

RETURN BIDS TO:
RETOURNER LES SOUMISSIONS À:
Bid Receiving - PWGSC / Réception des
soumissions - TPSGC
11 Laurier St. / 11, rue Laurier
Place du Portage , Phase III
Core 0A1 / Noyau 0A1
Gatineau, Québec K1A 0S5
Bid Fax: (819) 997-9776

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

Ship Refits and Conversions / Radoubss et
modifications de navires and / et
11 Laurier St. / 11, rue Laurier
6C2, Place du Portage
Gatineau, Québec K1A 0S5

Title - Sujet CCGS Samuel Risley refit 2014	
Solicitation No. - N° de l'invitation F2599-145028/A	Date 2014-05-27
Client Reference No. - N° de référence du client F2599-145028	GETS Ref. No. - N° de réf. de SEAG PW-\$\$MD-018-24496
File No. - N° de dossier 018md.F2599-145028	CCC No./N° CCC - FMS No./N° VME
Solicitation Closes - L'invitation prend fin at - à 02:00 PM on - le 2014-06-26	
Time Zone Fuseau horaire Eastern Daylight Saving Time EDT	
F.O.B. - F.A.B.	
Plant-Usine: <input type="checkbox"/> Destination: <input type="checkbox"/> Other-Autre: <input type="checkbox"/>	
Address Enquiries to: - Adresser toutes questions à: Vandal, Paul	Buyer Id - Id de l'acheteur 018md
Telephone No. - N° de téléphone (819) 956-0645 ()	FAX No. - N° de FAX (819) 956-0897
Destination - of Goods, Services, and Construction: Destination - des biens, services et construction:	
Specified Herein Précisé dans les présentes	

Instructions: See Herein

Instructions: Voir aux présentes

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

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PART 1 - GENERAL INFORMATION

1.1 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 and states that the Bidder agrees to be bound by the clauses and conditions contained in all parts of 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, if applicable, and the basis of selection;
- Part 5 Certifications: includes the certifications to be provided;
- Part 6 Financial and Other Requirements: includes specific requirements that must be addressed by bidders; and
- Part 7 Resulting Contract Clauses: includes the clauses and conditions that will apply to any resulting contract.

The Annexes include the Technical Specification, the Basis of Payment, the Federal Contractors Program for Employment Equity - Certification, the Insurance Requirements and other Annexes.

1.2 Summary

1. The Requirement is:
 - a) To carry out the docking, maintenance and alterations of the Canadian Coast Guard Vessel CCGS Samuel Risley in accordance with the associated Technical Specifications detailed in Annex "A".
 - b) To carry out unscheduled work authorized by the Contracting Authority.
2. Bidders must provide a list of names, or other related information as needed, pursuant to section 01 of Standard Instructions 2003.
3. The requirement is exempt from the provisions of the World Trade Organization Agreement on Government Procurement (WTO-AGP), Annex 4 and the North American Free Trade Agreement (NAFTA), Chapter Ten Annex 1001.2b Paragraph 1(a). However, it is subject to the Agreement on Internal Trade (AIT). The sourcing strategy relating to this procurement will be limited to suppliers in Eastern Canada, in accordance with Shipbuilding, Refit, Repair and Modernization Policy (1996-12-19).
4. There is a Federal Contractors Program (FCP) for employment equity requirement associated with this procurement; see Part 5 - Certifications, Part 7 - Resulting Contract Clauses and the annex named Federal Contractors Program for Employment Equity - Certification.

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1.3 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

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 (<https://buyandsell.gc.ca/policy-and-guidelines/standard-acquisition-clauses-and-conditions-manual>) 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 (2014-03-01) Standard Instructions - Goods or Services - Competitive Requirements, are incorporated by reference into and form part of the bid solicitation.

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.

2.3 Enquiries - Bid Solicitation

All enquiries must be submitted in writing to the Contracting Authority no later than **three (3) working 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.

Any clarifications or changes to the bid solicitation resulting from the questions and answers will be included as an amendment to the bid solicitation.

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 **Ontario**.

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.

Refer to Annex "J1" for Deliverables/Certifications.

2.5 Bidders' Conference

A bidders' conference chaired by the Contracting Authority will be held at (To Be Determined), Ontario on **June 19, 2014 @ 1000**. The scope of the requirement outlined in the bid solicitation will be reviewed during the conference and questions will be answered. It is recommended that bidders who intend to submit a bid attend or send representative.

Bidders are requested to communicate with the Contracting Authority before the conference to confirm attendance. Bidders should provide, in writing, to the Contracting Authority, the names of the person(s) who will be attending and a list of issues they wish to table at least **three (3) working days** before the scheduled conference.

Any clarifications or changes to the bid solicitation resulting from the bidder's conference will be included as an amendment to the bid solicitation. Bidders who do not attend will not be precluded from submitting a bid.

2.6 Optional Site Visit - Vessel

It is recommended that the Bidder or a representative of the Bidder visit the work site. Arrangements have been made for a tour of the work site. The site visit will be held on **June 19, 2014 @ 1300** at (To Be Determined), Ontario. Bidders must communicate with the Contracting Authority no later than **three (3) working days** before the scheduled visit to confirm attendance and provide the name(s) of the person(s) who will attend. Bidders who do not confirm attendance and provide the name(s) of the person(s) who will attend as required will not be allowed access to the site. Bidders will be requested to sign an attendance form. Bidders who do not attend or send a representative will not be given an alternative appointment but they will not be precluded from submitting a bid. Any clarifications or changes to the bid solicitation resulting from the site visit will be included as an amendment to the bid solicitation.

2.7 Work Period - Marine

Work must commence and be completed as follows:

Commence: August 13, 2014
Complete: October 29, 2014

By submitting a bid, the Bidder certifies that they have sufficient materiel and human resources allocated or available and that the above work period is adequate to both complete the known work and absorb a reasonable amount of unscheduled work.

2.7.1 Additional Instructions to Work Period

From refit start date of August 13, 2014 to September 10, 2014 the vessel will be unmanned during the work period and will be considered to be out of commission. The vessel during that period will be in the care and custody of the Contractor and under its control.

From September 10, 2014 to October 29, 2014 the vessel will be manned during the work period and will be considered to be in commission. The vessel during this period will remain in the care and custody of Canada and under its control.

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Reason for the ship to be manned between September 10, 2014 to October 29, 2014 is so that DFO/CCG employees and other personals such as manufacturer's representatives and or TCMS or Class surveyors may carry out other work including work items not included in the refit specification, on board the vessel during this work period.

Every effort will be made by the CCG to ensure this work and associated inspections and or surveys do not interfere with the Contractors work. The Contractor will not be responsible for coordinating the related inspection or payment of fees.

Please note the crew members on board during the work period with a manned ship is 22.

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>). To assist Canada in reaching its objectives, bidders are encouraged to :

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

Section I: Technical Bid

The Bidder must provide all of the deliverables as referenced in Annex "J1" Deliverables and Certifications.

Section II: Financial Bid

Bidders must submit their financial bid in accordance with the Financial Bid Presentation Sheet in Annex "H", and the detailed Pricing Data Sheet, Appendix 1 to Annex "H". The total amount of Applicable Taxes must be shown separately.

Section III: Certifications

Bidders must submit the certifications required under Part 5.

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3.1.1 Unscheduled Work and Evaluation Price

In any vessel refit, repair or docking contract, unscheduled work will arise after the vessel and its equipment is opened up and surveyed.

An anticipated cost for the unscheduled work will be included in the evaluation price. The evaluation price will be calculated by including an estimated amount of additional person-hours multiplied by a firm hourly charge-out labour rate for unscheduled work and will be added to the firm price for the known work.

The Evaluation Price will be used for evaluating the bid. The additional amount of person-hours for unscheduled work will be based on historical experience and there is no minimum or maximum amount of unscheduled work nor is there a guarantee of such unscheduled work.

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, management and financial evaluation criteria.
- (b) An evaluation team composed of representatives of Canada will evaluate the bids.

Section I - Technical Bid / Certifications

Notwithstanding deliverable requirements specified within the bid solicitation and its associated Technical Specification Annex "A", mandatory deliverables that must be submitted with the Bidder's bid to be deemed responsive are summarized in Annex "J1".

Section II - Financial Bid

In order to be compliant, the Bidder's bid must, to the satisfaction of Canada, meet all requirements and provide all information required under Part 3, Section II - Financial Bid.

Canada reserves the right to request information to support any bid requirement. The Bidder is instructed to address each requirement in sufficient depth to permit a complete analysis and assessment by the Evaluation Team. The Bid will be deemed responsive if it is found to meet all the mandatory requirements.

4.1.1 Evaluation of Price

SACC Manual Clause A0220T (2007-05-25) Evaluation of Price

4.2 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. The responsive bid with the lowest evaluated price will be recommended for award of a contract.

Bidders should note that all contract awards are subject to Canada's internal approvals process, which includes a requirement to approve funding in the amount of any proposed Contract. Notwithstanding that a Bidder may have been recommended for award of Contract, issuance of any Contract will be contingent upon internal approval in accordance with Canada's policies. If such approval is not given, no Contract will be awarded.

4.3. Deliverables after Contract Award

Refer to Annex "J2".

PART 5 - CERTIFICATIONS

Bidders must provide the required certifications and associated information 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 in carrying out any of its obligations under the Contract, 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 may render the bid non-responsive or constitute a default under the Contract.

5.1 Certifications Required Precedent to Contract Award

5.1.1 Integrity Provisions - Associated Information

By submitting a bid, the Bidder certifies that the Bidder and its Affiliates are in compliance with the provisions as stated in Section 01 Integrity Provisions - Bid of Standard Instructions 2003. The associated information required within the Integrity Provisions will assist Canada in confirming that the certifications are true.

5.1.2 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" list (http://www.labour.gc.ca/eng/standards_equity/eq/emp/fcp/list/inelig.shtml) available from Employment and Social Development Canada (ESDC) - 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.

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PART 6 - FINANCIAL AND OTHER REQUIREMENTS

6.1 Financial Capability

SACC Manual Clause A9033T (2011-05-16) Financial Capability

6.2 Vessel Transfer Costs

Vessel Transfer Costs will apply to the evaluation price of this solicitation.

1. The evaluation price must include the cost for transferring the vessel from its home port to the shipyard/ship repair facility where the Work will be performed and the cost of transferring the vessel to its home port following completion of the Work, in accordance with the following:

(a) The Bidder must provide the location of the shipyard/ship repair facility where it proposes to perform the Work together with the applicable vessel transfer cost from the list provided under paragraph 2 of this clause shall be entered into Table H1 (D):

(b) If the list in paragraph 2 of this clause does not provide the shipyard/ship repair location where the Bidder intends to perform the Work, then the Bidder must advise the Contracting Authority, in writing, at least **10 calendar days** before the bid closing date, of its proposed location for performing the Work. The Contracting Authority will confirm to the Bidder, in writing, at least **5 calendar days** before the bid closing date, the location of the shipyard/ship repair and the applicable vessel transfer cost.

A bid that specifies a location for executing the Work which is not on the list of paragraph 2 of this clause, and for which a notification in writing has not been received by the Contracting Authority as required above, will be considered non-responsive.

2. List of shipyard/ship repair facilities and applicable vessel transfer costs

Vessel: CCGS Samuel Risley
Home port: Parry Sound, Ontario

Transfer costs in the case of vessels transferred using a government delivery crew include the fuel cost at the vessel's most economical speed of transit and for unmanned refits only, crew transportation costs for the delivery crew based on the location of the vessel's home port and the shipyard/ship repair facility. Crew transportation costs do not include any members of the delivery crew who remain at the shipyard/ship repair facility in order to discharge project responsibilities related to the vessel being transferred.

Transfer costs in the case of vessels transferred unmanned by either commercial towing, railway, highway or other suitable means of transportation must be:

(i) included as part of the Bidder's financial bid in the case where the Bidder is responsible for the transfer; or

(ii) identified as the applicable vessel transfer cost, as given in the list below, in the case when Canada is responsible for the transfer.

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Shipyard/ship repair facility

Applicable vessel transfer cost

Company	City	Transfer Cost Manned
New Dock, St. John's Dockyard Ltd.	St. John's	C\$188,370.00
Halifax Shipyards Ltd.	Halifax	C\$169,784.00
Group Verreault Navigation Inc.	Les Mechins	C\$159,235.00
Davie Canada Yard Inc.	Levis	C\$95,441.00
Heddle Marine Service Inc.	Hamilton	C\$56,360.00
Pictou Shipyard	Pictou	C\$156,222.00
Ocean Industries Inc.	Saint-Bernard-Sur-Mer	C\$99,058.00

Proposed Drydocking Location : _____

Refer to Annex "J1" for Deliverables/Certifications.

6.3 Workers' Compensation - Letter of Good Standing

The Bidder must have an account in good standing with the applicable provincial or territorial Workers' Compensation Board.

The bidder must provide with the bid, a certificate or letter from the applicable Worker's Compensation Board confirming the Bidder's good standing account. Failure to comply with the request may result in the bid being declared non-responsive.

Refer to Annex "J1" for Deliverables/Certifications.

6.4 Valid Labour Agreement

If the Bidder has a labour agreement, or other suitable instrument, in place with all its unionized labour, it must be valid for the proposed period of any resulting contract. Documentary evidence of the agreement or suitable instrument must be provided on or before bid closing date. If this information is not provided with the bid it will render the bid non-responsive.

Refer to Annex "J1" for Deliverables/Certifications

6.5 Preliminary Work Schedule

At the time of bid closing the Bidder must submit to Canada one (1) copy of its preliminary production work schedule. This schedule is to show the commencement and completion dates for the Work in the available work period, including realistic target dates for significant events. This schedule will be reviewed with the successful Bidder at the Pre-Refit Meeting.

Refer to Annex "J1", Deliverables/Certifications.

6.6 Safety Measures for Fueling and Disembarking Fuel

Fueling and disembarking fuel from Canadian government vessels must be conducted under the supervision of a responsible supervisor trained and experienced in these operations.

At bid closing date, the Bidder must provide details of its safety measures for fueling and disembarking fuel together with the name and qualifications of the person in charge of this activity. If this information is not provided with the bid it will render the bid non-responsive.

Refer to Annex "J1", Deliverables/Certifications.

6.7 ISO 9001:2008 - Quality Management Systems

The Bidder shall have in place a Quality Management System registered to ISO 9001:2008 or a Quality Management System modeled on ISO 9001-2008 and shall provide at time of bid closing:

- If registered its valid ISO 9001-2008 certification;
- Example of Quality Control Plan (QCP) as per clause 6.15.

Documentation and procedures of bidders may be subject to a Quality System Evaluation (QSE) by the Technical Authority during bid evaluation period.

Refer to Annex "J1" for Deliverables/Certifications.

6.8 Health and Safety

The Bidder must submit with its bid objective evidence that it has a documented Health and Safety system fully compliant with all current Federal, Provincial and Municipal regulations. If this information is not provided with the bid it will render the bid non-responsive.

Refer to Annex "J1" for Deliverable Requirements.

6.9 Fire Protection, Fire Fighting and Training Procedures

The Bidder must submit with its bid objective evidence that it has documented fire protection, fire fighting and training procedures compliant with current regulations and their insurance requirements. The fire protection, fire fighting and training procedures will, once accepted by Canada, form part of the Contract. Please refer to clause 7.25. If this information is not provided with the bid it will render the bid non-responsive.

Refer to Annex "J1" for Deliverable Requirements.

6.10 Hazardous Waste

1. The Bidder acknowledges that sufficient information has been provided by Canada with respect to the location and estimated amount of hazardous materials such as asbestos, lead PCBs, silica or other hazardous materials or toxic substances.
2. The price includes all costs associated with the removal, handling, storage, disposal and/or working in the vicinity of hazardous materials such as asbestos, lead, PCBs, silica and other hazardous materials or toxic substances on board the vessel, including those costs resulting from the need to comply with applicable laws and regulations in relation to the removal, handling, disposal or storage of hazardous materials or toxic substances.
3. The completion date for the Work takes into account the fact that the removal, handling, storage, disposal and/or working in the vicinity of hazardous materials such as asbestos, lead, PCBs, silica and other hazardous materials or toxic substances may be affected by the need to comply with applicable federal, provincial and municipal laws or regulations and that this will not be considered to be an excusable delay.

6.11 Insurance Requirements

The Bidder must provide with its bid a letter from an insurance broker or an insurance company licensed to operate in Canada stating that the Bidder, if awarded a contract as a result of the bid solicitation, can be insured in accordance with the Insurance Requirements specified in Annex "D". If this information is not provided with the bid it will render the bid non-responsive.

Refer to Annex "J1", Deliverables/Certifications.

6.12 Welding Certification

1. Welding must be performed by a welder certified by the Canadian Welding Bureau and in accordance with the requirements of the following Canadian Standards Association (CSA) standards:
 - (a) CSA W47.1-03, Certification for Companies for Fusion Welding of Steel (Minimum Division Level 2.1); and
 - (b) CSA W47.2-M1987 (R2003), Certification for Companies for Fusion Welding of Aluminum (Minimum Division Level 2.1).

The bidder shall submit proof of certification with the bid. The certification shall remain valid for the duration of the contract. If this information is not provided with the bid it will render the bid non-responsive.

Refer to Annex " J1 " for Deliverables/Certifications.

6.13 Project Management Services

The Bidder is required to provide a Project Management Team experienced and capable of successfully managing the ship refit contract as defined herein. Project management personnel, services and deliverables must comply with the requirements detailed in the contract.

1. Intent

(a) Job titles used in this annex are for clarity within this document only. The Contractor is free to choose job titles that suit its organization.

(b) The Contractor, through its Project Management Team, is responsible to discharge the duties and supply the deliverables required in the Contract and the Specifications.

(c) Project Management encompasses the direction and control of such functions as engineering, planning, purchasing, manufacturing, assembly, overhauls, installations and test and trials.

2. Project Manager

(a) The Contractor must supply an experienced Project Manager (PM).

(b) The PM must have experience in managing a project of this nature.

3. Project Management Team

Other than the Project Manager, the Contractor must assign and vary other job descriptions to suit its organization; provided however that the collective resume of its Project Management must provide for the effective control of the project elements including but not limited to:

- i. Project Management
- ii. Quality Assurance
- iii. Planning and Scheduling

4. Tender Deliverable

Names, brief resumes, and list of duties for each of the team members that ensures that each of the project elements listed in Article 3. above have been addressed.

5. Reports

The following Management Reports and Documentation are to be prepared and maintained by the Contractor and submitted to Canada in accordance with the Contract or upon request by the Contracting Authority.

- i. Production Work Schedule
- ii. Inspection Summary Report
- lii. Growth Work Summary

Refer to Annex "J1" for Deliverables/Certifications.

6.14 List of Proposed Subcontractors

If the bid includes the use of subcontractors, the Bidder shall provide a list of all subcontractors including a description of the things to be purchased, a description of the work to be performed by specification section and the location of the performance of that work. The list should not include the purchase of off-the-shelf items, software and such standard articles and materials as are ordinarily produced by manufacturers in the normal course of business, or the provision of such incidental services as might ordinarily be subcontracted in performing the Work, i.e. subcontract work valued at less than \$ 5,000.00 aggregate for the project.

Refer to Annex "J1" for Deliverables/Certifications.

6.15 Quality Control Plan

At the time of bid closing the Bidder must submit to Canada an example of its Quality Control Plan (QCP) as applied on previous projects of the same nature.

Refer to Annex "J1" for Deliverables/Certifications.

6.16 Inspection and Test Plan

At the time of bid closing the Bidder must submit to Canada an example of an Inspection and Test Plan (ITP) complete with requirement and inspection reports as developed on previous projects of the same nature.

Refer to Annex "J1" for Deliverables/Certifications.

6.17 Environmental Protection

At the time of bid closing the Bidder must submit details of its environmental emergency response plans, waste management procedures and/or formal environmental training undertaken by its employees.

Refer to Annex "J1" for Deliverables/Certifications.

PART 7 - RESULTING CONTRACT CLAUSES

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

7.1 Requirement

The Contractor must:

- a) carry out the docking, maintenance and alterations of the Canadian Coast Guard Vessel CCGS Samuel Risley in accordance with the associated Technical Specifications detailed in the Requirement and attached as Annex "A".
- b) carry out any unscheduled work authorized by the Contracting Authority.

7.2 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 issued by Public Works and Government Services Canada (PWGSC). The manual is available on the following PWGSC website:

(<https://buyandsell.gc.ca/policy-and-guidelines/standard-acquisition-clauses-and-conditions-manual>)

7.2.1 General Conditions

2030 (2014-03-01), General Conditions - Higher Complexity - Goods, apply to and form part of the Contract.

2030 (2014-03-01) General Conditions Higher Complexity - Goods are hereby amended as follows:

Section 22 Warranty

1. The Contractor, if requested by Canada, must replace or repair at its own expense any finished work, excluding Government Issue incorporated in the Work, which becomes defective or which fails to conform to contract requirements as a result of faulty or inefficient manufacture, material or workmanship.

2. Despite acceptance of the finished work, and without restricting any other term of the Contract or any condition, warranty or provision imposed by law, the Contractor warrants that the following will be free from all defects and will conform with the requirements of the Contract:
- (a) The painting of the underwater portion of the hull for a period of 365 days commencing from the date of undocking, except that the Contractor will only be liable to repair and/or replace to a value to be determined as follows:
- Original cost to Canada of the underwater painting work, divided by 365 days and multiplied by the number of days remaining in the warranty period. The resultant sum would represent the "Dollar Credit" due to Canada from the Contractor.
- (b) All other painting work for a period of 365 days commencing from the date of acceptance of the Work;
- (c) All other items of work for a period of ninety (90) days commencing from the date of acceptance of the Work, except that:
- (i) the warranty on the work related to any system or equipment not immediately placed in continuous use or service will be for a period of ninety (90) days from the date of acceptance of the vessel;
- (ii) for all outstanding defects, deviations, and work items listed on the Acceptance Document at Delivery, the warranty will be ninety (90) days from the subsequent date of acceptance for each item.
3. The Contractor agrees to pass to Canada, and exercise on behalf of Canada, all warranties on the materials supplied or held by the Contractor which exceed the periods indicated above.
4. Refer to Annex "E" and its Appendix "1" for Warranty Defect Claim Procedures and forms.

1031-2 (2012-07-16), Contract Cost Principles, apply and form part of the Contract.

7.2.2 Supplemental General Conditions

1029 (2010-08-16) Ship Repairs

7.3 Term of Contract

7.3.1 Work Period - Marine

1. Work must commence and be completed as follows:

Commence: August 13, 2014
Complete: October 29, 2014

2. The Contractor agrees that the above time (the "Work Period") provides an adequate period to perform the subject work and absorb a reasonable amount of unscheduled work. The Contractor certifies that they have sufficient material and human resources allocated or available to complete the subject work and a reasonable amount of unscheduled work within the Work Period.

Canada has the right to delay the arrival of the Vessel at the Contractor's facility subject to the following conditions:

- a) Canada gives 30 calendar days advance notice of a 15 day maximum delay.

The Contractor may claim no additional cost when arrival of the vessel at the Contractor's facility is delayed up to a maximum of 15 calendar days beyond the commencement date, above. The Completion Date shall be extended by a period equal to the length of the delay.

- b) Canada does not provide 30 calendar days advance notice of a delay.

The Completion Date shall be reasonably adjusted to reflect the impact of the delay on the arrival of the Vessel and Canada shall pay only the Daily Services Fee referred to in the Basis of Payment for the period of the delay.

7.3.2 Additional Instructions to Work Period

From refit start date of August 13, 2014 to September 10, 2014 the vessel will be unmanned during the work period and will be considered to be out of commission. The vessel during that period will be in the care and custody of the Contractor and under its control.

From September 10, 2014 to October 29, 2014 the vessel will be manned during the work period and will be considered to be in commission. The vessel during this period will remain in the care and custody of Canada and under its control.

Reason for the ship to be manned between September 10, 2014 to October 29, 2014 is so that DFO/CCG employees and other persons such as manufacturer's representatives and or TCMS or Class surveyors may carry out other work including work items not included in the refit specification, on board the vessel during this work period.

Every effort will be made by the CCG to ensure this work and associated inspections and or surveys do not interfere with the Contractor's work. The Contractor will not be responsible for coordinating the related inspection or payment of fees.

Please note the crew members on board during the work period with a manned ship is 22.

7.4 Authorities

7.4.1 Contracting Authority

The Contracting Authority for the Contract is:

Paul Vandal
Department of Public Works and Government Services Canada (PWGSC)
Defence and Major Projects Sector
PWGSC, 6C2 Place du Portage, Phase III
11 Laurier Street,
Gatineau, Quebec, K1A 0S5
Tel: (819) 956-0645
Cell: (613) 277-3259
Fax: (819) 956-0897
E-Mail - paul.vandal@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.

7.4.2 Technical Authority

The Technical Authority for the Contract is:

Selim Ullah
Senior Vessel Maintenance Manager, Marine Engineering, C&A Region
Fisheries and Oceans Canada
Government of Canada
520 Exmouth Street
Sarnia, Ontario
N7T 8B1
519-383-1807 telephone
519-383-1990 facsimile
519-330-5127 cellular
E-mail: selim.ullah@dfo-mpo.gc.ca

The Technical 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 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.

7.4.3 Inspection Authority

The Inspection Authority for the Contract is the Canadian Coast Guard.

Name will be determined at Contract Award

Name: _____

Telephone: _____

Cell: _____

Fax: _____

E-mail: _____

The Inspection Authority is the representative of the department or agency for whom the Work is being carried out under the Contract and is responsible for the inspection of the Work and acceptance of the finished work. The Inspection Authority may be represented on-site by a designated inspector and any other Government of Canada Inspector who may from time to time be assigned in support of the designated inspector.

7.5 Payment

7.5.1 Basis of Payment - Firm Price

In consideration of the Contractor satisfactorily completing all of its obligations under the Contract, the Contractor will be paid a firm price indicated in the Basis of Payment Annex " B" for the Known Work. Applicable Taxes are extra, if applicable. Payment for unscheduled work shall be in accordance with Annex "B".

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 Specifications, will be authorized or paid to the Contractor unless such design changes, modifications or interpretations have been authorized in writing, by the Contracting Authority prior to their incorporation in the Work.

7.5.2 Terms of Payment - Progress Payment

1. Canada will make progress payments in accordance with the payment provisions of the Contract, no more than once a month, for cost incurred in the performance of the Work, up to 90 percent of the amount claimed and approved by Canada if:
 - (a) an accurate and complete claim for payment using form PWGSC-TPSGC 1111 <http://www.tpsgc-pwgsc.gc.ca/app-acq/forms/documents/1111.pdf>, 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 90 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.

**7.5.3 Liens - Section 427 of the Bank Act
SACC Manual Clause H4500C (2010-01-11) Liens - Section 427 of the Bank Act**

**7.5.4 Limitation of Price
SACC Manual Clause C6000C (2011-05-16) Limitation of Price**

**7.5.5 Time Verification
SACC Manual Clause C0711C (2008-05-12) Time Verification**

7.6 Invoicing Instructions

The Contractor must submit invoices in accordance with the information required in Section 13 of 2030, General Conditions, Higher Complexity, Goods and Article 7.5 Payment and Article 7.6 Invoicing Instructions.

7.6.1 Invoices

1. Invoices are to be made out to:

Fisheries and Oceans Canada
Accounting Hub
301 Bishop Drive
Fredericton, NB
E3C 2M6

And

The original invoice to be forwarded for verification to:

Public Works and Government Services Canada
Marine Systems Directorate
Defence and Major Projects Sector
11 Laurier Street, Place du Portage
Phase III, 6C2
Gatineau, Quebec
K1A 0S5
Attention: Paul Vandal

2. Canada will only make payment upon receipt of a satisfactory invoice duly supported by specified release documents and any other documents called for under the Contract.
3. The Contractor shall not submit an invoice prior to the completion and acceptance of the Work or shipment of the items to which it relates.

7.6.2 Invoicing Instructions - Progress Claim

1. The Contractor must submit a claim for payment using form PWGSC-TPSGC 1111 <http://www.tpsgc-pwgsc.gc.ca/app-acq/forms/documents/1111.pdf>, Claim for Progress Payment.

Each claim must show:

- (a) all information required on form PWGSC-TPSGC 1111;
 - (b) all applicable information detailed under the section entitled "Invoice Submission" of the general conditions;
2. Applicable Taxes must be calculated on the total amount of the claim before the holdback is applied. At the time the holdback is claimed, there will be no Applicable Taxes payable as it was claimed and payable under the previous claims for progress payments.
 3. The Contractor must prepare and certify one original and two (2) copies of the claim on form PWGSC-TPSGC 1111, and forward it to the Contracting Authority identified under the section entitled "Authorities" of the Contract for appropriate certification after inspection and acceptance of the Work takes place.

