

**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**

<b>Title - Sujet</b> CPBEM ENHANCEMENTS	
<b>Solicitation No. - N° de l'invitation</b> W7707-135644/A	<b>Date</b> 2012-12-03
<b>Client Reference No. - N° de référence du client</b> W7707-13-5644	
<b>GETS Reference No. - N° de référence de SEAG</b> PW-\$HAL-220-8847	
<b>File No. - N° de dossier</b> HAL-2-69273 (220)	<b>CCC No./N° CCC - FMS No./N° VME</b>
<b>Solicitation Closes - L'invitation prend fin at - à 02:00 PM on - le 2012-12-19</b>	<b>Time Zone Fuseau horaire</b> Atlantic Standard Time AST
<b>F.O.B. - F.A.B.</b> <b>Plant-Usine:</b> <input type="checkbox"/> <b>Destination:</b> <input checked="" type="checkbox"/> <b>Other-Autre:</b> <input type="checkbox"/>	
<b>Address Enquiries to: - Adresser toutes questions à:</b> Dunphy, Nancy	<b>Buyer Id - Id de l'acheteur</b> hal220
<b>Telephone No. - N° de téléphone</b> (902) 496-5481 ( )	<b>FAX No. - N° de FAX</b> (902) 496-5016
<b>Destination - of Goods, Services, and Construction: Destination - des biens, services et construction:</b> DEPARTMENT OF NATIONAL DEFENCE DRDC ATLANTIC 9 GROVE STREET DARTMOUTH NOVA SCOTIA B3A 3C5 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

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

**Title: Enhancement to the CPBEM code for Modelling Shipboard Cathodic Protection Systems****PART 1 - GENERAL INFORMATION**

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3. Debriefings

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Solicitation No. - N° de l'invitation

W7707-135644/A

Amd. No. - N° de la modif.

Buyer ID - Id de l'acheteur

hal220

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

W7707-13-5644

File No. - N° du dossier

HAL-2-69273

CCC No./N° CCC - FMS No/ N° VME

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**List of Annexes:**

Annex "A"	Statement of Work
Annex "B"	Basis of Payment

## 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.

### 2. Summary

Defence R&D Canada - Atlantic has developed, under contractual research, an in-house boundary element code, called CPBEM, for modeling shipboard cathodic protection systems and associated galvanic corrosion issues. This code has been used to conduct numerical modelling studies on shipboard cathodic protection systems. This contract will focus on the enhancement of the CPBEM code and use of the enhanced code to generate shipboard cathodic protection models that can be used for modeling shipboard cathodic protection field data for comparison with sea trial data.

Completion date of this project is **March 15, 2013** and has a maximum budget of **\$35,000.00** plus applicable taxes.

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

This procurement is subject to the Controlled Goods Program

### 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 (2012-11-19) Standard Instructions - Goods or Services - Competitive Requirements, are incorporated by reference into and form part of the 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 seven (7) 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: 6.4.2 .

### 6. Maximum Funding

The maximum funding available for the Contract resulting from the bid solicitation is **\$35,000.00** (Goods and Services Tax or Harmonized Sales Tax extra, as appropriate). Bids valued in excess of this amount

will be considered non-responsive. This disclosure does not commit Canada to pay the maximum funding available.

### **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.

**EVALUATION CRITERIA**

The Technical and Management proposals will be evaluated and scored in accordance with the following evaluation criteria. It is suggested bidders address these criteria in sufficient depth in their proposals.

**Technical Proposal  
MIN****400 POINTS MAX / 280 POINTS**

- a) Demonstrated understanding of scope and objectives (140 points)
- b) Proposed work feasibility, approach, and methodology (140 points)
- c) Recognition of direct as well as peripheral problems and solutions proposed (60 points)
- d) Adequacy of level of effort, work plan, schedule, and deliverables (60 points)

**Management Proposal****200 POINTS MAX / 140 POINTS MIN**

- 
- a) Proposed management of the project and the qualifications and experience of the project manager, including: position within the organization, relevant experience, education, and demonstrated ability to control costs (40 points)
  - b) Demonstrated expertise of key personnel capability - qualification, competence, and practical experience in Fortran and C++ languages programming, and in using Microsoft Development Studio, specialized knowledge in both boundary element and finite element programming and modelling, as well as a general knowledge and experience in corrosion and cathodic protection modelling techniques (80 points)
  - c) Company including subcontractors, if applicable - relevant practical experience and competence proven by previous work in model generation for both boundary element and finite element modelling, in Fortran and C++ languages programming, and in using Microsoft Development Studio. (40 points)
  - d) Adequacy of planned team organisation, including availability of team members and backup capability, reporting structure, management of project, subcontracts and capability to carry out the project within the time frame allotted (40 points)

**Total Points: 600 POINTS MAX / 420 POINTS MIN**

## **2. Basis of Selection**

1. To be considered responsive, a bid must:

- (a) meet all the mandatory terms and conditions of this solicitation document; and
- (b) obtain the required minimum of 70 percent of the points for each of the technical and management criteria which are subject to point rating. The total overall rating is performed on a scale of 600 points.

