

RETURN BIDS TO:
RETOURNER LES SOUMISSIONS À:
**Bid Receiving Public Works and Government
Services Canada/Réception des soumissions
Travaux publics et Services gouvernementaux
Canada**
1713 Bedford Row
Halifax, N.S./Halifax, (N.É.)
B3J 1T3
Bid Fax: (902) 496-5016

REQUEST FOR PROPOSAL DEMANDE DE PROPOSITION

**Proposal To: Public Works and Government
Services Canada**

We hereby offer to sell to Her Majesty the Queen in right of Canada, in accordance with the terms and conditions set out herein, referred to herein or attached hereto, the goods, services, and construction listed herein and on any attached sheets at the price(s) set out therefor.

**Proposition aux: Travaux Publics et Services
Gouvernementaux Canada**

Nous offrons par la présente de vendre à Sa Majesté la Reine du chef du Canada, aux conditions énoncées ou incluses par référence dans la présente et aux annexes ci-jointes, les biens, services et construction énumérés ici sur toute feuille ci-annexée, au(x) prix indiqué(s).

Comments - Commentaires

Title - Sujet SYNTHETIC APERTURE SONAR	
Solicitation No. - N° de l'invitation W7707-135620/A	Date 2012-10-30
Client Reference No. - N° de référence du client W7707-13-5620	
GETS Reference No. - N° de référence de SEAG PW-\$HAL-210-8806	
File No. - N° de dossier HAL-2-69219 (210)	CCC No./N° CCC - FMS No./N° VME
Solicitation Closes - L'invitation prend fin at - à 02:00 PM on - le 2012-11-15	Time Zone Fuseau horaire Atlantic Standard Time AST
F.O.B. - F.A.B. Plant-Usine: <input type="checkbox"/> Destination: <input checked="" type="checkbox"/> Other-Autre: <input type="checkbox"/>	
Address Enquiries to: - Adresser toutes questions à: Thorpe, Susan	Buyer Id - Id de l'acheteur hal210
Telephone No. - N° de téléphone (902) 496-5191 ()	FAX No. - N° de FAX (902) 496-5016
Destination - of Goods, Services, and Construction: Destination - des biens, services et construction: DEPARTMENT OF NATIONAL DEFENCE 9 GROVE ST DARTMOUTH Nova Scotia B3A3C5 Canada	

Instructions: See Herein

Instructions: Voir aux présentes

Vendor/Firm Name and Address

**Raison sociale et adresse du
fournisseur/de l'entrepreneur**

Issuing Office - Bureau de distribution

Acquisitions
1713 Bedford Row
Halifax, N.S./Halifax, (N.É.)
B3J 3C9

Delivery Required - Livraison exigée See Herein	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

Title: Synthetic Aperture Sonar (SAS) Signal Processing Research for DRDC, Dartmouth, nova Scotia**PART 1 - GENERAL INFORMATION**

1. Introduction
2. Summary
3. Debriefings

PART 2 - BIDDER INSTRUCTIONS

1. Standard Instructions, Clauses and Conditions
2. Submission of Bids
3. Enquiries - Bid Solicitation
4. Applicable Laws
5. Basis for Canada's Ownership of Intellectual Property

PART 3 - BID PREPARATION INSTRUCTIONS

1. Bid Preparation Instructions

PART 4 - EVALUATION PROCEDURES AND BASIS OF SELECTION

1. Evaluation Procedures
2. Basis of Selection

PART 5 - CERTIFICATIONS

1. Code of Conduct Certifications - Certifications Required Precedent to Contract Award
2. Certifications Required with the Bid

PART 6 - SECURITY, FINANCIAL AND OTHER REQUIREMENTS

1. Security Requirement
2. Financial Capability
3. Insurance Requirements

PART 7 - RESULTING CONTRACT CLAUSES

1. Statement of Work
2. Standard Clauses and Conditions
3. Security
4. Term of Contract
5. Authorities
6. Payment
7. Invoicing Instructions
8. Certifications
9. Applicable Laws
10. Priority of Documents
11. Defence Contract
12. Insurance Requirements
13. Inspection and Acceptance

Solicitation No. - N° de l'invitation

W7707-135620/A

Amd. No. - N° de la modif.

Buyer ID - Id de l'acheteur

hal210

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

W7707-13-5620

File No. - N° du dossier

HAL-2-69219

CCC No./N° CCC - FMS No/ N° VME

14. Canada to Own Intellectual Property Rights in Foreground Information

List of Annexes:

Annex "A"	Statement of Work
Annex "B"	Basis of Payment
Annex "C"	DND 626 Task Authorization
Annex "D"	Security Requirements Check List - to be attached to the resultant Contract.

PART 1 - GENERAL INFORMATION

1. Introduction

The bid solicitation is divided into seven parts plus attachments and annexes, as follows:

- Part 1 General Information: provides a general description of the requirement;
- Part 2 Bidder Instructions: provides the instructions, clauses and conditions applicable to the bid solicitation;
- Part 3 Bid Preparation Instructions: provides bidders with instructions on how to prepare their bid;
- Part 4 Evaluation Procedures and Basis of Selection: indicates how the evaluation will be conducted, the evaluation criteria that must be addressed in the bid, and the basis of selection;
- Part 5 Certifications: includes the certifications to be provided;
- Part 6 Financial and Other Requirements: includes specific requirements that must be addressed by bidders; and
- Part 7 Resulting Contract Clauses: includes the clauses and conditions that will apply to any resulting contract.

