Public Works and Government Services Canada

Travaux publics et Services gouvernementaux Canada

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

Title - Sujet CCGS Griffon 2012 Refit - Alongside	
Solicitation No. - N° de l'invitation F2599-120160/A	**Date** 2012-08-02
Client Reference No. - N° de référence du client F2599-120160	**GETS Ref. No. - N° de réf. de SEAG** PW-$$MD-018-23038
File No. - N° de dossier 018md.F2599-120160	**CCC No./N° CCC - FMS No./N° VME**
Solicitation Closes - L'invitation prend fin **at - à 02:00 PM** **on - le 2012-08-17**	**Time Zone** **Fuseau horaire** Eastern Daylight Saving Time EDT
F.O.B. - F.A.B. **Plant-Usine:** ☐ **Destination:** ☐ **Other-Autre:** ☐	
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

Vendor/Firm Name and Address
Raison sociale et adresse du fournisseur/de l'entrepreneur

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**	

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

Canada

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PART 1 - GENERAL INFORMATION

1.1 Introduction

The bid solicitation and resulting contract document is divided into seven (7) parts plus annexes as follows:

Part 1 General Information: provides a general description of the requirement;

Part 2 Bidder Instructions: provides the instructions, clauses and conditions applicable to the bid solicitation 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, 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 Insurance Requirements and other Annexes.

1.2 Summary

1. The Requirement is:

a) to carry out the maintenance and alterations of the Canadian Coast Guard Vessel CCGS Griffon in accordance with the associated Technical Specifications detailed in Annex “A”.

b) to carry out unscheduled work authorized by the Contracting Authority.

2. Pursuant to section 01 of Standard Instructions 2003 and 2004, a Consent to a Criminal Record Verification form, must be submitted with the bid, by the bid solicitation closing date, for each individual who is currently on the Bidder’s Board of Directors.

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).

1.3 Debriefings

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

PART 2 - BIDDER INSTRUCTIONS

2.1 Standard Instructions, Clauses and Conditions

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

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

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

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 "H1" for Deliverables/Certifications.

2.5 Bidders' Conference

A bidders' conference chaired by the Contracting Authority will be held at CCIW Burlington, 867 Lakeshore Road, Burlington, Ontario on **August 9, 2012 @ 1300**. 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 **August 9, 2012 @ 1000** at CCIW Burlington, 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: September 12, 2012
Complete: October 24, 2012

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.

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 (2 hard copies)
Section II - Financial Bid (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 "H1" Deliverables and Certifications.

Section II: Financial Bid

Bidders must submit their financial bid in accordance with the Financial Bid Presentation Sheet in Annex “G”, and the detailed Pricing Data Sheet, Appendix 1 to Annex “G”. The total amount of Goods and Services Tax or Harmonized Sales Tax must be shown separately, if applicable.

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 "H1".

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 "H2".

PART 5 - CERTIFICATIONS

5.1 General

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

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

5.2 Certifications Required with the Bid

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

5.2.1 Federal Contractors Program - $200,000 or more

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

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

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

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

   The Bidder or the member of the joint venture

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

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

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

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

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

5.2.2 Code of Conduct Certifications - Consent to a Criminal Record Verification

Bidders must submit with their bid, by the bid solicitation closing date:

(a) a complete list of names of all individuals who are currently directors of the Bidder;

(b) a properly completed and signed form Consent to a Criminal Record Verification (PWGSC-TPSGC 229), for each individual named in the list.

PART 6 - FINANCIAL AND OTHER REQUIREMENTS

6.1 Financial Capability

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

6.2 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 "H1" for Deliverables/Certifications.

6.3 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 "H1" for Deliverables/Certifications

6.4 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 "H1", Deliverables/Certifications.

6.5 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 "H1", Deliverables/Certifications.

6.6 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 6.16.

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 "H1" for Deliverables/Certifications.

6.7 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 "H1" for Deliverable Requirements.

6.8 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 "H1" for Deliverable Requirements.

6.9 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.

6.10 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 "C". If this information is not provided with the bid it will render the bid non-responsive.

Refer to Annex "H1", Deliverables/Certifications.

6.11 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 " I1" for Deliverables/Certifications.

6.12 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
Iii. Growth Work Summary

Refer to Annex "H1" for Deliverables/Certifications.

6.13 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 "H1" for Deliverables/Certifications.

6.14 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 "H1" for Deliverables/Certifications.

6.15 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 "H1" for Deliverables/Certifications.

6.16 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 "H1" 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 maintenance and alterations of the Canadian Coast Guard Vessel CCGS Griffon 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 **(https://buyandsell.gc.ca/policy-and-guidelines/standard-acquisition-clauses-and-conditions-manual)** issued by Public Works and Government Services Canada.

7.2.1 General Conditions

2030 (2012-07-16), General Conditions - Higher Complexity - Goods, apply to and form part of the Contract.

2030 (2012-07-16) 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 “D” 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 - (excluding article 08) apply and form part of the Contract

7.3 Term of Contract

7.3.1 Work Period - Marine

1. Work must commence and be completed as follows:

Commence: September 12, 2012
Complete: October 24, 2012

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.

7.4 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 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
Canadian Coast Guard
Central and Arctic Region
520 Exmouth Street
Sarnia, Ontario
N7T 8B1
Telephone (519) 383-1807
Cell (519) 330-5127
Fax (519) 383-1990
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.

7.4.4 Contractor Contacts

Name and Telephone numbers of person responsible for:

General Enquiries:

Name _____ Telephone Number _____
Fax Number _____ E-mail Address _____

Delivery Follow-up:

Name _____ Telephone Number _____
Fax Number _____ E-mail Address _____

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. Goods and Services Tax or Harmonized Sales Tax is 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:

Canadian Coast Guard
Marine Engineering
520 Exmouth Street
Sarnia, Ontario
N7T 8B1

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

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 (GST/HST 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. Goods and Services tax or Harmonized Sales tax (GST/HST), 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 GST/HST payable, as it was included in previous payments.

7.7 Certifications

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 Applicable Laws

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

7.9 Priority of Documents

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

(a) the Articles of Agreement;
(b) 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”, Insurance Requirements;
(h) Annex “D”, Warranty;
(i) Annex “E”, Procedure for Unscheduled Work;
(j) Annex “F”, Quality Control/Inspection;
(k) Annex “G”, Financial Bid Presentation Sheet;
(l) Annex “H”, Deliverables/Certifications
(m) Annex “I”, Consent to Criminal Record Verification Form
a) complete list of names of all individuals who are currently directors for the Bidder
b) completed and signed form Consent to a Criminal Record Verification
(n) the Contractor's bid dated _____ (insert date of bid), as amended_____ (insert date(s) of amendment(s) if applicable)

7.10 Insurance Requirements

The Contractor must comply with the insurance requirements specified in Annex "C". 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 fulfill 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.

7.11 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:

   (a) any infringement of intellectual property rights;

   (b) any breach of warranty obligations; or

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.

7.12 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.

7.13 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.

7.14 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.

7.15 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.

7.16 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.

7.17 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

7.18 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 "F" for details.

7.19 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 "F" for details.

7.20 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 "F" for details.

7.21 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.

7.22 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.

7.23 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 Griffon must be done is accordance with the Contractor's submitted and accepted procedures.

7.24 Fire Protection, Fire Fighting and Training

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

7.25 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 "H2" for Deliverables/Certifications.

7.26 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.

7.27 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 "E".

7.28 7.25 Vessel Manned Refits

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

7.29 Pre-Refit Meeting

A Pre-Refit meeting will be convened and chaired by the Contracting Authority at the yard 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.

7.30 Progress Meetings

Progress meetings, chaired by the Contracting Authority, will take place at the yard 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**.**

7.31 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 "H" for details of Acceptance Procedures and Reports.

7.32 Site Regulations

The Contractor must comply will all rules, instructions and directives in force on the site where the Work is performed.

7.33 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.

7.34 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.

7.35 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.

7.36 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.

7.37 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.

7.38 Care, Custody and Control

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

7.39 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.

ANNEX A

Technical Specification

CCGS Griffon Self Refit 2012

Specification No: Spec # 738.12 rev. 2,

Date: 2012-07-23

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:	**$**
B)	**GST or HST as applicable of line a) only**	**$**
C)	**Total Firm PriceGST/HST 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 Goods and Services Tax or Harmonized Sales Tax, 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."

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

INSURANCE REQUIREMENTS

C.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.

C.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 D

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.

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** 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

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 E

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.

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.

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 F

QUALITY CONTROL/INSPECTION

F1 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**.**

F2 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

F3 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.

F4 Conduct of Inspection

1. Inspections must be conducted in accordance with the ITP and as detailed in F4.

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.

F5 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.

F6 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.

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 F2.

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 F5. 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.

ANNEX G

Financial Bid Presentation Sheet

G1 Price for Evaluation

A)	**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 "G", for a FIRM PRICE of:	**$**
B)	Unscheduled Work Contractor Labour Cost:Estimated labour hours at a firm Charge-out Labour Rate, including overhead and profit for evaluation purpose only: 750 person hours X $_____ per hour for a PRICE of: See Article G2.1 and G2.2 below. Overtime premium for time and one half: Estimated hours for evaluation purposes only: 75 person hours X $_____ per hour for a PRICE of: See Article G3 Below. Overtime premium for double time: Estimated hours for evaluation purposes only: 75 person hours X $_____ per hour for a PRICE of: See Article G3 below.	**$** **$** **$**
C)	Daily Service Fees for evaluation purpose only As per Clause G4 i) Ten (10) working days X $_____ firm daily service fee =$_____ ii) Four (4) non-working days X $____ firm daily service fee =$_____	**$**
D)	EVALUATION PRICE GST Excluded, [A + B + C]: For an EVALUATION PRICE of (GST/HST excluded):	**$**

G2 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 Goods and Services Tax or Harmonized Sales Tax, 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."

G2.1: 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 G2.2 below, will not be negotiated, but will be compensated for in accordance with Note G2.2. It is therefore incumbent upon the bidder to have bid appropriately which will result in fair compensation, regardless of their Cost Management System.

G2.2: 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 G2 above.

G2.3: 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.

G3 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.

G4 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.

G5 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.

ANNEX G - PRICING DATA SHEETS APPENDIX 1

Spec. #	Description	Total Hours	Total Labour Cost	Total Material Cost	Total FSR& Sub-Contractors Cost	Total Firm Price	Unit Cost
1.0	GENERAL NOTES						
1.13.4	For Crane (15 Hours)					$	
4.0	BILGE CLEANING		$	$	$	$	
4.3.2	Unit Rate/Cubic Meter of Oily Water						$
5.0	FUEL TANK CLEANING AND INSPECTION (SURVEY ITEM)		$	$	$	$	
5.3.2	Unit Rate/Cubic Meter Removing Fuel from Tanks						$
6.0	SPRINKLER PUMP REPLACEMENT (SURVEY ITEM)		$	$	$	$	
7.0	EMERGENCY FIRE PUMP REPLACEMENT (SURVEY ITEM)		$	$	$	$	
8.0	PROPULSION COOLING WATER PUMP REPLACEMENT (SURVEY ITEM)		$	$	$	$	
9.0	SSG LUBE OIL STORAGE TANK AND PIPING SYSTEMS		$	$	$	$	
10.0	FUEL AND LUBE OIL TANK REMOTE CLOSING VALVE INSTALLATION		$	$	$	$	
11.0	SHIP SERVICE GENERATOR FUEL PIPING MODIFICATIONS		$	$	$	$	
12.0	LIFTING POINT INSTALLATION		$	$	$	$	
13.0	REPAIR OF MIRANDA DAVIT SHEAVES		$	$	$	$	

Spec. #	Description	Total Hours	Total Labour Cost	Total Material Cost	Total FSR& Sub-Contractors Cost	Total Firm Price	Unit Cost
14.0	RELOCATION OF GALLEY POWER PANEL (SURVEY ITEM)		$	$	$	$	
15.0	GALLEY WATER DRAIN PIPING REPAIRS		$	$	$	$	
16.0	SEWAGE PLANT PARTIAL VENT REPLACEMENT		$	$	$	$	
17.0	NEW RADAR WIREWAY AND TRANSIT INSTALL		$	$	$	$	
18.0	PORT WATERTIGHT VENT TRUNK REPAIR		$	$	$	$	
	TOTAL		$	$	$	$	

ANNEX H DELIVERABLES/CERTIFICATIONS

H1 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 "H1" 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 "G" Financial Bid Presentation Sheet", clauses G1 through G6;	
3	Completed Pricing Data Sheets, per clause 3.1 Section II, Annex "G",Appendix 1;	
4	Completed Annex "H1" Deliverables/Certifications;	
5	Changes to Applicable Laws (if any), as per clause 2.4	
6	Federal Contractors Program for Employment Equity, Complete section 5.2.1;	
7	Submission of Consent to Criminal Record Verification Forms as per, section 5.2.2 and attached as Annex “I “; A) & B)	
8	Proof of good standing with Worker's Compensation Board, as per clause 6.2	
9	Proof of valid Labor Agreement or similar instrument covering the work period, as per clause 6.3	
10	Preliminary Work Schedule , per clause 6.4;	
11	Fueling and Disembarking Procedures, as per clause 6.5;	
12	If Registered its Valid ISO 9001-2008 Certification, as per clause 6.6	
13	Objective evidence of documented Health and Safety System, as per clause 6.7;	
14	Objective evidence of documented Fire Protection, Fire Fighting and Training Procedure, as per clause 6.8	
15	Insurance Requirements, as per clause 6.10	
16	Proof of welding certification, as per clause 6.11	
17	Project Management as per clause 6.12	
18	List of subcontractors, as per clause 6.13	
19	Example of its Quality Control Plan, as per clause 6.14	
20	Example of an Inspection and Test Plan as per clause 6.15	
21	Details of Environmental Emergency Response Plan, Details of Formal Environmental Training as per Clause 6.16	

H2 Deliverables after Contract Award

Item	Description	Reference	Due By
1	Insurance requirements as per Annex "C"	Clause 7.10 and Annex ‘‘C’’	10 Working Days after contract award
2	Revised Work Schedule	Clause 7.13	5 calendar days after contract award
4	The Contractor’s Quality Control Plan	Clause 7.18	5 calendar days after contract award
5	The list of Government specialized loaned equipment that the Contractor intends to request.	Clause 7.25	3 calendar days after contract award

Public Works and Government Services Canada

Travaux publics et Services gouvernementaux Canada

Protected (when completed and received by government)
Protégé (lorsque rempli et reçu par le gouvernement)

If completed manually, please print
Si rempli manuellement, veuillez écrire en lettres moulées

FOR GOVERNMENT USE ONLY POUR USAGE DU GOUVERNEMENT SEULEMENT	
Special Investigations Directorate File No. N° de dossier de la Direction des enquêtes spéciales	Date Received (Y-A M D-J) Date de réception

CONSENT TO A CRIMINAL RECORD VERIFICATION
CONSENTEMENT À LA VÉRIFICATION DE L'EXISTENCE D'UN CASIER JUDICIAIRE

This form must be completed and signed by each individual who is currently on the Board of Directors of the Bidder/Offeror/Supplier and provided with the Bid/Offer/Arrangement.
Le présent formulaire doit être rempli et signé par chaque membre du conseil d'administration du soumissionnaire/ de l'offrant/du fournisseur et fourni avec la soumission/l'offre/l'arrangement.

A *PRIVACY ACT* STATEMENT / ÉNONCÉ CONCERNANT LA *LOI SUR LA PROTECTION DES RENSEIGNEMENTS PERSONNELS*

The personal information requested on this form is collected under the authority of subsection 750(3) of the *Criminal Code*, paragraph 42(1(c)) of the *Financial Administration Act*, and sections 7 and 21 of the *Department of Public Works and Government Services Act*. The information will be used for validating the criminal conviction certifications necessary for obtaining or maintaining a procurement instrument. It may be shared with other government departments, agencies, as well as provincial, territorial, and federal courts, within the limits of what is required to conduct the criminal conviction verification.

A refusal to provide information will result in the bid/offer/arrangement being rejected or the contract terminated, the standing offer being set-aside or the supply arrangement being cancelled, as applicable.

The personal information is described in personal information bank PWGSC PPU 184 - Integrity Assessment Program. Individuals have a right of access to, correction of and protection of their information in accordance with the *Privacy Act*.

Les renseignements personnels demandés dans le présent formulaire sont recueillis en vertu du paragraphe 750(3) du *Code criminel*, du paragraphe 42(1(c)) de la *Loi sur la gestion des finances publiques* et des articles 7 et 21 de la *Loi sur le ministère des Travaux publics et des Services gouvernementaux*. Ces renseignements seront utilisés pour valider les attestations de condamnation au criminel nécessaires pour obtenir ou conserver un instrument d'approvisionnement. Les renseignements peuvent être diffusés à d'autres ministères et organismes fédéraux, ainsi qu'à des tribunaux provinciaux, territoriaux et fédéraux, dans les limites de ce qui est requis pour la vérification des condamnations au criminel.

À défaut de fournir les renseignements demandés, la soumission/l'offre/l'arrangement sera rejeté ou le contrat résilié, l'offre à commandes sera mise de côté ou l'arrangement en matière d'approvisionnement sera annulé, selon le cas.

Les renseignements personnels sont décrits dans les fichiers de renseignement personnels n° TPSGC PPU 184 - Programme de l'évaluation de l'intégrité. Les personnes ont le droit d'accéder aux renseignements personnels qui les concernent, ainsi que de les faire corriger ou protéger, conformément à la *Loi sur la protection des renseignements personnels*.

B BIOGRAPHICAL INFORMATION - Must be completed by the individual / RENSEIGNEMENTS BIOGRAPHIQUES - À remplir par l'individu

Family Name (Last Name) - Nom (de famille)	Family Name at Birth - Nom de famille à la naissance
Full Given Names (No initials) - Prénoms au complet (aucune initiale)	
All other previously used names (i.e. maiden name, previously married names, legal name change, nicknames) Tout autre nom utilisé (tel que nom de jeune fille, noms maritaux précédents, changement de nom légaux, sobriquets)	
Gender - Sexe ☐ Male / Masculin ☐ Female / Féminin	Date of Birth - Date de naissance (Y-A M D-J)

Current Residential Information
Information résidentielle actuelle

Apartment No. - N° d'appartement	Street No. - N° civique	Street Name - Nom de la rue

City - Ville	Province	Postal Code - Code postal

C	**CONSENT - Must be signed by the individual** **CONSENTEMENT - Doit être signé par l'individu**

I, the undersigned, confirm that I have read and understand the above *Privacy Act* statement and that I consent to the collection and use of my personal information as described therein.

Je, soussigné, confirme avoir pris connaissance de l'Énoncé concernant la *Loi sur la protection des renseignements personnels* et consens à la collecte et à l'utilisation des renseignements personnels fournis aux présentes.

Signature	
Print Name - Nom en lettres moulées	Date (Y-A M D-J)

D	**ADMINISTRATIVE INFORMATION - Internal Government Use Only** **RENSEIGNEMENTS ADMINISTRATIFS - Pour usage interne du gouvernement seulement**

Requesting Branch/Sector/Directorate/Division - Direction générale/Secteur/Direction/Division requérante	
Solicitation/Proposed Contract No. - N° de la demande de soumission/N° du contrat	Date of Request (Y-A M D-J) Date de la demande
Requesting Contact Person - Personne-ressource requérante	Contact Person Tel. No. - N° de tél. de la personne-ressource

CCGS Griffon Self Refit 2012 Rev 2.

Specification No: 738.12

Date: July 23, 2012

Prepared by Marine Engineering
520 Exmouth Street
Sarnia, Ontario
N7T 8B1

DO NOT MODIFY

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1.0 GENERAL NOTES

1.1 Identification

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

1.2 Work Period

1.2.1 The work period for this contract is September 12, 2012 until October 24, 2012 at CCG Base Prescott Ontario.

1.3 Reference

1.3.1 Applicable documentation:

FSSM Procedures	Title	Included Yes/No		
7.B.2.	Fall Protection	Yes		
7.B.3	Hazard Prevention Program	Yes		
7.D.9	Entry Into Confined Spaces	Yes		
7.D.11	Hotwork	Yes		
7.D.19	Lockout and Tagout	Yes		
10.A.2	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	

1.3.3 Acts & Regulations:

Acts & Regulations		
CSA	Canada Shipping Act	
CLC	Canada Labour Code	
MOHS	Marine Occupational Health and Safety	

1.4 Occupational Health and Safety

1.4.1 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.

1.4.2 The Contractor and the Contractor's employees, including any sub-contractors shall attend a 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 will have access to an uncontrolled copy of the Fleet Safety and Security Manual.

1.4.3 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 involving the following;

- Hot Work;
- Work Aloft;
- Confined Space Entry;
- Gas Freeing for Entry and Hot Work;
- Lock Out/Tag Out;
- Pre-Job Safety Assessments.