2. Bids not meeting (a) or (b) above will be given no further consideration. The responsive bid with the highest overall points within the stated budget 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.

Mandatory certifications prior to award of contract

### **1. Code of Conduct and Certifications - Related documentation**



By submitting a bid, the Bidder certifies, for himself and his affiliates, to be in compliance with the Code of Conduct and Certifications clause of the Standard instructions. The related documentation hereinafter mentioned will help Canada in confirming that the certifications are true. By submitting a bid, the Bidder certifies that it is aware, and that its affiliates are aware, that Canada may request additional information, certifications, consent forms and other evidentiary elements proving identity or eligibility. Canada may also verify the information provided by the Bidder, including the information relating to the acts or convictions specified herein, through independent research, use of any government resources or by contacting third parties. Canada will declare non-responsive any bid in respect of which the information requested is missing or inaccurate, or in respect of which the information contained in the certifications is found to be untrue, in any respect, by Canada. The Bidder and any of the Bidder's affiliates, will also be required to remain free and clear of any acts or convictions specified herein during the period of any contract arising from this bid solicitation.

Bidders who are incorporated, including those bidding as a joint venture, must provide with their bid or promptly thereafter a complete list of names of all individuals who are currently directors of the Bidder. Bidders bidding as sole proprietorship, including those bidding as a joint venture, must provide the name of the owner with their bid or promptly thereafter. Bidders bidding as societies, firms, partnerships or associations of persons do not need to provide lists of names. If the required names have 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 comply will render the bid non-responsive. Providing the required names is a mandatory requirement for 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/formulaires-forms-eng.html>) for any or all individuals aforementioned within the time specified. Failure to provide such Consent Forms within the time period provided 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**

Suppliers who are subject to the Federal Contractors Program (FCP) and have been declared ineligible contractors by Human Resources and Skills Development Canada (HRSDC) are no longer eligible to receive federal 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.

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

A.( ) 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;

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

C.( ) 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;

D.( ) has not been declared an ineligible contractor by HRSDC, and has a valid certificate number as follows: \_\_\_\_\_ .

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

#### 2.3.1 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

The Bidder certifies that, should it be awarded a contract as a result of the bid solicitation, every individual proposed in its bid will be available to perform the Work as required by Canada's representatives and at the time specified in the bid solicitation or agreed to with Canada's representatives. If for reasons beyond its control, the Bidder is unable to provide the services of an individual named in its bid, the Bidder may propose a substitute with similar qualifications and experience. The Bidder must advise the Contracting Authority of the reason for the substitution and provide the name, qualifications and experience of the proposed replacement. For the purposes of this clause, only the following reasons will be considered as beyond the control of the Bidder: death, sickness, maternity and parental leave, retirement, resignation, dismissal for cause or termination of an agreement for default.

If the Bidder has proposed any individual who is not an employee of the Bidder, the Bidder certifies that it has the permission from that individual to propose his/her services in relation to the Work to be performed and to submit his/her résumé to Canada. The Bidder must, upon request from the Contracting Authority, provide a written confirmation, signed by the individual, of the permission given to the Bidder

and of his/her availability. Failure to comply with the request may result in the bid being declared non-responsive.

## 2.5 Education and Experience

The Bidder certifies that all the information provided in the résumés and supporting material submitted with its bid, particularly the information pertaining to education, achievements, experience and work history, has been verified by the Bidder to be true and accurate. Furthermore, the Bidder warrants that every individual proposed by the Bidder for the requirement is capable of performing the Work described in the resulting contract.

## PART 6 - FINANCIAL AND OTHER REQUIREMENTS

### 1. Financial Capability

*Manual SACC clause A9033T (2012-07-16) Financial Capability*

### 2. 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 Annex "A" and generally in accordance with the Contractor's technical proposal dated\_\_\_\_\_.

### 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 (2012-11-19), General Conditions - Research & Development, apply to and form part of the Contract.

### 3. Term of Contract

#### 3.1 Delivery Date

All the deliverables must be received on or before **March 15, 2013**.