The Annexes include the Statement of Work, Basis of Payment, DND 626 Task Authorization

2. Summary

DRDC Atlantic is embarking on a new research direction on the topic of Synthetic Aperture Sonar (SAS). The project, named PISCES (Programme for Interferometric SAS on a Canadian Experimental System) will explore the fundamental principles of SAS with the aim of developing new techniques and methods for improved sensor performance and better exploitation of the resulting imagery. In support of this objective, the present contract will provide a series of taskings over the course of this project that will be focused on conducting research into improved signal processing methods for SAS. In this project, an effort will be made to leverage a significant amount of expertise found in the synthetic aperture radar (SAR) community. This is a Task Authorization Contract on an as and when requested basis using Task Authorizations. The period of work shall be from Contract award up to and including March 31, 2016. The funding budget shall be \$50,000.00 per year subject to approval and Contractor performance. There is a security requirement associated with this project.

The requirement is limited to Canadian goods and/or services.

3. Debriefings

After contract award, bidders may request a debriefing on the results of the bid solicitation process. Bidders should make the request to the Contracting Authority within 15 working days of receipt of the results of the bid solicitation process. The debriefing may be in writing, by telephone or in person.

PART 2 - BIDDER INSTRUCTIONS

1. Standard Instructions, Clauses and Conditions

All instructions, clauses and conditions identified in the bid solicitation by number, date and title are set out in the *Standard Acquisition Clauses and Conditions Manual* (<https://buyandsell.gc.ca/policy-and-guidelines/standard-acquisition-clauses-and-conditions-manual>) issued by Public Works and Government Services Canada.

Bidders who submit a bid agree to be bound by the instructions, clauses and conditions of the bid solicitation and accept the clauses and conditions of the resulting contract.

The 2003 (2012-07-11) Standard Instructions - Goods or Services - Competitive Requirements, are incorporated by reference into and form part of the bid solicitation.

The text under Subsection 4 of Section 01 - Code of Conduct and Certifications - Bid of 2003 referenced above is replaced by:

Bidders should provide, with their bid or promptly thereafter, a complete list of names of all individuals who are currently directors of the Bidder. If such a list has not been received by the time the evaluation of bids is completed, Canada will inform the Bidder of a time frame within which to provide the information. Failure to provide such a list within the required time frame will render the bid non-responsive. Bidders must always submit the list of directors before contract award.

Canada may, at any time, request that a Bidder provide properly completed and Signed Consent Forms (Consent to a Criminal Record Verification form - PWGSC-TPSGC 229) (<http://www.tpsgc-pwgsc.gc.ca/app-acq/forms/formulaire-forms-eng.html>) for any or all individuals named in the aforementioned list within a specified delay. Failure to provide such Consent Forms within the delay will result in the bid being declared non-responsive.

The text under Subsection 5 of Section 01 - Code of Conduct and Certifications - Bid of 2003 referenced above is replaced by:

The Bidder must diligently maintain the list up-to-date by informing Canada in writing of any change occurring during the validity period of the bid, and must also provide Canada, when requested, with the corresponding Consent Forms. The Bidder will also be required to diligently maintain the list and when requested, provide Consent Forms during the period of any contract arising from this bid solicitation.

2. Submission of Bids

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

3. Enquiries - Bid Solicitation

All enquiries must be submitted in writing to the Contracting Authority no later than 5 calendar days before the bid closing date. Enquiries received after that time may not be answered.

Bidders should reference as accurately as possible the numbered item of the bid solicitation to which the enquiry relates. Care should be taken by bidders to explain each question in sufficient detail in order to enable Canada to provide an accurate answer. Technical enquiries that are of a proprietary nature must be clearly marked "proprietary" at each relevant item. Items identified as "proprietary" will be treated as such except where Canada determines that the enquiry is not of a proprietary nature. Canada may edit the questions or may request that the Bidder do so, so that the proprietary nature of the question is

eliminated, and the enquiry can be answered with copies to all bidders. Enquiries not submitted in a form that can be distributed to all bidders may not be answered by Canada.

4. Applicable Laws

Any resulting contract must be interpreted and governed, and the relations between the parties determined, by the laws in force in the Province of Nova Scotia.

Bidders may, at their discretion, substitute the applicable laws of a Canadian province or territory of their choice without affecting the validity of their bid, by deleting the name of the Canadian province or territory specified and inserting the name of the Canadian province or territory of their choice. If no change is made, it acknowledges that the applicable laws specified are acceptable to the bidders.

5. Basis for Canada's Ownership of Intellectual Property

DRDC has determined that any intellectual property rights arising from the performance of the Work under the resulting contract will belong to Canada, on the following grounds: 6.4.3 .

PART 3 - BID PREPARATION INSTRUCTIONS

1. Bid Preparation Instructions

Canada requests that bidders provide their bid in separately bound sections as follows:

Section I: Technical Bid (2 hard copies)

Section II: Financial Bid (1 hard copy)

Section III: Certifications (1 hard copy)

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

Canada requests that bidders follow the format instructions described below in the preparation of their bid:

- (a) use 8.5 x 11 inch (216 mm x 279 mm) paper;
- (b) use a numbering system that corresponds to the bid solicitation.

In April 2006, Canada issued a policy directing federal departments and agencies to take the necessary steps to incorporate environmental considerations into the procurement process Policy on Green Procurement (<http://www.tpsgc-pwgsc.gc.ca/ecologisation-greening/achats-procurement/politique-policy-eng.html>). To assist Canada in reaching its objectives, bidders are encouraged to :

- 1) use 8.5 x 11 inch (216 mm x 279 mm) paper containing fibre certified as originating from a sustainably-managed forest and/or containing minimum 30% recycled content; and
- 2) use an environmentally-preferable format including black and white printing instead of colour printing, printing double sided/duplex, using staples or clips instead of cerlox, duotangs or binders.