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

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

7.6.3 Warranty Holdback

A warranty holdback of 5% of the total contract price as last amended (Applicable Taxes excluded) will be applied to the final claim for payment. This holdback will be payable by Canada upon the expiry of the 90 day warranty period(s) applicable to the Work. Applicable Taxes, as appropriate, is to be calculated and paid on the total amount of the claim before the 5% holdback is applied. At the time that the holdback is released, there will be no Applicable Taxes payable, as it was included in previous payments.

7.7 Certifications

7.7.1 Compliance

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

7.8 Federal Contractors Program for Employment Equity - Default by the Contractor

The Contractor understands and agrees that, when an Agreement to Implement Employment Equity (AIEE) exists between the Contractor and Employment and Social Development Canada (ESDC)-Labour, the AIEE must remain valid during the entire period of the Contract. If the AIEE becomes invalid, the name of the Contractor will be added to the "FCP Limited Eligibility to Bid" list. The imposition of such a sanction by ESDC will constitute the Contractor in default as per the terms of the Contract.

7.9 Applicable Laws

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

7.10 Priority of Documents

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

- (a) the Articles of Agreement;
- (b) the Supplemental General Conditions 1029, (2010-08-16), Ship Repairs;
- (c) the General Conditions 2030, , General Conditions - Higher Complexity - Goods
- (d) the General Conditions 1031-2, (2008-05-12), Contract Cost Principles;
- (e) Annex "A", Statement of Work;
- (f) Annex "B", Basis of Payment;
- (g) Annex "C", Federal Contractors Program for Employment Equity - Certification;
- (h) Annex "D", Insurance Requirements;
- (i) Annex "E", Warranty;
- (j) Annex "F", Procedure for Unscheduled Work;
- (k) Annex "G", Quality Control/Inspection;
- (l) Annex "H", Financial Bid Presentation Sheet;
- (m) Annex "I", Vessel Turnover
- (n) Annex "J", Deliverables/Certifications
- (o) the Contractor's bid dated _____ (insert date of bid), as amended _____ (insert date(s) of amendment(s) if applicable)

7.11 Insurance Requirements

The Contractor must comply with the insurance requirements specified in Annex "D". The Contractor must maintain the required insurance coverage for the duration of the Contract. Compliance with the insurance requirements does not release the Contractor from or reduce its liability under the Contract.

The Contractor is responsible for deciding if additional insurance coverage is necessary to fulfil its obligation under the Contract and to ensure compliance with any applicable law. Any additional insurance coverage is at the Contractor's expense, and for its own benefit and protection.

The Contractor must forward to the Contracting Authority within **ten (10) working days** after the date of award of the Contract, a Certificate of Insurance evidencing the insurance coverage and confirming that the insurance policy complying with the requirements is in force. Coverage must be placed with an Insurer licensed to carry out business in Canada. The Contractor must, if requested by the Contracting Authority, forward to Canada a certified true copy of all applicable insurance policies.

Solicitation No. - N° de l'invitation

F2599-145028/A

Amd. No. - N° de la modif.

File No. - N° du dossier

018mdF2599-145028

Buyer ID - Id de l'acheteur

018md

CCC No./N° CCC - FMS No/ N° VME

7.12 Limitation of Contractor's Liability for Damages to Canada

1. This section applies despite any other provision of the Contract and replaces the section of the general conditions entitled "Liability". Any reference in this section to damages caused by the Contractor also includes damages caused by its employees, as well as its subcontractors, agents, and representatives, and any of their employees.

2. Whether the claim is based in contract, tort, or another cause of action, the Contractor's liability for all damages suffered by Canada caused by the Contractor's performance of or failure to perform the Contract is limited to \$10 million per incident or occurrence to an annual aggregate of \$20 million for losses or damage caused in any one year of carrying out the Contract, each year starting on the date of coming into force of the Contract or its anniversary. This limitation of the Contractor's liability does not apply to nor include:

(a) Any infringement of intellectual property rights;

(b) Any breach of warranty obligations;

(c) Any liability of Canada to a third party arising from any act or omission of the Contractor in performing the Contract; or

(d) Any loss for which the policies of insurance specified in the Contract or any other policies of insurance held by the Contractor would provide insurance coverage.

3. Each Party agrees that it is fully liable for any damages that it causes to any third party in connection with the Contract, regardless of whether the third party makes its claim against Canada or the Contractor. If Canada is required, as a result of joint and several liability, to pay a third party in respect of damages caused by the Contractor, the Contractor must reimburse Canada for that amount.

4. The Parties agree that nothing herein is intended to limit any insurable interest of the Contractor nor to limit the amounts otherwise recoverable under any insurance policy. The Parties agree that to the extent that the insurance coverage required to be maintained by the Contractor under this Contract or any additional insurance coverage maintained by the Contractor, whichever is greater, is more than the limitations of liability described in sub article (2), the limitations provided herein are increased accordingly and the Contractor shall be liable for the higher amount to the full extent of the insurance proceeds recovered.

5. If, at any time, the total cumulative liability of the Contractor for losses or damage suffered by Canada caused by the Contractor's performance of or failure to perform the Contract, excluding liability described under subsection 2(a), (b), (c) and (d) exceeds \$40 million, either Party may terminate the Contract by giving notice in writing to the other Party and neither Party will make any claim against the other for damages, costs, expected profits or any other such loss arising out of the termination. However, no such termination or expiry of the Contract shall reduce or terminate any of the liabilities that have accrued to the effective date of the termination but which liabilities are subject to the limitations as specified in sub-article (1) through (4) above.

6. The date of termination pursuant to this Article, shall be the date specified by Canada in its notice to terminate, or, if the Contractor exercises the right to terminate, in a notice to the Contractor from Canada in response to the Contractor's notice to terminate. The date of termination shall be in Canada's discretion to a maximum of 12 months after service of the original notice to terminate served by either Party pursuant to sub-article 5, above.

7. Nothing shall limit Canada's other remedies, including Canada's right to terminate the Contract for default for breach by the Contractor of any of its obligations under this Contract, notwithstanding that the Contractor may have reached any limitation of its liability hereunder.

7.13 Sub-contracts and Sub-contractor List

The Contracting Authority is to be notified, in writing, of any changes to the list of subcontractors before commencing the work.

When the Contractor sub-contracts work, a copy of the sub-contract purchase order is to be passed to the Contracting Authority. In addition, the Contractor must monitor progress of sub-contracted work and inform the Inspection Authority on pertinent stages of work to permit inspection when considered necessary by the Inspection Authority.

7.14 Work Schedule and Reports

No later than **five (5) calendar days** after contract award, the preliminary work schedule provided with the bid must be revised, detailed and resubmitted in preparation to the contract award meeting.

The Contractor must provide a detailed work schedule showing the commencement and completion dates for the Work in the available work period, including realistic target dates for significant events.

During the work period the schedule is to be reviewed on an ongoing basis by the Inspection Authority and the Contractor, updated when necessary, and available in the Contractor's office for review by Canada's authorities to determine the progress of the Work.

7.15 Insulation Materials - Asbestos Free

All materials used to insulate or re-insulate any surfaces on board the vessel must meet Transport Canada Marine standards, for commercial marine work, and, for all work, be free from asbestos in any form. The Contractor must ensure that all machinery and equipment located below or adjacent to surfaces to be re-insulated are adequately covered and protected before removing existing insulation.

7.16 Trade Qualifications

The Contractor must use qualified, certificated (if applicable) and competent tradespeople and supervision to ensure a uniform high level of workmanship. The Technical Authority may request to view and record details of the certification and/or qualifications held by the Contractor's tradespeople. This request should not be unduly exercised but only to ensure qualified tradespeople are on the job.

7.17 ISO 9001:2008 - Quality Management Systems

In the performance of the Work described in the Contract, the Contractor must comply with the requirements of:

ISO 9001:2008 - Quality management systems - Requirements, published by the International Organization for Standardization (ISO), current edition at date of submission of Contractor's bid.

The Contractor's quality management system must address each requirement contained in the standard, however, the Contractor is not required to be registered to the applicable standard.

7.18 Project Management Services

The Contractor is required to provide their own Project Management Team experienced and capable of successfully managing the ship repair contract as defined herein. Project management personnel, services and deliverables must comply with the requirements detailed in the contract.

1. Intent

(a) Job titles used in this annex are for clarity within this document only. The Contractor is free to choose job titles that suit its organization.

(b) The Contractor, through its Project Management Team, is responsible to discharge the duties and supply the deliverables required in the Contract and the Specifications.

(c) Project Management encompasses the direction and control of such functions as engineering, planning, purchasing, manufacturing, assembly, overhauls, installations and test and trials.

2. Project Manager

(a) The Contractor must supply an experienced Project Manager (PM).

(b) The PM must have experience in managing a project of this nature.

3. Project Management Team

Other than the Project Manager, the Contractor must assign and vary other job descriptions to suit its organization; provided however that the collective resume of its Project Management must provide for the effective control of the project elements including but not limited to:

- i. Project Management
- ii. Quality Assurance
- iii. Planning and Scheduling

4. Reports

The following Management Reports and Documentation are to be prepared and maintained by the Contractor and submitted to Canada in accordance with the Contract or upon request by the Contracting Authority.

- i. Production Work Schedule
- ii. Inspection Summary Report
- iii. Growth Work Summary

7.19 Quality Control Plan

The Contractor must implement and follow the Quality Control Plan (QCP) prepared according to the latest issue (at contract date) of ISO 10005:2005 Quality management - Guidelines for quality plans, approved by the Inspection and the Technical Authority. The QCP must describe how the Contractor will conform to the specified quality requirements of the Contract and specify how the required quality activities are to be carried out, including quality assurance of subcontractors. The Contractor must include a traceability matrix from the elements of the specified quality requirements to the corresponding paragraphs in the QCP. The QCP must be made available to the Inspection and Technical Authority for review and approval **within five (5) calendar days** after contract award.

The documents referenced in the QCP must be made available when requested by the Inspection Authority.

The Contractor must make appropriate amendments to the QCP throughout the term of the Contract to reflect current and planned quality activities. Amendments to the QCP must be acceptable to the Inspection Authority and the Technical Authority.

Refer to Annex "G" for details.

7.20 Inspection and Test Plan

The Contractor must in support of its Quality Control Plan (QCP), implement an approved Inspection and Test Plan (ITP).

The Contractor must provide at no additional cost to Canada, all applicable test data, all Contractor technical data, test pieces and samples as may reasonably be required by the Inspection Authority to verify conformance to contract requirements. The Contractor must forward at his expense such technical data, test data, test pieces and samples to such location as the Inspection Authority may direct.

Refer to Annex "G" for details.

7.21 Equipment/Systems: Inspection/Test

Inspections, Tests and Trials of Equipment, Machinery and Systems shall be conducted in accordance with the Specification. The Contractor is responsible for performing, or having performed, all Inspections, Tests and Trials necessary to substantiate that the materiel and services provided conform to contract requirements.

Refer to Annex "G" for details.

7.22 Environmental Protection

The Contractor and its sub-contractors engaged in the Work on a Crown vessel must carry out the Work in compliance with applicable municipal, provincial and federal environmental laws, regulations and industry standards.

The Contractor must have detailed procedures and processes for identifying, removing, tracking, storing, transporting and disposing of all potential pollutants and hazardous material encountered, to ensure compliance as required above. The contractor must maintain in force their Environmental Protection procedures through the course of the contract.

All waste disposal certificates are to be provided to the Technical Authority, with information copies sent to the Contracting Authority. Furthermore, additional evidence of compliance with municipal, provincial and federal environmental laws and regulations is to be furnished by the Contractor to the Contracting Authority when so requested.

The Contractor must have environmental emergency response plans and/or procedures in place. Contractor and subcontractor employees must have received the appropriate training in emergency preparedness and response. Contractor personnel engaging in activities which may cause environmental impacts or potential non compliance situations, must be competent to do so on the basis of appropriate education, training, or experience.

7.23 Hazardous Waste

1. The Contractor acknowledges that sufficient information has been provided by Canada with respect to the location and estimated amount of hazardous materials such as asbestos, lead PCBs, silica or other hazardous materials or toxic substances.
2. The price includes all costs associated with the removal, handling, storage, disposal and/or working in the vicinity of hazardous materials such as asbestos, lead, PCBs, silica and other hazardous materials or toxic substances on board the vessel, including those costs resulting from the need to comply with applicable laws and regulations in relation to the removal, handling, disposal or storage of hazardous materials or toxic substances.
3. The completion date for the Work takes into account the fact that the removal, handling, storage, disposal and/or working in the vicinity of hazardous materials such as asbestos, lead, PCBs, silica and other hazardous materials or toxic substances may be affected by the need to comply with applicable federal, provincial and municipal laws or regulations and that this will not be considered to be an excusable delay.

7.24 Supervision of Fueling and Disembarking Fuel

The Contractor must ensure that fueling and disembarking of fuel from Canadian government vessels are conducted under the supervision of a responsible supervisor trained and experienced in these operations.

All fueling and disembarking of fuel on CCGS Samuel Risley must be done in accordance with the Contractor's submitted and accepted procedures.

7.25 Fire Protection, Fire Fighting and Training

The Contractor must maintain in force their fire protection, fire fighting and training procedures throughout the course of the Contract.

7.26 Loan of Equipment - Marine

The Contractor may apply for the loan of the Government special tools and test equipment particular to the subject vessel as identified in the Specifications. The provision of other equipment required for the execution of work in the Specifications is the sole responsibility of the Contractor.

Equipment loaned under this provision must be used only for work under this Contract and may be subject to demurrage charges if not returned on the date required by Canada. In addition, equipment loaned under the above provision must be returned in a like condition, subject to normal wear and tear.

A list of Government equipment that the Contractor intends to request must be submitted to the Contracting Authority within **three (3) days** of Contract Award to permit timely supply or for alternate arrangements to be made. The request must state the time frame for which the equipment is required.

Refer to Annex "J2" for Deliverables/Certifications.

7.27 Welding Certification

1. The Contractor must ensure that welding is performed by a welder certified by the Canadian Welding Bureau (CWB) in accordance with the requirements of the following Canadian Standards Association (CSA) standards:

(a) CSA W47.1-03, Certification for Companies for Fusion Welding of Steel (Minimum Division Level 2.1); and

(b) CSA W47.2-M1987 (R2003), Certification for Companies for Fusion Welding of Aluminum (Minimum Division Level 2.1).

2. In addition, welding must be done in accordance with the requirements of the applicable drawings and specifications.

3. Before the commencement of any fabrication work, and upon request from the Technical Authority, the Contractor must provide approved welding procedures and/or a list of welding personnel intended to be used in the completion of the work. The list must identify the CWB welding procedure qualifications attained by each of the personnel listed and must be accompanied by a copy of each person's current CWB welding certification.

7.28 Procedures for Design Change or Additional Work

SACC Manual Clause B5007C (2010-01-11) Procedures for Design Change or Additional Work

In addition, refer to Annex "F".

7.29 Vessel Manned Refits

SACC Manual Clause A0032C (2011-05-16) Vessel Manned Refits

Refer to Annex "I" for details.

7.30 Vessel Unmanned Refits

SACC Manual Clause A0024C (2010-08-16) Vessel Unmanned Refits

Refer to Annex "I" for details.

7.31 Pre-Refit Meeting

A Pre-Refit meeting will be convened and chaired by the Contracting Authority at the Contractor's facility at a time to be determined. At that meeting the contractor will introduce all its management personnel as per its organization chart, and Canada will introduce authorities. Details of ship's arrival and work commencement will be discussed.

7.32 Progress Meetings

Progress meetings, chaired by the Contracting Authority, will take place at the Contractor's facility as and when required, generally once a month. Interim meetings may also be scheduled. Contractor attendees at these meetings will, as a minimum, be its Contract (Project) Manager, Production Manager (Superintendent) and Quality Assurance Manager. Progress meetings will generally incorporate Technical meetings to be chaired by the Technical Authority.

7.33 Outstanding Work and Acceptance

1. The Inspection Authority, in conjunction with the Contractor, will prepare a list of outstanding work items at the end of the work period. This list will form the annexes to the formal acceptance document for the vessel. A contract completion meeting will be convened by the Inspection Authority on the work completion date to review and sign off the form PWGSC-TPSGC1205, Acceptance. In addition to any amount held under the Warranty Holdback Clause, a holdback of twice the estimated value of outstanding work will be held until that work is completed.
2. The Contractor must complete the above form in three (3) copies, which will be distributed by the Inspection Authority as follows:
 - (a) original to the Contracting Authority;
 - (b) one copy to the Technical Authority;
 - (c) one copy to the Contractor.

Refer to Annex "I" for details of Acceptance Procedures and Reports.

7.34 Scrap and Waste Material

Despite any other provision of the Contract, scrap and waste materials other than accountable material, derived from the Contract, will revert to the Contractor as part of the Contract Price.

7.35 Stability

The Contractor will be solely responsible for the stability and trim of the ship during the period the vessel is in the Contractor's facility, including docking and undocking. The Contractor must maintain weight change information pertinent to the vessel's stability during the docking period. The Technical Authority will supply the Contractor with cross curves of stability, hydrostatic curves, tank status, location of centre of gravity, and other information relevant to the ship's condition upon handing over of the vessel.

7.36 Vessel Access by Canada

Canada reserves the right to have its personnel carry out limited work on equipment on board the vessel. This work will be carried out at times mutually acceptable to Canada and the Contractor.

7.37 Title to Property - Vessel

If the Contractor is in default in carrying any of its obligations under the Contract, Canada, or its agents, will have the immediate right to enter the shipyard, without first obtaining a court order, to take possession of the vessel and all other property of Canada, including, but not limited to, work-in-process located on the premises, and to perform any further work required to enable the vessel and other such property to be removed from the shipyard.

7.38 Workers Compensation

The Contractor must maintain its account in good standing with the applicable provincial or territorial Workers' Compensation Board for the duration of the Contract.

7.39 Dispute Resolution

The parties agree to follow the procedures below for the settlement of any disputes which may arise throughout the life of this Contract prior to seeking redress through court procedures:

- (a) Disputes arising from this Contract will in the first instance be resolved by the Contracting Authority and the Contractor's Contract Administrator within 15 working days or such additional time as may be agreed to by both parties.
- (b) Failing resolution under (a) above, the Manager of the Ship Refit Division (MD) of the Marine Systems Directorate at PWGSC and the Contractor's Representative Supervisor will attempt to resolve the dispute within an additional fifteen (15) working days.
- (c) Failing resolution under (a) or (b) above, the Senior Director of the Marine Systems Directorate at PWGSC, and the Contractor's Senior Management will attempt to resolve the dispute within an additional thirty (30) working days.
- (d) Notwithstanding the above procedure, either party may seek a decision through the courts at any time during the dispute.

7.40 Failure to Deliver

Time is of the essence of the Contract. Changes in the Completion date not caused by Canada are Contractor defaults, will prejudice Canada and are at the Contractor's expense. The Completion date will not be extended without consideration being provided by the Contractor acceptable to Canada in the form of adjustment to the price, warranty or services to be provided.

7.41 Care, Custody and Control

Refer to Annex "I" and Supplemental General Conditions 1029 (2010-08-16) Ship Repairs Article 09 Where Vessel Out of Commission.

Refer to Annex "I" and Supplemental General Conditions 1029 (2010-08-16) Ship Repairs Article 08 Where Vessel In Commission.

7.42 Licensing

The Contractor must obtain and maintain all permits, licenses and certificates of approval required for the work to be performed under any applicable federal, provincial or municipal legislation. The Contractor is responsible for any charges imposed by such legislation or regulations. Upon request, the Contractor must provide a copy of any such permit, license or certificate to Canada.

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ANNEX A

Technical Specification

CCGS Samuel Risley Refit 2014

Specification No: Spec # 779.14 rev. 03,

Date: 2014-04-25

ANNEX B

BASIS OF PAYMENT PRICE

Annex "B" will form the Basis of Payment for the resulting Contract and should not be filled in at the bid submission stage.

B1 Contract Firm Price

A)	Known Work For work as stated in Article 7. 1, Specified in Annex "A" and detailed in the attached Pricing Data Sheets, for a FIRM PRICE of:	\$
B)	Applicable Taxes of line a) only	\$
C)	Total Firm Price Applicable Taxes Included:	\$

B2 Unscheduled Work

The Contractor will be paid for unscheduled work arising, as authorized by Canada. The authorized unscheduled work will be calculated as follows:

"Number of hours (to be negotiated) X \$_____, being the Contractor's firm hourly charge-out labour rate which includes overhead, consumables, and profit, plus net laid-down cost of materials to which will be added a mark-up of 10%, plus applicable taxes, of the total cost of material and labour. The firm hourly charge-out labour rate and the material mark-up will remain firm for the duration of the Contract and any subsequent amendments."

B2.1: Notwithstanding definitions or useage elsewhere in this document, or in the Contractor's Cost Management System, when negotiating hours for unscheduled work, PWGSC will consider only those hours of labour directly involved in the production of the subject work package.

Elements of Related Labour Costs identified in B2.2 below, will not be negotiated, but will be compensated for in accordance with B2.2.

B2.2: Allowance for Related Labour Costs such as: Management, all Supervision, Purchasing and Material Handling, Quality Assurance and Reporting, First Aid, Gas Free Certification Inspecting and Reporting, Estimating, and Preparing Unscheduled Work Submissions will be included as Overhead for the purposes of determining the Charge-out Labour Rate entered in line B2 above.

B2.3: The 10% mark-up rate for materials will also apply to subcontracted costs. The mark-up rate includes any allowance for material and subcontract management not allowed for in the Chargeout Labour Rate. The Contractor will not be entitled to a separate labour component for the purchase and handling of materials or subcontract administration.

Pro-rated Prices Unscheduled Work

Hours and prices for unscheduled work shall be based on comparable historical data applicable to similar work at the same facility, or shall be determined by pro-rating the quoted Work costs in the Contract when in similar areas of the vessel.

B3 Overtime

The Contractor must not perform any overtime under the Contract unless authorized in advance and in writing by the Contracting Authority. There will be no overtime payment for Known Work. Any request for payment must be accompanied by a copy of the overtime authorization and a report containing the overtime performed pursuant to the written authorization. Payment for authorized overtime will be calculated as follows:

For unscheduled work, the Contractor will be paid the authorized overtime hours at the quoted charge-out labour rate plus the following premium rates:

For Time and one half: \$ _____ per hour; or,

For Double time \$ _____ per hour

The above premiums will be calculated by taking the average hourly direct labour rate premiums, plus certified fringe benefit, plus profit on labour premium and fringe benefits. These rates will remain firm for the duration of the Contract, including all amendments and are subject to audit if considered necessary by Canada.

B4 Daily Services Fee

In the event of a delay in the performance of the Work that lengthens the Work period beyond the date specified in this Contract, and if such delay is recognized and agreed upon by the Contracting Authority as being attributable to Canada, Canada agrees to pay the Contractor the daily services fee, described below, for each day of such delay. This fee shall be the sole liability of Canada to the Contractor for the delay.

The firm daily services fee is:

(a) For a working day: \$ _____

(b) For a non-working day: \$ _____

The above fees shall include but not be limited to, all aspects of the following costs: Project Management Services, Administrative Support, Production Services, Quality Assurance, Material Support, Planned Maintenance and Ship Services, and all other resources and direct costs needed to maintain the Vessel at the Contractor's facility. These fees are firm and not subject to any additional charges for mark-up or profit.

B5 Vessel, Refit, Repair or Docking Cost

The following costs must be included in the price:

1. Ship Services: include all costs for ship services such as water, steam, electricity, etc., required for vessel maintenance for the duration of the Contract.
2. Docking and Undocking include:
 - (a) all costs resulting from drydocking, wharfage, security, shoring, shifting and/or moving of the vessel within the successful Bidder's facility;
 - (b) the cost of services to tie up the vessel alongside and to cast off.

Unless specified otherwise, the vessel will be delivered by Canada to the successful Bidder's facility alongside a mutually agreed safe transfer point, afloat and upright, and the successful Bidder will do the same when the Work is completed. The cost of services to tie up the vessel alongside and to cast off must be included in the evaluation price.

3. Field Service Representatives/Supervisory Services: include all costs for field service representatives/supervisory services including manufacturers' representatives, engineers, etc. The Contractor is responsible for the performance of all subcontractors and FSRs.

These services must not be an extra charge except where unscheduled work requiring these services is added to the Contract.

4. Removals: include all costs for removals necessary to carry out the Work and will be the responsibility of the successful Bidder whether or not they are identified in the specifications, except those removals not apparent when viewing the vessel or examining the drawings. The successful Bidder will also be responsible for safe storage of removed items and reinstalling them on completion of the Work. The successful Bidder will be responsible for renewal of components damaged during removal.
5. Sheltering, Staging, Cranage and Transportation: include the cost of all sheltering, staging including handrails, cranage and transportation to carry out the Work as specified.

The Contractor will be responsible for the cost of any necessary modification of these facilities to meet applicable safety regulations.

B6 Pricing Data Sheets

Parameters from the Pricing Data Sheets will be used at Canada's sole discretion in the determination of unscheduled work price.

ANNEX C
to PART 5 - BID SOLICITATION

FEDERAL CONTRACTORS PROGRAM FOR EMPLOYMENT EQUITY - CERTIFICATION

I, the Bidder, by submitting the present information to the Contracting Authority, certify that the information provided is true as of the date indicated below. The certifications provided to Canada are subject to verification at all times. I understand that Canada will declare a bid non-responsive, or will declare a contractor in default, if a certification is found to be untrue, whether during the bid evaluation period or during the contract period. Canada will have the right to ask for additional information to verify the Bidder's certifications. Failure to comply with any request or requirement imposed by Canada may render the bid non-responsive or constitute a default under the Contract.

For further information on the Federal Contractors Program for Employment Equity visit Employment and Social Development Canada (ESDC)-Labour's website.

Date: _____(YYYY/MM/DD) (If left blank, the date will be deemed to be the bid solicitation closing date.)

Complete both A and B.

A. Check only one of the following:

- A1. The Bidder certifies having no work force in Canada.
- A2. The Bidder certifies being a public sector employer.
- A3. The Bidder certifies being a federally regulated employer being subject to the *Employment Equity Act*.
- A4. The Bidder certifies having a combined work force in Canada of less than 100 employees (combined work force includes: permanent full-time, permanent part-time and temporary employees [temporary employees only includes those who have worked 12 weeks or more during a calendar year and who are not full-time students]).
- A5. The Bidder has a combined workforce in Canada of 100 or more employees; and
- A5.1. The Bidder certifies already having a valid and current Agreement to Implement Employment Equity (AIEE) in place with ESDC-Labour.

OR

- A5.2. The Bidder certifies having submitted the Agreement to Implement Employment Equity (LAB1168) to ESDC-Labour. As this is a condition to contract award, proceed to completing the form Agreement to Implement Employment Equity (LAB1168), duly signing it, and transmit it to ESDC-Labour.

B. Check only one of the following:

- B1. The Bidder is not a Joint Venture.

OR

- B2. The Bidder is a Joint Venture and each member of the Joint Venture must provide the Contracting Authority with a completed annex Federal Contractors Program for Employment Equity - Certification. (Refer to the Joint Venture section of the Standard Instructions)

ANNEX D**INSURANCE REQUIREMENTS****D.1 Ship Repairers' Liability Insurance**

1. The Contractor must obtain Ship Repairer's 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 \$10,000,000 per accident or occurrence and in the annual aggregate.
2. The Ship Repairer's Liability insurance 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 as additional insured should read as follows: Canada, represented by Public Works and Government Services Canada.
 - b. Waiver of Subrogation Rights: Contractor's Insurer to waive all rights of subrogation against Canada as represented by Environment Canada and Public Works and Government Services Canada for any and all loss of or damage to the vessel, however caused.
 - c. Notice of Cancellation: The Insurer will endeavour to provide the Contracting Authority thirty (30) days written notice of cancellation.
 - d. 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.
 - 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.

D.2 Commercial General Liability Insurance

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 \$10,000,000 per accident or occurrence and in the annual aggregate.
2. The Commercial General Liability Insurance 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) 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.
 - (d) 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.

(e) 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.

(f) Employees and, if applicable, Volunteers must be included as Additional Insured.

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

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

(i) 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.

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

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

ANNEX E**WARRANTY****Warranty Procedures****1. Scope**

a. The following are the procedures that suit the particular requirements for warranty considerations for a vessel on completion of a refit.

2. Reporting Failures With Warranty Potential

a. The initial purpose of a report of a failure is to facilitate the decision as to whether or not to involve warranty and to generate action to effect repairs. Therefore in addition to identification, location data, etc. the report must contain details of the defect. Warranty decisions as a general rule are to be made locally and the administrative process is to be in accordance with procedures as indicated.

b. These procedures are necessary as invoking a warranty does not simply mean that the warrantor will automatically proceed with repairs at his expense. A review of the defect may well result in a disclaimer of responsibility, therefore, it is imperative that during such a review the Department is directly represented by competent technical authority qualified to agree or disagree with the warrantor's assertions. Since the INSPECTION AUTHORITY has the closest and most active involvement of the contracted work completed this agency must assume this role.

