

Black Water System Change

CCGS *F.C.G. SMITH* (F 005)

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1. GENERAL NOTES

1.1. IDENTIFICATION

These general notes specify CCG requirements applicable to all the following technical specifications.

1.2. REFERENCES

Applicable regulations and documentation:

Applicable documents:

Safety and Security Procedures	Title
7. A. 1	Risk prevention program
7. B. 1	Diving operation
7. B. 2	Fall protection
7. B. 3	Access to confined spaces
7. B. 4	Hot work
7. B. 5	Lockout/tagout
7. B. 6	Electrical work on live circuits
7.E.8	Use of halocarbons
10. A. 2	Contractor's safety and security
DFO-CCG	Sorel Base Safety Directives

Publications:

TP3177E	Standard for the Control of Gas Hazards in Vessels to be Repaired or Altered
TP127E	Transport Canada's Ships Electrical Standards
IEEE 45	Recommended Practice for Electrical Installations on Shipboard
CSA W47.1	Certification of Companies for Fusion Welding of Steel, Section 2 (Certification)
CSA W47.2	Certification of Companies for Fusion Welding of Aluminum
CSA W59	Welded Steel Construction (Metal Arc Welding)
EPS Report 1/RA/2	Environmental Code of Practice for the Elimination of Fluorocarbon Emissions from Refrigeration and Air Conditioning Systems
NFPA 10	Standard for portable fire extinguishers
DFO/5737	Fleet Safety and Security Manual

Acts and regulations:

S.C. 2001, c. 26	<i>Canada Shipping Act</i> and applicable regulations
R.S.C. (1985), c. L-2	<i>Canada Labour Code</i>
SOR /2003-289	<i>Federal Halocarbon Regulations</i>

1.3. OCCUPATIONAL HEALTH AND SAFETY

The Contractor and all subcontractors must follow occupational health and safety (OHS) procedures in accordance with federal and provincial OHS regulations to ensure that the Contractor's activities are conducted safely and without compromising the safety of any staff members.

The Contractor and the Contractor's employees, including all subcontractors, must attend an orientation session on vessel safety before beginning any work to familiarize the Contractor's employees with the dangers specific to the vessel and with its permit systems for work protocols as well as with the procedures for safety, risk prevention, hazard response and pre-work safety assessments. The Contractor will have access to an uncontrolled copy of the Fleet Safety and Security Manual.

The Contractor must comply with the Fleet Safety and Security Manual, DFO/5737, as well as with the Instructions for working on board the vessel, in addition to the relevant requirements of the *Canada Labour Code* during performance of the following types of work:

- Hot work;
- Work at heights;
- Entry into confined spaces;
- Degassing before entering into confined spaces and for hot work;
- Lockout and tagout;
- Pre-work safety assessments.

For the purpose of the lockout and tagout procedure, the Contractor must provide the padlocks and locking devices for the Contractor's employees as well as those provided by the Chief Engineer for the vessel's crew.

The Contractor and its employees will not have access to the crew's washrooms or lounges. The Contractor must provide the necessary facilities for its employees and subcontractors as needed.

The Contractor shall follow the Sorel Base safety instructions.

1.4. ACCESS TO THE WORKPLACE

The Contractor must ensure that TA and CCG personnel have unlimited access to the workplace at all times during the contract.

1.5. WORKPLACE HAZARDOUS MATERIALS INFORMATION SYSTEM (WHMIS)

The Contractor must provide the TA with the material safety data sheets (MSDSs) for any product subject to WHMIS control that it will supply.

The TA will provide the Contractor with access to the MSDSs for all controlled products on board the vessel which could be used in any work item of the specification.

1.6. SMOKING IN THE WORKPLACE

The Contractor must ensure compliance with the *Non-smokers' Health Act*. The Contractor will ensure that any employer and any person acting on behalf of an employer ensures that everyone refrains from smoking in any workspace under the employer's control. The Contractor must ensure that there is absolutely no tobacco use on board the vessel.

