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**LETTER OF INTEREST**

**LETTRE D'INTÉRÊT**

Comments - Commentaires

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Issuing Office - Bureau de distribution

Victoria Class Modernization (VCM) / Modernisation de  
la classe Victoria

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K1A 0S5

<b>Title - Sujet</b> RFI - Flank Array	
<b>Solicitation No. - N° de l'invitation</b> W8472-195763/A	<b>Date</b> 2019-05-27
<b>Client Reference No. - N° de référence du client</b> W8472-195763	<b>GETS Ref. No. - N° de réf. de SEAG</b> PW-\$VCM-002-27335
<b>File No. - N° de dossier</b> 002vcm.W8472-195763	<b>CCC No./N° CCC - FMS No./N° VME</b>
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<b>Time Zone</b> <b>Fuseau horaire</b> Eastern Standard Time EST	
<b>F.O.B. - F.A.B.</b> Specified Herein - Précisé dans les présentes <b>Plant-Usine:</b> <input type="checkbox"/> <b>Destination:</b> <input type="checkbox"/> <b>Other-Autre:</b> <input checked="" type="checkbox"/>	
<b>Address Enquiries to: - Adresser toutes questions à:</b> Swindlehurst, Tomas	<b>Buyer Id - Id de l'acheteur</b> 002vcm
<b>Telephone No. - N° de téléphone</b> (819) 939-3089 ( )	<b>FAX No. - N° de FAX</b> ( ) -
<b>Destination - of Goods, Services, and Construction:</b> <b>Destination - des biens, services et construction:</b> DEPARTMENT OF NATIONAL DEFENCE MGen Georges R. Pearkes Building 101 COLONEL BY DR. OTTAWA Ontario K1A0K2 Canada	

Instructions: See Herein

Instructions: Voir aux présentes

<b>Delivery Required - Livraison exigée</b> See Herein	<b>Delivery Offered - Livraison proposée</b>
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<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>

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## ABBREVIATIONS AND DEFINITIONS

**Broadband:** Acoustic energy over a wide range of frequencies.

Typical broadband sources are noise from either the propeller, shaft, flow noise and/or some propulsion systems (example: steam).

**CAF:** Canadian Armed Forces.

**Component:** The third level of decomposition, below that of system and sub-system, of physical installations to which ship-level capabilities are allocated. Components are typically wholly contained functions within a sub-system.

**Deep Diving Depth:** The maximum operating depth for the submarine is classified. For the purpose of the RFI, the maximum operating depth is 200 metres.

**DND:** Department of National Defence.

**DOORS:** Dynamic Object Oriented Requirements System.

**EMC:** Electromagnetic Compatibility.

**EMI:** Electromagnetic Interference.

**Integrated Logistic Support [ILS]:** A unified and iterative approach to the managerial and technical activities necessary to:

- a. cause support considerations to influence both requirements and design;
- b. define the support requirements which are optimally related to the design and to each other;
- c. acquire the required support; and
- d. provide the required support over the life of the equipment at the lowest possible cost.

**ILS Elements** are:

- a. maintenance planning;
- b. manpower and personnel;
- c. supply support;
- d. supply equipment;
- e. technical data;
- f. training and training support;
- g. facilities;
- h. package, handling, storage and transportation; and
- i. design interface.

**Narrowband:** Acoustic energy within a small band about a particular frequency, or class of frequencies.

Typical sources are the various pieces of machinery found in every ship; for example, pumps, motors, electrical generation equipment and propulsion systems.

**Operate:** The system of interest functions normally, providing all specified functionalities at the specified levels of performance, without degradation.

**Patrol Cycle:** A routine operational voyage of a submarine for a period of forty-five days.

**PDF:** Portable Document Format.

**Periscope Depth:** The submerged depth that a submarine maintains to keep the payload of the submarine's periscope above the surface.

**PSPC:** Public Services and Procurement Canada.

**RCN:** Royal Canadian Navy.

**RFI:** Request for Information.

**RFP:** Request for Proposal.

**SOR:** Statement of Operational Requirements.

**Technical Readiness Assessment [TRA]:** A Technology Readiness Assessment (TRA) is a systematic, metrics-based process that assesses the maturity of, and risk associated with, critical technologies to be used by a program.

**Technical Readiness Level [TRL]:** A scale that identifies the maturity of developing technologies (rated from 0 to 9) with the criteria for each increment defined in Technology Readiness Assessment (TRA) Guidance, section 2.5, US DOD, April 2011.

