

CCGS *Des Groseilliers*

General Work Specifications

F3017-14D223

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Item 1

SHOWER BASE

1.0 SHOWER BASES

- 1.1 Acquire the services of a company that specializes in this work.
- 1.2 Provide the equipment, tools and labour to redo the shower floors in the following areas:
 - 1.2.1 Small shower in the mechanical assistants' washroom, mid-ships main deck. (72 square feet)
 - 1.2.2 Chief engineer's cabin, starboard side boat deck. (36 square feet)
 - 1.2.3 Women's crew washroom, port side aft main deck. (66 square feet)
 - 1.2.4 Public washroom, port side upper deck. (83 square feet)
- 1.3 Remove the current coat, prepare steel deck surface by using mechanical tools to remove any traces of corrosion. Recoat with anti-corrosion paint that is compatible with the Dex-O-Tex system.
- 1.4 Provide and use the Dex-O-Tex cement system to coat the shower floor surface area and edges. Build a slope for water to flow toward the drain.
- 1.5 Provide and install the Dex-O-Tex Terrazzo system that is the same colour as the current coating.
- 1.6 It is the Contractor's responsibility to install the necessary protection to prevent damage to surrounding surface areas.
- 1.7 The Contractor must leave the premises in a similar state of cleanliness as that prior to the work being started. This is to be inspected by the Canadian Coast Guard representative at completion of work.
- 1.8 Dispose of all residues and waste upon completion of work.
- 1.9 If hot work is required, the Contractor must obtain a hot work permit from the vessel authorities prior to starting work. The Contractor will provide the personnel and safety equipment required for the work to be done safely and must prevent fires.
- 1.10 Reference drawing: 68-H-102_1
68-H-102_2
68-H-102_3

Item 2

CARPET PROTECTOR

2.0 CARPET PROTECTOR

- 2.1 Provide the equipment, tools and labour to replace the carpet protector in the following locations:

Carpet replacement

Cab. #	Name	Area			Ft ²
		Stateroom	Lounge	Entrance	
	<i>Officers' deck</i>				
1	3rd officer	8.5 x 14			119
2	2nd officer	8.5 x 14			119
3	Chief officer	12 x 5	12 x 12	3 x 9	231
4	Commanding officer	13.5 x 10			135
	<i>Boat deck</i>				
10	Supplementary	10 x 15	9 x 15		285
12	Electronics tech.	13 x 10			130
14	Helicopter pilot	13 x 11			143
16	Helicopter tech.	10 x 10			100
	<i>Upper deck</i>				
20	Senior engineer	6.5 x 10	13 x 10	4 x 5	215
21	Electrician	10.5 x 10			105
22	Supplementary	8 x 12			96
23	2nd engineer	15 x 10			150
25	3rd engineer	11 x 10			110
33	Logistics officer	11 x 8	15 x 9		223
	Off. dining room	31 x 21			651
TOTAL					2812

The dimensions are for bidding purposes only; the Contractor will come to the site to confirm actual measurements. Upon contract award, the contractor will confirm the measurements prior to the start of work. The price can then be adjusted up or down by using a 1379 form if required.

Item 2

CARPET PROTECTOR

2.2 The work will include:

- Removing the old carpet layer and glued-down underlay.
- Using Dex-O-Tex marine cement (fine Magnabond) to prepare the surfaces, applying a 1/8" coating to surface areas, increasing or decreasing it based on the requirements in PWGSC form 1379.
- Providing and installing a commercial stain-resistant carpet of good weight (min. 28 oz), 100% nylon, tone on tone without patterns, including a 4" baseboard (carpet model to be confirmed).
- Carpeting installation should take into account that most furniture is permanently fixed and cannot be removed (cabinets, desks, beds, etc.).
- Dispose of all residues and waste.

2.3 The Contractor shall leave the premises in the same state of cleanliness as that found prior to starting work. This is to be inspected by the Canadian Coast Guard representative at completion of work.