1.7. CLEAN AND SAFE WORKPLACE

During the work period, the Contractor must maintain the parts of the vessel used by its personnel to access places where it must perform work in a clean and debris-free state and dispose of waste daily.

Areas that are hazardous due to work done according to the specification must be secured and clearly identified by the Contractor, including posting to warn and protect all personnel of the existing danger in accordance with the relevant requirements of the *Canada Labour Code*.

At the end of the contract, the Contractor must clear the vessel of all waste created by performance of the work and return the vessel to a state of cleanliness equal to that which existed at the beginning of the contract period.

Once all predetermined work has been completed and a final cleaning done, the Contractor's quality guarantee (QG) representative, the TA and the IA will conduct a joint inspection tour of the vessel to visit all places where work was done by the Contractor. All deficiencies or damage noted will be recorded and compared with the digital images taken in advance. The Contractor must, at its own expense, fully correct any damage or deficiency for which it is responsible following the contract work it performed; no portion of the expenses may be charged to the CCG.

1.8. FIRE PROTECTION

The Contractor must ensure that the insulation, removal and installation of fire detection and extinguishing systems, or of any component of such systems, are done by a qualified technician. When the Contractor deactivates a fire detection or extinguishing system during the contract, a qualified technician must then recertify that the system is fully functional. A signed and dated copy of the original certificate must be delivered to the TA and the IA before the end of the contract.

The Contractor must notify the TA and the IA and obtain written approval from the TA before disturbing, insulating, deactivating, interrupting or excluding any part of the fire detection and/or extinguishing systems, including smoke and heat detectors.

The Contractor must ensure protection against fire at all times, including when someone is working on the vessel's fire detection and/or extinguishing systems. This may be accomplished as suggested below and only with written approval from the TA:

- by deactivation of only one part of the system at a time;
- by maintaining the system with spare parts while the work is in progress;
- by other acceptable means approved by the TA.

The Contractor must note that if it does not take the necessary precautions while performing the work, either on the vessel's fire extinguishing systems or near them, it could cause accidental discharge of the extinguishing agent. The Contractor must, at its own expense, refill and recertify the containers or systems so emptied during this work.

1.9. RETOUCHING/PAINTING

Unless otherwise indicated, any new steel and/or any affected steel must receive two coats of marine primer, compatible with the vessel's paint coating scheme.

The Contractor must prepare any new or affected steel in accordance with the paint manufacturer's standards before painting.

1.10. CCG EMPLOYEES AND OTHERS ON THE VESSEL

CCG or DFO employees and other workers such as manufacturer's agents and/or TCMS or classification society experts may perform work other than the work included in this statement of work on board the vessel throughout this contract. The TA will do everything possible to ensure that such work and/or the resulting inspections/examinations do not interfere with the Contractor's work. The Contractor is not responsible for arranging or paying for the related inspections, unless otherwise indicated.

1.11. REGULATORY INSPECTIONS AND/OR CLASSIFICATION REVIEW

The Contractor must make the calls and set the schedule for any regulatory inspections and/or classification visits by the responsible authority: TCMS, HC, Environment Canada or other persons required by the specifications. The CCG is responsible for paying Transport Canada and Bureau Veritas inspection fees for the inspector's services. The Contractor is responsible for all costs for assistance associated with inspections (e.g. opening a manhole, conducting a test, etc.).

Any documentation generated by the inspections/visits referred to above and demonstrating that they have taken place (i.e., signed and dated originals of certificates) must be provided to the TA with copies to the IA.

The Contractor must not substitute regulatory inspections or classification visits with inspections done by the TA or IA.

The Contractor must give the TA and the IA prior notice (at least 24 hours) of regulatory inspections/classification visits so they can attend the inspection/visit.

1.12. TEST RESULTS AND DATA COLLECTION

The Contractor must prepare a test and trial plan that must include, at a minimum, all the tests and trials set out in the specifications. This plan must be submitted to the TA and the IA for their approval one week before the beginning of the originally planned tests and trials.

All tests, measurements, calibrations and readings must be recorded, signed by the person taking the measurements, dated and provided in electronic and printed report format – to the TA, IA and TC.

