

**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> PREDICTION - HULL MANEUVERING FORCE	
<b>Solicitation No. - N° de l'invitation</b> W7707-145687/A	<b>Date</b> 2013-09-06
<b>Client Reference No. - N° de référence du client</b> W7707-14-5687	
<b>GETS Reference No. - N° de référence de SEAG</b> PW-\$HAL-305-9067	
<b>File No. - N° de dossier</b> HAL-3-71085 (305)	<b>CCC No./N° CCC - FMS No./N° VME</b>
<b>Solicitation Closes - L'invitation prend fin at - à 02:00 PM on - le 2013-10-01</b>	<b>Time Zone Fuseau horaire</b> Atlantic Daylight Saving Time ADT
<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> Collier, Susan	<b>Buyer Id - Id de l'acheteur</b> hal305
<b>Telephone No. - N° de téléphone</b> (902) 496-5350 ( )	<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**

<b>Delivery Required - Livraison exigée</b> SEE HEREIN	<b>Delivery Offered - Livraison proposée</b>
<b>Vendor/Firm Name and Address Raison sociale et adresse du fournisseur/de l'entrepreneur</b>	
<b>Telephone No. - N° de téléphone Facsimile No. - N° de télécopieur</b>	
<b>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)</b>	
<b>Signature</b>	<b>Date</b>

**Issuing Office - Bureau de distribution**  
Acquisitions  
1713 Bedford Row  
Halifax, N.S./Halifax, (N.É.)  
B3J 3C9

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Solicitation No. - N° de l'invitation

W7707-145687/A

Amd. No. - N° de la modif.

File No. - N° du dossier

HAL-3-71085

Buyer ID - Id de l'acheteur

hal305

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

W7707-14-5687

CCC No./N° CCC - FMS No/ N° VME

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Annex "C"      Criminal Code of Conduct

## **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 Security, 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 Requirement, the Basis of Payment, the Insurance Requirements, and any other annexes.

### **2. Summary**

Predictions of hull maneuvering forces will be performed for hull form DTMB 5415, which is based on the US Navy DDG51 destroyer. The predictions shall be performed for combined sway and yaw motions at a Froude number of 0.280 and compared with model tests conducted by FORCE Technology and reported by Simonsen (2004). The numerical computational fluid dynamics (CFD) predictions will be performed using the commercial software Star-CCM+ from CD-adapco. The CFD predictions will use a Reynolds-averaged Navier-Stokes (RANS) approach. The CFD predictions will consider the bare hull with bilge keels, but with no other appendages. Sensitivity studies will examine the influence of usage of varying grid size and excluding bilge keels. Deliverables shall be provided in the form of Star-CCM+ input and output files, and a comprehensive report describing the work conducted, including development of geometric grids, setting of computational parameters, comparison of numerical predictions to model experiments, and sensitivity of predictions to grid size and exclusion of bilge keels.

See Statement of Work attached as Appendix A

### 3. Debriefings

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 (2013-06-01) Standard Instructions - Goods or Services - Competitive Requirements, are incorporated by reference into and form part of the bid solicitation.

Subsection 5.4 of 2003, Standard Instructions - Goods or Services - Competitive Requirements, is amended as follows:

Delete: sixty (60) days

Insert: ninety (90) days

#### 1.1 SACC Manual Clauses

### 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. Former Public Servant - A3025T (2013-07-10)

Contracts awarded to 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 before contract award.

#### 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 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

As per the above definitions, is the Bidder a FPS in receipt of a pension? Yes ( ) No ( )

If so, the Bidder must provide the following information, for all FPS in receipt of a pension, as applicable:

a.name of former public servant;

b.date of termination of employment or retirement from the Public Service.

By providing this information, Bidders agree that the successful Bidder's status, with respect to being a former public servant in receipt of a pension, will be reported on departmental websites as part of the published proactive disclosure reports in accordance with Contracting Policy Notice: 2012-2 and the Guidelines on the Proactive Disclosure of Contracts.

#### Work Force Adjustment Directive

Is the Bidder a FPS who received a lump sum payment pursuant to the terms of the Work Force Adjustment Directive? 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 adjustment 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 Applicable Taxes.

#### **4. Enquiries - Bid Solicitation**

All enquiries must be submitted in writing to the Contracting Authority no later than five (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.

#### **5. Applicable Laws**

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

#### **6. Basis for Canada's Ownership of Intellectual Property**

The Department of National Defence, DRDC Atlantic, 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:

(6.4.1) the main purpose of the contract, or of the deliverables contracted for, is to generate knowledge and information for public dissemination;

(6.4.2) the main purpose of the contract, or of the deliverables contracted for, is to augment an existing body of Canada's background information as a prerequisite to the transfer of the augmented background to the private sector, through licensing or assignment of ownership (not necessarily to the original contractor), for the purposes of commercial exploitation;

### **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 ( one hard copy)

**Section II: Financial Bid ( one hard copy**

**Section III: Certifications (one 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 should:

- 1) use 8.5 x 11 inch (216 mm x 279 mm) paper containing fibre certified as originating from a sustainably-managed forest and 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.

