

Annex A

CCGS CONSTABLE CARRIÈRE ECHO SOUNDER DOCKING 2020

F3065 – 191120

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G 1.0 GENERAL NOTES**G 1.1 Introduction**

G 1.1.1 These project requirements are provided to the Contractor to define the objectives, performance, engineering standards and requirements for the refit of the CCGS Constable Carrière for the Canadian Coast Guard, Department of Fisheries and Oceans Canada.

G 1.1.2 It is the Contractor's responsibility to ensure that:

- a) The execution of the work specified herein meets the requirements described and those of Regulatory Bodies.
- b) All items and equipment supplied are deemed necessary to ensure the seaworthiness and safe operation of the vessel, as required for a vessel of this class.

G 1.1.3 The crew will not be on board the ship during the work period.

G 1.1.4 A crew of 9 will be present during the complete duration of the work. These crew members will not be accommodated on board.

G 1.2 Vessel Particulars**G 1.2.1 Details**

Name:	CCGS Constable Carrière
Official No.:	837317
IMO No.:	9586069
Type:	Twin Screw, Mid Shore Patrol Vessel
Class:	Near Coastal Class 1
Year Built:	2013 Irving Shipbuilders
Principle Dimensions	
Length Overall:	39.72 m
Breadth:	7.00 m

Depth:	3.80 m
Tonnage, Gross:	253 tonnes
Tonnage, Net:	75 Tonnes
Propulsion	Twin screw, Controllable Pitch Propeller, MTU S4000 M93L 12V. 1 bow thruster
Construction Material	Steel

G 1.2.2 Equipment - Not Used

G 1.3 References

G 1.3.1 Regulations

G 1.3.1.1 All regulations, standards, publications, and procedures listed below are to be used as reference. The Contractor will ensure all work completed in the specification are done to all pertinent federal and provincial regulations and standards. CCG procedures are to be used as a guide if no other regulation takes precedence.

G 1.3.1.2 In the following table “Included – Yes” means that the document will be provided by CCG to the Contractor. “Included – No” means that the Contractor must obtain the document separately. “Included – N/A” means that the document is not relevant to this specification.

FSSM Procedures	Title	Included Yes/No
FSSM	Fleet Safety and Security Manual (Latest Edition)	Yes
Ship Specific	Vessel Specific - Asbestos Risk Assessment Report and Management Plan	Yes
Ship Specific	Vessel Specific – Lead Paint Test Report	No
Publications		
TP 127	Ships Electrical Standards	No
TP 3669	Standards for Navigating Appliances and Equipment	N/A
TP3177	Standard for the Control of Gas Hazards in Vessels to be Repaired or Altered	No

TP 11469	Guide to Structural Fire Protection	No
TP 14231	Marine Occupational Health and Safety Program	No
TP 14612	Procedures for approval of Life-saving appliances and fire safety systems, Equipment and Products	No
TP 4414 E	Guidelines Respecting Helicopter Facilities on Ships.	N/A
IEEE 45	Institute of Electrical and Electronics Engineers, Recommended Practice for Electrical Installations on Shipboard	No
70-000-000-EU-JA-001	Specification for the Installation of Shipboard Electronic Equipment	N/A
IEC 60533	Electrical and Electronic installations in ships – Electromagnetic Compatibility	No
IEC 60945	Maritime Navigation and Radio communication equipment and systems – methods of testing and required test results.	N/A
Standards		
CSA W47.1	Certification of Companies for Fusion Welding of Steel Structures Division 2 Certification	No
CSA W47.2	Certification of Companies for Fusion Welding of Aluminum	No
CSA W59	Welded Steel Construction – Metal Arc Welding	No
CSA W59.2	Welded Aluminum Construction	No
ISO 9712:2005	International Standards for NDT	No
18-080-000-SG-001	Welding of Ferrous Materials	No
18-080-000-SG-002	Welding of Aluminum and Aluminum Alloys	No
SSPC	The Society for Protective Coatings	No
ISO 8501-1:2007	Preparation of steel substrates before application of paints and related products	No

ISO 10816-1:1995	Mechanical vibration -- Evaluation of machine vibration by measurements on non-rotating parts -- Part 1: General guidelines	No
Regulations		
MOHS	Maritime Occupational Health and Safety	No
CSA	Canada Shipping Act 2001	No
Machinery Regs.	Marine Machinery Regulations (SOR/90-264)	No
Hull Regs.	Hull Inspection Regulations (C.R.C., C. 1432)	No
Canada Labour Code	Canada Labour Code (R.S.C., 1985, c. L-2)	No
WorkSafe	Occupational Health and Safety (OHS) Regulation	No

G 1.3.2 Guidance Drawings

G 1.3.2.1 The following Drawings are to be considered as Guidance Drawings as defined in the Drawings section of the General Notes.

Drawing Number	Description
6094-24300-01_E	SHAFT LINE ARRANGEMENT PLAN
6094-50000-02_D	AIR PIPES AND SOUNDING DIAGRAM
6094-61100-01	Bottom Plugs Diagram
AF6097-10000-01_AF	Midship and Other Sections Plans
AF6097-10000-03_AF	Shell Expansion
AF6097-10000-04_AF	Watertight Bulkheads Plans
AF6097-10000-11_AF	Rudders Construction Plan 1
AF6097-10000-11_AF	Rudders Construction Plan 2
AF6097-10000-14_AF	Dry-Docking Plan-1_2 (Mar 27 2014)
AF6097-25600-01	AS-BUILT COOLING WATER SYSTEM
AF6097-50000-03_8	Valve Schedule