3. Procedures

a. Immediately it becomes known to the Ship's Staff that an equipment/system is performing below accepted standards or has become defective, the procedures for the investigation and reporting are as follows:

i. The vessel advises the Technical Authority when a defect, which is considered to be directly associated the refit work, has occurred.

ii. On review of the Specification and the Acceptance Document, the Technical Authority in consort with Ship's Staff is to complete the Tombstone Data and section 1 of the Warranty Claim Form Appendix 1 of Annex "D" and forward the original to the Contractor for review with a copy to the PWGSC Contracting Authority. If the PWGSC Contracting or INSPECTION AUTHORITY is unable to support warranty action, the Defect Claim Form will be returned to the originator with a brief justification. (It is to be noted that in the latter instance PWGSC will inform the Contractor of its decision and no further action will be required of the Contractor.

Warranty defect claims may be forwarded in hard copy, by fax or by e-mail whichever format is the most convenient.

iii.. Assuming the Contractor accepts full responsibility for repair, the Contractor completes Section 2 and 3 of the Warranty Claim Form, returns it to the INSPECTION AUTHORITY who confirms corrective action has been completed, and who then distributes the form to the Technical Authority and the PWGSC Contracting Authority.

b. In the event that the Contractor disputes the claim as a warranty defect, or agrees to share, the contractor is to complete Part 2 and 3 of the Warranty Claim Form with the appropriate information and forward it to the Contracting Authority who will distribute copies as necessary.

c. When a warranty defect claim is disputed by the Contractor, the Technical Authority may arrange to correct the defect by in-house resources or by contracting the work out. All associated costs must be tracked and recorded as a possible charge against the contractor by PWGSC action. Material costs and manhours expended in correcting the defect are to be recorded and entered in Section 5 of the warranty defect claim by the Technical Authority who will forward the warranty defect claim to the PWGSC Contracting Authority for action. Defective parts of equipment are to be retained pending settlement of claim.

d. Defective equipment associated with potential warranty should not normally be dismantled until the Contractor's representative has had the opportunity to observe the defect. The necessary work is to be undertaken through normal repair methods and costs must be segregated as a possible charge against a contractor by PWGSC action.

4. Liability

a. Agreement between the Contracting Authority, INSPECTION AUTHORITY, Technical Authority and the Contractor will result in one of the following conditions:

i. The Contractor accepts full responsibility for costs to repair or overhaul under the warranty provisions of the contract;

ii. The Technical Authority accepts full responsibility for repair and overhaul of item concerned; or

iii. The Contractor and the Technical Authority agree to share responsibility for the costs to repair or overhaul the unserviceable item, in such cases the PWGSC Contracting Authority will negotiate the best possible sharing arrangement.

b. In the event of a disagreement as in paragraph 5c, PWGSC will take necessary action with the Contractor while the Technical Authority informs its Senior Management including pertinent data and recommendations.

c. The total cost of processing warranty claims must include accommodation and travel costs of the Contractor's employees as well as equipment/system down time and operational constraints. Accordingly, the cost to remediate the defect, in manhours and material, will be discussed between the Contracting/Inspection Authorities and the Technical Authority to determine the best course of action.

5. Alongside Period For Warranty Repairs and Checks

a. If at all possible, an alongside period for the vessel is to be arranged just before the expiration of the 90 day warranty period. This alongside period is to provide time for warranty repair and check by the contractor.

b. In respect to the underwater paint, should it become defective during the associated warranty period the contractor is only liable to repair to a value determined as follows:

"Original cost to Canada for painting and preservation of the underwater section of the hull, divided by 365 days and multiplied by the number of days remaining in the 365 days warranty period. The resultant would represent the 'Dollar Credit' due to Canada from the Contractor."

c. The Underwater paint system, before expiration of the warranty, should be checked by divers. The Technical Authority is to arrange the inspection and ensure that a representative of the Contractor will attend. The Technical Authority will inform the Contracting Authority of any adverse results.

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Public Works and Government
Services Canada

Travaux publics et Services
gouvernementaux Canada

Warranty Claim Réclamation De Garantie

Vessel Name – Nom de navire	File No. – N° de dossier	Contract No. - N ° de contrat												
Customer Department – Ministère client	Warranty Claim Serial No. Numéro de série de réclamation de garantie													
Contractor – Entrepreneur	Effect on Vessel Operations Effet sur des opérations de navire <table> <tr> <td>Critical</td> <td>Degraded</td> <td>Operational</td> <td>Non-operational</td> </tr> <tr> <td>Critique</td> <td>Dégradé</td> <td>Opérationnel</td> <td></td> </tr> <tr> <td>Non-opérationnel</td> <td></td> <td></td> <td></td> </tr> </table>		Critical	Degraded	Operational	Non-operational	Critique	Dégradé	Opérationnel		Non-opérationnel			
Critical	Degraded	Operational	Non-operational											
Critique	Dégradé	Opérationnel												
Non-opérationnel														

1. Description of Complaint – Description de plainte

Contact Information – l'information de contact	
Name – Nom	Tel. No. - N ° Tél
Signature – Signature	Date

2. Contractor's Investigative Report – Le rapport investigateur de l'entrepreneur

3. Contractor's Corrective Action – La modalité de reprise de l'entrepreneur

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Contractor's Name and Signature – Nom et signature de l'entrepreneur

Date of Corrective Action - Date de modalité de reprise

Client Name and Signature - Nom et signature de client

Date

4. PWGSC Review of Warranty Claim Action – Examen d'action de réclamation de garantie par TPSGC

Signature – Signature

Date

ANNEX F**PROCEDURE FOR PROCESSING UNSCHEDULED WORK****1. Purpose**

The Unscheduled Work Procedure has been instituted for the following purposes:

- a. To establish a uniform method of dealing with requests for Unscheduled Work;
- b. To obtain the necessary Technical Authority approval and Contracting Authority authorization before Unscheduled Work commences;
- c. To provide a means of maintaining a record of Unscheduled Work requirements including Serial Numbers, dates, and accumulated cost. The Contractor shall have a cost accounting system that is capable of assigning job numbers for each Unscheduled Work requirement so that each requirement can be audited individually.

2. Definitions

- a. An Unscheduled Work Procedure is a contractual procedure whereby changes to the scope of Work under the Contract may be defined, priced and contractually agreed to. Such changes may arise from;
 - i. "Work Arising" from opening up of machinery and/or surveys of equipment and material, or
 - ii. "New Work" not initially specified but required on the Vessel.
- b. The procedure does not allow for the correction of deficiencies in the Contractor's Bid.
- c. No unscheduled work may be undertaken by the Contractor without written authorization of the Contracting Authority except under emergency circumstances described in Sub. Paragraph 3(b).
Unscheduled Work
- d. Work undertaken without written Contracting Authority authorization will be considered the Contractor's responsibility and cost.
- e. The appropriate PWGSC form is the final summary of the definition of the Unscheduled Work requirement, and the costs negotiated and agreed to.

3. Procedures

- a. The procedure involves the electronic form PWGSC 1379 for refit and repair and will be the only form for authorizing all Unscheduled Work.
- b. Emergency measures required to prevent loss or damage to the Vessel which would occur if this procedure were followed, shall be taken by the Contractor on its own authority. The responsibility for the cost of such measures shall be determined in accordance with the terms and conditions of the Contract.

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018md

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File No. - N° du dossier

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c. The Technical Authority will initiate a work estimate request by defining the Unscheduled Work requirement. It will attach drawings, sketches, additional specifications, other clarifying details as appropriate, and allocate their Serial Number for the request.

d. Notwithstanding the foregoing, the Contractor may propose to the Technical Authority in writing, either by letter or some type of Defect Advice Form (this is the Contractor's own form) that certain **Unscheduled Work** should be carried out.

e. The Technical Authority will either reject or accept such Proposal, and advise the Contractor and Contracting Authority. Acceptance of the Proposal is not to be construed as authorization for the work to proceed. If required, the Technical Authority will then define the **Unscheduled Work** requirement in accordance with Sub. Paragraph 3.(c).

f. The Contractor will electronically submit its Proposal to the Contracting Authority together with all price support, any qualifications, remarks or other information requested.

The price support shall demonstrate the relationship between the scope of work, the Contractor's estimated costs and its selling price. It is a breakdown of the Contractor's unit rates, estimates of person hours by trade, estimate of material cost per item for both the contractor and all of its subcontractors including quotations, estimates of any related schedule impact and an evaluation of the contractor's time required to perform the **Unscheduled Work**.

g. The Contractor shall provide copies of purchase orders and paid invoices for Subcontracts and/or materials, including stocked items, in either case. The Contractor shall provide a minimum of two quotations for Subcontracts or materials. If other than the lowest, or sole source is being recommended for quality and/or delivery considerations, this shall be noted. On request to the Contractor, the Contracting Authority shall be permitted, to meet with any proposed Subcontractor or material supplier for discussion of the price and always with the Contractor's representative present.

h. After discussion between the Contracting Authority and the Contractor and if no negotiation is required, the Contracting Authority will seek Technical Authority confirmation to proceed by signing the form. The Contracting Authority will then sign and authorize the **Unscheduled Work** to proceed.

i. In the event the Technical Authority does not wish to proceed with the work, it will cancel the proposed **Unscheduled Work** through the Contracting Authority in writing.

j. In the event the negotiation involves a Credit, the appropriate PWGSC form will be noted as "credit" accordingly.

k. In the event that the Technical Authority requires **Unscheduled Work** of an urgent nature or an impasse has occurred in negotiations, the commencement of the **Unscheduled Work** should not be unduly delayed and should be processed as follows, in either case. The Contractor will complete the appropriate PWGSC 1379 form indicating the offered cost and pass it to the Contracting Authority. If the Technical Authority wishes to proceed, the Technical Authority and the Contracting Authority will sign the completed PWGSC form with the notation, "CEILING PRICE SUBJECT TO DOWNWARD ADJUSTMENT", and allocate a Serial Number having the suffix "A". The work will proceed with the understanding that following an audit of the Contractor's actual costs for completing the described work, the cost will be finalized at the ceiling price or lower, if justified by the audit. A new PWGSC form will then be completed with the finalized costs, signed and issued with the same Serial Number without the suffix "A", and bearing a notation that this form is replacing and canceling the form having the same Serial Number with the suffix "A".

NOTE:

PWGSC forms bearing Serial Numbers with a suffix "A" shall not to be included in any contract amendments, and therefore no payment shall be made until final resolution of the price and incorporation into the contract.

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4. Amendment to Contract or Formal Agreement

The Contract will be amended from time to time in accordance with the Contract terms to incorporate the costs authorized on the appropriate PWGSC forms.

ANNEX G**QUALITY CONTROL/INSPECTION****G1 Quality Control Plan**

The Contractor must implement and follow the Quality Control Plan (QCP) prepared according to the latest issue (at contract date) of ISO 10005:2005 quality management - Guidelines for quality plans, approved by the Inspection and the Technical Authority. The QCP must describe how the Contractor will conform to the specified quality requirements of the Contract and specify how the required quality activities are to be carried out, including quality assurance of subcontractors. The Contractor must include a traceability matrix from the elements of the specified quality requirements to the corresponding paragraphs in the QCP. The QCP must be made available to the Inspection and Technical Authority for review and approval **within five (5) calendar** days after contract award.

The documents referenced in the QCP must be made available within two (2) working days when requested by the Inspection Authority.

The Contractor must make appropriate amendments to the QCP throughout the term of the Contract to reflect current and planned quality activities. Amendments to the QCP must be acceptable to the Inspection Authority and the Technical Authority.

G2 Inspection and Test Plan (ITP):

1. The Contractor must prepare an Inspection and Test Plan (ITP) comprising individual inspection and test plans for each specification item of this project, in accordance with the Quality Standard and its Quality Control Plan. The ITP must be submitted to the Inspection Authority for review and amended by the Contractor to the satisfaction of the Inspection Authority.

- a. Each ITP must contain all inspection points identified in the Specification highlighting any mandatory points that must be witnessed by the Inspection Authority and other "hold" points imposed by the Contractor to ensure the quality of the work.
- b. Milestone delivery date for the ITP is given in the Contract, however individual ITPs should be forwarded for review as developed.

2. Coding:

a. Each Inspection and Test Plan (ITP) is to be coded for identification clearly demonstrating a systematic approach similar to the following (Contractor's system should be defined in its Quality Control Plan):

i. Prefixes for Inspections, Test and Trials:

- Prefix "1" is a Contractor inspection, i.e. 1H-10-01, 1H-10-02;
- prefix "2" is a Contractor post repair test, i.e. 2H-10-01; and
- prefix "3" is a Contractor post repair trial, i.e. 3H-10-01.

b. Specification items followed by assigned sequence numbers for inspection processes within each Specification Item; and

c. Cross reference to a verification document number

G3 Inspection and Test Plan Criteria:

Inspection criteria, procedures and requirements are stated in the specifications, drawings, technical orders and reference standards invoked by the Specifications. Test and trial documentation may also be included or referenced in the Specifications. An individual Inspection and Test Plan (ITP) is required for each Specification item.

- a. All ITPs must be prepared by the Contractor in accordance with the above criteria, its Quality Plan, and must provide the following reference information:
 - i. the ship's name;
 - ii. the Specification item number;
 - iii. equipment/system description and a statement defining the parameter which is being inspected;
 - iv. a list of applicable documents referenced or specified in the inspection procedure;
 - v. the inspection, test or trial requirements specified in the Specification;
 - vi. the tools and equipment required to accomplish the inspection;
 - vii. the environmental conditions under which the inspections are to be conducted and the tolerances on the inspection conditions;
 - viii. a detailed step-by step procedure of how each inspection is to be performed, conformance parameters, accept/reject criteria and recording of results, deficiencies found and description of corrective action(s) required;
 - ix. name and signature of the person who prepared the plan, date prepared and amendment level; and,
 - x. names and signatures of the persons conducting and witnessing the inspection, test or trial.

4. Contractor Imposed Testing:

Tests and trials in addition to those given in the Specification must be approved by the Inspection Authority.

- a. Amendments: Amendment action for the Inspection and Test Plans must be ongoing throughout the refit and reflect the inspection requirements for unscheduled work. Amendments must be submitted as developed, but not less frequently than once every second week.

G4 Conduct of Inspection

1. Inspections must be conducted in accordance with the ITP and as detailed in G4.
2. The Contractor must provide its own staff or subcontracted staff to conduct inspections, tests and trials; excepting that Technical Authority or Inspection Authority personnel may be designated in the specifications, in which case the Contractor must ensure that its own staff are provided in support of such inspection/test/trial.
3. The Contractor must ensure that the required conditions stated in the ITP prevail at the commencement of, and for the duration of, each inspection/test/trial.
4. The Contractor must ensure that personnel required for equipment operation and records taking during the inspection/test/trial are briefed and available at the start and throughout the duration of the inspection/test/trial. Tradesmen or FSRs who may be required to effect minor changes or adjustments in the installation must be available at short notice.
5. The Contractor is to coordinate the activities of all personnel taking part in each inspection/test/trial and ensure that safe conditions prevail throughout the inspection/test/trial.

G5 Inspection Records and Reports

1. The Contractor on the inspection record, test or trials sheets as applicable must record the results of each inspection. The Contractor must maintain files of completed inspection records consistent with the Quality Standard and its Quality Plan for this project.
2. The Contractor's QC representative (and the FSR when required) must sign as having witnessed the inspection, test or trial on the inspection record. The Contractor must forward originals of completed inspection records, together with completed test(s) and/or trials sheets to the Inspection Authority as they are completed.
3. Unsatisfactory inspection/test/trial results, for which corrective action cannot be completed during the normal course of the inspection/test/trial, will require the Contractor to establish and record the cause of the unsatisfactory condition to the satisfaction of the Inspection Authority. Canada representatives may assist in identification where appropriate.
4. Corrective action to remove cause of unsatisfactory inspections must be submitted to the Inspection Authority in writing by the Contractor, for approval before affecting such repairs and rescheduling of the unsatisfactory inspection/test/trial. Such notices must be included in the final records passed to the Inspection Authority.
5. The Contractor must undertake rectification of defects and deficiencies in the Contractor's installation or repair as soon as practicable. The Contractor is responsible to schedule such repairs at its own risk.
6. The Contractor must reschedule unsatisfactory inspections after any required repairs have been completed.
7. Quality Control, Inspection and Test records that substantiate conformance to the specified requirements, including records of corrective actions, must be retained by the Contractor for three (3) years from the date of completion or termination of the Contract and must be made available to the Inspection Authority upon request.

G6 Inspection and Trials Process

1. Drawings and Purchase Orders
 - a. Upon receipt of two (2) copies of each drawing or purchase order, the designated Inspection Authority will review its content against the provisions of the specification. Where discrepancies are noted, the Inspection Authority will formally advise all concerned, in writing using a Discrepancy Notice. The resolution of any such discrepancy is a matter for consultation between the Contractor and other Crown Authorities.

The Inspection Authority is NOT responsible for the resolution of discrepancies.

2. Inspection
 - a. Upon receipt and acceptance of the Contractor's ITP, inspection will consist of a number of Inspection Points supplemented by such other inspections, tests, demonstrations and trials as may be deemed necessary by the Inspection Authority to permit him to certify that the work has been performed in compliance with the provisions of the specification. The Contractor must be responsible for notifying the designated Inspection Authority of when the work will be available for inspection, sufficiently in advance to permit the designated Inspection Authority to arrange for the appropriate inspection.

b. The Inspection Authority will inspect the materials, equipment and work throughout the project against the provisions of the specification and, where non-conformances are noted, will issue appropriate

INSPECTION NON-CONFORMANCE REPORTS.

c. The Contract requires the implementation of a Quality Assurance/Quality Control system, so the Inspection authority must require that the Contractor provide a copy of its internal inspection report pertaining to a work item before conducting the requested inspection. If third party inspections are required by the Contract (e.g. inspections by a certified CWB 178.2 welding inspector), the reports of these inspections must be required before the Work is inspected by the PWGSC Inspection Authority.

d. The QA/QC system is a requirement, so if the documentation is presented to the Inspection Authority before an inspection stating that the Work is satisfactory but the Inspection Authority finds that the Work has not been satisfactorily inspected, the Inspection Authority must issue an Inspection Non-conformance Report against the Work and another against the failure of the Contractor's QA/QC system.

e. Before carrying out any inspection, the PWGSC Inspection Authority must review the requirements for the Work and the acceptance and/or rejection standards to be applied. Where more than one standard or requirement is called up and they are potentially conflicting, the Inspection Authority must refer to the order of precedence in the Contract to determine the standard or requirement to be applied.

3. Inspection Non-conformance report

a. An Inspection Non-conformance report will be issued for each non-conformance noted by the Inspection Authority. Each report will be uniquely numbered for reference purposes, will be signed and dated by the Inspection Authority, and will describe the non-conformance.

b. When the non-conformance has been corrected by the Contractor and has been re-inspected and accepted by the Inspection Authority, the Inspection Authority will complete the Report by adding an applicable signed and dated notation.

c. At the end of the project, the content of all Inspection Non-conformance Reports which have not been signed-off by the Inspection Authority will be transferred to the Acceptance Documents before the Inspection Authority's certification of such documents.

4. Tests, Trials, and Demonstrations

a. To enable the Inspection Authority to certify that the Work has been performed satisfactorily, in accordance with the Contract and Specifications, the Contractor must schedule, co-ordinate, perform, and record all specified Tests, Trials and Demonstrations required by the Inspection Authority.

b. Where the Specifications contain a specific performance requirement for any component, equipment, sub-system or system, the Contractor must test such component, equipment, sub-system or system to the satisfaction of the Inspection Authority, to prove that the specified performance has been achieved and that the component, equipment, sub-system or system performs as required by the specifications.

c. Tests, trials and demonstrations must be conducted in accordance with a logical, systematic schedule which must ensure that all associated components and equipment are proven before sub-systems demonstration or testing, and that sub-systems are proven before system demonstration or testing.

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d. Where the Specifications do not contain specific performance requirements for any component, equipment, sub-system or system, the Contractor must demonstrate such component, equipment, sub-system or system to the satisfaction of the Inspection Authority .

e. The Contractor must submit its Inspection and Test Plan as detailed in G2.

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f. The Contractor must co-ordinate each test, trial and demonstration with all interested parties, including the Inspection Authority; Contracting and Technical Authorities; regulatory authorities; Classification Society; Sub-contractors; etc. **The Contractor must provide the Inspection Authority and other Crown Authorities with a minimum of five (5) working days notice of each scheduled test, trial, or demonstration.**

g. The Contractor must keep written records of all tests, trials, and demonstrations conducted as detailed in G5. The Contractor may utilize the **PWGSC STANDARD TESTS & TRIALS RECORD SHEETS** which can be customized by the Contractor to suit individual test or trial requirements. These Record Sheets are available from the Inspection Authority in digital format.

h. The Contractor must in all respects be responsible for the conduct of all tests and trials in accordance with the requirements of the Contract.

i. The Inspection Authority and the Technical Authority reserve the right to defer starting or continuing with any sea trials for any reasonable cause including but not limited to adverse weather, visibility, equipment failure or degradation, lack of qualified personnel and inadequate compliance with safety standards.

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ANNEX H

Financial Bid Presentation Sheet

H1 Price for Evaluation

A)	<p>Known Work For work as stated in Part 1 Clause 1.2, Specified in Annex "A" and detailed in the attached Pricing Data Sheets Appendix 1 of Annex "H", for a FIRM PRICE of:</p>	<p>\$ _____</p>
B)	<p>Unscheduled Work Contractor Labour Cost: Estimated labour hours at a firm Charge-out Labour Rate, including overhead and profit for evaluation purpose only: 1,000 person hours X \$ _____ per hour for a PRICE of: See Article H2.1 and H2.2 below.</p> <p>Overtime premium for time and one half: Estimated hours for evaluation purposes only: 100 person hours X \$ _____ per hour for a PRICE of: See Article H3 Below.</p> <p>Overtime premium for double time: Estimated hours for evaluation purposes only: 100 person hours X \$ _____ per hour for a PRICE of: See Article H3 below.</p>	<p>\$ _____</p> <p>\$ _____</p> <p>\$ _____</p>
C)	<p>Daily Service Fees for evaluation purpose only As per Clause H4</p> <p>i) Ten (10) working days X \$ _____ firm daily service fee = \$ _____</p> <p>ii) Four (4) non-working days X \$ _____ firm daily service fee = \$ _____</p>	<p>\$ _____</p> <p>\$ _____</p>
D)	<p>Vessel Transfer Cost as Per Clause H7</p> <p>Proposed shipyard/ship repair facility: _____</p>	<p>\$ _____</p>
E)	<p>EVALUATION PRICE Applicable Taxes Excluded, [A + B + C+ D]:</p> <p>For an EVALUATION PRICE of (Applicable Taxes excluded):</p>	<p>\$ _____</p>

H2 **Unscheduled Work**

The Contractor will be paid for unscheduled work arising, as authorized by Canada. The authorized unscheduled work will be calculated as follows:

"Number of hours (to be negotiated) X \$ _____, being the Contractor's firm hourly charge-out labour rate which includes overhead, consumables, and profit, plus net laid-down cost of materials to which will be added a mark-up of 10 percent, plus Applicable Taxes, if applicable, of the total cost of material and labour. The firm hourly charge-out labour rate and the material mark-up will remain firm for the duration of the Contract and any subsequent amendments."

H2.1: Notwithstanding definitions or usage elsewhere in this document, or in the Contractor's Cost Management System, when negotiating Hours for unscheduled work, PWGSC will consider only those hours of labour directly involved in the production of the subject work package.

Elements of Related Labour Costs identified in H2.2 below, will not be negotiated, but will be compensated for in accordance with Note H2.2. It is therefore incumbent upon the bidder to have bid appropriately which will result in fair compensation, regardless of their Cost Management System.

H2.2: Allowance for Related Labour Costs such as: Management, all Supervision, Purchasing and Material Handling, Quality Assurance and Reporting, First Aid, Gas Free Certification Inspecting and Reporting, and Estimating and preparing unscheduled work Submissions will be included as Overhead for the purposes of determining the Charge-out Labour Rate entered in line H2 above.

H2.3: The 10% mark-up rate for materials will also apply to subcontracted costs. The mark-up rate includes any allowance for material and subcontract management not allowed for in the Chargeout Labour Rate. The Contractor will not be entitled to a separate labour component for the purchase and handling of materials or subcontract administration.

H3 **Overtime**

The Contractor must not perform any overtime under the Contract unless authorized in advance and in writing by the Contracting Authority. There will be no overtime payment for Known Work. Any request for payment must be accompanied by a copy of the overtime authorization and a report containing the overtime performed pursuant to the written authorization. Payment for authorized overtime will be calculated as follows:

For unscheduled work, the Contractor will be paid the authorized overtime hours at the quoted charge-out labour rate plus the following premium rates:

For Time and one half: \$ _____ per hour; or,

For Double time \$ _____ per hour

The above premiums will be calculated by taking the average hourly direct labour rate premiums, plus certified fringe benefit, plus profit on labour premium and fringe benefits. These rates will remain firm for the duration of the Contract, including all amendments and are subject to audit if considered necessary by Canada.

H4 Daily Services Fee

In the event of a delay in the performance of the Work, and if such delay is recognized and agreed upon by the Contracting Authority as being attributable to Canada, Canada agrees to pay the Contractor the daily services fee, described below, for each day of such delay. This fee shall be the sole liability of Canada to the Contractor for the delay.

The firm daily services fee is:

- (a) For a working day: \$ _____
- (b) For a non-working day: \$ _____

The above fees shall include but not be limited to, all aspects of the following costs: Project Management Services, Administrative Support, Production Services, Quality Assurance, Material Support, Planned Maintenance and Ship Services, and all other resources and direct costs needed to maintain the Vessel at the Contractor's facility. These fees are firm and not subject to any additional charges for mark-up or profit.

H5 Vessel, Refit, Repair or Docking Cost

The following costs must be included in the price:

1. Ship Services: include all costs for ship services such as water, steam, electricity, etc., required for vessel maintenance for the duration of the Contract.
2. Docking and Undocking include:
 - (a) all costs resulting from drydocking, wharfage, security, shoring, shifting and/or moving of the vessel within the successful Bidder's facility;
 - (b) the cost of services to tie up the vessel alongside and to cast off.

Unless specified otherwise, the vessel will be delivered by Canada to the successful Bidder's facility alongside a mutually agreed safe transfer point, afloat and upright, and the successful Bidder will do the same when the Work is completed. The cost of services to tie up the vessel alongside and to cast off must be included in the evaluation price.

3. Field Service Representatives/Supervisory Services: include all costs for field service representatives/supervisory services including manufacturers' representatives, engineers, etc.

These services must not be an extra charge except where unscheduled work requiring these services is added to the Contract.

4. **Removals:** include all costs for removals necessary to carry out the Work and will be the responsibility of the successful Bidder whether or not they are identified in the specifications, except those removals not apparent when viewing the vessel or examining the drawings. The successful Bidder will also be responsible for safe storage of removed items and reinstalling them on completion of the Work. The successful Bidder will be responsible for renewal of components damaged during removal.

5. **Sheltering, Staging, Cranage and Transportation:** include the cost of all sheltering, staging including handrails, cranage and transportation to carry out the Work as specified.

The successful Bidder will be responsible for the cost of any necessary modification of these facilities to meet applicable safety regulations.

H6 Vessel Transfer Costs

1. The evaluation price must include the cost for transferring the vessel from its home port to the shipyard/ship repair facility where the Work will be performed and the cost of transferring the vessel to its home port following completion of the Work, in accordance with the following:

(a) The Bidder must provide the location of the shipyard/ship repair facility where it proposes to perform the Work together with the applicable vessel transfer cost from the list provided under paragraph 2 of this clause shall be entered into Table H1:

(b) If the list in paragraph 2 of this clause does not provide the shipyard/ship repair location where the Bidder intends to perform the Work, then the Bidder must advise the Contracting Authority, in writing, at least 5 calendar days before the bid closing date, of its proposed location for performing the Work. The Contracting Authority will confirm to the Bidder, in writing, at least 3 calendar days before the bid closing date, the location of the shipyard/ship repair and the applicable vessel transfer cost.

A bid that specifies a location for executing the Work which is not on the list of paragraph 2 of this clause, and for which a notification in writing has not been received by the Contracting Authority as required above, will be considered non-responsive.

2. List of shipyard/ship repair facilities and applicable vessel transfer costs

Vessel: CCGS Samuel Risley
Home port: Parry Sound, On

Transfer costs in the case of vessels transferred using a government delivery crew include the fuel cost at the vessel's most economical speed of transit and for unmanned refits only, crew transportation costs for the delivery crew based on the location of the vessel's home port and the shipyard/ship repair facility. Crew transportation costs do not include any members of the delivery crew who remain at the shipyard/ship repair facility in order to discharge project responsibilities related to the vessel being transferred.

Transfer costs in the case of vessels transferred unmanned by either commercial towing, railway, highway or other suitable means of transportation must be:

(i) included as part of the Bidder's financial bid in the case where the Bidder is responsible for the transfer; or

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(iii) identified as the applicable vessel transfer cost, as given in the list below, in the case when Canada is responsible for the transfer.

