the Normal Loaded condition. Test margin 150% for four straps, or per CSA if higher standard.</p>
<p>16.5 Bow Eyes</p> <p>A system is to be designed and incorporated into the construction of the stems that allows for the bowline and or trailering hook to be attached to the bow and which must not protrude from the line of the stem. The fitting must be of a non-corrosive material and of sufficient strength to allow for towing the vessel at a speed of 10 knots in calm water in the normal loaded condition, on an even keel, without damaging the vessel or causing chafing of the towline.</p>
<p>16.6 Pumping and Drainage:</p> <ol style="list-style-type: none">1. A marine grade electric bilge pump with 2000 gph capacity must be fitted in each main hull or largest hull compartment as well as a fixed manual operated bilge pump of the diaphragm type. The bilge pumps must be located so that it takes suction from the lowest point of the compartment. Piping must be installed which will allow the bilge pumps to discharge directly overboard aft. Any additional watertight division of the hull will be serviced by a bilge pump of 1500 GPH capacity. (The Rule® 1500 Model Submersible Bilge Pump, and Rule series pumps meet the electric bilge pump requirement)2. The electric bilge pumps control panel must be located visibly on the operator's console, with settings for 'on', 'off' and 'automatic' operation. An indicator light must be provided at the console that lights when the bilge pumps are operating.3. An automatic float switch control must be fitted that turns on the electric bilge pumps when water is present in the bilge. (This" float switches" must have the float mechanism contained in a protected housing, at the base of the pump or separately, an Ultra® Pumps witch Junior Model Float Switch meets this requirement.)4. Bilge High Water Alarm for each compartment equipped with a pump as per TP1332 including the outboard engine pod, with alarm indicators at helm to be clearly visible by the operator.5. Hull drainage - a non-corroding threaded plug must be provided in the lowest point to drain the aft compartments of each hull when out of the water.6. Any forward water retaining compartment without pump will have a piped drain to the aft bilge where a stainless steel ball valve must be located readily accessible for testing or draining the forward bilge to the aft pump.

7. Two Manual pumps such as Whale ‘Gusher’ are required as noted in lifesaving sec. 17.5, one for each hull.

17.0 Specification: OUTFITTING and EQUIPMENT

17.1 Bow Sonar Ram Mount

1. The builder is to supply and install a Sonar Ram unit, which must be mounted on the centreline of the bow.
2. The Ram mount end mounting plate must be capable of mounting a Kongsberg EM2040 Sonar and a Motion Reference Unit (MRU) on a secondary mounting plate on the Ram Mount. The sonar and MRU will be Government Supplied Material (GSM).
3. A sonar processing unit and sonar cable will also be supplied as GSM. The sonar processing unit must be installed by the builder in the Electronics rack in the cabin, see section 13.3.6.
4. The MRU (Applanix Corp, IMU type 38) is a controlled good and cannot be supplied, however the dimensions are 172mm diameter x 195.5mm deep and a weight of 10kg, a bolting pattern will be supplied as GSM.
5. The ram mount must be of sufficient size and strength such that upon deployment of the sonar/MRU units ram and at an operational speed of 10 knots, the vibration will not affect the normal operation of the sonar/MRU.
6. The ram mount must be constructed such that the sonar/MRU assembly can be removed/installed for maintenance and stowage when not in operation. The builder is to provide a detailed description of this solution with their bid.
7. The ram mount must rotate and deploy with a dual sprocket reduction gear, controlled by a 12V DC electric motor. The rotation of the ram must provide for proximity switches and an auto stop in both the deployed and retrieved positions.
8. Operation of the 12V DC motor will be controlled using a three button (Deploy, retrieve and Stop) portable watertight Pendant station. The station must have be wired to allow for operation up to 2m from the ram and have a cradle for storage during non-operation.
9. All Interfacing cables and diagrams will be supplied as GSM.

17.2 Moving Vessel Profiler (MVP)30 (GSM)

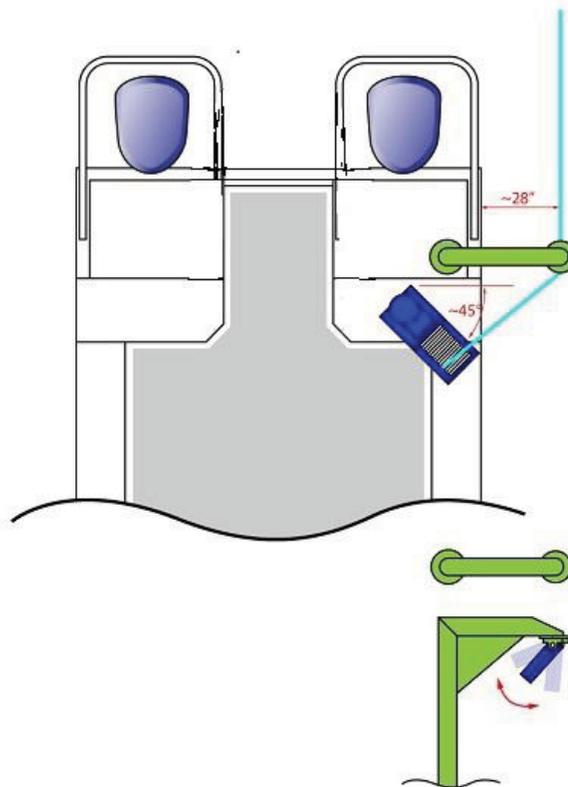
1. The builder is to provide a foundation for and install one Rolls Royce MVP30 with hanging outer overboard sheave.
2. The MVP30 will be supplied as GSM and includes the following items;
 - a) Winch
 - b) Hanging overboard Swivel Sheave
 - c) Winch control box
 - d) Controller unit (to be mounted in the Electronics rack in the cabin, see section 17.3)
 - e) All associated cables
3. See Appendix C for further information.

17.3 B_J Frame - Davit Boom

1. A rotating/removable davit boom with cable sheave must be supplied by the contractor to work in conjunction with the Moving Vessel profiler outer overboarding sheave and deploy the fish.

- The height of the boom is governed by the top height of the sheave which has been determined to be 1.90m above the deck, therefore the boom can be designed around this criteria. A UHMW Sleeve must be used for easy rotation of the boom.
- The Safe working load of the boom must be 1000lbs, which must be stamped into the boom arm and be clearly visible.
- The boom must be able to lock into position when rotated to port and again when rotated to stern.
- The boom must extend the cable overboard to port by 28". See reference figure below.

B_J-frame



17.4 Generator Compartment

- A generator compartment must be integrated into the structure of the stbd hull on the aft deck to contain and operate a Kohler Marine, Model 10EGD generator on a shock mitigated foundation. The generator must have the following Accessories/options:
 - Advanced Digital control
 - Siphon Break
 - Ship-to-Shore Switch
 - Remote Digital Gauge
 - Oil Pressure and Water Temperature Sender
 - Remote Start Panel
 - Remote Connection/Extension Harness
 - 12-Inch Remote Wiring Harness
 - Line Circuit Breakers
 - Sea Spares - Maintenance Kit

2. The compartment should be designed to be partially extended above the deck.
3. The compartment design will allow full operation of the generator with the access lid closed and be suitable for all weather conditions; therefore a blower and air supply will be required. Blower must have a dual switch to engage at the generator compartment or at the operators console. When the generator is running the blower must be on continuously, locking out the switches.
4. A Remote digital gauge and ship / shore transfer switch must be provided.
5. A quick access fire port is required as well as dedicated fire extinguisher mounted on the compartment exterior for ease of access.
6. Compartment must be designed for quick access for full removal of the generator.
7. To meet compliance with SVCP, the compartment must have a heat detector and a warning light must be installed at the operators console.

17.5 Lifesaving Emergency Equipment: The following items must be supplied and provided with stowage / securing arrangements (as appropriate for each item). All fittings, Contractor supplied, must be heavy duty, corrosion resistant stainless steel fittings. All items must be readily accessible.

1. Fire extinguishers (Class B1, marine type) minimum two (2) extinguishers
2. Two (2) paddles
3. Two manual bilge pumps (built in), one for each hull, Whale Gusher type.
4. One life buoy with heaving line not less than 15 meters
5. One watertight flashlight
6. Pyrotechnics Type A Qty: 3, Type B or C Qty: 3
7. First Aid Kit
8. Boat hook, 8 feet long (retractable)
9. CQR plow anchor with chain/rope locker (or equal) suitable for this vessel with 6' chain and 100 ft. nylon rope.
10. Drogue sea anchor and 100 feet of 1/2 " braided nylon line
11. Mooring lines, four (4) X 20' X 5/8" braided nylon line with eye spliced into one end

17.6 Navigation Electronics : This vessel must be constructed for contractor installation of the following Contractor Supplied electronics navigation package, with displays located across the forward, side and above dash, in addition to the Colregs required equipment. Final arrangement to be approved by the Technical Authority.

1. Raymarine C Series C127 network multifunction Display with Canadian chart, Mfg nbr: E70014.
2. Raymarine RD418D Radar Scanner with 10m Raynet Cable, Mfg. nbr: T70166
3. Raymarine AIS650 Class B Transceiver, Mfg. nbr: E32158
4. Raymarine DSM300-G Digital Sonar Module, Mfg. nbr: E63069G
5. Raymarine P66 High Speed Transom Transducer, Mfg. nbr: E66054
6. Raymarine Raystar RS130 External GPS Sensor, Mfg. nbr: E32153
7. Raymarine Ray260 Modular VHF Radio, Mfg. nbr: E70087 (will require CFM Shakespeare antenna w/ ratchet mount.)
8. Raymarine Smart Heading System with fluxgate compass.
9. Raymarine Active Speaker for Ray260, Mfg. nbr: A80199
10. Raymarine External Hailing Horn Speaker, Mfg. nbr: M95435
11. Raymarine Autopilot, with low cost independent heading solution. The autopilot selection is dependent upon the catamaran engine drive type and steering connection.

12. Externally Mounted EPIRB ACR RLB-35.
13. Additional requirements: The Catamaran should utilize the Seataalk NG (NMEA2000) bus to interconnect Raymarine equipment. Raymarine components not equipped with Seataalk NG can be interconnected through Seataalk HS and / or NMEA 0183.
14. Contractor to supply two mounts (retractable for transport) on the cabin top on the centreline space at 2m apart and at the same vertical height for mounting two Trimble Zephyr GPS antennas (GSM).

18.0 Propulsion/Fuel System

18.1 Main Propulsion

1. Unless otherwise specified, propulsion must be by TWO of, Government Supplied (GSM) 250HP Yamaha, (one counter rotation), 4-Stroke, gasoline outboard motor c/w 30" leg. All other engine equipment CFM.
2. Motors must be mounted in accordance with manufacturer's recommendations.
3. Engine package must incorporate an automatic shutdown feature (kill switch) for the engine to be mounted near the ignition switch.
4. Contractor to supply and install equipment included in the manufacturers' standard Command Link® Plus LCD Display gauge package, and appropriate cables and harnesses, for the specified engine.
5. In addition to the factory supplied individual propulsion leg trim controls there must be a SYNCRO trim switch to integrate the two drive leg trim controls on one switch.
6. Contractor to supply and install any of the following equipment functions included in the manufacturers' standard and optional electronic gauge package (e.g. Yamaha Command Link) for the specified engine: All gauges must be backlit with an adjustable dimmer. Lighting for gauges and compass must use separate dimmers.
7. a. Tachometer for engine.
8. b. Water pressure gauge.
9. c. Trim gauge.
10. d. Controls, cables.
11. e. Ignition harness.
12. f. Hour meter for engine.
- g. Voltmeter.

18.2 Fuel Systems:

1. Fuel systems must meet with all requirements of TP 1332 "Construction Standards for Small Vessels", which reference the ABYC standards. **Regardless of interpretation of TP 1332 requirements, below deck fuel tank compartment MUST have both passive and powered bow to stern ventilation system installed with clearly warning labelled switch at the helm, and at below deck acceses.**
2. The vessel must be fitted with minimum two (2) fuel tanks with baffles, to be located under the deck for a total capacity of no less than seven hundred and fifty (750) litres.
3. The vessel must be fitted with one additional fuel tank for the generator, to be located under the deck with a capacity of no less than one hundred (100) litres.
4. There must be inspection hatches (8") in the deck, to allow access to the fuel pick-ups, vent, fill connections, and tank level indicators.

5. Arrangements must be provided for two fuel tanks and associated lines, vents, fills, and on / off selector manifold, using three way valves, to be fitted to the boat.
6. Fuel lines from the inboard shutoff valve or manifold to the outboard motor(s) to be protected against chafing and wear.
7. A fuel / water separator filter is to be mounted “in-line” to each engine with easy access to drain the sediment bowl.
8. Fuel shutoff valves must be installed at fuel tank outlets and be easily accessible by vessel operators. Near the filters and engines, additional ‘service’ fuel shutoff valves to be located, to facilitate engine or filter service.
9. Lockable/ labelled, fuel fill, and vent station must be located on the bulwark at the Cabin aft bulkhead. The fuel fill station must have a cofferdam such that any fuel spill will be directed overboard away from the vessel.
10. The Fuel tank space requires flow through ventilation per TP1332 and ABYC.
11. The Fuel tank space must have a fume detector, Marine Tech 2” or equal.

19.0 Steering

1. Steering systems must be hydraulic with a maximum of 3.5 turns from hard over to hard over. (The SeaStar® and / or DayStar steering systems, depending on vessel horsepower, from Teleflex meet this requirement). Particular propulsion systems may have their own requirements for steering that must be adhered to, e.g. Jet steering systems.
2. All hydraulic steering hoses must be routed below deck and all hoses must be routed so that there are no pinch or chafing points on the hoses.
3. The wheel / console connection must be of robust construction, to eliminate fore and aft or lateral movement of wheel / steering shaft fixture.
4. The Steering wheel must be stainless steel and may be rubber or plastic covered, or the steering wheel must be stiff enough that during rough water operations there is no flexing of the wheel and the wheel should be padded to provide a comfortable non-slip surface for the operator to grip. (Momo Marine steering wheels meet these requirements.)