Dimensions recorded in the register must have an accuracy of three (3) decimal places (unless otherwise specified) in the measurement system in use on board the vessel.

The Contractor must provide the TA and the IA with recent calibration certificates in force for all instrumentation used in the test and trial plan, demonstrating that the measurement instruments concerned have been calibrated in accordance with the manufacturer's instructions.

Printed reports will be bound in standard three-ring binders, typed on letter-sized paper and indexed in accordance with the specification's numbering system. Electronic copies will be saved in Adobe PDF format without password protection and provided on CD-ROM. The Contractor will supply three paper copies and one electronic copy of each report.

All documentation from the contract period must be incorporated in the collection of data to be remitted to the TA and IA at the end of the contract period.

1.13. TOOLS AND MATERIALS PROVIDED BY THE CONTRACTOR

Unless otherwise indicated, the Contractor must supply all the material, equipment and parts necessary to perform the work in the specifications.

The Contractor must ensure that all materials are new and have never been used.

The Contractor must ensure that alternative materials such as glands, packaging, insulation, small hardware, oil, lubricants, cleaning solvents, preservatives, paints, coatings, etc., comply with the drawings provided by the equipment manufacturer or those found in guides and instructions.

Where no particular article is specified or where a substitute must be used, the TA must provide written approval for the substituted article. The Contractor must provide information on the materials used – certificate of classification and the quality of various materials – to the TA before use.

The Contractor must provide all the equipment, machinery, material and tools such as cranes, scaffolding, platforms and rigging necessary to carry out the work described in this specification.

The Contractor must provide a waste disposal service for any oil, oily waste, any other hazardous material and any garbage subject to control resulting from the work described by this specification. It will also provide the garbage disposal certificates for any waste mentioned

above, and these certificates must show that the disposal has been done in accordance with the federal, provincial and municipal guidelines in force.

1.14. TOOLS AND MATERIALS PROVIDED BY THE GOVERNMENT

All tools will be provided by the Contractor unless otherwise indicated in the technical specification.

Where the tools are provided by the TA, they will be returned by the Contractor in the same condition as when they were borrowed. Borrowed tools must be inventoried and the Contractor must sign an acknowledgement of receipt and return them to the TA.

Any Government Supplied Material (GSM) must be received by the Contractor and stored in a secure warehouse or storage area having a controlled environment appropriate to the equipment according to the manufacturer's instructions.

1.15. CONTRACTOR FAMILIARIZATION

All personnel working on the Sorel Canadian Coast Guard base must take a familiarization session and sign form 10.A.7. The session will be held on the same day as the kickoff meeting. The familiarization session will be led by an employee of the Canadian Coast Guard. The session will last two hours.

1.16. RESTRICTED ACCESS AREAS

Other than for security or for the purpose of work required by the specification, the Contractor does not have the right to enter the following places: any cabins, offices, workshops, engineer's office, wheelhouse, control room, any washrooms, the galley, dining halls, lounges or any other sector where access is restricted by notice.

The Contractor must notify the TA at least 24 hours in advance before undertaking work in inhabited spaces or in offices. Such notice will give the CG the time needed to evacuate its personnel and ensure safety in these rooms.

1.17. INSPECTIONS BY THE CONTRACTOR AND PROTECTION OF THE WORKPLACE AND EQUIPMENT

The Contractor must coordinate an inspection of the condition and location of items to be removed with the TA and the IA before performing the specified work or accessing a location to work in it.

The Contractor must repair, at its own expense, any damage resulting from its actions during performance of its work and which may be attributed to its performance. Any material used in a replacement or repair must comply with the criteria for the material provided by the Contractor as indicated above in the Tools and Materials Provided by the Contractor section.

The Contractor must protect all equipment and all neighbouring areas against damage. Work areas must be protected against flooding and water leaks, debris from sandblasting, welding, etc. Temporary tarpaulins must be placed over work areas.

1.18. RECORDS OF WORK IN PROGRESS

The TA and IA may record the work in progress by various means including, but not limited to, photographs and video, whether digital or film.