## **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 II: Management Bid**

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

Bidders are strongly encouraged to include a "Cross Reference" index in their Technical/Management Proposal that identifies the paragraphs and page numbers associated with each of the following point rated criteria.

## **Section III: Financial Bid**

- 1.1** A budget of \$69,000.00 Canadian dollars plus applicable taxes has been set aside for this project. The total amount of Goods and Services Tax or Harmonized Sales Tax must be shown

separately. Bidders must submit their financial bid in accordance with Annex "B", Basis of Payment. The total amount of Applicable Taxes must be shown separately.

### 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.
- (c) The evaluation team will determine first if there are three (3) or more bids with a valid Canadian Content certification. In that event, the evaluation process will be limited to the bids with the certification; otherwise, all bids will be evaluated. If some of the bids with a valid certification are declared non-responsive, or are withdrawn, and less than three responsive bids with a valid certification remain, the evaluation will continue among those bids with a valid certification. If all bids with a valid certification are subsequently declared non-responsive, or are withdrawn, then all the other bids received will be evaluated.

#### 1.1 Technical Evaluation

##### 1.1.1 Mandatory Technical Criteria

A bid must comply with the requirements of the bid solicitation and meet all mandatory technical evaluation criteria to be declared responsive. The responsive bid with the lowest evaluated price will be recommended for award of a contract.

##### 1.1.2 Point Rated Technical Criteria

Bidders are strongly encouraged to include a "Cross Reference" index in their Technical/Management Proposal that identifies the paragraphs and page numbers associated with each of the following POINT RATED CRITERIA.

Technical/Management proposals will be evaluated in accordance with the following POINT RATED CRITERIA. It is suggested you address these POINT RATED CRITERIA in sufficient depth in your proposal

### TECHNICAL PROPOSAL

### 200 POINTS MAX / 140 POINTS MINIMUM

- |   |           |
|---|-----------|
| (a) Demonstrated understanding of scope and objectives  | 80 POINTS |
| (b) Proposed work feasibility, approach and methodology | 80 POINTS |
| (c) Recognition of problems and solutions proposed      | 20 POINTS |

(d) Adequacy of level of effort, workplan and schedule, deliverables 20 POINTS

## **MANAGEMENT PROPOSAL 100 POINTS MAX / 70 POINTS MINIMUM**

(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. 20 POINTS

(b) key personnel capability - demonstrated relevant experience, qualifications and competence proven by similar and/or related work. 40 POINTS

(c) company capability including subcontractors, if applicable - relevant experience/competence proven by similar or related work, and resource capability, risk of non-performance, commitment to this field of work. 20 POINTS

(d) adequacy of planned team organization, 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. 20 POINTS

## **TOTAL POINTS - 300**

### **1.1.3 Financial Limitations**

Funding: \$69,000 CDN (before taxes).

## **2. Basis of Selection**

A bid must comply with the requirements of the bid solicitation and meet all mandatory technical evaluation criteria to be declared responsive.

1. To be considered responsive, a bid must:

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

(b) obtain the required minimum of 70 percent of the points for 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 (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. In the case of a tie the bid with the highest technical proposal will be recommended.

## PART 5 - CERTIFICATIONS

Bidders must provide the required certifications and documentation to be awarded a contract.

The certifications provided by bidders to Canada are subject to verification by Canada at all times. Canada will declare a bid non-responsive, or will declare a contractor in default, if any certification made by the Bidder is found to be untrue whether during the bid evaluation period or during the contract period.

The Contracting Authority will have the right to ask for additional information to verify the Bidder's certifications. Failure to comply with this request will also render the bid non-responsive or will constitute a default under the Contract.

### 1. Mandatory Certifications Required Precedent to Contract Award

#### 1.1 Code of Conduct and Certifications - Related documentation

By submitting a bid, the Bidder certifies that the Bidder and its affiliates are in compliance with the provisions as stated in Section 01 Code of Conduct and Certifications - Bid of Standard Instructions 2003 . The related documentation therein required will assist Canada in confirming that the certifications are true.

#### 1.2 Federal Contractors Program for Employment Equity - Bid Certification

By submitting a bid, the Bidder certifies that the Bidder, and any of the Bidder's members if the Bidder is a Joint Venture, is not named on the Federal Contractors Program (FCP) for employment equity "[FCP Limited Eligibility to Bid](http://www.labour.gc.ca/eng/standards_equity/eq/emp/fcp/list/inelig.shtml)" list ([http://www.labour.gc.ca/eng/standards\\_equity/eq/emp/fcp/list/inelig.shtml](http://www.labour.gc.ca/eng/standards_equity/eq/emp/fcp/list/inelig.shtml)) available from Human Resources and Skills Development Canada (HRSDC) - Labour's website

Canada will have the right to declare a bid non-responsive if the Bidder, or any member of the Bidder if the Bidder is a Joint Venture, appears on the "[FCP Limited Eligibility to Bid](http://www.labour.gc.ca/eng/standards_equity/eq/emp/fcp/list/inelig.shtml)" list at the time of contract award.