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**Shipyard/ship repair facility
cost**

**Applicable vessel transfer
cost**

Company	City	Transfer Cost Manned
New Dock, St. John's Dockyard Ltd.	St. John's	C\$188,370.00
Halifax Shipyards Ltd.	Halifax	C\$169,784.00
Group Verreault Navigation Inc.	Les Mechins	C\$159,235.00
Davie Canada Yard Inc.	Levis	C\$95,441.00
Heddle Marine Service Inc.	Hamilton	C\$56,360.00
Pictou Shipyard	Pictou	C\$156,222.00
Ocean Industries Inc.	Saint-Bernard-Sur-Mer	C\$99,058.00

ANNEX H - APPENDIX 1

PRICING DATA SHEETS

Ref #	Spec. #	Description	Total Hours	Total Labour Cost	Total Material Cost	Total FSR& Sub-Contractors Cost	Total Firm Price	Unit Cost
2.0		SERVICES		\$	\$	\$	\$	
	2.1.6.5	Unit Rate/Kw.Hr for Consumption						\$
	2.1.7.8	Unit Rate/Cubic Meter for Potable Water						\$
	2.1.10	Unit Rate/Hr for Crane Supply						\$
4.0		BILGE CLEANING		\$	\$	\$	\$	
	4.2.1.4	Unit Rate/Cubic Meter for Removing Oily Waste and Dispose						\$
5.0		MAIN ENGINE #1 BLOCK REMOVAL AND INSTALLATION		\$	\$	\$	\$	
6.0		GALLEY READY USE FRIDGE REPLACEMENT		\$	\$	\$	\$	
7.0		MAIN DECK COVERING REPLACEMENT		\$	\$	\$	\$	
	7.2.7.2	Unit Rate/M2 Removal and Install Carpet						\$
	7.2.7.3	Unit Rate/M2 Removal and Install Tiles						\$
8.0		MAIN DECK GREY WATER DRAINS & BLACK WATER PIPE REPLACEMENT		\$	\$	\$	\$	
9.0		BALLAST, SEWAGE AND VOID TANKS INSPECTIONS (SURVEY ITEM)		\$	\$	\$	\$	
	9.3.1.5	Unit Rate/Cubic Meter for removing and dispose of solid debris						\$
	9.4.1.3	Unit Rate/Cubic Meter for Disposal of Ballast Water						\$
10.0		BRIDGE WIPER INSTALLATION		\$	\$	\$	\$	\$
11.0		EMERGENCY GENERATOR (DIESEL ENGINE) (SURVEY ITEM)		\$	\$	\$	\$	\$

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Ref #	Spec. #	Description	Total Hours	Total Labour Cost	Total Material Cost	Total FSR& Sub-Contractors Cost	Total Firm Price	Unit Cost
12.0		<i>MEGGER TEST (SURVEY ITEM)</i>		\$	\$	\$	\$	
13.0		<i>SEWAGE TREATMENT SYSTEM PUPOUT AND CLEANING (OPTIONAL)</i>		\$	\$	\$	\$	
14.0		<i>MAIN ENGING #2 & 1 FRS SERVICE</i>		\$	\$	\$	\$	
		TOTAL		\$	\$	\$	\$	

ANNEX I

VESSEL CUSTODY

I1 Vessel Custody

1. This work is going to take place with the vessel "out of commission" and therefore in the "care, control and custody" of the Contractor.
2. An "ACCEPTANCE CERTIFICATE - ASSUMPTION OF CUSTODY OF FEDERAL GOVERNMENT SHIPS BY SHIPYARDS" (attached as Appendix 1 to this Annex "I") shall be completed as required and a copy passed to the INSPECTION AUTHORITY.
3. To facilitate this turnover, representatives of the Contractor and Canada shall confirm the condition of the vessel.
4. A vessel condition report shall be appended to the above noted certificate and shall be accompanied by colour photographs or videos in either conventional or digital format.
5. When the vessel is to be returned to the "care, control and custody" of Canada, an "ACCEPTANCE CERTIFICATE - RESUMPTION OF CUSTODY OF FEDERAL GOVERNMENT SHIPS BY THE CLIENT DEPARTMENT" (Attached as appendix 2 to this Annex I) shall be completed and a signed copy passed to Canada for distribution.

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ANNEX I - APPENDIX 1

ACCEPTANCE CERTIFICATE

ASSUMPTION OF CUSTODY OF CANADIAN GOVERNMENT SHIPS BY CONTRACTORS

ACCEPTANCE OF _____

1. The undersigned, on behalf of the Department of Canadian Coast Guard and of _____ acknowledge to have handed over and received respectively CCGS _____ for the purpose of refit, all in accordance with the terms and conditions of PWGSC Contract Serial Number _____ and such documents which form part of the said contract.

2. It is mutually agreed by all parties that the condition report by compartment or area shall be considered as an addendum to this agreement; and shall be a valid document in the taking over of the vessel by the Contractor, even if the inspection and signing occur after the signing of the agreement but within the agreed ten (10) day period.

SIGNED AT _____ PROVINCE _____ ON,

THE _____ DAY OF _____ (Month) 2014.

AT _____ HOURS.

FOR: _____
(CONTRACTOR)

FOR: _____
Department of Canadian Coast Guard

WITNESSED BY: _____
PUBLIC WORKS AND GOVERNMENT SERVICES CANADA

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ANNEX I - APPENDIX 2

ACCEPTANCE CERTIFICATE

RESUMPTION OF CUSTODY OF CANADIAN GOVERNMENT SHIPS BY SHIPYARDS

ACCEPTANCE OF CCGS _____

1. The undersigned, on behalf of _____ and of the Department of Canadian Coast Guard, acknowledge to have handed over and to have received respectively the CCGS _____, said vessel having been received By _____ on _____ (date), for the purpose of refit in accordance with the terms and conditions of PWGSC Contract Serial Number _____.

2. It is mutually agreed by all parties that the liabilities and responsibilities of _____, as defined in Article 9 of PWGSC 1029 Supplemental General Conditions for Ship Repairs, for a vessel out of commission, shall automatically cease as at _____ hours on _____ (date).

3. That effective from _____ hours on the _____ (date) Article 8 of PWGSC 1029 for a vessel "in commission" Shall apply, and that responsibility for the care and protection of the said vessel shall revert to Canada.

SIGNED AT _____ PROVINCE _____ ON,

THE _____ DAY OF _____ (Month) 2014.

AT _____ HOURS.

FOR: _____
(CONTRACTOR)

FOR: _____
Department of Canadian Coast Guard

WITNESSED BY: _____
PUBLIC WORKS AND GOVERNMENT SERVICES CANADA

Solicitation No. - N° de l'invitation
F2599-145028/A

Amd. No. - N° de la modif.

Buyer ID - Id de l'acheteur

Client Ref. No. - N° de réf. du client
F2599-145028

File No. - N° du dossier
018mdF2599-145028

018md

CCC No./N° CCC - FMS No/ N° VME

ANNEX J

DELIVERABLES/CERTIFICATIONS

J1 Mandatory Tender Deliverables Check List

Notwithstanding deliverable requirements specified within the bid solicitation and its associated Technical Specification (Annex A), mandatory deliverables that must be submitted with the Bidder's tender to be deemed responsive are summarized below.

The Bidder must submit a completed Annex "J1" Deliverables/ Certifications.

The following are mandatory and the Bidder's submission will be evaluated against the requirements as defined herein. The Bidder must be determined to be compliant on each item to be considered responsive.

Item	Description	Completed and Attached
1	Invitation To Tender document part 1 page 1 completed and signed;	
2	Completed Annex "I" Financial Bid Presentation Sheet", clauses G1 through G6;	
3	Completed Pricing Data Sheets, per clause 3.1 Section II, Annex "I", Appendix 1;	
4	Completed Annex "J1" Deliverables/Certifications;	
5	Changes to Applicable Laws (if any), as per clause 2.4	
6	Integrity Provisions - Associated Information, section 5.1.1	
7	Federal Contractors Program for Employment Equity, Complete section 5.1.2	
8	Vessel Transfer Cost, as per clause 6.2 and Annex "H"	
9	Proof of good standing with Worker's Compensation Board, as per clause 6.3	
10	Proof of valid Labor Agreement or similar instrument covering the work period, as per clause 6.4	
11	Preliminary Work Schedule , per clause 6.5;	
12	Fueling and Disembarking Procedures, as per clause 6.6;	
13	If Registered its Valid ISO 9001-2008 Certification, as per clause 6.7	
14	Objective evidence of documented Health and Safety System, as per clause 6.8;	
15	Objective evidence of documented Fire Protection, Fire Fighting and Training Procedure, as per clause 6.9	
16	Insurance Requirements, as per clause 6.11	
17	Proof of welding certification, as per clause 6.12	
18	Project Management as per clause 6.13	
19	List of subcontractors, as per clause 6.14	
20	Example of its Quality Control Plan, as per clause 6.15	
21	Example of an Inspection and Test Plan as per clause 6.16	
22	Details of Environmental Emergency Response Plan, Details of Formal Environmental Training as per Clause 6.17	

Solicitation No. - N° de l'invitation

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018mdF2599-145028

Buyer ID - Id de l'acheteur

018md

CCC No./N° CCC - FMS No/ N° VME

J2 Deliverables after Contract Award

Item	Description	Reference	Due By
1	Insurance requirements as per Annex "D"	Clause 7.11 and Annex "D"	10 Working Days after contract award
2	Revised Work Schedule	Clause 7.14	5 calendar days after contract award
3	The Contractor's Quality Control Plan	Clause 7.19	5 calendar days after contract award
4	The list of Government specialized loaned equipment that the Contractor intends to request.	Clause 7.26	3 calendar days after contract award

CCGS Samuel Risley Refit 2014

Specification No: 779.14 Rev 03

Date: April 25, 2014

Prepared by Marine Engineering
520 Exmouth Street
Sarnia ON
N7T 8B1

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1.0 GENERAL NOTES

1.1.1 Identification

1.1.2 These General Notes describe the CCG requirements applicable to all accompanying Technical Specifications.

1.1.3 Work Period

1.1.3.1 The work period for this contract is Aug 13 until Oct 29, 2013.

1.1.4 References

1.1.4.1 Applicable documentation:

FSSM Procedures	Title	Included Yes/No		
7.B.2.	Fall Protection	Yes		
7.A.1.	Hazard Prevention Program	Yes		
7.B.3.	Entry Into Confined Spaces	Yes		
7.B.4.	Hotwork	Yes		
7.B.5.	Lockout and Tagout	Yes		
10.A.7.	Contractor Liability	Yes		
1.3.2	Publications:			
TP3177E	Standard for the Control of Gas Hazards in Vessels to be Repaired or Altered			
T127E	Transport Canada Marine Safety Electrical Standard			
IEEE 45	Recommended Practice for Electrical			

	Installation on Ships			
70-000-000-EU-JA-001	Specification for the Installation of Shipboard Electronic Equipment			
CSA W47.1	Certification of Companies for Fusion Welding of Steel Structures Division 2 Certification			
CSA W47.2	Certification of Companies for Fusion Welding of Aluminum			
CSA W59	Welded Steel Construction – Metal Arc Welding			
CSA W59.2	Welded Aluminum Construction			

1.1.5 Acts & Regulations:

- CSA Canada Shipping Act
- CLC Canada Labour Code
- MOHS Marine Occupational Health and Safety

1.1.6 Occupational Health and Safety

- 1.1.6.1 The Contractor and all sub-contractors shall follow Occupational Health and Safety (OHS) procedures in accordance with applicable federal and provincial OHS regulations ensuring that Contractor activities are carried out in a safe manner and do not endanger the safety of any personnel.

- 1.1.6.2 The Contractor and the Contractor's employees, including any sub-contractors shall attend an on board safety orientation meeting of the vessel prior to the commencement of any work in order to familiarize the Contractor's employees with ship specific hazards and permit systems for work protocols as well as procedures for Security, Hazard Prevention, Hazard Intervention and Pre-Job Safety Assessments. The Contractor to note CCG provides this orientation. The Contractor will have access to an uncontrolled copy of the Fleet Safety and Security Manual.
- 1.1.6.3 The Contractor shall comply with the Fleet Safety and Security Manual, DFO/5737 and shipboard work instructions in addition to the applicable Canada Labour Code regulations while performing work aboard.
- 1.1.6.4 For the purpose of the Lock Out/Tag Out procedure the Contractor shall supply locks and locking devices for the Contractor's employees in addition to those provided by the Chief Engineer for the ship's crew.
- 1.1.6.5 The Contractor shall supply a copy of a certified marine chemist or other qualified person's Gas Free Certificate to the Technical Authority where any work shall be carried out in tanks or bilge areas prior to commencing work. The certificates shall specify, "Safe for persons" or "Safe for hot work" as appropriate. All Certificates shall be posted in full view and adjacent to the opening of the compartment.
- 1.1.6.6 All tanks and pipe tunnels which have been opened for inspection and testing are to be cleaned and submitted for a final inspection by the Technical Authority prior to the closing of the space.
- 1.1.6.7 The Contractor and Contractor's employees will not have access to the vessel's washrooms and crew mess facilities. The Contractor shall provide the necessary amenities for the Contractor's and sub-contractor's employees as required.
- 1.1.7 Access to Worksite
 - 1.1.7.1 The Contractor shall ensure the TA and CG staff has unrestricted access to the worksite at all times during the contract period.
- 1.1.8 Workplace Hazard Material Information System (WHMIS)
 - 1.1.8.1 The Contractor must provide the TA with Material Safety Data Sheets (MSDS) for all Contractor supplied WHMIS controlled products.
- 1.1.9 The TA will provide the Contractor with access to MSD sheets for all controlled products on the ship for all specified work items.

1.1.10 Smoking in the Work Space

- 1.1.10.1 The Contractor must ensure compliance with the Non- Smokers' Health Act. The Contractor shall ensure that every employer, and any person acting on behalf of an employer, shall ensure that persons refrain from smoking in any work space under the control of the employer. The Contractor shall ensure that there is absolutely no smoking onboard the vessel.

1.1.11 Clean and Hazard Free Worksite

- 1.1.11.1 Before the Contractor starts any work on the vessel the Contractor's Quality Assurance Representative, the TA shall walk through each space and area where work is to take place, including access and removal routes and areas adjacent to those where the work is to be done as a result of this specification. The Contractor's Quality Assurance Representative shall take digital pictures of each area showing the outfit therein and download the photos in JPG format onto a CD or DVD. Each picture shall be dated and labeled as to the location on the vessel. Copies of this CD or DVD are to be provided to the TA for reference purposes within 48 hours of the start of the contract.
- 1.1.11.2 The Contractor, during the work period shall maintain those areas of the vessel which Contractor personnel use to access those areas where work is to be undertaken, in a clean condition, free from debris and remove garbage daily.
- 1.1.11.3 Areas that pose a hazard as a result of the specification work are to be secured and clearly identified by the Contractor with signage to advise and protect all personnel from the hazard in accordance with applicable Canada Labour Code requirements.
- 1.1.11.4 Upon completion of this contract, the Contractor shall be responsible for the removal and disposal of all garbage generated from the work of this specification and for returning the vessel to the state of cleanliness in which the vessel was at the start of the contract period.
- 1.1.11.5 Once all known work and final clean-up has been completed the Contractor's QA Representative and TA shall perform a 'walk through' of the vessel to view all areas where work was performed by the Contractor. Any deficiencies or damage noted shall be recorded and compared to the photos and if deemed to have been caused by the Contractor as a result of the work the damage shall be repaired by the Contractor at no cost to the Coast Guard.

1.1.12 Touch-up / Disturbed Paint

- 1.1.12.1 Unless stated otherwise the Contractor shall supply and apply two coats of marine primer compatible with the vessel's existing coating system to all new and/or disturbed metal surfaces.
- 1.1.12.2 The Contractor shall prepare all new and disturbed steelwork to the paint manufacturer's standards prior to painting.

1.1.13 CCG Employees and Others on the Vessel

1.1.13.1 CCG / DFO employees and other personnel such as manufacturer's representatives and/or TCMS or Class surveyors may carry-out other work including work items not included in this specification, onboard the vessel during this work period. Every effort will be made by the TA to ensure this work and the associated inspections and/or surveys do not interfere with the Contractor's work. The Contractor will not be responsible for coordinating the related inspections or payment of inspection fees for this.

1.1.14 Regulatory Inspections and/or Class Surveys

1.1.14.1 The Contractor shall contact, coordinate and schedule all regulatory inspections and/or class surveys by the applicable authority: i.e. TCMS, HC, Environment Canada or others as required by the specification.

1.1.14.2 The Contractor shall convene a meeting of the Contractors Project Manager for the work of this specification, the attending TCMS surveyor, and the TA, no less than 3 weeks before the scheduled start date of this project. The purpose of this meeting is to confer with all parties and determine the inspection and testing requirements of TCMS for the work of this specification.

1.1.14.3 Any documentation generated by the above inspections and/or surveys to show that the inspections and/or surveys were conducted (i.e. original signed and dated certificates) must be provided to the TA.

1.1.14.4 The Contractor must not substitute inspection by the TA for the required TCMS regulatory inspections or Class surveys.

1.1.14.5 The Contractor shall provide no less than 48 hours notice to TCMS and TA of the starting or completion of a work item, and of the reaching of an inspection point such that TCMS and TA can witness the conduct of the work or perform an inspection.

1.1.14.6 The Contractor shall ensure the TCMS inspector has the opportunity to inspect all materials to be installed on the vessel prior to the commencement of work. The Contractor shall ensure all materials have their associated heat numbers and mill test reports available to the TCMS inspector.

1.1.15 Test Results and Data Book

1.1.15.1 The Contractor shall develop a Test and Trials Plan which shall include as a minimum, all tests and trials stated in the specification. This plan shall be provided for TA review one week prior to the originally scheduled Tests and Trials commencement.

1.1.15.2 All tests, measurements, calibrations and readings must be recorded, signed by the person taking the measurements, dated and provided in report format both in hard copy and electronic format, to the TA and TCMS.

1.1.15.3 Recorded dimensions shall be to a precision of three decimal places (unless otherwise stated) in the measuring system currently in use on the vessel.

- 1.1.15.4 The Contractor shall provide to the TA current and valid calibration certificates for all instrumentation used in the Test and Trials Plan showing that the instruments have been calibrated in accordance with the manufacturer's instructions.
- 1.1.15.5 Hard copy reports shall be bound in standard 3-ring binders, type written on letter size paper and indexed by specification number. Electronic copies shall be in unprotected
- 1.1.15.6 Adobe PDF format and provide on CD-ROM media. The Contractor shall provide 3 hard copies and 1 electronic copy of all reports.
- 1.1.15.7 All documentation from the contract period shall be inserted in a data book and delivered to the TA on completion of the contract.
- 1.1.15.8 For any drawings requested, the drawings shall be plotted on standard ANSI paper size paper – minimum ANSI B (11" x 17"). Three copies shall be provided.
- 1.1.15.9 Also the drawings shall be provided in AutoCAD 2000 DWG format (as a minimum – more recent versions are acceptable) and shall be on CD-ROM media. The drawings shall not be password protected. One (1) copy shall be provided
- 1.1.16 Contractor Supplied Materials and Tools
 - 1.1.16.1 The Contractor must ensure all materials are new and unused.
 - 1.1.16.2 The Contractor must ensure replacement material such as jointing, packing, insulation, small hardware, oils, lubricants, cleaning solvents, preservatives, paints, coatings, bolts and bolting materials etc. are in accordance with the equipment manufacturer's drawings, manuals and/or instructions.
 - 1.1.16.3 Where no particular item is specified or where substitution must be made, the TA must approve the substituted item in writing. The Contractor must provide information about materials used, certificate of grade and quality of various materials to the TA prior to use.
 - 1.1.16.4 The Contractor shall provide all equipment, devices, tools and machinery such as welding machines, cranes, staging, scaffolding and rigging necessary for the completion of the work in this specification.
 - 1.1.16.5 The Contractor shall provide waste disposal services for any oil, oily waste or other hazardous or controlled waste generated by the work of this specification. The Contractor shall provide waste disposal certificates for all of the above generated waste and the disposal certificates shall indicate that the disposal was in accordance with Federal, Provincial and Municipal regulations in effect.
- 1.1.17 Government Supplied Materials & Tools
 - 1.1.17.1 All tools are Contractor supplied unless otherwise stated in the technical specifications.

- 1.1.17.2 Where tools are supplied by the TA they shall be returned by the Contractor in the same condition as when they were borrowed. Borrowed tools must be inventoried and signed for by the Contractor on receipt and return to the TA.
- 1.1.17.3 Any Government supplied material (GSM) shall be received by the Contractor and stored in a secure warehouse or storeroom having a controlled environment appropriate for the equipment as per manufacturer's instructions.
- 1.1.18 Restricted Areas
- 1.1.18.1 The Contractor must not enter the following areas except to perform work as required by the specifications: all cabins, offices, workshops, Engineers' office, Wheelhouse, Control Room, all washrooms, Galley, Mess Rooms, Lounge areas and any other areas restricted by signage.
- 1.1.18.2 The Contractor must give the TA 24 hours advance notice prior to working in any accommodation areas or office spaces. This will allow CCG adequate time to move personnel and secure the areas.
- 1.1.19 Contractor Inspections and Protection of Equipment and the Worksite
- 1.1.19.1 The Contractor must coordinate all inspection with the TA on the condition and location of items to be removed prior to carrying out the specified work or to gain access to a location to carry out the work.
- 1.1.19.2 Any damage incurred as a result of the Contractor's work and that is attributable to the Contractor's work performance shall be repaired by the Contractor at his expense. Materials used in any replacement or repairs must meet the criteria for Contractor supplied material noted above in section Contractor Supplied Materials and Tools.
- 1.1.19.3 The Contractor shall protect all equipment and surrounding areas from damage. Work areas are to be protected from the ingress of water, welding and blasting grit etc. Temporary covers to work areas must be installed.
- 1.1.20 Recording of Work in Progress
- 1.1.20.1 The TA may record any work in progress using various means including, but not limited to photography and video, digital or film.
- 1.1.21 List of Confined Spaces
- 1.1.21.1 The Contractor may request a list of the vessel's identified confined spaces at the Pre-Refit meeting.
- 1.1.22 Lead Paint and Paint Coatings
- 1.1.22.1 The Contractor shall not use lead based paints.
- 1.1.22.2 CG ships have been painted with lead based paints in the past and as a result some of the Contractor's processes such as grinding, welding and burning may release this lead from the coatings. The Contractor shall ensure that coatings in the affected work areas are tested for lead content and that the work is performed in accordance with applicable Federal and Provincial regulations.

- 1.1.22.3 The Contractor shall have in place a Lead Paint Abatement Program in order to deal with any lead paint discovered in the course of this specification.
- 1.1.22.4 Any expenses due to lead remediation (containment, disposal, etc.) will be covered by 1379 action.
- 1.1.22.5 The Contractor must provide HC product approval for underwater hull surface paints controlled by HC and the Pest Management Regulatory Agency.
- 1.1.23 Asbestos Containing Materials
 - 1.1.23.1 The Contractor shall not use any asbestos containing materials.
 - 1.1.23.2 Handling of any asbestos containing materials shall be performed by personnel trained and certified in the removal of asbestos in accordance with Federal, Provincial and Municipal regulations in effect and in accordance with the Fleet Safety Manual. The Contractor shall provide the TA with disposal certificates for all asbestos containing material removed from the vessel indicating that the disposal was in accordance with Federal, Provincial and Municipal regulations in effect.
- 1.1.24 Removed Materials and Equipment
 - 1.1.24.1 All removed equipment as a result of this specification shall remain the property of the Coast Guard unless otherwise instructed in the specification sections.
- 1.1.25 Welding Certification
 - 1.1.25.1 For any item requiring the application of fusion welding for steel structures, the Contractor or his Sub-Contractors shall be certified in accordance with the Canadian Welding Bureau, CSA\ACNOR W47.1; Division 2.1 certification – latest revision.
 - 1.1.25.2 For any item requiring the application of fusion welding for stainless steel structures, the Contractor or his Sub-Contractors shall be certified in accordance with the Canadian Welding Bureau, CSA\ACNOR AWS; Division 16 certification – latest revision.
 - 1.1.25.3 For any item requiring the application of fusion welding to aluminum structures, the Contractor or his Sub-Contractors shall be certified in accordance with the Canadian Welding Bureau, CSA\ACNOR W47.2; Division 2.1 certification – latest revision.
 - 1.1.25.4 The Contractor shall provide documentation to the Technical Authority clearly identifying the welding certification of all employees performing any welding included in this specification.
- 1.1.26 Electrical Installations
 - 1.1.26.1 All electrical installations and repairs shall be carried out in accordance with the latest revisions of Transport Canada Marine Safety Electrical Standard TP127E and IEEE Standard 45 Recommended Practice for Electrical Installation on Ships.
 - 1.1.26.2 All installations of electronic equipment shall be carried out in accordance with Canadian Coast Guard Telecommunications and Electronics publication CGTS-3(E)

entitled “General Specification for the Installation of Shipboard Electronic Equipment”.

2.0 SERVICES

2.1.1 General

- 2.1.1.1 The Contractor shall supply the following services to the vessel for the entire work period and disconnect upon completion of the work period. The Contractor shall be responsible for the re-establishment of services if the vessel is moved during the work period.
- 2.1.1.2 Each of the services noted below shall be separately priced in the Contractor's submitted bid.
- 2.1.1.3 The Contractor shall be responsible for supplying all material, hoses, cables etc. and labor required to connect and disconnect the services to the vessel. Unless otherwise stated these services shall be available 24 hours a day 7 days a week for the entire contract period.
- 2.1.1.4 All staging, craning, screens, lighting and any other support services, equipment and materials necessary to carry out the work identified in these specifications shall be Contractor supplied.

2.1.2 Berthing

- 2.1.2.1 The berthing and mooring facilities must be suitable for a vessel of this size in local weather / tide / sea conditions. Fenders shall be supplied by the Contractor to prevent the vessel from contacting the wharf in local weather / tide / sea conditions.
- 2.1.2.2 The length of the dock must be a minimum of 90% of the length of the vessel (LOA).
- 2.1.2.3 During the contract period, when the ship is not in the dry dock, the ship must be berthed at the Contractor's wharf at a safe and secure location with a minimum clearance of 2 meters under the vessel at extreme low tide to ensure the vessel will not touch bottom.
- 2.1.2.4 The Contractor shall be responsible for all movements of the vessel, including berthing and mooring of the vessel for the contract period and arrangements and costs for line handlers, tugs and pilots.

2.1.3 Mooring Lines

- 2.1.3.1 The Ships crew will be supplying mooring rope to secure the vessel to the Contractors facility.

2.1.4 Gangways

- 2.1.4.1 Contractor shall supply the labor and services required for the installation and removal of two gangways, complete with handrails, safety nets and lighting for the duration of the contract. The Contractor shall be required to supply and maintain the gangways.

- 2.1.4.2 Any movement of the gangways required by the Contractor will be at the expense of the Contractor.
- 2.1.4.3 Gangways shall be at separate locations to facilitate fire evacuation.
- 2.1.5 Telephone Services
 - 2.1.5.1 Not used.
- 2.1.6 Electrical Power
 - 2.1.6.1 The Contractor shall be responsible for supplying 600Volt Alternating Current, 60 Hertz, 3 Phase, 300 Ampere electrical power for the duration of the contract.
 - 2.1.6.2 The Contractor shall be responsible for supplying and connecting the necessary shore cable to the ship's shore power connection.
 - 2.1.6.3 The Contractor shall be responsible for ensuring that the correct phase rotation on a 3 – phase system is established prior to energizing the ship's distribution system. Any changes to the ship's power system to accommodate the Contractor supplied shore power connections must be returned to the original setup by the Contractor upon the disconnection of the Contractor supplied power cable and equipment. All work shall be carried out by certified electricians.
 - 2.1.6.4 The Contractor shall supply all power to the vessel through a Contractor supplied kilowatt-hour meter. The Contractor shall read the kilowatt-hour meter when the connection is made and once again when the power is disconnected. Both readings of the meter shall be witnessed by the TA. The Contractor shall provide a calibration certificate for the kilowatt-hour meter.
 - 2.1.6.5 The Contractor shall supply a price quote per kilowatt-hour for electrical power for the duration of the work period.
 - 2.1.6.6 Final price for this item shall be determined at the end of the contract once the meter has been read The final power consumption total shall be adjusted up or down by PWGSC 1379 action.
- 2.1.7 Potable Water Supply
 - 2.1.7.1 The Contractor shall provide a 2 inch diameter sized hose, disinfected and certified for use for potable water only, to supply potable water to the vessel. Water shall be supplied through a calibrated pressure regulator and calibrated water meter, complete with pressure gauge and isolation valve. Potable water pressure shall be capable of being regulated between 40 to 100 psig. The dock connection shall be flushed for at least 5 minutes before connecting the supplied hose to the ship to ensure standing water in the system has been cleared from the pipe.