DO NOT MODIFY

1.4.4 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.

1.4.5 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.

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.

1.4.6 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-contractors employees as required.

1.5 Access to Worksite

The Contractor shall be required to follow CCG Prescott Base entry procedures.
The Contractor shall ensure the TA and CG staff has unrestricted access to the worksite at all times during the contract period.

1.6 Workplace Hazard Material Information System (WHMIS)

1.6.1 The Contractor must provide the TA with Material Safety Data Sheets (MSDS) for all Contractor supplied WHIMS controlled products.

1.6.2 The TA will provide the Contractor with access to MSD sheets for all controlled products on the ship for all specified work items.

1.7 Smoking in the Work Space

1.7.1 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.

1.8 Clean and Hazard Free Worksite

1.8.1 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.

1.8.2 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.

1.8.3 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.

1.8.4 Upon completion of this contract, the Contractor shall be responsible for the removal 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.

1.8.5 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.

1.9 Touch-up / Disturbed Paint

1.9.1 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.

1.9.2 The Contractor shall prepare all new and disturbed steelwork to the paint manufacturer's standards prior to painting.

1.10 CCG Employees and Others on the Vessel

1.10.1 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

1.11 Regulatory Inspections and/or Class Surveys

1.11.1 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.

1.11.2 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.

DO NOT MODIFY

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

1.11.4 The Contractor must provide timely advance notification (minimum of 24 hours) of scheduled regulatory TCMS inspections and/or class surveys to the TA so they may witness the inspection.

1.12 Test Results and Data Book

1.12.1 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.

1.12.2 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.

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

1.12.4 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.

1.12.5 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 Adobe PDF format and provide on CD-ROM media. The Contractor shall provide 3 hard copies and 1 electronic copy of all reports.

1.12.6 All documentation from the contract period shall be inserted in a data book and delivered to the TA on completion of the contract.

1.12.7 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.

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

1.13 Contractor Supplied Materials and Tools

1.13.1 The Contractor must ensure all materials are new and unused.

1.13.2 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.

1.13.3 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.

DO NOT MODIFY

1.13.4 The Contractor shall provide all equipment, devices, tools and machinery such as welding machines, cranage, staging, scaffolding and rigging necessary for the completion of the work in this specification.

The Contractor shall supply the services of a crane of sufficient capacity for the work to be done in this specification and personnel to operate and direct the crane to load and unload supplies from the vessel. The Contractor shall quote on 15 hours of crane time.

1.13.5 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.

1.14 Government Supplied Materials & Tools

1.14.1 All tools are Contractor supplied unless otherwise stated in the technical specifications.

1.14.2 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.

1.14.3 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.

1.15 Restricted Areas

1.15.1 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.

1.15.2 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.

1.16 Contractor Inspections and Protection of Equipment and the Worksite

1.16.1 The Contractor must coordinate an 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.

1.16.2 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.

DO NOT MODIFY

1.16.3 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.

1.17 Recording of Work in Progress

1.17.1 The TA may record any work in progress using various means including, but not limited to photography and video, digital or film.

1.18 List of Confined Spaces

1.18.1 The Contractor may request a list of the vessel's identified confined spaces at the Pre-Refit meeting.

1.19 Lead Paint and Paint Coatings

1.19.1 The Contractor shall not use lead based paints.

1.19.2 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.

1.19.3 The Contractor must provide HC product approval for underwater hull surface paints controlled by HC and the Pest Management Regulatory Agency.

1.20 Asbestos Containing Materials

1.20.1 The Contractor shall not use any asbestos containing materials.

1.20.2 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 and Security 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.

1.21 Removed Materials and Equipment

1.21.1 All removed equipment as a result of this specification shall remain the property of the Coast Guard unless otherwise instructed in the specification sections.

1.22 Welding Certification

1.22.1 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.

1.22.2 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.

1.22.3 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.

1.22.4 The Contractor shall provide documentation to the Technical Authority clearly identifying the welding certification of all employees performing any welding included in this specification.

1.23 Electrical Installations

1.23.1 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.

1.23.2 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”.

1.24 Electric Power

1.24.1 CCG shall allow the to use of a limited number of 115 VAC, 1 phase, 15 amp receptacle(s) for the use of the Contractor for the contracted period.

1.25 Gangways

1.25.1 The Coast Guard shall supply and erect one gangway complete with safety net in compliance with the Canada Labor Code while the vessel is secured alongside the CCG Base Prescott, Ontario facility.

2.0 LIST OF ACRONYMS

CA	Contract Authority (PWGSC)
CCG	Canadian Coast Guard
CLC	Canada Labour Code
CSM	Contractor Supplied Material
CSA	Canadian Standards Association
CWB	Canadian Welding Bureau
DFO	Department of Fisheries and Oceans
FSSM	Fleet Safety & Security Manual (CCG)
FSR	Field Service Representative
GSM	Government Supplied Materials
GFM	Government Furnished Materials
HC	Health Canada
IEEE	Institute of Electrical and Electronic Engineers
LOA	Length Over All
MSDS	Material Safety Data Sheet
OHS	Occupational Health and Safety
PWGSC	Public Works and Government Services Canada
SSMS	Safety & Security Management System
TBS	Treasury Board of Canada Secretariat
TCMS	Transport Canada Marine Safety
TA	Technical Authority – Owner's Representative (CCG)
WHMIS	Workplace Hazardous Material Information System

DO NOT MODIFY

3.0 GENERAL PARTICULARS OF EXISTING VESSEL

Name: CCGS Griffon

Type: Twin Screw, Medium Icebreaker / Navaids Tender

Class of Voyage: Inland Waters Class I Fire Extinguishing and Lifesaving Appliances for a vessel of Class X.

Year Built: 1970

Shipbuilder: Davie Shipbuilding Ltd., Lauzon, Quebec

Principal Dimensions:

Length O.A.	234’ – 0” (71.32m)
Length B.P.	214’ – 0” (65.23m)
Breadth Mld.	49’ – 0” (14.94m)
Depth Mld.	21’ – 6” (6.55m)
Draft (Mld Design)	15’ – 6 ¼” (4.73m)

Tonnages:

Gross	2211.87 L.T. (2252 Metric Tonnes)
Reg. Net	751.90 L.T. (765.56 Metric Tonnes)
Displacement 15’ – 6 ¼”	2944 L.T. (2991 Metric Tonnes)
Deadweight Max	744 L.T. (757.5 Metric Tonnes)

Propulsion:
Twin screw, fixed pitch, diesel electric, total power 2x2000 S.H.P. Main machinery: four (4) Fairbanks Morse 38D8-1/8” diesel engines driving four (4) Westinghouse DC two wire single armature, non-reversing variable voltage generators.

4.0 BILGE CLEANING

4.1 Identification

4.1.1 The Contractor shall clean all of the bilge area of the vessel's main engine room, propulsion motor room, and shaft compartment prior to the commencement of several items of work of this specification.

This bilge cleaning shall consist of a thorough cleaning of all the bilge areas in the first week of the contract and as required spot cleaning throughout the contract.
The reasons of this cleaning are:
a. An annual cleaning for housecleaning purposes.
b. To ensure there is no contamination of the #2 double bottom tanks.
c. To ensure hot work can be carried out safely in the engine room, motor room, and shaft compartment.

4.2 References

4.2.1 Drawings:

Drawing Number	Drawing Title	Electronic File Name
664-AF-507	General Arrangement Profile & Superstructure Decks	G05A0803.MIL.pdf
664-AF-507	General Arrangement Profile & Superstructure Decks	ASFITGA2.pdf

4.3 Technical

4.3.1 Initial Bilge Cleaning

The Contractor shall clean all bilge areas safe for man entry in the following locations:

- Engine Room Bilge.
- Motor Room Bilge
- Shaft Compartment Bilge

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

a. Fuel Tank Cleaning and Inspection - the #2 DB tanks only of this section to prevent tank ingress of bilge contaminants.
b. Pump Replacements - any hot work in these sections.
c. Galley Power panel - any hot work in this section.
d. SSG Lube Oil Storage Tank - any hot work in this section.
e. SSG Fuel Piping - any hot work in this section.

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

4.3.3 Spot Cleaning

4.3.3.1 Through out the duration of the contract spot cleaning may be required in order to perform hot work. This is due to oil in the bilge being trapped under machinery and hence not accessible for the initial cleaning - this oil slowly seeps aft over time due to the trim of the vessel.

4.3.3.2 The Contractor is responsible for this spot cleaning including disposal of bilge residues and cleaning materials.

4.3.4 Disposal of Liquid and Waste from the Bilges

4.3.4.1 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.

4.3.4.2 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.

4.4 Inspection, Test and Trials

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

4.4.2 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 FUEL TANK CLEANING AND INSPECTION (SURVEY ITEM)

5.1 Identification

5.1.1 The Contractor shall open, drain, clean and test the listed fuel tanks to obtain a TCMS Division III survey credit for both a hydrostatic test and internal structural inspection.

5.1.2 The Griffon crew has some hotwork to perform on top of the Port Settling Tank. The Contractor shall perform all necessary work to certify this tank “Safe for Hotwork”.

5.2 References

5.2.1 Drawings:

Drawing Number	Drawing Title	Electronic File Name
664-AF-501	General Arrangement and Capacity Plan	G05A0807.MIL.pdf
664-120-4	Framing Plan	G05A0855.MIL.pdf
664-120-7	Fore End Framing	G05A0861.MIL.pdf
664-120-9	Watertight and Non Watertight Bulkheads Aft and Fore	G05A0865.MIL.pdf
664-120-10	Oil Stabilization Tanks	G05A0867.MIL.pdf

5.3 Technical

5.3.1 The Contractor shall open all access covers to the fuel tanks listed in the following list. Depending on the amount of fuel remaining onboard at the time, the Contractor may need to work in conjunction with the ship’s crew to shift fuel from various fuel tanks to allow all the work in this section to be completed.

Description	Location	Particulars
Fuel Oil Settling Tank Port	Frames 62-67	Capacity: 41.53 L. Tons
Fuel Oil Settling Tank Center	Frames 62-67	Capacity: 43.09 L. Tons
Fuel Oil Settling Tank Stbd	Frames 62-67	Capacity: 41.53 L. Tons
Fuel Oil Day Tank	Frames 53-54	Capacity: 3.51 L. Tons
#2 Double Bottom Tank Port	Frames 48-62	Capacity: 31.58 L. Tons
#2 Double Bottom Tank Stbd	Frames 48-62	Capacity: 31.58 L. Tons

5.3.2 The Contractor shall remove any remaining fuel from the tanks and shall provide a marine chemist or other qualified person's gas free certificate stating the tanks are safe for entry and work. The Contractor shall quote on removing a total of 20 cubic meters of fuel from the tanks. The Contractor shall be responsible to arrange for the disposal of this fuel. All fuel removed from the vessel and all waste generated from the tank cleaning shall be tracked in accordance with all Federal, Provincial and Municipal regulations in effect. The Contractor shall provide disposal documentation for all generated waste to the Technical Authority.

5.3.3 The Contractor shall supply all materials and labor necessary to clean all internal surfaces of the Port Settling Tank such that the tanks can be ready to accept hot work.

5.3.4 The Contractor shall supply all materials and labor necessary to clean all internal surfaces of the tank such that the internal structures of the tanks can be inspected by the attending TCMS surveyor.

5.3.5 The Contractor shall notify TCMS and have the internals of the tanks inspected by the attending TCMS surveyor. The Contractor shall also notify the Technical Authority such that they may also be afforded the ability to view the internals of the fuel tanks. The Contractor shall obtain a Division III survey credit for all tanks inspected by the TCMS surveyor.

Any defects noted or that need to be corrected based on the inspection by the attending TCMS surveyor will be done under PWGSC 1379 action.

5.3.6 The Contractor shall close all tank covers and shall install new Contractor supplied fiber-re-enforced neoprene gaskets for all tank covers.

5.4 Tests and Trials

5.4.1 All tanks that have been opened for inspection shall be hydrostatic pressure tested to a 2.5-meter (8-foot) head of water. The Contractor shall blank all suction and discharge lines, vents and sounding pipes during the test. The Contractor shall be responsible for supplying, fitting and subsequent removal of blanks. The Contractor shall empty and wipe down dry the tanks afterwards and ensure no water remains in the tanks. Pressure tests shall be witnessed by TCMS.

5.4.2 The Contractor shall obtain a Division III survey credit for all hydrostatic pressure tests performed on the tanks. These survey credits shall be provided to the Technical Authority prior to the completion of the contract.

6.0 SPRINKLER PUMP REPLACEMENT (SURVEY ITEM)

6.1 General

6.1.1 Griffon requires replacement of the Sprinkler Pump fitted to the vessel. The existing pump and structure must be removed and a new pump and priming system must be installed including piping. The new pump and primer is Government Furnished Material (GFM). The new pump is a similar design - vertical centrifugal - but different dimensionally. The new primer is an air venture system with electric solenoids. The Contractor shall install a new air line to the primer unit. The main electrical circuitry will be reused. The circuitry shall be required to be modified to operate the new primer and pump.

6.1.2 The work in this section of the specification is to be completed in conjunction with Section 4- Bilge Cleaning.

6.1.3 The work in this specification shall be performed in conjunction with Section 7.0 Emergency Fire Pump Replacement. Both pumps will share the same primer air piping and primer electrical circuitry

6.2 Gas-Freeing and Certification of Areas for Hot Work

6.2.1 The Contractor shall certify the following spaces safe for hot work:

- Lower Motor Room inclusive of bilges

6.3 Rigging

6.3.1 The Contractor shall be responsible for all materials and labor required for rigging and transporting equipment and material into and from the Lower Motor Room. Any additional lifting lugs that are required to be welded as a result of this specification are the responsibility of the Contractor. Any additional welded lifting lugs shall be approved by the Chief Engineer prior to installation. The Contractor shall be responsible for proof testing the lifting lugs to 200% the SWL prior to using them.

6.4 Protection of Existing Equipment

6.4.1 The Contractor shall exercise extreme caution and ensure that remaining electrical and mechanical equipment is well protected from the ingress of dirt, debris and water or exposure to heat. In particular, attention shall be given to all wiring and equipment in the area where the work is to be done. The Contractor is responsible for all labor and equipment required to take all necessary precautions in order to prevent damage to the surrounding fixtures and equipment.

DO NOT MODIFY

6.5 References

6.5.1 Drawings

6.5.1.1 The following drawings are provided for guidance. These drawings are not to be construed as production drawings.

Drawing Number	Drawing Title	Electronic File Name
664-4093-10 Sht 2	Sprinkler Piping Upper & Lower Decks & Tank Top	G05A1130.MIL Rev. 0.pdf
664-4093-10 Sht 3	Sprinkler System Piping (Details & Bill of Material)	G05A1109.MIL Rev. 1.pdf
B38691	Arrgt of Drysdale 6/4 Falcon Rotary Centrex Sprinkler Pump	B38691 Drysdsale Sprinkler pump.pdf
664-4211-1	Compressed Air System	G05A1051.MIL Rev. 1.pdf
1WD68Q462-122, Sht 1 of 4	List of Equipment, Layout, Legend & NP Emergency MCC	G05322mi1Model(1).pdf
1WD68Q462-122, Sht 2 of 4	Power & Control Schematic Diagram - Emergency MCC	G05322sc2Model(1).pdf
IWD68Q462-122, Sht 3 of 4	Control Schematic - Emergency MCC	G05322sc3Model(1).pdf
664-M-1	Seats for Thrust Block, Turning Gear, Shaft Brake, Propulsion Motor, Diesel Engine, Propulsion & Service Generators	G05A0833.MILRev. 2.pdf
664-M1 (4 of 5)	Machinery Arrangement - Plan View - Sections	G05A1015.MIL.pdf
G05SPRPP-01	Hamworthy Sprinkler Pump Elevations	G05SPRPP-01.pdf
G05SPRPP-02	Hamworthy Sprinkler Pump Arrangement	G05SPRPP-02.pdf

DO NOT MODIFY

6.5.2 Manuals and Documents:

- Peacock-Drysdale Pumps for Davie Shipbuilding, Peacock Ref. # 68DR-3270
- Instruction Manual CG Centrifugal Pump
- Manual Hamworthy PMB Primer
- Technical Datasheet for CGB100R-V048-AAN-B11K1-CNB
- SU 03395-007 CGB 100 Form 48 General Description & Outline
- SU S2487-002 Centrifugal Pump CGA, B, C Form V General Description and Parts List
- SU S3685-001 Centrifugal Pump, Type CG General Description and Parts List

6.5.3 Regulations:

6.5.3.1 The following standards apply specifically to this section of the specification:

- Canada Shipping Act, Fire Detection and Extinguishing Equipment Regulations- Latest version.
- Canada Shipping Act, Marine Machinery Regulations – Latest version.

6.5.4 Materials

6.5.4.1 New steel structural material shall be C.S.A. G40.21 Grade 44W quality plate and sections, unless otherwise specified. All piping shall be seamless steel, black pipe, Schedule 40 to A.S.T.M. Spec. A.53 Grade “A”. Material test certificates shall be a deliverable for this specification.

6.6 Technical

6.6.1 Sprinkler Pump Details

6.6.1.1 Existing Pump Details:

Drysdale/Peacock 6/4 Falcon Rotary Centrex Sprinkler Pump

Unit I.D. #	J300
Capacity	501 Imp. Gall per min.
Discharge Pressure (Head)	231 feet
Suction Pipe Flange Size	6”
Discharge Pipe Flange Size	4”
Motor Make	Lawrence Scott Electromotor Ltd
Motor Model	No. M424892
Motor Frame	VD 250SBD
Motor Voltage	440 VAC, 3 PH, 60 Hz
Motor HP	66 HP
Motor Speed	1750 RPM
Motor Current	80 Amps
Connection	Star
Insulation	Class B
Rating	Continuous
Manufactured	1969
Spec.	Lloyd’s & CU 12

6.6.1.2 Replacement Pump Details:

Hamworthy CG centrifugal, single suction, single stage, radially split, vertical, inline Sprinkler Pump

Unit Model #	CGB100R-V048-AAN-B11K1-CNB
Pump Serial Number	11-20466
Pump KW	40.7 KW (55 HP)
Capacity	137 cu. m./hr
Discharge Pressure (Head)	249 Feet
Total Head	70.6 m
Suction Pipe Flange Size	125 mm (4.92”)
Discharge Pipe Flange Size	100 mm (3.93”)
Pump Weight	145 KG (320 Lbs)
Motor Make	TECO
Motor Model	AEVBKB020060
Motor Serial	10730046823-1
Motor Frame	IP 55
Motor Voltage	460V,

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Motor KW	49.5 KW
Motor Speed	3540 RPM
Motor Current	71.6 Amps
Connection	
Insulation	Class F
Rating	Continuous
Motor Weight	356 KG
Manufactured	2011
Pump Spec.	Lloyd's Cert. #SNG 1106050-1
Total pump assembly weight	501 KG

6.6.2 Description of Fitted Installation

6.6.2.1 Mechanical - The existing Sprinkler Pump is fitted in the Lower Motor room, Port side at Frame 28. It is a single stage centrifugal pump fitted with a water ring/separator priming system fitted to the suction of the pump. The pump draws suction from a dedicated Sprinkler Pump Seabox in the Lower Motor Room Port side at Frame 34 and 35, through a 6 inch globe valve mounted on the sea bay and through a 6 inch duplex strainer mounted at Deep Frame 30. The existing pump mounts are fitted to two steel channels bolted to a steel base plate measuring ¾ inch by 34 inches long by 18 inches wide. The base plate is welded to the transverse floors at Frames 28 and 29. The base plate is shimmed 1 ¼" at Frame 28. The base plate extends approximately 8 ¾" inches aft of Frame 28. The forward end of the base plate also provides the support arrangement for the primer separator that is mounted to the pump suction at Frame 29. The pump discharge piping is fitted with a 2" test connection to bilge. This is a regulatory requirement. Access for maintenance of this pump is from aft and accomplished by vertically splitting the pump casing.

6.6.2.2 Electrical - The existing Sprinkler Pump motor is powered from the Emergency MCC located in the Emergency Generator Compartment via 3 conductor cable, 440 VAC circuit 21-EP-2. It is controlled by a Klockner - Moeller AC Magnetic Reduced Voltage Autotransformer starter. The pump is operated manually from the Machinery Control Room (MCR) via a Hand/Auto switch mounted on the Sub Mimic Display or automatically by a pressure switch measuring pressure from the Sprinkler Discharge Manifold. The pressure switch is mounted locally at the pump. The pump also has a Lock-On/Stop switch mounted locally at the pump for testing and maintenance purposes. Remote indication of power available by way of a white indicator light is fitted on the Essential MCC in the MCR. Remote indication of pump running/stopped status by way of green/amber indicating lights are fitted adjacent to the Hand/Auto switch on the Sub Mimic Display in the MCR.

