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K1A 0S5
Bid Fax: (819) 997-9776

LETTER OF INTEREST
LETTRE D'INTÉRÊT

Title - Sujet
VCM Periscope System

Solicitation No. - N° de l'invitation W8472-195765/A	**Date** 2020-01-30
Client Reference No. - N° de référence du client W8472-195765	**GETS Ref. No. - N° de réf. de SEAG** PW-$VCM-004-27601
File No. - N° de dossier 004vcm.W8472-195765	**CCC No./N° CCC - FMS No./N° VME**

Solicitation Closes - L'invitation prend fin
at - à 02:00 PM
on - le 2020-03-31

Time Zone
Fuseau horaire
Eastern Standard Time
EST

F.O.B. - F.A.B. Specified Herein - Précisé dans les présentes
Plant-Usine: ☐ **Destination:** ☐ **Other-Autre:** ☑

Address Enquiries to: - Adresser toutes questions à: Mélanie Girard	**Buyer Id - Id de l'acheteur** 004vcm
Telephone No. - N° de téléphone (819) 939-3256 ( )	**FAX No. - N° de FAX** ( ) -

Destination - of Goods, Services, and Construction:
Destination - des biens, services et construction:

DEPARTMENT OF NATIONAL DEFENCE
MGen Georges R. Pearkes Building
101 COLONEL BY DR.
OTTAWA
Ontario
K1A0K2
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Comments - Commentaires

Instructions: See Herein

Instructions: Voir aux présentes

Vendor/Firm Name and Address
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Delivery Required - Livraison exigée See Herein	**Delivery Offered - Livraison proposée**

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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**

Issuing Office - Bureau de distribution
Victoria Class Modernization (VCM) / Modernisation de la classe Victoria
Louis St-Laurent Building (2)
2nd Floor - SC19
455 De la Carrière Blvd
Gatineau
Quebec
K1A 0S5

Canada

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ABBREVIATIONS AND DEFINITIONS

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.

Control Room: The Control Room is the space onboard a VCS that centralizes command functions and co-locates control of the following:

a. submarine manoeuvrability systems (propulsion, rudder, hydroplanes, ballast control);
b. auxiliary machinery systems (HP air, hydraulics, sea water systems, fresh water systems, power conversion systems);
c. navigation systems (electronic charting, GPS, inertial fixing aids, radio navigation aids),
d. tactical communications (radio, underwater telephone);
e. sensor systems (sonar, radar, electronic support measures, optical, electro-optical); and
f. combat systems (weapon management, countermeasures, combat management 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.

Field of Regard: The total area that a collection system is capable of seeing, typically measured in degrees either vertically and horizontally, or as a conical angle.

Field of View: A defined volume of space that a sensor can see at any instant, typically measured in degrees vertically and horizontally, or as a conical angle.

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.

ISR: Intelligence, Surveillance and Reconnaissance

IR: Infrared

NSE: National Security Exception

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 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.

Ultra high frequency [UHF]: A radio frequency in the range 300 to 3,000 megahertz.

Very high frequency [VHF]: A radio frequency in the range 30 and 300 megahertz.

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.

REQUEST FOR INFORMATION (RFI)

FOR THE PROVISION OF A PERISCOPE

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) Periscope capability element and to solicit industry feedback and contributions on high level requirements described herein. The responses provided will contribute to the further definition of 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 may 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) Potential collaboration 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.

The purpose of 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 Periscope systems and to receive additional product information in response to Periscope 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) will provide modernized and increased capability to maintain the *Victoria*-Class Submarines' (VCS') operational relevance through the mid-2030s. VCM will be a collection of discrete projects (referred to as capability elements) that will be managed both individually and within a larger VCM 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. improving the habitability and deployment conditions onboard the VCS in support of Royal Canadian Navy (RCN) submariners;
b. positioning the VCS to contribute meaningfully to Canadian Armed Forces (CAF) Joint Operations ashore; and
c. ensuring the survivability of the VCS against an evolving threat in an increasingly complex and changing battlespace.

This RFI relates to the VCM Periscope capability element.

The VCS are each equipped with two periscopes, an attack periscope and a search periscope.

The attack periscope has a smaller cross section above the water.

The attack periscope's smaller diameter results in less wake, reduced optical resolution and lower visual detectability by opposing forces when compared to the search periscope. This makes the attack periscope the preferred option for approach and attack on surface targets and for Intelligence, Surveillance and Reconnaissance (ISR) missions.

The search periscope has a larger cross section with correspondingly better optics but with a higher probability of detection. This periscope is used for all operations involving visual navigation, and for ISR missions that requires higher fidelity images.

The current concept of operations is to keep a continuous all-around look on the search periscope. Due to improvements in periscope detection, it is becoming increasingly important to minimize the amount of time the periscopes are exposed above the water.

Therefore, the RCN wants to replace the optics with modern sensors and rangefinders to improve performance and reduce probability of detection. The output of these sensors is to be recorded and remotely displayed at appropriate console(s).

The desired VCM Periscope system consists of new or upgraded search and attack periscopes, either with the received imagery presented on new displays or integrated within existing displays in the control room.

Replacement or refurbishment of the mast raising equipment will be the responsibility of the periscope supplier.

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 or 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.

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 as required.

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/or Industry Day, 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 or Industry Days 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 or Industry Days.