AF6097-50000-04_AF	Pipe Schedule
AF6097-52000-01	AS-BUILT BILGE DRAINAGE AND DEWATERING SYSTEM
AF6097-52000-02	AS-BUILT BALLAST SYSTEM
AF6097-52600-01	AF SCUPPERS AND DRAINS
AF6097-53000-02	AS-BUILT SANITARY FRESH WATER SYSTEM
AF6097-55100-01	AS-BUILT COMPRESSED AIR SYSTEM
AF6097-56100-02	AS-BUILT STEERING SYSTEM SCHEMATIC OF THE HYDRAULIC SYSTEM
AF6097-56100-03	AF STEERING GEAR ROOM ARRANGEMENT
AF6097-58100-01	AF ANCHOR SYSTEM ARRANGEMENT PLAN
AF6097-59300-02	AS-BUILT BLACK GREY WATER AND SANITARY FLUSHING SYSTEM
AF6097-59300-04	AS-BUILT OILY WASTE SYSTEM
AF6097-63100-01_AF	Paint schedule
AF6097-63300-01	AF Scheme of Cathodic Protection
AF6097-89940-01	AF GENERAL ARRANGEMENT PLAN_(NEW)SHT1_of_2
AF6097-89940-01	AF GENERAL ARRANGEMENT PLAN_(NEW)SHT2_of_2
AF6097-89940-02	AF Tank Arrangement & Capacity Plan
AF6097-89940-03	AF LINES PLAN
AF6097-89940-08	AF DRAFT MARKS AND LOAD LINE MARKS PLAN
AF6097-10000-14	AF Dry-Docking Plan-2_2 (Mar 27 2014)
AF6097-63300-01	AF Scheme of Cathodic Protection

G 1.3.3 Abbreviations

ACM: Asbestos Containing Material	MCA: Matériaux contenant de l'amiante
CFM: Contractor Furnished Material and/or Equipment	MFE: Materials Provided by Contractor
CLC: Canada Labour Code	CCT: Code canadien du travail
CSA: Canadian Standards Association	CSA: Association canadienne de normalisation - ACNOR
CWB: Canadian Welding Bureau	BCS: Bureau canadien du soudage
DFO/CCG: Department of Fisheries and Oceans, Canadian Coast Guard	MPO/ GCC: Ministère des Pêches et Océans, Garde côtière canadienne
FSR: Manufacturer's Field Service Representative	RSF: Représentant de service du fabricant
FSM: Fleet Safety Manual	MSF : Manuel de sécurité de la flotte
GSM: Government Supplied Material and/or Equipment	MFG: Matériel fourni par le Gouvernement
HC: Health Canada	SC: Santé Canada
IEEE: The Institute of Electrical & Electronic Engineers Inc.	IEEE: Institute of Electrical and Electronic Engineers
MSDS: Material Safety Data Sheet	FS: Fiche signalétique
NDT: Non Destructive Testing	END: Essais non destructifs
OEM: Original Equipment Manufacturer	FEO: Fabricant d'équipement d'origine
OHS: Occupational Health and Safety	SST: Santé et sécurité au travail
PWGSC: Public Works and Government Services Canada	TPSGC: Travaux publics et Services gouvernementaux Canada
RO: Recognized Organization as defined by Canada Shipping Act.	OR: organismes reconnus par la Loi sur la marine marchande du Canada
SSMS: Safety and Security Management System	SGSS: Système de gestion de la sécurité et de la sûreté

TBS: Treasury Board of Canada Secretariat	SCT: Secrétariat du Conseil du Trésor du Canada
TA: Technical Authority -CCG Superintendent, Marine Engineering Western Region, or her delegated Representative.	AT: Autorité technique – Représentant du propriétaire (GCC)
TCMS: Transport Canada Marine Safety	SMTC: Sécurité Maritime de Transports Canada
TI: Technical Inspector – CCG delegated	AI: Autorité de l'Inspection – Inspecteur technique (GCC)
VCS: Vessel Condition Survey	EEN : Examen de l'état d'un navire
VLE: Vessel Life Extension	PVN: Prolongement de vie d'un navire
WCB: Workers' Compensation Board	CNESST: Commission des normes, de l'équité, de la santé et de la sécurité du travail (CNESST)
WHMIS Workplace Hazardous Materials Information System	SIMDUT: Système d'information sur les matières dangereuses utilisées au travail

G 1.4 Conditions and Definitions

G 1.4.1 The following conditions and definitions are applicable to all work contained in the Specifications and are intended to outline the quality of workmanship and practice that is the minimum acceptable level:

- a) The word "install" means that the Contractor must connect mechanically and electrically and provide the labor and materiel to complete the installation;
- b) The word "reinstall" means a piece of equipment that the Contractor has affected repairs on and is to be returned/installed in its original location and be mechanically and electrically connected. The Contractor must provide the labor and materiel to complete the reinstallation;
- c) The word "remove" means that the Contractor must provide all labor and materiel to remove the unit, equipment, materiel, or system in its entirety. Part of the removal process is to blank openings, restore insulation and paint;
- d) The word "relocate" means that the Contractor must provide all labor and material to remove the unit, piece of equipment, or system and to install the same unit, piece of equipment, or system in the new location;
- e) The term "or equivalent" means a substitute which has equal characteristics i.e. (size, materiel type, life, weight, input, and output) as approved by the TA. A comparison of the general specifications must be provided to the TA for the equipment specified and the "or equivalent" (i.e. old compared to the new);
- f) The term "overhaul" as applied to any mechanical equipment, structure or system comprises: disassembly into component parts; cleaning examination of parts for defects; gauging of parts for wear; reporting of parts worn beyond specification limits or otherwise defective and reassembly followed by specification adjustments; tests; and functional trials;
- g) The word "disconnect" means the Contractor must mechanically and electrically disconnect the piece of equipment of all piping, wiring, seatings and other attachments permitting the removal of the unit as a whole;
- h) The word "disassemble" means that the Contractor must provide all labor to take apart, piece by piece, the equipment, machinery or system to be examined or repaired;

