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SOLICITATION AMENDMENT
MODIFICATION DE L'INVITATION

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

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

Comments - Commentaires

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

Issuing Office - Bureau de distribution
Public Works and Government Services Canada - Pacific Region
401 - 1230 Government Street
Victoria, B. C.
V8W 3X4

Title - Sujet 5.2-5.5m Aluminum Jet Boat	
Solicitation No. - N° de l'invitation M8026-201876/A	**Amendment No. - N° modif.** 001
Client Reference No. - N° de référence du client M8026-201876	**Date** 2019-07-24
GETS Reference No. - N° de référence de SEAG PW-$XLV-166-7773	
File No. - N° de dossier XLV-9-42081 (166)	**CCC No./N° CCC - FMS No./N° VME**
Solicitation Closes - L'invitation prend fin **at - à 02:00 PM** **on - le 2019-08-07**	**Time Zone** **Fuseau horaire** Pacific Daylight Saving Time PDT
F.O.B. - F.A.B. **Plant-Usine:** ☐ **Destination:** ☐ **Other-Autre:** ☐	
Address Enquiries to: - Adresser toutes questions à: Castle, David G.	**Buyer Id - Id de l'acheteur** xlv166
Telephone No. - N° de téléphone (250) 217-6555 ( )	**FAX No. - N° de FAX** ( ) -
Destination - of Goods, Services, and Construction: **Destination - des biens, services et construction:**	

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**

Canada

SOLICITATION AMENDMENT #1 REQUIRED TO INCORPORATE THE FOLLOWING CHANGES TO THE SOLICITATION TO CORRECT THE REQUIRED DIMENSIONS;

Delete: **1.2 Summary**

The Royal Canadian Mounted Police has a requirement to purchase one (1) 5.7 to 5.99 m Aluminum Jet Boat with trailer built in accordance with the Technical Statement of Requirement (TSOR) - Annex "A" and Bidder Questions and Canada Responses – Annex "D" with an option to purchase up to 3 additional Aluminum Jet Boats and trailers.

Insert: **1.2 Summary**

The Royal Canadian Mounted Police has a requirement to purchase one (1) 5.2 to 5.5 m Aluminum Jet Boat with trailer built in accordance with the Technical Statement of Requirement (TSOR) - Annex "A" and Bidder Questions and Canada Responses – Annex "D" with an option to purchase up to 3 additional Aluminum Jet Boats and trailers.

Remove Annex A and replace with the following;

ANNEX "A" - STATEMENT OF WORK

A1. VESSEL:

a. **5.2 to 5.5 METER ALUMINUM OUTBOARD JET BOAT – RCMP**
b. **Configured as a 'Step Deck Bow' Outboard Jet Runabout.**

A2. ABBREVIATIONS

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

UV	Ultraviolet
VHF	Very High Frequency

A3. LIST OF REFERENCE DOCUMENTS

REFERENCE	TITLE
ASTM F1166	Standard Practice for Human Engineering Design for Marine Systems, Equipment and Facilities
TP 1332	Construction Standards for Small Boats
TP 13430	Standard For Tonnage Measurement of Ships
TP 14070	Small Commercial Vessel Safety Guide
ISO 12217	Small 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) 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

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 over the previous five years, and have no TSB "Marine Incidents" recorded against the model based on structural or design issues, 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 required by the Contract Authority.	
b.	Annex A Section A5, TECHNICAL SPECIFICATION is divided into four parts: Part 1 Article 1 General Description of Vessel Role and Function Part 2 Articles 2-9 Contractor Design and Construction Practices Part 3 Articles 10-16 Vessel Particulars Part 4 Articles 17-20 Outfitting and Equipment 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).	
c. Use of the Specification for bidding purposes: The Bidder is to mark an **(X)** at each **BOLD** header signifying that the specification has been read and that any proposal offered will meet, or exceed the required compliance with the written specification. The bidder must agree to comply with the specification even if offering an option.	**X**
d. Bidders may make notations in the appropriate column (For Example "See note 1,2,3, etc.") to refer to any optional proposals that have been entered onto the page(s) at the end of Annex A, Statement of Work. **Any cost differences, resulting from proposed options, must be entered ONLY in Annex I, Appendix 1, table b.**	**X** (e.g. see note 1)