- 2.1.7.2 The Contractor shall read the water meter at the beginning of the contract period and again at the end. The readings shall be taken in the presence of the TA and shall be used to calculate the total water usage.
- 2.1.7.3 The water shall be supplied from an approved municipal drinking water supply system that has been certified safe for consumption. (Reference CCG FSSM 7F12 Potable Water Quality paragraphs 3.3 Shore Supply, 3.6 Potable Water Testing).
- 2.1.7.4 At the start of the contract the Contractor shall provide the TA with a copy of water test results for the potable water being supplied to the vessel showing at a minimum the following 5 parameters:
- E. Coli must be 0 detectable per 100ml;
 - Total Coliform must be 0 detectable per 100ml;
 - Total Dissolved Solids must be less than 500 mg/L;
 - pH must be between 6.5 and 8.5 pH units;
 - Iron shall be below 0.3 mg/L.
- 2.1.7.5 The test results must have been taken within 1 month of the start of the contract date.
- 2.1.7.6 Provisions shall be made by the Contractor to ensure that the potable water supply does not freeze during cold weather.
- 2.1.7.7 The Contractor shall supply a price quote per cubic meter of potable water. The Contractor shall also quote on supplying 10 cubic meter of potable water per day for the duration of the contract.
- 2.1.7.8 The final amount of potable water used shall be calculated from the calibrated water meter and adjusted up or down by PWGSC 1379 action.
- 2.1.8 Non Potable Water
- 2.1.8.1 Not Used.
- 2.1.9 Black and Grey Water Service
- 2.1.9.1 Not Used
- 2.1.10 Cranage
- 2.1.10.1 The Contractor shall quote on the general services of a crane, including an operator and a rigger, for the support of the vessel's day-to-day activities, i.e. the moving of stores from the vessel to the Contractor's facilities ashore while the vessel is in the dry-dock. The Contractor shall quote on providing this service for 15 hours over the duration of the contract. The 15 hours of cranage shall not include transit or assembly of the crane prior to commencing lifts.

2.1.10.2 The crane capacity - lift height and SWL - shall be sufficient to perform all work within this specification excluding the specification item – ME#1 block removal and installation.

2.1.11 Garbage Removal

2.1.11.1 A garbage container or dumpster of 5 cubic meters shall be located adjacent to the vessel. The garbage container shall be emptied as required if full or at a minimum every 4 days. Ship's personnel shall comply with any recycling programs that the Contractor has in place, provided the appropriate containers are made available.

2.1.11.2 The Contractor to supply a green bin for food waste. The green bin shall be emptied daily from September 10 to Oct 29.

3.0 VESSEL PARTICULARS

Name: CCGS Samuel Risley

Type: Type 1050 Medium Endurance Multitasked Vessel, Ice Class 1A Super/
Arctic Class 2

Propulsion: Twin rudder, direct drive diesel, twin screw, controllable- pitch shrouded
propellers, jet type bow thruster, and tunnel-type CPP stern thruster.

Year Built: 1985

Principal Dimensions:

Length: 69.73 meters

Breadth, molded: 13.7 meters

Loaded Draft: 5.817 meters

Tonnage, displ: 2935 tonnes

4.0 BILGE CLEANING

4.1.1 Identification

4.1.1.1 The Contractor shall spot clean all of the bilge area of the vessel’s main engine room, prior to the commencement of several items of work of this specification.

4.1.1.2 This bilge spot cleaning shall consist of areas requiring hotwork so that it is safe for hotwork and certified for man entry for duration of contract.

4.1.2 References

4.1.2.1 Drawings:

Drawing Number	Drawing Title	Electronic File Name
	General Arrangement Profile & Superstructure Decks	

4.2 Technical

4.2.1 Initial Bilge Cleaning

4.2.1.1 The Contractor shall spot clean all bilge areas requiring hotwork such that they can be safe for hotwork and certified for man entry in the following locations:

- Main Engine Room Bilge.

4.2.1.2 This certification shall be maintained for the duration of the contract.

4.2.1.3 All bilge cleaning shall be completed before work items in the following sections are started:

- a.Main Engine #1 rebuild.

4.2.1.4 The Contractor shall quote on removing 20 cubic meters of oily waste from the bilges prior to the start of the cleaning operation.

4.2.2 Disposal of Liquid and Waste from the Bilges

4.2.2.1 All material from the bilges shall be removed and disposed of ashore in accordance with Federal, Provincial and Municipal regulations in effect at the time of the contract. The Contractor shall provide copies of waste oil manifests showing that the materials removed from the bilges were disposed of in accordance with Federal, Provincial and Municipal regulations in effect at the time.

4.2.2.2 Where water or any foreign materials are allowed to ingress into the bilge as a result of subsequent work performed by the Contractor; this material shall be removed from the bilge areas prior to the close of the contract at the Contractor's expense.

4.3 Inspection, Test and Trials

4.3.1 The Contractor shall have the Technical Authority inspect the bilges for cleanliness once the work is completed.

4.3.2 The Contractor shall provide the Technical Authority with all copies of waste oil manifests showing the disposal of the materials removed from the vessel's bilges.

5.0 MAIN ENGINE #1 BLOCK REMOVAL AND INSTALLATION

5.1 General

5.1.1 The Contractor shall remove Main Engine #1 block and crankshaft. The installed block is damaged and must be removed and renewed. The engine is a Wartsila VASA 12V22 rated at 1590 kW, similar to other 3 main engines. Once removed the contractor shall installed a new Wartsila VASA 12V22 short block assembly provided by the owner. Main engine #1 is located approximately 4047mm off centerline to port side between frames 20 and 24. Contractor is responsible for the removal and reinstallation of all piping, ventilation ducting, structural components, lighting, brackets, fire suppression systems and all other systems that are located in the removal and installation path of the engine.

5.2 Applicable Documents

5.2.1 The following documents are applicable to or interface with the task requirements of this section:

- C.S.A., Hull and Machinery Regulations;
- IASCS, Document No.47; Shipbuilding and Repair Quality Standard
http://www.iacs.org.uk/document/public/Publications/Guidelines_and_recommendations/PDF/REC_47_pdf193.pdf
- Drawing/Document List.

Drawing/Document Number	Description
161-201-100	Profile and decks
161-201-101	Tank top and flat plan
161-201-102 Sheet 1 of 2	Longitudinal Bulkheads 0 to FR 32
161-201-11	Main Deck plating, FR 16-32
161-201-12	Main Deck Girders and Longitudinals FR 16-32
161-201-13	Main Deck Longitudinals and Beams FR 16-32
161-202-20	Structural Section FR 20
161-202-21	Structural Section FR 21
161-202-22	Structural Section FR 22
161-202-23	Structural Section FR 23
161-260-1	Main Engine and Gear Boxes Foundations
161-300-1	General arrangement
S030-Engine overhaul-01	Engine removal and replacement (5 sheets)

161-500-100	Machinery Arrangement
161-625-3	Engine Room Lighting Layout
161-702-001	Vent and Sounding Diagrammatic
161-703-001	Fuel Oil Piping Diagrammatic
161-709-001	Compressed Air Piping Diagrammatic
161-713-100	Exhaust Uptakes and Fire Monitor Piping
161-800-001	Thermal Fluid Heater Diagrammatic
161-807-001	Domestic Fresh Water Piping
LI-4354228-01 Sheets 1-2-9 &11	Kidd Marine FM-200 System Layout and Installation
Ventec 81055-1433- CD3	Ductwork Sys. – Below Main Deck & Thruster Compartment
Reference Doc#1	Wartsila Engine Installation Data
Reference Doc#2	Wartsila Component Weights
Reference Doc#3	Chockfast Pad Dimension Information
Reference Doc#4	Info from Chockfast for Fitted Bolts
Reference Doc#5	Risley Chock Calcs Main Engine rev.2
Reference Doc#6	Vulkan-Ratio S Coupling M-E Series 2200
Reference Doc#7	Wartsilla VASA Manual
Reference Doc#8	Wartsila Ops&Maint Manual
Reference Doc#9	Flywheel Details
Ref Dwg #1	12V22 Propulsion Unit 1 of 2
Ref Dwg #2	12V22 Propulsion Unit 2 of 2
Ref Pic#1	Air Supply Ducting
Ref Pic#2	Piping #1
Ref Pic#3	Piping #2
Ref Pic#4	Joints at Fr 22
Ref Pic#5	Piping #3
Ref Pic #6	Piping #4
Ref Pic#7	Piping #5
Ref Pic#8	Piping #6
Ref Pic#9	Sewage & Potable Penetrations
Ref Pic#10	Alignment Plates
Ref Pic#11	Wartsila Crankshaft
Ref Pic#12	Flywheel Bolts
Ref Pic#13	Flywheel
Ref Pic#14	Crank and Flywheel Assembly

5.3 Technical

5.3.1 General

- 5.3.1.1 The contractor shall ensure all surrounding areas not disturbed and protected from any damage. Any damage outside of the “as delivered” condition shall be repaired at the contractor’s expense.
- 5.3.1.2 The contractor is responsible for all aspects of the removal and installation of ME#1 including engine rebuild, commissioning and performance trials. All manufacturer’s recommendations and requirements must be followed for each stage of the removal and installation. All manufacturers’ documentation must be submitted to the TA prior to contract end.
- 5.3.1.3 Inspections shall be completed by Transport Canada (TCMS), the Technical Authority (TA) and manufacturer’s representatives throughout the entire removal and installation process.

5.3.2 Certifications

5.3.2.1 Welding

- 5.3.2.2 For fusion welding for steel the Contractor shall be certified in accordance with the Canadian Welding Bureau (CWB), CSA\ACNOR W47.1 1983, Division 2.1. The Contractor shall supply proof of his accreditation to the TA and TCMS. All such welding shall be to CSA Standard W59M “Welded Steel Construction (Metal Arc Welding) (Metric Version)”.
- 5.3.2.3 The Contractor shall provide copies of all welding certificates to the TA at the start of the contract work.
- 5.3.2.4 The Contractor shall submit CWB stamped welding specifications and weld procedure data sheets to TCMS where required. Weld procedures for joining pipe connections shall be recorded and approved by CWB in accordance with ASME, Section IX.

5.3.3 Component Certificates

- 5.3.3.1 The new engine block provided by the owner is class approved and comes with manufacturer’s warranty. This documentation can be provided to the contractor upon request once engine has been delivered to contractor’s facility.
- 5.3.3.2 Any parts required during the rebuild and installation of the new engine block outside the parts provided in the GSM list of this specification shall be new, not reconditioned. These parts shall be defined in a list and provided to TA for acceptance prior to rebuild. All parts shall be purchased by engine manufacturer. All new parts shall carry manufacturer’s warranties.

5.3.4 Material Certificates

5.3.4.1 The Contractor shall provide all new material certificates to the TA prior to installation. Certificates shall also be made available to all TCMS inspectors.

5.3.5 Inspection Report and Certificates

5.3.5.1 The contractor shall arrange for TCMS inspectors to inspect all work throughout the removal and replacement of the engine block, the rebuild of ME#1 and the commissioning of the engine. Contractor shall deliver to the TA all original signed compliance reports provided by TCMS with regards to this work.

5.3.5.2 The contractor shall supply the TA with a schedule of work to be completed. The contractor shall also provide TA with a signed certificate from the engine manufacturer stating the engine has been rebuilt within manufacturer's tolerances, operation tolerances are verified and accepted, and all warranties are accepted by manufacturer.

5.3.6 Environmental Disposal

5.3.6.1 All hazardous material removed during the engine work shall be disposed of by contractor according to all federal, provincial and municipal laws. Signed certificates shall be provided by the contractor to the TA stating all disposal regulations have been followed.

5.3.7 Tools and Supplies

5.3.7.1 It is the contractor's responsibility to provide all tools and supplies to complete the work required. No tools or supplies shall be used from the ships inventory without specific approval by the TA.

5.3.8 Cleanliness

5.3.8.1 The Contractor shall maintain the vessel in a clean condition. Debris and garbage shall be removed from the vessel and disposed of at the end of each working day.

5.3.8.2 Attention shall be given to hazardous materials such as flammable or toxic waste products. These shall be disposed of in accordance with section 5.3.6.

5.3.8.3 Care shall be taken while installing and rebuilding the new engine that no debris enters the engine. This shall include cleaning of crank case of all debris prior to installing on new engine block, covering and protecting top end of engine block during installation, welding and reinstallation of both piping, deck plate and lifting beams. Any problems resulting from debris entering the new engine shall be repaired at contractor's expense.

5.3.9 Temporary Storage

5.3.9.1 Several components shall be removed and reinstalled once the new engine block is in place. While these parts are removed the contractor shall store them in a secure, dry environment.

5.3.9.2 Pipes that are removed shall be temporarily capped to prevent debris entering the system once reinstalled.

5.3.9.3 Any damage to parts temporarily removed shall be repair or replaced at contractors expense.

5.3.10 Lifting Procedures.

5.3.10.1 All lifting procedures shall be carried out in accordance with all industrial regulations for the region. Lifting appliances shall have safe working loads (SWL) above all intended lifts. Only certified lifting gear with SWL within lifting tolerances shall be used. Any off-axis lifting shall consider all vector loads and lifting appliances designed to withstand these loads.

5.3.10.2 A lifting plan shall be provided to the TA prior to work being completed. All lifting temporary lifting lugs shall be removed prior to contract end. All lifting lug designs and calculation shall be provided to TA prior to install. CCG has developed a lifting that can be used by the contractor subject to TCMS approval. Please reference (Ref DWG S030-Engine ohual -01).

5.3.10.3 All loose or rotating parts within both new and existing engines shall be secured prior to lifting.

5.3.11 Piping

5.3.11.1 All pipes and piping systems broken during the engine block removal and install shall be broken at the most convenient pipe joint unless defined within this document. Pipe system removal shall be kept to a minimum while providing a safe, clear working space for removing and installing the engine block with minimal risk of damage to surrounding systems. All broken pipe systems shall be capped at both ends to prevent debris from entering. Pipes that are removed shall be stored in a clean and dry environment protected from damage. Any pipes damaged during the removal, storing and reinstallation shall be replace with new at the contractor's expense. All pipes shall be proven clear prior to reinstallation.

5.3.12 Storage

5.3.12.1 All temporary storage in accordance with section 5.3.9.

5.3.13 Joints, Connections and Hangers

5.3.13.1 All removed pipe work shall be reinstalled in the original configuration. Any gaskets, flanges and connectors damaged during removal shall be replaced with new by contractor at contractor's expense.

5.3.13.2 All pipe hangers removed during the engine work shall be reinstalled in original position and provide adequate support and protection to piping system. The contractor shall replace any isolating rubber during the reinstallation of the hangers.

5.3.14 Pipe Labeling

5.3.14.1 All piping systems shall be identified in accordance with CCG Piping Identification Standard CGFM 308.00.03.

5.3.15 Painting

5.3.15.1 All paint repairs to pipes and hangers shall be done in accordance with section 5.3.18 & 5.3.19

5.3.16 Commissioning

5.3.16.1 Contractor shall commission all temporarily removed systems shall be returned to operable condition. The contractor shall flush all system to avoid debris damaging the system. Contractor shall provide TCMS inspection certificates for all required systems.

5.3.17 Hot Work

5.3.17.1 The following precautions shall be taken where hot work is to be conducted:

- The compartment(s) affected shall be certified gas free by a certified marine chemist or other qualified person. The Contractor shall provide copies of all certificates to the Inspection Authority. Certificates shall specify, "Safe for persons" and/or "safe for hot work" as appropriate. The Contractor shall post a copy of all certificates at the entrance to the affected spaces;
- Protective material shall be used to prevent the spread of sparks, protecting electrical cables and other services;
- Fire sentries shall be provided in each space and in all adjacent spaces, if welding, grinding and burning is being carried out. Fire sentries shall be provided with an appropriate fire extinguisher and shall be trained in its use. The fire sentry shall maintain a watch in his designated area for at least thirty (30) minutes after any hot work has been completed.

5.3.17.2 Any hot work carried out onboard the vessel during the contract period shall be conducted in accordance with the Canadian Coast Guard Fleet Safety Management System (CCGFSM) procedures and individual shipboard work instructions. Copies of the manual and site-specific work instructions are available from the Technical Authority.

5.3.18 Surface Preparation Prior to Paint

5.3.18.1 All surfaces to be painted shall be cleaned and degreased. All new structural parts shall be shot blasted; the corners shall be rounded by grinding and primed with pre-construction primer in accordance with paint suppliers recommendations.

5.3.19 Paint

5.3.19.1 All zones affected by the work shall be painted. All paint shall be provided by the owner. One (1) primer coat shall be applied followed by two (2) top coats. One (1) stripe coat shall be applied on all welds, edges, across holes etc. before the application of the primer coats well as before the application of the first finish coat.

5.3.19.2 All painting applications shall be carried out in accordance with paint manufacturer's specifications.

5.3.20 Electrical Isolation

5.3.20.1 When working on electrically operated equipment, the following precautions shall be taken:

- Electrical lock-outs shall be used to isolate the equipment and electrical caution tags posted at the main power and distribution panel on those switches supplying equipment under maintenance and verification made at the terminals to ensure power is not present.

5.3.20.2 Any lock-out requirements onboard the vessel during the contract period shall be conducted in accordance with the Canadian Coast Guard Fleet Safety Management System procedures and individual shipboard work instructions. The Contractor's Standard Operating Procedures (SOP's) may be substituted for this requirement based upon a review and acceptance of the Contractor's SOP's by the Contract Authority and the Technical Authority.

5.4 Scope of Work

5.4.1 Upon receiving the vessel the contractor shall note the damaged ME#1 engine will be completely stripped of all auxiliary equipment and ready for removal. The contractor shall use the engine manufacturer's Field Service Representatives (FSR) to oversee all aspects of the existing engine block and crankshaft removal, the lifting and installation of the new engine block assembly, as well as carry out the complete rebuild of ME#1 and the commissioning.

5.4.2 Engine Manufacturer's Contact Information;

Ian Brouwer
Sales Account Manager, Services
Wärtsilä Canada Inc.
4420 Rue Garand
Montreal, QC, H4R 2A3
Canada

Tel.+1 514 404 4234
Mob.+1 514 970 8077

ian.brouwer@wartsila.com

- 5.4.3 The contractor shall be responsible for all aspects of the engine removal and reinstallation including; old engine block removal, old engine crankshaft removal, preparation of engine beds for new engine block, removal of all auxiliary systems in way of the removal/entry route, cutting of access hole in deck, installing of lifting lugs, develop lifting plan, installing new engine block assembly, fit existing flywheel, aligning engine to coupling, seating engine on engine beds, connect driveline, reinstalling auxiliary systems, commissioning auxiliary systems, repairing access hole in deck, complete engine build of new engine and initial operation and commissioning of engine.
- 5.4.4 Deck Cutout
- 5.4.4.1 The contractor shall cut an access hole in the aft working deck between frame 20 and frame 22. This access hole shall be cut in accordance with drawing S030-Engine ohaul-01. During this procedure the outside stairway access to the boat deck shall be removed by the contractor. This stairway shall be reinstalled at the end of the engine work and thus shall be removed and stored by contractor in a safe and dry facility. The contractor shall reinstall the stairway to original position and condition once access hole is sealed. Any damage to the stairway shall be repaired at contractor's expense.
- 5.4.4.2 Temporary barricades shall be installed IWO stairways and access hole. These barricades shall be removed prior to end of contract.
- 5.4.4.3 The deck penetrations in way of the cutout (Fuel oil header Vent, #3 water ballast tank vent, fresh water fill, sewage discharge, sea bay vent) shall be disconnected at the nearest possible pipe joint and removed with the deck plate keeping the watertight penetrations intact.
- 5.4.4.4 The large longitudinal deck girder located at 2940 mm off centerline shall be cut IWO the access hole.
- 5.4.4.5 Section of deck plate removed with girder and pipe penetrations shall be stored by contractor in accordance with section 5.3.9 and reused to seal deck once engine work is complete. Once engine reinstallation is complete the contractor shall seal the deck access hole in accordance with drawing S030-Engine Ohaul-01 to original condition. Contractor shall arrange for TCMS inspection of work and witness a hose test to verify watertightness prior to painting welds. All tests and inspections of this repair shall be define by contractor and submitted to TA for approval prior to completion. All painting to be done in accordance with section 5.3.18 & 5.3.19.
- 5.4.4.6 Any temporary lifting lugs shall be removed prior to contract end.

5.4.5 Main Engine #1 (ME#1)

- 5.4.5.1 The owner shall supply a new Wartsila VASA 12V22 short block assembly that includes new engine block, new crankshaft, pistons, and connecting rods installed. The dimensions and weight of the engine assembly are as follows;

Total Assembly Weight:	8573.2 KG
Short Block Ass. Height:	1.255 m
Short Block Ass. Width:	1.350 m
Short Block Ass. Length:	2.845 m

- 5.4.5.2 Please refer to Wartsila dimensional drawing Ref. Dwg#3 for guidance. For further technical information concerning the engine block and installation please contact Wartsila Canada. Lifting lugs shall be shipped with the new short block assembly for lifting. These lugs can be removed and installed on old block to help facilitate removal. These lugs shall be returned to the owner at contract end as they are the property of Wartsila and must be returned to Wartsila in Finland. Contractor shall be liable for any costs incurred by owner if the lifting lugs are lost, stolen or damaged. All work with respect to the ME#1 removal, install, rebuild and commission shall be done in the witness of or using Wartsila Canada certified FSR's as defined in this document.

5.4.6 Existing ME#1 Removal

- 5.4.6.1 Existing ME#1 will be stripped of all auxiliary items prior to delivery to contractor's facility. Contractor shall install the Wartsila provided lifting lugs onto the existing block. Deck access hole allows for a shore side crane to lift almost directly over the centre of the engine in ME#1 position. Any small adjustments shall be made using other lifted equipment detailed and in accordance with section 5.3.9 . Current engine position shall be marked by the contractor on the engine beds at all four corners prior to removal of the engine block.
- 5.4.6.2 The jacking screws located on the four corners of the engine shall be removed and installed on the new block. Existing engine block and crank shall be prepared by contractor for shipping to owner's facility. This shall include proper temporary shipping seating, all tie-downs to properly secure equipment and shrink wrapped to avoid water accessing engine parts. Any damage caused to engine and crankshaft due to improper shipping preparation shall be paid at contractor's expense. The owner will pick up existing engine and crank from the contractor facility prior to end of contract.
- 5.4.6.3 The existing crank case shall remain in place once the block is removed.

5.4.7 Cleaning of Area IWO Engine Block

5.4.7.1 Once the existing block is removed the crank case shall be completely cleaned of all debris, oil and residue. The bilge beneath the crank case shall also be cleaned and removed of all oily residue and debris prior to the new block being installed. The engine beds shall be cleaned and all old chocking material and paint removed. Engine beds shall be buffed down to bare metal in accordance with Chock Fast recommendation. Once bilge and engine beds are cleaned the contractor shall have the TA inspect the area and approve prior to repositioning the crank case and installing the new block. All removed material shall be disposed of in accordance with section 5.3.6 .

5.4.8 Engine Beds

5.4.8.1 The contractor shall use drawing 161-260-1 and Ref. Dwg #2 for guidance. Alignment plates shall be welded to the engine beds at all four corners (Ref. Pic #10) using the marks provided prior to the engine removal as guidance. Once final alignment and engine fastening, these alignment plates shall be removed.

5.4.8.2 To bed the engine the contractor shall use Chock Fast provided by Philadelphia Resins. The contractor shall provide an updated Chock Fast Pad dimensions drawing (Ref #3) and Chock calculations (Ref #4). All chocking shall be completed in accordance with manufacturer's recommendations, TCMS and Wartsila requirements. Once chock fast has cured 4 samples shall be taken at predetermined location to ensure proper curing.

5.4.9 New Block Installation

5.4.9.1 The new engine shall be unpacked from its shipping crate and inspected by Wartsila prior to installation. Contractor shall use the Wartsila provided lifting lugs (Ref. Doc #1) to lift the engine assembly. Using a shore side crane the contractor shall lower the new engine block assembly into the engine room space, (Ref Dwg S030-engine ohaul-01). For final manipulation into position the contractor shall use the installed lifting lugs and lifting tackle detailed in section 5.3.10. All installation details shall be in accordance with manufacturer's recommendations and under the supervision of a Wartsila FSR to ensure proper installation.

5.4.10 Engine Alignment

5.4.10.1 The engine shall be aligned using the alignment plates and jacking screws installed on the engine. Alignment shall be done under the supervision of Wartsila, TCMS and the TA in accordance with the requirements for the Vulkan – Ratio S Coupling (Ref Doc #6). The existing Vulkan coupling and flywheel shall remain and be used to connect the engine to the gearbox. All Alignment shall be completed using laser measurement devices or other standard marine industry practices as approved by TA and TCMS. A report shall be developed by the contractor stating all tolerances have been met and shall be submitted to TCMS for approval. Once approved the original signed report

shall be submitted to the TA prior to contract end. Report shall be complete in accordance with section 5.5.5.

5.4.11 Engine Flywheel

5.4.11.1 The contractor shall have Wartsila Canada fit the existing flywheel to the new crankshaft prior to installation (Ref Doc 9). The contractor is responsible to order all necessary parts to complete this work. Once flywheel is fitted it shall be removed and the short block assembly lowered into place. Once engine is aligned and installed the contractor shall have Wartsila connect the flywheel to the crankshaft and then connect the flywheel to the Vulkan coupling and completing the driveline assembly. Pictures of crank and flywheel assembly from previous crankshaft renewal on board the CCGS Samuel Risley are provided for guidance (Ref Pic #11-14).

5.4.11.2 The existing flywheel, which the owner intends to reuse, has a different bolt pattern than the new crankshaft. This fitting process shall be completed to ensure proper operation of the engine and driveline and shall be done before the new engine block is installed in the engine room.

5.4.12 Engine bolting and Chocking

5.4.12.1 The engine shall be bolted to the engine beds using bolts fitted using chock fast in accordance with document Ref.4. Drawings of the fitted bolts shall be submitted to the TA for acceptance.

5.4.12.2 Chock fast shall be poured by qualified technician and final torqueing of the bolts shall be in accordance with Wartsila and Chock fast installation requirements. Please refer to section 5.4.8 for further requirements with regards to chock fast. Any coffer dams or moulds used during the pouring of the chockfast shall be removed upon completion.

5.4.13 New Engine Rebuild

5.4.13.1 The contractor shall contract Wartsila Canada certified FSR's to complete the engine rebuild and connection of driveline. The Wartsila technicians shall utilize all owner supplied equipment as defined in the GFM list to rebuild the engine. All GSM parts provided shall be new or reconditioned and measured with manufacturer's tolerances. Any additional equipment outside of the equipment provided by the owner shall be defined in a list prior to the rebuild and submitted to the TA for approval. During the rebuild the contractor shall ensure access to the area for the TA to carry out inspections. All work carried out shall be carried out in accordance with manufacturer's specifications as well as to the TA's satisfaction. Once engine rebuild is complete and all auxiliary's system are attached the contractor shall provide the TA with a signed reported from Wartsila Canada in accordance with section 5.3.5.

5.4.14 Commissioning

5.4.14.1 Commissioning of the new engine shall be completed by Wartsila Canada. All commissioning shall be done in accordance with manufacturer's specifications. The contractor shall arrange TCMS inspection in accordance with section 5.3.5 during this process.

5.4.15 Performance Trials

5.4.15.1 The contractor under the guidance of Wartsila Canada shall perform a set of performance trials to ensure the engine is operating at optimum performance. A trial agenda shall be submitted to the TA and TCMS for approval prior to the trials. Any deficiencies noted during the trials shall be rectified by the contractor under the guidance of Wartsila prior to acceptance by the TA. Any additional work required to repair deficiencies shall be completed at contractor's expense.

5.4.16 Ventilation Duct Work

5.4.16.1 Located between frame 20 and 22 running transversely are the air supply ducts for ME#1 and ME#1 (Ref Pic#1). These ducts shall be dismantled and stored in a suitable location by the contractor in accordance with section 5.3.9. These ducts can be disconnected at the most convenient flange to provide a clear removal/access path for the engine block. Once engine removal/install is complete the ducting can be reconnected. All work to be complete in accordance with section 5.3.11.

5.4.17 Piping Systems

5.4.17.1 FiFi Pipes

There is a large 12" diameter pipe that provides water to the firefighting monitors running transversely forward of frame 20. The portion of this pipe IWO the deck access opening shall be removed. This pipe is best removed once the deck cutout has been removed as it will provide better access for removal. The pipe can be disconnected at the nearest practical pipe Victaulic couplings as shown on Ref. Pic #2-8. Using proper lifting techniques the pipe shall be removed and stored in accordance with section 5.3.9 until reinstallation can occur. The pipe shall be reinstalled prior to the deck access being sealed. All pipework shall be completed in accordance with section 5.3.11.

5.4.18 Thermal Pipes

5.4.18.1 The thermal pipes noted in Ref. Pic#2-8, that runs longitudinally along the longitudinal girder 2940mm off centerline and cross transversely at frame 21/22 shall be drained and broken outside of the deck access opening. The pipes are connected using threaded couplings and shall be removed IWO the engine block removal/access path. All pipework shall be completed in accordance with section 1.3.6.