2.4 Reference drawing: 68-H-102_1
68-H-102_2
68-H-102_3
68-H-102_4
68-H-102_5

Item 3

STEEL WORK

3 STEELWORK

3.1 General information

- 3.1.1 Provide the equipment, tools and labour for the steelwork described in this section.
- 3.1.2 The Contractor must obtain a hot work permit from the vessel authorities prior to starting work. The Contractor must provide the personnel and safety equipment required for the work to be done safely and must prevent fire hazards.
- 3.1.3 The Contractor must be in possession of W47.1 certification for welding steel from the Canadian Welding Bureau.
- 3.1.4 If necessary, the Contractor must provide the required ventilation equipment to route gases and welding smoke outside the vessel.
- 3.1.5 The Contractor shall dispose of all residues and waste and leave the premises in the same state of cleanliness as that found prior to starting the work. This is to be inspected by the Canadian Coast Guard representative at completion of work.
- 3.1.6 After work is completed, surfaces shall be prepared mechanically. Provide and apply two (2) coats of bridge red Interbond 501 paint to the exterior surfaces affected by the work. Provide and apply two (2) coats of metal primer to the surfaces affected by work inside the vessel.

3.2 Forward cargo hatch coaming

- 3.2.1 **Reference drawing:** 68-HSK-34 Insulation & cover plate protection I.W.O.
forwd cargo hatch coaming
Reference photos: Item 3.2.1-1; Item 3.2.1-2; Item 3.2.1-3
- 3.2.2 Work consists in repairing a crack in frame 165 in the fore starboard corner of the hatch coaming.
- 3.2.3 Remove the Belzona coating covering the crack in the deck; this crack is about 6" long. Mould the crack and stop-drill its extremities.
- 3.2.4 On the main deck at frame 165 in the work area, remove ceiling covering and insulation. Reinstall after completion of hot work; thoroughly seal the vapour barrier.
- 3.2.5 Weld the crack to the complete satisfaction of the Canadian Coast Guard representative.

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STEEL WORK

3.3 Helicopter hangar deck rail

- 3.3.1 Reference Photos; Item 3.3.1-1; Item 3.3.1-2; Item 3.3.1-3.
On frame 65, work consists in replacing the deck rail to which the front of the aluminum helicopter hangar is bolted.
- 3.3.2 On the upper deck at frame 65 in the work area, remove the ceiling tiles and insulation. Reinstall them after the work is completed; thoroughly seal the vapour barrier. Locations involved: female officers' washroom; crew laundry room, downward staircase.
- 3.3.3 Remove the bolts that attach the hangar to the rail and remove the rail. Smooth the surface before installing the new rail. The rail must be replaced by section or the hangar must be supported during the replacement work.
- 3.3.4 Provide the equipment and weld a new rail to the Canadian Coast Guard representative's satisfaction.
- 3.3.5 Provide and install a joint between the new steel rail and the aluminum helicopter hangar in order to separate both materials.
- 3.3.6 Provide new stainless steel bolts, screws and washers and bolt the hangar to the new rail.
- 3.3.7 If equipment must be moved to access the work area, it must be replaced after the work is completed.

3.4 Bowsprit

- 3.4.1 Reference Photos : Item 3.4.1-1 élévation; Item 3.4.1-2; Item 3.4.1-3 photo
Work consists in building and in welding to the bowsprit a support for a ladder to be used for maintenance purposes (see attached drawings).
- 3.4.2 Remove both halyard pulleys and the rings on the bowsprit. Ask the chief officer or chief engineer to store the pulleys. Thoroughly smooth the surfaces.
- 3.4.3 Supply the equipment (a steel rod 3/4" in diameter and stiffeners); build the support and weld it to the bowsprit to the full satisfaction of the Canadian Coast Guard representative. Weld two (2) rings to the support to fasten it to the halyard pulleys.
- 3.4.4 Repair the welding on the fasteners in the two (2) cracked bowsprit stays.

Item 3

STEEL WORK

- 3.4.5 A Contractor provided crane can be used to lower the bowsprit to enable work to be done; put the bowsprit back in place thereafter.
- 3.4.6 Prepare surfaces; supply and apply two (2) coats of white Interprime 235 metal primer (provided by Contractor) to work surface areas. Supply and apply two (2) coats of beige Interlac 665, RAL 1001 paint to entire bowsprit and to both stays.

