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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 -  
Western Region  
Room 100  
167 Lombard Ave.  
Winnipeg  
Manitoba  
R3B 0T6

<b>Title - Sujet</b> Remotely Operated Underwater Vehicle	
<b>Solicitation No. - N° de l'invitation</b> F2402-180143/A	<b>Amendment No. - N° modif.</b> 001
<b>Client Reference No. - N° de référence du client</b> F2402-180143	<b>Date</b> 2018-11-01
<b>GETS Reference No. - N° de référence de SEAG</b> PW-\$WPG-010-10659	
<b>File No. - N° de dossier</b> WPG-8-41101 (010)	<b>CCC No./N° CCC - FMS No./N° VME</b>
<b>Solicitation Closes - L'invitation prend fin</b> <b>at - à 02:00 PM</b> <b>on - le 2018-11-26</b>	<b>Time Zone</b> <b>Fuseau horaire</b> Central Standard Time CST
<b>F.O.B. - F.A.B.</b> <b>Plant-Usine:</b> <input type="checkbox"/> <b>Destination:</b> <input checked="" type="checkbox"/> <b>Other-Autre:</b> <input type="checkbox"/>	
<b>Address Enquiries to: - Adresser toutes questions à:</b> Maki, Christie	<b>Buyer Id - Id de l'acheteur</b> wpg010
<b>Telephone No. - N° de téléphone</b> (204) 891-6126 ( )	<b>FAX No. - N° de FAX</b> (204) 983-7796
<b>Destination - of Goods, Services, and Construction:</b> <b>Destination - des biens, services et construction:</b>	

Instructions: See Herein

Instructions: Voir aux présentes

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

This amendment 001 to solicitation F2402-180143/A is hereby raised to address the following and answer questions from the industry:

**QUESTIONS:**

- Q1. Can you please provide examples of acceptable scientific instruments that will meet requirements 2.12, 2.13, 2.14, and 2.15.
- R1. We do not require specific sensors, but either Sea-Bird Scientific or RBR are examples of companies that manufacture CTD sensors that meet Requirement 2.12, and we identified the Sea-Bird ECO Triplet as a fluorometer that meets Requirements 2.13 and 2.14.
- Q2. Minimum mandatory performance specification 1.1: Is this specification requiring the vehicle to travel 800 m on a single battery with a full sensor load in arctic water temperatures?
- R2. Yes, if the vehicle is battery powered.
- Q3. Minimum mandatory performance specification 2.5: Please reconsider this spec. Most ROVs in the 20 kg range can only do 1 m/s with no options. SEAMOR does not know of a mini ROV that can even get close to 5.8 knots
- R3. A maximal speed of 1m/s excluding the payload is acceptable.
- Q4. Minimum mandatory performance specification 2.6: What is meant by tether management? Is this a manual reel or an electric drive required for the reel?
- R4. A manual reel is acceptable.
- Q5. Minimum mandatory performance specification 2.8: SEAMOR can certainly quote these systems. However, they are third party equipment as ROV manufacturers do not make their own. The sonar requirement has a wide range of prices so some specifications would be helpful.
- R5. A sonar altimeter is required is for bottom collision avoidance.
- Q6. Minimum mandatory performance specification 2.12: Is the ROV to carry all of these at the same time? We can certainly provide these sensors but again, including the positioning and sonar, these three sensors will cost more than the ROV. To level the field for the ROV pricing these should be a separate line items from the ROV. Depending on the weight of these sensors in water this may or may not be possible for a 20 kg ROV.
- R6. Yes, the ROV has to carry all the sensors and they will not be listed as separate items.
- Q7. Minimum mandatory performance specification 2.18: Is the ability to run on battery a mandatory requirement?
- R7. The unit can be powered by a small 2000-watt 120V AC generator.

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- Q8. Minimum mandatory performance specification 3.4: Please clarify this requirement. Is this looking for a second ROV with a second USBL beacon?
- R8. The secondary ROV system must be fully operational, including positioning in the case of a primary unit malfunction, but without the payload.
- Q9. Minimum mandatory performance specification 5.2: Where is training to take place? Does the training include how to run the USBL, sonar, CTD, fluorometer and CDOM/FDOM sensor.
- R9. Training is conducted at the vendor's location, topics were specified in the solicitation but the focus is on piloting of the ROV.

**REVISIONS:**

1. See Annex A, Requirement and Minimum Mandatory Performance Specifications-Compliance Matrix.

**DELETE:** Annex A, Requirement and Minimum Mandatory Performance Specifications-Compliance Matrix.

**INSERT:** Annex A, Requirement and Minimum Mandatory Performance Specifications-Compliance Matrix, attached

2. See Annex B, Basis of Payment

**DELETE:** Annex B, Basis of Payment

**INSERT:** Annex B, Basis of Payment, attached.

**ALL OTHER TERMS AND CONDITIONS REMAIN THE SAME**

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## **ANNEX A**

### **REQUIREMENT**

#### **Objective:**

Fisheries and Oceans Canada (DFO), Freshwater Institute (FWI) wish to acquire one primary underwater remotely operated vehicle (ROV) for research on sea ice ecosystems and one Recovery ROV in case primary unit rescue is necessary. The ROV will be used to map and characterize complex under-ice environments, to collect oceanographic and biological data, and to conduct visual surveys of the benthic environment.