- i) The word "reassemble" means that the Contractor must provide all labor and material to put together, piece by piece, the equipment, machinery or system on completion of examination or repair;
- j) The words "Additional Work Procedures" means the procedures as defined in solicitation and contract and includes any additional work required on a system, sub-system or equipment which the original specification did not specify;
- k) The word "calibrate" means the adjustment of readings and measurements to a known standard;
- l) The word "check" means that the Contractor must provide labor to find faults by sighting, feeling or listening. The checking of any equipment does not involve the disturbance or removal of parts, components or sub-assemblies;
- m) The word "examine" means that the Contractor must provide labor for the process of systematically examining, checking and testing equipment, records or administrative procedures to detect actual or potential defects or errors;
- n) The word "test" means that the Contractor must provide labor to conduct the operation of a unit in relation to a stated standard or procedure;
- o) The words "set-to-work" means the tuning, alignment and adjustment of equipment and/or systems required subsequent to satisfactory installation. Inspection to make the equipment and/or systems ready for technical acceptance trials;
- p) The word "trials" is an element of QA that means an action(s) by which the Contractor proves by a visual or instrumental presentation that the equipment or system satisfies the requirements of the specified trials agenda; and
- q) The term "functional test" means operation of a piece of equipment in all its normal operating modes and throughout its operating range to establish that it will perform its designed function within normal operating parameters as indicated in the manufacturer's documentation.

G 1.5 Miscellaneous Information**G 1.5.1 Occupational (Workplace) Health and Safety**

G 1.5.1.1 The Contractor and all sub-contractors must 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. The Contractor and Contractor's employees will not have access to the vessel's washrooms and crew mess facilities. The Contractor must provide the necessary amenities as required.

G 1.5.1.2 Where "Safety Management System" is referenced in this document, it is referring to the Contractor's Safety Management System, which must be in affect while in the Contractor's Care and Custody and must be in accordance with the applicable OHS regulations and procedures.

G 1.5.1.3 When the Contractor works on the vessel while in the Care and Custody of the Canadian Coast Guard, the Safety Management System of CCG must be followed.

- a) 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.
- b) 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
 - i) Work at heights;
 - ii) Entry into enclosed spaces;
 - iii) Degassing before entering into confined spaces and for hot work;
 - iv) Lockout and Tag out;
 - v) Pre-work safety assessments.
- c) The contractor and his representatives shall participate in a ship safety orientation session prior to the commencement of any work to familiarize the

contractor's employees with the hazards specific to the ship and its permit systems related to work protocols. During this session, CCG will review 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.

- d) For the purpose of the Lockout and identification 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.
- e) The Contractor must adhere to local facilities shore based safety instructions and safety procedures if they are provided to the Contractor.

G 1.5.1.4 The Contractor must identify a specified person that is responsible for the safety management of the work site. The Safety Manager must insure that daily safety rounds are carried out and that safety issues are identified and safety precautions are maintained.

G 1.5.1.5 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 regulations.

G 1.5.2 Lead Paint and Paint Coatings

G 1.5.2.1 The Contractor must not use lead based paints. CCG 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 CCG will provide copies of all available lead testing results. However, responsibility lies with the contractor to ensure all environmental considerations and use of Personal Protective Equipment are employed.

G 1.5.3 Asbestos Containing Materials (ACM)

G 1.5.3.1 The Contractor must use insulation that contains 0% ACM.

G 1.5.3.2 The Contractor will be supplied the most recent copy of the vessel's Green Passport, by CCG prior to Assumption of Custody.

- G 1.5.3.3 **Handling of any asbestos containing materials must be performed by trained personnel and/or a company certified in the removal of asbestos in accordance with Federal, Provincial and Municipal regulations.**
- G 1.5.3.4 **The Contractor must 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.**
- G 1.5.3.5 **The vessel maintains a Green Passport under Lloyd's Register which states in Part A.1A Summary of Asbestos Status: Material Declarations confirms that no asbestos has been used in the construction of this vessel. The Contractor must provide an "Observation Report (OR)" with reference to any concerns or intentions in regards to asbestos containing materials not already specified. Any approved work resulting from the OR will follow the Additional Work Procedures.**

G 1.5.4 Confined Spaces

- G 1.5.4.1 **Prior to commencing work in any confined space, the Contractor must ensure that a qualified person issues a "Gas Free Certificate" for that space. Certificates must specify, "Safe for persons" or "safe for hot work" as appropriate. Contractor must adhere to the safety management system requirements as determined in the Pre-Work Meeting. All copies of certificates generated are to be provided to the TA in accordance with the Documentation section of the General Notes.**
- G 1.5.4.2 **Any entry into confined spaces onboard the vessel during the contract period must be conducted in accordance with the safety management system as determined in the Pre-Work Meeting.**

G 1.5.5 Hot Work

- G 1.5.5.1 **The Contractor must, as a minimum, ensure the following items are followed when conducting hot work while in their care and custody:**
 - a) **The compartment(s) affected must be certified gas free by a qualified person. The Contractor must provide all certificates to the TA in accordance with the Documentation section of the General Notes. Certificates must specify, "Safe for persons" or "safe for hot work" as appropriate. The Contractor must post a copy of all certificates at the entrance to the affected spaces;**
 - b) **All portable combustible materials within 2m of hot work must be removed from the vicinity;**

- c) **Protective material must be used to prevent the spread of sparks, protecting electrical cables and other services;**
- d) **Fire sentries must be provided in each space and in the adjacent space where welding, grinding, or burning is being carried out on bulkheads, deck-heads or decks. Fire sentries must be provided with an appropriate fire extinguisher (Contractor supplied) and must be trained in its use. The fire sentry must maintain a watch in his designated area for at least thirty (30) minutes after any hot work has been completed.**

G 1.5.5.2 Any hot work carried out onboard the vessel during the contract period must be conducted in accordance with the safety management system. A copy of the site generated hot work permits must be provided to the TA in accordance with the Documentation section of the General Notes named in accordance with the specification item generating the required work.

G 1.5.6 Work Aloft

G 1.5.6.1 Any work aloft onboard the vessel during the maintenance/refit period must be conducted in accordance with the safety management system. Notices must be placed to prevent operation of Radars while personnel are working aloft on the mast or on the wheelhouse top.

