



RETURN BIDS TO:

RETOURNER LES SOUMISSIONS À:

Réception des soumissions - TPSGC / Bid

Receiving - PWGSC

1550 Avenue d'Estimauville

1550 D'Estimauville Avenue

Québec

Québec

G1J 0C7

INVITATION TO TENDER

APPEL D'OFFRES

**Tender 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.

Soumission 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 et sur toute feuille ci-annexée, au(x) prix indiqué(s).

Comments - Commentaires

Vendor/Firm Name and Address

Raison sociale et adresse du

fournisseur/de l'entrepreneur

Issuing Office - Bureau de distribution

TPSGC - PWGSC

601 - 1550 Avenue d'Estimauville

Québec

Québec

G1J 0C7

| | |
|--|---|
| Title - Sujet Stertune Bushing & Mechanical Seals | |
| Solicitation No. - N° de l'invitation F3017-17N231/A | Date 2017-09-18 |
| Client Reference No. - N° de référence du client F3017-17N231 | GETS Ref. No. - N° de réf. de SEAG PW-\$QCW-028-17212 |
| File No. - N° de dossier QCW-7-40111 (028) | CCC No./N° CCC - FMS No./N° VME |
| Solicitation Closes - L'invitation prend fin at - à 02:00 PM on - le 2017-11-02 | |
| Time Zone Fuseau horaire Heure Avancée de l'Est HAE | |
| F.O.B. - F.A.B. Specified Herein - Précisé dans les présentes Plant-Usine: <input type="checkbox"/> Destination: <input type="checkbox"/> Other-Autre: <input checked="" type="checkbox"/> | |
| Address Enquiries to: - Adresser toutes questions à: Simoneau, Steve | Buyer Id - Id de l'acheteur qcw028 |
| Telephone No. - N° de téléphone (418) 649-2816 () | FAX No. - N° de FAX (418) 648-2209 |
| Destination - of Goods, Services, and Construction: Destination - des biens, services et construction: NGCC DES GROSEILLIERS Pêches et Océans Canada Garde Côtière 101 Boul Champlain QUEBEC Québec G1K7Y7 Canada | |

Instructions: See Herein

Instructions: Voir aux présentes

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

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TITLE: STERN TUBE BUSHINGS AND MECHANICAL SEALS**PART 1 - GENERAL INFORMATION****1.1 Introduction**

The bid solicitation is divided into six parts plus 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;

Part 4 Evaluation procedures and basis of selection;

Part 5 Certifications: includes the certifications to be provided;

Part 6 Resulting Contract Clauses: includes the clauses and conditions that will apply to any resulting contract.

The Annexes include the Statement of Requirement, the Basis of Payment, the list of individual who are currently directors and or owner of the bidder, the Technical evaluation of an equivalent product and the Technical specifications.

1.2 Requirement

- 1.2.1 Supply material and workmanship to fabricate and deliver at destination two (2) aft, and two (2) forward bushings for the two (2) tailshafts of CCGS Des Groseilliers. The bushings must be approved by a classification society approved by Transport Canada for class 1 ice breaker ship and in accordance with the following technical description and drawings.
- 1.2.2 Supply material and workmanship to fabricate and deliver at destination two (2) mechanical seals for the propulsion shafts.
- 1.2.3 Supply material and workmanship to fabricate and deliver at destination two (2) Adapter Plates.
- 1.2.4 Supply the manpower to prepare an application to Transport Canada for a Propeller Shaft Condition Monitoring Program.

1.3 Debriefings

Bidders may request a debriefing on the results of the bid solicitation. Bidders should make the request to the Contracting Authority within **fifteen (15)** working days of receipt of notification that their bid was unsuccessful. The debriefing may be provided in writing, by telephone or in person.

1.3 Trade Agreements

The requirement is subject to the provisions of the World Trade Organization Agreement on Government Procurement (WTO-AGP), the North American Free Trade Agreement (NAFTA), and the Agreement on Internal Trade (AIT).

PART 2 - BIDDER INSTRUCTIONS

2.1 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) (<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 (2016-04-04) Standard Instructions - Goods or Services - Competitive Requirements, are incorporated by reference into and form part of the bid solicitation.

2.1.1 SACC Manual Clauses

SACC Manual Clause B1000T (2014-06-26), Condition of Material – Bid
SACC Manual Clause B3000T (2006-06-16), Equivalent Products

2.2 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.

You can also submit your bid by facsimile at (1) 418-648-2209, by the date, time and place indicated on page 1 of the bid solicitation.