DO NOT MODIFY

6.6.3 Strip Out Requirement

6.6.3.1 Piping Removals

6.6.3.1.1 The Contractor must ensure all piping is drained, isolated and locked out prior to removal of all piping. The Contractor shall be responsible to supply all labour and materials to remove the following existing Sprinkler Pump piping:

- The 7 foot section of 6 inch piping from pump discharge flange to Sprinkler Pump Discharge Valve. The bracket securing this pipe to the deckhead is to be reused upon installation of new piping.
- The 6” flanged pipe spool at the outlet of the suction strainer.
- All piping connected to the water ring primer and separator.
- The 7 foot section of steel piping on the outlet of the 2” Test Valve is to be removed and retained on board for reuse.
- The 2” Test Valve is to be removed and retained on board for reuse.
- All brackets supporting the separator are to be cropped flush and removed. The pump suction flange shall be unbolted and the separator removed.
- Disconnect and remove all Sprinkler Pump pressure gauge piping and crop and grind flush the pressure gauge mounting arrangement.
- Disconnect and discard the copper tubing connected to the Low Pressure Switch. The pressure gauge on this line is to be retained for reuse.

6.6.3.2 Sprinkler Pump Electrical Removals

6.6.3.2.1 The Contractor must ensure all Sprinkler Pump circuits have been isolated and locked out in accordance with the FSSM. The Contractor shall ensure all cables are identified and all wires are marked as to their intended reconnection prior to removal. The Contractor shall disconnect the following electrical equipment and cabling for the existing Sprinkler Pump:

- One power cable and two control cables to the Sprinkler Pump junction box and auxiliary switches are to be released from the supporting wire way, disconnected and pulled back to the deckhead and secured temporarily out of the way of the work. These cables will be reused on the new installation. The Contractor must not bend these cables in such a way as to cause damage to them.

DO NOT MODIFY

• Remove the switch and junction boxes and retain on board for reuse.

6.6.3.3 Sprinkler Pump Removals

6.6.3.3.1 The Contractor must remove the Sprinkler Pump, Primer and Separator from the vessel. The Contractor is advised to break down the Sprinkler Pump into at least 4 parts (motor, pump, separator and primer) in order to facilitate easier dismounting and removal from the vessel. The Contractor shall release the Sprinkler Pump from it's mount and remove it from the vessel. The pump unit shall be reassembled and returned to CG in an undamaged state at the completion of the work.

6.6.3.4 Miscellaneous Removals

6.6.3.4.1 The Contractor shall remove the following:

• The wire way support adjacent to the pump. The wire way support must be retained on board for reuse. Store out of the way of work.

• The Contractor shall release and discard the existing steel channel pump supports.

• All unused brackets associated with the support of Sprinkler Pump components are to be cropped and base structure ground flush.

• The Contractor must retain the ¾" steel base plate on the supporting structure. This plate will be used to build the new pump support. It has already been shimmed at Frame 28 during the construction of the ship to align with the ship's baseline.

6.6.4 New Pump Installation

6.6.4.1 The Contractor shall adhere to the manufacturer's installation and all instructions concerning installation of the pump, piping, electrical and pneumatics. All deviation from the installation instructions shall be approved by the Technical Authority prior to the commencement of work.

6.6.4.2 The Contractor may use whatever method considered best for introducing the new material into the vessel and welding it in place, provided there is no damage to the surrounding structure. The Contractor shall remove the pressure gauges, piping and primer system prior to transporting the new pump. They shall be reconnected once the pump is bolted in place.

6.6.4.3 Mounting Arrangement

6.6.4.3.1 The Contractor shall construct a support structure according to the supplied guidance drawing "Hamworthy Sprinkler Pump Arrangement". The Contractor shall be

responsible for verifying all dimensions of all scantlings, sizes and clearances on site prior to commencement of work.

6.6.4.3.2 The Contractor shall verify exact location where the pump is to be installed with the Chief Engineer prior to installing the supports.

6.6.4.3.3 The Contractor may propose alternate construction and fitting arrangements that shall be submitted for review by the Technical Authority. Any alternative arrangement shall be approved by the Technical Authority prior to implementation and be accompanied by drawings showing the intended "as fitted" arrangement.

6.6.4.3.4 The pump centerline shall be aligned on Frame 28 and in line with the suction strainer flange. The frame spacing in the area of installation is 24 inches on center. There are intermediate frames between the main frames 12 inches on center.

6.6.4.3.5 The pump shall be mounted such that the maintenance opening in the entablature of the pump is facing inboard. The recommended access clearance for maintenance in this area is 600 mm. This access clearance must be respected.

6.6.4.3.6 The pump shall be mounted such that the manufacturers recommended vertical clearance for the removal of the motor is respected.

6.6.4.3.7 The location of the motor junction box shall be facing inboard, free of obstruction and easily accessible for maintenance. The Contractor shall be responsible for orienting the motor correctly on the entablature. The Contractor shall perform alignment measurements on the pump before and after disturbing the alignment. Copies of the results shall be presented to the Technical Authority for approval prior to commissioning the pump. Rotation of the motor on it's base shall be considered as disturbing the alignment.

6.6.4.4 Base Support

6.6.4.4.1 The Contractor must fabricate a new welded pump support frame to rigidly support the pump. The base support shall be built off and welded to the existing pump base plate. This arrangement shall be stiff to reduce vibration. The Contractor shall take into account the intended location of the pump prior to welding the support to the existing base.

6.6.4.4.2 The Contract shall fabricate the pump support from ½" plate measuring 20 3/8" X 18 5/16" supported by 3" X 1/4 " steel angle in four places. The pump support frame shall be sized such that the piping passing underneath can be withdrawn when required. The Contractor must ensure there is no distortion to the pump foundation as a result of welding. The Contractor shall ensure the pump foundation is flat.

6.6.4.4.3 The new pump support and all exposed steel, created as a result of removals, shall be coated with 2 coats of marine primer prior to fitting the pump.

6.6.4.5 Pump

6.6.4.5.1 The Contractor shall bolt the new pump to the pump support using 7/8" non-corrosive steel fasteners, washers and lock washers. The pump has a three point attachment to the foundation. The Contractor shall ensure the foundation is free from distortion prior to bolting the pump in place.

6.6.4.6 Piping

6.6.4.6.1 All new Sprinkler system piping shall be seamless steel, black pipe, Schedule 40 to A.S.T.M. Spec. A.53 Grade "A". All pipe fittings to be seamless steel, butt weld, schedule 40. All piping runs are to be flanged.

6.6.4.6.2 The Contractor shall ensure flange parallelism at the pump is within +/- 0.3 mm of a compressed gasket. Flange eccentricity shall be such that the flange bolts easily pass through both bolt holes.

6.6.4.6.3 All piping shall be assembled using full penetration, continuous butt welds.

6.6.4.6.4 All fittings shall be long radius so long as space permits.

6.6.4.6.5 The Contractor shall connect the 6" flange of the suction strainer to the 125 mm flange of the pump inlet. The Contractor shall ensure the piping is removable for galvanizing.

6.6.4.6.6 The Contractor shall connect the 100 mm flange at the pump outlet with the 6" flange of the Sprinkler Discharge Valve. The Contractor shall provide a 2" flanged branch line for reconnection of the Test Valve and piping. This is a regulatory requirement. The arrangement and orientation of the test connection shall be according to the guidance drawing provided. The end of the 2" pipe shall be directed into the bilge. The Contractor shall modify this pipe as required to ensure discharge is below the deck plating. The Contractor shall remove all sections of piping once proper piping alignment is verified.

6.6.4.6.7 All piping sections shall be pressure tested to 150 psi prior to being sent for galvanizing. The pressure testing is to be witnessed by the Technical Authority. All leaks are to be repaired prior to galvanizing. Where leak repairs are carried out, the piping shall be retested in the presence of the Technical Authority.

6.6.4.6.8 The Contractor shall send the piping for hot dip galvanizing. This is a regulatory requirement. Copies of the galvanizing report are to be provided to the Technical Authority prior to final fitting of the Sprinkler piping. All costs associated with the shipping and galvanizing of the pipes shall be at the Contractor's expense.

6.6.4.6.9 Piping shall be adequately supported on either side of the pump, at the Discharge Valve and at the suction strainer such that the flanges of the pump and existing equipment are not subjected to any stress. The Contractor must weld steel bracketing with bolted clamps to ensure all sections of pipe are adequately supported.

6.6.4.6.10 The piping shall be reinstalled with appropriate fasteners for the size of flange being connected. All fasteners to be fitted with lock washers and be corrosion resistant.

DO NOT MODIFY

6.6.4.6.11 The Contractor shall provide new 1/8" thick reinforced black neoprene rubber gaskets between flanges.

6.6.4.6.12 The Contractor shall provide two coats of marine primer to the finished piping.

6.6.4.7 Miscellaneous

6.6.4.7.1 The Contractor shall install new copper tubing from the pressure connection on the Sprinkler System to the Low Pressure Switch. The copper tubing shall be suitably supported to prevent vibration.

6.6.4.7.2 The Contractor shall reinstall the steel wire way and secure all Sprinkler cables to it. The Contractor shall mount the Low Pressure Switch and the Lock On/Stop Switch on the back of the wire way.

6.6.5 New Pump Installation - Primer Installation

6.6.5.1 Primer - Mechanical Installation

6.6.5.1.1 The Contractor to note all piping, fitting and hose shall be Contractor supplied to complete this section.

6.6.5.1.2 The Contractor shall connect ejector supply air to the new primer. The Griffon crew have roughed in a ¾" air primer piping system in the Motor Room. It is composed of ¾" seamless steel pipe and 300 lb socket weld fittings. The Contractor shall complete the piping to the Sprinkler Pump, Emergency Fire Pump (see section 7.0) and to the isolation valve for the Bilge & Ballast Pump (located on centerline adjacent to the column at frame 30 in the Motor Room), weld and pressure test this pipe to the satisfaction of the TCMSB Inspector.

6.6.5.1.3 The ship's Service Air piping shall be cut and the new primer piping branched into the existing piping. All steel piping shall be fabricated ¾" seamless steel pipe and 300 lb socket weld black steel fittings. The exact location of the branch line to the existing system shall be determined on site in consultation with the Chief Engineer. The Contractor shall connect the new ¾" steel piping to the pump ejector inlet air connection. The pipe shall terminate 3 ft short of the pump and be terminated with a Contractor supplied flexible rubber hose suitable for the application. The rubber hose shall be ¾" internal diameter and have non corrosive process connections. The ejector inlet is a tapered, ¾" BSP female thread. All fittings and hose shall be Contractor supply.

6.6.5.1.4 The Contractor shall pipe the primer ejector outlet to bilge. The piping on this connection shall be NPT threaded ,Sch. 40, galvanized steel. The connection to the ejector shall be completed with a non corrosive, 1" BSP to 1" NPT adapter suitable for the application.

6.6.5.1.5 All new primer piping shall be suitable supported with steel brackets to eliminate any stress on primer components.

DO NOT MODIFY

6.6.5.2 Primer - Electrical Installation

6.6.5.2.1 The Contractor shall install a new electrical supply for the primer circuits in the Motor Room. A new junction box has been installed on the forward bulkhead of the Motor Room to provide power to the primer circuits for the Sprinkler Pump, Emergency Fire Pump (see section 7), and a Bilge and Ballast Pump that will be installed in the future.

6.6.5.2.2 The Contractor shall run a new 14/2 conductor bronze armored cable from Panel EL-8, Circuit #6, 15 amp breaker to a watertight, metal junction box mounted on the forward bulkhead of the Propulsion Motor Room. Panel EL-8 is located adjacent to the forward MCR entrance door at Frame 44.The metal junction box is GFM.

The Contractor will use one of the existing pipe transits below the panel to transition to the Lower Engine Room. The cable will pass through the watertight bulkhead to the Motor Room. The Contractor shall use the existing wire transit and wire ways to run this cable. The cable shall be suitably supported along the wire way.
The Contractor shall run new 14/2 conductor bronze armored cable from the junction box to the pressostat on the Sprinkler Pump. The Contractor shall use existing wireways and ensure the cable is supported along its entire route.
The Contractor shall complete the wiring to the Primer circuit.

6.6.6 New Pump Installation - Electrical

6.6.6.1 Electrical - General

6.6.6.1.1 The Contractor shall be responsible for supplying all glands, connectors, brackets, and any other material required to secure and connect the Sprinkler pump wiring.

6.6.6.1.2 The new motor full load current is less than the existing motor. The Contractor shall replace the existing Klockner-Moeller Z4-130 overload relay with a new overload relay of suitable rating for the new motor. The new relay shall be GFM.

6.6.6.2 Power Wiring :

6.6.6.2.1 The Contractor shall reconnect the existing cable to the new motor.

6.6.6.2.2 The Contractor shall install and connect the power wiring to the new overload relay.

6.6.6.3 Control Wiring :

6.6.6.3.1 The Contractor shall connect the control circuitry to the new overload relay. The relay shall be set to trip the motor at 125% overload. The relay will be GFM.

6.6.7 Commissioning

6.6.7.1 The Contractor shall schedule and co-ordinate the commissioning of the Sprinkler Pump and associated equipment.

6.6.7.2 The pump shall not be operated until the Contractor has proven to the Chief Engineer that the suction is flooded and all air in the pump and suction piping has been bled. The Contractor shall prove to the Chief Engineer that the pump shaft can be turned by hand without binding. All other manufacture's recommendations for pre-start checks and running the pump shall be adhered to.

6.6.7.3 The Contractor, with the assistance of the engine room staff, will arrange a 2 hour full flow operational test of the Sprinkler pump. The Fire Main shall be used for the test. The Contractor shall remove the valve disc in the SDNR valve Sprinkler Cross-Connect and discharge water from hydrants on the Poop Deck. The test shall be done with the vessel's 2" fire hoses hooked up to at least two connections.

6.6.7.4 The Contractor shall verify and record the following items during commissioning:

1) All piping is leak free and flooded.
2) The pump seal is leak free.
3) The motor is bump tested and turns in the correct direction. The Contractor should note the pump start circuit has an anti-restart timer.
4) The proper operation of the primer at start-up.
5) The motor can be operated in Auto using the Low Pressure Switch and manually with the Hand-Auto switch.
6) The motor can be stopped locally using the Lock-On/Stop Switch.
7) The motor is operating within rated values.
8) The pump is operating within rated values with minimum vibration.
9) The Contractor shall close the discharge valve momentarily to record the closed discharge pressure. The Contractor shall note the pump will overheat rapidly when operating against a closed discharge.
10) The Contractor shall record the motor full load current while the pump is operating at full flow capacity.

6.6.7.5 The Contractor shall reinstall the valve disc once the commissioning is complete.

6.7 Inspection, Tests and Trials

6.7.1 The Contractor shall be responsible for all labour and equipment required to perform the Sprinkler Pump Testing in the presence of the TCMSB surveyor and the Technical Authority.

6.7.2 The Sprinkler Pump and associated equipment shall be tested to the minimum standards as follows:

- Fire Detection and Extinguishing Equipment Regulations C.R.C, c.1422 of the Canada Shipping Act

6.7.3 The Contractor must provide an Inspection and Test Plan to both the TCMS and Technical Authorities for approval prior to the commencement of all Sprinkler Pump testing.

6.7.4 In the case where additional lift lugs were installed, the Static Load test of 2 times SWL shall be applied and witnessed by the Technical Authority and it shall be in accordance with the Tackle Regulations of the Canada Shipping Act.

6.8 Documentation

6.8.1 The Contractor shall provide final as-fitted Sprinkler Pump and Piping Arrangement drawings.

6.8.2 The Contractor shall provide new drawings of the electrical installation of the pump, from Emergency MCC to the pump including all control and primer circuitry.

6.8.3 The Contractor shall provide the Technical Authority with copies of the readings recorded as per section Testing & Inspection of this specification item.

6.8.4 The Contractor shall provide a Pump Alignment Report to the Technical Authority prior to commissioning of the pump. The Report shall be in Word or Excel format.

6.8.5 The Contractor shall provide a copy of the Galvanizing Report to the Technical Authority prior to the final fitting of the piping.

6.8.6 The Contractor shall supply material test certificate for this specification to the Technical Authority.

7.0 EMERGENCY FIRE PUMP REPLACEMENT (SURVEY ITEM)

7.1 General

7.1.1 CCGS Griffon requires replacement of the Emergency Fire Pump fitted to the vessel. The existing pump and structure must be removed and a new pump and priming system must be installed. The new pump and primer is Government Furnished Material (GFM). The new pump is a similar design - vertical centrifugal - but different dimensionally. The new primer is an air venturi system with electric solenoids. A new air connection to the primer will be required. The main electrical circuitry will be reused. The circuitry will require to be modified to operate the new primer and pump. Some cooling piping and deck plating in the vicinity of the new pump will require to be modified.

7.1.2 The work in this section of the specification is to be completed only after Section 4, Bilge Cleaning has been performed.

7.1.3 The work in this section shall be performed in conjunction with Section 6, Sprinkler Pump Replacement. Both pumps will share the same primer air piping and electrical circuitry.

7.2 Gas-Freeing and Certification of Areas for Hot Work

7.2.1 The Contractor shall certify the following spaces safe for hot work:

- Lower Motor Room inclusive of bilges

7.3 Rigging

7.3.1 The Contractor shall be responsible for all materials and labor required for rigging and transporting equipment and material into and from the Lower Motor Room. Any additional lifting lugs required as a result of this specification are the responsibility of the Contractor. Any additional lifting lugs shall be approved by the Chief Engineer prior to installation. The Contractor shall be responsible for proof testing the lifting lugs to 200% the SWL prior to using them.

7.4 Protection of Existing Equipment

7.4.1 The Contractor shall exercise extreme caution and ensure that remaining equipment is well protected from the ingress of dirt, debris and water or exposure to heat. In particular, attention shall be given to all wiring and equipment in the area where the work is to be done. The Contractor is responsible for all labor and equipment required to take all necessary precautions in order to prevent damage to the surrounding fixtures and equipment.

DO NOT MODIFY

7.5 References

7.5.1 Drawings

7.5.1.1 The following drawings are provided for guidance. These drawings are not to be construed as production drawings.

Drawing Number	Drawing Title	Electronic File Name
B38690	Arrangement of Drysdale 6/4 Falcon Rotary Centrex Emergency Fire Pump	B38690 Drysdale Emergency fire pump.pdf
664-4211-1	Compressed Air System	G05A1051.MIL Rev. 1.pdf
1WD68Q462-122, Sht 1 of 4	List of Equipment, Layout, Legend & NP - Emergency MCC	G05322mi1Model(1).pdf
1WD68Q462-122, Sht 2 of 4	Power & Control Schematic Diagram - Emergency MCC	G05322sc2Model(1).pdf
IWD68Q462-122, Sht 3 of 4	Control Schematic - Emergency MCC	G05322sc3Model(1).pdf
664-5-1	Seats for Thrust Block, Turning Gear, Shaft Brake, Propulsion Motor, Diesel Engine, Propulsion & Service Generators	G05A0833.MILRev. 2.pdf
664-M1 (4 of 5)	Machinery Arrangement - Plan View - Sections	G05A1015.MIL.pdf
G05EFPP-01	Hamworthy Emergency Fire Pump Elevations	G05EFPP-01.pdf (Rev.2)
G05EFPP-02	Hamworthy Emergency Fire Pump Arrangement	G05EFPP-02.pdf (Rev.3)
664-9000-3 (1 of 3)	Profile & Bhds Scantlings	G05A0498MIL Part 1.pdf
664-120-9	W.T. & N.W.T. Bhds Aft & Floors	G05A0865.MIL .pdf
664-AF-501	General Arrangement and Capacity Plan	G05A0807.MIL.pdf

7.5.2 Manuals and Documents:

- Peacock-Drysdale Pumps for Davie Shipbuilding, Peacock Ref. # 68DR-3270
- Instruction Manual CG Centrifugal Pump
- Manual Hamworthy PMB Primer
- Technical Datasheet for CGA065R-V048-AAN-B03J1-CNB
- SU 03395-007 CGA 65 Form 48 General Description & Outline
- SU S2487-002 Centrifugal Pump CGA, B, C Form V General Description and Sectional Drawing
- SU S3685-001 Centrifugal Pump, Type CG General Description and Parts List

7.5.3 Regulations

7.5.3.1 The following standards apply specifically to this section of the specification:

- Canada Shipping Act, Fire Detection and Extinguishing Equipment Regulations - Latest Version
- Canada Shipping Act, Marine Machinery Regulations SOR/90-264 - Latest Version

7.5.4 Materials

7.5.4.1 New steel structural material shall be C.S.A. G40.21 Grade 44W quality plate and sections, unless otherwise specified. All piping shall be seamless steel, black pipe, Schedule 40 to A.S.T.M. Spec. A.53 Grade “A” or equivalent. Material test certificates shall be a deliverable for this specification.