A5. TECHNICAL SPECIFICATION

Table of Contents

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 and Data
16.0 Construction and Finish

Outfitting And Equipment
17.0 Outfitting Detail
18.0 Propulsion
19.0 Steering
20.0 A trailer, if required

1.0 General Description of Vessel Role and Functions	
1.1 Mission Statement RCMP-GRC buys, manages and operates numerous small craft in support of its Departmental programs and other missions. The requirement is for a Runabout Jet boat with step deck bow in the 5.2-5.5 meter range (not including aft Jet protection grid). This boat will be used for various law enforcement operations in various river conditions including extensive work in shallow braided channels and fast flowing rapids. The boat is required to be capable of operating in up to class III Swiftwater (International River Rating) and in shallow draft (i.e. less that 6 inches).	
1.2 Utilization : Vessel to be trailered and deployed at various launching facilities.	

CONTRACTOR DESIGN AND CONSTRUCTION PRACTICES	
General Marine Construction Practises: As applies to; Vessel's Specific Construction and equipment, found in Section 10 onward.	
2.0 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. 150 to 190 cm (5 ft. to 6' 4")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 measures, 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 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., and 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' conformity plate**, the lateral and vertical impact loading that equates to the conditions of the operational profile and mission requirements.	
3.2 Materials – General 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, or 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. Stiffened 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, deck components with braked elements, consoles, and hardware items may be of other aluminium alloys suitable for commercial saltwater marine use such as type 5052 or 6063. Thin hull topside plate, from chine to deck edge, must be alloy 5086 if .15 or .16 plate, with shallow or 45 degree embossed strakes, if required. Thicker topsides will not be embossed. Thinner topsides plate may be alloy 5052. 4. Stainless Steel: Stainless steel plate type 316 must be used for all stainless steel applications except as noted. Alloy 316L must be used in welded underwater components.	
3.3 Fasteners 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 as1/4" 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, round, or oval head, machine screws to eliminate tripping and snagging hazards.	
3.4 Construction Procedures: Hulls must be fabricated as per the requirements quoted in Construction Standards, Sec 14, 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. Fibreglass components must have a coloured gel-coat finish on all exterior surfaces. Gelcoat to be applied at 20-22 mil thicknesses. Finish colour(s) as per Vessel Particulars. 2. Aluminium components must have a painted finish, or powdercoat, 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. Powdercoat finishes will typically finish at 2 to 3 mils thickness. 3. Prior to delivery the Contractor must ensure that all non-painted exposed alum. is free of cosmetic blemishes, including all construction marks, scratches, gouges and stains.	
3.6 Propulsion: Unless otherwise specified, propulsion motor(s) will be supplied and installed, per Outfitting section 18. 1. **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. **See Section 7.3 also**. 2. **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). 3. **Impellers:** Unless otherwise specified, propellers or jet impeller(s) must be as per Sec 18. Contractor must record in the trials report and equipment lists, the appropriate pitch and diameter to meet the Performance Requirements as determined by the Contractor developed design check, and trials. Impellers must be CFM.	
3.6.5 Hydraulic 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 decks or side decks. 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 1. Unless otherwise specified, gauges must be analogue-style, or Engine Manufacturers' digital equipment. Gauges must be sized and installed so they are readily visible by the operator. 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 as well as the following: 5. Bilge Pump operation indication for each compartment so equipped. 6. High water alarm for the engine installation space and every other space serviced by a bilge pump. 7. Engine space heat/ heat-rise sensor required for inboard engines, and fire alarm panel. 8. Allowance required for at least one additional input, if a single integrated alarm panel used	
3.7.6 Piping, Tanks and Ventilation 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 20 kPa (3.0 p.s.i). and be labelled per the requirements of TP1332. See Sec. 18. 3. Fittings and clamps must be stainless steel. per the requirements of TP1332. 4. Each watertight Hull compartment is to have its own 12V DC bilge pump, plumbed to discharge overboard from the compartment, as per TP1332. 5. Enclosed compartments with gasoline engine or tanks spaces must have passive and powered ventilation.	
3.8 Fire Suppression - Inboard Engine Configuration **Inboard Engine installations will require fire suppression, sound insulation, and heat sensor(s) with alarm panel in accordance with TP 1332 / TC regulations.**	
3.9 Navigation Equipment (COLREGS) *ttp://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 night vision. 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 near the centreline of the helm station, in easy view of the operator when facing forward. Deviation card development is an Owner responsibility.	
4.0 <u>Warranty and Service Provisions:</u>	
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. 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, if multiple vessels are built in one contract.	
4.3 Parts and Service Depot(s) Contractor's parts depots must be capable of efficiently supplying all of the Client service area for this vessel, 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 **48** hours of receiving a service call. BUILDERS will find that a service relationship with marine repair and service companies in every region will provide clients reassurance of service availability. All warranty work must follow the requirements for service shops to get approval for work to ensure cost recovery. Clients will be responsible for costs above the approved levels.	
5.0 <u>Documentation</u>	
5.1 Technical Publications General: The Contractor must provide, upon delivery of the vessel, one (1) hard copy and one (1) electronic copy per vessel produced for the operator of the vessel, plus one (1) hard copy and one (1) electronic copy for the Technical Authority, shipped to the same address as identified for invoicing: 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. **See also section 7.8 for the listing of Deliverables "with each completed vessel".**	
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, hull and deck equipment serial or manufacturer's numbers, including tank test reports, Life Saving Appliances, lifting gear, extinguishers, etc. TEST and TRIAL results, and certification notices, instructions, and warranty cards that distribute with equipment. 3. Engine(s) and propulsion manuals: including engine and propulsion serial numbers.	