Technical Section I: Technical Bid

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

The technical bid should address clearly and in sufficient depth the points that are subject to the evaluation criteria against which the bid will be evaluated. Simply repeating the statement contained in the bid solicitation is not sufficient. In order to facilitate the evaluation of the bid, Canada requests that bidders address and present topics in the order of the evaluation criteria under the same headings. To avoid duplication, bidders may refer to different sections of their bids by identifying the specific paragraph and page number where the subject topic has already been addressed.

Section I: Management Bid

In their management bid, bidders must describe their capability and experience, the project management team and provide client contact(s).

Section II: Financial Bid

Bidders must submit their financial bid in accordance with the Annex "B". The total amount of Goods and Services Tax or Harmonized Sales Tax must be shown separately, if applicable.

Section III: Certifications

Bidders must submit the certifications required under Part 5.

PART 4 - EVALUATION PROCEDURES AND BASIS OF SELECTION

1. Evaluation Procedures

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

1.1 Technical Evaluation

Bidders shall include a "Cross Reference" index in their Technical/Management proposal that identifies the paragraphs and page numbers associated with each of the following criteria.

1.1.1 Point Rated Criteria

Technical and management proposals will be evaluated and scored in accordance with the evaluation criteria given below. It is suggested that bidders address these criteria in sufficient detail in their proposal to ensure that the evaluation team may adequately assess capabilities to perform this work.

Technical Proposal: (Max 150 points / Min 105 points)

- (a) Proposed approach to the project 30 points
- (b) Demonstrated understanding of SAS(synthetic aperture sonar) and/or SAR(synthetic aperture radar) principles, including interferometry 50 points
- (c) Demonstrated understanding of SAS and/or SAR signal processing 30 points

- (d) Demonstrated understanding of SAS and/or SAR waveforms 20 points
- (e) Demonstrated understanding of principles of target detection in SAS/SAR 20 points

Management Proposal: (Max 150 points / Min 105 points)

(a) Proposed management of the project and the demonstrated qualifications and experience of the project manager, including: position within the organization, relevant experience, education, etc.; demonstrated ability to control costs 10 points

(b) Key personnel capability - demonstrated relevant experience, qualifications and competence proven by similar and/or related work. The bidder should demonstrate through examples of project work or existing products (where applicable):

Experience in SAS/SAR processing	25 points
Experience in SAS/SAR waveform design	25 points
Experience in MIMO (multiple input,multiple output) design	25 points
Experience in SAS/SAR models	25 points

(d) Adequacy of planned team organization, including availability of team members and backup capability, reporting structure, management of project. 20 points

(c) Company or institution's capability- relevant experience/competence proven by similar or related work, and resource capability, risk of non-performance, commitment to this field of work. 20 points

Total Points: 300

2. Basis of Selection

1. To be considered responsive, a bid must meet all the mandatory requirements of the solicitation.

(a) meet all the mandatory requirements of the solicitation; and

(b) obtain the required minimum of 70 percent of the points for EACH of the technical and management criteria specified in the solicitation, which are subject to point rating. The total overall rating is performed on a scale of 300 points.

2. Bids not meeting (1) above will be given no further consideration. The responsive bid with the highest score will be recommended for award of a contract.

PART 5 - CERTIFICATIONS

Bidders must provide the required certifications to be awarded a contract. Canada will declare a bid non-responsive if the required certifications are not completed and submitted as requested.

Compliance with the certifications bidders provide to Canada is subject to verification by Canada during the bid evaluation period (before award of a contract) and after award of a contract. The Contracting Authority will have the right to ask for additional information to verify bidders' compliance with the certifications before award of a contract. The bid will be declared non-responsive if any certification made by the Bidder is untrue, whether made knowingly or unknowingly. Failure to comply with the

certifications or to comply with the request of the Contracting Authority for additional information will also render the bid non-responsive.

1. Code of Conduct Certifications - Certifications Required Precedent to Contract Award

- 1.1** Bidders should provide, with their bid or promptly thereafter, a complete list of names of all individuals who are currently directors of the Bidder. If such a list has not been received by the time the evaluation of bids is completed, the Contracting Authority will inform the Bidder of a time frame within which to provide the information. Bidders must submit the list of directors before contract award, failure to provide such a list within the required time frame will render the bid non-responsive.

The Contracting Authority may, at any time, request that a Bidder provide properly completed and Signed Consent Forms (Consent to a Criminal Record Verification form - PWGSC-TPSGC 229) (<http://www.tpsgc-pwgsc.gc.ca/app-acq/forms/formulaires-forms-eng.html>) for any or all individuals named in the aforementioned list within a specified delay. Failure to provide such Consent Forms within the delay will result in the bid being declared non-responsive.

2. Certifications Required with the Bid

Bidders must submit the following duly completed certifications as part of their bid.

2.1 Federal Contractor's Program Certification \$200,00.00 or more

The Federal Contractors Program (FCP) requires that some suppliers, including a supplier who is a member of a joint venture, bidding for federal government contracts, valued at \$200,000 or more (including all applicable taxes), make a formal commitment to implement employment equity. This is a condition precedent to contract award. If the Bidder, or, if the Bidder is a joint venture and if any member of the joint venture, is subject to the FCP, evidence of its commitment must be provided before the award of the Contract.