### 2. Additional Certifications Precedent to Contract Award

The certifications listed below should be completed and submitted with the bid but may be submitted afterwards. If any of these required certifications is not completed and submitted as requested, the Contracting Authority will so inform the Bidder and provide the Bidder with a time frame within which to meet the requirement. Failure to comply with the request of the Contracting Authority and meet the requirement within that time period will render the bid non-responsive.

#### 2.1 Canadian Content Certification

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

## **2.2 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.

## **2.3 Education and Experience**

**2.3.1** 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.

## **2.4 Former Public Servant - Competitive Requirements - A3025T (2013-07-10)**

Contracts awarded to 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 before contract award.

### **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 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

As per the above definitions, is the Bidder a FPS in receipt of a pension? Yes ( ) No ( )

If so, the Bidder must provide the following information, for all FPS in receipt of a pension, as applicable:

a.name of former public servant;

b.date of termination of employment or retirement from the Public Service.

By providing this information, Bidders agree that the successful Bidder's status, with respect to being a former public servant in receipt of a pension, will be reported on departmental websites as part of the published proactive disclosure reports in accordance with Contracting Policy Notice: 2012-2 and the Guidelines on the Proactive Disclosure of Contracts.

#### Work Force Adjustment Directive

Is the Bidder a FPS who received a lump sum payment pursuant to the terms of the Work Force Adjustment Directive? 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 adjustment 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 Applicable Taxes.

## **PART 6 - SECURITY, FINANCIAL AND OTHER REQUIREMENTS**

### **1. Security Requirement**

All work is unclassified and the contractor will not have access to any classified information. Contractor personnel must be escorted at all times while on DND premises by fully screened DND personnel.

### **2. Controlled Goods Requirement**

1.As the resulting contract will require the production of or access to controlled goods that are subject to the Defence Production Act, R.S. 1985, c. D-1, bidders are advised that within Canada only persons who are registered, exempt or excluded under the Controlled Goods Program (CGP) are lawfully entitled to examine, possess or transfer controlled goods. Details on how to register under the CGP are available at: Controlled Goods Program and registration is carried out as follows:

a.When the bid solicitation includes controlled goods information or technology, the Bidder must be registered, exempt or excluded under the CGP before receiving the bid solicitation. Requests for technical data packages or specifications related to controlled goods should be made in writing to the Contracting Authority identified in the bid solicitation and must contain the CGP registration number or written proof of exemption or exclusion of the Bidder and of any other person to whom the Bidder will give access to the controlled goods.

b.When the bid solicitation does not include controlled goods information or technology but the resulting contract requires the production of or access to controlled goods, the successful Bidder and any subcontractor who will be producing or accessing controlled goods must be registered, exempt or excluded under the CGP before examining, possessing or transferring controlled goods.

c.When the successful Bidder and any subcontractor proposed to examine, possess or transfer controlled goods are not registered, exempt or excluded under the CGP at time of contract award, the successful Bidder and any subcontractor must, within seven (7) working days from receipt of written notification of contract award, ensure that the required application(s) for registration or exemption are submitted to the CGP. No examination, possession or transfer of controlled goods must be performed until the successful Bidder has provided proof, satisfactory to the Contracting Authority, that the successful Bidder and any subcontractor are registered, exempt, or excluded under the CGP.

Failure to provide proof, satisfactory to the Contracting Authority, that the successful Bidder and any subcontractor are registered, exempt or excluded under the CGP, within thirty (30) days from

receipt of written notification of contract award, will be considered a default under the resulting contract except to the extent that Canada is responsible for the failure due to delay in processing the application.

2. Bidders are advised that all information on the Application for Registration (or exemption) Form will be verified and errors or inaccuracies may cause significant delays and/or result in denial of registration or exemption.

### **3. Insurance Requirements**

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.

#### **3-1 Commercial General Liability Insurance - G2001C (2008-05-12)**

1. The Contractor must obtain Commercial General Liability Insurance, and maintain it in force throughout the duration of the Contract, in an amount usual for a contract of this nature, but for not less than \$2,000,000 per accident or occurrence and in the annual aggregate.