G 1.5.7 Electrical Equipment

G 1.5.7.1 When working on electrically operated equipment, the following precautions must be taken at a minimum:

- a) **All electrical equipment undergoing work must be isolated at the main power and alternate distribution panel;**
- b) **Electrical lock-outs must be used to isolate the equipment and electrical caution tags posted at the main power and distribution panel on those switches supplying equipment under maintenance and verification made at the terminals to ensure power is not present.**
- c) **Only after completion of the work must the lock-outs and electrical caution tags be removed and the switches engaged.**

G 1.5.7.2 Any lock-out requirements onboard the vessel during the contract period must be conducted in accordance with the safety management system.

G 1.5.7.3 The TA must be notified of all such ongoing work.

G 1.5.8 Workplace Hazardous Materials Information System (WHMIS)

G 1.5.8.1 The Contractor must provide the TA with Material Safety Data Sheets (MSDS) for all Contractor and sub-contractor supplied WHMIS controlled products. MSDS sheets are to be the formats requested in the Documentation section of the General Notes.

G 1.5.8.2 All MSDS sheets must be maintained in accordance with OHS procedures.

G 1.5.8.3 The TA will provide the Contractor with access to MSDS sheets for all controlled products on the ship for all specified work items on request.

G 1.5.9 Smoking in the Work Space

G 1.5.9.1 The Contractor must ensure compliance with the Non- Smokers' Health Act. The Contractor must ensure that there is absolutely no smoking onboard the vessel by their employees, sub-contractors, including the employees of any sub-contractors.

G 1.5.10 Touch-up / Disturbed Paint

G 1.5.10.1 The Contractor must prepare and coat all touch-up work in accordance with the paint specification provided for the particular area involved in accordance with PAINT SPECIFICATIONS see: MSPV International Coatings Maintenance Plan OBM.pdf

G 1.5.11 Contractor Furnished Materials (CFM) and Tools

G 1.5.11.1 The Contractor must ensure replacement 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 and/or instructions.

G 1.5.11.2 Where no particular item is specified or where substitution must be made, the Contractor must submit an Observation Report indicating the substitution or item not specified to the TA. The Contractor must provide information about materials used, certificate of grade and quality of various materials to the TA prior to use.

G 1.5.11.3 The Contractor must provide all equipment, devices, tools and machinery such as craneage, staging, scaffolding, hoarding, and rigging necessary for the completion of the work in this specification.

- G 1.5.11.4 **The Contractor must deliver and store all new CFM equipment at their facility. The CFM must be stored in a secure, environmentally controlled space in accordance with the equipment storage section of this specification.**

G 1.5.12 Government Supplied Materials (GSM) & Tools

- G 1.5.12.1 **All tools are Contractor supplied unless otherwise stated in the technical specifications.**
- G 1.5.12.2 **Where tools are supplied by the TA they must 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.**
- G 1.5.12.3 **All GSM material will be brought to the Contractor's facility onboard the vessel and will remain stored onboard the vessel until required by the Contractor.**

G 1.5.13 Storage

- G 1.5.13.1 **Equipment (i.e. covers, cowling and other items that may need to be removed and stored) must be stored in accordance with the equipment manufacturer's or equipment vendor's specific storage instructions. The Contractor must make these instructions available to the TA.**
- G 1.5.13.2 **All equipment and items must be stored in such a manner so as to be easily accessible for inspection. No items are to be stored directly on floors.**

G 1.5.14 Regulatory Inspections and/or Class Surveys

- G 1.5.14.1 **The Contractor must contact, coordinate, schedule, and be completely prepared for all regulatory inspections and surveys by the applicable authority: i.e. ABS, HC, Environment Canada or others as indicated by individual specifications.**
- G 1.5.14.2 **For the purposes of this contract all regulatory inspection will be conducted by ABS including all TCMS inspections. TCMS retains the authority to inspect the vessel at any time. Inspection expenses occurred by TCMS will be handled outside of this contract. Any work arising within this contract due to TCMS inspection will be handled through PWGSC 1379 action.**
- G 1.5.14.3 **Documentation generated by the above inspections and/or surveys indicating that the inspections and/or surveys were conducted (i.e. original signed and dated certificates) must be provided to the TA in accordance with the "Documentation" Section of these General Notes.**

G 1.5.14.4 **The Contractor must not substitute inspection by the TA for the required regulatory inspections.**

G 1.5.14.5 **The Contractor must provide timely advance notification (minimum of 2 working days) of scheduled regulatory inspections to the TA so they may witness the inspection.**

G 1.5.14.6 **The Contractor must arrange for all visits and inspections associated with ABS, HC, Environment Canada, or any other Inspection required by the specification unless otherwise indicated. All costs and fees associated with these visits and inspections will be billed directly to Canada.**

G 1.5.15 Contractor Inspections

G 1.5.15.1 **The Contractor must afford the opportunity for the TA to conduct an inspection with the Contractor on the condition and location of items to be removed prior to either carrying out the specified work or gaining access to a location to carry out the work.**

G 1.5.15.2 **The Contractor must take a before photo of conditions prior to removing any item. These photos are to be in accordance with the Documentation section of the General note, named according to the specification section that resulted in removing those items.**

G 1.5.15.3 **Prior to the close out of any item under this specification, the Contractor must afford the TA the opportunity to verify the work has been completed in accordance with the specification. At that time the Contractor must have available all photos, documents, reports, and trials in relation to the item being closed out as completed.**

G 1.5.16 Recording of Work in Progress

G 1.5.16.1 **The TA may record any work in progress using various means including, but not limited to photography and video, digital or film.**

G 1.5.17 Access for Maintenance, Installation, and Removal.