3.5 Submersible pump expansion tank

- 3.5.1 Référence Photo : Item 3.5.1-1
Work consists in building an expansion tank that is identical to the model provided by the Canadian Coast Guard. The CCG will dismantle the existing tank and provide it to the Contractor for reference with a view to constructing a new one.
- 3.5.2 Provide the equipment (grade 316 stainless steel 3/32" in thickness) and build a new tank to the complete satisfaction of the Canadian Coast Guard representative.
- 3.5.3 Dimensions of the current cylindrical tank: 20" in diameter and 28 1/2" in height.
- 3.5.4 The new tank will have the same adapters and accessories in the identical position as the current tank:
- Water inlet
 - Water outlet
 - Drain with screw-in plug
 - Ventilated filler cap
 - Level indicator
 - Cover bolted at the top with a sealing ring
 - Installed angle iron
- Note:** Do not reinstall the square flange adapter.
- 3.5.5 Provide and install a new level indicator with impact protection; also provide and install a new ventilated filler cap.
- 3.5.6 Provide new stainless steel bolts, screws and washers to bolt the cover. Also provide a sealing ring.

4.0 FALL PROTECTION

- 4.1 Provide the equipment, tools and labour for the steelwork described in this section.
- 4.2 Provide the services of an entrepreneur specialized in fall protection systems for the purpose of ensuring that work being performed aloft or over the vessel's side is performed safely in accordance with the Maritime Occupational Health and Safety (MOHS) Regulations and the Canadian Coast Guard Fall Protection Program.
- 4.3 Identify anchor points for ships' masts, as well as other areas exceeding 2.4 meters in height.
- 4.4 References;
 - 4.4.1 Canada Occupational Health and Safety Regulations (SOR/86-304) section 12.10 FALL-PROTECTION SYSTEMS
 - <http://laws-lois.justice.gc.ca/eng/regulations/SOR-86-304/page-65.html#h-167>
 - 4.4.2 Fleet Safety Manual
 - 7.B.2 – Fall Protection

LIST OF ACRONYMS

Table 1 - List of Acronyms

CA Contract Authority (PWGSC)
CBW Canadian Bureau of Welding
CCG Canadian Coast Guard
CE Chief Engineer
CLC Canada Labour Code
CSM Contractor Supplied Material
CSA Canadian Standards Association
DFO Department of Fisheries and Oceans
FSM Fleet Safety Manual (CCG)
FSR Field Service Representative
GSM Government Supplied Materials
HC Health Canada
IA Inspection Authority – Technical Inspector CE Chief Engineer
IEEE Institute of Electrical and Electronic Engineers
MSDS Material Safety Data Sheet
PWGSC Public Works and Government Services Canada
SMS Safety Management System
TBS Treasury Board of Canada Secretariat
TCMS Transport Canada Marine Safety
TA Technical Authority (CCG) Jean-François Thibault
WCB Work Safe BC
WHMIS Workplace Hazardous Material Information System

PART 1: SCOPE**1.1 General**

- 1.1.1 This document describes Canadian Coast Guard (CCG) requirements applicable to all accompanying Technical Specifications.

PART 2: HEALTH AND SAFETY RELATED REQUIREMENTS**2.1 General**

- 2.1.1 The Contractor must appoint a Health & Safety Manager or Supervisor responsible for ensuring compliance with the Health and Safety requirements listed herein. This includes monitoring of all work by Contractor employees and Sub-Contractor employees.
- 2.1.2 During the execution of Work, the Contractor must comply with:
- Applicable Provincial Health and Safety Regulations,
 - Canada Labour Code Part II,
 - Marine Occupational Health and Safety Regulations (MOSH),
 - The Gas Hazard Control Standard (TP3177),
 - Applicable CCG region specific Health and Safety requirements
 - DFO/5672 Welding Health and Safety Technical Program,
 - TBS “Smoking in the Workplace” Policy,
 - The following sections of DFO/5737- CCG Fleet Safety and Security Manual
 - o Fall Protection (section 7B2),
 - o Confined Space Entry (section 7B3),
 - o Hot Work (Section 7B4),
 - o Lock-Out - Tag-Out (Section 7B5).

2.2 Hot Work

2.2.1 When executing Hot Work, the Contractor must:

- inform the TA & IA prior to commencing work and upon completion of work,
- supply sufficient and suitable fire extinguishers in support of the Hot Work,
- not use the Ship's fire extinguishers except in the case of emergency. Should the ship's extinguishers be used, the Contractor must ensure they are recharged and certified by a certified facility at no cost to Canada,
- maintain a competent and properly equipped Fire Watch while Hot Work is underway and for one hour following the completion of Hot Work. The Fire Watch must be situated such that all sides of the surfaces undergoing work are visible and accessible,
- ensure that all dust, debris, gas and smoke generated is evacuated from the vessel by the most direct method,
- provide suitable fire retardant coverings to protect wire ways, cables, equipment and structure from welding slag, splatter etc,
- comply with the specific Hot Work requirements listed in section 2.1 herein.