*Suppliers who have been declared ineligible contractors by Human Resources and Skills Development Canada (HRSDC) are no longer eligible to receive government contracts over the threshold for solicitation of bids as set out in the *Government Contracts Regulations*. Suppliers may be declared ineligible contractors either as a result of a finding of non-compliance by HRSDC, or following their voluntary withdrawal from the FCP for a reason other than the reduction of their workforce to less than 100 employees. Any bids from ineligible contractors, including a bid from a joint venture that has a member who is an ineligible contractor, will be declared non-responsive.*

If the Bidder does not fall within the exceptions enumerated in 3.(a) or (b) below, or does not have a valid certificate number confirming its adherence to the FCP, the Bidder must fax (819-953-8768) a copy of the signed form LAB 1168, Certificate of Commitment to Implement Employment Equity, to the Labour Branch of HRSDC.

The Bidder, or, if the Bidder is a joint venture the member of the joint venture, certifies its status with the FCP, as follows:

The Bidder or the member of the joint venture

() is not subject to the FCP, having a workforce of less than 100 full-time or part-time permanent employees, and/or temporary employees having worked 12 weeks or more in Canada;

() is not subject to the FCP, being a regulated employer under the Employment Equity Act, S.C. 1995, c. 44;

() is subject to the requirements of the FCP, having a workforce of 100 or more full-time or part-time permanent employees, and/or temporary employees having worked 12 weeks or more in Canada, but has not previously obtained a certificate number from HRSDC (having not bid on requirements of \$200,000 or more), in which case a duly signed certificate of commitment is attached;

() is subject to the FCP, and has a valid certificate number as follows: _____ (e.g. has not been declared an ineligible contractor by HRSDC).

Further information on the FCP is available on the HRSDC Web site.

2.2 Former Public Servant Certification

Contracts with former public servants (FPS) in receipt of a pension or of a lump sum payment must bear the closest public scrutiny, and reflect fairness in the spending of public funds. In order to comply with Treasury Board policies and directives on contracts with FPS, bidders must provide the information required below.

Definitions

For the purposes of this clause, "former public servant" is any former member of a department as defined in the Financial Administration Act, R.S., 1985, c. F-11, a former member of the Canadian Armed Forces or a former member of the Royal Canadian Mounted Police. A former public servant may be:

- a. an individual;
- b. an individual who has incorporated;
- c. a partnership made of former public servants; or
- d. a sole proprietorship or entity where the affected individual has a controlling or major interest in the entity.

"lump sum payment period" means the period measured in weeks of salary, for which payment has been made to facilitate the transition to retirement or to other employment as a result of the implementation of various programs to reduce the size of the Public Service. The lump sum payment period does not include the period of severance pay, which is measured in a like manner.

"pension" means, in the context of the fee abatement formula, a pension or annual allowance paid under the Public Service Superannuation Act (PSSA), R.S., 1985, c.P-36, and any increases paid pursuant to the Supplementary Retirement Benefits Act, R.S., 1985, c.S-24 as it affects the PSSA. It does not include pensions payable pursuant to the Canadian Forces Superannuation Act, R.S., 1985, c.C-17, the Defence Services Pension Continuation Act, 1970, c.D-3, the Royal Canadian Mounted Police Pension Continuation Act, 1970, c.R-10, and the Royal Canadian Mounted Police Superannuation Act, R.S., 1985, c.R-11, the Members of Parliament Retiring Allowances Act, R.S., 1985, c.M-5, and that portion of pension payable to the Canada Pension Plan Act, R.S., 1985, c.C-8.

Former Public Servant in Receipt of a Pension

Is the Bidder a FPS in receipt of a pension as defined above? Yes () No ()

If so, the Bidder must provide the following information:

- a.name of former public servant;
- b.date of termination of employment or retirement from the Public Service.

Work Force Reduction Program

Is the Bidder a FPS who received a lump sum payment pursuant to the terms of a work force reduction program? Yes () No ()

If so, the Bidder must provide the following information:

- a.name of former public servant;
- b.conditions of the lump sum payment incentive;
- c.date of termination of employment;
- d.amount of lump sum payment;
- e.rate of pay on which lump sum payment is based;
- f.period of lump sum payment including start date, end date and number of weeks;
- g.number and amount (professional fees) of other contracts subject to the restrictions of a work force reduction program.

For all contracts awarded during the lump sum payment period, the total amount of fees that may be paid to a FPS who received a lump sum payment is \$5,000, including the Goods and Services Tax or Harmonized Sales Tax.

Certification

By submitting a bid, the Bidder certifies that the information submitted by the Bidder in response to the above requirements is accurate and complete.

2.3 Canadian Content Certification

SACC Manual clause A3050T (2010-01-11) Canadian Content Definition

This procurement is limited to Canadian services.

The Bidder certifies that:

() the service offered is a Canadian service as defined in paragraph 2 of clause A3050T.

2.4 Status and Availability of Resources

Status and Availability of Resources (2010-08-16) A3005T

2.5 Education and Experience

Education and Experience (2010-08-16) A3010T

PART 6 - SECURITY, FINANCIAL AND OTHER REQUIREMENTS

1. Security

1. Before award of a contract, the following conditions must be met:
 - (a) the Bidder must hold a valid organization security clearance as indicated in Part 7-Resulting Contract Clauses;
 - (b) the Bidder's proposed individuals requiring access to classified or protected information, assets or sensitive work site(s) must meet the security requirement as indicated in Part 7- Resulting Contract Clauses;
 - (c) the Bidder must provide the name of all individuals who will require access to classified or protected information, assets or sensitive work sites.
2. Bidders are reminded to obtain the required security clearance promptly. Any delay in the award of a contract to allow the successful bidder to obtain the required clearance will be at the entire discretion of the Contracting Authority.
3. For additional information on security requirements, bidders should consult the "Security Requirements for PWGSC Bid Solicitations - Instructions for Bidders" (<http://www.tpsgc-pwgsc.gc.ca/app-acq/lc-pl/lc-pl-eng.html#a31>) document on the Departmental Standard Procurement Documents Web site.