2.3 Enquiries - Bid Solicitation

All enquiries must be submitted in writing to steve.simoneau@tpsgc-pwgsc.gc.ca, the Contracting Authority no later than **(7) 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 question(s) or may request that the Bidder do so, so that the proprietary nature of the question(s) is eliminated, and the enquiry can be answered to all Bidders. Enquiries not submitted in a form that can be distributed to all Bidders may not be answered by Canada.

2.4 Applicable Laws

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

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.

2.5 Bidders' Conference (Not mandatory)

A bidders' Conference chaired by the Contracting Authority will be convened on board vessel Des Groseilliers at 09:00 AM on October 19, 2017 in the Officers' Messroom. The vessel will be moored at l'Anse-aux-foulons, of Québec Harbour, Québec City.

It is recommended that the Bidder or a representative of the Bidder attend the Bidders' Conference in order to review the Scope of the Work required and to receive additional information and clarifications. Bidders are to communicate with the Contracting Authority prior to the conference to confirm attendance. Bidders that do not attend are not precluded from submitting a bid. **Bidders are to provide the Contracting Authority with the names of their representatives no later than two days prior to the conference.** The Contracting Authority will have an attendance form which is to be signed by the Bidder's representative(s) in attendance. Bidders are advised that any clarifications or changes resulting from the Bidder's conference and/or the subsequent viewing of the vessel, shall be included as an amendment to the bid solicitation document.

2.6 Viewing - Vessel (Not mandatory)

A site visit will be held immediately after the bidders' Conference.

PART 3 - BID PREPARATION INSTRUCTIONS

3.1 Bid Preparation Instructions

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

Section I: Technical Bid (1 hard copy)

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) (<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 explain and demonstrate how they propose to meet the requirements and how they will carry out the Work.

Section II: Financial Bid

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

3.1.1 Exchange Rate Fluctuation

The requirement does not offer exchange rate fluctuation risk mitigation. Requests for exchange rate fluctuation risk mitigation will not be considered. All bids including such provision will render the bid non-responsive.

3.1.2 SACC Manual Clauses

Section III: Certifications

Bidders must submit the certifications required under Part 5.

PART 4 - EVALUATION PROCEDURES AND BASIS OF SELECTION

4.1 Evaluation Procedures

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

4.1.1 Technical Evaluation

4.1.1.1 Mandatory Technical Criteria at bids opening:

The bidder must clearly demonstrate with his proposal, he meets and complies with the requirement.

- a) The Bidder must provide two (2) examples within the last ten (10) years where its systems have already been accepted for an extended shaft withdrawal interval of 15 years or more by a Transport Canada recognized classification society. Provide references.
- b) For equivalent products, the Bidder should include with his proposal the technical data sheets and drawings of the proposed products in accordance with the table in Annex D - Technical evaluation of an equivalent product, in order to demonstrate that the proposed products meet the mandatory criteria of Annex A.

4.1.1.2 Mandatory Criteria before Contract award:

See Part 5. Paragraph 5.2.1 and 5.2.2

4.1.2 Financial Evaluation

Evaluation of Price - Bid

The price of the bid will be evaluated in Canadian dollars, Applicable Taxes excluded, DDP destination, Canadian customs duties and excise taxes included.

Unless the bid solicitation specifically requires bids to be submitted in Canadian currency, bids submitted in foreign currency will be converted to Canadian currency for evaluation purposes. The rate given by the Bank of Canada in effect on the bid solicitation closing date, or on another date specified in the bid solicitation, will be applied as a conversion factor to the bids submitted in foreign currency.

Notice: The resulting contract will be award in CDN dollars.

4.2 Basis of Selection – Mandatory technical criteria's

A bid must comply with the requirements of the bid solicitation to be declared responsive. The responsive bid with the lowest evaluated price will be recommended for award of a contract.

PART 5 – CERTIFICATIONS AND ADDITIONAL INFORMATION

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

The certifications provided by Bidders to Canada are subject to verification by Canada at all times. Unless specified otherwise, 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 made knowingly or unknowingly, 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 and to cooperate with any request or requirement imposed by the Contracting Authority will render the bid non-responsive or constitute a default under the Contract.

5.1 Certifications Required with the Bid

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

5.1.1 Integrity Provisions - Declaration of Convicted Offences

In accordance with the [Ineligibility and Suspension Policy](http://www.tpsgc-pwgsc.gc.ca/ci-if/politique-policy-eng.html) (<http://www.tpsgc-pwgsc.gc.ca/ci-if/politique-policy-eng.html>), the Bidder must provide with its bid the required documentation, as applicable, to be given further consideration in the procurement process.