7.6 Technical

7.6.1 Emergency Fire Pump Details

7.6.1.1 Existing Pump Details

Drysdale/Peacock 6/4 Falcon Rotary Centrex Emergency Fire Pump

Unit I.D. #	J298
Capacity	254 Imp. Gall per min.
Discharge Pressure (Head)	231 feet
Suction Pipe Flange Size	6”
Discharge Pipe Flange Size	4”
Motor Make	Lawrence Scott & Electromotors Ltd
Motor Model	No. M424891
Motor Frame	VD 200LBD
Motor Voltage	440 VAC, 3 PH, 60 Hz
Motor HP	40 HP
Motor Speed	1750 RPM
Motor Current	51 Amps
Insulation	Class B
Rating	Continuous
Manufactured	1969
Spec.	CU 12SP/Lloyd’s #8607

7.6.1.2 Replacement Pump Details

Hamworthy CG centrifugal, single suction, single stage, radially split, vertical, inline Emergency Fire Pump

Unit Model #	CGA065R-V048-AAN-B03J1-CNB
Pump Serial Number	11-20467
Pump KW	21.6 KW (28.95 HP)
Capacity	69 cu. m./hr (253 Imp. Gall./min)
Discharge Pressure (Head)	70.4 m (231 ft)
Total Head	70.4 m (231 Ft)
Suction Pipe Flange Size	80 mm (3.15”)
Discharge Pipe Flange Size	65 mm (2.56”)
Pump Weight	120 KG
Motor Make	TECO
Motor Model	AEVBKB020030FMX
Motor Serial	10730046833-1
Motor Frame	IP 55
Motor Voltage	460V,

DO NOT MODIFY

Motor KW	24.2 KW
Motor Speed	3530 RPM
Motor Current	37.2 Amps
Insulation	Class F
Rating	Continuous
Motor Weight	190 KG
Manufactured	2011
Pump Spec.	Lloyd's Cert. #SNG 1106050-2
Total pump assembly weight	308 KG

7.6.2 Description of Fitted Installation

7.6.2.1 Mechanical - The existing Emergency Fire Pump is fitted in the Lower Motor room, approximately 60 inches off centerline to Port at Frame 25 and 26. It is a single stage centrifugal pump fitted with a water ring/separator priming system fitted to the suction of the pump. The pump draws suction from the Lower Seabox in the Lower Motor Room Port side between Frame 35 and 36, through a 5 inch globe valve and 5 inch gate valve mounted on the sea box and through a 5 inch basket strainer mounted between Frame 26 & 27. The last section of piping before the suction of the pump is nominal 6 inches. The pump discharge is connected to a 5" check valve via a 4 inch to 5 inch concentric reducer and is connected to the Fire Main via 5 inch nominal piping. The existing pump mounts are fitted to two 4 inch steel channels bolted approximately 12 ¼" inches apart. The channels are bolted to 1" X 3" flat bar approximately 25 inches long spanning Frames 26 and 27. The flat bar is continuously welded to the tank top between Frames 25 and 26. The primer separator is supported separately by it's own arrangement welded to the tank top. Access for maintenance of this pump is from aft and accomplished by vertically splitting the pump casing.

7.6.2.2 Electrical - The existing Emergency Fire Pump motor is powered from the Emergency MCC located in the Emergency Generator Compartment via 3 conductor cable, 440 VAC circuit 20-EP-2. It is controlled by a Klockner - Moeller AC Magnetic Reduced Voltage Autotransformer starter. The pump is operated remotely from the Machinery Control Room (MCR) Sub Mimic Panel via Start/Stop pushbuttons. The pump also has a Local Start/stop pushbutton station mounted locally at the pump. Remote indication of power available by way of a white indicator light is fitted on the Essential MCC in the MCR. Remote indication of pump running/stopped status is by way of green/red illuminated pushbutton lights on the Sub Mimic Display in the MCR.

7.6.3 Strip Out Requirement

7.6.3.1 Piping Removals

7.6.3.1.1 The Contractor must ensure all piping is drained, isolated and locked out prior to removal of all piping. The Contractor shall be responsible to supply all labor and materials to remove the following existing Emergency Fire Pump piping:

- The Contractor shall remove all separator and primer piping. This is to be removed from the vessel and retained for reassembly onto the pump
- Remove the Thrust Block cooling water pipe from the thrust block to the flanged connection under the deck plating approximately 30 inches to Stbd of centerline.

7.6.3.2 Emergency Fire Pump Electrical Removals

7.6.3.2.1 The Contractor must ensure all Emergency Fire Pump circuits have been isolated and locked out in accordance with the FSSM. The Contractor must ensure all cables are identified and all wires are marked as to their intended reconnection prior to removal. The Contractor shall disconnect the following electrical equipment and cabling for the existing Emergency Fire Pump:

- One power cable to the Emergency Fire Pump junction box is to be released from the supporting wire way, disconnected and pulled back to the deckhead and secured temporarily out of the way of the work. These cables will be reused on the new installation. The Contractor must not bend these cables in such a way as to cause damage to them.

7.6.3.3 Emergency Fire Pump Removals

7.6.3.3.1 The Contractor must remove the Emergency Fire Pump, Primer and Separator from the vessel.

7.6.3.3.2 The Contractor is advised to break down the Emergency Fire Pump into at least 4 parts (motor, pump, separator and primer) in order to facilitate easier dismounting and removal from the vessel. The Contractor shall release the Emergency Fire Pump from it’s mount and remove it from the vessel. The pump unit shall be reassembled and returned to CG in an undamaged state at the completion of the work

7.6.3.4 Miscellaneous Removals

7.6.3.4.1 The Contractor shall remove and discard the following:

- The lower horizontal section of wire way support mounted on the bulkhead. The vertical section of wire way must be retained.
- The support bracket for the primer separator shall be cropped approximately 1” from the tank top. The Contractor shall protect the tank top from all undue heat as a result of the cutting.
- All unused brackets associated with the support of Emergency Fire Pump and components are to be cropped and base structure ground flush.

• The Contractor must remove the deck plate and support frame on the outboard side of the pump. A new frame accommodating the new pump arrangement with removable railing shall be constructed once the pump and piping have been installed.
• Any additional removals required in order to execute the pump installation shall be the responsibility of the Contractor.
• The 1" X 3" steel flat bar and 4" steel channel sections comprising the existing pump support shall be left as fitted and reused for the new pump installation. The paint coating on the top face of the steel channel sections shall be removed and the surface prepared for welding.

7.6.4 New Pump Installation

7.6.4.1 The Contractor must adhere to the manufacturer's installation and all instructions concerning installation of the pump, piping, electrical and pneumatics. All deviation from the installation instructions shall be approved by the Technical Authority prior to the commencement of work.

7.6.4.2 The Contractor may use whatever method considered best for introducing the new material into the vessel and welding it in place, provided there is no damage to the surrounding structure.

7.6.4.3 The Contractor shall remove the pressure gauges, piping and primer system prior to transporting the new pump. They shall be reconnected once the pump and piping is installed.

7.6.4.4 Mounting Arrangement

7.6.4.4.1 The Contractor must construct a support structure according to the supplied guidance drawing "Hamworthy Emergency Fire Pump Arrangement". The Contractor shall be responsible for verifying all dimensions of all scantlings, sizes and clearances on site prior to commencement of work.

7.6.4.4.2 The Contractor shall verify exact location where the pump is to be installed with the Chief Engineer prior to installing the supports.

7.6.4.4.3 The Contractor may propose alternate construction and fitting arrangements that shall be submitted for review by the Technical Authority. Any alternative arrangement shall be approved by the Technical Authority prior to implementation and be accompanied by drawings showing the intended "as fitted" arrangement.

7.6.4.4.4 The pump centerline shall be aligned between Frame 25 and Frame 26 and in line with the 6" flange at the inlet to the existing separator flange. The frame spacing in the area of installation is 24 inches on center.

7.6.4.4.5 The pump shall be mounted such that the maintenance opening in the entablature of the pump is facing outboard. The recommended access clearance for maintenance in this area is 600 mm. This clearance shall be respected.

7.6.4.4.6 The pump shall be mounted such that the manufacturers recommended vertical clearance for the removal of the motor is respected.

7.6.4.4.7 The location of the motor junction box shall be facing aft, free of obstruction and easily accessible for maintenance. The Contractor shall be responsible for orienting the motor correctly on the pump entablature. The Contractor shall perform alignment measurements on the pump before and after disturbing the alignment. Copies of the results shall be presented to the Technical Authority for approval prior to commissioning the pump. Rotation of the motor on it's base shall be considered as disturbing the alignment.

7.6.4.5 Base Support

7.6.4.5.1 The Contractor shall install a new ¾" steel plate measuring approximately 18 1/4" wide by 12" long spanning the existing steel channels. The plate shall be continuously fillet welded to the steel channels both sides. The plate is to be situated such that it rigidly supports the new pump pedestal.

7.6.4.5.2 The Contractor must fabricate a new welded pump pedestal to rigidly support the pump and provide a solid mounting surface for the pump. The pedestal shall be built off and welded to the new ¾" bottom plate. The Contractor shall take into account the intended location of the pump prior to welding the pedestal to the new bottom plate. The Contractor shall fabricate the pump pedestal from steel plate according to the guidance drawing "Emergency Fire Pump Elevations". The Contractor must ensure there is no distortion to the pump foundation as a result of welding. The Contractor shall weld the pedestal to the new bottom plate using continuous fillet welds. The Contractor shall ensure the pump foundation is flat.

7.6.4.5.3 The new pump support and all exposed steel, created as a result of removals, shall be coated with 2 coats of marine primer prior to fitting the pump.

7.6.4.6 Pump

7.6.4.6.1 The Contractor shall bolt the new pump to the pump support using 7/8" non-corrosive steel fasteners, washers and lock washers. The pump has a three point attachment to the foundation. The Contractor shall ensure the foundation is free from distortion prior to bolting the pump in place.

7.6.4.7 Piping

7.6.4.7.1 All new Emergency Fire Pump piping shall be seamless steel, black pipe, Schedule 40 to A.S.T.M. Spec. A.53 Grade "A" or equivalent. All pipe fittings shall be seamless steel, butt weld, schedule 40. All piping runs shall be flanged.

7.6.4.7.2 The Contractor shall ensure flange parallelism at the pump is within +/- 0.3 mm of a compressed gasket. Flange eccentricity shall be such that the flange bolts easily pass through both bolt holes.

7.6.4.7.3 All piping shall be assembled using full penetration, continuous butt welds.

7.6.4.7.4 All fittings shall be long radius so long as space permits.

DO NOT MODIFY

7.6.4.7.5 The Contractor shall connect the 6” flange of the existing suction piping to the 80mm flange of the pump inlet. The Contractor shall ensure the piping is removable for galvanizing.

7.6.4.7.6 The Contractor shall connect the 65 mm flange at the pump outlet with the 5” flange of the check valve at the discharge piping.

7.6.4.7.7 The Contractor shall fabricate a new Thrust Block Cooling Water pipe such that it passes free and clear of the Emergency Fire Pump and suction piping. The new piping shall be in two sections, flanged at each end.

7.6.4.7.8 The Contractor shall remove all sections of piping once proper piping alignment is verified. All piping sections shall be pressure tested to 100 psi prior to being sent for hot dip galvanizing. The pressure testing is to be witnessed by the Technical Authority. All leaks are to be repaired prior to galvanizing. Where leak repairs are carried out, the Contractor shall retest the piping in the presence of the Technical Authority. The Contractor shall subcontract to have the piping hot dip galvanized. This is a regulatory requirement. Copies of the galvanizing quality report are to be provided to the Technical Authority prior to final fitting of the Emergency Fire Pump piping. All costs associated with the shipping and galvanizing of the pipes shall be at the Contractor’s expense.

7.6.4.7.9 Piping must be adequately supported on either side of the pump, at the Discharge Valve and at the suction piping such that the flanges of the pump and existing equipment are not subjected to any stress. The Contractor shall weld steel bracketing with bolted clamps to ensure all sections of pipe are adequately supported. The Contractor shall not weld on the tank top.

7.6.4.7.10 The piping shall be reinstalled with appropriate fasteners for the size of flange being connected. All fasteners to be fitted with lock washers and be corrosion resistant. The Contractor shall provide new 1/8” thick reinforced black neoprene rubber gaskets between flanges.

7.6.4.7.11 The Contractor shall provide two coats of marine primer to the finished piping.

7.6.4.8 Miscellaneous

7.6.4.8.1 The Contractor shall install new copper tubing from the pressure connection on the Emergency Fire Pump to the existing pressure gauge on the bulkhead. The copper tubing shall be suitably supported to prevent vibration.

7.6.4.8.2 The Contractor shall reinstall new steel wire way and secure the existing power cable to it.

7.6.4.8.3 The Contractor shall construct a new deck plating support structure on the outboard side of the pump similar to what was existing. The scantlings of the structure shall be the same or stronger to what was existing. The orientation of the deck plating shall take into account the arrangement of the new pump. The original checker plate that was removed may be reused if required.

DO NOT MODIFY

7.6.4.8.4 The Contractor shall fabricate and install a hand rail along the outside edge of the new deck plating. The construction of the railing shall comply with national Marine Occupational Health & Safety regulations. The railing shall be fabricated such that it can be easily removable. The size, scantlings and style of the railing shall be similar to what is fitted in other areas of the Motor Room.

7.6.5 New Pump Installation - Primer Installation

7.6.5.1 Primer - Mechanical Installation

7.6.5.1.1 The Contractor to note all piping, fitting and hose shall be supplied by the Contractor to complete this section.

7.6.5.1.2 The Contractor shall connect the new ¾" steel piping from the vessel's service air supply that was completed in specification section 6 to the inlet connection at the ejector solenoid. The Contractor shall terminate the piping approximately 3 feet before the pump and terminate the line with a metal reinforced ¾"rubber hose appropriate for the application. The hose shall have non corrosive fittings. All steel piping shall be fabricated ¾" seamless steel pipe and 300 lb socket weld black steel fittings. The ejector inlet is a tapered, ¾" BSP female thread. All new sections of steel pipe not tested as part of Section 6.0 shall be pressure tested to the satisfaction of the TCMSB Inspector.

7.6.5.1.3 The Contractor shall pipe the primer ejector outlet to bilge. The piping on this connection shall be NPT threaded ,Schedule 40, galvanized steel. The connection to the ejector shall be completed with a galvanized, 1" BSP to 1" NPT adapter suitable for the application.

7.6.5.1.4 All new primer piping shall be suitable supported with steel brackets to eliminate any stress on primer components and directed to bilge.

7.6.5.2 Primer - Electrical Installation

7.6.5.2.1 The Contractor shall install a new electrical supply for the primer circuits in the Motor Room. This section shall be done in conjunction with Section 6. A new junction box has been installed on the forward bulkhead of the Motor Room to provide power to the primer circuits for the Sprinkler Pump, Emergency Fire Pump (see section 6), and a Bilge and Ballast Pump that will be installed in the future. The Contractor shall run a new 14/2 conductor bronze armored cable from the new junction box on the forward bulkhead of the Motor Room to the Danfoss pressure control. The Contractor shall use the existing wire transit and wire ways to run this cable. The cable shall be suitably supported along the wire way.

7.6.5.2.2 All glands, clips, ties or any other equipment required to complete the installation of the electrical supply to the primer shall be Contractor supplied material.

7.6.6 New Pump Installation - Electrical

7.6.6.1 Electrical - General

7.6.6.1.1 The Contractor shall be responsible for supplying all glands, connectors, brackets, and any other material required to secure and connect the Emergency Fire Pump wiring.

7.6.6.1.2 The new motor full load current is less than the existing motor. The Contractor shall replace the existing Klockner-Moeller Z4-80 overload relay with a new overload relay of suitable rating for the new motor. The new relay shall be GFM.

7.6.6.2 Power Wiring

7.6.6.2.1 The Contractor shall reconnect the existing cable to the new motor.

7.6.6.2.2 The Contractor shall install and connect the power wiring to the new overload relay.

7.6.6.3 Control Wiring

7.6.6.3.1 The Contractor shall connect the control circuitry to the new overload relay. The relay shall be set to trip the motor at 125% overload. The relay will be GFM.

7.6.7 Commissioning

7.6.7.1 The Contractor shall be responsible to schedule and co-ordinate the commissioning of the Emergency Fire Pump and associated equipment.

7.6.7.2 The pump shall not be operated until the Contractor has proven to the Chief Engineer that the suction is flooded and all air in the pump and suction piping has been bled. The Contractor shall prove to the Chief Engineer that the pump shaft can be turned by hand without binding. All other manufacture's recommendations for pre-start checks and running the pump shall be adhered to.

7.6.7.3 The Contractor, with the assistance of the vessel's staff, will arrange a 2 hour full flow operational test of the Emergency Fire Pump. The vessel's Fire Main shall be used for the test. The Contractor shall hook up fire hoses and nozzles to at least 5 hydrants on the Poop Deck. The test shall be done with the vessel's 2" fire hoses.

7.6.7.4 The Contractor shall verify and record the following items during commissioning:

1) All piping is leak free and flooded.
2) The pump seal is leak free.
3) The motor is bump tested and turns in the correct direction.
4) The proper operation of the primer at start-up.
5) The motor can be operated locally and remotely from the MCR Sub-Mimic panel.
6) The motor can be stopped locally and remotely from the MCR Sub-Mimic Panel.
7) The motor is operating within rated values.

8) The pump is operating within rated values with minimum vibration..
9) The Contractor shall close the discharge valve momentarily to record the closed discharge pressure. The Contractor shall note the pump will overheat rapidly when operating against a closed discharge.
10) The Contractor shall record the motor full load current while the pump is operating at full flow capacity.
11) The Contractor shall take motor current readings at increments of 10 psi discharge pressure up to maximum discharge pressure and develop a pump curve to submit to the Technical Authority.

7.7 Inspection, Tests and Trials

7.7.1 The Contractor shall be responsible for all labor and equipment required to perform the Emergency Fire Pump Testing in the presence of the TCMS and Technical Authority.

7.7.2 The Contractor must provide an Inspection and Test Plan to both the TCMSB Inspector and Technical Authority for approval prior to the commencement of all Emergency Fire Pump testing.

7.7.3 The Emergency Fire Pump and associated equipment shall be tested to the minimum standards as follows:

- Fire Detection and Extinguishing Equipment Regulations C.R.C, c.1422 of the Canada Shipping Act, Schedule II.

7.7.4 The Contractor shall consult with the TCMSB Inspector and elaborate in the Inspection and Test Plan the specific requirements to be tested. As a minimum, the Contractor shall test for the throw capability of fire hoses and nozzles fitted to two separate hydrants while being supplied by the Emergency Fire Pump. The throw must be at least 12 m at each hose nozzle. Also, as a minimum, the maximum pressure at the Emergency Fire Pump discharge with all hydrants closed shall be determined.

7.7.5 In the case where additional lift lugs were installed, the Static Load test of 2 times SWL and it shall be in accordance with the Tackle Regulations of the Canada Shipping Act.

7.7.6 The Contractor shall be responsible for testing the new railing in the presence of the TCMS and Technical Authority. All material and labor required to perform this test shall be the responsibility of the Contractor. The new railing adjacent to the Emergency Fire Pump shall be subjected to a side load equal to 250 lbs at it’s weakest point.

7.8 Documentation

7.8.1 The Contractor shall provide final as-fitted Emergency Fire Pump and Piping Arrangement drawings.

7.8.2 The Contractor shall provide new drawings of the electrical installation of the pump, from Emergency MCC to the pump including all control and primer circuitry.

7.8.3 The Contractor shall provide the Technical Authority with copies of the readings recorded as per section Testing & Inspection of this specification item.

7.8.4 The Contractor shall provide a Pump Alignment Report to the Technical Authority prior to commissioning of the pump. The Report shall be in Word or Excel format.

7.8.5 The Contractor shall provide a copy of the Galvanizing Report to the Inspection & Technical Authority prior to the final fitting of the piping.

7.8.6 The Contractor shall supply material test certificate for this specification to the Technical Authority.

8.0 PROPULSION COOLING WATER PUMP REPLACEMENT (SURVEY ITEM)

8.1 General

8.1.1 CCG Griffon requires replacement of two Propulsion Cooling Water pumps fitted to the vessel. The existing pumps and bases must be removed and new pump assemblies with bases must be installed. The new pump assemblies are Government Furnished Material (GFM). The new pumps are identical to the existing pumps - horizontal centrifugal. The main electrical circuitry will be reused. The overload relay shall be changed out by the Contractor with a new (GFM) relay.

8.1.2 The work in this section of the specification is to be completed only after Section 4, Bilge Cleaning has been performed.