**Training Material:** Training Material includes the following material in editable electronic format:

- a. training design documentation;
- b. lesson plans;
- c. presentations;
- d. handouts;
- e. reference material;
- f. handbooks; and
- g. training aids.

**VCS:** *Victoria*-class Submarines.

**VCM:** *Victoria*-class Modernization.

**WebEx:** WebEx is a set of tools designed for personal and corporate collaboration. It's used to connect to others, typically through the internet, and allows you to communicate with audio, video, text chat, file sharing, whiteboard and other features.

**Withstand:** The system of interest has temporarily degraded functionality or performance for periods where the operating conditions exceed those specified for 'Operate', but returns to full functionality and performance once the 'Operate' conditions are restored.

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## REQUEST FOR INFORMATION (RFI) FOR THE PROVISION OF A FLANK ARRAY SYSTEM

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### 1. Purpose of the Request for Information

Public Services and Procurement Canada (PSPC) is releasing a Request for Information (RFI) on behalf of the Department of National Defence (DND) in order to prepare industry for potential procurement opportunities related to the *Victoria*-class Modernization (VCM) Flank Array capability element and to solicit industry feedback and contributions on high level requirements described herein. The responses provided will contribute to further define the Statement of Operational Requirements (SOR) in a manner that is understandable by industry and meaningful to DND operational contexts, and thus contribute to better describing the strategic fit and operational needs for DND to achieve the required capability.

As the project progresses towards a formal Request for Proposal (RFP), this RFI will provide a continuous single point of official communication with industry. The project will use this RFI process for multiple purposes such as but not limited to:

- a) Collaborating with industry on the draft high level SOR provided herein, including price and availability information;
- b) Ensuring all interested participants receive the same information;
- c) Collaborating with industry in the form of Post Submission Review Meetings;
- d) Presenting draft RFP documents to industry and soliciting comments and feedback on the project requirements and procurement strategies.

This initial RFI (Release #1) is to request industry feedback on the draft high level SOR provided as Annex A, gain an understanding of available submarine Flank Array systems and to receive additional product information in response to Flank Array questions provided as Annex B.

Additional questions may be asked of industry through amending this RFI. Please see the following link to learn how to follow updates to this RFI:

<https://buyandsell.gc.ca/procurement-data/tenders/follow-opportunities>

### 2. Background Information

The *Victoria*-class Modernization (VCM) Program will provide modernized and increased capability to maintain the *Victoria*-class Submarines' (VCS') operational relevance through the mid-2030s. The VCM Program will be a collection of discrete projects (referred to as capability elements) that will be managed both individually and within a larger VCM Program portfolio to generate the necessary capability for Canada's submarines as detailed in *Strong, Secure, Engaged* - Canada's Defence Policy. Overall, the modernization outcomes will make Canada and its allies stronger and safer by:

- a. positioning the VCS to contribute meaningfully to Canadian Armed Forces (CAF) Joint Operations ashore;
- b. ensuring the survivability of the VCS against an evolving threat in an increasingly complex and changing battlespace; and
- c. improving the habitability and deployment conditions onboard the VCS in support of Royal Canadian Navy (RCN) submariners.

This RFI relates to the VCM Flank Array capability element.

The VCS are currently equipped with a late 1970s design 32 element Flank Array originally manufactured by Thompson Marconi Sonar Limited - now under Thales Group. The Flank Array allows the submarine to passively detect and track targets at long ranges.

The current Flank Array is comprised of two 16-hydrophone arrays, one on each of the port and starboard sides. Analog signals from each port and starboard array element are fed, via copper cabling, to port and starboard amplifier groups. The amplifier groups transmit the amplified signals to the VCS AN/BQQ-10 Sonar System.

The VCM Program wants better detection and performance from the new Flank Array.

### **3. Directions to Respondents**

#### **3.1 Nature of the RFI**

This is not a bid solicitation and this RFI will not result in the award of any contract.

Procurement of the goods and services described in this RFI will not necessarily follow this request. Any procurements of this system/equipment/services will be in accordance with standard government procurement policies, i.e., formal RFPs.

Respondents and potential suppliers of any goods or services described in this RFI should not earmark stock or facilities, nor allocate resources, as a result of any information contained in this RFI. This RFI will not result in the creation of any source list; therefore, whether or not any supplier responds to this RFI will not preclude that supplier from participating in any future procurement.