2.2.2 When executing Hot Work, the Contractor must define a surrounding zone that is to be kept sealed off from the rest of the vessel during the work period that involves the generation of welding gases, smoke, and grinding dust etc. All unscheduled work arising during the refit period involving Hot Work must have a similar zone isolated from the remainder of the vessel. The zone must be limited to the space(s) where the Hot Work is conducted, boundary areas where Fire Watches are required, and the access routes between the zone and the exterior of the vessel for workers, welding and cutting equipment and ventilation ductwork.

2.2.3 In areas where occupied accommodations and or workplaces cannot be completely isolated a double sealed door (air lock) arrangement must be erected to minimize ingress of contaminants into the occupied areas. A ventilation extraction point must be located as near as practical to the inside door on the worksite side to reduce the egress into the air lock and subsequently the accommodations and/or workspaces.

2.2.4 All doorways within the affected area that are not required for access to the work or for Fire Watch activities must be sealed off to prevent contaminants from entering. Passageway branches that connect to the zone are to be sealed off as well. The Contractor must clean all surfaces and fabrics within the zone and in surrounding areas, which have become contaminated, upon completion of work.

2.3 Confined Space Entry

2.3.1 In the execution of Confined Space Entry, the Contractor must comply with the requirements listed in section 2.1 herein. The following is a non-exhaustive list of Confined Spaces on CCG Vessels: Bilge Areas; Machinery Compartments; all storage compartments accessed by manhole covers including fuel tanks; water tanks; cofferdams; chain lockers; thruster compartments.

2.4 Monitoring Atmosphere for Confined Space Entry or Hot Work

- 2.4.1 Prior to Confined Space Entry and Hot Work within a Confined Space, including machinery compartments, the Contractor must:
- have the space gas freed and tested in accordance with TP3177,
 - ensure the Permit states the type of work, the time period for which the Permit is valid and also indicates "Safe for Persons" or "Safe for Hot Work" as required,
 - post the Permit in a conspicuous location and provide the TA and IA with the signed and dated Marine Chemist's or Contractor qualified persons Certificate,
 - renew the Confined Space Entry or Hot Work Permit as required by Regulations.

2.5 Work At Heights and Fall Protection

- 2.5.1 In the execution of Work at Heights, the Contractor must:
- erect staging as required to safely carry-out work and remove it upon completion,
 - ensure walkways, gangways, scaffolding, ladders, guard-rails and similar apparatus are maintained in proper and safe condition. Daily inspections are to be conducted and recorded by the Contractor,
 - comply with requirements listed in 2.1 herein when conducting work aloft,
 - must do so in accordance with the Contractor's standard operating procedures.

2.6 Lock-Out / Tag-Out

- 2.6.1 The Contractor must comply with requirements listed in 2.1 herein for Lock-Out and Tagout.

2.7 Workplace Hazardous Materials Information System (W.H.M.I.S)

- 2.7.1 CCG shall provide the Contractor with access to M.S.D.S. for all controlled products located on the vessel. The Contractor must provide M.S.D.S for all Contractor supplied WHMIS controlled products.

2.8 Smoking

- 2.8.1 The Contractor must obtain written approval prior to smoking in designated areas.

2.9 Temporary Lighting and Ventillation

- 2.9.1 The Contractor must ensure temporary lighting and/or ventilation is supplied, installed and maintained in proper and safe condition and removed upon completion.
- 2.9.2 The Contractor must ensure temporary lighting incorporates shields/guards to protect against breakage.

2.10 Sign-in / Sign-out

- 2.10.1 When the vessel remains in Care and Custody of the Crown, the Contractor must ensure employees and Sub-Contractors sign-in and sign-out of the Vessel Register located at the Quartermasters Station, or in a convenient location to the gangway, whenever they enter or leave the vessel. Alternatively, the Crown may provide an electronic system whereby passes are issued to those requiring access to the vessel. Individuals violating this requirement may be denied access to the vessel for the duration of the work period upon advice from the TA to the CA.