5.2 Mandatory Certifications Required Precedent to Contract Award

The certifications and additional information listed below should be submitted with the bid, but may be submitted afterwards. If any of these required certifications or additional information is not completed and submitted as requested, the Contracting Authority will inform the Bidder of a time frame within which to provide the information. Failure to provide the certifications or the additional information listed below within the time frame provided will render the bid non-responsive.

5.2.1 Lloyds Type Approval Certificate or other approved certification

Before contract award and within two working days of written notification by the Contracting Authority the successful Bidder must provide the Lloyds Type Approval Certificate, or any other similar certification from another classification society approved by Transport Canada.

5.2.2 ISO 9001-2008 certification or a Quality Management System that takes into account the requirements of the standard.

Before contract award and within two working days of written notification by the Contracting Authority the successful Bidder must provide the ISO 9001-2008 certification or a Quality Management System that takes into account the requirements of the standard.

5.2.3 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.

5.2.4 Integrity Provisions – List of Names

Bidders who are incorporated, including those bidding as a joint venture, must provide a complete list of names of all individuals who are currently directors of the Bidder, see Annex C.

Bidders bidding as sole proprietorship, as well as those bidding as a joint venture, must provide the name of the owner(s).

5.2.5 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) 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](#)" list at the time of contract award.

Canada will also have the right to terminate the Contract for default if a Contractor, or any member of the Contractor if the Contractor is a Joint Venture, appears on the "[FCP Limited Eligibility to Bid](#)" list during the period of the Contract.

The Bidder must provide the Contracting Authority with a completed annex Federal Contractors Program for Employment Equity - Certification, before contract award. If the Bidder is a Joint Venture, the Bidder must provide the Contracting Authority with a completed annex Federal Contractors Program for Employment Equity - Certification, for each member of the Joint Venture.

PART 6 - RESULTING CONTRACT CLAUSES

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

6.1 Security Requirements

There is no security requirement applicable to this Contract.

6.2 Requirement

The Contractor must provide the items detailed under the "Requirement" at Annex "A".

6.3 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) (<https://buyandsell.gc.ca/policy-and-guidelines/standard-acquisition-clauses-and-conditions-manual>) issued by Public Works and Government Services Canada.

6.3.1 General Conditions

2010A (2016-04-04), General Conditions - Goods (Medium Complexity), apply to and form part of the Contract.

6.3.2 Supplemental General Conditions

4001 (2015-04-01), Hardware Purchase, Lease and Maintenance, apply to and form part of the Contract.

6.4 Term of Contract

The contract period is from the date of the contract award until the end of the warranty period, inclusively.

6.4.1 Delivery Date

All the deliverables must be received within five (5) months following contract award.

6.4.2 Delivery Date, Optional deliverables

All optional deliverables must be received within 8 months following the application of the option. This item is to be exercised within 24 months of the contract award.

6.5 Authorities

6.5.1 Contracting Authority

The Contracting Authority for the Contract is:

Name: Steve Simoneau
Title: Supply Officer
Public Works and Government Services Canada
Acquisitions Branch
Directorate: Supply
Address: 1550, avenue D'Estimauville, Québec, (Québec) G1J 0C4,

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qcw028
CCC No./N° CCC - FMS No./N° VME

Quebec, Canada
Telephone: 418-649-2816
Facsimile: 418-648-2209
E-mail address: steve.simoneau@tpsgc-pwgsc.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.

6.5.2 Technical Authority

The Technical Authority for the Contract is: ***(will be completed at contract award)***

Name: _____
Title: _____
Organization: _____
Address: _____

Telephone : _____
Facsimile: _____
E-mail address: _____

The Technical Authority named above 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 Technical Authority, however the Technical 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.

6.5.3 Contractor's Representative: ***(to be completed)***

Name: _____
Title: _____
Organization: _____
Address: _____

Telephone : _____
Facsimile: _____
E-mail address: _____

6.6 Payment

6.6.1 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 in Annex B for a cost of \$ _____CDN (insert the amount at contract award). DDP at destination, 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.

6.6.2 Progressive Payments

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 75 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 all work required under the Contract 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.

6.6.3 Travel and Living Expenses

The Contractor will be reimbursed for the authorized travel and living expenses reasonably and properly incurred in the performance of the Work, at cost, without any allowance for overhead or profit, in accordance with the meal, private vehicle and incidental expense allowances specified in Appendices B, C and D of the [Treasury Board Travel Directive](#), and with the other provisions of the directive referring to "travellers", rather than those referring to "employees".