4. Electronics manuals, (if applicable): including model and serial numbers. 5. Collar, if any; including collar materials and glue materials and product sheets, and procedures necessary for onboard repair of the collar, including a materials repair kit. 6. Regulatory and Stability information: as required per TP 1332, which references ABYC, TC publications, or ISO12217 that further references ISO 6185 for RIBs. ISO 11812 for drainage times of cockpits, and ISO 11216 for hatch and portal watertightness are required as well, for example. **Stability and ISO operation class calculations MUST be calculations on Maximum Load, which may lead to dual certification on the builder's plate as the calculations must be done for the Normal Load as well as it will result in a higher (rougher sea states and wind) ISO operating classification, for SAR emergencies and extreme duty usage.** 7. Contractor to fill out Simplified Method of Tonnage **Measurement**, TC form 4a. 8. **NOTE: Builder** is encouraged to use the "Small Vessel Detailed Compliance Report" sheets as a check off sheet for hull and equipment and list the name/ Company of the person checking the data in the "Authorised Representative" space on P. 7 of the form. **http://www.tc.gc.ca/eng/marinesafety/svcp-menu-3633.htm.**	
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 Quality Assurance: **The basic reference to ISO 900x 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 required, 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 Authority must be notified no less than 48 hours prior to sea trials. The Technical Authority reserves the right to witness or decline	

attendance of sea trials, or to require the Inspector to attend. Absence of the Technical Authority, or Inspector 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 Contract and Technical Authorities prior to delivery of the vessel. The Technical Authority will inform the Inspector of trials so they may attend.	
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. 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. 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, or for 10 hours, whichever is least, and to have a 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. 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. Data from previous test to same standard, for same post and construction accepted 7. At the conclusion of sea trials each boat must be thoroughly cleaned and inspected.	