2.11 Lead Based Paints and Paint Approvals

- 2.11.1 The Contractor must provide Health Canada product approval for underwater hull surface paints controlled by Health Canada and the Pest Management Regulatory Agency,
- 2.11.2 The Contractor must identify and take precautionary measures to ensure the application of paints complies with Federal, Provincial and Municipal regulations,
- 2.11.3 The Contractor must not use lead-based paints.

2.12 Clean and Hazard Free Site

- 2.12.1 The Contractor must maintain all spaces, compartments, work areas and areas used by Shipyard personnel as transit routes in a clean and sanitary condition and free from debris,
- 2.12.2 The Contractor must return the vessel to the CCG at least as clean as when work began. This includes both internal and external areas of work, as well as any affected adjacent spaces outside the principle areas of work,
- 2.12.3 The Contractor must supply own refuse containers to be emptied daily and removed upon completion of work. All rags, debris, and associated refuse are to be removed to refuse container(s) daily,
- 2.12.4 When working at CCG facilities, the Contractor must clean-up dock areas used by Contractor personnel and/or equipment. This includes but is not limited to the removal of all dirt, grit, debris, staging, containers and equipment as well as the immediate cleanup and proper disposal of leaked oil, solvent or any other hazardous materials,
- 2.12.5 If work will be conducted in the vicinity, the Contractor must supply and install for the duration of the work period a suitable material approved by the TA and IA at all main entries and over surfaces of the main, upper, flight and navigation officers decks to protect alleyways from dirt,
- 2.12.6 The Contractor must ensure safe access to the work area as required by applicable Health and Safety Regulations,
- 2.12.7 The Contractor must prevent rat and vermin harbourage onboard the vessel for the duration of the work period. The Contractor must remove any rats or vermin from the vessel if they do come onboard during the work period.

2.13 Fire Protection

- 2.13.1 The Contractor must ensure the isolation, removal and installation of fire detection and suppression systems or its components is performed by certified technicians familiar with the systems,
- 2.13.2 The Contractor must notify the TA and IA and obtain written approval from the TA prior to disturbing, removing, isolating, deactivating/disabling or locking-out any part of the fire detection or suppression system including heat and smoke sensors. The Contractor must also notify the TA and the IA once the system has been reactivated,
- 2.13.3 The Contractor must ensure protection against fire at all times including when working on the ship's fire detection or suppression system. This may be accomplished as suggested below and requires the written approval from the TA:
 - disabling only one portion of the system at a time,
 - by maintaining system function using spares while work is in progress,
 - other means acceptable to the TA.
- 2.13.4 The Contractor must note that failure to take necessary precautions while performing work on fire suppression systems may result in malfunction and discharge of CO₂, Halon or other fire suppression agents. The Contractor must recharge and certify at their cost, containers that are discharged as a result of their work.

2.14 Hydrostatic / Pneumatic Tank Testing

- 2.14.1 The Contractor must verify that all necessary openings are closed prior to hydrostatic or pneumatic testing of tanks. The Contractor must blank all suction and discharge lines, vents and sounding pipes. The Contractor is responsible for supplying, fitting and the subsequent removal of blanks.
- 2.14.2 The Contractor must drain the tanks upon completion of testing and wipe clean and dry the fuel tanks.
- 2.14.3 The Contractor must hydrostatically test tanks as specified with a 2.44m head of water. Where the Contractor wishes to perform a pneumatic test in lieu of the hydrostatic test, written approval must be obtained by the IA and TA.
- 2.14.4 The Contractor must provide the IA and TA with the Contractor's standard operating procedures for conducting pneumatic tank tests.

2.15 Contractor Supplied Potable Water

- 2.15.1 The Contractor must provide water quality test results to the IA to demonstrate the potable water supplied meets the current Health Canada Guidelines for Canadian Drinking Water Quality (http://www.hc-sc.gc.ca/ewh-semt/pubs/water-eau/guidelines_sixth-rec-eng.php).
- 2.15.2 The Contractor must ensure lines are flushed prior to connecting the water supply to the vessel.

PART 3: GENERAL REQUIREMENTS**3.1 Electrical Work / Electronics**

- 3.1.1 The Contractor must carry-out all electrical and electronic installations, renewals and repairs in accordance with the latest editions of:
 - TP127 - "Ship Safety Electrical Standards",
 - IEEE Standard 45 – 2002 "Recommended Practice for Electrical Installations on Shipboard 2002",
 - CGTS-3 - "General Specifications for the Installation of Shipboard Electronic Equipment".
- 3.1.2 The Contractor must replace, at no charge, the entire length of point to point cable if damaged as a result of installation.
- 3.1.3 The Contractor must not use plastic tie-wraps to secure wiring except in panels and junction boxes.