G 1.5.17.1 **The layout of newly installed machinery and equipment must be designed and constructed to permit ready access for routine maintenance, operational checks and operational inspections without disturbance of other machinery, equipment or structure.**

G 1.5.17.2 **The Contractor must determine best routes for installing and removing equipment. All lifting points currently fitted on the ship must be treated as uncertified, and must be certified before use by the Contractor.**

G 1.5.17.3 **Temporary lifting points installed by the Contractor must be removed prior to transfer of custody with welds ground flush, and paint coatings applied in accordance with the paint schedule: AF6097-63100-01 specification.**

G 1.5.17.4 **Manufacturer's recommended removal clearances must be allowed for.**

G 1.5.17.5 **After equipment installation and/or removal the Contractor must make good all equipment relocations, blemishes, and penetrations and must return the affected areas of the ship to the As-Delivered working condition.**

G 1.5.18 Assembly of Components

G 1.5.18.1 **The Contractor must ensure that during installation of specified equipment, that parts and assembled equipment are cleaned of smudges, spatter or excess solder, weld metal and metal chips or any other foreign material which might detract from the intended operation, function, or appearance of the equipment. (This would include any particles that could loosen or become dislodged during the normal expected life of the equipment). All corrosive material must be removed. This cleaning must take place before the parts are assembled into the equipment.**

G 1.5.18.2 **Covers, cowlings and components damaged by the Contractor must be replaced with a new CFM cover, cowl, or component.**

G 1.5.18.3 **Where torque specifications are not provided by the manufacturer, standard SAE nut and bolt torques must be used.**

G 1.5.19 Protection of Equipment

G 1.5.19.1 **The Contractor must take measures to ensure that surfaces and components of equipment installed on the vessel are protected against damage, soiling, and contamination as a result of contracted work.**

G 1.5.19.2 **All electrical and electronic equipment and components must be protected during the contract against physical damage, internal damage, and by the effects of adverse temperatures or other environmental conditions.**

G 1.5.19.3 **The Contractor must protect equipment that could be damaged as a result of movement of materials and equipment nearby. The Contractor must also protect**

equipment from nearby sources of contamination including but not limited to burning, welding, grinding and painting.

- G 1.5.19.4 Any damage to surfaces, equipment, furnishings or decor incurred prior to acceptance must be returned to As Delivered condition by the Contractor.
- G 1.5.19.5 All openings in machinery and/or systems prior to connections being made must be kept covered by suitable inserts or covers at all times.
- G 1.5.19.6 The Contractor must obtain and follow instructions from its sub-Contractors for any special protection required for their equipment during the project work. Such instructions must be made available to the TA.
- G 1.5.19.7 Physical protection including but not limited to plastic sheets, fireproof covers, heavy weight material covers, wood plugs, wood encasements and heaters must be used as required.
- G 1.5.19.8 The Contractor must protect the vessel from the possibility of vermin infestation (insect/mammal/bird). If an infestation does occur during the contract period the Contractor must bear all costs to ensure the vessel is made vermin free before the vessel's departure and contract completion.

G 1.6 Documentation

- G 1.6.1 Documentation is identified as a deliverable in the specification items requesting them.

G 1.6.2 Data Book

- G 1.6.2.1 The Contractor must provide all documentation generated as a result of specified deliverables in both electronic and paper formats. There must be 2 paper copies of each document, in two separate binders, as part of the Contractor's QA program. An electronic copy of all documentation must also be provided to the TA in accordance with the formats described in this specification item.
- G 1.6.2.2 All copies of documents generated as a result of specified deliverables will be referred to as the "Data Book".
- G 1.6.2.3 The Contractor must provide to the TA all the files generated as part of the Data Book must be received prior to the contract being considered complete. The files must be in hard format (CD-ROM, DVD-ROM, Flash Drive / Memory Stick). Each specification item is to have its own folder named according to the specification item. For example "G1.0 General Notes".

- G 1.6.2.4 Any documentation, media, and reports, that are the result of Additional Work, are also to be included as part of the Data Book.

G 1.6.3 File Naming

- G 1.6.3.1 File naming must be in the following format: *Specification#.# – Date (yyyy-mm-dd) – File Name Describing Information*. For Example: “G1.0 – 2016-12-01 – Details of file naming.pdf”.

G 1.6.4 E-mails

- G 1.6.4.1 Any files sent to the CA/TA by e-mail must be named as per the “File Naming” section of this specification. All files that are e-mailed must have in the subject name: “Contract# - DATA BOOK – Date – Specification #”. For Example: **F3065-0 – DATA BOOK – 2019-11-30 – G1.0 General Notes**. Files sent by e-mail must also be included in the “Data Book”.

G 1.6.5 File Formatting

- G 1.6.5.1 All documentation, reports, test results, certificates, or data obtained by the Contractor in paper form must be scanned into unprotected (preferably searchable) PDF formatted files and named according to the File Naming section of this specification.
- G 1.6.5.2 All reports, test results, certificates, or raw data obtained by the Contractor in electronic format must be converted to unprotected PDF formatted files and named according to the “File Naming” section of this specification. Both the original and the converted copy are to be provided as part of the “Data Book”.

G 1.6.6 Photos

- G 1.6.6.1 All photos obtained by the Contractor as requested in the specification must be provided in .JPG formatted files at a resolution of at least 640 x 480 and named according to the “File Naming” section of this specification.

G 1.6.7 Measurements, Calibrations, and Readings.

- G 1.6.7.1 All measurements, calibrations and readings recorded, must be signed by the person taking the measurements, dated and scanned into electronic format as part of the “Data Book”.
- G 1.6.7.2 Recorded dimensions must be to a precision of three decimal places (unless otherwise stated) in the measuring system currently in use on the vessel.

- G 1.6.7.3 The Contractor must 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. These copies are to be provided as part of the "Data Book" under any specification where measurements are required.