Outboard engine 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 Inspection Authority.	
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 Inspection Authority; a copy of the trial results must be shipped with the deliverables for each boat, per 7.6/ 7.7.	
7.6 **Stability** examination as applicable per TP1332, from ISO standards 12217 which for RIBs delegates to ISO 6185, or by TP 7301, 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 stability trial of the first of a series of vessels can be used for all identical vessels.	
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% "normal load" lifting gear test, if required. This check sheet must be included with the deliverables of each vessel.	
7.8 **Standard Deliverables** (and notes on client department registration and compliance) **Required with each completed vessel, one manual and one CD per vessel delivered plus one manual and one CD for the client department TA. Items 2 to 4 may be collected in separate clear sleeves.** 1. A detailed operator manual must be provided for all equipment, and systems, per Sec 5. This may be developed using equipment instruction sheets and manuals. 2. Sea Trial results, and shop testing sheets, including Builders' technical data, per Sec 5. 3. Acceptance Certificates, and compliance sheets or certificates distributed with equipment, per **Sec. 5.3.2-5**. 4. Regulatory Compliance data, including ISO, ABYC, or TC calculation sheets for stability, drainage, watertightness, tonnage, or Builder's flotation tests, per **Sec 5.6-7.** 5. **The initial inspection of the vessel(s) after delivery, by Owner / Department Self Inspector, will establish TP 1332 / ISO compliance, using SVCP self inspection.** 6. Vessel drawings; The Annex A Specification calls for the submission of Preliminary drawings and the "As Fitted" update of drawings must be included in the manuals. 7. **NOTE**: Regarding Documentation for vessel entry in the Small Vessel Registry. The Contractor should inform the Client TA as soon as they have deposited the payment on the final invoice, as this will determine when the Client department can fill out the new TC Form 19 registration for the vessel and get their O.N. assigned. The Client TA or financial authority will distribute a copy of the invoice for the end user files.	
8.0 **Packaging and Shipping:** 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 Inspection Authority.	
9.0	**Trailer Information: IF required:** (See Solicitation Annex 'I' pricing sheet for requested pricing, if any, and section 20 at the end of Vessel Particulars for specific trailer information)	

VESSEL PARTICULARS	
10.0 Physical Characteristics: 5.2-5.5 meter Aluminium Jet Boat	
NOTE: Every effort must be made to control the weight of the vessel to facilitate handling in beaching situations. Topside hull plating may use embossed strakes to increase stiffening. 1. Length (hull) must be approx. 5.2m and must not exceed 5.5m. 2. Step deck bow walk through windshield 3. Preferred design to incorporate jet tunnel for optimum water availability for jet pump. 4. A ½ width **UHMW** sheathing to be applied to hull bottom centered at keel using a suitable watertight method. 5. Main and auxiliary engines transom mounted with partial starboard swim grid.	
10.12 Normal Load conditions: (Light vessel is complete vessel; no fuel, load, or personnel) - Crew of 2 = 200 kg - Fuel = minimum 75 litres in two tanks, (150 kg) - Equipment & supplies = 200 kg	
10.13 **Vessel Tonnage Requirements**: Vessel must be shown to be ≤ 5 GRT. Contractor to fill out simplified tonnage measurement form and include in manuals for vessel.	

11.0 Operational Performance	
1. Unless otherwise stated, performance must be for conditions of zero sea state and no wind, in fresh 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 15 years, with an expected usage of between 100 and 150 hours per year. **2.** Minimum at plane speed 28 knots in Normal Load condition.	
11.1 Beaching 1. Capable of beaching on soft (sand, earth or clay) surfaces at a speed of up to 5 knots without damage to the hull. **2.** Capable of beaching on hard (stone or concrete) surfaces at speeds of up to 3 knots without damage to the hull.	
11.2 Depth under Keel 1. Operate carefully in depths of 0.2 meter on plane. Basic manoeuvring in depths of 0.50 meters off plane	
12.0 Environmental Conditions: Capable of 24 hr. operations in these conditions;	
1. Average ambient air temperature range: -5°C to + 30°C 2. Average water temperature: 0°C to +20°C. 3. Wave heights of 2 ft. to 6 ft. 4. Wind speeds up to 30 knots	
13.0 Vessel Configuration	
13.1 General Arrangement Notes: 1. There must be a forward 'step-deck' with separate drainage. 2. The windshield must incorporate a centre port-side hinged window and lower weather tight closure at the forward faces of the port and starboard consoles. 3. Windshield frame to incorporate one grab rail each port and starboard located on the upper portion of the inboard aft face of the fixed forward sections. 4. The aft cockpit must run from consoles to transom with only the centreline engine box, at the transom, extending into the cockpit. 5. There must be helm and navigator seating with 1 port and 1 starboard storage box seat mounted aft of helm and nav seat. See Sec. 13.7 6. There must be side fixed windows running to the forward windshield. 7. A bow locker is required for anchor, cable and miscellaneous stowage. 8. One full width splash well/lazarette with incorporated locking access panels to be incorporated into the transom aft. 9. Splash well to be fabricated for transom area eliminating any wave surge from entering the vessel.	