2. The Commercial General Liability policy must include the following:

a. Additional Insured: Canada is added as an additional insured, but only with respect to liability arising out of the Contractor's performance of the Contract. The interest of Canada should read as follows: Canada, as represented by Public Works and Government Services Canada.

b. Bodily Injury and Property Damage to third parties arising out of the operations of the Contractor.

c. Products and Completed Operations: Coverage for bodily injury or property damage arising out of goods or products manufactured, sold, handled, or distributed by the Contractor and/or arising out of operations that have been completed by the Contractor.

d. Personal Injury: While not limited to, the coverage must include Violation of Privacy, Libel and Slander, False Arrest, Detention or Imprisonment and Defamation of Character.

e. Cross Liability/Separation of Insureds: Without increasing the limit of liability, the policy must protect all insured parties to the full extent of coverage provided. Further, the policy must apply to each Insured in the same manner and to the same extent as if a separate policy had been issued to each.

f. Blanket Contractual Liability: The policy must, on a blanket basis or by specific reference to the Contract, extend to assumed liabilities with respect to contractual provisions.

g. Employees and, if applicable, Volunteers must be included as Additional Insured.

h. Employers' Liability (or confirmation that all employees are covered by Worker's compensation (WSIB) or similar program)

i. Broad Form Property Damage including Completed Operations: Expands the Property Damage coverage to include certain losses that would otherwise be excluded by the standard care, custody or control exclusion found in a standard policy.

j. Notice of Cancellation: The Insurer will endeavour to provide the Contracting Authority thirty (30) days written notice of policy cancellation.

k. If the policy is written on a claims-made basis, coverage must be in place for a period of at least 12 months after the completion or termination of the Contract.

l. Owners' or Contractors' Protective Liability: Covers the damages that the Contractor becomes legally obligated to pay arising out of the operations of a subcontractor.

m. Non-Owned Automobile Liability - Coverage for suits against the Contractor resulting from the use of hired or non-owned vehicles.

n. Advertising Injury: While not limited to, the endorsement must include coverage piracy or misappropriation of ideas, or infringement of copyright, trademark, title or slogan.

o. All Risks Tenants Legal Liability - to protect the Contractor for liabilities arising out of its occupancy of leased premises.

p. Amendment to the Watercraft Exclusion to extend to incidental repair operations on board watercraft.

q. Sudden and Accidental Pollution Liability (minimum 120 hours): To protect the Contractor for liabilities arising from damages caused by accidental pollution incidents.

r. Litigation Rights: Pursuant to subsection 5(d) of the Department of Justice Act, S.C. 1993, c. J-2, s.1, if a suit is instituted for or against Canada which the Insurer would, but for this clause, have the right to pursue or defend on behalf of Canada as an Additional Named Insured under the insurance policy, the Insurer must promptly contact the Attorney General of Canada to agree on the legal strategies by sending a letter, by registered mail or by courier, with an acknowledgement of receipt.

For the province of Quebec, send to:

Director Business Law Directorate,

Quebec Regional Office (Ottawa),  
Department of Justice,  
284 Wellington Street, Room SAT-6042,  
Ottawa, Ontario, K1A 0H8

For other provinces and territories, send to:

Senior General Counsel,  
Civil Litigation Section,  
Department of Justice  
234 Wellington Street, East Tower  
Ottawa, Ontario K1A 0H8

A copy of the letter must be sent to the Contracting Authority. Canada reserves the right to co-defend any action brought against Canada. All expenses incurred by Canada to co-defend such actions will be at Canada's expense. If Canada decides to co-defend any action brought against it, and Canada does not agree to a proposed settlement agreed to by the Contractor's insurer and the plaintiff(s) that would result in the settlement or dismissal of the action against Canada, then Canada will be responsible to the Contractor's insurer for any difference between the proposed settlement amount and the amount finally awarded or paid to the plaintiffs (inclusive of costs and interest) on behalf of Canada.

## **PART 7 - RESULTING CONTRACT CLAUSES**

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

### **1. Requirement**

Predictions of hull maneuvering forces will be performed for hull form DTMB 5415, which is based on the US Navy DDG51 destroyer. The predictions shall be performed for combined sway and yaw motions at a Froude number of 0.280 and compared with model tests conducted by FORCE Technology and reported by Simonsen (2004). The numerical computational fluid dynamics (CFD) predictions will be performed using the commercial software Star-CCM+ from CD-adapco. The CFD predictions will use a Reynolds-averaged Navier-Stokes (RANS) approach. The CFD predictions will consider the bare hull with bilge keels, but with no other appendages. Sensitivity studies will examine the influence of usage of varying grid size and excluding bilge keels. Deliverables shall be provided in the form of Star-CCM+ input and output files, and a comprehensive report describing the work conducted, including development of geometric grids, setting of computational parameters, comparison of numerical predictions to model experiments, and sensitivity of predictions to grid size and exclusion of bilge keels.

See Statement of Work attached as Appendix A

### **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 (2013-06-27), General Conditions - Research & Development, apply to and form part of the Contract.

## **2.2 Supplemental General Conditions**

Software Development or Modification Services 4002 (2010-08-16) apply to and form part of the Contract.

Licensed Software 4003 (2010-08-16) apply to and form part of the Contract.