8.2 Gas-Freeing and Certification of Areas for Hot Work

8.2.1 The Contractor shall certify the following spaces safe for hot work:

- Lower Motor Room inclusive of bilges

8.3 Rigging

8.3.1 The Contractor shall be responsible for all materials and labor required for rigging and transporting equipment and material into and from the Lower Motor Room.

8.4 Protection of Existing Equipment

8.4.1 The Contractor shall exercise extreme caution and ensure that remaining equipment is well protected from the ingress of dirt, debris and water or exposure to heat. In particular, attention shall be given to all wiring and equipment in the area where the work is to be done. The Contractor is responsible for all labor and equipment required and take all necessary precautions in order to prevent damage to the surrounding fixtures and equipment.

8.5 References

8.5.1 Drawings

8.5.1.1 The following drawings are provided for guidance. These drawings are not to be construed as production drawings.

Drawing Number	Drawing Title	Electronic File Name
664-M1 sh1 Rev.5	Machinery Arrangement-Plan View-Lower Level	664-M1 sh1 of 5.pdf
664-4207-1	Raw Water Circulating Diagram	G05A1045.MIL Rev.1.pdf
664-4207-10 sh1	Raw & Fresh Water Circulating Piping Arrangement	G05A1096.MIL Rev. 2.pdf
1WD68Q462-122, Sht 1 of 4	List of Equipment, Layout, Legend & NP - Emergency MCC	G05322mi1Model(1).pdf
1WD68Q462-122, Sht 2 of 4	Power & Control Schematic Diagram - Emergency MCC	G05322sc2Model(1).pdf
IWD68Q462-122, Sht 3 of 4	Control Schematic - Emergency MCC	G05322sc3Model(1).pdf
Section 340/360 Page 206, Dated: March 2004	Dimensional Drawing Aurora 344A & 364A Pumps	Dimensions.pdf

8.5.2 Manuals and Documents:

- Pump Curve #212109 (Electronic File: 2386260-1.pdf)
- Pump Curve #212110 (Electronic File: 2386260-2.pdf)
- Instruction Manual - Installation Frame Mounted, Section 2, Item 2, Dated July 1991 (Electronic File: Install Manual.pdf)
- Instruction Manual - Operation Centrifugal Pump, Section 4, Item 1. (Electronics File: Operating Manual.pdf)

DO NOT MODIFY

8.5.3 Regulations

8.5.3.1 The following standards apply specifically to this section of the specification:

• Canada Shipping Act, Marine Machinery Regulations SOR/90-264 – Latest Version

8.5.4 Materials

8.5.4.1 New steel structural material shall be C.S.A. G40.21 Grade 44W plate and sections, unless otherwise specified. All piping shall be seamless steel, black pipe, Schedule 40 to A.S.T.M. Spec. A.53 Grade “A” or equivalent. Material test certificates shall be a deliverable for this specification.

8.6 Technical

8.6.1 Propulsion Cooling Water Pump Details

8.6.1.1 Existing Pump Details

Aurora Frame Mounted Horizontal Centrifugal Pump

Pump Location	Upper	Lower
Unit I.D. #	668-8905-2	668-8905-1
Make	Aurora	Aurora
Model	GBPA-BF	GBPA-BF
Size (inches)	2.5 X 3 X 9	2.5 X 3 X 9
Motor Make	CGE	CGE
Motor Model	117901	117901
Motor No.	977499	977500
Motor Frame	254	254
Motor Voltage	440 VAC, 3 PH, 60 Hz	440 VAC, 3 PH, 60 Hz
Motor HP	7.5 HP	7.5 HP
Motor Speed	1760 RPM	1760 RPM
Motor Current	10 Amps	10 Amps
Insulation	Class B	Class B
Rating	Continuous	Continuous

8.6.1.2 Replacement Pump Details

Aurora Model 364A End Suction Horizontal Centrifugal Pump

Frame Data plate	Pump 1	Pump 2
Nat. Proc. Equip. Base #	379568A	379568A
Type	364 BF	364 BF
Capacity GPM	330	330
Head (Feet)	71.5	71.5
Size (inches)	2.5 X 3 X 9	2.5 X 3 X 9
RPM	1750	1750
Pump Type	364 A AB	364 A AB
Pump No.	11-2023181-2	11-2023181-1
Pump Size	2.5 X 3 X 9	2.5 X 3 X 9
Motor Make	WEG	WEG
Motor Model	W21 CC029A Severe Duty	W21 CC029A Severe Duty
Motor Serial	1008413764	100841359
VJP Part #	HT010404P	HT010404P
Motor Frame	215 T IP 55	215 T IP 55

DO NOT MODIFY

Motor Voltage	460V, 3 Ph, 60 Hz	460V, 3 Ph, 60 Hz
Motor KW	10 HP (7.5 KW)	10 HP (7.5 KW)
Motor Speed	1760 RPM	1760 RPM
Motor Current	12.8 Amps	12.8 Amps
Enclosure	TEFC	TEFC
Insulation	Class F	Class F
Rating	Continuous	Continuous
Motor Weight	156 lbs	156 lbs
Manufactured	July 6, 2010	July 6, 2010
Pump Spec.	ABS Certified	ABS certifed

8.6.2 Description of Fitted Installation

8.6.2.1 Mechanical - The existing Propulsion Motor Cooling Water Pumps are fitted in the Lower Motor room, at the Stbd side of the hull between Frames 27 and 29. They are fitted in tandem. They are end suction, single stage, frame mounted, horizontal centrifugal pumps coupled to CGE Induction Motors via a flexible coupling. The whole assembly is mounted on C15 X 33. The channels are welded to cranked steel plate that is rigidly supported by steel brackets welded to the ship's frames. The pumps draw suction from the Motor Room Seabay between Frame 36 and 37, through a 4 inch angle globe valve mounted on the seaybay forward of the Starboard Propulsion Motor. Both pumps are fed by the same common pipe and then split before the suction of each pump. The last section of piping before the suction of the pump is nominal 5 inches with an eccentric reducer fitted at the pump suction. The pump discharge piping is nominal 4 inch. The Steel channel base frames measuring 15 inches wide by 38 inches long.

8.6.2.2 Electrical - The existing Propulsion Cooling Water Pumps are powered from the Emergency MCC located in the Emergency Generator Compartment via 3 conductor cable, 440 VAC circuit 10-EP-2 (Working -Upper) and 11-EP-2 (Standby - Lower). It is controlled by a Klockner - Moeller AC Magnetic starter. The pump is operated remotely from the Machinery Control Room (PTB) Propulsion Auxiliary & Exciter Transfer Board via Start/Stop pushbuttons. The pump also has a Local Lock off/start pushbutton station mounted locally at the pump. Remote indication of power available by way of a white indicator light is fitted on the Essential MCC (ESM) in the MCR. Remote indication of pump running/stopped status is by way of green/red illuminated pushbutton lights on the PTB and on the Main Mimic Display (MMD) in the MCR. The pumps are also controlled by a pressure switch such that the standby pump may start should the working pump fails.

8.6.3 Strip Out Requirement

8.6.3.1 Pump Removals

8.6.3.1.1 The Contractor must ensure all equipment is drained, isolated and locked out electrically and mechanically prior to removal of all piping and pumps.

8.6.3.1.2 The Contractor shall be responsible for all labor and materials to remove the existing Propulsion Cooling Water Pumps.

8.6.3.1.3 The Contractor shall remove the following on both pumps:

- Disconnect and remove the copper tubing for the suction and discharge gauges.
- Disconnect and remove the copper tubing to the pressure switches.
- Unbolt the suction flanges at the pump.
- Unbolt and remove the pipe spools on the discharge of the pump.
- Power cable to the motor junction box is to be released from the supporting wire way, disconnected and pulled back to the deckhead and secured temporarily out of the way of the work. These cables will be reused on the new installation. The Contractor must not bend these cables in such a way as to cause damage to them. The Contractor must ensure all cables are identified and all wires are marked as to their intended reconnection prior to removal.
- Crop and remove a 4 foot section of 3 inch angle supporting the adjacent deck plating. This will provide access to the welds on the lower pump base. The aluminum deck plating is to be removed and retained and reused. The Contractor is responsible for all temporary platforms required while this angle is removed.
- Grind off the welds on the pumps base and remove the pumps assemblies complete with the steel channel base to the Upper Deck. The existing pump assemblies are to be moved to the Upper Deck, retained by the Contractor and handed over to CG at the completion of work in good working order.
- All additional removals required in order to execute the pump installation shall be the responsibility of the Contractor.

8.6.4 New Pump Installation

8.6.4.1 The Contractor must adhere to the manufacturer’s installation and all instructions concerning installation of the pump, piping and electrical. All deviation from the installation instructions shall be approved by the Technical Authority prior to the commencement of work.

DO NOT MODIFY

8.6.4.2 The Contractor may use whatever method considered best for introducing the new material into the vessel and welding it in place, provided there is no damage to the surrounding structure.

8.6.4.3 The new pump assemblies are loose and require fitting on bases new bases which are identical dimensionally to the bases being removed. The new pump bases are Government Furnished Material C15 X 33.9 steel channel measuring 15 inches wide by 38 inches long. The Contractor shall fit and stitch weld in place the new 15 inch wide steel channels in a similar location and orientation to the old bases taking into account the alignment of the pump with the existing piping. The schedule of welding shall be such there is no distortion to the pump base.

8.6.4.4 The Contractor may propose alternate construction and fitting arrangements that shall be submitted for review by the Technical Authority. Any alternative arrangement shall be approved by the Technical Authority prior to implementation and be accompanied by drawings showing the intended “as fitted” arrangement.

8.6.4.5 The Contractor shall ensure the pumps 15 inch bases are flat prior to bolting down the pumps.

8.6.4.6 The Contractor shall apply two coats of marine primer to the new pump base once all welding is completed.

8.6.4.7 The Contractor shall fit the new pumps to the new 15 inch bases taking into account the alignment between pump and piping. The pump centerline shall be aligned with the centerline of the pump suction piping and shall be in the center of the pump base. The pumps shall be bolted to their bases with the new fasteners that were provided with the pump.

8.6.4.8 The Contractor shall be responsible for fabricating and installing new pipe spools at the pump discharge. All new pipe shall be seamless steel, black pipe, Schedule 40 to A.S.T.M. Spec. A.53 Grade “A” or equivalent. All pipe fittings shall be seamless steel, butt weld, schedule 40. All piping runs shall be flanged. The new pipe spools shall be fitted such that the pump is not subjected to stress from misalignment.

8.6.4.9 The Contractor shall ensure flange parallelism at the pump is within +/- .012” of a compressed gasket. Flange eccentricity shall be such that the flange bolts easily pass through both bolt holes.

8.6.4.10 The new pipe spools shall be removed and pressure tested to 100 psi prior to being galvanized. The pressure testing is to be witnessed by the Inspection and Technical Authority. All leaks are to be repaired prior to galvanizing. Where leak repairs are carried out, the Contractor shall retest the piping in the presence of the Technical Authority. The Contractor is responsible for all labor and materials in order to perform the tests. The Contractor shall have the new piping hot dip galvanized. Copies of the galvanizing report shall be a deliverable. All costs associated with the shipping and galvanizing of the pipes shall be at the Contractor’s expense.

DO NOT MODIFY

8.6.4.11 The Contractor shall install the new pipe spools with new 1/8" reinforced neoprene gasket material and new non-corrosive fastener of the appropriate size for the flanges being connected. All fasteners to be fitted with lock washers and be corrosion resistant. The Contractor shall provide new 1/8" thick reinforced black neoprene rubber gaskets between flanges.

8.6.4.12 The pump mounting feet shall be drilled and dowelled in place once the piping is connected to the pumps. The dowels shall be installed in such a way that they will not weaken the pump mounting feet and are removable. The dowels shall be tapered.

8.6.4.13 The Contractor shall align and bolt down the new motors to the pumps with the new fasteners. The motors shall be aligned to the pumps using new, non-corrosive, metal shims commercially designed for that purpose. All alignment shall be performed according to and within the specifications of the manufacturers' recommendations.

8.6.4.14 The Contractor shall perform alignment measurements between motor and pump for both installations. Copies of the results shall be presented to the Technical Authority for approval prior to commissioning the pump. The alignment reports shall be a deliverable for this specification.

8.6.4.15 The Contractor shall reconnect the power wiring for each motor. All connectors, clips, ties, etc. are the responsibility of the Contractor.

8.6.4.16 The full load amperage of the new motors is higher than the original motors. The Contractor shall remove the existing overload relay from the motor control center for the pumps and install new overload relays. The overload relays are to be set to trip at 125% of motor full load current. The new overload relays are GFM.

8.6.4.17 The Contractor shall install new copper tubing to all the suction and discharge pressure gauges and both pressure switches. The copper tubing shall be suitably supported to prevent vibration.

8.6.4.18 The Contractor shall reinstall the deck plating support structure on the inboard side of the pump similar to what was existing. The scantlings of the structure shall be the same to what was existing. The orientation of the deck plating shall take into account the arrangement of the new pump. The original checker plate that was removed may be reused if required. All new steel and bare steel surfaces shall be painted with two coats of marine primer.

8.6.4.18.1 The Contractor shall provide two coats of marine primer to the finished piping.

8.6.5 Commissioning

8.6.5.1 The Contractor shall be responsible to schedule and co-ordinate the commissioning of the Propulsion Motor Cooling Water Pump and associated equipment.

8.6.5.2 The pump shall not be operated until the Contractor has proven to the Chief Engineer that the suction is flooded and all air in the pump and suction piping has been bled. The Contractor shall prove to the Chief Engineer that the pump shaft can be turned by hand without binding. All other manufacture's recommendations for pre-start checks and running the pump shall be adhered to.

8.6.5.3 The Contractor, with the assistance of the vessel's crew, will arrange a 2 hour full flow operational test of each Propulsion Motor Cooling Water Pump. The vessel's system shall be used for the test.

8.6.5.4 The Contractor shall verify and record the following items during commissioning:

1) All piping is leak free and flooded.
2) The pump seal is leak free.
3) The motor is bump tested and turns in the correct direction.
4) The motor can be operated locally at the pump and remotely from the MCR (PTB) Propulsion Auxiliary & Exciter Transfer Board.
5) The motor is operating within rated values.
6) The pump is operating within rated values with minimum vibration.
7) The Contractor shall close the discharge valve momentarily to record the closed discharge pressure and motor current. The Contractor shall note the pump will overheat rapidly when operating against a closed discharge.
8) The Contractor shall record the motor full load current while the pump is operating at full flow capacity.
9) The Contractor shall take motor current readings at increments of 10 psi discharge pressure up to maximum discharge pressure and develop a pump curve to submit to the Technical Authority.
10) The Contractor shall ensure the pressure switch operation of the standby pump when the duty pump is stopped.

8.7 Inspection, Tests and Trials

8.7.1 The Contractor shall be responsible for all labor and equipment required to perform the Propulsion Motor Cooling Water testing in the presence of the TCMSB Inspection Authority and the Technical Authority.

8.7.2 The Contractor shall review all weld quality requirements and defect limits of applicable codes and standards prior to starting any work. The Contractor shall also formulate an "Inspection and Test Plan" in co-operation with the Technical Authority and not conceal welds until they have been inspected, tested and witnessed by the Technical Authority and the attending TCMS Inspector where required. The Contractor shall afford the Technical Authority and TCMS the opportunity to witness all welds during early stages of welding procedures in accordance with AWS W1. The Contractor shall repair or replace all defects as required by code and as specified herein. Re-inspection and re-testing of welds due to poor workmanship shall be at the Contractor's expense.

8.7.3 In addition to the regulatory tests, the completed Propulsion Motor Cooling Water Pump installation shall be functionally tested to prove correct operation as set out by the pump manufacturer in the presence of the TCMS Inspector.

8.7.4 In the case where additional lift lugs were installed, the Static Load test of 2 times SWL must be applied to the lugs and it shall be in accordance with the Tackle Regulations of the Canada Shipping Act. Proof of testing shall be made a deliverable for this specification.

DO NOT MODIFY

9.0 SSG LUBE OIL STORAGE TANK AND PIPING SYSTEMS

9.1 General

9.1.1 The Ship Service Generators (SSGs) on the Griffon now use different lube oil than the main engines - a suitable storage tank and associated piping systems must be installed.

This new tank will be installed in the upper engine room, starboard side at frame 46. Up until 2007, a much larger tank was fitted in this location - this tank was removed to provide a removal route for the new boiler installation.

9.1.2 The tank sections are to be pre-fabricated at the Contractor's facility ashore and brought in to the Engine room in pieces - the Contractor is responsible for final assembly, testing, installation and hook-up. The Contactor to note that supplied TCMS approved drawings to be utilized in the construction and installation of the SSG Lube Oil tank and piping system.

9.1.3 The Contractor shall restrict the amount of steelwork in this area to the minimum required to complete the specification.

9.1.4 The Contractor is advised that Griffon staff will be conducting a Main Engine survey forward of the proposed work in this specification. The engine will be dismantled and open for an extended period. The Contractor shall demonstrate precaution so that engine parts are not contaminated.

9.2 Gas-Freeing and Certification for Hot work

9.2.1 The Contractor shall certify the following space safe for hot work :

Upper engine room starboard side at frame 46.

9.3 References

Drawings

Drawing No.	Drawing title	Electronic File No.
CMG05-325-PL sht 1/1	Griffon SSG LO storage system line diagram	Griffon SSG LO storage system line diagram.pdf
CMG05-323-ME sht 1/3	Griffon SSG LO storage Tank	Griffon SSG LO storage Tank.pdf
CMG05-323-ME sht 2/3	Griffon SSG LO storage Tank flange info	Griffon SSG LO storage Tank flange info.pdf
CMG05-323-DE sht 3/3	Griffon LO storage tank flange details	Griffon LO storage tank flange details.pdf

9.3.1 Documentation: Flo Components manual for Oil Dispensing Station.

9.3.2 Regulations:

Canada Shipping Act- Hull Construction Regulations - Latest version.

DO NOT MODIFY

Canada Shipping Act - Marine Machinery Regulations - Latest version.

9.4 Technical

9.4.1 General Requirements

9.4.1.1 All pipe fittings are to be 150# rated butt weld type.

9.4.1.2 All piping shall be seamless steel, black pipe, Schedule 40 to A.S.T.M. Spec. A.53 Grade “A” or equivalent.

9.4.1.3 All piping material (pipe, fittings, fasteners, clamps, gaskets, etc.) is Contractor supplied except the pipe work already roughed in by the Coast Guard. The Contractor to note that CCG roughed in 1.5” pipe is about 62 feet long.

9.4.1.4 All piping shall be suitably supported to protect the piping against vibration. Supports will be steel pipe clamps.

9.4.1.5 All tank plate material, flanges, gaskets, studs, paint and primer shall be Contractor supplied as per supplied TCMS approved drawings.

9.4.2 New Tank Installation

9.4.2.1 The Contractor shall transport the new tank components to the engine room. These components will be located in the general area of the tank installation. Griffon staff shall ensure the work area will be cleared to allow assembly and install of the tank. The Contractor shall be responsible to prepare proposed foot print area for the new tank to be installed in the upper engine room, starboard side at frame 46.

9.4.2.2 The Contractor shall assemble the tank according to the supplied drawings approved by TCMS.

9.4.2.3 After fabrication but before installation the Contractor shall perform a pressure test of the tank as described under Section - Testing and Inspection.

9.4.2.4 The tank support structure is to be welded to the deck. The exact tank location shall be confirmed with the Chief Engineer prior to final welding. The aft edge of the tank shall be aligned as close as possible with the under deck beam at Frame 46.

9.4.2.5 The Contractor shall install the fire hose bracket on the forward side of the tank.

9.4.2.6 The Contractor shall weld bracing brackets to align to the lugs welded to the top of the tank.

9.4.3 New Fill Pipe Installation

9.4.3.1 The new fill pipe has been roughed in from the main deck to the tank general area which consists of 40 butt welds and 14 flanges. This was done by CCG in order to avoid conflict with #4 main engine overhaul work.

DO NOT MODIFY

9.4.3.2 The Contractor shall remove this roughed in line and finish weld all connections - at present all fittings are tack welded.

9.4.3.3 After finish welding and pressure testing, the Contractor shall re-install the pipe with Contractor supplied flange gaskets and fasteners.

9.4.3.4 The Contractor shall fabricate the final piece of piping from the roughed in fill pipe to the filling connection on the tank and install one filling valve 1-1/2" 150 FS Globe Flange RFD Full Port as per approved drawing. The Contactor shall confirm exact location of the filing valve prior to installation with the Chief Engineer. The valve will be GFM.

9.4.4 New Vent pipe and Drip tray Installation

9.4.4.1 The 2" vent from the previous Lubricating oil tank supplied by Technical Authority shall be utilized for the new tank by cutting it to the size as per approved drawings. The Contractor shall fabricate the vent line section with new flange and secure to the tank with Contractor supplied oil compatible gasket.