13.2 General Deck Arrangement 1. Tie up points along the side deck and aft at transom, will be provided by the low profile handrail and to include approx. 6"aft corner cleats under the transom corner rails. 2. There is to be an anchoring bit /cleat fitted on the bow of the vessel. 3. Vessel must be outfitted with navigation lighting, and antennas as required. 4. Vessel must be fitted with aluminium protective pipe 'swim grid', which extends above the jet unit, fabricated to fully support the installation of auxiliary propulsion system. See section 18 propulsion. 5. Vessel must be equipped with securing eyes fitted to the outside of the transom used for trailer tie downs. 6. Low profile pipe railings to be installed at sheer from windshield forward to break at bow, and from approx 3' forward from transom to transom with a return across the transom on port and stbd of about 12". Aft rails height to be 30" from cockpit deck.	
13.3 Not Used	
13.4 Towing: A tow eye is to be incorporated into the stem such that it is flush with the stem. This is to allow the boat to bow up to rocks without getting hung up. It must be strong enough to tow the boat in calm water in a normal load condition, on an even keel, without damaging the boat. The tow eye must also be suitable for trailer tie down, and located approx. 18 inches above waterline	
13.5 **Not Used**	
13.6 Cockpit and Layout	
1. The cockpit is to be open with a walk-through windshield. The bow is to be recessed (self-draining overboard from aft P&S corners) with the welded frame windshield and lower, closure panel, sealed from water coming over the bow and into the helm and aft cockpit area. 2. Laminated Safety glass, ¼ inch thick, to be used in the windshield. Height of windshield top to be minimum 50 inches above the cockpit sole.	
13.7 Seating: There must be two, height and sliding adjustable shock mitigating seat bases at helm and navigators position .The seat units will be a deluxe, cushioned seat that can provide robust support for seated and standing operation for occupants of 100kg in size. Seat framing, fasteners, and hinging to be constructed exclusively of non –ferrous material. Seat assemblies to be positioned to accommodate either seated or stand-up operation. Aft of these port and starboard seats will be two storage seat boxes with cushioned upholstered tops. Boxes to be approximately 20" by 30". (optional)	
13.8 Console: 1. The dash layout is to be arranged in an ergonomic manner, to provide easy access to controls, electrical panels and easy viewing of navigation and propulsion instruments. The console is to be robustly constructed to eliminate flex from operators holding points, and equipped with a steering system specified for the motor (Mercury steering system). 2. A 12 V DC 'cigarette lighter' power point is to be installed on each of the port and starboard dash, with a lockable storage 'glove box' in the "Nav" console. 3. The operator's helm is to be located to starboard and equipped with all appropriate	

gauges as recommended by the propulsion system manufacturer, as listed in 'Outfitting'. A dimmer switch is to service all dash lighting. Compass light to have separate control.	
14.0 Construction Standards	
1. Transport Canada Marine Safety publication **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, loading capacity, etc. as delegated to ISO 12217. *http://www.tc.gc.ca/MarineSafety/Directorate/TP/tp1332/tp1332e.htm* 2. Canadian Standards Association C22.2 NO. 183.2-M1983 (R1999) "Standards for D.C. Electrical Installations on Boats **and TP 1332 and ABYC electrical standards**." 3. Canadian Standards Association (CSA) CSA W47.2-M1987; Certification of Companies for Fusion Welding of Aluminium	
15.0 Construction Drawings and Data	
The following, "As Fitted", dimensioned drawings must be produced for manuals to record the vessel particulars. Preliminary drawings required for bid evaluation. 1. Lines plan, sections only, with transom dead rise noted. 2. Plan and Profile, showing the General arrangement; and 3. Midship section from aft showing helm and navigation operating positions. 4. Indication of the Systems arrangement presented with the above drawings covering Bilge, Fuel, Electrical, and propulsion installations.	* Present with bid
16.0 Construction and Finish	
16.1 Hull and Deck: The hull, and deck, must be constructed of Aluminium per the requirements of Sec 3.2.3. Mil Certificates are required for all aluminium used in the fabrication..	
16.2 The hull must be an approximately 6 -12 degree dead rise "mono hull with a reverse chine flat and hull bottom to be incorporating a reinforced centre keel bar of approx ¼" thickness. 1. Vessel to have a fully welded hull/ deck shell and split swim grid with centre space for outboard engine. Framing welds must be continuous in areas subject to vibration in the vicinity of machinery bedplates and bow areas subject to impact. See Sec 18. 2. The hull is to have a minimum 3/8 inch thick 'delta pad' keel, with preferred jet tunnel design for outboard jet water intake. 3. A minimum of 6 full-length (bottom) stringers is required, or minimum 4 box girders with approx 6 " base on hull per girder, not including bar keel forward integrated with delta pad stiffener. Stringers to be ¼" type 6061 extrusions, or braked .125 pl. 4. The hull and decks are to be transversely framed and longitudinally stringered, with 3/16" bottom and chine plating and minimum 1/8" side plating 5. The hull, to have minimum bottom plate thickness of .190" and side plate of .125". 6. Hull bottom to incorporate bottom strakes, as applicable to design to assist in	