20.0 Trailer – Gooseneck with Fifth wheel adjustable coupler

1. Must be rated at least 20% over the anticipated ‘normal load’ weight of the vessel, designed specifically for this catamaran hull, meet the requirements and regulations of Ministry of Transport for Ontario and as specified below.
2. Capacity to be minimum 18,000 lb. Welded aluminum construction.
3. 16 inch 6 bolt wheels with disc brakes, carrying 225 / 75R / 16D tires with ‘E’ load rating.
4. Triple axle, with axle bearing protection, grease nipple.
5. Brake, and turn signal lighting, with 7-prong flat wiring connector. (NOTE: Requirement for other connector if required for the equipment listed for trailer.)
6. Electric / hydraulic jurisdiction compliant, disc braking system .
7. Winch - heavy duty worm gear winch with deep cycle battery and power shutoff switch. Bow chocks, and swivel tongue jack, (2500 lb.) with footpad.
8. Trailer to be fitted with heavy-duty ‘stand-on’ fenders.
9. Hitch, Gooseneck with a Fifth wheel adjustable coupler.
10. Trailer to have multiple bunk assemblies, two spare tires with carriers, with lug wrench.
11. Trailer to be supplied with two (2) ratchet tie down straps with hooks securing boat to

APPENDIX A

SMALL CRAFT / VESSEL TESTS & TRIALS SHEET

CONTRACT # F7047-130039

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: _____ Imp gal	Fuel: _____ Litres	_____ lbs/ _____ kg
	Total Weight of Small Craft/Vessel:		_____ lbs/ _____ kg
	Number of Crew _____ and operating equipment:		_____ lbs/ _____ kg
	Test Total Laden Weight:		_____ lbs/ _____ kg
	Trailer weight:		_____ lbs/ _____ kg
	Boat & Trailer weight:		_____ lbs/ _____ kg
Motors: Starting - Operation "IDENTIFY INBOARD/OUTBOARDS"	Port	<input type="radio"/> Immediate, Yes / No	
	Starboard	<input type="radio"/> Immediate, Yes / No	
Propellers/Impellers	Pitch	_____	
	Diameter	_____	
	No. of Blades	_____	

Stainless Steel or Aluminum		<input type="radio"/> S/S ___ AL
Static Attitude & Trim:		
Weather Conditions: Refer to attached Beaufort Wind Scale. BWS No. _____		
Speed Trials	Speed Required _____ - _____ knots	
	Cruising Speed: measured mile 1 way	_____ kts @ _____ rpm
	Cruising Speed: measured mile return	_____ kts @ _____ rpm
	Averaged Cruising Speed:	
	_____ kts @ _____ rpm	
	Maximum Speed: measured mile 1 way	_____ kts @ _____ rpm
	Maximum Speed: measured mile return	_____ kts @ _____ rpm
Average Maximum Speed _____ kts @ _____ rpm		
Full Throttle	From dead stop to plane	_____ seconds
	From dead stop to 30 knots	_____ seconds
Astern Propulsion:	Straight line to 2000 rpm	<input type="radio"/> Issues, Yes / No

	Hard a-port	<input type="radio"/> Issues, Yes / No
	Hard a-starboard	<input type="radio"/> Issues, Yes / No
	Emergency stop	_____ seconds
Tubes (if applicable)	No. of Chambers	_____
	Semi-auto fill system	<input type="radio"/> Yes / No
	Time to fill all chambers	_____ seconds
Endurance Trials: X = gallons or Litres	Fuel consumption	
	Port & Starboard Motor: at cruise:	_____ X/hr @ _____ rpm
	Port & Starboard Motor: at full throttle:	_____ X/hr @ _____ rpm
Steering: Acceptable Y /N	Straight line	<input type="radio"/> Yes / No
	Hard-Port radius of turn. Full Throttle	_____ feet
	Hard-Stbd radius of turn. Full Throttle	_____ feet
	Lock to lock = 35 degrees pt. & stbd	<input type="radio"/> Yes / No
	Effective steering 0-5 knots	<input type="radio"/> Yes / No
	5-10 knots	<input type="radio"/> Yes / No
	20-30 knots	<input type="radio"/> Yes / No
	Full speed	<input type="radio"/> Yes / No

Outboard/Inboard Leg Trim Control:	From fully raised to fully lowered.	<input type="radio"/> Acceptable Yes / No
Trim Tab Operation:	Fully raised, fully lowered.	<input type="radio"/> Acceptable Yes / No
Engine Controls:	Start	<input type="radio"/> Issues, Yes / No
	Shift	<input type="radio"/> Issues, Yes / No
	Throttle	<input type="radio"/> Acceptable Yes / No
Engine Gauges:	Tachometer	<input type="radio"/> Acceptable Yes / No
	Fuel gauges	<input type="radio"/> Acceptable Yes / No
	Trim gauges	<input type="radio"/> Acceptable Yes / No
	Oil pressure	<input type="radio"/> Acceptable Yes / No
Engine Gauges:	Voltmeter	_____ volts
Cabin Sound Levels:	Cruising speed- door & windows closed	_____ dbA @ _____ rpm
	Cruising speed- door & windows open	_____ dbA @ _____ rpm
	Full speed- door & windows closed	_____ dbA @ _____ rpm

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

<u>NOTES</u>

Beaufort Wind Scale Identifier

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

Force	Wind Speed		Descriptive Term	Effects Observed at Sea	Effects Observed on Land
	Km/h	Knots			
				Visibility affected.	
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.

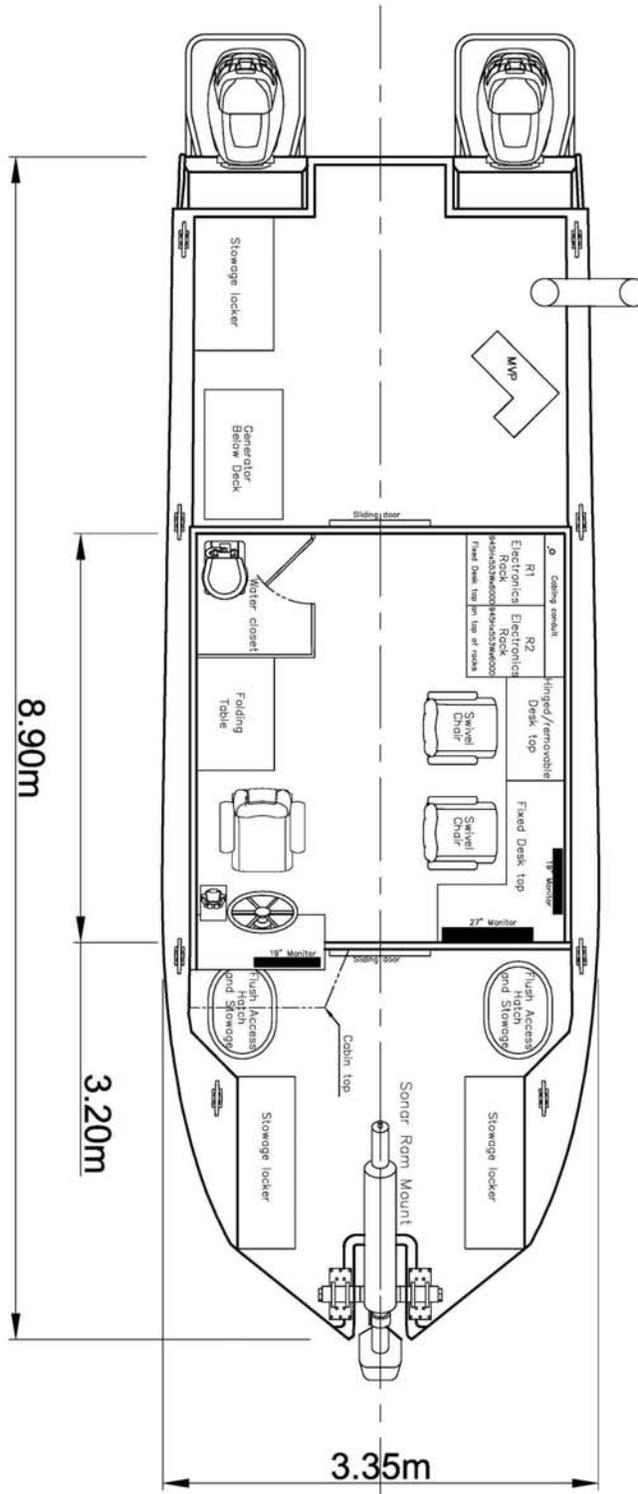


BEAUFORT FORCE 11
WIND SPEED: 56-63 KNOTS
SEA: WAVE HEIGHT 11.5-16M (37-52FT), EXCEPTIONALLY HIGH WAVES, SMALL-MEDIUM SIZED SHIPS MAY BE LOST TO VIEW BEHIND THE WAVES, SEA COMPLETELY COVERED WITH LONG WHITE PATCHES OF FOAM LYING ALONG WIND DIRECTION. EVERYWHERE, THE EDGES OF WAVE CRESTS ARE BLOWN INTO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

Appendix B




Canadian Coast Guard
 Integrated Technical Services
 Marine Engineering

Title:
**Canadian Coast Guard concept sketch for
 an 8.9m Cataman for
 Canadian Hydrographic Services**

Drawn By: Kenneth Aker

Solicitation No. - N° de l'invitation
F7047-130039/A
Client Ref. No. - N° de réf. du client
F7047-130039

Amd. No. - N° de la modif.
3
File No. - N° du dossier
XLV-4-37001

Buyer ID - Id de l'acheteur
xl1v176
CCC No./N° CCC - FMS No./N° VME

APPENDIX C – MVP30

SEE ATTACHED PDF FILE

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 (one boats and one trailer) For work as stated in Part 7 article 1, and Specified in Annex A for a FIRM PRICE of:	\$ _____ X _____
b.	Delivery to destination, CIP (Incoterms 2000) to: Burlington, ON <div style="text-align: right;">for a FIRM PRICE of:</div>	\$ _____ X _____
c.	Total Firm Price (a+b) <div style="text-align: right;">For a FIRM PRICE of:</div> Customs duties are included and applicable taxes are extra.	\$ _____ X _____ :

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

C-1 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

D-1 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.

D-2 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.

D-3 Inspection Records and Reports

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

4. Corrective action to remove cause of unsatisfactory inspections must be submitted to the Inspection Authority in writing by the Contractor, for approval before affecting such repairs and rescheduling of the unsatisfactory inspection/test/trial. Such notices must be included in the final records passed to the Inspection Authority.
5. The Contractor must undertake rectification of defects and deficiencies in the Contractor's installation or repair as soon as practicable. The Contractor is responsible to schedule such repairs at its own risk.
6. The Contractor must reschedule unsatisfactory inspections after any required repairs have been completed.
7. Quality Control, Inspection and Test records that substantiate conformance to the specified requirements, including records of corrective actions, must be retained by the Contractor for three (3) years from the date of completion or termination of the Contract and must be made available to the Inspection Authority upon request.

D-4 Inspection and Trials Process

1. Drawings and Purchase Orders
 - a. Upon receipt of two (2) copies of each drawing or purchase order, the designated Inspection Authority will review its content against the provisions of the 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

E-1 2030 (2014-03-01) General Conditions Higher Complexity Goods, are hereby amended as follows: Delete Section 22 Warranty

E-1.1 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.

E-2 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.

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.”

3. Warranty Conditions

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

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.

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.

and operational constraints. Accordingly, the cost to remediate the defect, in manhours and material, will be discussed between the Contracting/Inspection Authorities and the Technical Authority to determine the best course of action.

7. Alongside Period For Warranty Repairs and Checks

- a. If at all possible, an 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
F7047-130039/A
Client Ref. No. - N° de réf. du client
F7047-130039

Amd. No. - N° de la modif.
3
File No. - N° du dossier
XLV-4-37001

Buyer ID - Id de l'acheteur
xl1v176
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

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

Solicitation No. - N° de l'invitation
F7047-130039/A
Client Ref. No. - N° de réf. du client
F7047-130039

Amd. No. - N° de la modif.
3
File No. - N° du dossier
XLV-4-37001

Buyer ID - Id de l'acheteur
xl1v176
CCC No./N° CCC - FMS No./N° VME

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

F-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.

F-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.

F-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

F-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

F-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 _____

G-1 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: *Burlington, On.*

a.	Known Work (Quantities: 1 boat) For work as stated in Part 1 article 1.2, specified in Annex A, section 1 to 19. for a FIRM PRICE of:	\$ _____
b.	Known Work (Quantities: One trailer) For work as stated in Part 1 article 1.2, specified in Annex A section 20. for a FIRM PRICE of:	\$ _____
c.	Delivery CIP (Incoterms 2000) to destination: (one boat and trailer) <i>Burlington. ON.</i> 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: 100 person hours X \$_____ per hour for a PRICE of: See articles G2.1 and G2.2 below.	\$ _____
e.	EVALUATION PRICE [a + b + c + d], 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 boats and trailers are requested by February 19, 2015, the best delivery that could be offered is _____ weeks (ARO) after receipt of order.

ANNEX H- INFORMATION REQUIRED FOR CODE OF CONDUCT VERIFICATION

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

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

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

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

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

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

ANNEX I - QUESTIONS AND ANSWERS

Item	Spec –RFP Reference	Spec-RFP description	Questions	Answers
1	7-6.5	Milestone Payment	In section 7-6.5 under the Milestone Payments the total percentages add up to 105%?	Solicitation amendment no: 2 address this question.
2	Annex G, G1, Table 1	Financial Bid Presentation sheet	In Annex G under G1 Table C it states a delivery of the vessel to Langley BC rather than Brampton Ontario. ?	Solicitation amendment no: 2 address this question.
3	Part 2, article 5 and Annex G, Article G-3	Delivery	"We have downloaded the above noted Solicitation and would like to submit a proposal for supply of the vessel as specified. Could the final delivery date be extended by 60 days to provide sufficient design and construction time?	Solicitation amendment no: 2 address this question.
4	Annex A	Statement of Work	Section 3.4.1.2 describes options regarding reserve buoyancy in case of flooding. Could you please confirm that sufficient air tight below deck compartments satisfy this requirement? We do not recommend installation of foam for many reasons including weight, fluid absorption, corrosion and maintenance.	Yes agreed. In accordance with TP1332, Flotation foam is not required below deck.
5	Annex A	Statement of Work	Section 3.5.2 specifies that the vessel be coated with a clear coat finish. We find such a clear coat system not suitable for commercial use due to a lack of an effective epoxy primer system. Could the vessel be left unpainted or otherwise, coated with a more traditional marine grade paint system utilizing pigmented epoxy primers and linear polyurethane topcoats with UV inhibitors?	This requirement must stand as is.
6	Annex A	Statement of Work	Section 13.2.2 describes the vessel's cabin as having forward and aft sliding doors for access to the cabin from the forward and aft working decks. Having a sliding door on the forward face of the cabin would necessitate having a flat surface across the front of the vessel's cabin which, is not aerodynamic, seaworthy, nor aesthetically appealing. The sliding doors even of good commercial grade are not likely	Agree to an alternative proposal for the forward sliding door, however all other cabin requirements must be met.

			watertight enough to be located as described and could pose a hazard to the vessel and its electronic survey equipment. Could bidders be allowed to offer alternatives regarding the type of forward cabin door and therefore cabin design?	
7	Annex A	Statement of Work	Could clarification be provided regarding what specific equipment is to be shipyard and GSM?	All GSM has been clearly identified in the Statement of Work. All items in the Statement of Work are contractor supplied, unless identified as GSM.
8	Annex A	Statement of Work	Is the "Sonar Ram Mount" a shipyard fabrication or a supplied component by the GSM?	All components of the sonar ram mount are contractor supplied.
9	Annex A	Statement of Work	Could drawings and specifications for all GSM equipment be provided including CAD templates so that this equipment can be better integrated into the proposed design?	The specifications have been clearly defined in the Statement of Work. Drawings and CAD templates will be available to the winning bidder after contract award and dependent upon availability from equipment sources.
10	Annex A	Statement of Work	Section 20 describes a trailer of welded aluminum construction. Could a galvanized welded steel trailer be proposed?	Yes agreed.
11	Solicitation page 1	Solicitation	We ask for a 4 week extension of the closing date due to the additional engineering work required in the recent amendment, and the outstanding questions.	This requirement has been posted since May 26, 2014. Canada will extend the solicitation closing date by 2 weeks. Solicitation amendment no: 3 will show the new closing date .