All travel must have the prior authorization of the Technical Authority of the Call-Up.

All payments are subject to government audit.

6.7 SACCManual Clauses

| | | |
|--------------------|---------------------|--|
| SACC Manual Clause | C6000C (2011-05-16) | Limitation of Price |
| SACC Manual Clause | H3022C (2016-01-28) | Invoicing Instructions - Progress Payment Claim - Supporting Documentation required |
| SACC Manual Clause | H4500C (2010-01-11) | Lien – Section 427 of the Bank Act |

6.8 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.
2. Invoices must be distributed as follows:

DFO.invoicing-facturation.MPO@canada.gc.ca

Important:

Write the name of the following person on invoice;

[REDACTED]

AND

- a) An electronic copy must be transmitted to the Contracting Authority identified under the section entitled "Authorities" of the Contract.

6.9 Certifications

6.9.1 Compliance

The continuous compliance with the certifications provided by the Contractor in its bid and the ongoing cooperation in providing additional information are conditions of the Contract. Certifications are subject to verification by Canada during the entire period of the Contract. If the Contractor does not comply with any certification, fails to provide the additional information, 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.

6.10 Applicable Laws

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

6.11 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 general conditions 2010A (2016-04-04), General Conditions – Goods (Medium Complexity);
- I Annex A, Requirement;
- (d) Annex B, Basis of payment;
- I the Contractor's bid dated _____ (*will be completed at contract award*)

6.12 Defence Contract

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

6.13 Inspection and Acceptance

The Technical 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.

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File No. - N° du dossier
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Buyer ID - Id de l'acheteur
qcw028
CCC No./N° CCC - FMS No./N° VME

6.14 Shipping Instructions – Delivery at Destination

Goods must be consigned to the destination specified in the Contract and delivered: Canadian Coast Guard base, 101 Boulevard Champlain, Québec city, Québec, G1K 7Y7, Canada. Delivered Duty Paid (DDP) Incoterms 2000 for shipments from a commercial contractor.

6.15 Insurance – No Specific Requirement

SACC Manual clause G1005C (2016-01-28), Insurance – No Specific Requirement

ANNEX "A" – STATEMENT OF REQUIREMENT

1.0 SCOPE

- 1.1 Supply material and workmanship to fabricate and deliver at destination two (2) aft, and two (2) forward bushings for the two (2) tailshafts of CCGC Des Groseilliers. The bushings must be approved by a classification society for class 1 ice breaker ship and in accordance with the following technical description and drawings.
- 1.2 Supply material and workmanship to fabricate and deliver at destination two (2) mechanical seals for the propulsion shafts.
- 1.3 Supply material and workmanship to fabricate and deliver at destination two (2) Adapter Plates.
- 1.4 Supply the manpower to prepare an application to Transport Canada for a propeller shaft condition monitoring program.

1.5 MAIN CHARACTERISTICS

The following are the main characteristics of the CCGS "DES GROSEILLIERS":

- Vessel name : CCGS "DES GROSEILLIERS"
- Type of vessel: Medium icebreaker
- Year of construction: 1982
- Draft: 7.40 m
- Gross tonnage: 6097.80
- Service speed: 12 knots
- Maximum speed: 16.5 knots
- Vessel class « Lloyds Class I Ice Breaker »

- 1.6 Dimensions of the propeller shaft to be supported by the new sterntube bearings:
 - Weight 37 tonnes
 - Length 46' 1-13/16".
 - Diameter 26.57" minimum.

2.0 REFERENCES (Drawings / Standards / Regulations)

2.1 Drawings

- 2.1.1 24MA_48643_3 Michell aftmost bearing
- 2.1.2 68-2600-1 Arrangement of Shafting
- 2.1.3 68-H-101-T-Tabloid Deck profile
- 2.1.4 49199REF48482 2 Michell main thrust block
- 2.1.5 AW201941 Crane seal
- 2.1.6 AW201945 Tail shaft with liner

2.2 Certifications

- 2.2.1 Type Approval certificate by a classification society.