9.4.4.2 The Contractor shall fabricate a steel drip tray 6"X6"X2" with 2" drain pipe. Final assembly to be located on the aft side of tank under the vent secured with remove able clamps welded on two stand pipes. The drain pipe to follow the path as shown in the supplied drawings and to be in consultation with the Chief Engineer.

9.4.5 New Distribution Piping Installation

9.4.5.1 The Contractor shall install the GFM remote closing valve on the tank.

9.4.5.2 The Contractor shall consult with the Technical authority on a suitable location for a deck penetration. The Contractor shall cut the deck opening and install a 2" high combing around the opening. The opening shall be large enough to install the completed pipe.

9.4.5.3 The Contractor shall take into account the under deck stiffening prior to commencing this work. The Contractor shall note there is a large under deck wire way in close proximity to the work to be performed. The Contractor shall take all necessary precautions to protect the cabling in this wire way from damage. The piping shall run athwartships, just forward of and parallel to the deck beam at Frame 46. Where the pipe transits the 13" by 3/8" longintudinal girder, a 3" diameter stress ring shall be installed to maintain the structural integrity of the girder. The Contractor shall consult with the Chief Engineer for exact location of the stress ring before installation.

9.4.5.4 The oil dispensing pump and hose reel will be installed by the Coast Guard at the pillar in the lower engine room - between SSG#1 and SSG #2 at frame 44.

9.4.5.5 The Contractor shall run a new 1-1/2" line to the new oil dispensing unit. The Contractor to bid on about new 60 feet of this line.

9.4.5.6 The Contractor will connect the dispensing pump suction to the supply line.

9.4.6 New Save-all Drain Piping Installation

9.4.6.1 The new tank will be fitted with a save all on the front (inboard) side. This save-all requires a drain line to a sludge tank. The save all penetration will be made to suit the tank installation.

9.4.6.2 The Contractor shall install a 1" drain line from the save all to the blanked flange connection in the lower engine room at the starboard sea bay - frame 48. This flanged connection leads to the engine room drain tank.

9.4.6.3 The save all line will penetrate the deck and install a 2" high combing around the deck opening. The opening shall be large enough to install the completed pipe. The Contractor shall confirm exact location of the combing with the Chief Engineer before installation.

9.4.7 New Sure site Level Indicator Installation

9.4.7.1 The Contractor shall install on forward side of the tank one Sure site level indicator unit with oil compatible gaskets. The level indicator will be GFM.

9.4.8 Coatings

9.4.8.1 After installation of the tank, piping and pressure testing completion, the Contractor shall coat all new components (pipe, hangers, valves, and tank base etc.) with one coat of Interprime 198 primer and two coats of two coats of Intersheen 579 White.

9.4.8.2 Tank to be primed with weldable primer compatible with oil for outside only.

9.5 Testing & Inspection

9.5.1 The Contractor shall pressure test to 100 psi all pipes which have been fabricated. The test shall be witnessed by the Technical Authority and a TCMS surveyor.

9.5.2 The Contractor shall pressure test the tank with air to the equivalent of a 2.5-meter (8-foot) head of water. All seams are to be soap tested with the tank under pressure and this testing is to be witnessed by the Technical Authority and a TCMS surveyor. Any leak found shall be repaired at no cost to CCG.

9.6 Documentation

9.6.1 The Contractor shall provide the Technical Authority with copies of the pipe and tank pressure test results recorded as per section Testing & Inspection of this specification item.

9.6.2 All documentation shall be provided in electronic format on either a USB memory stick or on CD-ROM media that is in PDF format and is unprotected. Scans of documents are acceptable provided all items on the scan are fully legible.

9.6.3 The Contractor shall forward copies of Contractor supplied material test certificates to the Technical Authority.

DO NOT MODIFY

10.0 FUEL AND LUBE OIL TANK REMOTE CLOSING VALVE INSTALLATION

10.1 General

10.1.1 The Griffon has a requirement to install remote closing valves on the vessel's lube oil storage tanks.

10.1.2 The tanks are:

1. New Ship Service Generator lube oil storage tank located upper Engine room starboard side at frame 47.
2. Starboard main engine lube oil storage tank located upper engine room at frame 54.
3. Port main engine lube oil storage tank located upper engine room at frame 54.
4. The bearing oil storage tank located in the motor room at frame 25.

10.1.3 The ship service generator fuel feed tank isolation valve will be renewed at this time and incorporated into the new remote closing system.

10.2 Gas Freeing and Certification for Hot Work

10.2.1 The Contractor shall certify the following safe for hot work:

- Upper Fan Room
- Stack Compartment.
- Upper and Lower engine rooms.
- Upper and lower motor rooms.

10.3 References

10.3.1 Drawings:

10.3.2 Documentation:

LK Valves Quick Closing Valve documentation.
LK Valves Hydraulic Control Station with Cabinet documentation.

10.3.3 Regulations:

Canada Shipping Act- Hull Construction Regulations- Latest version.
Canada Shipping Act - Marine Machinery Regulations - Latest version.

10.4 Technical

10.4.1 Fitted Installation

10.4.1.1 At present the Griffon has only one hydraulically actuated quick closing valve - the SSG fuel feed tank outlet valve. See the Ship Service Generator Fuel Piping Modifications section of this specification for details. This valve is activated by a control station located in the upper fan room.

10.4.1.2 The Coast Guard will supply the following (GFE):

1. Five hydraulically activated quick closing valves.
2. One hydraulic control station with cabinet.
3. A Roxtec cable transit complete.

10.4.2 Strip Out Requirements

10.4.2.1 The Contractor shall remove the control station in the upper fan room - this is to be handed to the Coast Guard.

10.4.2.2 The ¼" copper line from the control station to the SSG feed tank valve is to be removed.

10.4.3 New Control Station Installation

10.4.3.1 The Contractor shall install the new valve control station in the same location as the previous station.

10.4.3.2 The control station shall be mounted off the bulkhead sheathing with steel standoffs welded to the engine uptake casing.

10.4.3.3 The Contractor shall be responsible for removal, modification, and replacement of all interior sheathing and insulation for the cabinet installation.

10.4.4 New Transit Installation

10.4.4.1 The Contractor shall install a new Roxtec cable transit from the upper fan room to the stack compartment. The bulkhead is A-0 rated steel. This transit will be located centered 32" off the deck of the upper fan room directly under the control station. The Roxtec cable transit complete will be GFM.

10.4.4.2 The Contractor shall be responsible for removal, modification, and replacement of all interior sheathing and insulation for this transit installation on both sides of the bulkhead.

10.4.4.3 The Contractor shall utilize this transit for all Hydraulic valve actuator lines.

10.4.4.4 The Contractor shall strip back the single armored cable which is located at the location of the new transit. This cable runs from the wheelhouse to the upper fan room via the stack compartment and is in the General Alarm circuit (used by the ICS system to interrupt General alarm for paging). This cable is to be re-run through the new

transit and re-connected. Note that the Technical authority shall be informed when this cable is to be disconnected. – the Contractor shall re-connect this circuit immediately.

10.4.5 New Remote Closing Valve Installation

10.4.5.1 All pipe modifications shall utilize 150# rated butt welded fittings to match the original installations.

10.4.5.2 SSG fuel feed tank outlet valve - see the Ship Service Generator Fuel Piping Modifications section of this specification for installation details.

10.4.5.3 New SSG lube oil storage tank outlet valve - see the tank installation section of this specification for installation details.

10.4.5.4 Bearing Oil Tank - the Griffon Engine room staff will remove the oil from this tank prior to the work being done. The old valve shall be removed and returned to the Coast Guard. The first section of outlet piping is to be removed and modified to suit the new valve.

10.4.5.5 Main Engine Lube Oil Tanks - There will be oil in these storage tanks during the refit period so the valves will have to be installed one tank at a time. The Griffon Engine room staff will assist the Contractor in transferring the oil in these tanks from one tank to the other prior to the work being done. The old valves shall be removed and returned to the Coast Guard.

10.4.5.6 The first section of outlet piping from each tank is to be removed and modified to suit the new valve.

10.4.6 New Valve Activation Tubing Installation

10.4.6.1 The Contractor shall run ¼” type 304 seamless stainless steel tubing from the remote station to each valve.

10.4.6.2 The tubing shall meet ASTM A213.

10.4.6.3 The Contractor shall utilize stainless steel compression fittings for this installation. Individual tube bulkhead penetrations for the line to the motor room shall utilize bulkhead unions.

10.4.6.4 The Contractor shall follow fitted cable and pipe runs as much as possible.

10.4.6.5 The tubing shall be secured with metallic clamps or strapping at 36” intervals.

10.4.6.6 The Contractor shall run the tubing to avoid any chafing due to vibration.

10.4.6.7 Where cable or pipe runs are not provided, the Contractor shall install welded supports to secure the tubing.

10.5 Testing & Inspection

10.5.1 The Contractor shall pressure test the modified lube oil piping to a test pressure of 100 psi.

10.5.2 The pressure test will be witnessed by the Technical Authority and TCMS surveyor.

10.4.3 The Contractor shall demonstrate the operation of the remote valves to the TCMS surveyor.

10.6 Documentation

10.6.1 The Contractor shall provide a report of the pipe pressure test results to the Technical Authority.

10.6.2 The Contractor shall provide a diagrammatic style drawing of the remote valve installation to the Technical Authority in electronic format.

DO NOT MODIFY

11.0 SHIP SERVICE GENERATOR FUEL PIPING MODIFICATIONS

11.1 General

11.1.1 The Ship Service Generators (SSGs) on the Griffon utilize a fuel feed tank in order to reduce the head of fuel on the generators from the vessel's day tank located a deck above the SSG diesels. CCG wishes to make modifications to the tank and piping to make the fuel system function properly. The tank and associated valves have never received any known maintenance - CCG wishes to overhaul the components at this time.

11.1.2 The Coast Guard will supply the following components as Government Furnished Equipment (GFE):

1. New float valve for the inside of the tank.
2. New remote closing style outlet valve.
3. New hand pump.
4. Two new 1" flanged globe valves to isolate the hand pump.
5. A new 1" socket weld check valve.
6. A new Suresite style level gauge with two float activated level switches.

11.1.3 All other pipe fittings, flanges, and materials shall be Contractor supplied.

11.2 Gas Freeing and Certification for Hot Work

The Contractor shall certify the following safe for hot work:

- Fuel feed tank
- Lower engine room inclusive of bilges.

11.3 References

11.3.1 Drawings:

Drawing No.	Drawing Title.	Electronic File No.
CMG05-192-PL	CCGS Griffon Diesel Oil Header Tank	CMG05-192-PL.pdf
Griffon SSG Fuel SH 1 and 2	CCGS Griffon SSG Piping - As Fitted/Proposed	Griffon SSG Piping Rev 1.pdf
G05SSGF-01	CCGS Giffon SSG Fuel Feed Tank - As Fitted Diagramatic	CCGS Griffon Fuel Feed Tank.pdf
G05SSGF-02	CCGS Giffon SSG Fuel Feed Tank - Proposed Diagramatic	CCGS Griffon Fuel Feed Tank Changes.pdf

11.3.2 Documentation:

Blackmer Hand Pump Manual
Liquid Level Gauge Description

11.3.3 Regulations:

Canada Shipping Act- Hull Construction Regulations- Latest version.
Canada Shipping Act - Marine Machinery Regulations - Latest version.

11.4 Technical

11.4.1 SSG Fuel Feed Tank Details - Mechanical

11.4.1.1 The tank construction details are shown on the reference drawing.

11.4.1.2 The tank is located in the lower engine room port side at frame 41.

11.4.2 SSG Fuel Feed Tank Details - Electrical

11.4.2.1 The tank is fitted with a low level alarm (float switch). This alarm is connected to the engine room Alarm and Monitoring system. It is fed to the Machinery Control Room rack at channel 0-4-11. Signal voltage 24 VDC.

11.4.3 Strip Out Requirements and Feed Tank Cleaning

11.4.3.1 The draining of the fuel feed tank shall be done in co-ordination with the draining of the fuel Day tank for the fuel tank survey section of this spec (required as the day tank supplies the SSG feed tank).

11.4.3.2 The Contractor shall drain the fuel feed tank of fuel - the contents may be transferred to the #2 DB Tanks.

11.4.3.3 The Contractor shall remove the side man hole cover of the tank and clean the two gasket surfaces.

11.4.3.4 The Contractor shall remove the float valve flange and clean the two gasket surfaces.

11.4.3.5 The Contractor shall remove the float valve.

11.4.3.6 The Contractor shall supply all materials and labor necessary to clean all internal surfaces of the tank.

11.4.3.7 The Contractor shall provide disposal documentation for all generated waste as per Provincial and Federal regulations to the Technical Authority.

11.4.3.8 The Contractor shall remove SSG Feed and return piping from the tank to the flange connection under the deck plates outboard of SSG#1.

11.4.3.9 The hydraulically activated quick close valve on the SSG supply line will be handed to the Coast Guard.

11.4.3.10 The Contractor shall remove the clean tank fuel return line to the flange at frame 44.

11.4.3.11 The Contractor shall remove the day tank fuel supply line to the flange at frame 44.

11.4.3.12 The Contractor shall remove the tank drain cock - this is to be handed to the Coast Guard.

11.4.4 Fuel Line and Tank Modifications

11.4.4.1 To be consistent with the fitted fuel oil piping on the Griffon, the Contractor to use socket weld steel fittings and flanges for all fuel piping.

DO NOT MODIFY

11.4.4.2 All piping shall be seamless steel, black pipe, Schedule 40 to A.S.T.M. Spec. A.53 Grade “A” or equivalent.

11.4.4.3 All piping to be secured to the ship’s framing to prevent vibration using removable pipe clamps.

11.4.4.4 All flange and cover gaskets shall be fuel compatible and are Contractor supply.

11.4.4.5 The Contractor shall install the GFE 1” check valve in the return line to the clean tank. Location as per supplied reference drawings. Exact location to be identified by the Technical Authority

11.4.4.6 The Contractor shall install the GFE 1-1/2” hydraulically actuated quick closing valve on the tank. Note this valve is dimensionally different than the fitted valve.

11.4.4.7 Refer to the Remote Closing Valve section of this specification for the actuator hydraulic line installation details.

11.4.4.8 The outlet piping to the generators is now to include a suction connection to the new hand pump.

11.4.4.9 The fitted outlet piping contains piping above the deck plates from a previous filter installation - this piping is not to be renewed.

11.4.4.10 The Contractor shall install the GFE hand pump and isolation valves at a suitable location at the feed tank. Location to be agreed to by Technical Authority before installation. The hand pump will be piped in according to the reference drawings.

11.4.4.11 The Contractor shall install the new GFE float valve inside the feed tank. Note that the new valve is 1-1/2” size and the pipe is 1-1/4” size - a Contractor supplied bushing shall be used.

11.4.4.12 The Contractor shall install the GFE Suresite style level gauge utilizing the drain connection and the sounding pipe as per the reference drawings.

11.4.5 Fuel Valve Overhaul

11.4.5.1 All valves fitted to this tank installation which will be re-used are to be overhauled at this time. The Contractor to dismantle each valve and clean all components. Valve discs are to be lapped to the seats to obtain 100% contact. The Technical Authority shall witness the contact before re-assembly. The valves are to be re-assembled with new gaskets and packing compatible with fuel oil.

11.5 Testing & Inspection

11.5.1 All new piping shall be subject to a pressure test of 100 psi. The tests shall be witnessed by the Technical Authority and also a TCMS surveyor.

11.6 Documentation

11.5.1 The Contractor shall provide the Technical Authority with copies of the pipe pressure test records recorded as per section Testing & Inspection of this specification item.

DO NOT MODIFY

12.0 LIFTING POINT INSTALLATION

12.1 General

12.1.1 The Griffon is in the process of testing and certifying all shipboard lifting points for TCMS. CCG wishes to install some 10 lifting points in the engine room at various locations.

12.1.2 Lifting Points will be GFM.

12.1.3 For bidding purposes the Contractor shall quote the services of a certified welder for 10 hours.

12.2 References

12.2.1 Regulations: Transport Canada Marine Safety - Tackle Regulations C.R.C. Chapter 1494 – Latest Version.

12.3 Technical

12.3.1 The Contractor shall provide a certified welder to weld the lifting points to the deckhead framing of the engine room.

12.3.2 The vessel's engine room staff shall provide fire watch personnel as required.

12.3.3 The point locations will be determined by the Technical Authority. The points will be certified for a SWL of 1.5 Tons (i.e. they will be load tested to twice the SWL).

12.4 Inspection Test and Trails

12.4.1 The Contractor shall arrange for the local TCMS inspector to witness a load test of the lifting points.

12.4.2 The Griffon ER crew will load test each point with a pull of 6000 lbs utilizing the vessel's test equipment. Test documentation will be done by the Technical Authority.

DO NOT MODIFY

13.0 REPAIR OF MIRANDA DAVIT SHEAVES

13.1 IDENTIFICATION

13.1.1 The Griffon crew will remove the eleven (11) sheaves of the Miranda davit.

13.1.2 The sheave bushings and pins are damaged and require renewal. The eleven sheaves and pins will be placed on the dock. 10 pins are identical - roughly 4" long x 2"diameter (note: vernier readings indicate the pins are machined 1.975" so 2" stock should work - this is to be verified by the Contractor at vessel viewing). The 11th pin is for the top double sheave and is longer at roughly 7". The diameter is the same as the other pins.

13.2 REFERENCES

13.2.1 Drawings:

Drawing No.	Drawing Title.	Electronic File No.
35117	General Arrangement MRT 3900 (STBD Side)	Miranda Davit Drawing 35117.pdf

13.3 TECHNICAL

13.3.1 The Contractor shall remove the sheaves from the Griffon dock and deliver them to the repair facility.

13.3.2 The Contractor shall supply 431 stainless steel material and all labour to machine new pins.

13.3.3 The Contractor shall supply bearing bronze (SAE 660) and all labour to machine new bushings.

13.3.4 The Contractor shall remove the old bushings from the sheaves.

13.3.5 The Contractor shall install and finish machine the new bushings in the sheaves. Clearances to be determined by the Contractor in consultation with the Technical Authority based upon measurements taken from the fitted pins and bushings.

13.3.6 The Contractor shall machine new pins and install new grease fittings in the pins.

13.3.7 The Contractor is to return the repaired sheaves and new pins to the Griffon dock.

13.3.8 The Griffon's crew will re-assemble the davit. The old pins to be returned to the Coast Guard.

13.4 DOCUMENTATION

13.4.1 The Contractor shall provide documentation certifying the type of materials used in the repair (i.e. pin and bushing material).

13.4.2 The Contractor shall also supply a final data sheet identifying all bushings and pin internal and external diameters taken at a minimum of 2 places on either side of the grease groove.

13.4.3 The Contractor shall provide a detailed drawing of the two pin types. The drawing shall be of sufficient detail to be used as a construction drawing.

DO NOT MODIFY

14.0 RELOCATION OF GALLEY POWER PANEL (SURVEY ITEM)

14.1 General

14.1.1 TCMS has determined that the fitted installation of the galley distribution panel PCC-1 is unsafe and this panel must be re-located. All work to be as per supplied TCMS approved drawing.

14.2 Gas Freeing and Certification for Hot Work

14.2.1 The Contractor shall certify the following safe for hot work:

- Upper and lower motor room.
- MCR
- Galley.

14.3 References

14.3.1 Drawings:

Drawing No.	Drawing Title.	Electronic File No.
(TCMS APPROVED Drawing) 780022 Rev E	CCGS Griffon 240 Volt Distribution Panels	780022 rev E.pdf
CMG05-246-M1 Sh 3/3	Griffon Structural Fire Protection	Griffon Structural Fire Protection.pdf

14.3.2 Regulations: TCMS - Electrical Standards - TP127E – Latest Version
TCMS - Guide to Structural Fire Protection - TP11469E – Latest Version

14.3.3 Documentation : TCMS supplied SI-07 deficiency notice copy

14.4 Technical

14.4.1 Fitted Installation

14.4.1.1 The 240 volt galley power panel PCC-1 is located in the galley under the steam table.

Feed for PCC-1 comes from Galley Panel NP-31 via cable 12-NP-31.
The circuits fed from PCC-1 are:

1. Port food wells of steam table. (40 amp breaker)
2. Hot water urn. (30 amp breaker)
3. Starboard food wells of the steam table. (15 amp breaker)
4. Starboard 240 volt galley receptacle (15 amp breaker).
5. Plate Warmer (15 amp breaker)
6. Port 240 volt galley receptacle (15 amp breaker).
7. Warming Light (15 amp breaker).
8. Spare (15 amp breaker).
9. Aft 240 volt crew's mess receptacle (15 amp breaker).
10. Spare (15 amp breaker).
11. Forward 240 volt crew's mess receptacle (15 amp breaker).