Maintenance and Support Services for Licensed Software 4004 (2013-04-25) apply to and form part of the Contract

## **3. Security Requirement**

:All work is unclassified and the contractor will not have access to any classified information. Contractor personnel must be escorted at all times while on DND premises by fully screened DND personnel.

## **4. Term of Contract**

### **4.1 Period of the Contract**

The period of the Contract is from date of Contract to 31 March 2014 inclusive..

## **5. Authorities**

### **5.1 Contracting Authority**

The Contracting Authority for the Contract is:

Name: *Susan Collier*  
 Title: Supply Specialist  
 Public Works and Government Services Canada  
 Acquisitions Branch  
 Directorate: Atlantic Region  
 Address: 1713 Bedford Row  
 Halifax, Nova Scotia B3J 1t3

Telephone: 902-496-5350  
 Facsimile: 902-496-5016  
 E-mail address: [susan.collier@pwgsc-tpsgc.gc.ca](mailto:susan.collier@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 is:  
(To be given upon contract award)

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: \_\_\_\_\_

Title: \_\_\_\_\_

Company: \_\_\_\_\_

Address: \_\_\_\_\_

Telephone: \_\_\_\_-\_\_\_\_-\_\_\_\_

Facsimile: \_\_\_\_-\_\_\_\_-\_\_\_\_

E-mail address: \_\_\_\_\_

## 6. Proactive Disclosure of Contracts with Former Public Servants

By providing information on its status, with respect to being a former public servant in receipt of a Public Service Superannuation Act (PSSA) pension, the Contractor has agreed that this information will be reported on departmental websites as part of the published proactive disclosure reports, in accordance with Contracting Policy Notice: 2012-2 of the Treasury Board Secretariat of Canada.

## 7. Payment

### 7.1 Basis of Payment

In consideration of the Contractor satisfactorily completing all of its obligations under the Contract, the Contractor will be paid a firm price, as specified herein for a cost of \$ \_\_\_\_\_ insert the amount at contract award). Customs duties are \_\_\_\_\_ included, and Applicable Taxes are extra.

Canada will not pay the Contractor for any design changes, modifications or interpretations of the Work, unless they have been approved, in writing, by the Contracting Authority before their incorporation into the Work.

## 7.2 Limitation of Expenditure

1.Canada's total liability to the Contractor under the Contract must not exceed \$ TBD . Customs duties are included, and Applicable Taxes are extra.

2.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:

- 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 contract funds provided are inadequate for the completion of the Work,
- whichever comes first.

3.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.

## 7.3 SACC Manual Clause

*SACC Manual* clause H1000C (2008-05-12) Single Payment

T1204 - Direct Request by Customer Department - A9117C (2007-11-30)

## 7.4 SACC Manual Clauses

Controlled Goods Program - A9131C (2011-05-16)

1.As the Contract requires production of or access to controlled goods that are subject to the Defence Production Act R.S. 1985, c. D-1, the Contractor and any subcontractor are advised that, within Canada, only persons who are registered, exempt or excluded under the Controlled Goods Program (CGP) are lawfully entitled to examine, possess or transfer controlled goods. Details on how to register under the CGP are available at: Controlled Goods Program

2. When the Contractor and any subcontractor proposed to examine, possess or transfer controlled goods are not registered, exempt or excluded under the CGP at time of contract award, the Contractor and any subcontractor must, within seven (7) working days from receipt of written notification of the contract award, ensure that the required application(s) for registration or exemption are submitted to the CGP. No examination, possession or transfer of controlled goods must be performed until the Contractor has provided proof, satisfactory to the Contracting Authority, that the Contractor and any subcontractor are registered, exempt or excluded under the CGP.

Failure of the Contractor to provide proof, satisfactory to the Contracting Authority, that the Contractor and any subcontractor are registered, exempt or excluded under the CGP, within thirty (30) days from receipt of written notification of contract award, will be considered a default under the Contract except to the extent that Canada is responsible for the failure due to delay in processing the application.

3. The Contractor and any subcontractor must maintain registration, exemption or exclusion from the CGP for the duration of the Contract and in any event for so long as they will examine, possess or transfer controlled goods.

#### **7.5 Discretionary Audit**

The estimated amount of profit included in the Contractor's price or rate certification is subject to audit by Canada, before or after payment is made to the Contractor under the conditions of the Contract. The purpose of the audit would be to determine whether the actual profit earned on a single contract if only one exists, or the aggregate of actual profit earned by the Contractor on a series of negotiated firm price and fixed-time rate contracts performed during a particular period selected, is reasonable and justifiable based on the estimated amount of profit included in earlier price or rate certification(s).

If the audit demonstrates that the actual profit is not reasonable and justifiable, as defined above, the Contractor must repay Canada the amount found to be in excess.

#### **8. Invoicing Instructions**

1. The Contractor must submit invoices in accordance with the section entitled "Invoice Submission" of the general conditions. Invoices cannot be submitted until all work identified in the invoice is completed.