2.3 **Quality assurance**

2.3.1 ISO 9001-2008

2.4 **Abbreviations**

- 2.4.1 ASTM - American society for Testing Materials
- 2.4.2 CCGS – Canadian Coast Guard Ship
- 2.4.3 SCM - Shaft Condition Monitoring
- 2.4.4 MTRB - Marine Technical Review Board

3.0 **TECHNICAL DESCRIPTION**

3.1 **SHAFT BUSHINGS**

- 3.1.1 Supply material and workmanship to fabricate and deliver at destination two (2) aft, and two (2) forward COMPAC model bushings or equivalent product for the two (2) tailshafts of CCGS Des Groseilliers. Performance criteria in item 3.1.6.
- 3.1.2 The shaft speed varies from 0 to 181 RPM in both directions. The bearings must be usable for shaft diameters in excess of 26.57" inches in order to allow tailshafts to be interchangeable.
- 3.1.3 Prior to fabrication, provide dimensional pdf plans demonstrating that the bushings are compatible for the current installation and specifications.
- 3.1.4 **Bushing Aft Sterntube:** Supply and machine 2 water lubricated, Polar code compliant, Classification society approved split (for fixed anti-rotation key) bearings. No oil lubrication systems will be accepted. Homogeneous bearing material with no changes to properties as bearing wears. To promote early formation of a hydrodynamic film between the shaft and bearing, the lower (loaded) portion of the bearing is smooth, while the upper half of the bearing incorporates grooves for enhanced flow of the water lubricant/coolant. Bearing rough molded with 3/16" (4.7625mm), over (OD) and underbuilt (ID). The CCG will perform final machine groove and machine slot at shipyard to accommodate fixed key. Shaft 680mm X Bore 734mm x Overall Length x 2720mm.
 - 3.1.4.1 Quantity: Two (2) aft bushings
 - 3.1.4.2 Two (2) Fixed anti-rotation key set, bronze, with mounting fasteners
- 3.1.5 **Bushing Forward Sterntube:** Supply and machine 2 water lubricated, Polar code compliant, Classification society approved split (for fixed anti-rotation key) bearings. No oil lubrication systems will be accepted. Homogeneous bearing material with no changes to properties as bearing wears and non-catastrophic failure mode and survivability to allow vessel and crew to return to port for repairs. To promote early formation of a hydrodynamic film between the shaft and bearing, the lower (loaded) portion of the bearing is smooth, while the upper half of the bearing incorporates grooves for enhanced flow of the water lubricant/coolant. Bearing rough molded with 3/16" (4.7625mm) over (OD) and underbuilt (ID). The CCG will perform final machine, groove and machine slot by at shipyard to accommodate fixed key. Shaft 675mm x Bore 736mm x Overall Length 1333mm.
 - 3.1.5.1 Quantity: Two (2) forward bushings
 - 3.1.5.2 Two (2) Fixed anti-rotation key set, bronze, with mounting fasteners

3.1.6 **Mandatory performance criteria's for shaft bushings**

- 3.1.6.1 Accept shaft speeds between 0 to 181 RPM in both directions
- 3.1.6.2 Water lubricated,
- 3.1.6.3 Polar code compliant,
- 3.1.6.4 Homogeneous bearing – no property changes throughout
- 3.1.6.5 Coefficient of friction, hydrodynamic 0.020 max
- 3.1.6.6 Ultimate Tensile Strength ASTM D-412 MPa 37.5 min
- 3.1.6.7 Coefficient of expansion 0°C to 30°C: 15.1×10^{-5} (°C) max
- 3.1.6.8 Modulus of Elasticity (Eo) 64,000 Eo (psi) min
- 3.1.6.9 Operating Temperature Wet -2/35°C
- 3.1.6.10 ASTM D5963-96 Rotary drum abrasion test - Wear result 0.2 cc maximum / 24 hours.
- 3.1.6.11 Izod Impact -notched ASTM D-256 Joules/m ~ 500 min

3.2 **MECHANICAL SHAFT SEAL**

- 3.2.1 The mechanical shaft seal must be approved by a classification society and in accordance with the following technical description and drawings in item 2.1. Thordon SeaThigor or equivalent with dynamic and static seals to provide water-tight integrity around the propeller shaft. The primary dynamic seal uses Silicon Carbide on Silicon Carbide faces. The secondary seal is an inflatable elastomer Safety Seal element activated by compressed air. Intended for maintenance and repair in Static Mode, and in for Safe-Return-To-Port capability in the event of a face failure of the primary seal. The limited duration time in Dynamic mode being minimum 5 days (144 hours) of continuous operation with and minimum shaft speed of 90 RPM. An air control panel for normal and Safe Return to Port operation will be included. Seal designed to suit 675 mm shaft over liner.
- 3.2.2 The pressure-balanced design must be able to handle hydrostatic pressure variations of 2 bar.
- 3.2.3 The rugged design and construction must be adaptable to shaft movements of at least 10mm.
- 3.2.4 The sealing components are contained within a metal housing are well protected from damage. No exterior moving parts are permitted.
- 3.2.5 Acceptable Seal inlet water temperature must range at least between: -2° C to 45° C.
- 3.2.6 Quantity required per shipset: Two (2) shaft mechanical seals.