handling stability.	
16.3 Deck: Deck to be constructed of aluminium will include deck plate joining faces to be continuously welded and finished to provide for smooth non-catch surface with the exception of machine screwed and gasket (non-adhesive) water tight, deck plate located immediately over the fuel tank sender unit and shut off valve. Entire surface to be coated with a durable, non-reflective, non-slip coating.	
16.4 Windows: The windows must be laminated safety glass, and carry the manufacturers' certification confirming construction. Forward windows must be minimum 1/4 inch glass as well as side windows beside the operator's positions. **16.4.1** Protective cushioning, with sunbrella or equal covers, for operator and navigator to be fashioned for the upper window frames port and starboard. Cushions are to be removable with the ability to be attached via the canopy snap retainers.	
16.5 Stowage and Trailer Securing Points 1. Two open deck stowage seat boxes to be affixed to the deck aft of helm and nav seats. (optional see Sec 13.7) **2.** Arrangements must be provided for safe, secure and accessible stowage of an anchor and cable, and other equipment in bow / anchor locker and side deck trays. **3. Tie Downs;** Port and Starboard trailering tie down points to be incorporated in transom.	
16.6 Bow Eye: A system is to be designed and incorporated into the construction of the stem 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-corroding material and of sufficient strength to allow for towing the vessel at a speed of 20 knots in calm water in the normal loaded condition, on an even keel, without damaging the vessel or causing chafing of the towline.	
16.7 Pumping and Drainage: Electric and Manual pumps 1. An electric bilge pump with 1500 gph capacity must be fitted in the main watertight division as well as a fixed manual operated bilge pump of the diaphragm type. The bilge pump(s), must be located so that they take suction from the lowest point of the hull, at the transom. Smooth bore piping must be installed which will allow the bilge pump to discharge directly overboard. Any additional watertight division of the hull must be serviced by a bilge pump of 1500 GPH capacity. 2. Bilge pump must have an integrated automatic float switch control that turns on the electric bilge pump when water is present in the bilge. Bilge pump must be easily accessible. Bilge system to incorporate a high water alarm with visual and audible indicators located at helm. The electric bilge pump control switch must be located on the operator's console, with settings for 'on', 'off', and 'automatic' operation. An indicator light must be provided at the control that lights when the bilge pump is operating. 3. A High-level float switch must be also be installed in the bilge compartment to warn operators of water ingress. The HIGH LEVEL switch(s) must activate an audible (cancelable) and visible	