G 1.6.8 Test Inspection Records and Certificates

- G 1.6.8.1 Test Inspection Records and Certificates are identified as a deliverable in the individual specification item requesting them.
- G 1.6.8.2 Test Inspection Records and Certificates must be included as a separate section in the DATA BOOK and indexed/arranged in numeric order by specification number.
- G 1.6.8.3 The Contractor is responsible for maintaining a complete and accurate record of all tests and trials conducted on the vessel and on each piece of equipment. Prior to the commencement of a trial, all relevant documentation and associated test sheets, including shop test data, must be complete and attached to the trials agenda.
- G 1.6.8.4 All tests and trials data must be legible both in hard copy and electronic format. If necessary, handwritten records may require transcription into electronic format in order to be acceptable. The original must be signed by ABS, the TA and the Contractor and where necessary by the sub-Contractors and/or FSRs who witnessed the tests. All the Data must be submitted to the TA in accordance with the "Documentation" section of these General Notes.

G 1.7 Drawings

- G 1.7.1 This section, to be referred to as the Drawings section of the General Notes, is intended to be used as reference for the minimum standards when specified deliverables are to be drawings.
- G 1.7.2 The Contractor must have on staff or through a sub-contractor a person qualified and experienced in the use of AutoCAD who will create or modify drawings that result from the work.
- G 1.7.3 The Contractor must comply with the Canadian Coast Guard National CAD Standards titled "*Computer Aided Design (CAD) using AUTOCAD*" provided.
- G 1.7.4 Drawing disks must be clearly labeled with the Contract Number, file names and drawing numbers. If a complete listing exceeds the label size, a "readme.txt" file in

ASCII format must be provided with each disk. A printed copy of the Readme file must accompany each disk. Disks must be labeled As-Fitted drawings for those drawings that have been approved and finalized.

- G 1.7.5 Final As-Fitted prints/plots must not contain markings or corrections by hand (i.e. marker, pen, pencil, etc.). Drawings containing mark-ups must be revised and re-printed/plotted.
- G 1.7.6 The Contractor must prepare all the working drawings necessary for the project requirements and modernization work.
- G 1.7.7 The Contractor must furnish all drawings required by sub-Contractors, trades and other consultants.
- G 1.7.8 Schematic drawings of systems must include all pertinent system information, including sizes, dimensions, labeling, equipment locations, and all information relating to system fittings.
- G 1.7.9 The Contractor must have in place a complete system of documenting and controlling all drawing revisions affected by the work of this project. Drawing numbering system and titles must match the original drawings for clarity and include a revision number with date.

G 1.7.10 Guidance Drawings

- G 1.7.10.1 All technical guidance drawings are issued to the Contractor for guidance purposes only. It is the responsibility of the Contractor to develop working drawings and to ensure that all such drawings receive applicable regulatory approval. The Contractor is to note that not all technical guidance drawings supplied are As-Fitted drawings. It is the responsibility of the Contractor to physically verify all affected items.
- G 1.7.10.2 All departures from the provided guidance drawings and project specifications must be clearly indicated by the Contractor and written approval obtained from the TA before carrying out such alterations or departures.
- G 1.7.10.3 Specification deviations must be documented using an Observation Report.

G 1.7.11 As Fitted Drawings

- G 1.7.11.1 The As-Fitted Drawings are identified as a deliverable in the specification item requesting them.

G 1.7.11.2 Upon completion of specified work, the Contractor must transfer the mark-ups from any working drawings where installation changes were made to drawings affected by the project work. These drawings become the As-Fitted drawings for the project work. The Contractor is responsible for providing updated vessel drawings affected by the project work to the TA prior to completion of the contract. The affected drawings must be submitted in the following formats:

- a) Five (5) plotted copies of the latest revision of each of the As-Fitted drawings;
- b) Two (2) electronic copies of the latest revision of each As-Fitted drawing.

G 1.7.11.3 Plotted drawings must be on standard ANSI paper sizes.

G 1.7.11.4 Marked up drawings are to be AutoCAD drawings where original AutoCAD drawings are provided. If no AutoCAD drawings were provided then scanned files (raster format) must be supplied to CCG in one of the following formats:

- a) DXF format;
- b) TIFF format;
- c) PDF format.

G 1.8 Manuals

G 1.8.1 This section, to be referred to as the Manuals section of the General Notes, is intended to be used as reference for the minimum standards when specified deliverables are to be manuals.

G 1.8.2 General

G 1.8.2.1 Instruction Manuals must be individually bound in a hard cover 3 ring book format with a page size of 8 1/2" x 11". Drawings of a larger size must be concertina folded to suit. The covers must have the following information printed thereon:

- a) NGCC Constable Carrière ;
- b) Equipment Identification;
- c) Equipment Manufacturer;
- d) Date.

- G 1.8.2.2 **Plastic tabbed indices must be provided for all sections of the manuals. Major equipment components must be subdivided into separate sections of the manuals.**
- G 1.8.2.3 **A master index must be provided at the beginning of each binder indicating all items included in each section.**
- G 1.8.2.4 **A list of names, addresses and telephone numbers of contacts associated with the equipment manufacturers must be provided that can be used after the project completion for maintenance and information data purposes.**
- G 1.8.2.5 **A copy of the final reviewed and approved As-Fitted drawing(s) must be provided within the maintenance manual.**
- G 1.8.2.6 **One (1) electronic copy of each manual must be provided in accordance with the Data Book section of this specification.**
- G 1.8.2.7 **Two (2) paper copies of manuals and data sheets must be supplied in English and French for all Contractor Furnished Equipment items.**
- G 1.8.3 Operation Manuals – As-Fitted**
- G 1.8.3.1 **Operation manuals must include the following items:**
- a) **General description of equipment operating sequence;**
 - b) **Step by step procedure to follow in commissioning the equipment;**
 - c) **Schematic wiring diagram for the fitted equipment; and**
 - d) **All pertinent equipment performance criteria.**
- G 1.8.3.2 **Where software/hardware systems are fitted, the operation manual must include the full software documentation manual in paper form for the system and an electronic copy in accordance with the Documentation Section. The minimum software documentation must include:**
- a) **System level diagrams describing the overall scheme of the software/hardware system;**
 - b) **The functional specifications, which must describe in detail the functional capabilities of the system and each software components; and**

- c) Project specific program listings including all comments describing the details of the code functions.