#### **Context:**

Fisheries and Oceans Canada FWI is purchasing an ROV that will be deployed to characterize sea ice habitats and to gain a better understanding of the ecosystem structure and function of the marine environment in the Last Ice Area. This purchase is required as part of a multidisciplinary research initiative to collect baseline data on complex sea ice ecosystems. The system must be delivered to the following address on or before March 29<sup>th</sup> 2019:

Fisheries and Oceans Canada  
501 University Crescent  
Winnipeg (MB)  
R3T 2N6

#### **Training:**

The Contractor must provide hands on and theoretical training. Training for 2 operators will be provided in English at the Vendor's location. Training must be completed using a comparable ROV system with a similar control system. Training must be provided on or before August 30<sup>th</sup> 2019.

Future training (separate from this contract and at additional expense) in a remote location may be required.

The training should, at minimum, cover the following topics:

Introduction to ROV and sonar systems, safety procedures, pre and post-dive checks, basic piloting and navigation techniques, equipment launch and recovery, payload operations, tether management, emergency recovery procedures, maintenance and troubleshooting.

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## **MINIMUM MANDATORY PERFORMANCE SPECIFICATIONS- COMPLIANCE MATRIX**

### **INSTRUCTIONS**

A complete list of the minimum mandatory performance specifications are detailed below in Minimum Mandatory Performance Specifications-"Compliance Matrix". Bidders are to clearly demonstrate compliance with each mandatory specification.

1. Bidders are requested to provide the Manufacturer and model number offered.
2. It is requested that supporting technical documentation, including but not limited to, specification sheets, technical brochures, photographs or illustrations be provided with the bid at solicitation close and be cross-referenced on the Compliance Matrix for each performance specification to outline where in the supporting technical documentation it demonstrates compliance. It is the Bidders responsibility to ensure that the submitted supporting technical documentation provides detail to prove that the proposed product(s) meet the requirements of the Performance Specification. If published supporting technical documentation is not available, the Bidder should prepare a written narrative complete with a detailed explanation of how its bid demonstrates technical compliance.
3. If the supporting documentation referenced above has not been provided at bid closing, the Contracting Authority will notify the Bidder that they must provide supporting documentation within two (2) business days following notification. Failure to comply with the request of the Contracting Authority within that time period, will deem the bid non-responsive and the bid will be given no further consideration.
4. Canada will not evaluate information such as references to Web site addresses where additional information can be found.
5. Bidders must address any concerns with the performance specifications in written detail to the Contracting Authority before bid closing as outlined in the Request for Proposal (RFP) document.
6. Failure to meet each performance specification will result in the bid being deemed non-responsive, and be given no further consideration.

Requirement	Manufacturer Offered:	Model Number Offered:
One Primary remotely operated underwater vehicle (ROV).		
One Recovery remotely operated underwater vehicle (ROV).		

**MINIMUM MANDATORY PERFORMANCE SPECIFICATIONS- COMPLIANCE MATRIX**

Mandatory Performance Specifications		Specification being offered: Bidder should record in this column how they meet the performance specification by recording this information in this column	Cross Reference: In this column, Bidders should cross-reference where this performance specification is indicated in their supporting documents
Fisheries and Oceans Canada (DFO), Freshwater Institute (FWI) has a requirement for the supply, and delivery of an underwater remotely operated underwater vehicle (ROV) for multiyear sea ice research in the Canadian high Arctic. Training on how to use the ROV is also required. The ROV must have the following specifications and meet the operational requirements below:			
<b>1.0</b>	<b>Mandatory Operational Requirements</b>		
1.1	Must be able to descend 200 m, conduct a visual survey transect of at least 400 m in total length, and return to base. If battery operated, this must be on a single charge.		