5.4.19 Fuel Manifold

5.4.19.1 The fuel manifold as noted on Ref. Pic#2-8, that runs aft of ME#2 to ME#1 shall be disconnected and removed during the engine replacement. Pipes can be disconnected at flanged couplings. All pipework shall be completed in accordance with section 5.3.8.

5.4.20 Seabay Vent

5.4.20.1 The seabay vent pipe shall be disconnected at the closest Victaulic coupling and the deck penetration shall be removed with the deck cutout. Details of the penetration can be reviewed in Ref. Pic#2-8. Additional sections of the vent pipes shall be removed to the closest coupling as required to avoid the engine removal/access path. All pipework shall be completed in accordance with section 5.3.8.

5.4.21 Vent Pipes and Auxiliary Oil Fill

5.4.21.1 These pipes run fore and aft outboard of the longitudinal deck girder at 1500mm off CL on port side (Ref Pic#2-8). These pipes are connected via threaded couplings. Sections of these pipes shall be disconnected and removed to the closest coupling as required to avoid the engine removal/access path. All pipework shall be completed in accordance with section 5.3.8.

5.4.22 Fresh Water Fill

5.4.22.1 The fresh water fill pipe shall be disconnected at the closest Victaulic coupling and the deck penetration shall be removed with the deck cutout. Details of the penetration can be reviewed in Ref. Pic#2-8. Additional sections of the vent pipes shall be removed to the closest coupling as required to avoid the engine removal/access path. All pipework shall be completed in accordance with section 5.3.8. Great care shall be taken to cap this system to avoid debris and contamination entering the system. Once the system is reinstalled the contractor shall preform a superchlorination test on the system and test results provided to the TA in accordance with Section 5.3.5.

5.4.23 Fuel Header Tank Vent Pipe

5.4.23.1 The fuel header tank vent pipe has to be disconnected and a portion removed as detailed in Ref. Pic#2-8. This pipe is connected by threaded pipe connections and can be removed at the closest coupling to avoid the engine removal/access path. All pipework shall be completed in accordance with section 5.3.11.

5.4.24 FM200 Fire Suppression System

5.4.24.1 The contractor shall hire National Marine and Fire Services (NMFS) to disconnect and remove the portion of FM200 suppression system IWO the engine removal/access path. During this time NMFS shall isolate this portion of the fire suppression system including all alarms, discharge pipes etc. Once engine work is completed the

contractor shall hire NMFS to reinstall the portion of the fire suppression system, reinstate all alarms, charge the system re-certify system, and complete the annual inspection of the ship's fire suppression system. Please refer to Ref. Pic#2-8 for guidance on pipe location.

5.4.25 Pipes to Avoid

5.4.25.1 There are hydraulic lines that run transversely along frame 20 (Ref. Pic#2-8). These pipes are located aft of the intended deck cutout. These pipes power the port deck winch and shall be maintained intact throughout this work.

5.4.26 Lifting Beams

5.4.26.1 The lifting Rails located over ME#1 and between ME#1 and ME#2 shall be removed. Care shall be taken to maintain these rails especially to protect the running rails.

5.4.26.2 These rails shall be removed for the engine removal and install. These rails are required to be reinstalled prior to the building of the new ME#1 by Wartsila as they will require them to lift various components. Temporary storage of these items shall be in accordance with section 5.3.9.

5.4.26.3 When reinstalling the lifting beams the contractor shall ensure the beams are within a maximum deviation of <2 degrees from horizontal. Once lifting beams are installed a static load test shall be carried out in accordance with TCMS regulations and witnessed by TCMS inspectors to provide a safe working load. The lifting capacities for each beam shall be maintained (SWL 3 ton).

5.4.27 Electrical Trays

5.4.27.1 There are two main electrical wire trays running fore and aft outboard of ME#1. These trays are attached to the deck head and shall remain intact throughout this work. The deck cutout had been designed to avoid altering these wire conduits.

5.4.28 Lighting

5.4.28.1 The contractor shall disconnect in accordance with section 5.3.10 all permanent lighting IWO the engine removal/access route. These permanent lights shall be removed and stored in a suitable location in accordance with Section 5.3.9. The contractor shall supply auxiliary lighting in the area surrounding ME#1 for the duration of the removal/installation process. Once the new engine block is in place the ship's permanent lighting can be reinstalled and commissioned to be used during the engine rebuilding process.

5.5 Inspection

- 5.5.1 The contractor shall arrange for TCMS to inspect all aspects of this engine overhaul. Contractor shall consult with TCMS and define an inspection schedule. This schedule is to be provided to the TA for approval. All documents provided by TCMS shall be handed over to the TA at contract end. It is the contractor's responsibility to ensure all work completed is approved by TCMS prior to contract completion.
- 5.5.2 During the ME#1 removal and installation Wartsila Canada shall be involved with the inspection of equipment, lifting plan, installation, alignment and total overhaul of engine. All documents provided by Wartsila shall be handed over to the TA at contract end.
- 5.5.3 Vessel shall be made available at all times for TA to inspect. TA shall inspect all aspects of the work being completed. All work completed shall be to the TA's satisfaction.
- 5.5.4 Commissioning
 - 5.5.4.1 The contractor shall commission all systems affected by this engine overhaul. All pipe systems shall be commissioned in accordance with section 5.3.15. ME#1 commissioning shall be carried out by Wartsila Canada.
 - 5.5.4.2 Performance trials shall be in accordance with section 5.4.15.
- 5.5.5 Deliverables
 - 5.5.5.1 Manufacturers Manuals and Documents
 - 5.5.5.1.1 The contractor shall supply all manufacturer's installation manuals and documents with regards to the engine removal and install. All manuals shall be provided in both Hard and electronic copies; 3 x hard copies and 1 x electronic copy.
- 5.5.6 Certificates
 - 5.5.6.1 The Contractor shall make reference to Section 5.3.2 and provide the TA with all required certificates.
 - 5.5.6.2 Copies of all disposal certificates as defined in 5.3.6 shall also be provided to the TA.
- 5.5.7 Drawings
 - 5.5.7.1 The Contractor shall be responsible for updating all "As Fitted" drawings affected by the ME#1 replacement. Three (3) hard copies as well as original CAD drawings shall be provided to the TA. CAD drawing format to be ACAD 2010.dwg.

6.0 GALLEY READY USE FRIDGE REPLACEMENT

6.1 Identification

6.1.1 The Contractor shall remove old galley Ready Use Refrigerator and shall install a new Coast Guard supplied Refrigerator/Freezer.

6.2 Reference

Drawings

Drawing Number	Description	Electronic File Name
161-202-100	CCGS Samuel Risley Structural Sections	S30107se1 .dwg
161-320-15	CCGS Samuel Risley Main Deck & Boat Deck Ceiling Panel Layout	S30120mi1 .dwg
161-300-2	CCGS Samuel Risley Main Deck & Boat Deck Accommodation Layout	S30114ar1 .dwg
OSK5	READY-USE FRIDGE/FREEZER INSTALLATION	
SSK1	Deck Cut-out Diagram (3 sheets)	

Regulations

- CSA, Hull Construction Regulations (Latest version).
- IASCS, Document No.47; Shipbuilding and Repair Quality Standard
- DFO 5847 Paint and Hull Coating Standard

Manuals

- IM-RI-Black-50187-20120503.pdf (Installation and Operators Manual Continental)

6.3 Technical

6.3.1 Old Refrigerator Details

6.3.1.1 The current Galley Refrigerator/Freezer (Ready Use) is a Foster MLH-25-40ADU installed on the CCGS Samuel in 1985 during the original construction of the vessel. The original R22 compressors and operating refrigerant have been converted to 134a. There is a refrigeration compressor/evaporator/condenser and a Freezer compressor/evaporator/condenser system. Each system holds an estimated 12 oz of R134 for a total of approximately 24 oz.

6.3.1.2 The current Refrigerator Freezer measures 33-1/4" (845 mm) Deep x 88-1/2" (2247 mm) Wide x 71-1/2" (1816 mm) High

6.3.1.3 The current Refrigerator Freezer sits on a 1/4" thick support base that is 6" high and has a 2-1/4" flange of mild steel. The Fridge unit is bolted to this base with tabs that have been welded onto the Unit.

6.3.2 New Refrigerator Freezer Details

6.3.2.1 The Refrigeration unit supplied is a Continental 2R-SS

6.3.2.2 The Freezer unit supplied is a Continental 1 F-SS

6.3.2.3 The Contractor shall refer to the installation and operation manual: IM-RI-Black-50187-20120503.pdf for information on proper door removal (Page 9) and installation/adjustment procedures.

6.3.2.4 The new refrigeration unit consists of an individual Freezer and Refrigerator. The Freezer measurements are 35-1/2" (902 mm) Deep x 26" (660 mm) Wide x 82-1/4" (2089 mm) High. The Refrigerator section is 35-1/2" (902 mm) Deep x 52" (1321 mm) Wide x 82-1/4" (2089 mm) High.

6.3.2.5 The Height of both units includes 5" (127mm) castors. The Contractor shall remove the Castors from the refrigeration units prior to installation if they are shipped in place. The Contractor shall carefully remove and protect from damage the doors for both the Refrigerator and Freezer for ease of installation. The units without the doors will have a depth of 32" (813 mm). The front top access cover will also have to be removed. The Doors shall be returned and mounted to the Fridge and Freezer at a suitable time of the installation phase.

6.3.3 Removals

6.3.3.1 The Contractor shall electrically isolate the fitted Ready Use Refrigerator. Supply breaker panels are located in the Galley STBD side aft 120V panels:

M4-10 "A" -2 GALLEY FRIDGE/FREEZER.
M4-10 "A" - 14, 15, 16, 17 GALLEY HOT TABLE PANS
M4-10 "B"- 35 GALLEY COLD TABLE

6.3.3.2 The fire shutter opening to the galley measures approximately 2250 mm x 838 mm. The opening is increased to its maximum by removing the lower edge of the shutter. This edge is bolted on and has tabs welded on each end.

6.3.3.3 The Fire Shutter shall be blocked open to prevent accidental closure of the shutter while work is in progress. The shutter shall be returned to full operation as soon as possible after moving in the new refrigeration units.

6.3.3.4 The Contractor shall have the Ready Use unit prepared for disposal in accordance with Federal Halocarbon Regulations 2003 and the Environmental Code of Practice for Elimination of Fluorocarbon Emissions from Refrigeration and Air Conditioning Systems by a Certified Refrigeration Contractor. Workers tasked with removal of the refrigerant and refrigeration system shall present valid Ozone Depletion Certificates and be suitably qualified to work on Refrigeration systems.

6.3.3.5 The contractor shall remove the frame guard from the serving tables in way of the fire shutter. These are secured with rivets that will need to be drilled out. New, Contractor supplied stainless steel rivets shall be installed during re-assembly.

6.3.3.6 The Contractor shall electrically isolate/disconnect and remove the HOT serving table to a suitable temporary location in the Galley.

6.3.3.7 The Contractor shall electrically isolate/disconnect and remove the cold table to a suitable temporary location in the Galley.

6.3.3.8 The Contractor shall detach and relocate the starboard forward preparation table to a suitable temporary location in the Galley.

6.3.3.9 The Contractor shall release the Ready Use from the base support and remove any additional brackets bonding the fridge to the vessel.

- 6.3.3.10 The Contractor shall break down the Galley Ready use unit into manageable pieces (once declared and fully documented safe to do so by a Certified Refrigeration Contractor).
- 6.3.3.11 The Contractor shall remove the existing Galley Ready Use through the Galley fire shutter or side door into the mess area on the Stbd side of the vessel. Any items deemed to be in the way of this exit route shall be identified and removed by the Contractor. Items shall be clearly identified as to their location such that they can be returned upon completion of the work.
- 6.3.3.12 The Contractor shall be responsible to protect all surfaces and items in way of the extraction and installation route. Damage shall be the responsibility of the Contractor.
- 6.3.3.13 The Contractor shall re-use the existing Base Support. The Contractor shall modify the existing base as outlined in drawing OSK5. There will be an additional space left at the inboard end of the existing frame work (Approx 267 mm). This additional space shall remain unaltered.
- 6.3.3.14 The entire base assembly shall be cleaned free of contaminants and coated with 3 coats of rust inhibiting primer. The tile work on the front of the base shall be protected from damage and paint.
- 6.3.3.15 The Contractor shall remove the deck head insulation (5 sections) directly above the Old Ready Use refrigeration unit after it has been removed. This will leave an opening in the deck head approximately 75-3/4" (1924 mm) x 39-1/2" (1003 mm). The Contractor shall also remove the 5 deck head panels that extend further inboard to allow for the T track that is fitted to be modified.
- 6.3.3.16 The Contractor shall modify the T track and L bracket arrangement as per Drawing OSK5 to allow for the new deck head panel to be installed.

6.3.4 Opening in the Boat Deck:

- 6.3.4.1 The Contractor shall remove the mess room deck head and deck head insulation in the way of frames 29 to 31. The Contractor shall use TCMS approved drawing SSK1 for guidance and dimensions of cutout. All deck head panels shall be identified as to their location and in the order in which they were removed.
- 6.3.4.2 The contractor shall electrically isolate this area to prevent any potential shock hazards using proper ship practices. The contractor shall remove thermal insulation IWO the intended cut-out detailed on Dwg: SSK1.
- 6.3.4.3 All existing pipe work, electrical conduits and HVAC ducting along with the adjacent interior space in the galley mess shall be protected from potential damage during cutting of frames and deck plate. Any damage to these items or areas shall be repaired at the contractor's expense.
- 6.3.4.4 Deck plate and frames shall be cut using standard practices. Care shall be taken to make clean straight cuts and radius the corners in accordance with TCMS regulations and the guidance drawing provide dwg: SSK1. The deck cut-out shall be removed and stored on-site at the contractor's facility as it shall be reused to close the cut-out once the fridge and all other equipment has been renewed or replaced. Lifting lugs can be temporarily installed on the cut-out piece to help facilitate removal and reinstallation. Once piece is reinstalled all temporary lifting lugs shall be removed and surface ground smooth. Contractor shall gird cut-out edges smooth on both the vessel and cut-out pieces to minimise risk of injury, damage to equipment and to ensure a proper fit prior to re-installation.
- 6.3.4.5 Over the deck access hole the contractor shall install a cover to prevent wind, rain and any debris from entering the vessel. This cover shall be anchored to the ship and provide proper drainage of the surrounding areas during the refit as well as protection from rain, wind and extreme temperatures.
- 6.3.4.6 Once the new fridge is installed and the old fridge has been removed the contractor shall install the cut-out piece using dwg:SSK1 for guidance as well as meeting all noted reference regulations. Once welded in place, area shall be inspected by TCMS inspector at contractor's expense. An acceptance document shall be provided to the TA showing this area has been repaired to the original structural state and complies with all TCMS regulations. This document shall be the original signed by the TCMS inspector. Any defects found by TCMS during this re-installation shall be repaired by the contractor at their expense.

6.3.4.7 Once the cut-out piece has been re-installed, and TCMS has approved, the contractor shall ensure all weld are ground smooth and the surrounding are prepped for paint using proper ship repair practices. All repair areas shall by painted in accordance with DFO paint standard noted above. All surrounding area protection shall be removed and deck head paneling replaced by the contractor.

6.3.5 Opening in the Galley Deck Head:

6.3.5.1 The Contractor shall remove the existing galley Ready Use from the vessel and dispose of this unit.

6.3.5.2 The Contractor shall remove Galley Deck head insulated panels as required to run new electrical service to the new refrigeration system.

6.3.5.3 The Contractor shall remove old supply wire from the breaker panel to the original fridge connection.

6.3.6 Installation

6.3.6.1 The Contractor shall fabricate and install a new deck head panel to fit above the new refrigerator/freezer with reference to construction drawing OSK5. This panel shall be suitably secured to the existing framing using the existing screw holes and any additional fasteners as required. Fasteners shall be #8 Robertson pan head self tapping machine screws, stainless steel construction, 12.5 mm length.

6.3.6.2 All electrical wires run above deck head panels shall be suitably protected from chaffing and damage from sharp edges. All thin steel edges shall be covered to prevent wire damage.

6.3.6.3 The Contractor shall supply and install a new electrical supply cable from the main breaker M4-10A-02 to the new Refrigeration units. This wire shall be 14/2 AWG wire braided Marinex. Wire shall be routed across the deck head behind the ceiling panels and secured to the deck framing using Marine Grade approved fasteners. Wiring shall be terminated through marine grade approved strain relief and properly stripped, fastened and labeled for identification.

- 6.3.6.4 The Contractor shall supply and install a new electrical supply from the main breaker panel M4-10A-03 to the new Freezer unit. This wire shall be 14/2 AWG wire braided Marinex. Wire shall be routed across the deck head behind the ceiling panels and secured to the deck framing using Marine Grade approved fasteners. Wiring shall be terminated through Marine Grade approved strain relief and properly stripped, fastened and labeled for identification.
- 6.3.6.5 Power shall be supplied to the top of the new refrigeration units.
- 6.3.6.6 The Contractor shall insert the new galley Ready Use Refrigerator and Freezer through the deck opening and shall install the new galley Units in place of the old unit. The new units shall be Coast Guard Supplied and shall be Refrigerator model R2 and Freezer Model F1. The Contractor shall refer to the technical documentation for the supplied units for proper installation and set up.
- 6.3.6.7 The Contractor shall secure the Freezer and Refrigerator units to the modified base using the existing bolt holes where the wheel assemblies were to be originally installed. It is understood that only 3 of the bolt holes will be accessible for installation. The Contractor may choose to use threaded rod such that the rod is allowed to extend approx 35 mm past the bottom of the units. The Contractor shall then use washers, lock washers and nuts to secure the units to the angle iron base.
- 6.3.6.8 The Contractor shall also secure the new refrigeration units at their top back edge to further secure the units to the bulkhead.
- 6.3.6.9 The contractor shall re-install steel plating and weld in the passage through the exterior deck. All framing and steel edges shall be plate edge prepared to accept welding.
- 6.3.6.10 Once welding has been completed the Contractor shall clean the weld areas to remove all slag and loose paint. The Contractor shall then apply 2 coats of primer Tremclad Flat Black (Coast Guard Supplied) to the interior weld areas allowing dry time between coats.
- 6.3.6.11 The Contractor shall re-install the removed insulation from the deck head in the mess area.
- 6.3.6.12 The Contractor shall install all other items that were previously identified and removed.

6.4 Inspections, Tests and Trials

- 6.4.1 The Contractor shall set to work the new Refrigerator and Freezer. The Contractor shall test all functions of the Refrigerator and Freezer in the presence of the Technical Authority.
- 6.4.2 The Contractor shall have the attending TCMS surveyor witness a hose test on the welded portion of the boat deck plate after all welding has been completed and prior to any insulation being replaced below deck.
- 6.4.3 The Contractor shall afford the Technical Authority to witness the final insulation installation prior to the assembly of the Mess Room deck head.

7.0 MAIN DECK COVERING REPLACEMENT

7.1 General

7.1.1 The Contractor shall remove all deck flooring material in the designated areas on the main deck of the vessel. It has been identified there is a moisture problem within the mineral fiber insulation on the existing floating floor material and thus needs to be removed and replaced. The current deck covering consists of Isolamin floating floor panels with a light leveling compound and vinyl tiles or in wet areas the vinyl tiles are replaced by a one piece epoxy floor coating.

7.1.2 References

The following documents are applicable to or interface with the task requirements of this section:

- Lloyd’s Classification Society Rules;
- C.S.A., Hull and Machinery Regulations;
- Drawing/Document List.

Document Number	Description
CFN 161-200-01	General Arrangement
OSK1	Deck Covering Diagram
	Isolamin Panel Bulkhead Support Details
OSK2	HVAC Floor Drain Arrangement
	Screw for Wall Panels
	Dex-O-TEX Manual
	Installation-manual Isolamin

7.2 Technical

7.2.1 General

7.2.1.1 The contractor shall ensure all surrounding areas are not disturbed in this specification are protected from any damage. Any damage from the “as delivered” condition of the vessel shall be repaired at the contractor’s expense.

7.2.2 Certifications

7.2.2.1 All deck coverings to replace existing shall provide an A-60 fire barrier. All materials used shall have either Class or TCMS type approval and suitable for marine use. All material certificates shall be submitted to the TA prior to installation.

- 7.2.2.2 Personnel responsible for taking Ultrasonic readings shall provide certificates to the TA and TCMS Inspectors they are certified to a minimum of Level II of Can/CGSB 48.9712-2000.
- 7.2.3 Removal of Existing Deck Covering
- 7.2.3.1 The Contractor shall remove all existing cement and floating floor deck covering from the steel deck plating beneath and dispose of IAW Federal, Provincial and Municipal regulations and provide copies of the disposal certificates to the Inspection Authority.
- 7.2.3.2 The Contractor shall monitor the air quality of the spaces affected and ventilate to the exterior of the ship if required. Contractor is responsible to provide all additional ventilation equipment required to maintain a suitable work space in accordance with local laws.
- 7.2.4 Electrical & Plumbing Isolation
- 7.2.4.1 The contractor shall use common ship building and repair practices when removing deck covering material. This includes proper lockout of all associated electrical connections as well as the disconnection of all associated plumbing interfaces. Both electrical and plumbing connections affected during the removal of the floor shall be reconnected and demonstrated as operable to the TA prior to the contract end.
- 7.2.4.2 Please refer to Section 8.0 for Drain Pipe replacement as this work will be conducted during the deck replacement.
- 7.2.5 Fuel Tanks
- 7.2.5.1 There shall be welding IWO the fuel oil day and settling tanks located between frames 37 and 39. Due to the welding of wall panel support brackets onto the main steel deck these fuel tanks are required to be emptied and gas free prior to this work commencing. The contractor shall arrange with the ship's crew to transfer as much fuel as possible in these tanks to other onboard fuel tanks. The contractor shall remove the remaining fuel (approximately 300 litres in Starboard side and 5000 Litres in Port side settling/Day tanks) from the ship and dispose of it using proper disposal methods IAW Federal, Provincial and Municipal regulations and provide copies of the disposal certificates to the Inspection Authority. The contractor shall clean and gas free each fuel settling tank and provide certificates to the TA from a certified marine chemist prior to any welding on the tank top.
- 7.2.6 Other Tanks
- 7.2.6.1 There are several other tanks located below the main deck as shown on the General Arrangement. Tanks located between frames 31 and 41 will be affected by welding on the main steel deck. The contractor shall ensure all tanks IWO welding on the main deck is properly prepared for hot by removing any liquid inside the tank, gas freeing the tank and repairing and coating that could be affected by the hot work on the main deck. These tanks include potable water tank (frame 27-32, port side), Void (frame

27-32, port & starboard), Stand-by Sewage Tanks (frame 37-39, port & starboard), Sanitary Water Tank (frame 27-32, starboard side) and water ballast tanks (frame 32-37, port & starboard). All repairs shall be in accordance with TCMS regulations and inspected by TCMS inspectors prior to closing.

7.2.6.2 All gas freeing certificates shall be presented to the TA and completed by a certified marine chemist.

7.2.7 Scope of Work

7.2.7.1 The areas of deck covering to be removed and replaced are as follows; (please refer to Deck Covering Diagram)

General Hallway

Existing Decking Material	-73mm Isolamin floating floor -3mm epoxy leveling compound -12"x12" vinyl tiles -4" flexible PVC skirting
Area	17.9 m ²
Perimeter	41.6 m

Crew Lounge

Existing Decking Material	-73mm Isolamin floating floor -3mm epoxy leveling compound -Carpet Underlayment -Marine approved carpet -4" flexible PVC skirting
Area	32.1 m ²
Perimeter	25.9 m

Crew Mess

Existing Decking Material	-73mm Isolamin floating floor -3mm epoxy leveling compound -12"x12" vinyl tiles -4" flexible PVC skirting
Area	50.4 m ²
Perimeter	38.6 m

Canteen

Existing Decking Material	-73mm Isolamin floating floor -3mm epoxy leveling compound -12"x12" vinyl tiles -4" flexible PVC skirting
Area	5 m ²
Perimeter	8.9 m

Female Lavatory

Existing Decking Material	-73mm Isolamin floating floor -3mm epoxy leveling compound -One piece epoxy flooring -4" flexible PVC skirting
Area	7.4 m ²
Perimeter	11.2 m

2 Steward Cabin (port)

Existing Decking Material	-73mm Isolamin floating floor -3mm epoxy leveling compound -Carpet Underlayment -Marine approved carpet -4" flexible PVC skirting
Area	12.2 m ²
Perimeter	14.0 m

1-2nd Cook & 1 Clerk-Storekeeper Cabin (port)

Existing Decking Material	-73mm Isolamin floating floor -3mm epoxy leveling compound -Carpet Underlayment -Marine approved carpet -4" flexible PVC skirting
Area	11.6 m ²
Perimeter	13.8 m

2 Seaman Cabin (port)

Existing Decking Material	-73mm Isolamin floating floor -3mm epoxy leveling compound -Carpet Underlayment -Marine approved carpet -4" flexible PVC skirting
Area	10.7 m ²
Perimeter	13.9 m

1 ER Worker & 1 Day Worker Cabin (Stb.)

Existing Decking Material	-73mm Isolamin floating floor -3mm epoxy leveling compound -Carpet Underlayment -Marine approved carpet -4" flexible PVC skirting
Area	10.7 m ²
Perimeter	13.8 m

2 ER Watch (Stb.)

Existing Decking Material	-73mm Isolamin floating floor -3mm epoxy leveling compound -Carpet Underlayment -Marine approved carpet -4" flexible PVC skirting
Area	11.7 m2
Perimeter	13.9 m

7.2.7.2 The Contractor to provide unit rate price for the removal & installation based on measurements provided.

7.2.8 Removal, Storage and installation of Cabin Joinery, Mess Equipment

7.2.8.1 The contractor shall remove and clearly identify the original location of all cabin joinery and mess equipment that prevents the removal and replacement of the existing flooring. These items shall be stored either onboard the ship or within the contractors facility. These items shall be stored in a temperature controlled environment and each item shall be suitably protected to avoid damage while out of position. This procedure also applies to any other items that require removal to access, remove and replace the floor covering. All items shall be reinstalled prior to contract end. Any items that require plumbing or electrical disconnection and reconnection shall do so in accordance with 7.2.4. Any damage to equipment shall be repaired or replaced at the contractor's expense.

7.2.8.2 All exposed service connections resulting from the removal of furnishings shall be identified and tagged with their service and purpose. These temporary tags shall be affixed to the services in such a way that they will remain attached to identify the services throughout the work of this Section of the specification.

7.2.9 Existing Flooring Removal

7.2.9.1 The contractor shall remove all existing Isolamin floating floor, vinyl floor tiles, baseboards, leveling cement and epoxy one piece flooring located in the areas noted in section 7.2.7. Removal of this material shall be in accordance with 7.2.3. All traces of the existing decking material shall be removed to expose the main deck steel deck plating.

7.2.10 Main Deck Plate Inspection

7.2.10.1 Once all remaining fire insulation and flooring material the contractor shall remove all rust and loose paint. The contractor shall prepare deck plate for paint by power tooling to a minimum of ST2 (ISO 8501-1:2007). The Contractor shall take care not to contaminate surrounding area due to power tooling action.