G 1.8.4 Maintenance Manuals – As-Fitted

G 1.8.4.1 Maintenance manuals are to include:

- a) Manufacturer's maintenance instructions for each item of the equipment requiring maintenance activity;
- b) Instructions are to include installation instructions, part numbers, part lists, master drawings and exploded views with part identification for all mechanical, electrical and electronic parts and the name of suppliers;
- c) Summary list of each item of the equipment requiring lubrication, indicating the name of the equipment item, location of all points of lubrication, type of lubricant recommended, and frequency of lubrication; and
- d) Troubleshooting sections must be included for all equipment in the maintenance manual under a separate heading.

G 1.9 Identification

G 1.9.1 Nameplates

- G 1.9.1.1 Nameplates are identified as a deliverable in the individual specification item requesting them.
- G 1.9.1.2 All nameplates must be bilingual : English and French.
- G 1.9.1.3 Lettering must be clear and concise with the minimum use of abbreviations. Primary information must be given in larger size lettering than secondary information.
- G 1.9.1.4 The type of nameplates must suit the location in the vessel as specified below:
- G 1.9.1.5 Plastic:
 - a) Laminated plastic nameplates, black with white core engraved through to the center core, must be provided for all devices located on the exterior surfaces of switchboards, MCC's, or local control panels. Nameplates must be secured to the equipment with machine screws.

- b) **New nameplates to be fitted on the existing equipment must be consistent in size and lettering with those already fitted or those being replaced.**
- c) **Nameplates indicating feeder circuits must identify each circuit by name and number and the fuse size or trip element rating.**
- d) **The Following Labels must be of laminated plastic, red with white core engraved through to the center core:**
 - i) **Safe Working Loads,**
 - ii) **Warning/Caution labels,**
 - iii) **Circuit Breakers with shunt trips requiring completion of remote circuits prior to being operated,**
 - iv) **Equipment with multiple power sources,**
 - v) **Circuit breaks having a potential power source connected to both sides**
 - vi) **Indication of any other potentially hazardous condition.**
- e) **Engraved on Metal:**
 - i) **Must be used in machinery spaces and where exposed to the weather or susceptible to covering by paint, oil or grease. Nameplates exposed to weather must be stainless steel or brass. Engraved metal nameplates must be of stainless steel or brass with lettering accentuated by means of black wax unless otherwise noted, and secured with stainless steel or brass machine screws.**
 - f) **A complete list of nameplates, detailing size of plate, size of lettering and inscription must be submitted to the TA for review prior to ordering and/or manufacturing.**

G 1.9.2 Wire Labeling

- G 1.9.2.1 **Wire Labeling is identified as a deliverable in the individual specification item requesting them.**
- G 1.9.2.2 **All permanently installed cables must be tagged with the circuit designation at all points of connection and on both sides of bulkheads, decks, etc. Tags must be of metal compatible with the armor or cable sheathing. Both ends of the tags must be strapped to the cable with compatible metal strap after all painting has been completed. Straps must pass through holes in the tags so that tags are positively**

secured. Strap ends must be permanently folded and crimped. Adhesives of any kind will not be acceptable.

- G 1.9.2.3 All wiring in panels specified to be labeled must be labeled with the Cable Number and their conductor number unless otherwise specified in equipment installation drawings.**

S 1.0 SERVICES**S 1.1 GENERAL**

- S 1.1.1** The Contractor must supply the following services to the vessel for the entire work period and disconnect upon completion of the work period. The Contractor must re-establish all services if the vessel is moved during the work period, the TA must be contacted.
- S 1.1.2** The Contractor must supply all material, hoses, cables, etc. and labor required to connect and disconnect the services to the vessel. Unless otherwise stated these services must be available 24 hours a day 7 days a week for the entire contract period.
- S 1.1.3** All staging, craneage, screens, lighting, and any other support service, equipment, and material necessary to carry out the work identified in these specifications must be Contractor supplied.

S 1.2 BERTHING

- S 1.2.1** The berthing and mooring facilities must be suitable for a vessel of this size in local weather/tide/sea conditions. Fenders must be supplied by the Contractor to prevent the vessel from contacting the wharf in said local conditions.
- S 1.2.2** The length of the dock must be a minimum of 90% of the keel length of the vessel.
- S 1.2.3** During the contract period, when the ship is afloat, the ship must be berthed at the Contractor's wharf at a safe and secure location with a minimum clearance of 0.45 meters (1.5 feet) under the vessel at extreme low tide to ensure the vessel will not touch bottom.
- S 1.2.4** The Contractor is responsible for all movements of the vessel, including berthing and mooring of the vessel for the contract period and arrangements and costs for line handlers, tugs, and pilots.

S 1.3 MOORING LINES

- S 1.3.1** The Contractor must provide the labor required to secure the vessel alongside the facilities.

- S 1.3.2** The Contractor must provide CFM mooring lines while vessel is secured alongside the Contractor's facilities. The ship's mooring lines must not be used.

S 1.4 GANGWAYS

- S 1.4.1** The Contractor must supply two means of access to the vessel and escape from the vessel while in possession of the vessel. One means of access and escape must be by gangway.
- S 1.4.2** The Contractor must supply all labor and services required for the installation and removal of all gangways, complete with handrails, safety nets, and lighting for the duration of the contract while the vessel is moored.
- S 1.4.3** Any movement of the gangway required by the Contractor is the responsibility of the Contractor.
- S 1.4.4** The Contractor must provide gangways in accordance with TCMS and Canada Labour laws and regulations.