alarm at the helm, and must be in plain sight of operator. Switch must accessible similarly to the bilge pumps, to manually test alarm functions. 4. Hull drainage: A compatible metal threaded plug must be provided in the lowest point to drain the hull when out of the water. 5. Valves and handles must be non-corroding material and must be located where they are readily accessible for operation, maintenance or removal.	
16.8 Hull and Deck Finish: **White exterior marine vinyl ply**, hull **s**ides only, from sheer to 20" below the sheer. - All reflective surfaces which could affect safe operation of vessel, to be painted with "**zolotone" , Granite Grey**, to be used on console, window frame, and side/ aft (transom top) decks, and interior return at inner side deck edge, and railings. - **Fore deck** must be painted with dark grey non-skid application - **Cockpit deck** and engine box top to be painted with Non-Skid as well. RCMP decaling to be GSM supplied and installed by the contractor.	
16.9 Collars – Not Used	
OUTFITTING AND EQUIPMENT	
17.0 Outfitting Detail	
17.1 Lifesaving Emergency Equipment: Will be GSM, with the exception of the following: a) One CO2 fire extinguisher of suitable size mounted in non-obstructing location in clear sight of operators. b) Two paddles with sleeve mounts one port and one starboard.	
17.2 Electrical System 1. The electrical system must be easily accessible, incorporating a waterproof faced breaker panel with a minimum of 8 circuits fitted, and an additional panel **if** required for the services specified herein. A minimum of two spare breakers required. 2. Twelve (12) volt DC distribution system must be provided to power the engine starting and boat service loads. Starting battery to be used for engine service loads only. 3. All circuit breakers must be clearly identified.	
17.3 Batteries 1. The boat is to be equipped with two deep-cycle batteries with a selector 4 position switch and connected in accordance with the motor manufacturer's technical specifications. 2. The batteries must be of marine quality equipped with rollover caps and a capacity to adequately service engines and ancillary vessel loads.	
17.4 Wipers, Lights and Utilities: 1. Two pantograph arm wipers must be installed on the starboard and port fwd windows. A switch located on the helm console must activate them individually. 2. A series of multipurpose light bars are to be affixed to light the working deck areas of the vessel. Two each side, port and starboard mounted under the gunnel to provide light to the aft deck working area and one each under the dash at operator and nav positions to provide light at console area deck. Lunasea LED multipurpose light bars 32CC-71-00 or equivalent.	

17.5 Navigational Equipment: 1. The Contractor must supply and install an electric horn that meets the requirements of TP 14070 (Small Vessel Regulation). The horn must be operated by a momentary switch located on the operators' console. The "Signaltone" model RB-85 electric horn, or Ongaro horn meets this requirement. 2. All navigation lights must display range of visibility as defined in the Canada Shipping Act, Collision Regulations. (COLREGS) (http://www.tc.gc.ca/Actsregs/csa-lmmc/csa14.html) Navigation lights must be permanently fitted to the cabin window corners and / or socketed in suitable location to meet requirements as listed sec 13.9.2 above with protected wiring and must be waterproof. All round light can be located on socketed / removeable mast on transom deck. 3. The fixtures must be designed to resist the effects of vibration and must be provided with adequate protection from damage that may occur when lying alongside a vessel or a pier. (The Hella NaviLED Series of lights, including the NaviLED 360 all–round light, and NaviLED sidelights meet this requirement.) 4. Non-white (red or green) lighting must be wired together on a separate breaker of the 12-volt DC electrical system. Masthead 'all around' light showing clear above the windshields and bimini is acceptable, and side lights, one meter below mast light, on windshield sides. Two switches to be provided, labelled: Nav 1 (masthead / anchor light) and Nav 2 (sidelights). .	
17.6 Navigational Electronics-contractor supplied and Installed 1. One standard horizon loud hailer with listen and intercom features 2. One Garmin GPSMAP 7410XSV with associated software for deployment area.	
18.0 <u>Propulsion</u>	
1. Contractor to supply the appropriate horse power Yamaha Outboard Jet Engine assembly to achieve/meet the performance as stated in section 11. 2. An auxiliary engine (Yamaha 9.9 hp 4 stroke) is to be mounted on the port side on the transom with designated controls located in such a manner that all starting / operating systems are available at the helm position. Engine to be CSM supplied. Controls, steering components contractor supplied and installed. All controls must be manufacturer OEM equipment. 3. Motors must be installed in accordance with manufacturer's recommendations. Installations of the engine(s), controls, lubrication and fuel systems, battery connections, etc. must be verified by an authorized Yamaha representative. 4. The steering for the auxiliary is to be directly linked to the main Yamaha engine steering system. 5. Auxiliary engine fuel to be supplied by main engine fuel supply. No PVC /poly auxiliary tanks. 6. Impeller is to be Stainless Steel.	
18.1 Propulsion Control	
1. Engine controls must be mounted on starboard inboard gunnel at optimum height to allow safe and ergonomic access to operators while standing or seated.	