#### **3.2 Nature and Format of the Requested Responses**

Respondents are asked to send their responses directly to the Public Services and Procurement Canada (PSPC) Contracting Authority by email in MS Word, Excel or PDF format with a suggested limit of 6 megabytes per response. The PSPC Contracting Authority will provide positive confirmation of receipt. All enquiries and other communications related to this RFI must be directed exclusively to the PSPC Contracting Authority.

Respondents must identify if their response, or any part of their response, is subject to the Controlled Goods Regulations and/or any export controls.

If respondents wish to provide multiple submissions or volumes/versions in response to this RFI, respondents are requested to indicate on the front cover page of the title of the response, the Buy and Sell identification number, the volume/version number, full legal name of the respondent and a point of contact of the respondent including name, telephone number and email address.

In addition to the questions being asked within this RFI, respondents are requested to provide their comments, concerns and where applicable, alternative recommendations and or various options regarding how the requirements described in the RFI could be satisfied. Respondents should list and explain any assumptions that they make in their responses.

#### **3.3 Response Costs**

Canada will not reimburse any respondent for expenses incurred in responding to this RFI.

#### **3.4 Treatment of Responses**

##### **3.4.1 Use of Responses**

Responses will not be formally evaluated. However, the responses received may be used by Canada to develop or modify procurement strategies or any draft requirements contained in this RFI.

#### **3.4.2 Review Team**

A review team composed of representatives from Canada will review the responses, yet they will not be formally evaluated. Canada reserves the right to hire any independent consultant, or use any Government resources or contractors that it considers necessary to review any response. Any consultants or contractors utilized will be subject to a Non-Disclosure Agreement. Not all members of the review team will necessarily review all responses.

Canada will review all responses received by the RFI closing date. Canada may, in its discretion, review responses received after the RFI closing date.

#### **3.4.3 Confidentiality**

Respondents should clearly identify any information they provide Canada that they feel is proprietary, commercial-in-confidence, third party, or personal information. Please note that Canada may be obligated by law (e.g., in response to a request under the Access to Information and Privacy Acts) to disclose proprietary or commercially-sensitive information concerning a respondent.

#### **3.4.4 Post-Submission Review Meetings**

Canada may request individual Post-Submission Review Meetings with respondents to provide clarity on information provided. This may take place in the form of follow on meetings, either in person or telecom/WebEx.

If required, the Post-Submission Review Meetings will be held at a location at Canada's discretion. For planning purposes, this may be held either on the East coast, West coast or the National Capital Region - location will be determined at a later date.

The intent of the Post-Submission Review Meetings will be to provide an opportunity for a discussion with respondents regarding the information submitted in response to this RFI.

Although respondents may request a Post-Submission Review Meeting, and their request will be considered, Canada will determine whether it requires additional information from any given respondent and will schedule meetings accordingly. All such requests, by respondents, should be provided to the PSPC Contracting Authority.

Should Post-Submission Review Meetings take place within a Naval Dockyard, an Enhanced Reliability security clearance will be required. Respondents who need sponsorship to obtain this clearance should contact the PSPC Contracting Authority.

Respondents will not be reimbursed for any cost incurred in participating in Post-Submission Review Meetings.

#### **3.5 Contents of this Request for Information**

The draft requirements contained in this RFI remain works-in-progress and respondents should assume that clauses and requirements may be added, modified and deleted in any bid solicitation that is ultimately published by Canada.

#### **3.6 Format of Responses**

The respondents must identify all response data with the following information:

- a. name and address of the respondent;
- b. name, address, telephone number, and email address of the respondent's contact;
- c. submission date;
- d. RFI number; and
- e. version number of the submission.

### 3.6.1 Numbering System

Each section has its own unique section number and corresponding letter. Respondents are requested to prepare their response using the system that corresponds to the one in this RFI. Descriptive material, technical manuals and brochures included as part of the response should be referenced accordingly.

### 3.6.2 Submission

Respondents must send their responses directly to the PSPC Contracting Authority by **1600 EST, August 6<sup>th</sup>, 2019**. The PSPC Contracting Authority will provide positive confirmation of receipt. Responses must be submitted in the Canada-provided MS-Excel spreadsheet, included as an attachment within Annex B for reference. Respondents must contact the PSPC Contracting Authority as detailed in Section 3.8, to attain a copy of the Canada-provided MS-Excel spreadsheet should you experience technical difficulties accessing the document. Responses will be imported into Dynamic Object Oriented Requirements System (DOORS), using the ID number as the key.