2. Financial Capability

A9033T (2012-07-16) Financial Capability

3. Insurance Requirements

Insurance (2008-05-12) G1005C

PART 7 - RESULTING CONTRACT CLAUSES

The following clauses and conditions apply to and form part of any contract resulting from the bid solicitation.

1. Statement of Work

Work shall be performed in accordance with Appendix "A" and generally in accordance with the Contactor's technical proposal dated_____.

1.2 Task Authorization

The Work or a portion of the Work to be performed under the Contract will be on an "as and when requested basis" using a Task Authorization (TA). The Work described in the TA must be in accordance with the scope of the Contract.

1.2.1 Task Authorization Limit

The Project Authority may authorize individual task authorizations up to a limit of \$50,000.00, Goods and Services Tax or Harmonized Sales Tax included, inclusive of any revisions.

Any task authorization to be issued in excess of that limit must be authorized by the Contracting Authority before issuance.

1.2.1.1 Limitation of Expenditure - Cumulative Total of all Task Authorizations

1. Canada's total liability to the Contractor under the Contract for all authorized Task Authorizations (TAs), inclusive of any revisions, must not exceed the sum of \$50,000.00 per year, Customs duties are included, Goods and Services Tax or Harmonized Sales Tax is extra, if applicable.
2. No increase in the total liability of Canada will be authorized or paid to the Contractor unless an increase has been approved, in writing, by the Contracting Authority.
3. The Contractor must notify the Contracting Authority in writing as to the adequacy of this sum:
 - a. when it is 75 percent committed, or
 - b. four (4) months before the contract expiry date, or
 - c. as soon as the Contractor considers that the sum is inadequate for the completion of the Work required in all authorized TAs, inclusive of any revisions, whichever comes first.
4. If the notification is for inadequate contract funds, the Contractor must provide to the Contracting Authority, a written estimate for the additional funds required. Provision of such information by the Contractor does not increase Canada's liability.

1.2.2 Canada's Obligation - Portion of the Work - Task Authorizations

Canada's obligation with respect to the portion of the Work under the Contract that is performed through task authorizations is limited to the total amount of the actual tasks performed by the Contractor. The first Task is detailed in Appendix "B" of the Statement of Work.

1.2.3 Task Authorization - Department of National Defence

The administration of the Task Authorization process will be carried out by DRDC. This process includes monitoring, controlling and reporting on expenditures of the contract with task authorizations to the Contracting Authority.

2. Standard Clauses and Conditions

All clauses and conditions identified in the Contract by number, date and title are set out in the *Standard Acquisition Clauses and Conditions Manual* (<https://buyandsell.gc.ca/policy-and-guidelines/standard-acquisition-clauses-and-conditions-manual>) issued by Public Works and Government Services Canada.

2.1 General Conditions

2040 (2012-07-16), General Conditions - Research & Development, apply to and form part of the Contract.

The text under Subsection 52 Code of Conduct and Certifications - Contract, of 2040 referenced above is replaced by:

During the entire period of the Contract, the Contractor must diligently update, by written notice to the Contracting Authority, the list of names of all individuals who are directors of the Contractor whenever there is a change. As well, whenever requested by Canada, the Contractor must provide the corresponding Consent Forms.

3. Security

The Contractor at all times during the performance of the Contract, hold a valid Designated Organization Screening (DOS) issued by the Canadian Industrial Security Directorate (CISD), Public Works and Government Services Canada (PWGSC).

2. The Contractor personnel requiring access to sensitive work site(s) must EACH hold a valid RELIABILITY STATUS, granted or approved by CISD, PWGSC. Until the Security screening of the Contractor personnel required by the Contract has been completed satisfactorily by the CISD, the Contractor MAY NOT enter sites without an escort.

3. Subcontracts which contact security requirements are NOT to be awarded without the prior written permission of CISD/PWGSC.

The Contractor must comply with the provision of the

(a) Security Requirements Check List, to be attached to the resultant Contract.

(b) Industrial Security Manual (latest Edition).

4. Term of Contract

4.1 Delivery Date

All the deliverables must be received on or before March 21, 2016.

5. Authorities

5.1 Contracting Authority

The Contracting Authority for the Contract is:

**Susan Thorpe
Supply Specialist
Public Works and Government Services Canada
Acquisitions Branch
Telephone: 902-496-5191
Facsimile: 902-496-5016
E-mail address: susan.thorpe@pwgsc-tpsgc.gc.ca**

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

5.2 Project Authority

The Project Authority for the Contract shall be identified in the resultant contract.

Name: _____

Title: _____

Organization: _____

Address: _____

Telephone: ____-____-____

Facsimile: ____-____-____

E-mail address: _____

The Project Authority is the representative of the department or agency for whom the Work is being carried out under the Contract and is responsible for all matters concerning the technical content of the Work under the Contract. Technical matters may be discussed with the Project Authority; however, the Project Authority has no authority to authorize changes to the scope of the Work. Changes to the scope of the Work can only be made through a contract amendment issued by the Contracting Authority.

5.3 Contractor's Representative

Name _____:

Phone: _____

Fax: _____

Email: _____

6. Payment

6.1 Basis of Payment

The Contractor shall be paid its costs reasonably and properly incurred in the performance of this work in accordance with Appendix "B" attached.