#### 4.1 Contracting Authority

The Contracting Authority for the Contract is:

**Nancy Dunphy**  
**Supply Officer**  
**Public Works and Government Services Canada**  
**Acquisitions Branch**  
**Telephone: 902-496-5481**  
**Facsimile: 902-496-5016**  
**E-mail address: nancy.dunphy@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.

#### **4.2 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.

#### **4.3 Contractor's Representative**

Name: \_\_\_\_\_  
Phone: \_\_\_\_\_  
Fax: \_\_\_\_\_  
Email: \_\_\_\_\_

### **5. Payment**

#### **5.1 Basis of Payment**

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

#### **5.2 Limitation of Expenditure**

Canada's total liability to the Contractor under the Contract must not exceed \$ \_\_\_\_\_. Customs duties are included *and* Goods and Services Tax or Harmonized Sales Tax is extra, if applicable.

No increase in the total liability of Canada or in the price of the Work resulting from any design changes, modifications or interpretations of the Work, will be authorized or paid to the Contractor unless these design changes, modifications or interpretations have been approved, in writing, by the Contracting Authority before their incorporation into the Work. The Contractor must not perform any work or provide any service that would result in Canada's total liability being exceeded before obtaining the written approval of the Contracting Authority. The Contractor must notify the Contracting Authority in writing as to the adequacy of this sum:

when it is 75 percent committed, or

four (4) months before the contract expiry date, or

as soon as the Contractor considers that the contract funds provided are inadequate for the completion of the Work,

whichever comes first.

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.

### 5.3 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)

## 6. 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 .**

## 7. Certifications

**7.1** 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.

### 7.2 Canadian Content Certification

A3060C Canadian Content Certification (2008-05-12) A3060C

## 8. 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.

## **9. 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 (2012-11-19) General Conditions - Research and Development
- (c) Annex "A", Statement of Work
- (d) Annex "B", Basis of Payment;
- (e) the Contractor's bid dated \_\_\_\_\_

## **10. Defence Contract**

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

## **11. 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.

## **12. 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.

## **13. 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****TITLE: Enhancement to the CPBEM code for Modelling Shipboard Cathodic Protection System**

Work shall be performed in accordance with the following information:

**Scope:**

This contract will focus on the enhancement of CPBEM, an inhouse cathodic protection boundary element code, and use of the enhanced code to generate shipboard cathodic protection models that can be used for modelling shipboard cathodic protection field data for comparison with sea trial data.

**Objective:**

- 1) Generation of a full ship hull Canadian Patrol Frigate (CPF) impressed current cathodic protection (ICCP) model and a full ship hull CFAV QUEST ICCP model
- 2) Generation of a separate CPF cathodic protection model to be used for finite element cathodic protection modeling
- 3) Enhancement of the code for the calculation of corrosion related magnetic field

**Background**

Defence R&D Canada - Atlantic has developed, under contractual research, an in-house boundary element code (i.e. CPBEM) for modeling shipboard cathodic protection systems and associated galvanic corrosion issues. This code has been used to conduct parametric studies of shipboard impressed current cathodic protection (ICCP) systems and to conduct performance evaluation of both ICCP and sacrificial anode cathodic protection systems. As part of an effort for the validation of this boundary element code, it is required to further enhance the CPBEM code. The enhanced code will be able to generate shipboard cathodic protection models that can be used for modeling off-board potential profiles in selected computational domains.

**TASKS:**

1. Generation of a full ship hull Canadian Patrol Frigate (CPF) impressed current cathodic protection (ICCP) model and a full ship hull CFAV QUEST ICCP model with requirements as follows:
  - a. The CPF model shall include a two-zone four-anode shipboard ICCP system. The model shall also include appendages such as bilge keels, shafts, A-brackets, a rudder and 5-blade propellers. The Project Authority will provide the information required to generate the ship model.
  - b. The CFAV QUEST model shall include a single-zone four-anode shipboard ICCP system. The model shall also include appendages such as bilge keels, shafts, A-brackets, a rudder and 5-blade propellers. The Project Authority will provide

geometry data for the  
reference electrodes.