3.2 Paint Application

- 3.2.1 The Contractor must ensure new and/or disturbed steel work is painted in accordance with the specification.
- 3.2.2 The Contractor must power clean all new and disturbed steelwork prior to painting.
- 3.2.3 The Contractor must notify the IA to inspect after the surface preparation and the first coat of paint has cured and prior to application of the second coat.
- 3.2.4 N/A
- 3.2.5 The Contractor must ensure new and/or disturbed steelwork receives application of at least two (2) coats of marine primer immediately upon completion of work, unless specified otherwise.

3.3 Changes to Vessel Stability, Carrying Capacity or Structure

- 3.3.1 The Contractor must discuss with the TA any comments, concerns or observations they may have regarding the effect of work on the vessel's stability or carrying capacity. Additionally, any work item that, in the opinion of the Contractor may pose a vessel structural integrity problem is to be brought to the attention of the TA.
- 3.3.2 The Contractor must advise the IA and TA of the details of any major changes in the distribution of weights on the vessel while the vessel is in dry-dock.

3.4 CCG Employees and others on the Vessel

- 3.4.1 Canadian Coast Guard employees and other personnel such as Manufacturer's Representatives and TCMS Inspectors may carry-out other work, including work items not included in this Statement of Work, on board the vessel during this work period. Every effort will be made by Canada to ensure this work and the associated inspections do not interfere with the Contractor's work. The Contractor is not responsible for coordinating the related inspections or payment of inspection fees for this work.

3.5 Regulatory Inspections

- 3.5.1 The Contractor must ensure all work identified as requiring regulatory inspection is inspected by the applicable authority such as TCMS, Health Canada, Environment Canada etc., and that the required documentation is received to prove the inspections were conducted. The Contractor must not substitute inspection by the TA or IA for required regulatory inspections.
- 3.5.2 The Contractor must provide original Certificates issued by inspectors to the TA and a Copy to the IA.
- 3.5.3 The Contractor must coordinate all regulatory related inspections required for this Statement of Work.
- 3.5.4 The Contractor must provide timely advance notification of scheduled regulatory inspections to the TA and IA so they may attend the inspection.

3.6 Welding

- 3.6.1 The Contractor must ensure welding is completed in accordance with DFO/5672 – "Welding Health and Safety Technical Program".
- 3.6.2 The Contractor must obtain written permission of TA prior to commencing welding.
- 3.6.3 The Contractor must not locally ground welding equipment near bearings or electronic equipment.
- 3.6.4 The Contractor must ensure all steel welding is in accordance with 18-080-000-SG-001 Welding of Ferrous Materials and the Canadian Coast Guard Welding Specifications for Ferrous Materials, Revision 4. (TP6151)
- 3.6.5 The Contractor must comply with CCG specification for ALUMINIUM WELDING (TP9415)
- 3.6.6 The Contractor must ensure that when welding of any item requires the application of fusion welding for stainless steel structures, the Contractor or his Sub-Contractors is certified in accordance with the Canadian Welding Bureau, CSA\ACNOR AWS; Division 1.6 certification – latest revision copies of which must be submitted to the IA/TA prior to the start of welding

3.7 Requirements imposed on Contractor when Equipment must be disturbed

- 3.7.1 The Contractor must coordinate an inspection of the condition of items (i.e.: piping, manholes, parts, equipment etc) to be removed, prior to carrying-out or to gain access to carry-out specified work. The inspection must be conducted jointly by the Contractor, the IA and the TA.
- 3.7.2 The Contractor must repair or replace any item that is damaged in this process. Any piping, manholes, parts, equipment etc. requiring installation after removal, must be refitted using new Contractor supplied materials such as jointing, packing, anti-seize compound, clamps, brackets, fasteners, oils, lubricants, cleaning solvents, preservatives and insulation. Materials must be in accordance with equipment manufacturers' drawings, manuals or instructions. Where a substitution must be made, the IA and TA must approve in writing the materials used.
- 3.7.3 The Contractor must provide a test plan and test to prove operation of disturbed items after completion of work.