6.2 Progress Payment

1. Canada will make progress payments in accordance with the payment provisions of the Contract, no more than once a month, for cost incurred in the performance of the Work, up to 90 percent of the amount claimed and approved by Canada if:

a. an accurate and complete claim for payment using form PWGSC-TPSGC 1111, Claim for Progress Payment, and any other document required by the Contract have been submitted in accordance with the invoicing instructions provided in the Contract;

b. the amount claimed is in accordance with the basis of payment;

c.the total amount for all progress payments paid by Canada does not exceed _____ percent of the total amount to be paid under the Contract;

d.all certificates appearing on form PWGSC-TPSGC 1111 have been signed by the respective authorized representatives.

2. The balance of the amount payable will be paid in accordance with the payment provisions of the Contract upon completion and delivery of the item if the Work has been accepted by Canada and a final claim for the payment is submitted."

3.Progress payments are interim payments only. Canada may conduct a government audit and interim time and cost verifications and reserves the rights to make adjustments to the Contract from time to time during the performance of the Work. Any overpayment resulting from progress payments or otherwise must be refunded promptly to Canada.

5.4 Time Verification

C0711C Time Verification (2008-05-12)

7. Invoicing Instruction

The Contractor must submit a claim for payment using form PWGSC-TPSGC 1111, Claim for Progress Payment.

Each claim must show:

all information required on form PWGSC-TPSGC 1111;

all applicable information detailed under the section entitled "Invoice Submission" of the general conditions.

Each claim must be supported by:

a copy of the invoices, receipts, vouchers for all direct expenses, travel and living expenses;

a copy of the monthly progress report if applicable.

The Goods and Services Tax or Harmonized Sales Tax (GST/HST), as applicable, must be calculated on the total amount of the claim before the holdback is applied. At the time the holdback is claimed, there will be no GST/HST payable as it was claimed and payable under the previous claims for progress payments.

The Contractor must prepare and certify one original and two (2) copies of the claim on form PWGSC-TPSGC 1111, and forward it to the Project Authority identified under the section entitled "Authorities" of the Contract for appropriate certification after inspection and acceptance of the Work takes place.

The *Project* Authority will then forward the original and two (2) copies of the claim to the Contracting Authority for certification and onward submission to the Payment Office for the remaining certification and payment action.

The Contractor must not submit claims until all work identified in the claim is completed .

8. Certifications

8.1 Compliance with the certifications provided by the Contractor in its bid is a condition of the Contract and subject to verification by Canada during the term of the Contract. If the Contractor does not comply with any certification or it is determined that any certification made by the Contractor in its bid is untrue, whether made knowingly or unknowingly, Canada has the right, pursuant to the default provision of the Contract, to terminate the Contract for default.

8.2 Canadian Content Certification

A3060C Canadian Content Certification (2008-05-12)

9. Applicable Laws

The Contract must be interpreted and governed, and the relations between the parties determined, by the laws in force in the Province of Nova Scotia.

10. Priority of Documents

If there is a discrepancy between the wording of any documents that appear on the list, the wording of the document that first appears on the list has priority over the wording of any document that subsequently appears on the list.

- (a) the Articles of Agreement;
- (b) 2040 (2012-07-16) General Conditions - Research and Development
- (c) Annex "A", Statement of Work
- (d) Annex "B", Basis of Payment;
- (e) Annex "C", Task Authorization
- (f) Annex "D", SRCL
- (g) the Contractor's bid dated _____

11. Defence Contract

SACC *Manual* clause A9006C (2012-07-16) Defence Contract

12. Insurance

The Contractor is responsible for deciding if insurance coverage is necessary to fulfill its obligation under the Contract and to ensure compliance with any applicable law. Any insurance acquired or maintained by the Contractor is at its own expense and for its own benefit and protection. It does not release the Contractor from or reduce its liability under the Contract.

13. Inspection and Acceptance

The Project Authority is the Inspection Authority. All reports, deliverable items, documents, goods and all services rendered under the Contract are subject to inspection by the Inspection Authority or representative. Should any report, document, good or service not be in accordance with the

requirements of the Statement of Work and to the satisfaction of the Inspection Authority, as submitted, the Inspection Authority will have the right to reject it or require its correction at the sole expense of the Contractor before recommending payment.

14. Canada to Own Intellectual Property Rights in Foreground Information

SACC Clause K3410C (2008-12-12) Canada to Own Intellectual Property Rights in Foreground Information

ANNEX "A"**STATEMENT OF WORK**

Work shall be performed in accordance with the following information:

Background

DRDC Atlantic is embarking on a new research direction on the topic of Synthetic Aperture Sonar (SAS). The project, named PISCES (Programme for Interferometric SAS on a Canadian Experimental System) will explore the fundamental principles of SAS with the aim of developing new techniques and methods for improved sensor performance and better exploitation of the resulting imagery. In support of this objective, the present contract will provide a series of taskings over the course of this project that will be focused on conducting research into improved signal processing methods for SAS. In this project, an effort will be made to leverage a significant amount of expertise found in the synthetic aperture radar (SAR) community.

Requirement

The requirement is to carry out research and support through the individual Task Authorizations on an "as and when required" basis, in some, but not necessarily all of the following areas:

1. Data Models

In the development of the theory and algorithms for SAS systems, a crucial tool is the availability of a data model for the received signal – with all the non-idealities – to test proposed signal processing algorithms. The data models generally treat the return signal as a sum of the responses due to point scatterers – the seafloor is effectively modelled as a combination of scatterers. The availability of such a data model would be extremely useful to test advanced SAS concepts. One of the most important difference between SAR and SAS is the issue of propagation. As the sonar signal propagates through the various layers of water with varying temperature and salinity, the speed of propagation changes. The effect on the received signal such as the resulting Doppler spread and impact on angular resolution are open problems that must draw on measured data to form an effective model.