1.19. LIST OF CONFINED SPACES

The Contractor may ask for a list of the vessel's confined spaces during the meeting preceding the refit.

1.20. LEAD-BASED PAINTS AND PAINT COATINGS

The Contractor will not use lead-based paints.

CCG vessels were coated in lead-based paints in the past and there may therefore be certain work done by the Contractor such as grinding, welding or hot work that could extract the lead from this paint. The Contractor must ensure that places in affected work areas are examined for any lead content and ensure that the work is done in accordance with the applicable federal and provincial regulations.

The Contractor must demonstrate the product's approval by HC for hull paints controlled by HC and the Pest Management Regulatory Agency.

1.21. MATERIALS CONTAINING ASBESTOS

The Contractor will not use any material that contains asbestos.

The handling of any material containing asbestos will be done by persons trained and qualified in asbestos disposal in accordance with the federal, provincial and municipal governments' current regulations as well as in accordance with the FSSM. The Contractor must provide the TA and the IA with certificates showing that removal from the vessel of any material containing asbestos has been done in accordance with the federal, provincial and municipal governments' current regulations.

1.22. REMOVED MATERIALS AND EQUIPMENT

All material removed under this specification remains the property of the CCG, unless instructions to the contrary are provided in the specifications section.

1.23. WELDING CERTIFICATION

The Contractor and the welders involved in the work shall be certified by the Canadian Welding Bureau. The Contractor shall be certified for welding of steel and aluminum in Division 2 of CSA W47.1 and in Division 2 of CSA W47.2. Copies of certifications (including those of the welders) shall be submitted to the TA and the IA.

1.24. ELECTRICAL INSTALLATIONS

All electrical installations and repairs must be done in accordance with the latest revisions of TP127E (Transport Canada Ship Safety Electrical Standards) and of standard 45 (Recommended Practice for Electrical Installations on Shipboard) of the IEEE. Standard TP127 takes precedence over the IEEE standard.

1.25. REFRIGERATION AND AIR CONDITIONING SYSTEMS

N/A

1.26. ELECTRICAL POWER SUPPLY

The CCG shall allow the Contractor to use a limited number of 115 VAC, 1 phase, 15-amp outlets for the duration of the contract, depending on the network's capacity.

1.27. CHEMICAL TOILET

The Contractor shall provide chemical toilets for its employees. The Contractor's staff will not be authorized to use the washrooms inside buildings at the Canadian Coast Guard base. Note that the washrooms on-board the vessels will be out of service.

1.28. TRADESPEOPLE'S COMPETENCE

The Contractor must employ qualified, certified (if applicable) and competent tradespeople and supervise them to ensure a high and consistent quality of performance.

All welders, engineers and electricians with less than five years of experience will be considered to be apprentices. They must be guided and supervised on site by a worker from the same trade who has more than five years of experience in said trade.

The welders, engineers and electricians must have completed recognized training in their field.

The head of inspection may ask to consult and record details of the certification or competencies of the Contractor's tradespeople. This request must not be exercised unduly; it is intended only to ensure the tradespeople's competency.

1.29. CANADA SHIPPING ACT AND ITS REGULATIONS

All modifications and work performed shall be done so in compliance with the *Canada Shipping Act, 2001* and its regulations.

2. SERVICES

Not applicable

3. LIST OF ACRONYMS

BV	Bureau Veritas
CA	Contracting authority (PWGSC)
CCG	Canadian Coast Guard
CLC	Canada Labour Code

CPM	Contractor-provided material
CSA	Canadian Standards Association
CWB	Canadian Welding Bureau
CWB	Canadian Welding Bureau
DFO	Department of Fisheries and Oceans
FSR	Field Service Representative
FSSM	Fleet Safety and Security Manual
GPM	Government-provided material
HC	Health Canada
IEEE	Institute of Electrical and Electronic Engineers
MSDS	Material safety data sheet
OHS	Occupational Health and Safety
OL	Overall length
PWGSC	Public Works and Government Services Canada
SSMS	Safety and Security Management System
TA	Technical Authority – Owner’s Representative (CCG)
TBS	Treasury Board of Canada Secretariat
TC	Transport Canada Marine Safety
TSR	Technical Services Representative
WHMIS	Workplace Hazardous Materials Information System

4. BLACK WATER SYSTEM

4.1 VESSEL BLACK WATER SYSTEM CHANGE

The Contractor shall provide a new black water treatment system for the vessel; the system must treat black water inflows into three toilets and provide water for 10 to 15 people.