Each invoice must be supported by:

- copy of the release document and any other documents as specified in the Contract;
- copy of the invoices, receipts, vouchers for all direct expenses, and all travel and living expenses;

2. 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

## 9. Certifications

### 9.1 Compliance

Compliance with the certifications and related documentation 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, provide the related documentation or if 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.

### 9.2 SACC Manual Clauses

A3060C Canadian Content Certification (2008-05-12)  
 A9062C Canadian Forces Site Regulations (2011-05-16)  
 B7500C Excess Goods (2006-06-16)

## 10. Applicable Laws

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

## 11. 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) the supplemental general conditions: Software Development or Modification Services 4002 (2010-08-16) apply to and form part of the Contract;
- (c) Licensed Software 4003 (2010-08-16);
- (d) the supplemental general conditions: Maintenance and Support Services for Licensed Software 4004 (2013-04-25);
- (e) the general conditions 2040 (2013-06-27), Research & Development, apply to and form part of the Contract.;
- (f) Annex A, Statement of Requirement;
- (g) Annex B, Basis of Payment;
- (h) the Contractor's bid dated \_\_\_\_\_, (*insert date of bid*)

## 12. Defence Contract

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

## 13. Insurance

SACC Manual clause G1005C 2008-05-12) Insurance

Solicitation No. - N° de l'invitation

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Amd. No. - N° de la modif.

Buyer ID - Id de l'acheteur

hal305

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

W7707-14-5687

File No. - N° du dossier

HAL-3-71085

CCC No./N° CCC - FMS No/ N° VME

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#### **14. Controlled Goods Program**

*SACC Manual* clause A9131C (2011-05-16), Controlled Goods Program

**ANNEX A****STATEMENT OF  
REQUIREMENT****Prediction of Hull Maneuvering Force Coefficients for a Naval Combatant Using Computational Fluid Dynamics****Requirement**

Predictions of hull maneuvering forces will be performed for hull form DTMB 5415, which is based on the US Navy DDG51 destroyer. The predictions shall be performed for combined sway and yaw motions at a Froude number of 0.280 and compared with model tests conducted by FORCE Technology and reported by Simonsen (2004). The numerical computational fluid dynamics (CFD) predictions will be performed using the commercial software Star-CCM+ from CD-adapco. The CFD predictions will use a Reynolds-averaged Navier-Stokes (RANS) approach. The CFD predictions will consider the bare hull with bilge keels, but with no other appendages. Sensitivity studies will examine the influence of usage of varying grid size and excluding bilge keels. Deliverables shall be provided in the form of Star-CCM+ input and output files, and a comprehensive report describing the work conducted, including development of geometric grids, setting of computational parameters, comparison of numerical predictions to model experiments, and sensitivity of predictions to grid size and exclusion of bilge keels.

See Statement of Work attached as Appendix A

**Security:**

All work is unclassified and the contractor will not have access to any classified information. Contractor personnel must be escorted at all times while on DND premises by fully screened DND personnel.

**Intellectual Property**

This requirement has been reviewed in accordance with "Basis For DRDC Ownership of Intellectual Property Arising From DRDC Contracts" form and it has been determined that the Intellectual Property arising from this requirement should rest with the Crown.

**Time Schedule**

Start Date: Upon Contract Award

Completion Date: 31 March 2014

## **Deliverables**

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

- Input and output files for Star-CCM+.
- All input and output files used to prepare Star-CCM+ input files. Such files could include input and output files for geometric modeling.
- Progress reports.
- Final report, which shall include the following topics:
  - Introduction
  - Literature review
  - Geometric modelling
  - Flow modeling
  - Comparison with physical model tests-
  - Sensitivity of computations to grid size
  - Sensitivity of computations to exclusion of bilge keels
  - Discussion
  - Final conclusions

## **Reports**

Progress reports (at least 5 pages in length) shall be provided to the Project Authority at intervals of 2 months, with the first progress report being delivered within 2 months of the start of the contract.

A final Contract Report shall be delivered electronically to the Project Authority. A complete draft of the Contract Report shall be delivered prior to the completion date as noted in the above Time Schedule section.

## **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 report shall be completed using Latex (preferred) or Microsoft Word. If the report is prepared using Latex, then all Latex input files shall be provided to DRDC Atlantic as deliverables.

## Financial Limitations

Funding: \$69,000 CDN (before taxes).

## Travel and Living

On-site meetings at DRDC Atlantic in Dartmouth, Nova Scotia will be an important aspect of this requirement. The contractor shall be on-site at DRDC Atlantic for at least the following:

" Kick-off meeting,

" Progress meetings of no more than one (1) day duration to occur approximately every two (2) months.

## 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)

It is anticipated that no Government Furnished Equipment will be supplied to the Contractor.

## Policy for Connecting Non-DND Computers to DRDC Atlantic Networks

It is anticipated that no non-DND computers will be connected to DRDC Atlantic networks. If non-DND computers are required to be connected to DRDC Atlantic networks, then the Contractor shall follow DRDC Atlantic policy, which will be provided to the Contractor.