14.4.1.2 The supply cable (12-NP-31) from NP-31 to PCC-1 transits as follows:

a. Down from NP-31 through the main deck at frame 18 via a deck stand pipe.
b. Forward through the aft motor room bulkhead at frame 24 via a multi-cable transit.
c. Through the motor room forward at the deckhead via cable trays.
d. Through the forward motor room bulkhead at frame 37 via a single pipe transit in to the deckhead space of the Machinery Control Room (MCR).
e. From the MCR deckhead up through the main deck via a single pipe transit to the plinth space under the steam table. In to PCC-1 at that location.

14.4.2 Strip Out Requirements

14.4.2.1 The Contractor is to disconnect the cabling to PCC-1 and remove the power panel - this panel will be re-located.

14.4.2.2 The Contractor shall strip back the feed wire 12-NP-31 in to the motor room area - this cable will be re-used.

14.4.2.3 The following cables from PCC-1 will be stripped out:

1. Port food wells of steam table.
2. Hot water urn.
3. Starboard food wells of the steam table.
4. Plate Warmer
5. Warming Light

DO NOT MODIFY

14.4.2.4 The following cables from PCC-1 will be re-used as they cannot be stripped out:

1. Starboard galley receptacle.
2. Port galley receptacle.
3. Aft crew's mess receptacle.
4. Forward crew's mess receptacle.

14.4.3 Relocation of the Panel

14.4.3.1 The PCC-1 is to be re-located to the forward motor room bulkhead - at frame 37.

14.4.3.2 The Contractor shall locate the panel approximately 5 feet of off the centerline to port. The Contractor shall mount the panel with angle iron stand-offs welded to the bulkhead. The feed cable 12-NP-31 will not be able to reach the new location of PCC-1. The Contractor is to supply, install, and mount a suitably sized NEMA 4 rated junction box in the motor room on the deckhead framing. The feed cable 12-NP-31 will be terminated in this junction box. The Contractor shall supply and install a new approved three conductor two gauge cable from the new junction box to the PCC-1 panel as per TCMS approved drawings. Watertight cable glands are to be used at the new junction box.

14.4.4 Installation of Two New Transits

14.4.4.1 The Contractor shall install two new Roxtec cable transits - the transits are GFM. The transit frames are mild steel and are to be welded in place.

14.4.4.2 One transit will be installed above and outboard of the watertight door on the forward motor room bulkhead (frame 37). Two low voltage communication cables will have to be disconnected in the motor room and stripped back in to the MCR prior to transit installation. After installation the cables are to be re-run and connected via the new transit.

14.4.4.3 The second transit is to be installed in the main deck under the steam table at the same location as the pipe transit used for cable 12-NP-31. The bottom of the cabinet under the steam table may have to be cut away to install this transit. CCG will supply stainless sheet metal to repair this cabinet after all work is completed. After all cabling has been run the Contractor shall pack these transits and the transits are to be presented to the TCMS surveyor.

14.4.5 Running of New Cabling

14.4.5.1 The Contactor shall identify all new cabling and wires with the circuit designation at all points of connection. Tags shall be of metal compatible with the armor or cable sheathing. Both ends of the tags shall be strapped to the cable with compatible metal strap after all painting has been completed. Straps shall pass through holes in the tags so that tags are positively secured. Strap ends shall be permanently folded and crimped. Adhesives of any kind will not be acceptable.

14.4.5.2 The Contractor shall be responsible for installing any new cableways required.

DO NOT MODIFY

14.4.5.3 The Contractor shall supply new TCMS approved cabling of appropriate size through the new transits to the following loads:

1. Port food wells of steam table.
2. Hot water urn.
3. Starboard food wells of the steam table.
4. Plate Warmer.
5. Warming Light.

14.4.5.4 Due to the load cables to receptacles running behind bulkhead panels these cables will be retained and terminated in a junction box under the steam table. The Contractor shall supply and install a new Nema-4 junction box under the steam table. This JB is to be as small as possible to incorporate 4 circuits:

1. Starboard 240 volt galley receptacle
2. Port 240 volt galley receptacle
3. Aft 240 volt crew's mess receptacle (not used)
4. Forward 240 volt crew's mess receptacle (not used)

14.4.5.5 Two new cables are to be run to the junction box from the re-located PCC-1 to feed the two galley receptacles (toasters). The two crew's mess circuits will be terminated in the JB and labeled - these circuits will not be powered.

14.4.5.6 All cables entering the new JB will utilize WT glands.

14.5 Inspection Test and Trails

14.5.1 The Contractor shall perform an insulation test on all new cabling. The results will be incorporated in Megger Report delivered as part of this specification.

14.5.2 The Contractor shall present the final installation to the local TCMS Surveyor for approval prior to replacement of any deckhead panels or covers.

14.6 Documentation

14.6.1 The Contractor shall update drawing 780022 Rev E to indicate changes, additions (junction boxes), wire numbers, cable sizes, etc. Drawings to be provided as per section 1.12.

14.6.2 The Contractor shall ensure that TCMS agrees the new installation rectifies the SI - 07 deficiencies. This will be accomplished by TCMS signing the item off on the original SI-07 form - held on board the Griffon.

DO NOT MODIFY

15.0 GALLEY WATER DRAIN PIPING REPAIRS

15.1 General

15.1.1 The Griffon has a requirement to repair corroded Galley water drain pipe. The pipe is located at upper motor room on frame 37.

15.2 Gas Freeing and Certification for Hotwork

15.2.1 The Contractor shall certify the following safe for hot work:

- Upper Engine Room
- Lower Engine Room
- Transformer Room
- Upper Motor Room
- Lower Motor Room

15.3 Reference

15.3.1 Drawings:

Drawing No.	Drawing Title.	Electronic File No.
G05GREYW2012	Griffon Galley Water Drain Piping	G05GREYW2012.pdf

15.4 Technical

15.4.1 Grey Water Lines:

15.4.1.1 The Contractor to note work shall be done at the same time as Section 14 Relocation of Galley Power Panel to take advantage of the period when the Galley is shut down for repairs.

15.4.1.2 The Contractor shall supply all labour and material to complete this section.

15.4.1.3 The Contractor shall replace a section of Galley Drain piping where it passes through the watertight bulkhead at frame 37 in the Upper Motor Room and install new pipe couplings on each end of the pipe. The section of 3” sch. 40 pipe to be replaced is approximately 20” long. The pipe couplings shall be Victaulic Roust-A-Bout Style 99 plain end system or similar. The Contractor shall follow the coupling manufacturer’s pipe preparation recommendations prior to final install of the pipe couplings.

15.4.1.4 The Contractor shall crop the 3” steel pipe 8” aft of the bulkhead at frame 37 and 12” forward of the bulkhead at frame 37.

DO NOT MODIFY

15.4.1.5 The Contractor shall remove the bulkhead plate sealing this pipe to the bulkhead and grind flush the bulkhead surface.

15.4.1.6 The Contractor shall install a new section of pipe complete with new 5" X 5/16" bulkhead plate and pipe couplings on either end.

15.4.1.7 The Contractor shall continuously fillet weld the bulkhead plate and pipe to the bulkhead to re-establish the bulkhead's watertight integrity.

15.4.1.8 Prior to installation, the Contractor shall provide documentation to the Technical Authority showing the weld technique and welding material proposed is suitable for this purpose.

15.5 Inspection Test and Trials

15.3.1 The Contractor shall test the Galley drain pipe by having the Griffon crew operate all the affected equipment in the Galley and inspect for leaks. Any leaks will be repaired at the Contractor's expense.

16.0 SEWAGE PLANT PARTIAL VENT REPLACEMENT

16.1 General

16.1.1 The Griffon's sewage plant is vented via a 6" pipe running forward from the sewage flat to the lower engine room then up the stack. The lower run of this vent is relatively horizontal and the thin wall mild steel pipe is rotted through in many places. Coast Guard requires replacement of this pipe with stainless steel pipe. In addition, a float chamber and alarm switch is to be installed to detect when the sewage plant backs up in to the vent.

16.2 Gas Freeing and Certification for Hot Work

16.2.1 The Contractor shall certify the following spaces safe for hot work:

- Lower Engine Room
- Lower Motor Room
- Sewage Flat (Shaft Compartment)

16.3 References

16.3.1 Drawings:

Drawing Number	Drawing Title	Electronic File Name
G05-SV1	Sewage Plant Vent Line - Fitted	Griffon Fitted Sewage Vent.pdf
G05-SV2	Sewage Plant Vent Line - Proposed	Griffon Proposed Sewage Vent.pdf
G05-SV3	Sewage Plant Vent Line - Proposed Construction Details	Griffon Proposed Sewage Vent Details.pdf

16.4 Technical

16.4.1 Operational Considerations

16.4.2 The sewage plant is to remain operational during the work period so the Contractor is expected to complete the work in a staged manner. The Griffon ER staff will work with the Contractor to turn off the sewage plant blowers as required - this reduces flow in the vent line.

16.4.3 Vent Description

16.4.3.1 The vent line to be replaced runs from the PVC flange in the sewage plant forward to where the vent pipe turns vertical up the stack. The vent is thin wall mild steel pipe with rolled grooves to accept Victaulic FireLock style couplings and fittings. The Victaulic connectors and fittings will be re-used - Contractor to supply new rubber inserts. Where the vent passes through watertight bulkheads at frames 24 and 36, the vent pipe is welded to the bulkhead.

16.4.4 Fitted Vent Pipe Removal

16.4.4.1 The fitted vent pipe, as indicated on the reference drawings, is to be removed and disposed of by the Contractor.

16.4.4.2 The Contractor shall ensure any contents of the vent line - liquid or solid - does not contaminate the bilges or any other part of the ship during removal. The Contractor shall be responsible for disposal of all solid waste from the vent line. The Coast Guard will assist in disposal of any liquid in the vent line - there is a sewage pump out connection on the dock at Prescott which can be used.

16.4.4.3 The Contractor shall remove the pipe from the bulkheads at frames 24 and 36. The old weld shall be ground flush in preparation for the new pipe install.

16.4.5 Bulkhead Penetrations

16.4.5.1 At the bulkhead penetrations, the new vent pipe will be type 316 stainless steel schedule 40 and will be continuously welded to the mild steel watertight bulkheads on both sides.

16.4.5.2 Prior to installation, the Contractor shall provide documentation to the Technical Authority showing the weld technique and welding material proposed is suitable for this purpose.

16.4.6 Float Tank Installation

16.4.6.1 The reference drawings show the location of the new float tank. The tank is to be located aft of the starboard propulsion motor. The tank is to utilize the space under the circuit breaker platform. The reference drawing shows a suggested design for the float tank - the Contractor is responsible for construction of a tank to fit in to the space available.

16.4.6.2 The Contractor is to take into account obstructions, support of the tank on the ship's structure, and alignment of the piping when constructing the tank.

16.4.6.3 The Contractor shall support the new vent tank so that the weight of this tank is not carried by the piping.

DO NOT MODIFY

16.4.6.4 The Contractor is responsible for all materials associated with the construction and mounting of the tank. The tank is to be constructed of schedule 40 type 316 stainless pipe.

16.4.6.5 The Contractor shall supply two Mobery float switches (one to be a spare) type A181D/F84 and one mounting flange for this switch (PN 71020/107).

16.4.6.6 Note that the Coast Guard will be responsible for the electrical connections to the float switch.

16.4.7 Vent Replacement

16.4.7.1 The sections of vent line not penetrating bulkheads will be Schedule 10 type 316 stainless steel pipe. This pipe will be grooved to accept the Victaulic fittings. The new installation has two more 6" Victaulic couplings than the old line - the Contractor shall supply these fittings.

16.4.7.2 The Contractor shall supply the following stainless steel (minimum150# rated) ball valves:

- Five 1" valves for the vent line drains
- One 1-1/2" valve for the float tank drain.
- Two 1" valves for the flushing points.

16.5 Inspection, Test and Trials

16.5.1 After final installation of the new vent line, the Coast Guard will assist the Contractor with flooding the entire line with fresh water.

16.5.2 The vent line will be inspected for leaks when flooded.

16.5.3 Any leaks due to the work of the Contractor shall be repaired at the Contractor's expense.

16.5.4 The flooding test will be repeated as required until the line is proven leak free.

DO NOT MODIFY

17.0 NEW RADAR WIREWAY AND TRANSIT INSTALL

17.1 GENERAL

17.1.1 CCGS Griffon will be renewing the radar navigation system on board thus requires new transits, wireways installed as part of the new system.

17.1.2 The Contractor shall install new wireways, transits and hollow steel structure where required. This hollow steel structural square tube will be installed through the Upper Flume Tanks to provide a wireway for passage of cables into the Tween Deck. A new cable tray system will be installed by the Contractor from the forward Flume Tank bulkhead to the Forward Cargo Hold bulkhead and from the Forward Cargo Hold bulkhead to the transit into the M-G Set Compartment.

17.2 BACKGROUND

17.2.1 The Cargo Hold deck head and bulkheads are insulated with a sprayed fiber fire-resistive material called Cafco Deckshield on to chicken wire to an A-60 rating. This is a porous insulation that readily retains dirt and debris.

17.2.2 A new wire way was installed which commences in the deckhead of the Captain's Cabin on the Bridge Deck and passes down through the accommodations, between Frames 58 and 59 to the Upper Deck.

17.2.3 Recently two new dual Roxtec transits were installed in the Winchman's cabin and the Aft ER Workshop bulkhead to allow the passage of cables into the Engine Room and forward into the ER Workshop.

17.3 GAS FREEING TANKS AND COMPARTMENTS

17.3.1 This specification shall be performed in conjunction with Fuel tank cleaning and inspection Section 5.0. The Contractor shall perform all necessary work to have the following tanks and compartments certified. "Safe For Hot Work" prior to the commencement of hot work on the Flume Tanks:

1) Port Settling Tank
2) Clean oil Tank
3) Stbd Settling Tank
4) Upper Flume Tank
5) Lower Flume Tank

17.3.2 The Contractor shall have the following compartments certified "Safe For Hot Work":

1) Engine Room Workshop
2) Cargo Hold (inclusive of Tween deck)
3) Buoy Winch Compartment

DO NOT MODIFY

17.3.3 The Tween Deck is composed of plywood. The Contractor shall supply all labour and materials to take all necessary precautions to ensure the deck is protected from damage and fire for the duration of the work in this specification.

17.3.4 The Cargo Hold bilge wells (Port and Stbd at Frame 78) shall be cleaned of oil residue.

17.3.5 The Contractor shall be responsible for provision of fire watches in the affected spaces.

17.3.6 The Griffon's engine room staff will be responsible for emptying the Upper and Lower Flume Tanks prior to commencement of the work.

17.4 REFERENCES

17.4.1 Drawings:

Drawing No.	Title	Electronic file
Dwg. No. 786111 sht 1/1	Griffon Radar Block & connection Diagram Rev. E Sht 1/1	Dwg No. 786111 sht 1/1.pdf
EN12527-01 Rev1 sht 1/2	New radar wire way installation	EN12527-01 Rev1 sht 1/2.pdf
EN12527-01 Rev1 sht 2/2	New radar wire way installation	EN12527-01 Rev1 sht 2/2.pdf

Standards:

Document	Title	Remarks
70-000-000-EU-JA-001	CCG Specification for the Installation of Shipboard Electronic Equipments	Table 1 Recommended Cable Separation for Electronic Navaid and Communication Equipments
VapCor Marine	VapCor Marine Coat 195W	Product Sheet
TP 127 E	TCMS Ships Electrical Standards	

17.4.2 List of GFM:

1. Roxtec unit complete (3 No.)

17.5 TECHNICAL

17.5.1 GENERAL

17.5.1.1 The Coast Guard has developed a production drawing. The drawings are been presented on the reference section and is not to be deviated from with out the consent of the Technical Authority.

17.5.1.2 The Contractor shall note all welding in this specification shall be performed by welders certified by CWB for steel and shall conform to CWB standards.

17.5.2 STRIPOUT

17.5.2.1 The ship's crew will be responsible for removal of any cabinets stored in way of the work being performed in the Engine Room Workshop, Tween Deck, Cargo Hold, Buoy Winch Compartment and M-G Set Compartment prior to the work taking place.

17.5.2.2 The Contractor shall supply all labour, equipment and materials to perform the strip out work. All other required strip out items not mentioned below shall be the responsibility of the Contractor.

17.5.2.3 STRIPOUT FLUME TANK BULKHEADS

17.5.2.3.1 The Contractor shall remove and dispose of the A-60 bulkhead insulation in the area where the upper flume tank transit tunnel will be installed on the forward side of the bulkhead at Frame 71. An area of approximately 9 square feet shall be removed.

17.5.2.3.2 The Flume Tank interior coated with corrosion prevention coating VapCor Marine Coat 195W. The Contractor shall remove an area of approximately 9 square feet of tank coating in each area where the transit tunnel will be installed between bulkheads at Frame 71 and 67. The Contractor shall be responsible for all labor and materials required and cleanup associated with this work.

Due to VapCor Marine Coat 195W coating adheres to anything it touches thus precautions shall be taken by the Contractor not to track the coating outside the Flume Tank.

17.5.2.3.3 The Contractor shall be responsible for containing and disposing of all refuse as a result of the tank coating removal and cleanup.

17.5.2.3.4 The Contractor shall remove the perforated aluminum sheathing and insulation in the area of the structural steel tube install on the aft side of the bulkhead at Frame 67. A section at least 9 square feet shall be removed and discarded. Where it is deemed welding or modifications will damage or interfere with linings or insulation and cannot be protected from damage, these materials are to be removed and over the extent required and reinstalled in good condition after the hot work has been completed.

17.5.2.3.5 The Contractor shall take care not to disturb the CO2 flooding system that is located adjacent to the work.

DO NOT MODIFY

17.5.2.4 STRIPOUT BUOYWINCH COMPARTMENT

17.5.2.4.1 In order to install the new Roxtec Transit on the Port side of the Bouywinch Compartment at Frame 95, the bulkhead shall be prepared for hot work. The Contractor shall remove the aluminum sheathing and bulkhead insulation to clear an area approximately 6 square feet. The Contractor shall carefully remove the aluminum sheathing, modify it and reinstall upon completion of the work. Insulation and sheathing that is damaged during removal will be replaced by the Contractor at the Contactor's expense.

17.5.2.4.2 The ships staff will be responsible for removing the items stored in the aft corner of the compartment, items stored in the Port aft cabinet and removal of the cabinet prior to the start of the work.

17.5.2.4.3 The Contractor will be required to install a cable tray from the new Roxtec transit leading to the pipe transit for the Radar equipment inboard of the Winch Compartment stairwell at Frame 107.

The Contractor shall carefully release and remove sections of aluminum sheathing and insulation where required in order to install the new wireway on the deckhead.

17.5.2.4.4 The Contractor shall develop a wireway route that will take into account the minimum disruption to the deckhead sheathing and insulation and adequately support the cable tray it's entire length. The cable tray shall not be supported from the aluminum sheathing.

17.5.2.5 STRIPOUT FORWARD CARGO HOLD BULKHEAD (FRAME 95)

17.5.2.5.1 The Contractor shall remove an area of 4 square feet of the Cafco A-60 bulkhead insulation in way of the intended Roxtec transit installation on bulkhead at Frame 95.

The intended area for the new transit shall be vertically in-line with the Midship Winch hydraulics lines and as per attached radar wireway installation drawing. Exact location shall be confirmed with the Chief Engineer once the aluminum sheathing in the Buoywinch Compartment has been removed.

DO NOT MODIFY

17.5.3 INSTALLATION

17.5.3.1 TRANSITS INSTALL

17.5.3.1.1 All A-60 Roxtec bulkhead transits shall be GFM. All other material and equipment required in order to complete this specification shall be the responsibility of the Contractor.

17.5.3.1.2 The Contractor shall ensure all bulkhead transits are installed and assembled in compliance with the conditions specified in the certificate of approval for the transit and the details shown on the manufacturer's approved drawing and guidelines and in compliance with TP 11469 - Guide to Structural Fire Protection.

17.5.3.2 CABLE TRAYS INSTALL

17.5.3.2.1 The Contractor shall follow the supplied production drawing showing new radar wire way installation plan sheets 1/2 and 2/2.

17.5.3.2.2 All cable trays referred to in this specification shall be steel, bottom-ventilated, corrugated, non-corrosive, trough type having a depth of 2 ½" to 3" and of a modular design to allow easy assembly and support. They shall be designed so that there are no burrs, projections, or sharp edges to damage cable insulation. The tray and fittings shall be Contractor supplied.

17.5.3.2.3 Cable trays shall be rigidly supported along their entire length and installed according to manufacturer's recommendations.