#### Directions:

- a. Populate only the following columns (only data in those columns will be reviewed):
  1. RFI Respondent's Responses, and
  2. RFI Respondent's Comments.
- b. Use alphanumeric characters only to populate the responses — no special characters.
- c. Do not create any new rows or new columns.
- d. Do not copy rows.
- e. Do not merge or split cells.
- f. Do not use formulas, macros or Visual Basic for Applications.
- g. Do not use conditional formats.
- h. Do not include graphics, diagrams, tables, figures.

Supplemental information may be provided in an electronic format (MS-Office applications or PDF). Provide the complete identification of the supplemental information in the RFI Respondent's Response column.

Responses to this RFI will not be returned.

### 3.7 Enquiries

Because this is not a bid solicitation, Canada will not necessarily respond to enquiries in writing or by circulating answers to all potential suppliers. However, respondents with questions regarding this RFI may direct their enquiries to the PSPC Contracting Authority. The use of email to communicate is preferred.

Canada may, in its discretion, contact any respondent for clarification on any aspect of the respondent's submission.

All enquiries must be submitted to the PSPC Contracting Authority no later than ten (10) calendar days before the RFI closing date. Enquiries received after that time may not be answered.

Documents may be submitted in either official language of Canada.

### 3.8 Contracting Authority

The PSPC Contracting Authority for the Contract is:

Name: Tom Swindlehurst  
Title: Supply Team Leader  
Public Works and Government Services Canada  
Directorate: Marine Sustainment Directorate  
Address: 2-SC19, 455, Boulevard de la Carrière, Gatineau, QC, J8Y 6V7



Solicitation No. - N° de l'invitation  
W8472-195763/A  
Client Ref. No. - N° de réf. du client  
W8472-195763

Amd. No. - N° de la modif.  
File No. - N° du dossier  
002VCM.W8472-195763/A

Buyer ID - Id de l'acheteur  
002VCM  
CCC No./N° CCC - FMS No./N° VME

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Telephone: 819-939-3089  
Mobile: 819-360-2327  
E-mail address: [Tom.Swindlehurst@tpsgc-pwgsc.gc.ca](mailto:Tom.Swindlehurst@tpsgc-pwgsc.gc.ca)

### **3.9 Security Requirements**

There is no security requirement associated with this RFI.

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## **ANNEX A – DRAFT STATEMENT OF OPERATIONAL REQUIREMENTS (SOR) FOR THE FLANK ARRAY SYSTEM**

### **1. VCM Flank Array Operational Requirements**

The Victoria-class Submarines (VCS) are currently equipped with a late 1970s design 32 element Flank Array originally manufactured by Thompson Marconi Sonar Limited - now under Thales Group. The Flank Array allows the submarine to passively detect and track targets at long ranges.

The current Flank Array is comprised of two 16-hydrophone arrays, one on each of the port and starboard sides. Analog signals from each port and starboard array element are fed, via copper cabling, to port and starboard amplifier groups. The amplifier groups transmit the amplified signals to the VCS AN/BQQ-10 Sonar System.

The Victoria-class Modernization Program wants better detection and performance from the new Flank Array.

The Flank Array System consists of the passive flank array elements, any associated digitization processing conducted within the panels, connectors cabling, multiplexing, and interface to the existing submarine sonar suite (AN/BQQ-10).

#### **1.1 Functional Requirements**

1.1.1 The VCM Flank Array shall passively detect contacts acoustically in Narrowband.

1.1.2 The VCM Flank Array shall passively detect contacts acoustically in Broadband.

#### **1.2 Performance Requirements**

1.2.1 The VCM Flank Array shall Operate from Periscope Depth to Deep Diving Depth.

1.2.2 The VCM Flank Array shall have a lateral bearing aperture from no less than 75 degrees forward of the starboard beam to no less than 75 degrees aft of the starboard beam.

1.2.3 The VCM Flank Array shall have a lateral bearing aperture from no less than 75 degrees forward of the port beam to no less than 75 degrees aft of the port beam.