## Controlled Goods

The Contractor will not require access to controlled goods. Resulting deliverables will not be controlled goods.

## Control Procedures

Progress will be monitored through progress reports as described in the Reports section above, and through meetings as described in the Travel and Living section above. The work shall be deemed 100% complete upon receipt and approval of the Star-CCM+ files and 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 and deliver minor editorial changes to the report at no additional cost. Upon receipt of any required revisions of the Final Report and other deliverables, and upon receipt of a Claim for Holdback, the holdback will be released

**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

**Available Documentation**

C.D. Simonsen, PMM Model Test with DDG51 Including Uncertainty Assessment, FORCE Technology, 19 March 2004.

Geometric data are available from the following:  
<http://www.simman2014.dk/cms/site.aspx?p=13337>

**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.

Prediction of Hull Maneuvering Force Coefficients for a Naval Combatant Using Computational Fluid Dynamics.

**Scope:**

The goal of this contract is to determine whether computational fluid dynamics can be used to provide practical and reliable predictions of ship hull maneuvering force coefficients.

**Objective:**

Predictions of hull maneuvering forces will be performed for hull form DTMB 5415, which is based on the US Navy DDG51 destroyer. The predictions shall be performed for combined sway

and yaw motions at a Froude number of 0.280 and compared with model tests conducted by FORCE Technology and reported by Simonsen (2004). The numerical computational fluid dynamics (CFD) predictions will be performed using the commercial software Star-CCM+ from CD-adapco. The CFD predictions will use a Reynolds-averaged Navier-Stokes (RANS) approach. The CFD predictions will consider the bare hull with bilge keels, but with no other appendages. Sensitivity studies will examine the influence of varying grid size and excluding bilge keels. Deliverables shall be provided in the form of Star-CCM+ input and output files, and a comprehensive report describing the work conducted, including development of geometric grids, setting of computational parameters, comparison of numerical predictions to model experiments, and sensitivity of predictions to grid size and exclusion of bilge keels.

## **Background**

Simulation of ship maneuvering performance requires accurate hull maneuvering force coefficients. Computational fluid dynamics now appears promising for providing practical and accurate predictions of hull maneuvering forces coefficients. DRDC Atlantic has obtained the commercial CFD software Star-CCM+. The present contract will provide DRDC Atlantic with information regarding usage and expected accuracy for hull maneuvering force predictions from Star-CCM+.

## **Requirement**

The Contractor shall perform CFD simulations using Star-CCM+ to determine hull maneuvering forces acting on hull form DTMB 5415. A Reynolds-averaged Navier-Stokes (RANS) approach shall be used, with the aim of obtaining a suitable balance between accuracy and required computational resources

## **Literature Review**

The Contractor shall perform a literature review on CFD prediction of hull maneuvering force coefficients. The literature review shall consider pertinent information, including geometric modelling, required grid sizes, turbulence modelling, and success of previously published CFD predictions.

## **Geometric Modelling**

The Contractor shall model the ship and flow domain for CFD computations. Geometric data for the ship hull is available in the form of an Initial Graphics Exchange Specification (IGES) file. Drawings and root coordinates are available for the bilge keels. CFD geometric models shall be developed for the hull with and without bilge keels. The Contractor shall obtain permission from the Scientific Authority to use any third-party software other than Star-CCM+.

## **Flow Modelling**

The Contractor shall develop flow modelling for determining hull maneuvering force coefficients. As part of this work, the Contractor shall determine suitable grid sizes, turbulence models, and other input parameters for modelling the flow. Determination of the flow modelling should be based on both a review of available literature and computations.

## **Comparison of Numerical Predictions with Physical Model Tests**

The Contractor shall compare numerical force predictions with hull maneuvering forces determined from combined sway and yaw by Simonsen (2004) for the ship travelling with Froude number of 0.280. The numerical forces predictions shall be compared with the following Table numbers from Simonsen (2004):

- Surge force coefficients, Table 7.3.16.11,
- Sway force coefficients, Table 7.3.17.15,
- Yaw moment coefficients, 7.3.18.14.

For determining the above force coefficients, the above shall be simulated:

- Static drift tests with drift angles of 0, 2, 6, 9, 10, 11, 12, 16, and 20 degrees,
- Dynamic pure sway tests with non-dimensional sway velocities of 0.03, 0.07, and 0.17,
- Dynamic pure yaw tests with non-dimensional yaw velocities of 0.05, 0.15, 0.30, 0.45, 0.60, and 0.75,
- Dynamic yaw and drift tests with a non-dimensional yaw velocity of 0.30 and drift angles of 9, 10, and 11 degrees.