ANNEX J - EVALUATION PLAN

J-1 GENERAL

- J-1.1** The general requirement for the Bidder's *Technical Bid* is stated at Part 3 of the Bid Solicitation.
- J-1.2** The *Evaluation Procedure* is stated at Part 4 of the Bid Solicitation. The evaluation procedure indicates the composition of the *evaluation team*. This Annex gives the detailed *Evaluation Criteria* and *Scoring Procedure*.
- J-1.3** In order that a complete technical evaluation of the Bid can be conducted, the Bid must be compliant with all of the bid deliverable requirements, which are summarized under Article 3-2 of the Bid Solicitation. It is the Bidder's responsibility to clearly demonstrate their capabilities and capacity to complete all of the Work and other requirements stated in the Bid Solicitation, the Statement of Work and other attachments. Bidders should describe their capabilities, how they will comply with mandatory requirements, and how they will deliver any other requested goods and/or services.
- J-1.4** It is requested at Article 3-1.1 that the Bidder present topics in the order of these evaluation criteria and under the same headings and numbering scheme. Alternatively, the Bidder should include in their Technical Bid an applicability matrix wherein they identify, by page number, where each of the criterion is addressed in their Bid.

J-2 MANDATORY TECHNICAL CRITERIA

- J-2.1** The Mandatory Technical Criteria are detailed in Table 1.
- J-2.2** Mandatory Criteria will be assigned either a pass or fail by the evaluation team. Any Bid which fails to comply with any one Mandatory Criterion will be declared non-responsive.
- J-2.3** Some (or all) of the Mandatory Criteria may also be point rated, for their technical merit, in accordance with *Scoring Procedure* given under Article J-4 of Annex J.

J-3 POINT-RATED TECHNICAL CRITERIA

- J-3.1** The Point-Rated Technical Criteria are detailed in Table 2.
- J-3.2** Point rating of Criteria, for their technical merit, will be conducted in accordance with *Scoring Procedure* given under Article J-4 of Annex J.

J-4 SCORING PROCEDURE

J-4.1 Each of the criterion to be point rated will be assigned a *Raw Score [RS]* by the evaluation team. Scores are assigned from a range of 0 to 10, as defined below, unless otherwise noted on the Evaluation Criteria Table:

a. Score 0

Unacceptable: Zero (0) points are awarded to Bids in any category in which they fail either to provide any information or provide information which cannot be understood.

b. Score 3, 4

Marginal: 3 or 4 points are awarded to responses considered to be marginally acceptable. The Bidder has not fully established the capability to perform the requirement and has marginally described its approach. For example:

- The proposal reiterated a requirement, but offered no explanation of how or what was to be accomplished in the Technical Scope of Work.
- The proposal offered an explanation of how or what was to be accomplished in the Technical Scope of Work but may have contained inaccurate statements or references which impacted their approach but did not fully negate the technical approach.
- The proposal referred to the quality of their organization but the proposer did not supply adequate descriptions of his/her past experience/personnel or provided resumes of people or case histories of work experience that was not relevant.

c. Score 6, 7, 8

Adequate to Good: Varying amounts of points are awarded if the technical proposal satisfies the requirement(s) and describes specifically how and /or what is to be accomplished in clear detail. For example:

- The organizational, personnel and experience section of the proposal satisfies the requirement and provided information on the company's capabilities, personal resumes, and case history reports on prior similar type of efforts in clear detail including job names, job responsibilities and types of assignment and the organization people and experience are adequate to good for the job.
- The technical proposal satisfies the requirement and describes specifically how and/or what is to be accomplished, including sample products and illustrative materials (i.e. diagrams, charts, graphs, etc.) where appropriate.

d. Score 10

Outstanding: 10 points are awarded if the proposal satisfies the requirements and describes specifically how and what will be accomplished in a superior manner, both quantitatively and qualitatively for their technical approach and the quantity and quality of their previous similar jobs and the experience and training of their personnel. For example:

- The proposal provided an innovative, detailed, cost-saving approach or established by references and presentation of material far superior capability in this area.

Note that 1, 2, 5 or 9 points are not used. The purpose is to create sufficient differences among the awarded scores in order to separate the proposals and help create meaningful rankings. Fractional values are not used for the same reason.

J-4.2 Each rated criterion has been assigned a *Weight Factor [WF]*, indicated on Table 2, generally from a range of 1 to 10, depending of the importance of that criterion.

J-4.3 The Bidder's *Score* in each Criterion is determined by multiplication, as follows:
$$\text{Score} = RS \times WF$$

J-4.4 The *Total Points [TPts]* for the Bid will be determined by addition of the column under the heading "*Score*", averaged between all evaluators. The required minimum *TPts* is as stated (by percentage) at Part 4 of the Bid Solicitation, and as demonstrated at the foot of Table 2.

J-4.5 The *Evaluation Price [EP]*, at Article B-1 (of the Financial Bid Presentation Sheet) will be determined by the Contracting Authority.

J-4.6 Best Value Determination. The highest compliant combined rating of Technical Merit (70%) and Price (30%) will be determined using a prorated score system as follows:

a. For each compliant bid received, the Technical Points achieved in from Annex J Evaluation Tables will be divided by 8140 potential points and multiplied by 70% resulting in a **Technical Point figure**.

b. For each compliant bid received, the Evaluation Price (EP) will form the denominator under the lowest evaluated price offered of all compliant bids received in a prorated fraction multiplied by 30% resulting in a **Price Point figure**.

c. For each compliant bid received, the resulting Technical Points figure and Price Point figure will be added to produce a **Total Point figure** which will be compared to the other bid results.

c. The bidder with the highest Total Point figure will determine the **Best Value for Canada**.

Example of Best Value Determination				
	Bidder 1	Bidder 2	Bidder 3	
Technical Points	5800/8140	7900/8140	7796/8140	
Price Quoted	\$234,000	\$400,000	\$365,000	
Calculation	Technical Points	Price Points	Total Points	Global Evaluation
Bidder 1	$\frac{5800}{8140} \times 70 = 49.87$ 8140	$\frac{234,000}{234,000} \times 30 = 30.00$ 234,000	79.87	Third
Bidder 2	$\frac{7900}{8140} \times 70 = 67.94$ 8140	$\frac{234,000}{400,000} \times 30 = 17.55$ 400,000	85.49	Second
Bidder 3	$\frac{7796}{8140} \times 70 = 67.04$ 8140	$\frac{234,000}{365,000} \times 30 = 19.23$ 365,000	86.27	First

J-4.7 The *Basis of Selection* is as stated at Article 4-3 of the Bid Solicitation.

Table J-1.0 Minimum Mandatory Requirements

The bidder must use the Statement of requirement Annex “A” numbering sequence for the tables below.

The Bidder shall provide, as part of its Technical Proposal, all documents essential to demonstrate compliance with each technical mandatory requirement, including, without limitation, photographs, maps, drawings, calculations, Original Equipment Manufacturer (OEM) specifications, documents, purchase orders (less cost data), job or Quality Control or Quality Assurance record sheets, personnel resumes, current trade certificates and, other such evidence.

The Bidder itself must meet the requirements of each evaluation item listed below, except as otherwise expressly provided in the evaluation item. If an evaluation item expressly provides that it or any element of it may be met by a subcontractor to the Bidder, then the Bidder shall provide documented evidence of such compliance by its subcontractor. In that event, the Bidder shall also provide evidence that it has a binding commitment with that subcontractor under which the subcontractor will perform services under subcontract with the Bidder under any contract issued pursuant to this RFP, and that such services are of the same type as are specified in the relevant evaluation item.

Lines annotated with the following symbol “◀ “requires drawing to demonstrate compliance with the requirement

Minimum mandatory requirement					
Item	Spec reference	Spec sub-Paragraph	Comments	Bid Ref Page #	Pass / Fail
1	2.1				
2	2.2				
3	2.3				
4	2.4				
5	2.5	Not used for evaluation			
6	2.6	Not used for evaluation			
7	3.1				
8	3.2	1. / 2. /3. /4.			
9	3.3	1. /2. /3. /4. /5. /6.			
10	3.4.1	1. / 2. / 3.			
11	3.5	2. / 3.			
12	3.6	Not used for evaluation			
13	3.6.5	1. / 2.			
14	3.7.0	1. / 2. / 3.			
15	3.7.1	1. / 2. / 3. / 4.			
16	3.7.2	1. / 2. / 3.			
17	3.7.3	Not used for evaluation			
18	3.7.4	1. / 2. /3. /4. /5.			
19	3.7.5	1. / 2. /3. /4. /5. / 6. /7. /8.			
20	3.7.6	1. / 2. /3. /4.			

Solicitation No. - N° de l'invitation
 F7047-130039/A
 Client Ref. No. - N° de réf. du client
 F7047-130039

Amd. No. - N° de la modif.
 3
 File No. - N° du dossier
 XLV-4-37001

Buyer ID - Id de l'acheteur
 xlv176
 CCC No./N° CCC - FMS No./N° VME

21	3.8	Not used for evaluation			
23	3.9	1. /2. /3. /4. /5. /5. /6.			
24	4.1				
25	4.2	Not used for evaluation			
26	4.3				
27	5.1				
28	5.2	1. / 2. /3. /4. /5.			
29	5.3				
30	5.4				
31	6.0	Not used for evaluation			
32	7.1				
33	7.2				
34	7.3	1. / 2.			
35	7.4	1. to 8.			
36	7.5				
37	7.6				
38	7.7				
39	7.8	1. to 7.			
40	8.1				
41	8.2				
42	8.3				
43	8.4				
44	8.5				
45	8.6				
46	8.7				
47	9.0	Not used for evaluation			
49	10				
50	13.3	9.			
51	14.0				

Table J-2.0 Point-Rated Additional Requirements

Point-Rated Additional Requirements				
<u>SPECIFICATION: VESSEL PARTICULARS</u>	Bid Ref	Raw Score	Weight Factor	Total Points
	Page #	(0-10)	(WF)	
<p><u>11.0 Operational Performance</u></p> <p>Unless otherwise stated, performance must be for conditions of zero sea state and no wind, in salt water with Normal Load and complement. The craft must be designed and constructed for ease of maintenance and repair, long life, and to be easily supportable by local commercial facilities and suppliers. The craft is expected to have a service life of at least 12 years, with an expected usage of between 350 and 500 hours per year.</p> <ol style="list-style-type: none"> 1. Maximum speed: 30 knots (at normal load condition). 2. Cruising speed: 18 knots. 95% of operations at <10 knots. 3. Endurance: maximum speed for 2 hours. Run at 10 knots for 12 hours. 4. Capable of steering 15° from heading, in Beaufort Force 6, with seas from any direction. 5. Steer and manoeuvre effectively at 3 knots in Beaufort Force 6. 6. Maintain course, made good over ground, when proceeding at 3 knots with relative cross wind of 25 knots. 			10	
<p><u>11.1 Depth under Keel</u></p> <ol style="list-style-type: none"> 1. Operate carefully in depths of 1.0 meter with outboard motors lowered. 2. Basic manoeuvring in depths of 0.7 meters with outboard motors in the partially raised position. 			10	
<p><u>12.0 Environmental Conditions:</u> Capable of operating day or night in the following</p>			5	

<p>conditions:</p> <ol style="list-style-type: none"> 1. Average ambient air temperature range: -15°C to + 35°C 2. Average water temperature: 0°C to +20°C. 3. Wave heights of up to 4 meters (Beaufort Force <u>6</u>). 4. Wind speeds of 22 - 27 knots. 5. Operate in freezing spray or freezing rain with accumulations of up to 6.0 mm while maintaining stability to allow for safe transit in Beaufort Force 6. 				
<p>13.0 Catamaran Hull with Cabin The following items will be supplied as GSM:</p> <ol style="list-style-type: none"> 1. Sonar, Sonar cable, Sonar Processing Unit with manuals. 2. Survey Navigation and motion sensor (POS MV 320) with manuals <ol style="list-style-type: none"> a. MRU (IMU), controlled good, dimensions and weight provided b. POS controller (rack mount unit) here on in "PCS" c. MRU Cable (run from IMU to PCS) d. 2 GPS Antennas e. GPS Coax 3. Two Operator computers and three monitors 4. Moving vessel profiler (MVP) <ol style="list-style-type: none"> a. Winch b. Hanging overboard Swivel Sheave c. Winch Control box d. Rack mounted controller unit e. All associated cables. 5. Sound velocity Sensor and associated RS 232 Cables. 6. All RS232 cables, Ethernet cables required for interfacing all the required equipment. 7. Supply all interfacing cables and diagrams. Cable lengths to be determined after contract award by the contractor and these lengths will be supplied as GSM. 	<p>Not used for evaluation information only</p>			
<p>13.1 General Deck Arrangement – See Appendix B for Concept Plan View</p> <ol style="list-style-type: none"> 1. Large open Aft deck to be maximised, length of working space to be minimum 3.0 meters. 			<p>10</p>	

<p>2. Primary operations on the aft deck will utilize an MVP30 (GSM) with “Outer hanging overboard sheave” and B_J Davit frame (17.4) for deployment of a Fish (data collection device) on the port side of the vessel, see section 17.2 and Appendix C for details.</p>			10	
<p>3. A generator must be contractor supplied and installed in a below deck compartment on the aft deck, STBD side. The generator is a Kohler Marine, Model 10EGD-low CO, gasoline fuelled 60hz, the exhaust must be ported above deck and overboard on the stbd side of the vessel. An electrical Load analysis must be completed as per TP 127 to verify that the generator identified will meet the requirements in this SOW</p>			5	
<p>4. The contractor will construct and install one stowage locker on the aft deck, STBD side. The minimum size of the locker must be 1.0m L x 0.61m D x 0.90m H.</p>			5	
<p>5. Primary operations on the forward deck will utilize a contractor supplied sonar ram mount, see section 17.1 for further details. The sonar ram mount must be capable of mounting a Kongsberg EM2040 Sonar (GSM) and a Motion Reference Unit (MRU).</p>			5	
<p>6. The contractor will construct and install two stowage lockers on the forward deck, one Port and one STBD. The minimum size of each stowage locker must be 1.22m L x 0.45m D x 0.90m H.</p>			5	
<p>7. Top of bulwarks around the perimeter of the vessel must be flat across their whole width.</p>			8	
<p>8. There will be at least 6 tie up points, 3 Port and 3 Starboard from bow to transom. In addition there will be 2 cleats aft at transom corners.</p>			4	
<p>9. Vessel must be fitted with aluminium protective pipe bracket guards, which extend around the outside of each outboard motor. The guards must be fabricated so as to be easily removed for maintenance access to the outboard engines.</p>			5	
<p>10. Both hulls of the vessel must be equipped with securing eyes fitted to the outside of the transom used for trailer tie downs and bow eyes for</p>			5	

towing and trailer tie downs.				
13.2 Cabin - General				
1. The cabin inside length must be a minimum of 3.20m, to meet the requirements of this SOW.			10	
2. There must be two center line sliding weathertight access doors, one on the forward end of the cabin and one on the aft end of the cabin for walkthrough access to both the forward deck and aft deck. The doors must have a vertical sliding/locking aluminum framed window. The doors must have positive retention in the open position and lockset. All locks and hardware must be of stainless steel construction. Aft door to slide to STBD and forward door to slide to Port.			8	
3. The cabin will have 196 centimeters of headroom internal clearance,(6' 5").			5	
4. The cabin must be fitted with proven manufacturers' aluminum framed windows (with screens) of Laminated-Tempered Safety glass and sized to maximize visibility, as follows; a. One (1) forward fixed window, raked forward starting at midpoint of outside cabin height in way of the pilot position. b. One (1) forward fixed window, in way of the navigation position. c. Two (2) side sliding window assemblies forward in cabin sides in way of the pilot (stbd side) and navigator (port side) positions. The windows must open a minimum of 0.4m. For the pilot the window must take into consideration the raked forward bulkhead to maximize visibility. d. Two (2) fixed windows on the port side. e. One (1) fixed window on the stbd side. f. One (1) aft fixed window on the port side.			10	
5. The operator's console must have a watertight forward face access hatch below the console dash for electrical equipment and console electronics access.			10	
6. An overhead console must be fitted with space adequate for two VHF radios, which must not protrude into the headroom of operators.			10	