1.2	Must be able to be deployed and operated through a 1.5 m x 1.5 m hole in sea ice.		
2.0	<b>Mandatory Technical Requirements</b>		
2.1	Must have a minimum depth rating of 200m in salt water.		
2.2	Must operate in salt water at a temperature range of at minimum -1.8°C to 25 °C.		
2.3	The base ROV unit weight in air must be less than 20 kg not including batteries, ballast or sensors.		
2.4	Must be capable of motion with 6 degree of freedom including active stabilization in roll and pitch.		
2.5	Must have a motor capable of propelling the ROV at a speed of at least 1m/s with the current payload requirements.		
2.6	Must have a tether of at least 300 m in length with a tether management system. A manual reel is acceptable		

2.7	Must have a tether tangle recovery system.		
2.8	Must have an underwater positioning system and sonar altimeter		
2.9	Must have a high definition, low lux camera with a minimum resolution of 1080p.		
2.10	Must have a lighting array of at least 4 x 1500 lumen lights.		
2.11	Must have a manipulator arm capable of collecting samples, recovering objects and untangling tether snags. Able to be opened and closed from the hand controller or control panel with a maximum jaw opening of 7 cm and a depth rating of at least 200 m.		
2.12	Must have a conductivity, temperature and depth sensor. The conductivity sensor must have a minimum accuracy and precision of 0.01 mS/cm and 0.003 mS/cm, respectively. The temperature sensor must have a minimum accuracy and precision of 0.005 °C and 0.003 °C, respectively.  The ROV has to carry all the sensors.		



2.13	Must have fluorimeters capable of detection of <i>in vivo</i> red and blue excitation with minimum detection limits of 0.3 µg/L and 0.03 µg/L respectively, and a linear range of 0-500 µg/L.		
2.14	Must have a coloured and fluorescent dissolved organic matter (CDOM/FDOM) sensor with minimum detection n 0.1 ppb and a linear range of 0-1,500 ppb.		
2.15	Must have the option to add sensors on an as needed basis. An upward looking spectroradiometer must be an option. Software add-ons must also be an option to support any upgraded features.		
2.16	Sensor data must be multiplexed.		
2.17	Must include a laser scaler attachment that allows for estimation and measurement without tilting the unit.		

2.18	Must be powered by an intelligent battery system that does not allow discharge below a recoverable voltage. Alternatively, the system can be powered by our 2000-watt 120V AC generator.		
2.20	The ROV must be able to carry all the sensors requested at once		
3.0	<b>Mandatory Components</b>		
3.1	Must come with compatible software for all sensors.		
3.2	Must include hand controller for piloting ROV and a backup controller.		
3.3	Must include weatherproof laptop computer for monitoring and piloting ROV system.		
3.4	Recovery ROV must adhere to all mandatory operational requirements, to mandatory technical requirements 2.1 to 2.11 inclusive, and to mandatory technical requirement 2.18.		

3.5	Must come with maintenance kit that includes parts such as domes, seals, and basic hardware.		
3.6	Must include two battery sets, if battery powered.		
3.7	Must include battery-charging dock, if battery powered.		
4.0	<b>Mandatory Training and Support</b>		
4.1	Supplier must provide technical and operational support by phone or email during business hours.		
4.2	Supplier must provide training covering topics such as setup, operational capability, basic piloting, troubleshooting, cleaning, and basic maintenance.		

5.0	<b>Delivery</b>		
5.1	The system must be delivered to the following address on or before March 29 <sup>th</sup> 2019:  Christine Michel Fisheries and Oceans Canada 501 University Crescent Winnipeg (MB) R3T 2N6		
5.2	Training must be provided on or before August 30 <sup>th</sup> 2019.		

## ANNEX B

### BASIS OF PAYMENT

It is **MANDATORY** that Bidders submit firm prices/rates for the period of the proposed Contract for all items listed hereafter. **This section, when completed, will be considered as the Bidder's financial proposal.**

Bidders must provide bids as per unit of issued requested. It is the responsibility of the bidder to provide conversion to the unit of issue requested. Failure to do so will render the bid non-responsive without further consideration.

Should there be an error in the extended pricing it shall be corrected in the evaluation. Any errors in the quantities of the Bidder's proposal shall be changed to reflect the quantities stated in the RFP.

Prices quoted must remain firm for the period of the Contract. Prices MUST include ALL costs, including customs if applicable, associated with providing the work in accordance with the Requirement, Annex A attached herein. GST, if applicable, is to be shown as a separate item on any resulting invoice. Payment will be made in accordance with the following pricing. Pricing must be in Canadian funds.

#### FOB Destination:

Item	Description	Qty	Unit of Issue	Unit Price CDN\$
1	One Primary remotely operated underwater vehicle (ROV) in accordance with the mandatory performance specifications detailed in Annex A – Requirement.  <b>Model Number:</b> _____	1	each	\$
2	One Recovery remotely operated underwater vehicle (ROV) in accordance with the mandatory performance specifications detailed in Annex A – Requirement.  <b>Model Number:</b> _____	1	each	\$

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2.	<b>Training</b> in accordance with the mandatory performance specifications detailed in Annex A – Requirement.  All-inclusive price including materials, travel, accommodations and meals.	1	lot	\$
4.	<b>Delivery charges</b> , including freight, customs and off-loading charges to:  Fisheries and Oceans Canada 501 University Crescent Winnipeg (MB) R3T 2N6	1	lot	\$