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 shall send their responses directly to the PSPC Contracting Authority by 1400 EDT, March 31st, 2020. 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: Melanie Girard
Title: Supply Officer
Public Works and Government Services Canada
Directorate: Marine Sustainment Directorate
Address: 2-SC21, 455, Boulevard de la Carrière, Gatineau, QC, J8Y 6V7

Telephone: 819-939-3256
E-mail address: Melanie.Girard@tpsgc-pwgsc.gc.ca

3.9 Security Requirements

There is no security requirement associated with this RFI.

On future procurement phases relating to the VCS periscopes, Canada reserves the right to apply the National Security Exception (NSE).

ANNEX A – DRAFT STATEMENT OF OPERATIONAL REQUIREMENTS (SOR) FOR THE PERISCOPE SYSTEM

1. VCM Periscope Operational Requirements

1.1 Functional Requirements

1.1.1 The VCM attack periscope shall provide stabilized, high definition, colour, full-motion video to users in the Control Room.

1.1.2 The VCM search periscope shall provide stabilized, high definition, colour, full-motion video to users in the Control Room.

1.1.3 The VCM search periscope shall provide high resolution, colour, still-imaging to users in the Control Room.

1.1.4 The VCM attack periscope shall provide high resolution, colour, still-imaging to users in the Control Room.

1.1.5 The VCM periscope system shall provide stabilized, full-motion thermal IR video to users in the Control Room.

1.1.6 The VCM search periscope shall determine the true bearing of a user-designated object.

1.1.7 The VCM attack periscope shall determine the true bearing of a user-designated object.

1.1.8 The VCM search periscope shall determine the relative bearing of a user-designated object.

1.1.9 The VCM attack periscope shall determine the relative bearing of a user-designated object.

1.1.10 The VCM periscope system shall fully raise and lower the search periscope.

1.1.11 The VCM periscope system shall fully raise and lower the attack periscope.

1.2 Performance Requirements

1.2.1 The VCM search periscope shall have bearing error of no more than 0.05 degrees.

1.2.2 The VCM attack periscope shall have bearing error of no more than 0.05 degrees.

1.3 System Interface Requirements

1.3.1 The VCM search periscope shall provide the range and bearing data to other on-board systems.

1.3.2 The VCM search periscope shall display the range and bearing data to users in the Control Room.

1.3.3 The VCM attack periscope shall provide the range and bearing data to other on-board systems.

1.3.4 The VCM attack periscope shall display the range and bearing data to users in the Control Room.

1.3.5 The VCM periscope system shall transfer signals between Canada-provided antennas and on-board systems.

1.3.6 The VCM periscope system shall provide power to the Canada-provided antennas.

1.4 Physical Requirements

1.4.1 The VCM search periscope shall provide external mounting for a Canada-provided antenna.

1.5 Environmental Conditions

1.5.1 The VCM periscope shall maintain structural and watertight integrity at Deep Diving Depth.

1.6 Reliability

1.6.1 In the event of loss of primary power, the VCM periscope system shall be able to continue to provide 360 degree visual look.

ANNEX B – PERISCOPE 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 and a training system set?

1.3 Training

Respondents are requested to provide information on training for equipment operators and 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);
d. cost for provision of initial cadre training (per student or per course);
e. cost for provision of periodic training courses (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 Periscope including:

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

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. Functional Characteristics

4.1 Payload

Does the periscope have an integrated UHF and VHF communication antenna?

What methods are used to determine the range of a contact?

What is the Field of View of the system's imaging sensors?

What is the Field of Regard of the system's imaging sensors?

Describe the means of image magnification and the magnifications achieved for each imaging sensor.

4.2 Record and Playback

Can the system record, playback and export imaging sensor data to removable media?

4.3 Analysis

What analysis tools and functionality does the system provide?

4.4 Control and Operation

Does the system require a separate, dedicated operator console?

5. Performance Characteristics

5.1 Sensor Performance

What imaging sensor options are available for the system?

What are the performance characteristics of the imaging sensor options (including wavelength, resolution, colour, stabilization, method of capture)?

Can the periscope system display the data from all the search periscope's sensors simultaneously? If so, how?

Can the periscope system display the data from all the attack periscope's sensors simultaneously? If so, how?

5.2 Depth

What is the maximum depth that the periscopes can be raised?

5.3 Speed

What are the speed restrictions on the submarine during:

a) mast raising;
b) mast lowering;
c) operations with the raised periscope sensors above water; and
d) operations with raised periscope sensors underwater.

5.4 Control and Operation

What is the rate (metres/second) at which each periscope can be raised when the submarine is at Periscope Depth?

What is the rate (metres/second) at which each periscope can be lowered when the submarine is at Periscope Depth?

How long does it take for each periscope to perform a 360 degree azimuth scan?

6. 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?

7. System Interface Characteristics

7.1 Legacy Systems

How could the system be interfaced with other on-board control systems?

If your solution comes with a new mast raising equipment, describe the components of the mast raising equipment.

7.2 Auxiliary Systems

What are the system's cooling requirements?

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

What is the system's pneumatic requirement on the submarine in metric?

What is the system's hydraulic requirement on the submarine in metric?

8. Physical Characteristics

8.1 Dimensions

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

8.2 Weight

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

8.3 Electrical

What are the system electric power requirements?

8.4 External Mounting Arrangements

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

9. 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?

What are the dominant failure modes associated with both the attack and search periscope?

What are the technical issues that drive cost associated with both the attack and search periscope?

9.1 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?

9.2 Maintainability

What is the recommended preventive maintenance profile of the system?

10. Safety

What are the safety restrictions on the system's payload operation?

11. Technical Readiness Level

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

12. 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.

13. Other Information

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