#### **1.3 System Interface Requirements**

1.3.1 The VCM Flank Array System shall provide digitized signal data to the BQQ-10 Sonar inboard processor.

#### **1.4 Physical Requirements**

1.4.1 The VCM Flank Array shall have an installed length of no more than 42 metres per side.

#### **1.5 Environmental Conditions**

1.5.1 The VCM Flank Array shall Operate in sea water from minus two degrees Celsius to 36 degrees Celsius.

1.5.2 The VCM Flank Array shall Withstand air temperatures from minus 34 degrees Celsius to 48 degrees Celsius.

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## ANNEX B – VCM FLANK ARRAY QUESTIONS

### 1. Price and Availability

This section of the RFI is to determine the price of equipment that can meet the draft requirements.

#### 1.1 Acquisition Costs

What is the acquisition cost breakdown of the system based on the following configurations:

- a) economic order quantities and the associated prices,
- b) cost of one boat set,
- c) cost of four boat sets,
- d) cost of five boat sets; and
- e) average annual maintenance costs (in-service support)?

#### 1.2 Spares

What is the anticipated cost for 2 years' worth of spares (initial provisioning) to support the purchase of four boats systems?

#### 1.3 Training

Respondents are requested to provide information on training for equipment maintainers to include:

- a. where the training can be conducted (RCN establishment, respondent facility, other commercial facility);
- b. if the training already exists;
- c. facilities recommended for training (classroom, simulator, emulator, suitably-equipped submarine, actual equipment);
- d. cost for provision of training for an initial cadre (per student or per course);
- e. cost for provision of periodic training to RCN students (per student or per course); and
- f. cost basis for provision of Training Material to the RCN.

Respondents are requested to provide details and cost of any recommended variant of the proposed equipment for use solely as a training system.

#### 1.4 Delivery Lead Times

What is the production lead time for the system?

#### 1.5 Installation Effort

What was the level of effort required for previous installations of the system (in hours)?

#### 1.6 Availability

Is the system currently in production?

#### 1.7 Current Customer Base

What customers have installed the system?

### 2. Description of System Enhancement

Respondents are requested to provide a description of the Flank Array including:

- a. performance specifications;
- b. sub-systems and components;
- c. interface requirements;
- d. maintenance requirements; and
- e. Integrated Logistic Support.

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### 3. Requirement Validation

Respondents are requested to identify requirements that may:

- a. require significant non-recurring engineering;
- b. create a significant integration cost and risk;
- c. be significant cost-drivers; or
- d. be unachievable.

For these identified requirements, respondents are requested to provide feedback, suggestions for improvement or alternative requirements.

### 4. Performance Characteristics

#### 4.1 Sensor Performance

What are the acoustic performance characteristics of the system, including frequency range, signal-to-noise ratio and bearing resolution for the following array lengths: 21 metres and 42 metres?

#### 4.2 Depth

What is the range of depths for operation?

### 5. Certification

What requirements qualification testing (e.g., Shock, Noise and Vibration, EMC/EMI, Environmental, etc.) has your system been subjected to and to what standard?

### 6. System Interface Characteristics

#### 6.1 Auxiliary Systems

What are the system's cooling requirements?

How much heat does the system generate inside the pressure hull in metric?

### 7. Physical Characteristics

#### 7.1 Dimensions

What are the dimensions of each of the system's major Components in metric?

#### 7.2 Weight

What is the weight of each of the system's major Components in kilograms?

#### 7.3 Electrical

What are the system electric power requirements?

#### 7.4 External Mounting Arrangements

How would the array be mounted to a *Victoria*-class submarine?

For equipment mounted external to the pressure hull, what are the space, mounting and pressure hull penetration requirements?

### 8. Sustainability

What is the intended service life of the system?

What are the planned system upgrades, when are the upgrades planned and what is the intended schedule?

### **8.1 Availability**

What is the operational availability described as a percentage, over a Patrol Cycle and what is the confidence level in that number?

What was the methodology for determining the operational availability?

### **8.2 Maintainability**

What is the recommended preventive maintenance profile of the system?

### **9. Technical Readiness Level**

What is the Technological Readiness Level (TRL) of the system in accordance with Technology Readiness Assessment (TRA) Guidance?

### **10. Trade Controls**

If the system is subject to export trade controls, what are they?

Trade controls include Controlled Goods, International Traffic in Arms Regulations and Export Administration Regulations.

### **11. Other Information**

Is there any other important information the respondent feels will be of use to Canada?