## **Sensitivity of Computations to Grid Size**

The Contractor shall perform additional computations showing the sensitivity of predicted forces to grid size. These computations may be limited to cases with small non-dimensional sway and yaw velocities. Sensitivity testing shall follow accepted methods from the Journal for Fluids Engineering (<http://journaltool.asme.org/Content/JFENumAccuracy.pdf>).

## **Sensitivity of Computations to Exclusion of Bilge Keels**

The Contractor shall perform additional computations showing the sensitivity of predicted forces to exclusion of bilge keels. These computations may be limited to cases with small non-dimensional sway and yaw velocities.

## ANNEX B

### BASIS OF PAYMENT

#### 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, and evaluation criteria.
- (b) An evaluation team composed of representatives of Canada will evaluate the bids.
- (c) The evaluation team will determine first if there are three (3) or more bids with a valid Canadian Content certification. In that event, the evaluation process will be limited to the bids with the certification; otherwise, all bids will be evaluated. If some of the bids with a valid certification are declared non-responsive, or are withdrawn, and less than three responsive bids with a valid certification remain, the evaluation will continue among those bids with a valid certification. If all bids with a valid certification are subsequently declared non-responsive, or are withdrawn, then all the other bids received will be evaluated.

##### 1.1 Technical Evaluation

###### 1.1.1 Mandatory Technical Criteria

A bid must comply with the requirements of the bid solicitation and meet all mandatory technical evaluation criteria to be declared responsive.

###### 1.1.2 Point Rated Technical Criteria

Bidders are strongly encouraged to include a "Cross Reference" index in their Technical/Management Proposal that identifies the paragraphs and page numbers associated with each of the following POINT RATED CRITERIA.

Technical/Management proposals will be evaluated in accordance with the following POINT RATED CRITERIA. It is suggested you address these POINT RATED CRITERIA in sufficient depth in your proposal

#### TECHNICAL PROPOSAL

#### 200 POINTS MAX / 140 POINTS MINIMUM

- |  |           |
|--|-----------|
| (a) Demonstrated understanding of scope and objectives               | 80 POINTS |
| (b) Proposed work feasibility, approach and methodology              | 80 POINTS |
| (c) Recognition of problems and solutions proposed                   | 20 POINTS |
| (d) Adequacy of level of effort, workplan and schedule, deliverables | 20 POINTS |

**MANAGEMENT PROPOSAL****100 POINTS MAX / 70 POINTS MINIMUM**

(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. **20 POINTS**

(b) key personnel capability - demonstrated relevant experience, qualifications and competence proven by similar and/or related work. **40 POINTS**

(c) company capability including subcontractors, if applicable - relevant experience/competence proven by similar or related work, and resource capability, risk of non-performance, commitment to this field of work. **20 POINTS**

(d) adequacy of planned team organization, 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. **20 POINTS**

**TOTAL POINTS - 300****1.1.3 Financial Limitations**

Funding: \$69,000 CDN (before taxes).

**1.1.4 Mandatory Evaluation Criteria**

A bid must comply with the requirements of the bid solicitation and meet all mandatory technical evaluation criteria to be declared responsive.

1. To be considered responsive, a bid must:

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

(b) obtain the required minimum of 70 percent of the points for 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 (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. In the case of a tie the bid with the highest technical proposal will be recommended.

## **Deliverables**

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

- Input and output files for Star-CCM+.
- All input and output files used to prepare Star-CCM+ input files. Such files could include input and output files for geometric modeling.
- Progress reports.
- Final report, which shall include the following topics:
  - Introduction
  - Literature review
  - Geometric modelling
  - Flow modeling
  - Comparison with physical model tests
  - Sensitivity of computations to grid size
  - Sensitivity of computations to exclusion of bilge keels
  - Discussion
  - Final conclusions

## **Reports**

Progress reports (at least 5 pages in length) shall be provided to the Project Authority at intervals of 2 months, with the first progress report being delivered within 2 months of the start of the contract.

A final Contract Report shall be delivered electronically to the Project Authority. A complete draft of the Contract Report shall be delivered prior to the completion date as noted in the above Time Schedule section.

## **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 report shall be completed using Latex (preferred) or Microsoft Word. If the report is prepared using Latex, then all Latex input files shall be provided to DRDC Atlantic as deliverables.

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W7707-145687/A

Amd. No. - N° de la modif.

Buyer ID - Id de l'acheteur

hal305

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

File No. - N° du dossier

CCC No./N° CCC - FMS No/ N° VME

W7707-14-5687

HAL-3-71085

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**Annex "C"**  
**Criminal Code of Conduct**

**COMPLETE LIST OF EACH INDIVIDUAL WHO ARE CURRENTLY DIRECTORS OF  
THE BIDDER**

**CODE OF CONDUCT**

**NOTE TO BIDDERS**

**WRITE DIRECTOR'S SURNAMES AND GIVEN NAMES IN BLOCK LETTERS**

**Board of Directors:** (Please print clearly)

NAME	NAME	NAME	NAME

Attach additional names on a separate sheet if required.