7. Three coat hooks must be installed in the cabin.			2	
13.3 Cabin – Interior/Exterior Outfit				
1. This vessel must be equipped with three marine seats in the cabin, one operators seat and two work station seats with ballistic nylon or other durable upholstery. As a minimum the seats must meet the requirements of the Grammer MSG85/722 seats with arm rests, head rests and slide functions . The two work station seats must swivel 360 degrees, however the operator’s seat will remain forward facing and be mounted on a pedestal to allow for storage below it. The work station seat closest to the electronics rack must be capable of easy removal for access to the cabling conduit.			5	
2. A water closet must be fitted in the cabin, located on the stbd side at the extreme aft of the cabin and will consist of a 12VDC marine grade toilet, privacy bulkheads, door, vent and light. A holding tank with easy access pump out is to be installed. Supply water to the toilet must be fitted with an easily accessible shut off valve. Sewage system and capacity must meet Transport Canada Vessel Pollution and Dangerous Chemicals Regulation section 90 (1).			10	
3. A foldable table is to be provided behind the operator’s seat, mounted to the water closet exterior bulkhead. The height of the table must be suitable for personnel during stand up work. The table must have positive retention in both operational and folded positions.			5	
4. An ‘L’ shaped fixed desktop will be fitted on the forward port side at a height suitable for personnel during sit down work.			5	
5. A hinged or removable desktop will be fitted just aft of the ‘L’ shaped desktop at a height suitable for personnel during sit down work. This desktop is hinged or removable in order to gain easy access to the cabling conduit behind the electronics racks.			3	
6. Two electronics racks (R1 and R2) with shock mounts must be supplied and located on the port side, to the aft end of the cabin. The racks must be mounted side by side with a 152mm conduit for cabling on the outboard side. The racks			10	

<p>required for mounting of electronic equipment is Schroff brand, Part number 15230-021. Dimensions of the racks are identified in Appendix B. Rack components will be supplied as GSM and must be mounted by the contractor on shelves with rack sliders. List of items to be rack mounted:</p> <ul style="list-style-type: none"> a. Electronics Rack R1 <ul style="list-style-type: none"> i. Sonar processing unit, size 447mmLx178mmHx345mmD, Weight= 15kg. ii. POS controller , size 482mmL x 44mmH x 352mmD, Weight= 4 kg. iii. MVP controller, size 482mmL x 133mmH x 432mmD, Weight= 10 kg. iv. Spare Sliding shelf. b. Electronics Rack R2 <ul style="list-style-type: none"> i. Rack mount computer 1, size 480mmLx178Hx 510D, Weight= 24kg. ii. Rack mount computer 2, size 480mmLx178Hx 510D, Weight= 24kg. ii. 2 Spare Sliding shelves. <p>7. A table (chart) must be mounted on top of the electronics racks sized to the perimeter of both racks and extending to the cabin bulkhead.</p> <p>8. Three computer monitors (110v) will be supplied as GSM and must be mounted by the contractor, as follows;</p> <ul style="list-style-type: none"> a. 24-27” monitor, mounted on desk for work station operator at the 'L' shaped desk, screen will face aft. b. 19” monitor, mounted on desk for work station operator at the 'L' shaped desk, screen will face inboard. c. 17” monitor, mounted on an adjustable arm from deck head for the vessel operator, screen will face aft. <p>9. This vessel must be equipped with an Air conditioning unit suitable to maintain the temperature at a manageable level, mounted to the top of the cabin. The unit must also be</p>			<p>5</p> <p>5</p> <p>Not used for</p>	
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<p>capable of producing heat and have a condensation collection pan for discharge overboard. The SeaMach A/C Unit with Van-Pan will meet this requirement, capable of Cooling capacity 13,500 BTUH and a Heating capacity of 5,600 BTUH.</p> <p>10. Grab Handles : There must be grab handles positioned as follows:</p> <ol style="list-style-type: none"> a. Three (3) overhead in way of the seats in the cabin. Locate over foot space ahead of seats. b. Two (2) at the aft door exterior one vertical on port side of door opening and one at the door opening under the cabin top. c. Two (2) at the forward door exterior one vertical on stbd side of door opening and one horizontal at the door opening under the cabin top. d. Grab handles are required around the exterior perimeter on cabin top. <p>11. Flooring: All interior floor covering must be non-slip approx 3/8" shock and sound absorbing rubber with embossed tread pattern.</p> <p>12. Interior Finish: The interior of the vessel must be in a speckled grey colour, Zolotone "Granite" or equal. All rough edges and sharp angled corners must be rounded and ergonomically adapted. The space between screwed on interior lining plates, and exterior plate, must be insulated between frames with thermal insulation. Frame faces must have thermal barrier strip isolating interior panels.</p> <p>13. Foot Rests; There must be three footrests, one for the operator and two foldable footrests for the work station seats.</p> <p>14. An exterior ladder must be installed for access to the cabin top.</p>			<p>evaluati on</p> <p>5</p> <p>5</p> <p>5</p> <p>5</p>	
<p>13.4 Lighting/Utilities</p> <p>1. Lighting interior, all lights must have individual switches;</p> <ol style="list-style-type: none"> a. The interior cabin must be equipped with two rows of three overhead LED white 			<p>10</p>	

lights, on P&S sides.				
b. One LED white light over each work station				
c. Three chart lamps on flexible goosenecks, one for the chart table, one for the folding table behind the operator and one for the operator.				
2. Exterior lighting; there must be four flood lights fitted on the cabin top, two are facing the bow and two facing the stern, Hella model 1GB-998-541-001 or equal. In addition two remote control spotlights to be mounted on cabin top, one is facing the bow and one facing the stern, Guest Model SPL 12W or equal .			5	
3. Three 12 VDC power points required, one at the console for the operator and one for each of the work stations.			10	
4. This vessel must be equipped with a 3.0 kW power charger / inverter that is tied to one (1) deep cycle large capacity marine house battery and a start battery per engine.			5	
5. An isolation transformer and galvanic isolators must be integrated into the vessels electrical system.			8	
6. There must be four 110 VAC power receptacles in the main cabin in way of the two work station positions and one area 110 VAC power receptacles in way of operators position.			5	
7. There must be two shore power 110v receptacle, 30-amp connections, on aft exterior bulkhead of cabin. One will service the block heaters and battery charger and the second will service the survey gear and cabin.			10	
8. A Uninterruptable Power Supply (UPS) must be supplied, Eaton Ferrups model FE 1.4 is acceptable or equal.			8	
9. Ducts from the SeaMach AC/Heater must be located in the cabin, at the operator and work station positions near the deck, and the window supply plenum(s) port and starboard.			5	
10. A front windshield defroster(s) must have a variable three-speed fan and be ducted to multiple outlets to be capable of clearing the entire front windshield area of the vessel.			5	
11. The front windshield defroster must be capable			5	

<p>of blowing both cold and heated air.</p> <p>12. The cabin must have at least two variable speed fans capable of circulating the air in the cabin. A positive pressure intake fan with ‘dorade’ type intake protection must supply air to the cabin.</p> <p>13. Two wipers with pantograph arms must be installed on the port and starboard fore windows. A variable speed switch located on the operator’s console must activate wipers individually.</p>			5	
<p>13.5 Deck Finish exterior:</p> <p>Non-skid paint system, SURE-FOOT GRAY or Equal must cover the entire deck except waterways and fittings.</p>			10	
<p>13.6 Console Finish: The console of the vessel must be painted in a speckled grey colour, Zolotone “Granite” or equal.</p>			3	
<p>13.7 Hull finish below waterline: AWLGRIP paint system or equal. Bottom will be protected with an epoxy water barrier and covered with 2 coats of black Tri-Lux II anti-fouling.</p>			8	
<p>13.8 Helm Station</p> <ol style="list-style-type: none"> 1. The Helm station will be on the stbd side of the console, with controls on stbd. 2. The helm will incorporate a steering system, capable of handling the horsepower of the vessel, with manufacturers’ engine controls designed for the power units. 3. There will be provision for an array of control gauges and electronic equipment at the helm position, see electronics section 17.6 and 18.1. 4. In addition, if not included with above gauge package, outboard trim gauges, and fuel level gauge(s) will be installed. 5. There will be a console mounted magnetic compass, see 13.8 following. 6. All lights switches and breakers must be within easy reach of the helmsmen. 			10 5 5 5 5 3	

<p>7. In addition to the factory supplied individual propulsion leg trim controls there will be a SYNCRO trim switch to integrate the outboard controls on one switch.</p> <p>8. Space required for future additional installations, e.g. for trim tab controls.</p>			2	
<p>13.9 Navigation Lighting and Equipment: LED options must be used where available</p> <p>1. The Contractor must supply and install an electric horn that meets the requirements of the Collision Regulations. The horn must be operated by a spring-loaded switch located on the operators' console. The "Signaltone", or Ongaro electric horns meet this requirement.</p> <p>2. Navigation lights must be permanently fitted to the cabin Top with protected wiring and must be waterproof. All around mast /anchor light ratchet mast mounting is acceptable.</p> <p>3. The fixtures must be of such a design as to resist the effects of vibration and must be provided with adequate protection from damage that may occur when lying along side a vessel or a pier. (The Hella NaviLED Series of lights, including the NaviLED 360 all-round light , and NaviLED side lights or equal meet this requirement.)</p> <p>4. Non-white lighting must be wired together on a separate breaker of the 12 volt DC electrical system. All around Mast /Anchor light showing clear above the radar scanner as per TP 1332. Two switches to be provided, labelled: Nav masthead / anchor and Nav sidelights. Magnetic Compass: The Contractor must provide and install a direct read compass, with light and dimmer switch . (The Ritchie Helmsman 70 series meets this requirement.)</p>			3	
<p>13.10 Exterior Equipment</p> <p>1. Transom deck drainage scuppers /freeing ports will be of a size to allow sufficient drainage of forward and aft deck surfaces per TP 1332 and ISO.</p> <p>2. Locking bilge access in below deck stowage, forward.</p>			8	

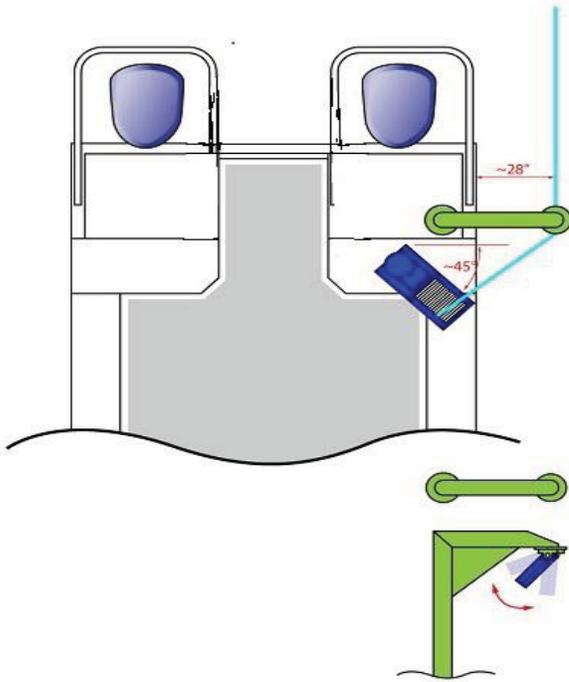
3. Locking fuel filler access.			4	
4. All storage lockers to have swing up hatches, (storage and access) to be held open by gas lift shocks.			4	
<u>15.0 Construction Drawings and Data</u>				
1. "As Fitted", drawings: Not used for evaluation				
<u>16.0 Hull and Deck: Construction and Finish:</u>				
Hull and Deck:				
1. The hull, and deck, must be constructed of Aluminium per Material section 3.2. Mil Certificates are required for all aluminium used in the fabrication.			Mandatory	
2. The Exterior of the vessel will be painted with clear sealer only above the waterline. Non-skid adhesive strips to be applied to the cabin top, top of bulwarks.			5	
16.1 The hull is to be Catamaran Twin hull. Scantlings must be per the American Bureau of Shipping (ABS) Rules "Rules for building and classing High-Speed Craft 2014, Part 3, Hull construction and equipment Class Rules" as a minimum (Class approval is not required, however the Technical Authority/ Inspection Authority will verify that the scantlings meet the minimum requirements of ABS, Part 3 Class rules as applicable to this hull form) with modifications for intended service identified within this SOW.			25	
Deck hatches to be arranged in way of fuel tanks and stowage, as well as quick accesses as required by TP1332 for utilities.			10	
16.2 Deck: Deck wells must be self-draining, by means of non-return freeing ports in the transom, aft and fore decks.			5	
16.3 Windows are to be laminated tempered glass,			4	

<p>and carry the manufacturers' marks confirming construction. Forward windows are to be minimum 3/8" laminated safety glass. Smaller side windows can be minimum 1/4" thick laminated, safety glass.</p>				
<p>16.4 Stowage, Lifting and Trailer Securing Points:</p> <ol style="list-style-type: none"> 1. Arrangements must be provided for safe, secure and accessible stowage of an anchor and cable, and other equipment in bow / anchor locker. 2. Tie Downs: Port and Starboard trawling tie down points to be incorporated in transom. <p>Lifting: The vessel must be equipped with a four-(4) leg, webbing lifting bridle, which may require a spreader bar. The location and arrangement of lifting gear must be such that it does not pose a safety hazard to the operator or crew nor interfere with boat operation. Four All bridle lifting lugs must be reinforced and proof tested in accordance with CSA Tackle Regulations. Lifting points must not be located below the deck or within lockers or compartments. Lifting points must be located so that the bridle does not snag on the boat structure, outfit or machinery. Lifting slings provided must be webbing strap type certified to safely lift the vessel in the Normal Loaded condition. Test margin 150% for four straps, or per CSA if higher standard.</p>			<p>5</p> <p>5</p>	
<p>16.5 Bow Eyes</p> <p>A system is to be designed and incorporated into the construction of the stems that allows for the bowline and or trawling hook to be attached to the bow and which must not protrude from the line of the stem. The fitting must be of a non-corrosive material and of sufficient strength to allow for towing the vessel at a speed of 10 knots in calm water in the normal loaded condition, on an even keel, without damaging the vessel or causing chafing of the towline.</p>			<p>5</p>	
<p>16.6 Pumping and Drainage:</p> <ol style="list-style-type: none"> 1. A marine grade electric bilge pump with 2000 gph capacity must be fitted in each main hull or largest hull compartment as well as a fixed manual operated bilge pump of the diaphragm 			<p>10</p>	