3.8 Test Results

- 3.8.1 The Contractor must ensure tests and trials are performed to the satisfaction of the IA, TA, and TCMS. All tests, measurements, calibrations and readings must be recorded and provided in a report to the IA, TA and TCMS. The reports must be bound and typewritten, double-spaced on 8 1/2" X 11" and indexed by specification number. The reports must also be provided in Adobe pdf format.
- 3.8.2 The Contractor must ensure all dimensions are measured and recorded. All measuring devices must be described in the report and the name of the person taking the readings must be recorded.
- 3.8.3 The Contractor must ensure all testing and measurement equipment (mechanical or electronic) are calibrated and that calibration certificates are provided to the IA prior to final inspection or witnessing of tests.

3.9 Contractor Supplied Materials and Tools

- 3.9.1 The Contractor must unless otherwise specified, supply all materials.
- 3.9.2 The Contractor must ensure materials are new.
- 3.9.3 The Contractor must ensure material such as jointing, packing, insulation, small hardware, oils, lubricants, cleaning solvents, preservatives, paints, coatings, etc., are in accordance with the equipment manufacturer's drawings, manuals or instructions. Where no particular item is specified or where substitution must be made, the IA and TA must approve in writing the materials used. The Contractor must provide certificates of grade and quality for various materials, as requested to the TA and IA.
- 3.9.4 The Contractor must obtain CCG ship specific special tools from the TA and return them to the TA upon completion of work.

3.10 Machinery and Overhaul Installation

- 3.10.1 The Contractor must overhaul and install machinery and equipment as per the manufacturer's instructions, drawings and specifications.

3.11 Restricted Areas

- 3.11.1 The Contractor must not enter the following areas except to perform work as required by the specifications: all cabins, offices, workshops, engineer's office, wheelhouse, control room, public washrooms, galley, mess rooms and lounge areas.

3.12 Protecting Equipment/Areas from Damage

- 3.12.1 The Contractor must protect equipment/areas (example: machinery, equipment, fittings stores or items of outfit) from damage by exposure, weather, movement of materials, sand, grit, or shot blasting, welding, grinding, burning, gouging, painting or airborne particles of paint etc.
- 3.12.2 The Contractor must provide the IA and TA the opportunity to inspect any protection installed prior to the work commencing.

3.13 Verification of Information Provided by CCG

- 3.13.1 The Contractor must verify, prior to bid submission, all drawings, pictures, dimensions, descriptions, locations, measurements, engineering values, materials, etc. listed or implied. Information such as engineering drawings, pictures, etc may have been provided with the accompanying technical specifications.

3.14 Drawing Revisions

- 3.14.1 The Contractor must revise drawings as required to a quality at least equal to those being updated. For example, drawings that have been lettered and dimensioned in a professional manner are not to be updated by hand. Updated hard copy drawings must be provided to the IA and TA in an acceptable format and if electronic format drawings have been provided for updating, these must be returned using the same version of software as originally used.

3.15 Service Conditions

- 3.15.1 The Contractor must provide ice-clearing services if so required for ship movements.
- 3.15.2 The Contractor must provide all enclosures and heating required to carry out work, taking into account the nature of the work, time of year and weather conditions. Examples of work items where heating and enclosures may be required include but are not limited to painting, shaft withdrawal, and tank cleaning.
- 3.15.3 Unless otherwise specified, all components, materials and installations supplied by or carried-out by the Contractor must be adequate to meet the following service conditions:
- In areas that are exposed to the elements:
 - o outside air temperature of minus 40°C to plus +35°C;
 - o wind velocity up to 50 knots;
 - o water temperature of minus 2°C to plus +30°C;
 - shock loading of 2.5g horizontal, 1.5g vertical. All new components, materials and installations within the ship must be adequate to withstand the specified shock loading accelerations.

3.16 Recording of Work in Progress

- 3.16.1 The IA and TA may record work in progress using various means including but not limited to photography and video, digital or film

3.17 Washrooms and Working Hours

- 3.17.1 A designated washroom on board may be made available should the Contractor not have access to washroom facilities ashore. The Contractor must obtain permission from the TA.
- 3.17.2 Hours of work for CCG personnel working on board the vessel are from 0800 hours to 2000 hours, seven (7) days a week, excluding statutory holidays. Permission to work on the vessel outside these hours must be obtained from the TA.