2. Contractor to have installed any of the following equipment included in the engine manufacturers' standard and optional gauge package for the specified engine**. Note that separate hour and fuel gauges must be installed in addition to any main multifunction gauge.** a. Tachometer for engine. b. Engine temperature alarm c. Fuel level sender and gauge d. Hour meter e. Voltage gauges. f. Ignition harness (mounted so that the key cannot collect water).	
18.2 Fuel Systems: NOTE: Ensure that engine room / tank space has powered vent.	
1. Fuel systems must meet with all requirements of TP 1332 "Construction Standards for Small Vessels", which reference the ABYC standards. 2. The vessel must be fitted with fuel tank(s), to be fitted centre mounted underdeck. Fuel tank(s) to have a capacity minimum capacity of 150 litres. Tanks must be hydrostatically tested, or air tested to 3.0 p.s.i. and bear manufacturers' name, capacity, and testing data. Fuel system to comply at the minimum with the most current American Boat and Yacht Council Standards, (ABYC) 3. Arrangements must be provided for the fuel tank and associated lines, vent, fill, and on / off selector manifold, to be fitted to the boat. 4. Fuel tanks must be equipped with a demand anti-siphon valve, or manual ball valve, installed on the supply fitting at the tank, depending on engine manufacturer's approval of the demand valve. 5. Fuel lines from the inboard shutoff valve or manifold to be protected against chafing and wear. The fuel shutoff "maintenance" valve to be located outside of engine compartment per TP 1332, which references ABYC standards. 6. A fuel / water separator filter is to be mounted "in-line" to the engine with easy access to drain the sediment bowl, a RACOR 320, or eq. 7. All valves and fittings for the fuel system must be of stainless steel or other non-corroding metals suitably isolated from the aluminium structure. 8. Filler pipe openings must be surface mounted on the side deck, and labelled for fuel type. 9. Fuel tank vents must be equipped with a non-return check valve with flash screen.	
19.0 <u>Steering:</u> 1. Steering system to have a hard over to hard over (270 degrees from lock to lock) 2. The wheel / console connection must be of robust construction, to eliminate fore and aft or lateral movement of wheel / steering shaft fixture. 3. The Steering wheel must be stainless steel, or high strength aluminium, and be rubber or plastic covered. 4. Auxiliary engine to be controlled directly by main propulsion unit steering system.	
20. <u>Trailer:</u> Must be rated at least 20% over the anticipated 'normal load' weight of the boat, and to be specified as follows: 1. Galvanized modular construction; 2. 15 inch 5 bolt wheels with disc brakes;	

3. Dual axle design with vault style or equivalent sealed bearing hubs. 4. Surge brake equipped. 5. Brake, and turn signal lighting, with seven pin round socket adaptor. 6. Manual, one speed bow winch assembly with winch webbing strap, bow chock, and high lift swivel tongue jack, (1500 lb.) with wheel; 7. Must be fitted with heavy duty 'stand-on' fenders and hitch for a 2" ball; 8. Must have double "slick" bunks (minimum), and spare tire and carrier, with lug wrench; 9. Must be supplied with two ratchet tie down straps with hooks securing boat to trailer aft. Turnbuckle to be provided for securing boat to trailer forward; 10. Must have horizontal, side-loading guides from inside of fenders to aft end of trailer frame. 11. A rock guard must be installed on the forward portion of the trailer designed to prevent impact damage to forward section of the hull when traileringlong distances over loose gravel roads.	
21.0 <u>Bimini Top</u> 1. Supply and install a "bimini" 3 hoop canopy top with folding frame and drop down centre panel in way of open windshield. Bimini assembly to be of commercial grade with stainless steel fittings able to withstand the varying environmental conditions at maximum speeds maintaining its shape and integrity. 2. Clear panels must be provided port, starboard and aft to provide maximum range of view for both the helm and navigator's positions. Canopy material shall be of durable, waterproof, and UV resistant. "Sunbrella" or "Top Gun" or equivalent meets this requirement. 3. Headroom beneath canopy shall be a minimum 6 ft. 4 inches (1.93 meters). Canopy shall be designed for easy removal from vessel. Color shall be dark blue 4. An aft drop curtain," sloper top" and padded windshield cover of the same color and material shall also be supplied.	
Proposal Notes:	
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9. Add lines as required	