<p>type. The bilge pumps must be located so that it takes suction from the lowest point of the compartment. Piping must be installed which will allow the bilge pumps to discharge directly overboard aft. Any additional watertight division of the hull will be serviced by a bilge pump of 1500 GPH capacity. (The Rule® 1500 Model Submersible Bilge Pump, and Rule series pumps meet the electric bilge pump requirement)</p> <p>2. The electric bilge pumps control panel must be located visibly on the operator’s console, with settings for ‘on’, ‘off’ and ‘automatic’ operation. An indicator light must be provided at the console that lights when the bilge pumps are operating.</p> <p>3. An automatic float switch control must be fitted that turns on the electric bilge pumps when water is present in the bilge. (This" float switches" must have the float mechanism contained in a protected housing, at the base of the pump or separately, an Ultra® Pumpswitch Junior Model Float Switch meets this requirement.)</p> <p>4. Bilge High Water Alarm for each compartment equipped with a pump as per TP1332 including the outboard engine pod, with alarm indicators at helm to be clearly visible by the operator.</p> <p>5. Hull drainage - a non-corroding threaded plug must be provided in the lowest point to drain the aft compartments of each hull when out of the water.</p> <p>6. Any forward water retaining compartment without pump will have a piped drain to the aft bilge where a stainless steel ball valve must be located readily accessible for testing or draining the forward bilge to the aft pump.</p> <p>7 Two Manual pumps such as Whale ‘Gusher’ is required as noted in lifesaving sec. 17.5, one for each hull.</p>			<p>8</p> <p>4</p> <p>5</p> <p>5</p> <p>5</p>	
<p><u>17.0 Specification: OUTFITTING and EQUIPMENT</u></p>				

<p>17.1 Bow Sonar Ram Mount</p> <p>The Bidder must provide a draft drawings arrangement with their bid. ◀</p> <ol style="list-style-type: none"> 1. The builder is to supply and install a Sonar Ram unit, which must be mounted on the centreline of the bow. 2. The Ram mount end mounting plate must be capable of mounting a Kongsberg EM2040 Sonar and a Motion Reference Unit (MRU) on a secondary mounting plate on the Ram Mount. The sonar and MRU will be Government Supplied Material (GSM). 3. A sonar processing unit and sonar cable will also be supplied as GSM. The sonar processing unit must be installed by the builder in the Electronics rack in the cabin, see section 13.3.6. 4. The MRU (Applanix Corp, IMU type 38) is a controlled good and cannot be supplied, however the dimensions are 172mm diameter x 195.5mm deep and a weight of 10kg, a bolting pattern will be supplied as GSM. 5. The ram mount must be of sufficient size and strength such that upon deployment of the sonar/MRU units ram and at an operational speed of 10 knots, the vibration will not affect the normal operation of the sonar/MRU. 6. The ram mount must be constructed such that the sonar/MRU assembly can be removed/installed for maintenance and stowage when not in operation. The builder is to provide a detailed description of this solution with their bid. 7. The ram mount must rotate and deploy with a dual sprocket reduction gear, controlled by a 12V DC electric motor. The rotation of the ram must provide for proximity switches and an auto stop in both the deployed and retrieved positions. 8. Operation of the 12V DC motor will be controlled using a three button (Deploy, retrieve and Stop) portable watertight Pendant station. The station must have be wired to allow for 			<p>25 (all)</p>	
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<p>operation up to 2m from the ram and have a cradle for storage during non-operation.</p> <p>9. All Interfacing cables and diagrams will be supplied as GSM.</p>				
<p>17.2 Moving Vessel Profiler (MVP)30 (GSM)</p> <p>The Bidder must provide a draft drawings arrangement with their bid. ◀</p> <ol style="list-style-type: none"> 1. The builder is to provide a foundation for and install one Rolls Royce MVP30 with hanging outer overboard sheave. 2. The MVP30 will be supplied as GSM and includes the following items; <ol style="list-style-type: none"> a. Winch b. Hanging overboard Swivel Sheave c. Winch control box d. Controller unit (to be mounted in the Electronics rack in the cabin, see section 17.3) e. All associated cables 3. See Appendix C for further information. 			<p>10 (all)</p>	
<p>17.3 B_J Frame - Davit Boom</p> <p>The Bidder must provide a draft drawings arrangement with their bid. ◀</p> <ol style="list-style-type: none"> 1. A rotating/removable davit boom with cable sheave must be supplied by the contractor to work in conjunction with the Moving Vessel profiler outer overboarding sheave and deploy the fish. 2. The height of the boom is governed by the top height of the sheave which has been determined to be 1.90m above the deck, therefore the boom can be designed around this criteria. A UHMW Sleeve must be used for easy rotation of the boom. 3. The Safe working load of the boom must be 1000lbs, which must be stamped into the boom arm and be clearly visible. 4. The boom must be able to lock into position when rotated to port and again when rotated to 			<p>12 (all)</p>	

<p>stern.</p> <p>5. The boom must extend the cable overboard to port by 28°. See reference figure below.</p> <p>B_J-frame</p> 				
<p>17.4 Generator Compartment</p> <p>The Bidder must provide draft drawings arrangement with their bid. ◀</p> <p>1. A generator compartment must be integrated into the structure of the stbd hull on the aft deck to contain and operate a Kohler Marine, Model 10EGD generator on a shock mitigated foundation. The generator must have the following Accessories/options:</p> <ul style="list-style-type: none"> a. Advanced Digital control b. Siphon Break c. Ship-to-Shore Switch d. Remote Digital Gauge e. Oil Pressure and Water Temperature Sender f. Remote Start Panel g. Remote Connection/Extension Harness h. 12-Inch Remote Wiring Harness i. Line Circuit Breakers 			<p>15</p>	

<p>j. Sea Spares - Maintenance Kit</p> <ol style="list-style-type: none"> 2. The compartment should be designed to be partially extended above the deck. 3. The compartment design will allow full operation of the generator with the access lid closed and be suitable for all weather conditions; therefore a blower and air supply will be required. Blower must have a dual switch to engage at the generator compartment or at the operators console. When the generator is running the blower must be on continuously, locking out the switches. 4. A Remote digital gauge and ship / shore transfer switch must be provided. 5. A quick access fire port is required as well as dedicated fire extinguisher mounted on the compartment exterior for ease of access. 6. Compartment must be designed for quick access for full removal of the generator. 7. To meet compliance with SVCP, the compartment must have a heat detector and a warning light must be installed at the operators console. 			<p>4</p> <p>15</p> <p>10</p> <p>10</p> <p>20</p> <p>10</p>	
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<p>17.5 Lifesaving Emergency Equipment: The following items must be supplied and provided with stowage / securing arrangements (as appropriate for each item). All fittings, Contractor supplied, must be heavy duty, corrosion resistant stainless steel fittings. All items must be readily accessible.</p> <ol style="list-style-type: none"> 1. Fire extinguishers (Class B1, marine type) minimum two (2) extinguishers 2. Two (2) paddles 3. Two manual bilge pumps (built in), one for each hull, Whale Gusher type. 4. One life buoy with heaving line not less than 15 meters 5. One watertight flashlight 6. Pyrotechnics Type A Qty: 3, Type B or C Qty: 3 7. First Aid Kit 8. Boat hook, 8 feet long (retractable) 9. CQR plow anchor with chain/rope locker (or equal) suitable for this vessel with 6' chain and 100 ft. nylon rope. 10. Drogue sea anchor and 100 feet of 1/2 " braided nylon line 11. Mooring lines, four (4) X 20' X 5/8" braided nylon line with eye spliced into one end 			5	
<p>17.6 Navigation Electronics: This vessel must be constructed for contractor installation of the following Contractor Supplied electronics navigation package, with displays located across the forward, side and above dash, in addition to the Colregs required equipment. Final arrangement to be approved by the Technical Authority.</p> <p>The Bidder must provide a draft console arrangement drawings arrangement with their bid. ◀</p> <ol style="list-style-type: none"> 1 Raymarine C Series C127 network multifunction Display with Canadian chart, Mfg nbr: E70014. 2. Raymarine RD418D Radar Scanner with 10m Raynet Cable, Mfg. nbr: T70166 3. Raymarine AIS650 Class B Transceiver, Mfg. nbr: E32158 4. Raymarine DSM300-G Digital Sonar 			28	

<p>Module, Mfg. nbr: E63069G</p> <ol style="list-style-type: none"> 5. Raymarine P66 High Speed Transom Transducer, Mfg. nbr: E66054 6. Raymarine Raystar RS130 External GPS Sensor, Mfg. nbr: E32153 7. Raymarine Ray260 Modular VHF Radio, Mfg. nbr: E70087 (will require CFM Shakespeare antenna w/ ratchet mount.) 8. RaymarineSmart Heading System with fluxgate compass. 9. Raymarine Active Speaker for Ray260, Mfg. nbr: A80199 10. Raymarine External Hailing Horn Speaker, Mfg. nbr: M95435 11. Raymarine Autopilot, with low cost independent heading solution. The autopilot selection is dependent upon the catamaran engine drive type and steering connection. 12. Externally Mounted EPIRB ACR RLB-35. 13. Additional requirements: The Catamaran should utilize the Seataalk NG (NMEA2000) bus to interconnect Raymarine equipment. Raymarine components not equipped with Seataalk NG can be interconnected through Seataalk HS and / or NMEA 0183. 14. Contractor to supply two mounts (retractable for transport) on the cabin top on the centreline space at 2m apart and at the same vertical height for mounting two Trimble Zephyr GPS antennas (GSM). 				
<p><u>18.0 Propulsion/Fuel System</u></p>				
<p>18.1 Main Propulsion</p> <ol style="list-style-type: none"> 1. Unless otherwise specified, propulsion must be by TWO of, Government Supplied (GSM) 250HP Yamaha, (one counter rotation), 4-Stroke, gasoline outboard motor c/w 30" leg. All other engine equipment CFM. 2. Motors must be mounted in accordance with manufacturer's recommendations. 3. Engine package must incorporate an automatic shutdown feature (kill switch) for the engine to be mounted near the ignition switch. 4. Contractor to supply and install equipment 			<p>N/A</p> <p>5</p> <p>5</p> <p>5</p>	

<p>included in the manufacturers' standard Command Link® Plus LCD Display gauge package, and appropriate cables and harnesses, for the specified engine.</p> <p>5. In addition to the factory supplied individual propulsion leg trim controls there must be a SYNCRO trim switch to integrate the two drive leg trim controls on one switch.</p> <p>6. Contractor to supply and install any of the following equipment functions included in the manufacturers' standard and optional electronic gauge package (e.g. Yamaha Command Link) for the specified engine: All gauges must be backlit with an adjustable dimmer. Lighting for gauges and compass must use separate dimmers.</p> <p>7. a. Tachometer for engine.</p> <p>8. b. Water pressure gauge.</p> <p>9. c. Trim gauge.</p> <p>10. d. Controls, cables.</p> <p>11. e. Ignition harness.</p> <p>12. f. Hour meter for engine.</p> <p>g. Voltmeter.</p>			5	
<p>18.2 Fuel Systems:</p> <p>1. Fuel systems must meet with all requirements of TP 1332 "Construction Standards for Small Vessels", which reference the ABYC standards. Regardless of interpretation of TP 1332 requirements, below deck fuel tank compartment MUST have both passive and powered bow to stern ventilation system installed with clearly warning labelled switch at the helm, and at below deck acceses.</p> <p>2. The vessel must be fitted with minimum two (2) fuel tanks with baffles, to be located under the deck for a total capacity of no less than seven hundred and fifty (750) litres.</p> <p>3. The vessel must be fitted with one additional fuel tank for the generator, to be located under the deck with a capacity of no less than one hundred (100) litres.</p> <p>4. There must be inspection hatches (8") in the deck, to allow access to the fuel pick-ups, vent, fill connections, and tank level indicators.</p>			15	
			15	
			10	
			5	

<p>5. Arrangements must be provided for two fuel tanks and associated lines, vents, fills, and on / off selector manifold, using three way valves, to be fitted to the boat.</p> <p>6. Fuel lines from the inboard shutoff valve or manifold to the outboard motor(s) to be protected against chafing and wear.</p> <p>7. A fuel / water separator filter is to be mounted “in-line” to each engine with easy access to drain the sediment bowl.</p> <p>8. Fuel shutoff valves must be installed at fuel tank outlets and be easily accessible by vessel operators. Near the filters and engines, additional ‘service’ fuel shutoff valves to be located, to facilitate engine or filter service.</p> <p>9. Lockable/ labelled, fuel fill, and vent station must be located on the bulwark at the Cabin aft bulkhead. The fuel fill station must have a cofferdam such that any fuel spill will be directed overboard away from the vessel.</p> <p>10. The Fuel tank space requires flow through ventilation per TP1332 and ABYC.</p> <p>11. The Fuel tank space must have a fume detector, Marine Tech 2” or equal.</p>			<p>2</p> <p>2</p> <p>2</p> <p>5</p> <p>3</p> <p>5</p> <p>8</p>	
<p><u>19.0 Steering</u></p>				
<p>1. Steering systems must be hydraulic with a maximum of 3.5 turns from hard over to hard over. (The SeaStar® and / or DayStar steering systems, depending on vessel horsepower, from Teleflex meet this requirement). Particular propulsion systems may have their own requirements for steering that must be adhered to, e.g. Jet steering systems.</p> <p>2. All hydraulic steering hoses must be routed below deck and all hoses must be routed so that there are no pinch or chafing points on the hoses.</p> <p>3. The wheel / console connection must be of robust construction, to eliminate fore and aft or lateral movement of wheel / steering shaft fixture.</p> <p>4. The Steering wheel must be stainless steel and may be rubber or plastic covered, or the steering</p>			<p>8</p> <p>3</p> <p>N/A</p> <p>3</p>	

<p>wheel must be stiff enough that during rough water operations there is no flexing of the wheel and the wheel should be padded to provide a comfortable non-slip surface for the operator to grip. (Momo Marine steering wheels meet these requirements.)</p>				
<p>20.0 Trailer – Gooseneck with Fifth wheel adjustable coupler</p>				
<ol style="list-style-type: none"> 1. Must be rated at least 20% over the anticipated 'normal load' weight of the vessel, designed specifically for this catamaran hull, meet the requirements and regulations of Ministry of Transport for Ontario and as specified below. 2. Capacity to be minimum 18,000 lb. Welded aluminum construction. 3. 16 inch 6 bolt wheels with disc brakes, carrying 225 / 75R / 16D tires with 'E' load rating. 4. Triple axle, with axle bearing protection, grease nipple. 5. Brake, and turn signal lighting, with 7-prong flat wiring connector. (NOTE: Requirement for other connector if required for the equipment listed for trailer.) 6. Electric / hydraulic jurisdiction compliant, disc braking system . 7. Winch - heavy duty worm gear winch with deep cycle battery and power shutoff switch. Bow chocks, and swivel tongue jack, (2500 lb.) with footpad. 8. Trailer to be fitted with heavy-duty 'stand-on' fenders. 9. Hitch, Gooseneck with a Fifth wheel adjustable coupler. 10. Trailer to have multiple bunk assemblies, two spare tires with carriers, with lug wrench. 11. Trailer to be supplied with two (2) ratchet tie down straps with hooks securing boat to trailer aft. Turnbuckle to be provided for securing vessel to trailer forward. 12. A removable ladder for ease of access to the vessel. 13. An aluminum tool box, weathertight and lockable. Size to be minimum 3'Lx18"Wx18"D. 			<p>26</p>	

Appendix c

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MVP30 INSTALLATION GUIDE



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WARNING - THE MVP30 SYSTEM SHOULD ONLY BE OPERATED BY TRAINED PERSONNEL

Winch hardware is microprocessor controlled with local and remote modes of operation. Ensure that personnel are clear of all moving parts whenever main power is ON.