ship hull and information on the placement of the anodes and

- c. Both models shall be capable of working in both infinite domains and finite domains with shallow bottom boundaries (as shallow as 20 meters from the waterline of the models to the bottom boundaries of the domain).
  - d. The code shall be enhanced to automatically generate fine meshes in the area of the bottom domain right below the ship model. The mesh size shall be sufficiently fine to accurately capture the potential gradients on the bottom surface in both longitudinal and transverse directions. The fine meshes are also required in order to extract the potential gradient data along a specified horizontal plane in the domain near the bottom boundary (as close as 0.5 m to the domain bottom). The area on the bottom surface right below the ship model where fine meshes to be applied shall be at least 160 m long and 60 m wide.
  - e. In the case of shallow finite domain, save the potential contour data on the bottom surface of the domain to a new separate Tecplot interface file (i.e. .DAT file).
  - f. The code shall be enhanced so the potential profile data can be collected on a horizontal plane at a user-specified water depth, and saved in a separate file. The data set shall include element connectivity information so that the contour plots can be generated from the data set.
  - g. The code shall be enhanced to enable the calculation of the potential gradient at a user-specified offset angle to the longitudinal direction.
  - h. A case study shall be used to verify that appropriate mesh sizes have been assigned to the two models and the both models can produce convergent results in both an infinite domain and shallow finite domains.
2. Generation of a separate CPF cathodic protection model to be used for finite element cathodic protection modelling with the requirement as follows:
  - a. The model shall include a FEA ship hull model from the keel of the ship to the water line and include the placement of the ICCP anodes and reference electrodes. The model shall also include appendages such as bilge keels, shafts, A-brackets, a rudder and two 5-blade propellers. The two propellers shall be separate bodies. The Project Authority will provide geometry data for the ship hull and information on the placement of the anodes and reference electrodes.
  - b. The solid model shall be saved in the formats that can be input to SolidWorks (such as .sldprt, .igs).
3. Calculation of magnetic field induced by the cathodic protection current surrounding a naval platform.
  - a. A design plan shall be developed for the calculation of the magnetic field induced by the cathodic protection current surrounding a naval platform, including mathematical and numerical approaches to be used.

#### 4. Other enhancements

- a. The code shall be compatible to both 32 bit and 64 bit computers with Windows 7 operating systems
- b. The contractor shall ensure that all modifications to the code will not affect the existing capabilities in the CPBEM code

#### 5. The contractor shall provide the Project Authority the following deliverables:

- a. A brief monthly progress report;
- b. A fully functional version of the boundary element cathodic protection simulation software (CPBEM) with all enhancements described in this statement of work;
- c. A copy of all CPBEM model files and restart-run data files generated during this contractual work, and original modeling results obtained using the CPBEM code;
- d. A contractor report that documents all enhancements to the CPBEM code and any numerical modeling case studies for the verification of the enhancements to the code.

### Deliverables

In addition to the return of all non-expended items (source code, software, books, etc.) acquired by the contractor in support of this requirement and claimed for against the contract, the deliverables shall be:

- 1) A brief monthly progress report;
- 2) A fully functional version of the boundary element cathodic protection simulation software (CPBEM) with all enhancements described in the statement of work;
- 3) A copy of all CPBEM model files and restart-run data files generated during this contractual work, and original modeling results obtained using the CPBEM code;
- 4) A contractor report that documents all enhancements to the CPBEM code and any numerical modeling case studies for the verification of the enhancements to the code.

### Contractor Personnel

All contractor personnel shall be named in the contract. All proposed changes in 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)

N/A

DRDC Atlantic Support, Facilities and Responsibilities

DRDC Atlantic will provide the contractor the CPBEM executables and/or part of source files (in Fortran and C++), and information required for the generation of the models.

### Controlled Goods

The contractor is not required to access to controlled goods. The resulting deliverables will not contain any controlled goods information.

### **Control Procedures**

Progress will be monitored through brief monthly written reports submitted with progress claims and regular consultations between the contractor and the Project Authority. The work shall be deemed 100% complete upon receipt and approval of the draft final report by the Project Authority. The contractor must allow time for editorial review of the draft report by the Project Authority and agree to make minor editorial changes to the report, to print the report, and to deliver the report, at no additional cost. Upon receipt of all bound copies of the Final Report and other deliverables, and upon receipt of a Claim for Holdback, the holdback will be released

### **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.

### **Travel and Living**

No travel or living requirements are anticipated.

### **Reports**

In addition to brief monthly progress reports, there will be a final Contract Report due at the completion of the contract. DRDC Atlantic requires one unbound hard copy and one 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".

Solicitation No. - N° de l'invitation

W7707-135644/A

Amd. No. - N° de la modif.

File No. - N° du dossier

HAL-2-69273

Buyer ID - Id de l'acheteur

hal220

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

W7707-13-5644

CCC No./N° CCC - FMS No/ N° VME

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**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 - No travel or living requirements are anticipated.

Total Estimated Cost \$\_\_\_\_\_ exclusive of applicable taxes