3.2.7 **Mandatory performance criteria's for the Mechanical Shaft Seal**

- 3.2.7.1 Approved by a Classification society recognized by TC.
- 3.2.7.2 Primary dynamic seal Silicon Carbide on Silicon Carbide faces.
- 3.2.7.3 Dynamic Mode in the event of a face failure of the primary seal operating with limited duration minimum 5 days/144 hours of continuous operation and minimum shaft speed of ½ throttle
- 3.2.7.4 Rates for hydrostatic pressure variations of 2 bar min
- 3.2.7.5 Axial shaft movement 10mm min
- 3.2.7.6 No exterior moving parts
- 3.2.7.7 Seal inlet water minimum temperature range: -2° C to 45° C

3.3 **ADAPTER PLATE**

- 3.3.1 The Contractor will make the required measurements and calculations to design and fabricate the required adapter plate. A retrofit installation requires a custom Adaptor Plate to ensure proper interface of the seal with the vessel. The Adaptor Plate finished on the outside diameter (OD) to

match the seal OD, and the inside diameter (ID) machined to match the ID of stern tube flange or vessel bulkhead. The Plate typically has two (2) sets of axial mounting holes: first set is drilled and threaded to match the size and number of bolts and bolt circle diameter required to attach the Seal to the Plate, depending on the respective seal size; the second set are drilled through holes to match the size, number and bolt center of bolts needed to attach the Plate to the stern tube flange. In addition, the Plate has a set of water inlet and drain ports – could be 1 or 2 depending on the seal size, drilled radially for connection of cooling water piping. The overall length (L) of the Adaptor plate can vary depending on the specific installation conditions, with the minimum length dictated by the size of water inlet port(s), and to accommodate the thickness of the bearing carrier flange. The entrepreneur shall also provide the Gasket between the Adaptor Plate and the Vessel's Bulkhead, to match the existing bolt mounting pattern.

3.4 PROPELLER SHAFT CONDITION MONITORING PROGRAM

- 3.4.1 The Contractor shall; study drawings and technical documents, attend the ship for survey, and document all findings and recommendations in order to assess the technical feasibility to implement Shaft Condition Monitoring (SCM) onboard the subject vessel in lieu of propeller tail shaft withdrawal for periodic survey in accordance with Canada Shipping Act C.R.C.,_c._1431 Hull Construction Regulations and C.R.C.,_c._1432 Hull Inspection Regulations.
- 3.4.2 As a result of that assessment, the vessel's project authority will be provided with a detailed summary of the shipboard arrangements along with commensurate recommendations to achieve an equivalent level of safety intended by the Canada Shipping Act. The basis to achieve the equivalent level of safety shall be compliance with the Lloyd's Register of Shipping Constriction Rules for Steel Ship as related to Shaft Condition Monitoring (SCM) Descriptive Note requirements.
- 3.4.3 Based on the results of the assessment and compliance matrix, the detailed plans for implementation of SCM may be developed. This scope of work will include the preparation of the formal MTRB submission which details the implementation of the measures which will provide for an equivalent level of safety to the requirements of the Canada Shipping Act and Inspection Regulations as they pertain to the withdrawal of propeller shafts for periodic inspections.
 - 3.4.3.1 In order to complete an initial review and familiarization with the current arrangements of the subject ship, the CCG will provide all necessary drawings, technical details and documents.
 - 3.4.3.2 The undersigned will prepare an initial draft of the compliance matrix based on these in preparation for a shipboard visit to survey the ship in Quebec City.
 - 3.4.3.3 The shipboard visit will, in consultation with ship staff, confirm the actual technical arrangements and functional/operational details and equipment as implemented. Once these are clear and a basic understanding of these with respect to rule compliance has been gained, the entrepreneur can the consult the CCG regarding the additional equipment, operational adjustments, and record keeping that may be required in order to achieve Rule compliance.
 - 3.4.3.4 All of these findings will be documented and reported to owners.
 - 3.4.3.5 A comprehensive assessment report will be prepared which will clearly lay out the current arrangements with regard to stern tubes, tail shafts, bearings and seals, any control and monitoring details and to what extent these already comply with the SCM rule requirements.
 - 3.4.3.6 The Compliance Matrix will be updated with details to fully define current arrangements and will include potential solutions for any Rule deficiencies that may be identified.
 - 3.4.3.7 This report will be suitable for further discussions between the CCG and TCMS to further clarify the requirements foreseen in order to gain Marine Technical Review Board (MTRB) approval.