17.5.3.2.4 Where cable trays are slung or supported by angle brackets, they will be bolted to the supports to prevent the tray vibrating or moving within the support. The Contractor shall ensure that all cable trays are supported in such a way to prevent vibration, exposure to excessive heat or moisture and does not obstruct access ways or create hazards where hazards did not previously exist.

17.5.3.2.5 Where cable trays make turns the appropriate cable trays system fittings shall be installed and connected to the straight sections with lockable, non-corrosive fasteners.

17.5.3.3 INSULATION INSTALL

17.5.3.3.1 Insulated area affected due to the installation as a part of this specification shall be replaced with chicken wire and re-sprayed to match existing.

17.5.3.4 UPPER FLUME TANK CABLE TRANSIT TUNNEL INSTALL

17.5.3.4.1 The Contractor shall supply and install a structural steel tube transit tunnel from the aft bulkhead of the Upper Flume Tank (Frame 67) to the forward bulkhead of the Upper Flume Tank (Frame 71) with Roxtec transits Type SF6 X 1 welded on each ends. The tube shall be welded inside and outside both bulkheads according to the drawings provided. The Roxtec transits Type SF6 X 1 two complete set supplied will be GFM.

17.5.3.4.2 The Contractor shall be responsible for all craneage and rigging required to load, position and fit the structural tube. The Contractor to note Griffon's crane will be out of service for modifications from October 01 to 12, 2012. The Contractor should take this into account in the production schedule.

17.5.3.4.3 The structural steel tube to be 12" X 8" X 3/8" CSA G40.20 GR.44W Hollow Structural Section.

17.5.3.4.4 The Contractor shall note the bulkhead plating is 5/16" thick and is vertically stiffened in the area concerned at intervals of 24". The Contractor shall locate and layout the proposed crop lines and confirm location with the Chief Engineer prior to cutting and according to the drawings provided. The penetration shall be centrally located between vertical stiffeners.

17.5.3.4.5 The Contractor shall develop and adhere to welding schedules that will prevent the distortion of the Flume Tank bulkheads and transition plates. The welding schedule shall be developed and presented to TCMS for approval prior to the work commencing.

17.5.3.4.6 The Contractor shall crop a hole in the forward and aft Flume Tank bulkheads, position the structural tube, fit and weld the structural tube according to the drawings provided.

17.5.3.4.7 The Contractor shall submit the Upper Flume Tank to a hydrostatic test.

17.5.3.4.8 Upon a successful hydrostatic test of the Upper Flume Tank, the Contractor shall coat any bare steel as a result of the tunnel install with one coat of Interprime 198 primer and two coats of Intersheen 579 White.

17.5.3.4.9 The Contractor shall then repair the Cafco insulation in the Tween Deck with new insulation to an A60 rating matching.

17.5.3.4.10 The Contractor shall modify and reinstall the insulation and aluminum sheathing on the bulkhead at Frame 67 in good order.

17.5.3.5 UPPER FLUME TANK AND TRANSIT TUNNEL COATING INSTALL

17.5.3.5.1 The Contractor shall remove the manhole cover Upper Flume Tank upon successful completion of testing, dry all exposed metal areas that were disturbed during the execution of this work and coat the exposed metal areas with VapCor Marine Coat 195W.

17.5.3.5.2 The Contractor shall be responsible for the labour, materials and equipment required to adequately touch up the affected areas according to manufacturer's recommendations.

17.5.3.6 WIRE TRANSIT AT FRAME 95 INSTALL

17.5.3.6.1 The Contractor shall install one Roxtec S6 X 1, A-60 rated wire transit on bulkhead 95. The Roxtec Transit will be GFM. The location of the transit shall be vertically in line with the Midship Winch hydraulic piping and as per supplied drawings. Exact location shall be determined on site in consultation with the Chief Engineer. The Contractor shall ensure the transit is centered between vertical bulkhead stiffeners. The Contractor shall note the bulkhead stiffeners in this area are 5" X 3 ½" X 3/8" steel angle spaced at 24" intervals.

17.5.3.6.2 The Contractor shall crop a rectangular penetration. Edges of the cropped opening shall be prepared for welding. The Contractor shall note the bulkhead plating is 9/32" thick in this location.

17.5.3.6.3 The Contractor shall develop a welding schedule that takes into the account the manufactures recommendations for A-60 bulkheads and prevents distortion of the bulkhead. The Contractor shall consult the transits manufacturers welding instructions prior to developing a welding schedule. The welding schedule shall be presented to TCMS authority for approval prior to commencing the work.

17.5.3.6.4 The Contractor shall weld the Roxtec transit to the bulkhead using a single continuous fillet weld on both sides of the bulkhead.

17.5.3.6.5 Upon final inspection of the transit, the Contractor shall coat any bare steel as a result of the transit install with one coat of Interprime 198 primer and two coats of Intersheen 579 White.

17.5.3.6.6 The Contractor shall modify and reinstall the insulation and sheathing in the Buoywinch Compartment. The Cafco insulation in the Cargo Hold shall be repaired with new insulation to an A60 rating.

17.5.3.7 CARGO HOLD WIREWAY INSTALL

17.5.3.7.1 The Contractor shall create a passage for the installation of a wireway passing from the new transit on bulkhead 95 to the aft side of Deep Frame 78. The Contractor will be required to penetrate the Deep Frames 78, 81, 84, 87 & 90 and supply as well as install required extra strengthening, cable trays and cable tray support arrangement as per supplied drawing, details of new radar wire way installation sheet 2/2.

17.5.3.7.2 The Contractor shall layout a wireway passage whose centerline will be parallel to and vertically in-line with the Midship Winch hydraulic piping and will align horizontally with the centerline of the new transit on bulkhead 95.

17.5.3.7.3 The Contractor shall crop flat oval shaped penetrations in the Deep Frames 78, 81, 84, 87 and 90 having 4" X ½" fabricated ring reinforcement. The opening shall have radiuses at both ends of 2". The radii shall be for continuous fillet welded on both sides of the Deep Frame plating as per supplied drawings.

17.5.3.7.4 The Contractor shall weld 2" X ¼" X 6" angle longitudinally on both sides of the deep frame plating to support the cable tray sections which will be installed between each deep frame. The arrangement of the angles provided on the supplied drawings.

17.5.3.7.5 The Contractor shall supply a cable tray system that is steel, non-corrosive, modular, bottom ventilated, 2.5 to 3" deep and 12" wide. For bidding purposes, the amount of cable tray required in the Cargo Hold area is approximately 40 feet in total length. The span between deep frames is 6 feet and the span between deep frame 90 and bulkhead 95 is 10 feet.

17.5.3.7.6 The Contractor shall install the cable tray in between each deep frame span and from deep frame 90 to bulkhead 95. The section of cable tray leading to bulkhead 95 from bulkhead 71 shall be suitably supported on it's span.

17.5.3.7.7 The cable trays shall be supported mid span by tray hangers welded to the under deck structure.

17.5.3.7.8 After coatings are applied as specified, the Contractor is responsible for the labour and material for the removal and replacement of all insulation required to complete the welding.

17.5.3.7.9 The cable tray shall be rigidly bolted to each location where the steel angle is supporting the tray. The fasteners shall be non corrosive and employ lock washers.

17.5.3.8 TWEEN DECK WIREWAY INSTALL

17.5.3.8.1 The Contractor shall develop a cable tray route for approval by the Chief Engineer prior to commencing the work. For bidding purposes, the length of cable tray required is 21 feet in the Tween Deck area. The cable tray route will contain 45 and 90 degree bends in order to line up with the penetration at Deep Frame 78. The route shall take into account all interference items at deckhead level. Should fixtures require relocation, the Chief Engineer shall be consulted for approval on an individual item basis. The Sprinkler piping and existing wireway in this area shall not be modified.

17.5.3.8.2 The Contractor shall install 12 inch wide cable tray from the transit at the Upper Flume Tank fwd bulkhead at Frame 71 to the penetration at Deep Frame 78. The cable tray to follow the path indicated on the supplied drawings to accept the cables from the transit at Frame 71 such that no obstruction exists at the top of the stairway and the cables are protected from abrasion by traffic in the stairway area.

17.5.3.8.3 The Contractor shall ensure the cable tray shall be installed as close to the deck beams as possible in the Tween Deck area.

17.5.3.8.4 The cable tray shall be rigidly supported from the deckhead structure. The Contractor shall be responsible for the removal and re-insulating of deckhead structure in order to complete this work.

17.5.3.9 BOUYWINCH COMPARTMENT WIREWAY INSTALL

17.5.3.9.1 The Contractor shall install a 12” wide by 2.5”- 3” high cable tray from the new cable transit at Frame 95 leading to the pipe transit for the Radar equipment inboard of the Winch Compartment stairwell at Frame 107.

17.5.3.9.2 The Contractor shall develop a wireway route that will take into account the minimum disruption to the deckhead sheathing and adequately support the cable tray along it’s entire route.

17.5.3.9.3 The wireway shall be rigidly supported to the deckhead structure at 48” spans. The Contractor shall not attach the wireway to the deckhead sheathing. Where attachment points are required and sheathing and insulation are to be removed, openings shall be cut in the sheathing and insulation then replaced in good order. Existing or redundant brackets already existing may be used. Any fixtures, wiring or junction boxes that require relocation as a result of this work shall be approved by the Chief Engineer in advance and shall be noted by the Contractor and allotted for accordingly.

17.5.3.10 COATINGS

17.5.3.10.1 Before any cables are run, the Contractor shall coat all bare steel with one coat of Interprime 198 primer and two coats of Intersheen 579 White. (TP127 E).

17.6 INSPECTION AND TESTING

17.6.1 The Contractor shall develop an inspection and test plan for approval by the TA.

17.6.2 Prior to commencing the work the Contractor shall submit to the TCMS for approval all welding schedules for the bulkhead and deep frame penetrations.

17.6.3 The Contractor shall afford the TCMS authority adequate opportunity to perform all inspections of the work in order to receive approval. The Contractor shall be responsible for scheduling and arranging inspection of the work.

17.6.4 Upon completion of this work the Contractor shall arrange for the inspection of welds by the Technical Authority and the TCMS Inspector. All noted defects shall be ground out to the root and rewelded to the satisfaction of TCMS at no cost to CCG.

17.6.5 The Contractor shall close the tank covers for the Upper and Lower Flume Tanks and shall install new Contractor supplied fibre-re-inforced neoprene gaskets for these tanks covers.

17.6.6 The Contractor shall submit the Upper Flume tank to a hydrostatic test to a 2.5 meter (8 foot) head of water. The Contractor shall blank all suction/discharge lines, sounding pipes and vents during the test. The Contractor shall be responsible for supplying, fitting, and subsequent removal of blanks. The pressure test shall be witnessed by the TCMS Inspector and the Technical Authority.

17.6.7 Upon successful completion of testing, the Contractor shall arrange for Griffon staff to dump the contents of the Upper Flume Tank to the Lower Flume Tank so that tank entry can be made to repair coatings.

17.7 DOCUMENTATION

17.7.1 The Contractor shall submit copies of the Inspection and Test Plan prior to the work commencing to the Technical Authority.

17.7.2 The Contractor shall submit a completed Inspection and Test Plan sign off sheet upon completion of this work as proof all inspections were carried out.

DO NOT MODIFY

18.0 PORT WATERTIGHT VENT TRUNK REPAIR

18.1 GENERAL

18.1.1 CCGS Griffon Cargo Hold is ventilated by two cowlings located on the Upper Deck which passes air down into the watertight vent trunkings located Port and Starboard. The watertight vent trunkings runs from the Engine Room Workshop at Frame 66, through the Upper Flume tank at Frame 67 to the forward bulkead at Frame 71. The Port side watertight vent trunk is in way of the entrance hatch for the Tween deck, it is this section of the vent trunk that is partially corroded and must be repaired.

18.2 SCOPE OF WORK

18.2.1 This work shall be completed in conjunction with Fuel Tank Cleaning and Inspection Section 5.0 and Section 17.0 Radar Wireway and Cable Install to reduce the amount of duplication involved in tank cleaning and certifying, hotwork, testing, tank re-coating and bulkhead re-insulating. The Contractor shall allot for savings realized by having common tasks in different sections of the specification completed at the same time.

18.2.2 The Contractor shall prepare the appropriate tanks and compartments safe for hotwork. Remove the insulation on the forward side of the bulkhead at Frame 71, install a temporary support structure between longitudinal girder and Frame 71, crop corroded section of vent trunking and weld new insert steel plating in its place

18.2.3 Upon a successful hydrostatic pressure test, the tank surface coatings shall be renewed and the bulkhead insulation repaired by the Contractor. Remove the temporary structure after completion of tank pressure testing.

18.3 GAS FREEING TANKS AND COMPARTMENTS

18.3.1 This specification shall be performed in conjunction with Section 5.0 and Section 17.0. The Contractor shall perform all necessary work to have the following tanks certified “Safe For Hot work” prior to the commencement of hot work on the Flume Tanks:

1) Port Settling Tank
2) Clean Tank
3) Stbd Settling Tank
4) Upper Flume Tank
5) Lower Flume Tank

18.3.2 The Contractor shall have the following compartments certified “Safe For Hot work”:

1) Engine Room Workshop
2) Cargo Hold (inclusive of Tween deck)

18.3.3 The Cargo Hold bilge wells (Port and Stbd at Frame 78) shall be cleaned of oil residue.

DO NOT MODIFY

18.3.4 The Tween Deck is composed of plywood. The Contractor shall supply all labour and materials to take all necessary precautions to ensure the deck is protected from damage and fire for the duration of the work in this specification.

18.3.5 The Contractor shall be responsible for provision of fire watches in the affected spaces.

18.3.6 The Griffon's engine room staff will be responsible for emptying the Upper and Lower Flume Tanks prior to commencement of the work.

18.4 REFERENCES

18.4.1 Drawings:

Drawings	Title	Electronic file No.
664-120-10	Oil and StabilisationTanks, O.T. and W.T. Bhds. Fwd	G05A0867.MIL Rev. 3.pdf
EN12527-02 Rev 1 sheet 1/2	Vent trunk repair	EN12527-02 Rev 1 sht 1/2,pdf
EN12527-02 Rev 1 sheet 2/2	Vent trunk repair	EN12527-02 Rev 1 sht 2/2.pdf

18.4.2 Standards: Transport Canada Marine Safety – Hull Construction Regulations (Latest Version)

18.5 TECHNICAL

18.5.1 GENERAL

18.5.1.1 CCG has developed a production drawing. The drawings been presented on the reference section and is not to be deviated from with out the consent of the Technical Authority.

18.5.1.2 The Contractor to note Cargo Hold deck head and bulkheads are insulated with a sprayed fiber fire-resistive material called Cafco Deckshield on to chicken wire to an A-60 rating.

18.5.2 STRIPOUT

18.5.2.1 The Contractor shall remove the tank coating and insulation in the area where the hot work shall take place. The Contractor shall be responsible for all labour and materials required to complete this work. All refuse produced as a result of this work shall be disposed of by the Contractor on a daily basis according to Provincial environmental regulations The Contractor shall take all necessary precautions to prevent the tracking of the tank coating throughout the vessel.

18.5.2.2 Where solvents are used to remove the coating, adequate ventilation shall be provided to prevent the fumes from traveling outside the tank and into the vessel's work spaces.

18.5.2.3 The Contractor shall note the vent trunk steel plating is 3/8" thick and the bulkhead at Frame 71 is 5/16" thick.

DO NOT MODIFY

18.5.2.4 The Contractor shall supply and install a W6 x 25 I beam to be installed as a temporary support of the longitudinal girder in the cargo hold area of the vent trunk repair. This support will be approximately 5 feet long.

18.5.2.5 The Contractor shall prepare the attachment area on the bulkhead at Frame 71 and longitudinal girder to weld a temporary support out of W6X25# beam as per the supplied drawings before the release of the Vent Trunk section. Exact location of the support shall be confirmed in consultation with the Technical authority.

18.5.2.6 The Contractor shall remove the Cafco Insulation in order to install the temporary support.

18.5.2.7 The Contractor to note the vertical stiffeners on either side of the vent trunking shall be preserved. The Contractor shall remove the existing bracket on the vertical stiffener which is 8' off centerline port looking outboard.

18.5.2.8 The Contractor shall remove the welds where the vent trunking penetrates the bulkhead at Frame 71 along the lower surface of the vent trunking and extending up the sides 12 inches on both sides of the bulkhead. The Contractor shall release the bottom section of the vent trunking from the bulkhead. A section of vent trunk extending aft 18" from the forward edge of the trunk is to be cropped out as per supplied drawings.

18.5.2.9 The Contractor shall note existing longitudinal ½" girder web plate to be preserved.

18.5.2.10 The Contractor shall remove and dispose of the corroded section that was cropped out.

18.5.3 INSERT INSTALLATION

18.5.3.1 The Contractor shall prepare the edges of the bulkhead, vent trunking and existing stiffeners on either side of the vent trunk for welding. Weld edges shall be ground smooth to remove all notches and surface oxides.

18.5.3.2 The Contractor shall develop a welding schedule for approval by TCMS Inspector and that prevents distortion to the bulkhead, stiffeners, bracket and vent trunk.

18.5.3.3 The Contractor shall fabricate a new 3/8" thick 18" Long X 24" wide X 12" high Lloyds grade "A" plate insert exact dimension to suit the existing trunk. The insert shall be cranked at each side with an inside radius to suit the existing. The edges of the insert shall be dressed as per supplied drawings for welds on the inside and outside of the tank and vent trunking. The Contractor to note existing longitudinal ½" girder web plate to be preserved and reattached to the new trunk plate. The Contractor shall ensure the approved welding schedule is to be adhered. Any deviation from approved welding schedule shall result in a new welding schedule being produced and submitted for approval before the work is commenced.

18.5.3.4 The Contractor shall weld the vertical stiffeners and one Lloyds grade "A" 14"X12"X3/8" bracketing with 2" lapped to the trunking.

18.5.3.5 The Contractor shall clean the tank to an "as found" and make it ready for closing.

DO NOT MODIFY

The Contractor shall notify the Chief Engineer when the tank is ready for closing. The Chief Engineer is responsible for a final inspection of the tank prior to the hydrostatic test.

18.5.4 COATINGS AND INSULATION

18.5.4.1 All coatings are to be applied after the Flume tank has successfully passed a hydrostatic test.

18.5.4.2 The Contractor shall coat any bare metal outside the tank resulting from the repair work with one coat of Interprime 198 primer and two coats of Intersheen 579 White.

18.5.4.3 The bare metal inside the flume tank is to be coated with VapCor MARINE COAT 195W as stated in the spec section detailing the new radar wireway and transit installation.

18.5.4.4 The Cafco insulation on the aft cargo hold bulkhead which was removed for the work in this spec section is to be replaced to match existing by the Contractor.

18.5.4.5 The Contractor shall close the tank cover.

18.5.4.6 The Contractor to note after successful tank testing the temporary support shall be dismantled and area of contacts to be brought back to the previous condition.

18.6 INSPECTION AND TESTING

18.6.1 The Contractor shall prepare an inspection and testing plan and submit to TA for approval prior to commencing the work. The Contractor shall notify TA and TCMS at stages when the work is ready for inspection.

18.6.2 The Contractor shall submit all completed welding of the trunk, bulkhead, vertical stiffeners and brackets for inspection by the TA and TCMS inspector.

18.6.3 The Upper Flume Tank shall be hydrostatically pressure tested to a 2.5 meter (8 feet) head of water in the presence of the TCMS Inspector and Technical Authority. Any leak or defect due to the work of the Contractor shall be repaired at no cost to CCG. The Contractor to note - the test to be conducted in conjunction with the work done in section 18.0.

18.6.4 The Contractor shall be responsible for supplying, installing and removal of blanks on all suction and discharge pipes, vents and sounding pipes to perform the test.

18.6.5 The Contractor shall arrange for the Engine Room staff to empty the Upper Flume Tank.

18.6.6 The Contractor shall open the manhole for the Upper Flume, dry the affected surfaces and recoat with Vapcor Marine Coat 195W all bare areas affected by the work undertaken in specification Section – 18 and Section - 19. For bidding purposes, the Contractor shall bid on the application of one 205 liter drum of Vapcor Marine Coat 195W.

18.6.7 The Contractor shall allot for a 72 hour period for the tank coating to cure prior to closing the tank. The Contractor shall adhere to the manufacturer’s guidelines for coating the tank.

DO NOT MODIFY

18.6.8 Upon completion, the Contractor shall notify the Chief Engineer that the tank is ready for closing prior to closing the manhole. Upon final inspection, the Contractor shall install the manhole with a new Contractor supplied ¼" fiber re-enforced neoprene gasket.

18.7 DOCUMENTATION

18.7.1 The Contractor shall obtain a Division III credit for the hydrostatic pressure test performed on this tank. This survey credit shall be provided to the Technical Authority prior to the completion of the contract.