WARNING: The Control Box and the Controller Interface Box in the lab must be turned OFF whenever working on the tow cable and cabling in the Free Fall Fish. High Voltage is present in these cables.

If the winch is to be operated in Hand mode with the Power Module or sensor disconnected from the tow cable, the Controller Interface Box in the lab must be turned OFF.

If the end of the tow cable is to be submerged, ensure a dummy plug is connected to the end of the tow cable to eliminate damage to the connector and cable.

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1 MVP30 SYSTEM SPECIFICATIONS

1.1 OPERATING DEPTH

MVP30 - Cable Length 185 m

- 125 m @ 0 knots*
- 66 m @ 5 knots
- 30 m @ 12 knots

MVP30-350 - Cable Length 440 m

- 350 m @ 0 knots*
- 175 m @ 5 knots
- 30 m @ 12 knot

NOTE: Ensure sensor(s) are rated for this depth before operations.

1.2 WINCH

MVP30

- Drum Dimensions: 216 mm (8.5") barrel diameter
198 mm (7.8") wide
292 mm (11.5") flange OD
- Line Pull: Bare Drum – 68 kg (150 lbs.)
- Capacity: 185m of 5.7 mm (0.223") dia. Tow Cable
- Tow Cable: Jacketed Vectran Electro-Mechanical, 4 conductor
- Winch Motor: Leeson 230VAC 1.5 hp, 1725 rpm
- Clutch Brake Module: Kebco Combibox, 24 VDC
- Slip Ring: Focal Technologies Model 180 ESR
- Mounting Footprint: 813 mm x 305 mm (32" x 12")
- Height: 686 mm (27")
- Weight: 100 kg (220 lbs.)

MVP30-350

- Drum Dimensions: 216 mm (8.5") barrel diameter
309 mm (12.2") wide
366 mm (14.4") flange OD
- Line Pull: Bare Drum – 68 kg (150 lbs.)
- Capacity: 450m of 5.7 mm (0.223") dia. Tow Cable
- Tow Cable: Jacketed Vectran Electro-Mechanical, 4 conductor
- Winch Motor: Leeson 230VAC 1.5 hp, 1725 rpm
- Clutch Brake Module: Kebco Combibox, 24 VDC
- Slip Ring: Focal Technologies Model 180 ESR
- Mounting Footprint: 828 mm x 305 mm (32.6" x 12")
- Height: 752 mm (29.6")
- Weight: 141 kg (310 lbs.)

2 OVERBOARDING SHEAVES

2.1 OUTER OVERBOARDING SHEAVE

- Mounting Footprint: 508 mm x 254 mm (20" x 10")
- Height: 762 mm (30")
- Weight: 16 kg (36 lbs.)

2.2 HANGING OVERBOARDING SHEAVE

- Mounting Footprint: 279 mm x 432 mm x 146 mm (11" x 17" x 5.75")
- Weight: 6 kg (13 lbs.)

2.3 A-FRAME OVERBOARDING SHEAVE

- Mounting Footprint: 924 mm x 711 mm (36.4" x 28")
- Height (Stowed): 2027 mm (79.8")
- Weight: 88 kg (194 lbs.)

3 MVP30 SINGLE-SENSOR FREE FALL FISH

- Weight: 11 kg (24 lbs.) with sensor and Power Module, in air
- Body Length: 597 mm (23.5") excluding bridle
- Body Diameter: 89 mm (3.5")
 - Sensor: - AML CTD Micro Sensor, or
 - AML SVP&T Micro Sensor, or
 - AML SVP Micro Sensor

4 MVP CONTROLLER

Minimum requirements (refer to system factory configuration for details)

- Operating system: Windows XP
- Processor: Pentium 600 or higher
- Ram: 128 Mb
- Hard Disk: 5 GB Hard drive
- Video: 1024x768 SVGA with 64 thousand colors
- Pointing Device: Microsoft Wheel Mouse
- Serial ports: 4 serial (RS232) ports
- Drive: CD-ROM drive
- Monitor: 15" Video Monitor
- Keyboard: PS/2 Keyboard
- Hardware: Network Card

5 POWER REQUIREMENTS

- Winch Unit: 120 VAC, 60 Hz, 20 Amps with Overload Protection or if requested at time of order, 220VAC, 50-60Hz, 16 Amps with Overload Protection.
- If a 120VAC three-phase input is to be used, please consult Rolls-Royce Canada Limited before proceeding.
- Controller Interface Box: 120 VAC, 60 Hz, 5 Amps or if requested at time of order, 220VAC, 50-60Hz, 4 Amps.

6 MVP30 INSTALLATION AND STARTUP INSTRUCTIONS

The MVP30 and MVP30-350 are shipped fully assembled: Control Box, Winch Unit, Overboarding Sheave (Outer, Hanging or A-Frame), Free Fall Fish, MVP Controller computer, Interface Cable and Controller Interface Box.

The steps for installation are:

1. Mounting the Control Box (Only applicable for off-winch mounting)
2. Mounting the MVP30 Winch Unit
3. Mounting the Outer Overboarding Sheave
4. Mounting the Hanging Overboarding Sheave
5. Mounting the MVP30 Winch Unit with A-Frame.
6. A-Frame Overboarding Sheave Release from stowed position.
7. Installing the Tow Cable through the Outer Overboarding Sheave
8. Installing the Tow Cable through the Hanging Overboarding Sheave
9. Installing the Tow cable through the A-Frame Overboarding sheave.
10. Deploying the MVP30 A-Frame
11. Attaching the Free Fall Fish to the Tow Cable
12. Installing the MVP Controller and Controller Interface Box
13. Controller Setup
14. Initial Start up

6.1 MOUNTING THE CONTROL BOX

(Only applicable for off-winch mounting)

Mount the Control Box with four 5/16" stainless steel fasteners using the mounting tabs located at the corners of the box; refer to **Figure 1**.

Once the Control Box is mounted, it must be connected to the Controller Interface Box, the Winch Junction Box, the Remote Pendant and the Electric Motor. The cables and connectors are clearly labelled and can only be connected in one location to prevent connectors from being incorrectly installed.

Note: *These cables should be connected with the power cord disconnected.*

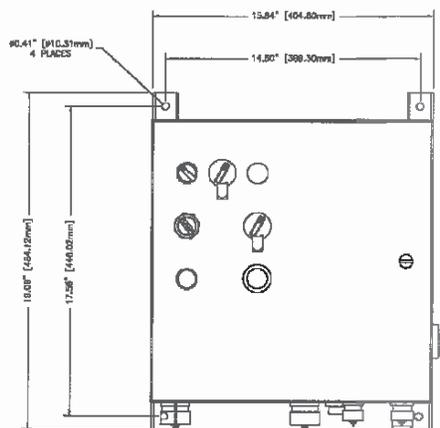


Figure 1: Mounting the Control Box

6.2 MOUNTING THE MVP30 WINCH UNIT

The MVP30 winch unit comes configured for the mounting orientation shown in **Figure 2** with the optional mounting base. This illustrates the minimum distance between the winch and the sheave, indicating the lowest position or angle of the fairlead (25°). The winch can be reconfigured in different orientations allowing for cable angles of 40° and 55° . The minimum distance between the winch and sheave applies to all angle configurations. Consult with Rolls-Royce Canada Limited for details.

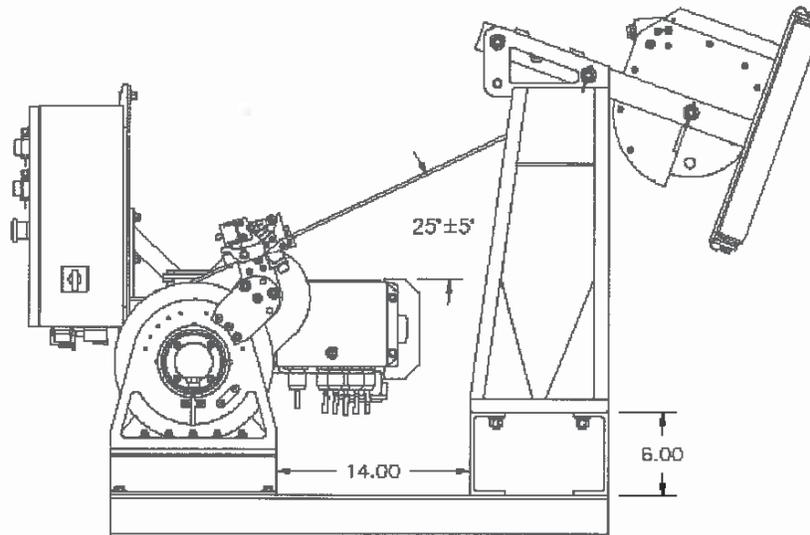


Figure 2: Winch Mounting with Outer Overboarding Sheave

The winch unit should be mounted on a flat surface, preferably raised up from the deck. Use $3/8$ " dia. bolts at all mounting locations, refer to **Figure 3**. The maximum line pull during normal operations is 150 lbs and the tow cable break strength is 800 lbs.

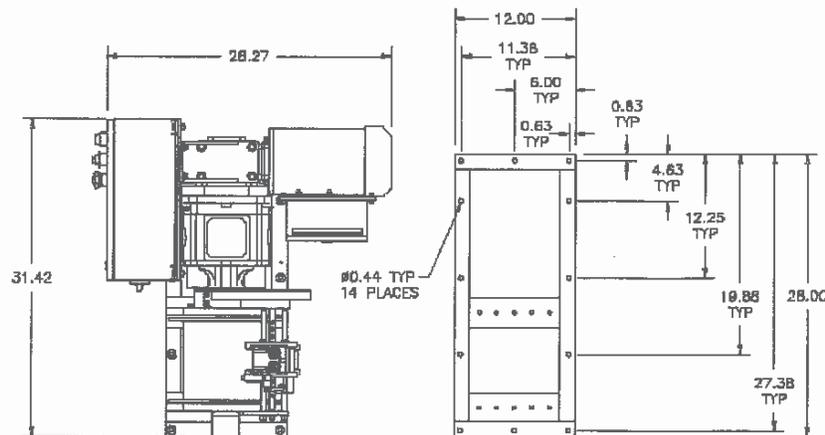


Figure 3: Winch Mounting Dimensions

6.3 MOUNTING THE OUTER OVERBOARDING SHEAVE

The outer overboarding sheave is mounted in relation to the winch unit as shown in **Figure 4**. The sheave frame should be level – if mounting on a transom with camber, raise the low side until the assembly is level. Use the four mounting holes with 3/8" dia. bolts as shown.

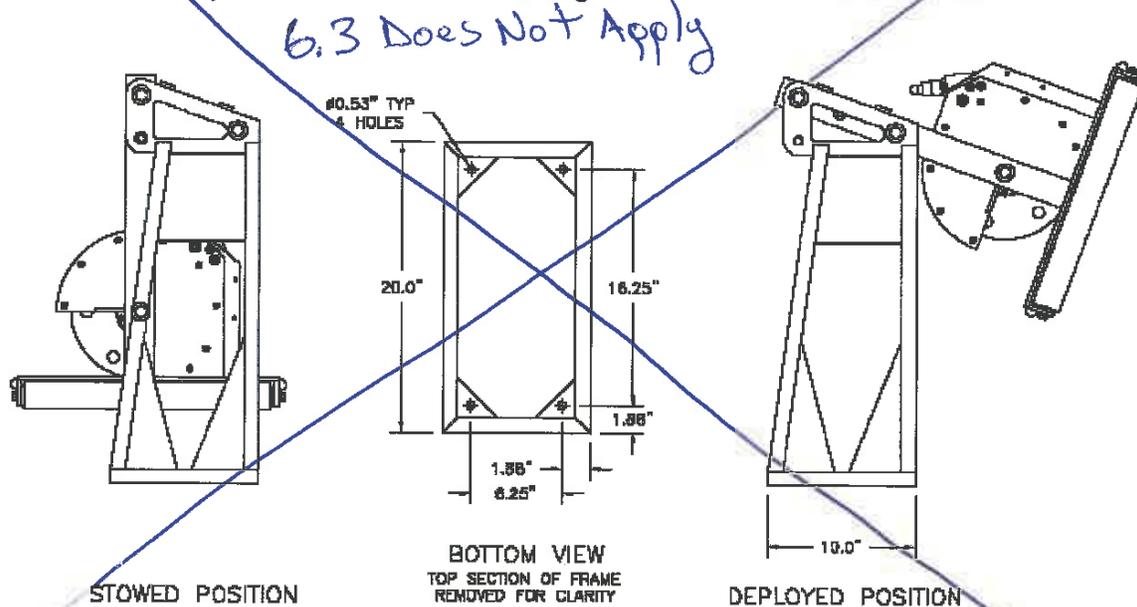


Figure 4: Winch Mounting With Outer Overboarding Sheave

6.4 MOUNTING THE HANGING OVERBOARDING SHEAVE

The hanging overboarding sheave must be shackled to the hanging overboarding device via a 1/2" shackle as shown in **Figure 5**. The 'OUT' label on the hanging overboarding sheave must point towards the stern of the vessel for correct operation of the sheave. **The shackle must have a minimum working load limit of 1,600 lbs.** Ensure that the shackle pin is appropriately locked in place to prevent it from backing out during operation.

The Cable Counter and Docking Sensor cables must be connected between the hanging sheave and the Winch Junction Box. These cables are clearly labelled and the connectors can only be connected in one location to prevent incorrect installation. The cables should be routed ensuring that there is slack as the cable passes from the sheave to the overboarding device to allow free-movement of the sheave and to avoid placing strain on the cable.

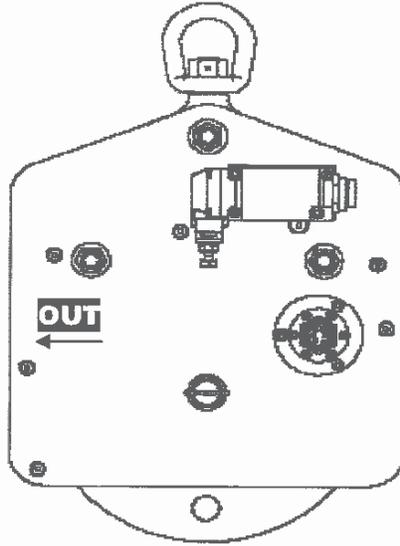


Figure 5: Hanging Overboarding Sheave

6.5 MOUNTING THE MVP30 WINCH UNIT WITH AN A-FRAME

The MVP30-350 winch unit (with A-frame) comes configured for the mounting orientation shown in **Figure 6**. The winch can be re-configured for other orientations; consult Rolls-Royce Canada Limited.