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- 7.2.10.2 Once deck plate is cleaned and prepped the contractor shall provide the TA the opportunity to inspect the condition of the deck plating. During this time 60 ultrasonic readings shall be taken. The locations for the Ultrasonic readings shall be determined under consultation with the TA and TCMS inspectors. Contractor shall supply a report to the TA on the Ultrasonic readings along with a detailed drawing showing each measurement location. This report shall be supplied within 24 hours of completing the measurements.
- 7.2.10.3 The contractor shall perform an extensive survey of all exposed steel deck/bulkhead boundaries to ensure there are no perforations that compromise the fire integrity and water tightness of the deck. The contractor shall provide a report detailing any defects found and proposed repair procedures to the TA with 48 hours of the survey. Should there be issues with the underlying deck plate, the contractor shall produce a repair plan for the deck plate and submit this to the TA and the TCMS inspector prior to commencing further repair work. Any additional work determined by the contractor and in agreement by the TA shall be dealt with under a 1379 action.
- 7.2.11 Underlying Deck Plate Painting
- 7.2.11.1 The underlying deck plate shall be painted with a rust inhibiting epoxy primer similar to International Paint's Intershield 300. This paint shall be suitable for use with the replacement flooring noted in section 7.2.13. The paint shall be suitable for marine use and certification shall be given to the TA. The application of this paint shall be done in accordance with manufacturers recommendations. Data such as film thickness for each coat, number of coats, dew point, temperature and relative humidity shall all be given to the TA for their records.
- 7.2.12 Bulkhead Support
- 7.2.12.1 During the floor removal phase the contractor shall support the Isolamin Panel bulkheads with temporary means in order to preserve the original spacing and panel gaps as well as prevent collapse of the panel system. The contractor shall be responsible for any damage to the bulkhead system as a result of a lack of support.
- 7.2.12.2 The Contractor shall refer to Dwg. "Isolamin Panel Bulkhead Support Details" for information regarding fastening the bulkhead structure to the deck. The contractor shall refer to the PDF: "Screw for Wall Panels" for details regarding a proposed fastener.
- 7.2.12.3 The Contractor shall fit the new bulkhead supports and tack weld in place ensuring that the Isolamin bulkhead remains true and at the original spacing from the inner steel bulkhead. Bulkhead supports shall be fitted at each joint channel (596.5 mm) as per Dwg. "Isolamin Panel Bulkhead Support Details", such that the required 600 mm fastening specification is maintained. The contractor shall include and fit supports at any free end of the bulkhead panel and at any point where additional support is required. Please refer to sections 7.2.5 and 7.2.6 prior to welding.
- 7.2.13 Deck Plate Fire Insulation, Sound Insulation and Flooring Installation
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- 7.2.13.1 The contractor shall replace the existing floating floor with a trowelled on composite flooring like Dex-O-Tex or similar. The composite flooring shall have an A-60 fire rating. The new flooring shall extend to the outboard deck / hull intersection and to any deck / interior steel bulkhead intersection thus providing a complete fire barrier within each area the flooring is replaced. The contractor shall ensure the A-60 flooring is suitable for marine with either class or TCMS approval. Certificates for the material shall be provided to both the TA and TCMS inspector. Contractor shall ensure the new flooring is installed as per the manufacturer's recommendations and that the weight of the material is kept to a minimum within these recommendations.
- 7.2.13.2 The general layup to be used (for guidance only);
- Steel main deck plate
 - Epoxy Primer (rust inhibitor)
 - Bonder
 - Acoustic damping underlayment
 - A-60 Fire Insulation
 - Top Coat
- 7.2.13.3 The top coat will consist of two alternative finishes according to the application. For dry spaces defined as; the Crew Lounge, Main Hallway, 2 Stewards Cabin, 1-2nd Cook & 1 clerk-Storekeeper Cabin, 2 Seamen Cabin, 1 ER Worker & 1 Day Worker Cabin, 2 ER Watch Cabin, Canteen and Crew Mess the top coat shall consist of a 3mm Vinyl flooring. The Vinyl flooring shall be roll type with welded seams. The colour shall be similar to existing flooring with samples provided to the TA for approval prior to installation. Vinyl shall be suitable for marine use with class or TCMS approval and installed as per manufacturers recommendations.
- 7.2.13.4 For wet spaces defined as; Women's Lavatory (port side) the flooring shall consist of a seamless epoxy top coat similar to Terrazzo M supplied by Dex-O-Tex. This epoxy top coat shall be similar in colour to the stair well flooring and forward main lavatory located on the main deck. Colour flake and an anti-slip agent shall be added to improve the appearance and traction of the product within these wet spaces. The seamless floor shall extend up the walls 4" and the finish level shall be above the bottom of the side bulkhead. This is necessary to provide additional wall support and seal the bulkhead panels.
- 7.2.13.5 The contractor shall ensure all floor coatings are installed by or under consultation with a certified service representative to ensure product cures properly and the application will meet an A-60 fire rating. Contractor shall involve TCMS inspectors during this process to ensure regulatory compliance.
- 7.2.13.6 The Contractor shall carefully remove residual contact cement from the baseboard area of the bulkheads and supply and install new flexible PVC baseboard skirting in all dry areas.

7.2.14 Floor Drains

- 7.2.14.1 As part of the vessel's overall refit there will be several grey water and black water drains replaced on the main deck. This drain replacement will correspond with the deck floor replacement. In the area and within the main deck female lavatory located on the port side the seamless epoxy flooring shall be graded towards the deck drains to be installed in accordance with manufacturer's recommendations. All pipe penetrations shall be fully welded, ground and coated with rust inhibitive paint in accordance with 7.2.11 prior to installing new flooring. Please refer to Section 8.0 for further details on the drain piping replacement.
- 7.2.14.2 The deck drain pipe located under the HVAC unit shall be routed above the steel main deck to a penetration located ahead of the bulkhead located at frame 39. This will be done to avoid welding on or in the fuel oil tank located under this location. Details as per how this drain shall be arranged is detailed in the drain replace section of this specification 8.0.

7.3 Deliverables

7.3.1 Certificates

- 7.3.1.1 The Contractor shall make reference to Section 7.2.2 and provide the TA with all required certificates.
- 7.3.1.2 Copies of all disposal certificates as defined in 7.2.3 shall also be provided to the TA.
- 7.3.1.3 The Contractor shall provide to the TA the original written acceptance report from TCMS regarding the A-60 fire insulation boundary for the main deck.

7.3.2 Reports

- 7.3.2.1 The contractor shall supply technical reports for both the ultrasonic thickness measurements and the structural survey as defined in section 7.2.10. Reports shall be presented to the TA in the allotted time frame and provided in both hard copy and PDF electronic copy.
- 7.3.2.2 A detailed drawing shall be provided with the ultrasonic testing report showing the exact locations of each test point taken. This drawing shall be plotted on an ISO size A1 paper and provided to the TA in both hard copy and PDF electronic copy. Along with this drawing shall be an MS-Excel spreadsheet table identifying the test points by

position on the drawing, steel thickness found, original thickness and percent wastage for each point.

7.3.3 Drawings

7.3.3.1 The Contractor shall be responsible for updating all “As Fitted” drawings affected by the flooring replacement. Three (3) hard copies as well as original CAD drawings shall be provided to the TA. CAD drawing format to be ACAD 2010.dwg.

7.3.4 Manuals

7.3.4.1 The contractor shall supply three sets of product literature for the new deck flooring that includes detailed data on the following:

- Cleaning;
- Maintenance;
- Repair;
- Specifications;
- Cautions and Limitations;
- WHMIS.

7.3.4.2 The service manual is to be that which the O.E.M. distributes to the authorized service centers for use by their technicians.

7.3.4.3 The contractor shall also supply product literature on the epoxy primer used on the steel decking noted in 7.2.11.

8.0 MAIN DECK GREY WATER DRAINS & BLACK WATER PIPE REPLACEMENT

8.1 General

8.2 The Contractor shall remove and replace all black water and grey water drains IWO and below the main deck between frame 29 and 44. This removal and replacement will consist of removing the existing specified drain pipes and replacing them with new material in a similar “as-fitted” arrangement.

8.2.1 During this replacement of pipework the contractor shall also install new deck drains. This work will take place during the corresponding main deck flooring replacement, reference section 7.0.

8.3 Applicable Documents

The following documents are applicable to or interface with the task requirements of this section:

- Lloyd’s Classification Society Rules;
- C.S.A., Hull and Machinery Regulations;
- Drawing/Document List.

Drawing Number	Description
161-200-01	General Arrangement
S30236pl1	GW Layout Diagram
S30236pl2	BW Layout Diagram
OSK2	HVAC Floor Drain
OSK3	Pipe Penetration Detail
OSK4	Piping Access Hole Detail
	BW and GW Drain Diagram
	Blucher Drain 475.200.050
	Blucher Trap 502.052.110 CRS
	Blucher Screen 472.320.100S
	Blucher Deck Drain Insert
	Blucher Trap
	Blucher-Drain Installation Manual
	Victaulic Coupling – Type 75

8.4 Technical

8.4.1 General

8.4.1.1 The contractor shall ensure all surrounding areas not disturbed are protected from any damage. Any damage outside of the “as delivered” condition shall be repaired at the contractor’s expense.

8.4.1.2 Piping shall be installed so as not to interfere with:

- Passage through doors, hatches, scuttles, openings covered by portable plates or working areas. In frequently used walkways, the minimum overhead clearance of the piping shall be 6 feet 6 inches.
- Operation of machinery, equipment, controls, and with routine maintenance of machinery and the ship’s structure;
- Designated equipment removal routes or removable structural portions of the ship provided for equipment access, removal, and/or maintenance.

8.4.1.3 Piping shall be located where it would not likely be subject to physical damage. Protection for piping shall be provided wherever susceptibility to physical damage is unavoidable. Piping runs shall be as direct as possible and utilize the minimum amount of fittings that would increase the frictional flow characteristics of the piping run. Piping shall be removable in way of mechanical, electrical or hydraulic systems requiring periodic overhaul.

Where high and low points in piping are unavoidable, vent drains or other effective means shall be installed to ensure proper system function. Drain pipes shall be sloped minimum 5 degrees to promote adequate drainage.

8.4.1.4 Bulkheads and decks shall generally be pierced close to boundaries of compartments. Cutting bulkhead stiffeners, deck beams and plating butts and seams is not permitted without prior TCMS approval.

8.4.1.5 Piping shall not be led through inner bottom tanks and voids. No pipe penetrations to penetrate fuel oil tanks.

8.4.1.6 Deflections of bulkheads, decks and other structures due to working of the ship shall be considered and the piping arranged for the necessary clearance and flexibility. Supports shall be designed and located to safely support the weight of the piping, its operating or test fluid (whichever is heavier) and its insulation and lagging (where installed). The supports shall also carry the loads imposed by expansion and contraction of the piping and working of the ship.

- 8.4.1.7 The number of supports installed, the type selected and their location shall prevent excessive vibration of the piping under all system operating conditions. They shall not constrain the piping for all operating conditions, cause excessive loading from support to piping and excessive stress being transmitted from piping to machinery equipment or the ship's structure.
- 8.4.1.8 Rigid anchors shall be designed so that noise and vibration from piping system components and excessive heat from high temperature systems are not transferred through the anchor into surrounding areas.
- 8.4.1.9 Changes in direction of piping shall be made by pipe bends and offsets where space permits; otherwise, straight length of pipe and pipefittings specified for the system shall be used. Miter joints shall not be permitted. Branch connections shall be located to minimize turbulent flow and the type used, (crosses, single and double-sweep tees, Y and lateral fittings), shall be suitable for the required flow characteristics.
- 8.4.1.10 Galvanic corrosion shall be minimized in systems that couple dissimilar metals. The permissible potential difference shall be no greater than 0.4 volts.
- 8.4.1.11 Raised face flanges shall not be used against bronze or other relatively low strength composition valves, fittings or flanges.
- 8.4.1.12 Where pipes pass through holes in non-watertight structure, provision shall be made to keep the pipes from bearing on the structure.

8.4.2 Certifications

8.4.2.1 Welding

For fusion welding for steel the Contractor shall be certified in accordance with the Canadian Welding Bureau (CWB), CSA\ACNOR W47.1 1983, Division 2.1. The Contractor shall supply proof of his accreditation to the TA and TCMS. All such welding shall be to CSA Standard W59M "Welded Steel Construction (Metal Arc Welding) (Metric Version)".

The Contractor shall provide copies of all welding certificates to the TA at the start of the contract work.

- 8.4.2.1.1 The Contractor shall submit CWB stamped welding specifications and weld procedure data sheets to TCMS where required. Weld procedures for joining pipe connections shall be recorded and approved by CWB in accordance with ASME, Section IX.

8.4.2.2 Component Certificates

8.4.2.2.1 All replacement machinery, equipment and fittings shall be new and unused, manufactured by a recognized manufacturer, having established facilities for production, and supply of parts and service in (a) Canada or (b) United States of America.

8.4.2.2.2 All machinery and equipment shall be approved by a Classification Society for use onboard ship and shall meet all applicable TCMS regulations. The Contractor shall provide copies of Classification Society approval certificates to the Inspection Authority and the Technical Authority. Approval certificates shall be current and for the type and model of equipment being installed by the Contractor.

8.4.2.3 Material Certificates

8.4.2.3.1 The Contractor shall provide all material certificates to the TA prior to installation. Certificates shall also be made available to all TCMS inspectors.

8.4.2.3.2 For all replacement grey water and black water drain pipes the contractor shall use galvanized schedule 80 seamless pipe.

8.4.2.4 Inspection Report and Certificates

8.4.2.4.1 The contractor shall arrange for TCMS inspectors to inspect all work throughout the removal and replacement of the piping systems. Contractor shall deliver to the TA all original signed compliance reports provided by TCMS with regards to this work. It is the contractor's responsibility to ensure all work completed is approved by TCMS prior to contract completion.

8.4.2.5 Pipe Labeling

8.4.2.5.1 All piping systems shall be identified in accordance with CCG Piping Identification Standard CGFM 308.00.03.

8.4.2.5.2 All paint shall be for marine application and shall meet CAN/CGSB 1.61-99 for exterior marine alkyd enamels and CAN/CGSB 1.193-99 for marine epoxy paints. Paint, varnish and other finishes used on interior surfaces shall be listed in TCMS's list of approved products, TP-438. Paints containing lead, mercury or copper shall not be used. Paints shall be compatible with piping material noted in 8.4.2.3.

8.4.2.6 Cleanliness

8.4.2.6.1 The Contractor shall maintain the vessel in a clean condition. Debris and garbage shall be removed from the vessel and disposed of at the end of each working day.

- 8.4.2.6.2 Attention shall be given to hazardous materials such as flammable or toxic waste products. These shall be disposed of in accordance with federal, provincial and municipal regulations.
- 8.4.2.7 Piping Fabrication
- 8.4.2.7.1 Flange faces shall be on a plane perpendicular to the longitudinal centerline of the pipe, tube or fitting to which they are attached. All components and assemblies of components shall be thoroughly cleaned after fabrication and before installation in the ship. Foreign matter such as dirt, grit and shavings, shall be removed by methods and materials compatible with the fluids employed in the service aboard ship.
- 8.4.2.7.2 Disposal of waste shall be in accordance with all federal, provincial and municipal regulations. Disposal certificates shall be provided to the Inspection Authority and the Technical Authority.
- 8.4.2.8 Joints and Connections
- 8.4.2.8.1 All pipe runs shall be designed to provide as direct a route as possible as well as use a minimum of joints or bends. Takedown joints shall be located to ensure sufficient clear space for proper assembly and maintenance. Joints located in areas inaccessible for maintenance shall be welded. All welded pipe assemblies shall be hot dipped galvanized prior to installation. All flanged piping joints shall be connected using jointing material suitable for the service intended and approved by TCMS.
- 8.4.2.8.2 Where practically possible the contractor shall use Victaulic Couplings to attach all sections of pipe. These couplings shall be Style 75 galvanized using a grade "T" gasket. Bolts shall be as per manufacturer's recommendation for the intended use.
- 8.4.2.8.3 Where the groove is cut into pipe ends to accommodate couplings the contractor shall applied cold dip galvanizing methods to protect exposed steel.
- 8.4.2.8.4 For pipe penetrations through steel bulkheads, frames and deck plating shall have couplings located on either side of the penetration to facilitate dismantling.
- 8.4.2.9 Hot Work
- 8.4.2.9.1 The following precautions shall be taken where hot work is to be conducted:
- The compartment(s) affected shall be certified gas free by a certified marine chemist or other qualified person. The Contractor shall provide copies of all certificates to the Inspection Authority. Certificates shall specify, "Safe for persons"

and/or "safe for hot work" as appropriate. The Contractor shall post a copy of all certificates at the entrance to the affected spaces;

- Protective material shall be used to prevent the spread of sparks, protecting electrical cables and other services;
- Fire sentries shall be provided in each space and in all adjacent spaces, if welding, grinding and burning is being carried out. Fire sentries shall be provided with an appropriate fire extinguisher and shall be trained in its use. The fire sentry shall maintain a watch in his designated area for at least thirty (30) minutes after any hot work has been completed.

8.4.2.9.2 Any hot work carried out onboard the vessel during the contract period shall be conducted in accordance with the Canadian Coast Guard Fleet Safety Management System (CCGFSM) procedures and individual shipboard work instructions. Copies of the manual and site-specific work instructions are available from the Technical Authority.

8.4.2.10 BW and GW System Decommissioning

8.4.2.10.1 The ship's crew shall decommission the black water (BW) and grey water (GW) systems to allow the contractor to complete the work defined in this section.

8.4.2.11 Electrical Isolation

8.4.2.11.1 When working on electrically operated equipment, the following precautions shall be taken:

- Electrical lock-outs shall be used to isolate the equipment and electrical caution tags posted at the main power and distribution panel on those switches supplying equipment under maintenance and verification made at the terminals to ensure power is not present.

8.4.2.11.2 Any lock-out requirements onboard the vessel during the contract period shall be conducted in accordance with the Canadian Coast Guard Fleet Safety Management System procedures and individual shipboard work instructions.

8.4.3 Scope of Work

8.4.3.1 Please refer to guidance drawings "Black Water Piping Layout" and "Grey Water Piping Layout".

8.4.3.2 The contractor shall remove existing piping and replace with new piping for the black water and grey water systems. This removal and renewal is limited to specific locations as noted on the drawings list above. Several sections of piping have already been renewed in the black water system and these items shall remain intact with the renewed pieces mating to this existing pipework. Generally the pipe work to be complete is on the main deck and below between frames 29 and 44.

8.4.4 Grey Water Drain System

8.4.4.1 Drain Removal and renewal shall include the following;

- Juice Fountain Drain (Stb.)
- Water Fountain Drain (Stb.)
- Mess Sink (Stb.)
- Stb. Aft Galley Deck Drain
- Port Aft Galley Deck Drain
- Stb. Fwd Galley Deck Drain
- Port Fwd Galley Deck Drain
- 2 ER Cabin Sink Drain (Stb.)
- 1 ER worker/ 1 day worker Cabin Sink Drain (Stb.)
- GW Main from Boat Deck (CL)
- Female Lav. Sink Drain (CL)
- Female Lav. Floor Drains x 2 (CL)
- Galley sink Drains x 2 (pt.)
- Lounge Sink Drain (pt.)
- HVAC Floor Drain (pt.)
- 2 stewards Cabin Sink Drain (pt.)
- 1-2nd cook/1 clerk-storekeeper Cabin Sink Drain (pt.)
- 2 seamen Cabin Sink Drain (pt.)

8.4.4.2 Sink Drains

8.4.4.2.1 These drains shall be removed and renewed during the floor renewal stage of this refit. Sink drains shall be renewed up to the P-traps for each sink above the main deck or up to 305mm above the main deck. Drains shall be re-plumbed into existing piping above the main deck or existing equipment.

8.4.4.3 Deck Drains

8.4.4.3.1 Floor drains shall be removed and replaced with new material. CCG shall supply new stainless steel deck drains to be used for all deck drains. Details on these SS drains are given in the reference section. New drains shall be welded to the steel main deck prior to the new flooring being installed. TCMS inspectors shall inspect these penetrations prior to covering and contractor shall be responsible for full compliance with all TCMS regulations. Contractor shall take care to install proper galvanic isolation as stated in 8.4.1. Where existing deck drains are installed in a concrete floor the existing flooring shall be removed IWO the existing drains and new flooring compound installed. Flooring compound shall be similar to the existing or as specified with Section 7.0. Floor renewal and shall maintain the existing A-60 fire

boundary. TCMS inspectors shall inspect these locations and provide Contractor with written documentation stating the fire boundary is still intact. Areas IWO the new floor drains where new and repaired flooring is installed shall have the floor tapered toward the deck drains to promote proper drainage.

8.4.4.4 General Piping Renewal below Main Deck

8.4.4.4.1 All drain piping shall consist of galvanized schedule 80 seamless pipe as stated in 8.4.2.3. All piping shall be connected via Victaulic couplings as noted in 8.4.2.2. Where Victaulic couplings cannot be used the contractor shall weld the pipe using proper CWB and TCMS regulations as well as proper ship building practices. Pipes shall be properly supported throughout entire run in accordance with 8.4.1. All drain piping shall be removed and renewed from the main deck and below ending at the flange connections to the overboard discharge valves, aft of the lounge sink drain pipe run on the starboard side and aft of the juice fountain drain pipe on the starboard side of the vessel as per the GW layout drawing provided. Contractor shall supply proper flange joint connections along with gaskets to join to existing overboard discharge valves and bulkhead flanges.

8.4.4.4.2 Pipe penetrations shall be completed in accordance with guidance dwg: OSK3.

8.4.4.4.3 All drains pipes shall be installed with a minimum slope of 5 degrees to promote proper drainage. All drains shall be trapped either by utilizing the Blucher trap inserts (see reference documents).

8.4.4.5 Grey Water Drain Vents

8.4.4.5.1 There are two grey water deck vents that are led up through the main deck from the decks below. These vent lines are noted on the Grey Water Layout drawing and are located on both port and starboard side ahead of the watertight bulkhead at frame 39. These vent lines are outboard close to the side shell. These vent lines shall be replaced from below the main deck up to 305mm above the main deck. These deck penetrations shall be removed and renewed during the flooring removal in these areas. The pipes are located behind wall panels in the Canteen and 2 steward's cabin. Sections of the wall panels shall be removed to access the pipes. The new vent lines shall be connected to the existing system via a Victaulic coupling.

8.4.4.6 Grey Water Main

8.4.4.6.1 Located between frame 40 and 41 in the stairwell heading from the main deck to below main deck is a grey water main drainpipe leading from the boat deck above, please refer to BW and GW Drain Diagram provided for guidance. This section of pipe shall be removed and renewed during this refit. The pipe shall be renewed up to the coupling noted on the reference diagram.

8.4.4.7 Deck Drain Located Under HVAC Unit

8.4.4.7.1 There shall be a new drain installed forward of the HVAC unit located on the port side hallway on the main deck. Currently the drain in this area runs between the steel main deck and the steel floating floor deck to lead it forward of the watertight bulkhead located at frame 39. This was done to avoid penetrating and welding in or around the fuel oil settling tanks located below. The contractor shall install a new deck drain forward of the HVAC compartment bulkhead, which will connect into the existing drain below the HVAC unit via a coupling. Contract shall provide and install a new drain piping and deck penetration as per drawing OSK2. The drain shall lead forward of the watertight bulkhead at frame 39. Please use dwg: OSK2 for guidance. Pipe runs shall be properly sloped to provide adequate drainage of this location. All detailed drawings shall be provided to the TA for approval prior to installing. This arrangement will be completed to avoid welding on or in the fuel oil settling tanks located below this space.

8.4.4.8 Black Water Drain Renewal

8.4.4.8.1 Please refer to guidance drawing Black Water Layout in the references. The black water system shall have the following sections removed and renewed;

- All original piping located below main deck forward of water tight bulkhead at frame 39.
- Section of BW main up to defined coupling. Reference BW and GW Drain Diagram.
- BW vent pipe penetration through main deck up to 305mm above main deck.

8.4.4.8.2 There are pipes that have been renewed within the last few years in this system that shall remain in place. These pipes are defined as and can be visually noted by the galvanized finish and new hardware;

- 6” Fire main on port side including the pipe penetration at bulkhead 39 and leading up to and including the pipe penetration at bulkhead 44.

8.4.4.8.3 New sections shall connect to this Sewage main using acceptable couplings as noted in section 8.4.2.8.

8.4.4.9 Pipe Penetrations

8.4.4.9.1 There are several areas where the BW pipes pass through steel bulkheads, steel deck plate or structural steel sections. Pipe penetrations shall be done in accordance with the guidance drawing provided and TCMS regulations. There should be coupling located on either side of the penetration for ease of dismantling as noted in section 8.4.2.8. For the BW vent pipes located on both port and starboard sides of the vessel the pipe shall be renewed up to 305mm above the main deck.

8.4.4.10 Piping located over Fridge and Freezer

8.4.4.10.1 There are several BW pipes that connect and run above the walk-in fridge and freezer located on the deck below main deck. These pipes include the sewage feed from the female lavatory, BW sewage main from the boat deck and the starboard sewage vent. This area has restricted access with food storage below. The contractor shall exercise great care in removing all piping in this area and protect the spaces below (Fridge and Freezer) from any potential sewage waste, welding damage or physical damage from removing and installing these pipes.

8.4.4.11 Access to Space above Fridge and Freezer

8.4.4.11.1 The space above the walk-in fridge and freezer is restricted by steel bulkheads and the thermally insulated panels that make the top of the fridge and freezer. Due to this restriction in access the contractor shall install one bolted manhole on both the port and starboard side to allow access to the area. Please refer to the guidance dwg: OSK4 for details on the location of these manholes. The manholes shall be 18" x 24" and made of steel. Appropriate gaskets and bolts shall be used to provide long lasting access to these areas. All installation details shall be provided to the TA as well as TCMS prior to installation and installed in accordance with all TCMS regulations. The contractor shall take care to avoid damaging the refrigeration lines running along the sides of the fridge and freezer. The contractor shall also take all necessary precautions to prevent damage to the thermal refrigeration panels and the evaporator coils located within this space. Once installed all welds shall be ground smooth and manhole shall be painted using the criteria provided in section 8.4.2.5.

8.4.4.12 Black Water Main for Boat Deck

8.4.4.12.1 There is a BW sewage main that drops down from the Boat Deck to the Main deck and then over the Fridge and Freezer on the Deck below the Main Deck. It is located between frame 40 and 41 and within the stairwell going from the main deck to the deck below. A portion of this sewage main shall be replaced, please refer to BW and GW Drain Diagram.

8.5 Inspection and Testing

8.5.1 The contractor shall arrange for TCMS to inspect and test all renewed areas of both the grey water and black water drain system in accordance with TCMS regulations. As a minimum, the BW and GW systems shall be tested at the working head pressure plus 10 percent for any leaks. All drain ends shall be blanked and each joint shall be visually inspected for leaks prior to commissioning. Test procedures shall be submitted to TA prior to completion and all tests on the system shall be witnessed by TCMS inspectors. The contractor shall provide the original signed document from TCMS stating all work completed has pass TCMS inspection and regulations. This document shall be provided to the TA prior to contract end.

8.5.2 Commissioning

8.5.2.1 The contractor shall commission both the grey water and black water systems. The contractor shall demonstrate to both the TA and TCMS that both the GW and BW systems are fully functional. Any deficiencies found during these trials shall be rectified by the contractor at the contractors own expense prior to the end of contract. If repairs are made during the trials a re-trial will be scheduled with the TA and TCMS to confirm proper system operation.

8.6 Deliverables

8.6.1 Certificates

8.6.1.1 The Contractor shall make reference to Section 8.4.2 and provide the TA with all required certificates.

8.6.1.2 Copies of all disposal certificates as defined in 8.4.2.6 shall also be provided to the TA.

8.6.2 Drawings

8.6.2.1 The Contractor shall be responsible for updating all “As Fitted” drawings affected by the piping replacement. Three (3) hard copies as well as original CAD drawings shall be provided to the TA. CAD drawing format to be ACAD 2010.dwg.

9.0 BALLAST, SEWAGE AND VOID TANKS INSPECTIONS (SURVEY ITEM)

9.1 Identification

9.1.1 The Contractor shall open, fire hose wash, and remove debris from the ballast, void, cofferdams, and sewage holding tanks to clean and prepare the identified tanks for TCMS Inspection and survey. After visual inspection is complete the tanks shall be sealed and subjected to a pressure test in the presence of a TCMS Inspector. Upon completion of the work, the tanks shall be returned to a state of operational readiness.

9.2 Reference

Drawing Number	File Name	Drawing Title
161-110-0	S30103mi Tank & Cap Plan.PDF	Tank Capacity Plan
CFN-161-300-1	S30113gal General Arrangement.PDF	General Arrangement
161-203-0	S30109mi1 Shell Expansion Model (1).PDF	CCGS Samuel Risley Shell Expansion

Description	Location	Capacity
No. 1 Ballast Tank,	frame 44-46	63.2 cubic meters
No. 2 Ballast Tank, Port	frame 32-37	49.1 cubic meters
No. 2 Ballast Tank, Stbd	frame 32-37	49.1 cubic meters
No. 3 Ballast Tank, Port	frame 27-32	39.2 cubic meters
No. 3 Ballast Tank, Stbd	frame 27-32	39.2 cubic meters
No. 4 Ballast Tank, Port	frame 17-22	34.3 cubic meters
No. 4 Ballast Tank, Stbd	frame 17-22	34.3 cubic meters
No. 5 Ballast Tank, Port	frame 10-17	39.4 cubic meters
No. 5 Ballast Tank, Stbd	frame 10-17	39.4 cubic meters
No. 6 Ballast Tank, Port	frame 5-10	63.7 cubic meters
No. 6 Ballast Tank, Stbd	frame 5-10	63.7 cubic meters
Void Tank Aft	aft peak	
Void, Port	frame 27-32	See Note *
Void, Stbd	frame 27-32	See Note *
Cofferdam, Center	frame 27-28	
Cofferdam, Port	frame 22-25	
Cofferdam, Stbd	frame 22-25	
Sewage Holding Tank, Port	frame 37-39	
Sewage Holding Tank, Stbd	frame 37-39	

*Note: The “Voids” at Frames 27-32 are not part of the CCGS Samuel Risley’s Capacity Plan and are not part of the vessel’s stability calculations. These two voids shall be opened for inspection; however, they shall not be submitted hydrostatic testing.