3.4.4 Deliverables:

3.4.4.1 Initial assessment Report with recommendations

3.4.4.2 Rule Compliance Matrix

3.4.4.3 The Contractor will prepare a comprehensive technical submission containing the details which will outline the manner in which an equivalent level of safety will be achieved by implementation of a shaft condition monitoring program based on the rule requirements of the Lloyd's Register of Shipping Rule requirements for Shaft Condition Monitoring Descriptive Note.

4.0 DOCUMENTATION

4.1 Certification

4.1.1 The Contractor must, before contract award, provide a Type approval certificate from a classification society approved by Transport Canada, with plans, drawings and fabrication procedures.

4.1.2 The Contractor shall provide two examples where these systems have been accepted in the past 10 years for an extended shaft withdrawal interval of 15 years or more by a classification society approved by Transport Canada.

4.2 Documentation (Reports/Drawings/Manuals)

4.2.1 Within four (4) weeks following contract award, supply all the engineering calculations (load, vibrations, torsion, etc.) for marine application onboard an ice breaker, and the original classification society approval certificates.

4.2.2 At the same time as the bearings delivery, supply three (3) copies maintenance, installation and parts manuals in both English and French. Supply all drawings associated to the bearings, and an electronic copy of the manuals and drawings.

5.0 PARTS

5.1.1 Supply a complete overhaul kit for item 3.2 – Mechanical shaft seal, with all necessary parts, packed for long term storage.

5.1.2 Provide all special tools (if any) required by the manufacturer to install and maintain the mechanical seal. Provide list (if applicable).

6.0 OPTIONS

6.1 Option to purchase eight (8) split bearings (four (4) forward and four (4) aft), with an 8 month delivery time, including all items in 3.1's statement of work. This item is to be exercised within 24 months of the contract award.

6.2 Option to purchase four (4) mechanical seals and adapter plates, with an 8 month delivery time, including all items in 3.2 and 3.3's statement of work. This item is to be exercised within 24 months of the contract award.

6.3 Option to purchase a Canada Shipping Act Compliance Assessment, with an 8 month delivery time, including all items in 3.4's statement of work. This item is to be exercised within 24 months of the contract award.

6.4 After-sales service - Include in your quote 100 hours for a field representative, this amount will be adjusted up or down at the end of the work via a PWGSC 1379 Formula.

ANNEX "B"

BASIS OF PAYMENT

Price for Supply material and workmanship to fabricate and deliver at destination the following equipment for the CCGS Des Groseilliers, in accordance with Annex A – Statement of Requirement. To be delivered deliver at destination (DDP) Coast Guard Base, Québec City.

| A. DELIVERABLES | | | | | |
|--|--|-----------------|-----------------------------|---------------------|-----------------------------|
| Item | Description | Quantity | Unit of distribution | Price / Unit | Total firm price CDN |
| 3.1.4 | Forward COMPAC bearings or equivalent Product Name (equivalent): _____ | 2 | Ea. | _____ \$ | _____ \$ |
| 3.1.5 | Aft COMPAC bearings or equivalent Product Name (equivalent): _____ | 2 | Ea. | _____ \$ | _____ \$ |
| 3.2 | Mechanical shaft seal SEA THIGOR or equivalent Product Name (equivalent): _____ | 2 | Ea. | _____ \$ | _____ \$ |
| 3.3 | Adapter plate | 2 | Ea. | _____ \$ | _____ \$ |
| 3.4 | Monitoring program | 1 | ---- | _____ \$ | _____ \$ |
| 5.0 | Spare parts : | | | | |
| 5.1 | Complete revision kit, with all necessary parts | 1 | Ea. | _____ \$ | _____ \$ |
| 5.2 | Recommended special tools (if applicable). Provide the list. | 1 | Lot | _____ \$ | _____ \$ |
| Delivery | Delivery Duty Paid (DDP) | 1 | ----- | _____ \$ | _____ \$ |
| Sub-total A (\$CAD, applicable taxes extra) | | | | | _____ \$ |

Solicitation No. - N° de l'invitation
F3017-17N231/A
Client Ref. No. - N° de réf. du client
F3017-17N231