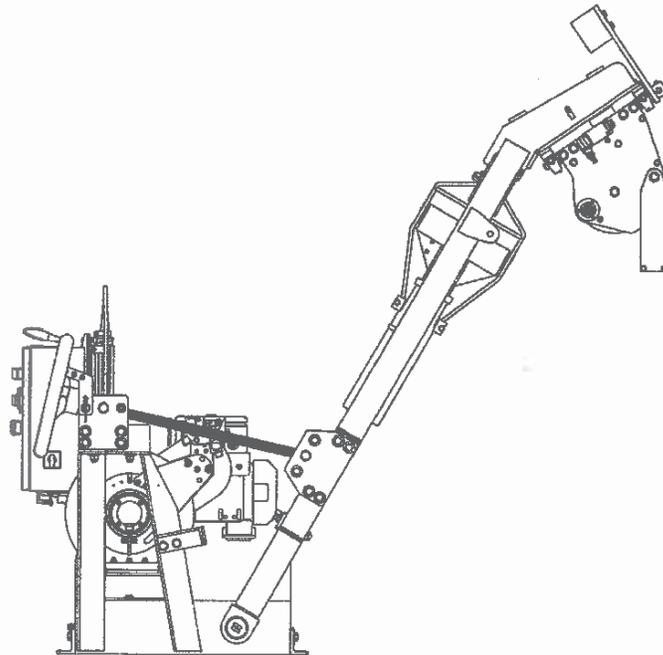


Figure 6: Deployment Configuration

The winch unit should be mounted on a flat surface, preferably raised up from the deck. Use 3/8" dia. bolts at all mounting locations. The maximum line pull during normal operations is 150 lbs, and the tow cable break strength is 800 lbs.

Winch deck space requirements need to be followed when installing the MVP30-350 in order to perform regular service procedures on the equipment. Refer to **Figure 7**.

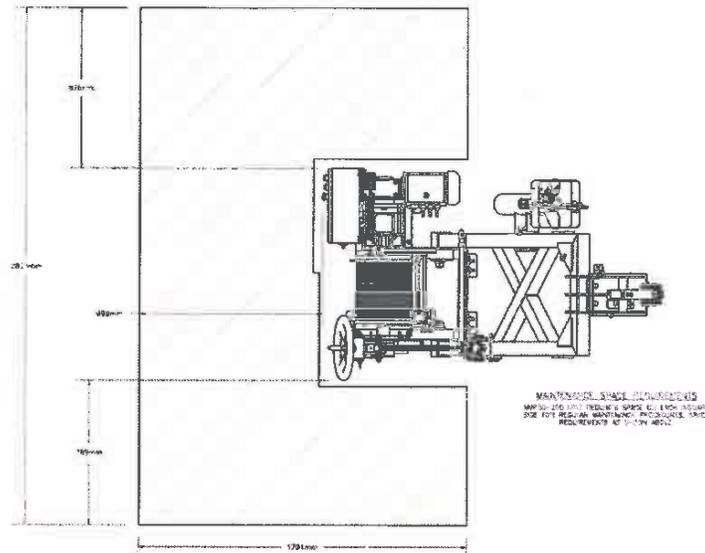


Figure 7: MVP30 Winch Space Requirements

6.6 A-FRAME OVERBOARDING SHEAVE RELEASE FROM STOWED POSITION

The MVP30-350 is shipped with the A-Frame Overboarding Sheave placed in the stowed position, rotated up and locked against the A-Frame with a pin. The locking pin (refer to **Figure 8**) is on the motor side of the A-Frame.

To rotate the sheave into its deployment position, steady the sheave with one hand and remove the locking pin (refer to **Figure 8**), allowing the sheave to gently swing down into its natural resting position.



Figure 8: A-Frame Sheave Locking Pin

The sheave should be stowed in this locked position whenever the MVP is not being used.

6.7 INSTALLING THE TOW CABLE THROUGH THE OVERBOARDING SHEAVE

6.7.1 ~~Outer Overboarding Sheave~~ *Does not apply*

The MVP30 is delivered with the tow cable installed on the winch unit. Once the winch unit and outer overboarding sheave are mounted, the tow cable must be installed through the outer overboarding sheave. Refer to the Outer Overboarding Sheave General Assembly, in Section II of the Maintenance Manual.

1. While holding the boom assembly, remove the frame boom bolt and swing the boom assembly into the operating position. Re-insert the frame boom bolt with the arm in the operating position; refer to **Figure 9**.

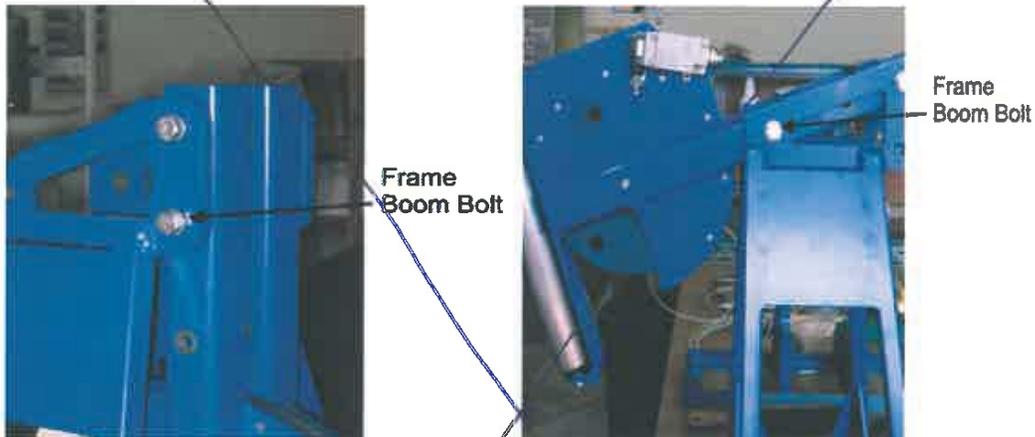


Figure 9: Frame Boom Bolt and Sheave in Operating Position

2. Remove one **outboard** roller bolt and let the roller swing away from the frame, refer to **Figure 10**.



Figure 10: Loosened Roller

NOTE: There is a spacer on the inboard side of the rollers. If an inboard bolt is removed and the tow cable installation is performed from this side, be careful not to drop the spacer when removing the roller bolt.

3. Remove the sheave pivot bolt and carefully lower the sheave until the two center bearing spacers are accessible, refer to **Figure 11**.



Figure 11: Sheave Bearing Spacer

4. Remove the sheave by pulling it out between the rollers, refer to **Figure 12**.



Figure 12: Removing the Sheave

Does not apply

5. Feed the tow cable through the frame and two vertical rollers until the thimble is on the outside of the rollers. Install the tow cable into the groove on the sheave and re-install the sheave into the frame ensuring the tow cable does not jump out of the groove during re-insertion, refer to **Figure 13**.



Figure 13: Inserting the Tow Cable

6. Reassemble the components by reversing steps 1-4, making sure the cable is installed above the sheave.

6.7.2 Hanging Overboarding Sheave

1. The MVP30 is delivered with the tow cable installed on the winch unit. Once the winch unit and hanging overboarding sheave are mounted, the tow cable is installed through the sheave. Refer to the Hanging Overboarding Sheave General Assembly in Section II.
2. Remove the hairpin cotter pin and remove the sheave pin bolt (a) using a $\frac{3}{4}$ inch wrench while holding onto the back of the sheave pin (b).

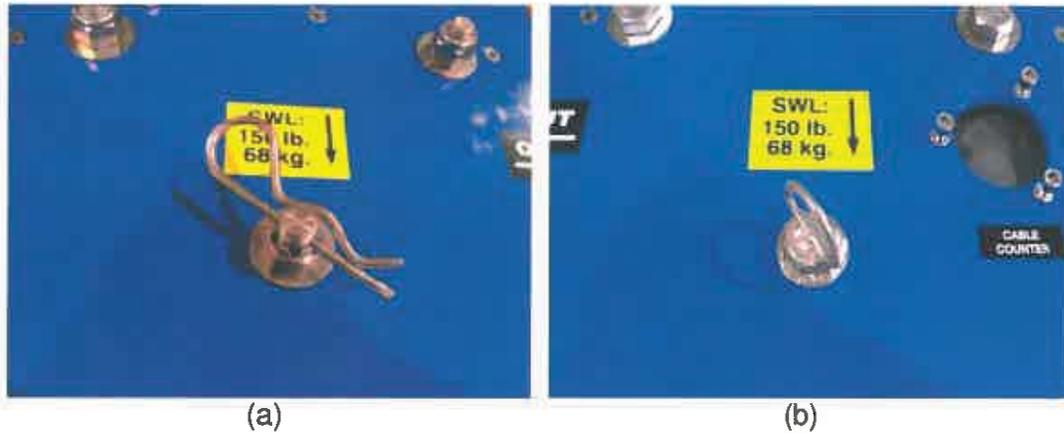


Figure 14: Hanging Overboarding Sheave Cotter Pin and Sheave Pin

3. Support the sheave wheel and remove the sheave pin, refer to **Figure 15**.



Figure 15: Removing Sheave Axle Bolt

4. Carefully remove the sheave wheel and install the tow cable over the sheave wheel and ensure it is seated in the groove, refer to **Figure 16**.



Figure 16: Installing the Tow Cable

5. Reinstall the sheave wheel and sheave pin. Ensure that the sheave pin bolt is as tight as possible by hand and reinstall the cotter pin.

6.7.3 A-Frame Overboarding Sheave

The MVP30 is delivered with the tow cable installed on the winch unit. Once the winch unit with A-Frame sheave are mounted, the tow cable is run through the sheave. Refer to the A-Frame Sheave Assembly and the Flagging Arm Assembly in the Section II of the Maintenance Manual.

1. Install the tow cable thimble through the center hole of the block that is installed in the flagging arm assembly, refer to **Figure 17**.



Figure 17: Flagging Arm Assembly

2. Remove the sheave axle bolt and carefully move the sheave wheel from its installed position in the Overboarding Sheave assembly. Using caution, continue to slide the sheave wheel until the two center bearing spacers are accessible, refer to **Figure 18**.

CAUTION: Removal of the sheave wheel will cause the Overboarding Sheave to become top heavy and the counterweight to swing down. This could injure unsuspecting personnel.



Figure 18: Removing the Sheave

3. Install the tow cable through the flagging arm assembly and reinstall the sheave wheel keeping the cable on top of the sheave wheel as you place the wheel between the two side plates, refer to **Figure 19**.



Figure 19: Inserting the Tow cable in A-Frame Sheave

6.8 DEPLOYING THE MVP30 A-FRAME

1. Pull the locking pin securing the locking handle and rotate the handle clear from the wheel, refer to **Figure 20**.
2. Using the hand crank, rotate the A-Frame into the overboarding position until it reaches the stop position.

3. Pull the locking pin securing the locking handle and rotate the handle back so it secures one of the spokes on the hand crank to prevent the wheel from spinning, refer to **Figure 21**.



Figure 20: Locking Handle - Overboarding Position



Figure 21: Locking Handle - Stowed Position

6.9 ATTACHING THE FREE FALL FISH TO THE TOW CABLE

1. With the HV extension cable in place, attach the tow cable termination to the tow point on the fish bridle and tighten with pliers, refer to **Figure 22**. Secure the shackle with a cable tie, wire or similar to prevent it from backing out.

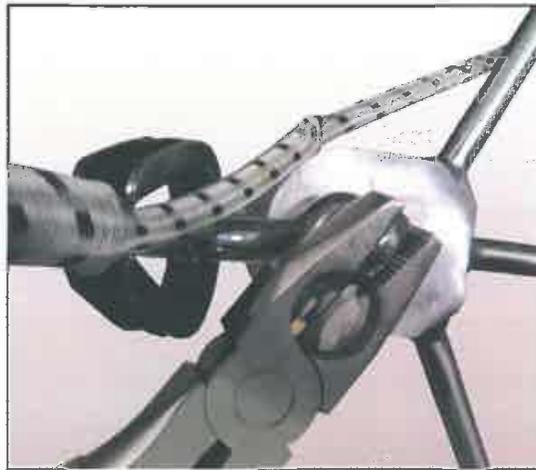


Figure 22: Connecting the Tow Cable to the Tow Fish

2. Ensure the main power switch on the Control Box and the main power switch on the Controller Interface Box is OFF. Attach the tow cable to the HV extension cable and partially tape into position as shown, refer to **Figure 23**.



Figure 23: Tow Cable to Extension Cable Connection

3. Secure the tow cable to the **outside of the bridle** exactly as shown below using 3M™ Super33 electrical tape, refer to **Figure 24**. Starting from the top of the bridle, working down to the fish pivot ensuring the tow cable splice is secured on the straight bar section on the bridle. Ensure that the tow cable is placed on the opposite side from the shackle pin.

CAUTION: Do not substitute with inexpensive electrical tape; experience has shown that it will not last. If tapes from alternative manufacturers are to be experimented with, make sure regular inspections are conducted.

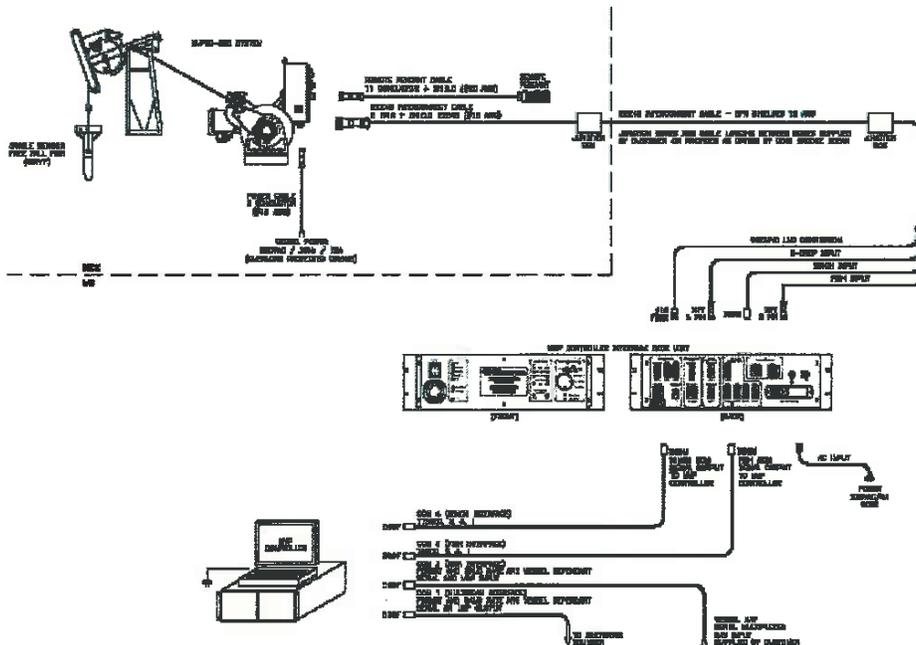


Figure 24: Tow Cable Installed on Bridle

4. While lifting the fish, completely pivot the bridle while checking that the tow cable is secure and does not interfere with the pivots or pivot stops on the tail.

6.10 INSTALLING THE MVP CONTROLLER AND INTERFACE BOX

1. Locate the MVP Controller in a nearby lab or other interior location. **DO NOT LOCATE OUTSIDE!** Connect the MVP Controller computer and Monitor to a 100/220v 50/60 Hz single-phase power source. The cabling setup in the lab is shown in Figure 25.



NOTE: Prior to connecting to the lab power supply, verify that the computer power supply and the controller interface box power module are configured for the proper input voltage. The computer supply voltage must be manually configured. The monitor supply voltage is automatically configured.