2. Robust Micronavigation for shallow water

A fundamental requirement of both SAR and SAS systems is the accurate localization of the transmit and receive platform(s). In SAR, this can be achieved using the global positioning satellite (GPS) system. In SAS systems the current localization algorithms use self-reference – also known as micronavigation – to localize the transmitter and receiver using the received data. The objective would be to examine methods to improve micronavigation performance in low to medium SNR scenarios, as can be encountered during shallow water operations, an area of significant military relevance.

3. Multiple-input, Multiple-Output Systems (MIMO)

In radar systems a recent active field of research has been in MIMO systems – systems which use multiple waveforms, usually orthogonal in some domain such as time or frequency to obtain multiple views of the same scene. MIMO radar systems have found application in detection, tracking and SAR. This task would be to build upon the literature in MIMO radar and reformulate algorithms in the context of SAS. Of specific interest are:

- the use of multiple orthogonal waveforms to provide effective coverage of different areas within the region of interest

- the use of adaptive processing schemes to provide suppression of speckle and other forms of clutter
- as required, depending on the application of interest, the detection of small anomalies within an ensonnified region.

4. Adaptive Waveform Design

A concept related to MIMO radar is that of waveform diversity. Following on the issue of MIMO SAS, the goal of this phase would be to develop techniques for real-time design of transmit pulses that are best tailored to the application at hand. The design process will use feedback from training phases to estimate the propagation environment and choose waveforms – either from an available bank of waveforms or, in preparing for the longer term, design them in the digital domain and transmit using an arbitrary waveform generator. In the context of radar systems, waveform design has received a lot of attention recently and the theory developed should, in a large part, be applicable to SAS as well

5. Exploitation of Phase Information in SAS Images

Modern-day SAR and SAS systems process the received signals and uses the magnitude of the processed signal to form the image. The phase information is ignored. A new proposal in the context of SAR system is to investigate the information content in the phase of the images and develop methods to exploit this information for target classification or seabed / environment characterization.

6. Wideband SAS

New piezoelectric materials used in transducer construction provide greater bandwidths for modern sonar, including SAS systems. This bandwidth not only provides increased resolution, an interesting direction of research is to exploit existing techniques in multi-spectral imaging to tie together multiple frequency bands to provide increased target detection capabilities.

7. Experiments

The contractor may also be required to take part in Experiments at Sea, and provide support during at-sea tests and validation, including periods on sea-going vessels such as CFAV Quest. In this case, all personnel will need to pass a basic physical to be deemed fit for sea duty.

8. Academic reporting

The contractor may be asked to take part in, or assist in the organization of, academic meetings or conferences (or sessions therein) in the field of SAS/SAR research. The work may also include publication of results in scholarly journals.

The first task to be undertaken in this contract is attached in Appendix B.

Security:

All work is unclassified and the contractor will not have access to any classified information.

Key contractor personnel will require unescorted access to DND facilities and so will require "Reliability" clearance. A Security Requirements Check List (SRCL) has been submitted to DPM Secur 3-4 and, upon authorization, will be forwarded to the PWGSC contracting officer.

Time Schedule

Starting Date: On contract award

Completion Date: 21 March 2016

Deliverables

Deliverables shall be specified in each Task Authorization. In general, this will include a contract report, any software tools, design specifications and data, and if applicable, all non-expendable items (equipment, software, books, data files, etc...) acquired by the contractor in support of this requirement and claimed for against the contract.

Reports

As specified in each Task Authorization, progress and summary reports will be provided to the Project Authority. As directed by the Project Authority, DRDC Atlantic requires (1) unbound hard copy and (1) electronic copy of final Contract Report.

Report Standard and Format

Reports will be to a standard acceptable to the Project Authority. Should a report not be in accordance with the requirement of the work, the Project Authority shall have the right to reject it or require its correction.

The Project Authority will provide the Contractor with a CD that contains: 1) a word template of a Contract Report, 2) a PDF file of a sample Contract Report, and 3) a PDF file of the "Requirements for DRDC Atlantic Contractor Reports". The contractor is responsible for delivering a draft copy of the Contract Report to the Project Authority for review. This review may require the contractor to make changes as directed by the Project Authority. Also, this review will help to ensure the report is in keeping with contract requirements and that DND interests, including security, are safeguarded. The final report format shall comply with the standards set out in the DRDC Atlantic guide "Requirements for DRDC Atlantic Contractor Reports".

Financial Limitations

The maximum funding for this contract is \$200,000 (excluding HST). Cash phasing will be

FY 12/13 - \$50,000 (excluding HST);

FY 13/14 - \$50,000 (excluding HST);

FY 14/15 - \$50,000 (excluding HST);

FY 15/16 - \$50,000 (excluding HST);

Funding availability for FY 13/14 and onwards is subject to approval and contractor performance.

Travel and Living

As per each Task Authorization. The contract may involve International Travel and Travel within Canada in support of experiments and validation of system at sea. Any travel requirement is to be preapproved by the Project Authority and will be within Treasury Board Guidelines.

Contractor Personnel

Key contractor personnel shall be named in the contract. All proposed changes in key contractor personnel shall be addressed by the contractor to Public Works and Government Services Canada who in turn will request DRDC Atlantic's approval.

Government Furnished Equipment (GFE)

GFE shall be specified in each Task Authorization, if applicable.

DRDC Atlantic Support, Facilities and Responsibilities

DRDC Atlantic support and responsibilities shall be specified in each Task Authorization, if applicable.

Control Procedures

Inspection shall be by and to the satisfaction of the Project Authority

The work shall be deemed 100% complete upon receipt and approval of the draft final report and deliverables as listed in individual Task Authorizations by the Project Authority.