9.3 Technical

- 9.3.1.1 The Contractor shall document the ballast tank soundings of all ballast tanks onboard. The Contractor shall empty the remaining water from these tanks.
- 9.3.1.2 The Contractor shall pay attention to the stability of the vessel during de-ballasting operations. It may be necessary to perform the work on the tanks such that the vessel is held at even keel. Tanks may be required to have the work performed over several stages.
- 9.3.1.3 The Contractor shall open all tanks, ventilate the tanks and shall have a marine chemist or other qualified person certify each tank safe to enter or safe for hot work as required, prior to the start of the cleaning operation.
- 9.3.1.4 The Contractor shall clean all tanks and submit them for inspection by the attending TCMS surveyor for a survey credit. All sludge and debris from the tanks shall be disposed of ashore in accordance with all Federal, Provincial and Municipal regulations in effect. The Contractor shall provide and supply proof of disposal for this waste to the Technical Authority.
- 9.3.1.5 The Contractor shall quote on removing 0.5 cubic meters of solid debris from each ballast tank. The Contractor shall quote on removing up to 300 liters of solid debris from each of the void spaces, cofferdams and sewage holding tanks.
- 9.3.1.6 Upon completion of the cleaning and TCMS hydrostatic survey, the Contractor shall close up all tanks using new 1/8 inch neoprene gaskets suitable for sea water service on all man-hole covers.
- 9.3.1.7 The Contractor shall hydrostatically test all tanks to a 2.44 meter head of water with the final test level being maintained for 1 hour. All hydrostatic tests shall be witnessed by the attending TCMS surveyor and the Inspection Authority.
- 9.3.1.8 Where the Contractor seeks and is granted approval to perform the Hydrostatic testing using low pressure compressed air, the Contractor assumes the liability for any damage to the tanks as a result of excessive pressure (greater than 10.3 Kilopascals or 1.5 PSI). 2 pressure gauge readings shall be available when using this method.

9.4 Inspections, Test and Trials

- 9.4.1.1 The Contractor shall inspect all sounding pipes and remove any foreign materials from the sounding pipes.
- 9.4.1.2 The Contractor shall ensure that a Division 3 TCMS credit is obtained for the pressure testing of the tanks; this credit shall consist of signed documentation from the TCMS surveyor attesting that the pressure test on the tanks has been performed and the tanks passed the test.
- 9.4.1.3 The Contractor shall dispose of all water used for the hydrostatic testing of the tanks. The Contractor shall fill all tanks to the same level as when the vessel was docked. This shall be done prior to the re-floating of the vessel. The Contractor shall supply unit price rate for disposal of ballast water.
- 9.4.1.4 All documentation shall be provided to the Technical Authority prior to the completion of the contract.

10.0 BRIDGE WIPER INSTALLATION

10.1 Identification

10.1.1 The Contractor shall remove the current ten bridge wipers including motors and controllers. The Contractor shall then install ten new wiper arrangements and install new controllers. The contractor shall demonstrate the functionality of the new wipers for the TA and the TI

10.2 Reference:

Drawings #	Drawing Name
161-320-10	SIDE LIGHT & WINDOW SCHEDULE REFERNCE WINDOW WIPERS ITEM: 4,8,9,15,16,17,23,24,28,34
161-623-2	240 VOLT HEATING PANEL 120 VOLT HEATED WINDOWS & WIPER MOTORS PANEL M5-4 ENGINE ROOM PANEL M4-11 WHEELHOUSE

Bridge Wiper and Control location.pdf
 Installation & Operation Manual Type C Straight Line Wiper With Series 1000 Control Unit
 (Electronic version: IOM Type C SLW w S1000 Control.pdf)

10.3 Technical

- 10.3.1 For any work requiring the application of fusion welding for steel structures the Contractor and/or the sub-contractor companies and operators shall be certified by the Canadian Welding Bureau in accordance with CSA Standards W47.1-03, latest revision – Certification of Companies for Fusion Welding of Steel Division 2 Certification as a minimum. Current copies of certification (including those of the welders) shall be provided to the TA.
- 10.3.2 The Contractor shall ensure that all employees working aloft are certified for Fall Arrest under the Provincial Health and Safety Standards.
- 10.3.3 The Contractor shall supply all necessary safety equipment, tools, materials and labour to complete the work outlined under this specification. Exclusions from this include the WYNN Type “C” wipers, motors and 1000 series controllers. These items shall be Coast Guard Supplied.
- 10.3.4 All fasteners used to locate the wipers and motors to the ship shall be 316 Stainless steel. Fasteners not supplied with the Wynn wiper package shall be Contractor supply.
- 10.3.5 The Contractor is to ensure that all wiring and cables used in the new wiper system meet regulatory requirements and are in accordance with all relevant regulations in effect. All electrical installations and repairs shall be carried out in accordance with the latest revisions of Transport Canada Marine Safety Electrical Standard TP127E and IEEE Standard 45 Recommended Practice for Electrical Installation on Ships.
- 10.3.6 The Contractor shall supply and install all electrical cable required. Wire size to be 14 AWG (2.5mm²) maximum. All Cable shall be certified for marine use and conductors shall be multi strand, solid core wire is unacceptable.
- 10.3.7 Multi- conductor cable from the 1000 series Controller to the local wiper junction box connections requires 8 conductors (six for operation and 2 spare).
- 10.3.8 The contractor shall supply and install a junction box, with cover, for each wiper unit. Each junction box shall be located as close as practical to the wiper motor assembly and securely fastened above the deck head panels. The junction box location and mounting shall not interfere with the deck head panels installation and removal. Each junction box shall be fitted with a terminal strip having a minimum of 10 input/output connections each rated for 15 amps at 120 volts and sized to accept 14 AWG wire.

10.3.9 The contractor shall run new power supply wire from the disconnect breaker to the 1000 series controllers as required. Existing wire will be renewed and continuous from the breaker to the controller and is sized correctly for the power supply requirements.

10.3.10 All wire runs and terminations shall be identified with wire labels. Wire labels shall be correct and consistent with installation wiring diagrams

10.3.11 Wires shall be protected from mechanical and ultraviolet damage where they are exposed to the elements.

10.3.12 Bulkhead glands required for penetrations shall be of 316 stainless steel construction and of water tight integrity.

10.3.13 The Contractor shall isolate and lock out all power to the window wipers during the removal and installation process. It is the Contractors responsibility to place lock out on all breakers and electrical connection as deemed necessary to perform the work.

10.3.14 The Breaker Panel M4-11 is located on the Wheel House:

M4-11-14 Forward Wipers
M4-11-15 STBD Wing Wipers
M4-11-16 PORT Wing Wipers
M4-11-17 Aft Window Wipers

10.3.15 Removal

10.3.15.1 The contractor shall remove ten WYNN window wipers at the locations indicated on drawing 161-320-10 SIDE LIGHT & WINDOW SCHEDULE designated reference ITEM 4,8,9,15,16,17,23,24,28,34

10.3.15.2 The Contractor shall remove the deck head material in way of the wiper motors and wire runs on the interior of the wheel house. The deck head panels shall be carefully removed, protected from damage and identified for re-fitting after work has completed.

10.3.15.3 The Contractor shall carefully remove the insulation in way of the Electrical motor assembly and where any hot work is required.

10.3.15.4 The Contractor shall protect all areas on the interior and exterior of the wheel house where hot work will be carried out. The Contractor shall ensure that all combustibles

have been removed from the local area. All hot work must be performed in accordance to the contract section 1.1.4.1.

10.3.15.5 The Contractor shall supply and fabricate insert steel plates to fit the holes left by the original motor penetrations. The steel plates shall be of the same thickness as the bulkhead steel. The Contractor shall weld these plates into place to fully seal and establish water tight integrity at the existing motor penetrations.

10.3.15.6 The contractor shall cut and grind flush all brackets and extensions used by the original wipers that will not be re-used.

10.3.16 Installation

10.3.17 The Contractor shall install ten new, Coast guard supplied WYNN type C marine window wipers and 1000 series controllers at the locations indicated on drawing 161-320-10 SIDE LIGHT & WINDOW SCHEDULE designated ITEM 4,8,9,15,16,17,23,24,28,34. Reference information: Bridge Wiper and Control location.pdf

Wiper Locations:

For Windows 9 and 23: New Wiper 915 mm Stroke, 500 mm Arm, 600 mm Blade

For Windows 8 and 24: New Wiper 480 mm Stroke, 650 mm Arm, 700 mm Blade

For Windows 4 and 28: New Wiper 480 mm Stroke, 650 mm Arm, 700 mm Blade

For Window 34: New Wiper 585 mm Stroke, 650 mm Arm, 700 mm Blade

For Windows 15,16,17: New Wiper 840 mm Stroke, 500 mm Arm, 600 mm Blade

- 10.3.18 The Contractor shall install the new wipers and controls using guidelines and instructions found in reference: Installation & Operation Manual Type C Straight Line Wiper With Series 1000 Control Unit (Electronic version: IOM Type C SLW w S1000 Control.pdf)
- 10.3.19 The Contractor shall install bulkhead penetrations as required to properly fit and locate the wiper assemblies, motors and controls. All bulkhead penetrations must be sealed for water tight integrity. All bolt threads shall be coated with Loctite 5040 where they thread into bulkheads.
- 10.3.20 Where spacers are required (6mm or greater in thickness) to establish proper installation dimensions they shall be secured to the bulkheads by welding. Welds must be continuous and not allow for the ingress of water behind the spacer. The spacers shall be drilled and tapped as required to affix the wiper assemblies.
- 10.3.21 The Contractor shall prime 2 coat of Interprime 198, @ 3 mils DFT and paint 3 coats of Intersheen 579 @ 1.5 mils DFT (WHITE – RAL9003) each coat on all exposed metal surfaces. Paint required for this work shall be Coast Guard supplied.
- 10.3.22 Where removal and installation has required paint to be removed from the bulkheads the Contractor shall feather the edges of the surrounding paint and remove all debris/dirt from the surface prior to applying new paint.
- 10.3.23 The contractor shall establish the location of the wipers such that full operation is permitted.
- 10.3.24 Wiper motors shall be installed to allow for service and attachment of control wiring. Wiper motors shall be secured as per the Installation Instructions.
- 10.3.25 Wiper Controllers shall be fitted with reference to the Wynn Type C Installation Instructions and the document Bridge Wiper and Control location.pdf.
- 10.3.26 Single Controllers that are fitted in place of multiple units shall be fitted with cover plates. Cover plates shall be constructed to cover the un-used panel penetration.
- 10.3.27 The controller fitted to the Wheel House Console shall be installed into the lower penetration. The upper two controller penetrations shall be fitted with a suitable cover plate. The Forward Wheel House console may undergo a reconfiguration prior to or during the installation of the new wiper controllers. The Contractor shall make allowance

for this. The position and installation of the Forward Wheel House controller shall be determined by the TA of the project.

10.4 Inspections, Tests and Trials

- 10.4.1 The Contractor shall submit the installed wipers to a hose test to ensure all welds and penetrations are secure and water tight. Any water ingress into the Wheel House shall be repaired by the Contractor.
- 10.4.2 All wipers and wiper heaters shall be demonstrated by the contractor to be functional and in proper adjustment. The Contractor shall ensure that the “Park” function of the wipers has been suitably adjusted according to the specifications established in the Installation manual.

10.5 Documentation

- 10.5.1 The Contractor shall supply and up to date as installed wiring diagram showing the connections and terminations at each window wiper and controller. The Wiring diagrams shall accurately reflect the installation and indicate supply power and control power runs.
- 10.5.2 Drawings shall be submitted in paper format (2 copies) and in AutoCad 2002 electronic format on DVD or Memory Stick.

11.0 EMERGENCY GENERATOR (DIESEL ENGINE) (SURVEY ITEM)

11.1 Identification

11.1.1 The Contractor shall fully inspect and report on the condition of the Emergency Generator diesel onboard the CCGS Samuel Risley. The Contractor shall perform a run test under full load for the attending TCMS surveyor. The Contractor shall obtain a Division III credit for the survey item. The Contractor shall be a fully accredited Detroit Diesel Technician familiar with the operation, service and maintenance of the 6-71 In Line series of Detroit Diesel engine.

11.2 References

- Detroit Diesel Engines In Line 71 Operators Manual 6SE329 (Rev 12/81).
- Part Plate 6_71 Samuel Risley.pdf

The emergency generator diesel engine is of the following make and model number:

- Detroit Marine Diesel 6-71T Series
- Serial Number: 6A0439657;
- Model Number: 1063-7305;
- Unit Number: 6A0439675
- Location: Emergency Generator Room, STBD side Winch Compartment.

11.3 Technical

11.3.1 Except where specified, the Contractor shall supply all parts, consumable products, hardware, tools and labor required to complete the service inspection as outlined in section 11.3.

11.3.2 The Contractor shall make reference to the Detroit Diesel Engine Service Manual for the in-line 71 series of engines. The Manual to be referenced is 6SE329 (Rev 12/81). The Contractor shall adhere to all precautions and work instructions provided within the manual in respect to the disassembly, measurements and assembly of the emergency generator diesel engine.

11.3.3 The Contractor shall isolate the diesel engine from the starting air circuit and fuel circuit with an approved lock-out tag system. The generator shall also be electrically isolated from the switchboard with an approved lock-out tag system as well as the electrical control circuit.

11.3.4 The Contractor shall drain and dispose ashore of all fluids from the diesel engine in accordance with all Federal, Provincial and Municipal regulations in effect, as required during the Inspection and Service work. The Contractor shall provide proof of disposal for this waste to the Technical Authority.

11.3.5 The Contractor shall mark matching parts and shall record these match marks so that parts will be assembled into their original location upon assembly of the diesel engine.

11.3.6 Inspection:

11.3.6.1 The Contractor shall remove all fuel injectors, as required, from the diesel engine and perform a compression test on the diesel engine. The Contractor shall record reading from all six cylinders for a final report.

11.3.6.2 The Contractor shall perform the Compression Test at the applicable engine temperature and RPM for the engine arrangement fitted. The Contractor shall provide the special compression testing tools required for this performance assessment.

11.3.6.3 Injector removal and installation is presented in Section 2 of the Operators Manual.

11.3.6.4 The Contractor shall open up the inspection ports for all six cylinders and inspect the condition of the piston rings and the cylinders. The contractor shall replace the gaskets with new prior to replacing the inspection covers.

11.3.6.5 The Contractor shall inspect the interior of the cylinder combustion spaces and pistons using a boroscope through the injector ports and exhaust ports. The boroscope shall be capable of taking photo or video feed back. A copy of this inspection shall be included in the final report.

11.3.6.6 The Contractor shall remove the oil pan and visually inspect the big end bearings and main bearings and oil pump. The Contractor shall install a new oil pan gasket after the inspection.

11.3.6.7 The Contractor shall inspect the diesel engine, visually, mechanically and operationally and provide Coast Guard with a Condition Assessment of the Emergency Generator Diesel Engine.

11.3.7 Service Work:

11.3.7.1 The Contractor shall replace the 6 Fuel injectors with Coast Guard supplied injectors. The Contractor shall perform a proper adjustment of the injectors as described the Service Manual.

11.3.7.2 The Contractor shall return the old removed injectors to the Coast Guard.

11.3.7.3 The contractor shall replace the fuel jumpers to and from each injector with new Contractor supplied jumper lines.

11.3.7.4 The Contractor shall perform the service work for tune up on the in line 71 series engine as applicable to the engine arrangement fitted. The guidelines for the engine service are found in Section 6 of the Operators Manual.

11.3.7.5 The Contractor shall replace all fluids: Lube Oil and Jacket Water.

11.3.7.6 The Contractor shall employ all new Contractor supplied gaskets when assembling the diesel engine.

11.3.7.7 The Contractor shall use new Coast Guard supplied lube oil, fuel and air filters.

11.3.7.8 The Contractor shall fill the engine with Coast Guard supplied glycol for the cooling water circuit and Coast Guard supplied oil for the lubricating circuit.

11.3.7.9 Upon completion of all service work the Contractor shall run up the Emergency Generator and make any adjustments as required to establish proper function of the diesel engine.

11.3.7.10 All leaks and/or mechanical defects shall be corrected by the Contractor prior to final contract acceptance.

11.4 Inspection, Test and Certification

- 11.4.1 The Contractor shall present the recorded readings to the attending TCMS surveyor for a Division III survey credit.
- 11.4.2 The Contractor shall produce an assessment report on the Diesel Engine with notes on the service work provided and an overall condition of the engine.
- 11.4.3 The Contractor shall present all measurements and readings taken from the engine to the PWGSC Inspection Authority, the Technical Authority and the TCMS surveyor prior to the end of the contract. All readings shall be presented in a typed format on 8.5 X 11 inch paper.
- 11.4.4 The Contractor shall verify the operation of all alarm and monitoring equipment fitted to the diesel engine. All local gauges shall be verified as providing the correct readings.
- 11.4.5 The Contractor shall check and test all normal and emergency engine shut downs. The results of these tests shall be recorded. The Contractor shall perform these tests in the presence of TCMS, the PWGSC Inspection Authority and the Technical Authority.
- 11.4.6 Upon completion of inspection and testing, the Contractor shall ensure that Coast Guard has obtained a Division III survey credit from the attending TCMS Inspector.

12.0 MEGGER TEST (SURVEY ITEM)

12.1 Identification

12.1.1 The CCG has a requirement for the Contractor to perform an annual Megger test on the CCGS Samuel Risley as required by TP127E to satisfy TCMS statutory requirements.

12.2 References

12.2.1 Equipment Data

12.2.1.1 The equipment and electrical circuits to be tested are identified in the referenced Risley Meggering Log.

12.2.2 Drawings

Drawing Number	Description	Electronic Number
	Risley Meggering Log	2013 Megger Test Report – Risley.xls

12.2.3 Regulations

12.2.3.1 TP 127 E – Latest Version

12.3 Technical

12.3.1 The Contractor shall perform thorough visual examinations and electrical insulation resistance tests of all items of machinery and equipment identified in the referenced Risley Meggering Log in order to determine the mechanical and electrical conditions of the equipment and machinery to the requirements of TP 127 E Section 34.1 and section 34.6 (a), (b).

12.3.2 Thorough visual examination shall include the external condition and internal conditions where the equipment internals are accessible through doors, cover plates, terminal boxes, removable enclosures, ventilation louvers that require opening or removal to perform the electrical insulation resistance tests.

12.3.3 The Contractor shall perform electrical insulation resistance tests on the machinery and equipment to the requirements of TP 127 E Section 34.6 (b). Tests shall be conducted between each phase and ground, and between each phase as applicable to the machinery and equipment under test. Motor circuits shall be tested from the switchboard to the motor controller and from the motor controller to the motor. General power circuits shall be tested from switchboards to distribution panels and sub-circuits, and shall include permanently connected equipment. The Contractor shall exercise caution and disconnect all sensitive electronic equipment which may be damaged by the testing.

- 12.3.4 The Contractor shall notify the TA of any unsatisfactory or doubtful condition discovered during the thorough visual examination before the end of the working day in which the condition is discovered. The Contractor shall notify the TA of any insulation resistance test that shows a resistance below 0.1 megohm before the end of the working day in which the test is made. The repair if any will be made under a PWGSC 1379 action.
- 12.3.5 The Contractor shall prepare and submit a report of the electrical insulation resistance test results as an updated copy of the MS-Excel spreadsheet provided. The Contractor shall add columns as required and retain the historic data. The Contractor shall submit to the TA the report required in this section in the paper and electronic formats and numbers required by Section 8.5.1 within 4 days of completion of the testing and any repairs and retesting required.
- 12.3.6 The Contractor shall supply in the report a detailed explanation and for any circuit or device that cannot be satisfactorily tested due to the presence of sensitive electronic components or circuits that cannot be disconnected from the device or circuit being tested.

12.4 Proof of Performance

12.4.1 Inspections

- 12.4.1.1 The CCG shall provide one engineering officer familiar with the vessel to assist the Contractor with the identification of machinery and equipment. The Contractor shall be responsible for the disconnection and isolation of the machinery and equipment under test and for the reconnection and setting back into service of the machinery and equipment after testing. The Contractor shall demonstrate to the assisting CCG personnel the correct functioning of the machinery and equipment after testing. The Contractor shall be responsible to correct and repair damage consequent to any incorrect reconnection and setting to work.

12.4.2 Deliverables

12.4.2.1 Documentation (Reports/Drawings/Manuals)

- 12.4.2.1.1 The Contractor shall submit the reports in electronic formats in an MS-Excel file as a new version of the file supplied, 1 copy as an open MS-Excel spreadsheet, 1 copy in PDF format on separate CD-ROM media, and 3 copies on paper. The new version shall insert the new data into the existing spreadsheet so that old and new data can be compared.

13.0 SEWAGE TREATMENT SYSTEM PUMPOUT AND CLEANING (OPTIONAL)

13.1 Identification

13.1.1 The CCGS Samuel Risley has a requirement to inspect the internal components of the sewage treatment plant, Hamworthy ST-4. The Contractor must pump out and clean the sewage treatment plant. All internal components of the sewage plant must be steam cleaned.

13.1.2 The Contractor must retain the services of an approved Hamworthy field service representative for the inspection of the internal components.

13.2 Reference:

Drawing Number	Drawing Title	Electronic File Name
CFN-161-300-1	General Arrangement	S30113gal .dwg

Hamworthy Super Trident Sewage Treatment Units Manual

13.2.1 Standards:

TCMS - Vessel Pollution and Dangerous Chemicals Regulations (Latest version).

13.3 Technical

13.3.1 The Contractor must pump out and dispose of the content of the sewage treatment plant, approximately 4000L, according to the applicable Federal and Provincial Regulations.

13.3.2 The expression sewage treatment plant includes all the mechanical and structural components of the ST-4 sewage treatment plant shell as shown on drawing D5232 of Hamworthy Super Trident Manual. This unit is not fitted with a macerator.

13.3.3 The Contractor must be responsible provide adequate ventilation from the sewage compartment to the outside of the ship. The Contractor must constantly monitor the air quality within the sewage plant and the sewage compartment space and certify it is safe for entry.

13.3.4 The Contractor must remove all access covers and remove all solids on the internal components and the bottom of the sewage plant and dispose of the solids in accordance with all applicable Federal and Provincial Regulations. The Contractor must thoroughly clean with water or Hamworthy approved septic safe cleaner the internal parts of the sewage plant.

- 13.3.5 The final cleaning stage must be a steam sterilization of all internal surfaces of the sewage treatment plant.
- 13.3.6 The Contractor must take all necessary precautions to ensure the internal coating of the tank is not removed during the cleaning process. Where internal hoses are used within the sewage plant, the Contractor must ensure those are protected from damage during the cleaning process. Any damage will be repaired at the Contractors cost.
- 13.3.7 All external effluent hoses between the different processing stages are to be disconnected and thoroughly cleaned with water only or Hamworthy approved septic safe cleaner.
- 13.3.8 The Contractor is responsible to dispose of all cleaning fluids in accordance with all applicable Federal and Provincial Regulations.
- 13.3.9 After the cleaning of the sewage plant is complete, the Contractor must retain the services of a Hamworthy Field Service Representative (FSR) to inspect all internal components of the sewage plant.
- 13.3.10 The Contractor must change all air diffusers with new, Coast Guard supplied, air diffusers.
- 13.3.11 Any defect identified by the Hamworthy FSR that would prevent the sewage treatment plant from performing according to the Vessel Pollution and Dangerous Chemicals Regulations for the next 2 years must identified to the Technical Authority (TA) prior to the closing up of the sewage treatment plant. The above mentioned defects will be corrected through a 1379 action.
- 13.3.12 The Contractor must afford the TA the opportunity to inspect all internal components prior to the closing of the sewage treatment plant.
- 13.3.13 After completion of the inspection, the Contractor must re-install all hoses and access hatches. All access hatches must be fitted with new, Contractor supplied, solid 3 mm rubber gasket, mesh reinforced gasket material is not acceptable.
- 13.3.14 Any defect must be corrected by the Contractor at his expenses prior to the end of the contract.

13.4 Inspections, Tests and Trials

- 13.4.1 Through the use of non destructive testing, the Contractor must conduct a survey of the condition of the sewage treatment plant and submit a report of the findings to the Technical Authority (TA). The survey must also include a photographic survey of all interior compartments, piping, hoses and components. All photographs must be at a minimum 10 megapixel resolution and labelled to identify the parts shown in the photographs.
- 13.4.2 The Contractor must take a minimum of 30 ultrasound measurements of the sewage plant steel thickness at the water/air interface within the tanks following the recommendations on locations from the Hamworthy FSR. The location of the measurements must be submitted to the Technical Authority for approval prior to the measurements being taken.
- 13.4.3 The Contractor shall fill the system with non-chlorinated or chemically treated water and all hatches must be tested for leak. All air lifts are to be proven for proper operation prior to the end of the contract. Any defect must be corrected by the Contractor at his expenses prior to the end of the contract.

13.5 Documentation

- 13.5.1 The Contractor must provide the TA with the disposal certificates for the effluent, solids and chemicals generated by this work specification.
- 13.5.2 The Contractor must provide the TA with a complete report of the condition survey of the sewage plant, including but not restricted to, the ultrasound measurements, the condition of the internal coating, the condition of the various internal components, a list of all repairs done and a list of recommendations for extending the life of the sewage treatment plant onboard beyond 2 years.
- 13.5.3 The Contractor must provide 1 electronic copy on either CD or USB media and 1 paper copies of the above mentioned documentation. The documentation format must be conforming to the specified format in Section 1.0 of this specification.

14.0 MAIN ENGINE #2 & 1 FRS SERVICE

14.1.1 CCGS Samuel Risley has a requirement for the overhaul and TCMS Survey of Wartsila Main Engine #2 and an overhaul/inspection of engine components to be re-used in #1 Main Engine. The Contractor shall supply a Wärtsilä Field Service Representative (FSR) in order to complete this portion of the specification.

14.2 REFERENCES

14.2.1 Wärtsilä Vasa 12V22MD operation and maintenance manual.

14.3 TECHNICAL

14.3.1 The Wartsila FSR will work with the CCGS Samuel Risley Engineering staff for the assembly portion of the #2 Main Engine overhaul. The Contractor to note that this is expected to be a “teaching atmosphere” with respect to the work being performed on #2 Main Engine.

14.3.2 The Wartsila FSR is to be prepared to overhaul and approve re-usable engine parts required for re-assembly of #1 Main Engine.

14.3.3 The Contractor to note that the FSR to be available within first week of the refit start date in order to complete this section of the specification.

14.3.4 The Contractor to note all Main Engine parts will be CCG supplied.

14.3.5 Wartsila FSR work for Main Engine #2 shall include:

- An “as found” condition assessment of the Main engine (#2). The engine will have been previously dismantled by the ship’s Engineering staff.
- Assist the Chief Engineer with presentation of the various engine components to Transport Canada Ship Safety (TCMS) for continuous survey credit.
- After the TCMS survey, assist and supervise the re-assembly of the engine and various components.
- Commissioning of the engine including dock trials.

14.3.6 Wartsila FSR work for Main Engine #1 shall include inspection, and overhaul (as required) for the following items:

- 476 030 Air Cooler x 2
- 474 040 Lubricating Oil Cooler x 1
- 471 140 Lubricating Oil Filter x2
- 470 240 Filter Complete (Fuel) x 1
- 191 040 Circulating Water Pump x 2
- 181 125 Lubricating Oil Pump x1
- 174 040 Fuel Feed Pump x1
- 217 015 Master Starting valve x 1
- 211 020 Starting Air Distributor x1
- 110 016 Gear Wheel for driving pumps
- 114 001 Flywheel
- 131 030 Small Intermediate Gear x 2
- 131 131 Large Intermediate Gear x 2
- 145 030 Push Rod x 24
- 148 050 Drive Gear
- 223 015 Governor Drive
- Over Speed Trip Device
- Piping, Tubing and General Fittings

14.3.7 The Contractor to note all Main Engine parts will be CCG supplied. All other commonly changed or overhauled parts for #1 Main Engine shall be provided as new or Wartsila approved rebuilt for the rebuild on #1 Main Engine.

14.3.8 The Wartsila FSR must perform the overhaul and inspection work according to the Wärtsilä Vasa 12V22MD operation and maintenance manual.

14.3.9 The Wartsila FSR must notify the TA immediately if any of the components are not suitable for re-use in the rebuild of #1 Main Engine.

14.3.10 The Wartsila FSR must review the new parts provided for the rebuild of #1 Main Engine and immediately advise the TA with respect to any missing items that will be required for the rebuild of #1 Main Engine under section 5.0 of this contract. All parts required for the rebuild of #1 Main Engine will be on site at the Contractor's facility.

14.3.11 The Wartsila FSR must inspect the block of #1 Main Engine and advise the Chief Engineer if any additional work is required to be performed on the block in order to ensure its proper removal as outlined in section 5.0 of this contract.

14.4 DOCUMENTATION

14.4.1 The Wartsila FSR must prepare detailed reports after the re-assembly of Main Engine #2 – these reports to include work performed, measurements taken, any other relevant observations, and hand it over to the Chief Engineer.

14.4.2 The Wartsila FSR must prepare detailed reports after the component overhaul and inspection for #1 Main Engine. These reports to include work performed, measurements taken, any other relevant observations, and hand it over to the Chief Engineer.