2. Locate the Controller Interface Box near the MVP Controller computer and make the connection to the Control Box located at the winch. The Controller Interface Box must be connected to enable communications with the winch and sensor.
3. Connect the power cable for the Controller Interface Box and the controller computer.
4. Connect the RS232 serial cables for Winch and Fish communications from the Controller Interface Box to the MVP Controller. The MVP Controller communicates with the MVP embedded controller (located at the winch) through an isolated RS485/RS422 to RS232 module in the Controller Interface Box. Communications with the fish instrument is interfaced through a second isolation module in the Controller Interface Box.

6.11 CONTROLLER SETUP

1. Connect the vessel's Navigation data to one of the RS232 ports. Raw NMEA 0183 data must be conditioned through an external device in order to properly interface with the MVP Controller.
2. Start the MVP control software by double clicking on the MVP Icon, or executing the MVP.exe program in the MVP directory (normally c:\mvp).
3. Switch the Hand/Off/Auto switch to the Hand or Auto position. Verify that data is received from the winch by clicking the Debug/Winch Interface Raw Control option from the Main Operator window. If no winch control data is being received, consult the 'Troubleshooting' section or check the Edit/System Configuration window settings.
4. Make any necessary adjustments to the Instrument and navigation interfaces in the System Configuration window. The Debug/NAV Interface and the Debug/Fish Interface options on the Main Operator window will assist in making the appropriate settings.
5. If it is necessary to reload the software, place the CD in the CDROM drive in the Controller and run the MVP Software version Setup.exe program.

6.12 INITIAL STARTUP

In order to run the tow cable through the hanging sheave, outer overboarding sheave or A-frame overboarding sheave, a length of tow cable must be pulled off the drum by placing the winch in Hand mode and turning the Freewheel switch to the ON position.

CAUTION: When starting the system, ensure that personnel are clear of the winch and outer sheave.

1. Connect the winch power cable to a 110 VAC source, capable of providing 20 amps. A fused disconnect rated for 20A is required. (This applies to a 220VAC, 16Amp source requested at time of order.)

2. Turn all control switches on the Control Box (Hand/Off/Auto, Manual Override and Freewheel) to the OFF position.
3. Turn ON the Main Power switch on the side of the Control Box. The green Power On indicator on the Control Box should illuminate.
4. Press the Inner Sheave Reset button to reset the emergency stop circuit. The light on the Emergency Stop button should go out. If the Emergency Stop button light does not go out, check the following:
 - Ensure that the Emergency stop buttons (Controller Interface Box, the Remote Pendant and the Control Box) are reset - pulled out.
 - Inner Sheave Reset button must be held down to remove the ESTOP but then reappears when the Inner sheave reset button is released. Ensure the Inner Sheave Limit switch is clear of messengers. If so, check the inner sheave circuit.
 - Hand-off-Auto switch is in the OFF position.
 - Freewheel switch must be in the OFF position.
 - Manual Override must be in the OFF position.
5. At the Control Box, turn the Hand/Off/Auto switch to Hand mode.
6. Turn the Freewheel switch to ON. This releases the brake and disengages the clutch, allowing tow cable to be pulled off the drum. (ENSURE THERE IS NO WEIGHT AT THE END OF THE TOW CABLE)
7. Remove approximately two meters of tow cable and then turn the Freewheel switch to OFF.
8. While maintaining tension on the tow cable, press the IN button on the Remote Pendant, refer to **Figure 26**. The winch tow cable should winch IN. Push the OUT button and the winch tow cable should winch OUT.



Figure 26: Remote Pendant

7 FASTENER TORQUES

The following tables give recommended values for fastener torques. Use these values unless specific values are given for specific fasteners.

Recommended Torque Values for 304 Stainless Steel Fasteners

Bolt Size	Dry Torque Nm [foot pound]
10-24	2.7 [2]
10-32	3.7 [2.7]
1/4-20	9 [6]
1/4-28	11 [8]
5/16-18	15 [11]
5/16-24	16 [12]
3/8-16	27 [20]
3/8-24	29 [22]
7/16-14	42 [31]
7/16-20	45 [33]
1/2-13	58 [43]
1/2-20	61 [45]
5/8-11	126 [93]
5/8-18	141 [104]
3/4-10	173 [128]
3/4-16	168 [124]
1-8	389 [287]
1-14	351 [259]

NOTE: Torque values are for dry threads only. For plated threads reduce torque values by 40%. This table is only valid for 304 stainless steel.

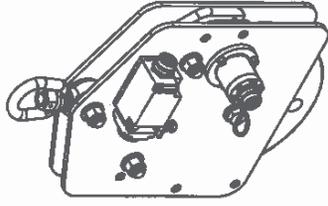
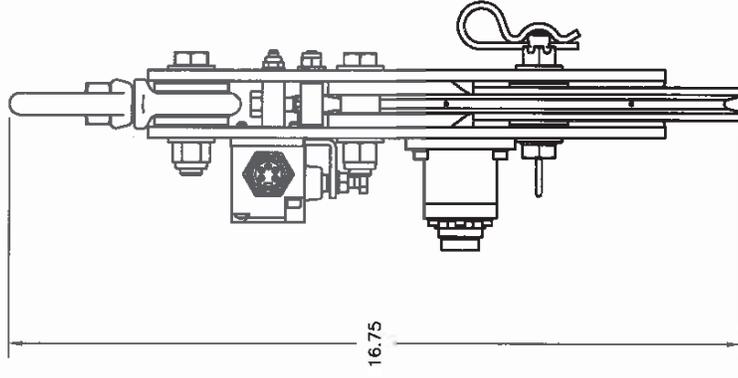
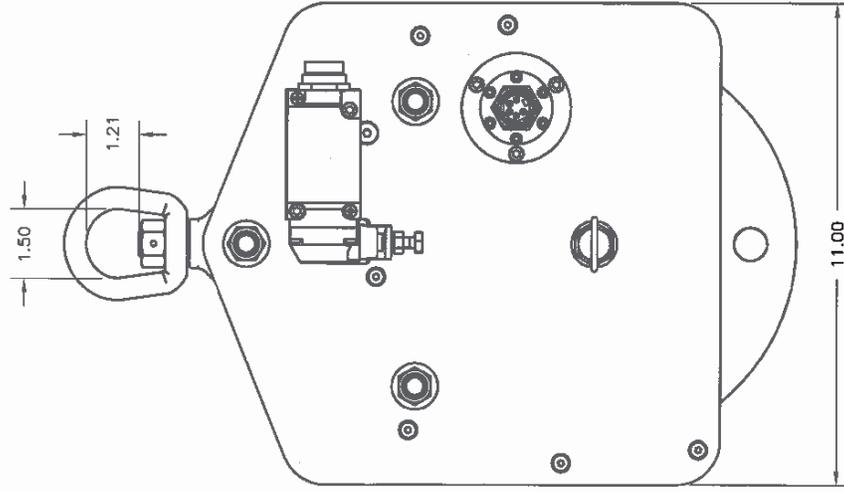
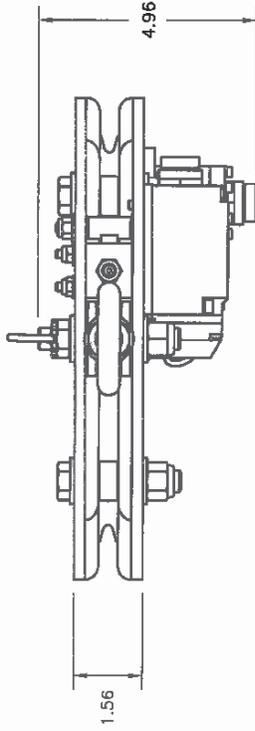
Useful Conversions:

Lbf-ft x 1.356 = Nm
 Nm x 0.7376 = lbf-ft
 Nm x 8.851 = lbf-in

Suggested Assembly Torques for Plated Bolts in Foot Pounds [Inch Pounds]

Diameter	TPI	Dry Threads	Lubricated Threads
1/4	20	9 [108]	5 [60]
	28	10 [120]	6 [72]
5/16	18	17 [205]	10 [120]
	24	20 [240]	12 [144]
3/8	16	31 [370]	19 [230]
	24	35 [420]	21 [250]
7/16	14	50 [600]	30 [360]
	20	56	33 [395]
1/2	13	75	45 [540]
	20	85	51 [610]
9/16	12	110	66
	18	120	72
5/8	11	150	90
	18	170	72
3/4	10	265	160
	16	300	180
7/8	9	430	260
	14	475	285
1	8	645	390
	14	720	435
1-1/8	7	800	480
	12	900	640
1-1/4	7	1120	670
	12	1240	745
1-3/8	6	1470	880
	12	1670	1000
1-1/2	6	1950	1170
	12	2200	1320
M12	1.75		110Nm [81 lbf-ft]
M16	1.5		275Nm [202 lbf-ft]
M18	1.5		347Nm [256 lbf-ft]
M20	1.5		546Nm [402 lbf-ft]
M22	1.5		736Nm [542 lbf-ft]

TITLE: MOVING VESSEL PROFILER
MVP30 HANGING OVERBOARDING SHEAVE



SCALE 1:8

NOTES:

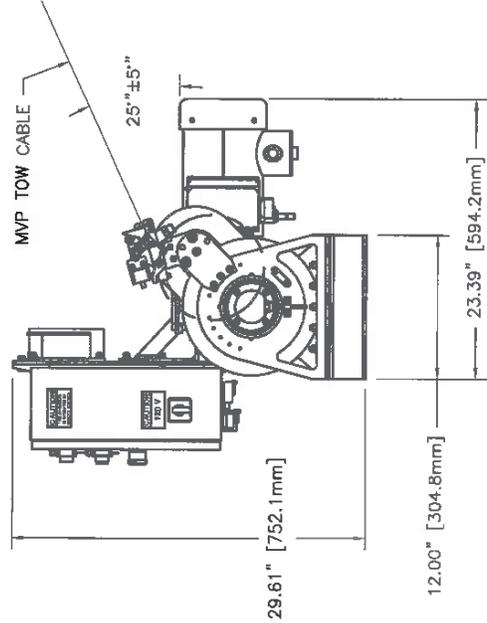
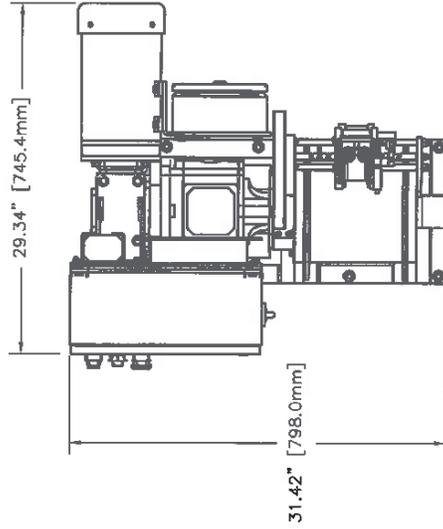
1. DRAWING SCALE 1:4 UNLESS OTHERWISE NOTED.
2. ALL DIMENSIONS ARE IN INCHES.
3. MVP30 HANGING OVERBOARDING SHEAVE WEIGHT (AS SHOWN): 15 lbs. [7 kg].



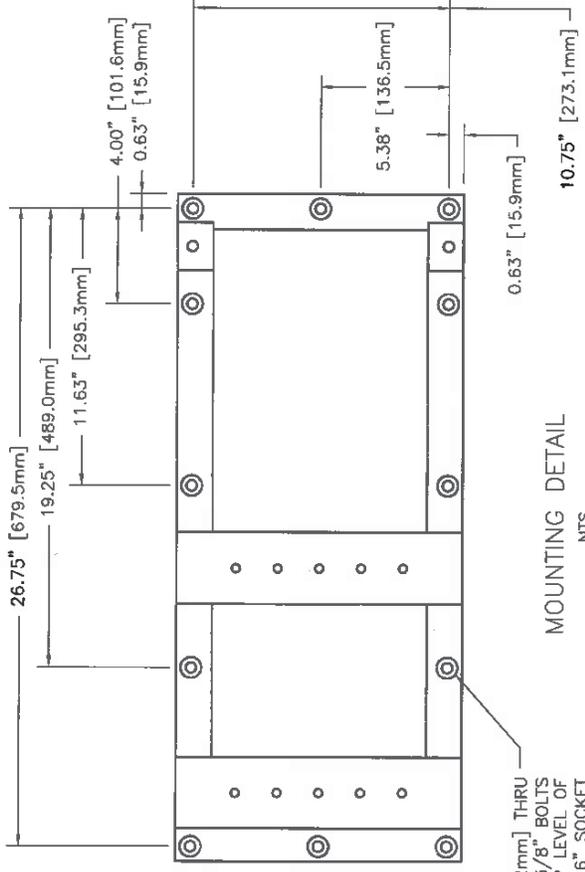
DWG No.: 0010-0-0-0-65C
DATE : APR. 18/11

NOTES:

1. THE MVP30 CAN HAVE IT'S CONTROL BOX ATTACHED OR DETACHED (REMOTELY MOUNTED). CLIENT MUST SPECIFY UPON ORDER IF DETACHED CONTROL BOX IS REQUIRED.
2. FOR DETACHED CONTROL BOX INTERCONNECT CABLE LENGTHS ARE REQUIRED.
3. CABLE ANGLE CAN BE ADJUSTED UP/DOWN 15° BY ADJUSTING THE POSITION OF THE LEVELWIND SUPPORTS FROM THE CENTER POSITION UP/DOWN.
4. THE FAIRLEAD LEVELWIND ASSEMBLY CAN ALSO BE ADJUSTED FOR DEPLOYMENT FROM EITHER SIDE OF THE DRUM.

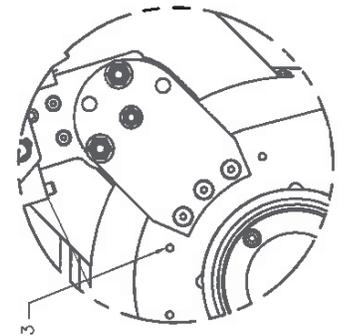


TITLE: MOVING VESSEL PROFILER LAYOUT OF MVP30 WINCH



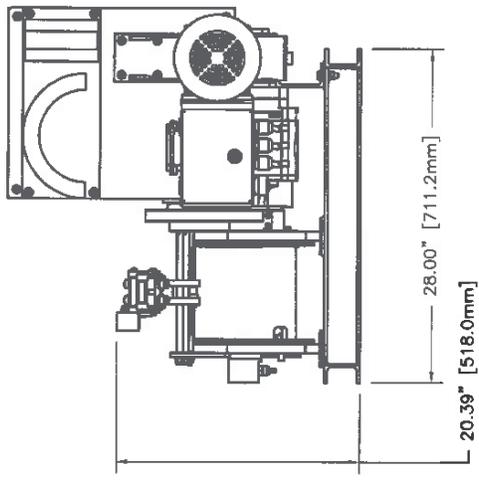
Ø0.44" [Ø11.2mm] THRU 12 HOLES FOR 3/8" BOLTS COUNTER-BORED TOP LEVEL OF CHANNEL FOR A 9/16" SOCKET

MOUNTING DETAIL
NTS



SEE NOTE 3

SCALE 3:1



12.00" [304.8mm]

MVP30 WEIGHT (AS SHOWN): 220 lbs. [100 kg]

Rolls-Royce
 DWG No.: 0010-0-0-56D
 DATE : FEB. 02/12