Black water flows in by gravity.

The electric power supply for the control panel shall be 220 volts, 3 phases, 15 amps and 60 Hz.

4.2 – REFERENCES

- *FCG Smith* Gen. arrgt. 45009
FCG Smith Dwg 45097. N.B. The plan indicates two (2) black water treatment systems but the one in the port after hold is the only one left.

4.3 – TECHNICAL DESCRIPTION

The Contractor shall perform the following work:

Provide the materials and labour to replace the existing black water treatment system in the starboard after hold with a new system to be provided by the Contractor.

The Contractor shall be responsible for parts handling in both directions between the dock and the exact location where the new system will be installed. The Contractor shall provide a crane and lifting equipment that is certified for handling.

On a daily basis, the Contractor shall request a hot work permit and comply with stated directives. Fire watch shall be provided by the Contractor.

Before starting the dismantling work, the Contractor shall drain the black water tank. The dismantling work consists of unplugging the equipment once the electric power supply and the various pipes have been insulated by the vessel's Chief Engineer.

The pumps and blowers will be put back on the vessel. The old tanks may be cut up to make them easier to remove. Once everything is removed, surface defects must be ground. The Contractor shall dispose of waste in the proper manner. Prepare the tanks' bases. Apply primer and paint in accordance with the specifications mentioned below to protect the steel surfaces that will no longer be accessible after the tanks are installed.

The entrance to the hatch through which the black water system will be lowered is 30 in. x 43 in. If necessary, the new tanks must be disassembled to make handling easier. Install the new components (pumps, blowers and control panels) in the locations indicated by the Chief Engineer. Provide proper supports.

Plug the pumps and the blowers into the control panels.

The suction connections and the discharge as well as the tank exhaust vents shall be connected to the existing pipes. The diameter of the pipe sections that are connected between the new system and the existing pipe must increase or decrease to allow their connections to be made.

Diameter for incoming black water: 3 in.

Diameter of discharge pipe: ¾ in.

Also, the vent that measures two (2) inches in diameter, is connected to the black water system, and reaches outside, must be replaced with a 3-in. black Schedule 80 steel pipe that is 30 ft in diameter.

All joints must be resistant to treated water and to chlorine.

Make sure that there are enough connections for the electrical wiring and the piping to absorb vibrations.

All unpainted surfaces or surfaces not affected by the work (new vent) must be covered with two coats of Interprime 198 primer and two coats of Interlac 665 fire retardant paint.

All welders who perform the work shall have W47.1 certification for welding of steel.

The Contractor shall be present when the system is put into operation. The work will be considered completed when the installation is put into operation by the manufacturer's engineer.

The Contractor is responsible for installing the system in compliance with OBS regulations.

Space available for installing the new system:

Length: 7 ft

Width: 5 ft.

Height: 7 ft

The system must be certified by Transport Canada for operation in Canadian Great Lakes waters and certified by the United States Coast Guard.

- The device must comply with the requirements stated in regulation 9.1.1 of MARPOL Annex IV (accompanied by a typical approval certificate), or
- be approved as a Type II marine sanitation device (USA 33 CFR Part 159) (accompanied by a typical approval certificate).

4.4 – PROOF OF PERFORMANCE

Inspection and certification

- The work shall be done to the satisfaction of the Canadian Coast Guard representative.

4.5 – DELIVERABLES

Report

- The Contractor shall submit two (2) paper copies of the report to the Chief Engineer and one electronic copy of the vessel's new black water treatment system.