Invoicing Address

Invoices/Progress Claims shall be mailed to:

Defence R&D Canada - Atlantic
P.O. Box 1012
Dartmouth, Nova Scotia
B2Y 3Z7

Attention: Materiel Management & Control

Approval Prior To Publication

All manuscripts for publication in scientific journals or the like, abstracts of oral presentations and any releases that describe portions of the contract work or related information shall be submitted to the Project Authority for approval of release. If the inadvertent presence of either defence classified or proprietary material is determined, the Project Authority will consult with the contractor to redraft the relevant sections to their joint satisfaction to produce an unclassified text or theme without sensitive information. Review of manuscripts and releases will be completed within two months after receipt. Review of abstracts and any other releases will proceed rapidly and approval of release will follow without delay.

Appendix B: Task 1 Statement of Work

Title: SAS Data Models

Estimated Cost of Task: \$25,000

Completion Date: 20 weeks from start of contract

Project Authority: Vincent Myers

Government Furnished Equipment:

N/A

Intellectual Property

No IP is anticipated to be generated as a result of this requirement. However the information that will be provided will be subject to copyright protection. It is requested that PWGSC ensure that title and copyright to the work rests with the Crown

Deliverables:

Report and code for SAS data model.

Scope:

As part of project PISCES, the requirement will be to develop a model for Synthetic Aperture Sonar data. This will allow the development of more advanced signal and data processing methods, in addition to giving insight into the SAS image formation process. It is expected that significant knowledge will initially be drawn from the SAR community, with the additional complexity provided by the underwater environment being added as the work develops.

Objective and Requirement:

In the development of the theory and algorithms for SAR systems, a crucial tool is the availability of a data model for the received signal – with all the non-idealities – to test proposed signal processing algorithms. The data models generally treat the return signal as a sum of the responses due to point scatterers – the seabed being effectively modelled as a combination of point scatterers. The most important difference between SAR and SAS is the issue of propagation. As the sonar signal propagates through the various layers of water with varying temperature and salinity, the speed of propagation changes. The effect on the received signal such as the resulting Doppler spread and impact on angular resolution are open problems that must draw on measured data to form an effective model.

This tasking will produce a computer model written in MATLAB and/or C that allows one to put various system parameters (e.g. including but not limited to system frequency, arrays specification, bandwidth, image resolution, vehicle speed and attitude) and produce the expected sensor output. This study will begin with a brief literature search of the basic SAS and SAR models currently employed. Time permitting, the model may be compared to real SAS data provided by DRDC or its partners. In addition, a report or academic paper explaining the relevant parts of the model will be provided.

ANNEX "B"**BASIS OF PAYMENT****Prices shall be submitted in the following format:**

1. Labour: For each individual and/or labour category to be employed on the project, indicate the proposed hourly rate (including overhead, excluding profit).

2. Other Direct Charges to be paid at cost without mark-up:

Equipment: Identify the items required to complete the work and identify the pricing basis inclusive of customs duty. These items will be delivered to Canada upon completion of the project.

Materials, Supplies, Components: Indicate general categories and the pricing basis. Indicate whether the items are likely to be used or consumed during the course of the Work.

Other Charges: Identify any other direct charges anticipated such as long distance communication and rentals and provide the estimated costs and relevance to the proposed work.

3. Subcontracts: Identify potential subcontractors and provide the same cost breakdown information detailed herein.

4. Travel and Living -

The Contractor will be reimbursed its authorized travel and living expenses reasonably and properly incurred in the performance of the Work, at cost, without any allowance for profit and/or administrative overhead, in accordance with the meal, private vehicle and incidental expenses provided in Appendices B, C and D of the Treasury Board Travel Directive, <http://www.njc-cnm.gc.ca/directive/travel-voyage/index-eng.php>, and with the other provisions of the directive referring to "travellers", rather than those referring to "employees". All travel must have the prior authorization of the Project Authority. All payments are subject to government audit.

Total Estimated Cost \$_____ exclusive of applicable taxes

Annex "C"**Requirement for use of DND 626 Task Authorization**

This Requisition contains the requirement for DND to authorize the contractor to perform some or all of the work on an "as and when requested" basis using the terms and conditions of the contract. DND will issue a DND 626 Task Authorization to authorize the work to be performed. The requested DND threshold for each DND 626 is \$50,000.00 [plus tax] including amendments. Tasks over this limit will be passed to the Contracting Authority for review and signature in the PWGSC block on the DND 626 prior to release to the contractor.

DND 626 Administrative Process

The DND 626 will be used to authorize tasks under this contract using the following administrative process:

- * The Technical authority prepares a SOW describing the task.
- * The DND procurement authority submits the Task SOW to the contractor.
- * The contractor reviews the Task SOW and provides a quote on the level of effort (LOE) to complete the task, to the procurement/requisition authority, using the rates established in the contract.
- * The DND Procurement authority reviews the LOE quote with the technical authority and seeks approval to proceed.
- * If the LOE quote is within the DND Task approval ceiling, the DND Procurement authority signs the DND 626 and forward copies to the contractor and the contracting authority.
- * If the quote exceeds DND's Task approval ceiling, the PWGSC contracting authority must also sign the DND 626 prior to DND releasing it to the contractor.
- * Amendments to the DND 626 require completion of a DND 626 amendment form. The DND Procurement authority approves tasks where the amended value is within the threshold established in the contract. The PWGSC Contracting authority must sign any amendment that exceeds the threshold before the DND procurement authority releases it to the contractor.
- * The contractor may not begin work before receiving the approved DND 626.