Amd. No. - N° de la modif.
File No. - N° du dossier
QCW-7-40111

Buyer ID - Id de l'acheteur
qcw028
CCC No./N° CCC - FMS No./N° VME

| B. OPTIONAL DELIVERABLES | | | | | |
|--|---|-----------------|-----------------------------|---------------------|-----------------------------|
| Item | Description | Quantity | Unit of distribution | Price / Unit | Total firm price CDN |
| 6.1 | Item 3.1: Forward bushings | 4 | Ea | _____ \$ | _____ \$ |
| | Item 3.1: Aft bushings | 4 | Ea. | _____ \$ | _____ \$ |
| 6.2 | Item 3.2 and 3.3: Seal and Plate Set | 2 | Lot | _____ \$ | _____ \$ |
| 6.3 | Item 3.4: Option Condition Monitoring Program | 2 | Lot | _____ \$ | _____ \$ |
| 6.4 | After-sale service** (estimated hours) | 200 | Hours | _____ \$ | _____ \$ |
| Delivery | Delivery Duty Paid (DDP) | 2 | Ea. | _____ \$ | _____ \$ |
| Sub-total B (\$CDN, applicable taxes extra) | | | | | _____ \$ |

| | |
|--|----------|
| Total firm price (A+B) (\$CDN excluding applicable taxes) | _____ \$ |
|--|----------|

- Customs duties are included and applicable taxes are extra, if applicable.
 - All mandatory requirements must be met before a financial evaluation is conducted and a price must be indicated for all items.
 - Shipping costs: enter \$ 0 if no charge.
- * At this time, the application of additional options over the next 24 months is unknown. If an option is applied, the deliverable will be the same as the current deliverable, i.e. 2 front cushions, 2 rear cushions, 2 mechanical shaft seals, 2 adapter plates a one Condition Monitoring Program. Therefore, 2 additional optional requests are expected.
- ** Travel and living expenses will be processed in accordance with Article 6.6.3.

Buyer ID - Id de l'acheteur
qcw028
CCC No./N° CCC - FMS No./N° VME

This image shows a single sheet of white paper with horizontal ruling lines. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.

ANNEX D – TECHNICAL EVALUATION OF AN EQUIVALENT PRODUCT

All of the following mandatory requirements must be met. Bidders must submit the product data sheet for confirmation that the following mandatory requirements are met.

| ITEM | MANDATORY REQUIREMENTS | Bidder's Specifications (should indicate the reference to the technical specifications of the proposed product or indicate the exact information) |
|-------|---|--|
| 3.1.6 | Mandatory performance criteria's for shaft bushings Name of Equivalent Product: _____ | |
| | .1 Accept shaft speeds between 0 to 181 RPM in both directions .2 Water lubricated, .3 Polar code compliant, .4 Homogeneous bearing – no property changes throughout .5 Coefficient of friction, hydrodynamic 0.020 max .6 Ultimate Tensile Strength ASTM D-412 MPa 37.5 min .7 Coefficient of expansion 0°C to 30°C: 15.1 x 10-5 (°C) max .8 Modulus of Elasticity (Eo) 64,000 Eo (psi) min .9 Operating Temperature Wet -2/35°C .10 ASTM D5963-96 Rotary drum abrasion test - Wear result 0.2 cc maximum / 24 hours. .11 Izod Impact -notched ASTM D-256 Joules/m ~ 500 min | .1 _____ .2 _____ .3 _____ .4 _____ .5 _____ .6 _____ .7 _____ .8 _____ .9 _____ .10 _____ .11 _____ |
| 3.2.7 | Mandatory performance criteria's for Mechanical shaft seal Name of Equivalent Product: _____ | |
| | .1 Approved by a Classification society recognized by TC. .2 Primary dynamic seal Silicon Carbide on Silicon Carbide faces. .3 Dynamic Mode in the event of a face failure of the primary seal operating with limited duration minimum 5 days/144 hours of continuous operation and minimum shaft speed of ½ throttle .4 Rates for hydrostatic pressure variations of 2 bar min .5 Axial shaft movement 10mm min .6 No exterior moving parts .7 Seal inlet water minimum temperature range: -2° C to 45° C | .1 _____ .2 _____ .3 _____ .4 _____ .5 _____ .6 _____ .7 _____ |

Solicitation No. - N° de l'invitation
F3017-17N231/A
Client Ref. No. - N° de réf. du client
F3017-17N231

Amd. No. - N° de la modif.
File No. - N° du dossier
QCW-7-40111

Buyer ID - Id de l'acheteur
qcw028
CCC No./N° CCC - FMS No./N° VME

ANNEX "E" – TECHNICAL DRAWINGS

See attached documents