S 1.5 ELECTRICAL POWER

- S 1.5.1** The Contractor must supply 600 Volt Alternating Current, 60 hertz, 3 Phase, 4 wire with floating neutral, 200 Ampere electrical power, through the vessel's shore power system, for the duration of the contract.
- S 1.5.2** The Vessel's shore power cable and associated plug connection may be used by the Contractor. However, the Contractor is responsible to replace the entire length of cable with an equal quality, size, and length of cable should the shore power cable be damaged during the contract period. Damage to the shore power cable also includes damage to the plug-in connections which must be replaced if damaged. Splicing any section of the cable is not acceptable.
- S 1.5.3** The Cable condition must be inspected at the start and completion of the work period. The Contractor and the TA must record in writing all defects prior to the start of the contract period and all parties must sign the original document. Photos must be taken of general condition and close-ups of existing damage. All photos and documents are to be provided to the TA in accordance with the Documentation section of the General Notes.

S 1.5.4 The Contractor must ensure the correct phase rotation on a 3 phase system is established prior to energizing the ship's distribution system from shore. Any changes to the ship's power system to accommodate the Contractor supplied shore power connections must be returned to the original setup by the Contractor upon the disconnection of the Contractor supplied power cable and equipment. All work must be carried out by certified electricians.

S 1.5.5 When connected to shore power, it must be connected to a Contractor supplied kilowatt-hour meter. The Contractor must read the kilowatt-hour meter when the connection is made and once again when the power is disconnected. Both readings of the meter must be witnessed by the TA and recorded.

S 1.5.6 If temporary lighting is required for any of the work, the temporary power system must be feed through a Contractor supplied kilowatt-hour meter. The Contractor must read the kilowatt-hour meter when the connection is made and once again when the power is disconnected. Both readings of the meter must be witnessed by the TA and recorded.

S 1.5.7 Temporary lighting and power must meet provincial regulations for safe work conditions and there must be sufficient number of lights set up to provide safe passage through the accommodation and machinery spaces.

S 1.5.8 The Contractor must supply a price quote per kilowatt-hour for electrical power for the duration of the work period. The final price for this item shall be determined at the end of the contract once the meter has been read. The final power consumption total shall be adjusted up or down and will be processed by 1379 as required.

For the purposes of this contract the bidders are to quote for 5,000 kilowatt-hours.

S 1.6 HEATING

S 1.6.1 The Contractor must supply the heating required onboard and around the vessel to facilitate specified work.

S 1.7 WORKSITE INSPECTIONS

S 1.7.1 Before the Contractor starts any work on the vessel the Contractor's Quality Assurance Representative and the TA must 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 Walk-through must occur during vessel demobilization and the Contractor's Quality Assurance Representative must identify all items that are to be removed or secured prior to the Contractor assuming Care and Custody of the Vessel.

S 1.7.2 The Contractor's Quality Assurance Representative must take digital pictures of each area showing the outfit therein. Each picture must be dated and named as to the location on the vessel and that it represents As-Delivered conditions. These photos must be in the format; as well as named, in accordance with the Documentation section of the General Notes. A Copy of these photos must be provided to the TA within 48 hours of the start of contract on a memory stick, CD, or DVD.

S 1.7.3 During the work period, the Contractor must maintain work areas in the vessel, in a clean condition, free from debris and remove garbage daily.

S 1.7.4 Upon completion of the contract, the Contractor must return the vessel to the As-Delivered state of cleanliness.

S 1.7.5 Prior to the completion of the Acceptance Document, the Contractor's QA Representative, and the TA must perform an inspection of the vessel to view all areas where work was performed by the Contractor.

S 1.7.6 Copies of all photos, documentation, and inspection sign off sheets must be provided in accordance with the Documentation section of the General Notes.

S 1.8 FIRE PROTECTION

S 1.8.1 The Contractor must ensure protection against fire 24 hours/day and 7 days/week throughout the contract period.

S 1.8.2 The Contractor must isolate the vessel's fixed fire suppression system for the duration of the contract period to prevent accidental discharge.

S 1.8.3 The Contractor must ensure the isolation, removal, installation and reactivation of the shipboard fire detection and suppression systems or any components thereof, is performed by a qualified technician. When the shipboard fire detection or fire suppression system is deactivated or disabled by the Contractor during the contract period, the system must be recertified by a qualified technician prior to the end of the work period, as fully functional. A signed and

dated original copy of the certificate must be delivered according to the Documentation section of the General Notes.

- S 1.8.4** The Contractor must note that failure to take the necessary precautions while performing work on the vessel's fire suppression system(s) could result in the accidental discharge of the fire suppression agent(s). The Contractor must recharge and certify at his cost, container(s) or systems that are discharged as a result of the Contractor's or subcontractor's activities.

S 1.9 SECURITY

- S.1.9.1** The Contractor must provide security for the vessel at all times. During night hours without workers on board the ship, security rounds must be conducted at minimum every 3 hours during quiet hours 7 days a week including holidays during the entire work period at the contractor's facility.

- S.1.9.2** Contractor provided Security log books are to be signed during every set of rounds in the following spaces –

Bridge

Forward Machinery Space (Bow Thruster Compartment)

Main Machinery Room

Auxiliary Machinery Room

Steering Gear Compartment

Security log must be accessible at all time and an electronic copy must be given to the technical authority every week.

S 1.10 PARKING

The Contractor shall provide three (3) parking spaces reserved for the Technical Authority, and nine (9) crew members and suppliers for the duration of the contract. As well, the contractor will be required to provide snow removal service to maintain access to the vessel for Coast Guard personnel and various contractors.

10.0 SAFETY AND SECURITY

10.1 NOT USED

11.0 HULL AND RELATED STRUCTURES

11.1 DOCKING AND UNDOCKING (ABS SURVEY)

11.1.A Identification

- 11.1.A.1 The intent of this specification it is to conduct docking and undocking activities for the purpose of conducting an underwater hull survey by ABS and other work specified. CCG will pay for all ABS fees.
- 11.1.A.2 The vessel must be docked at the Contractor's facility, and the vessel hull must be surveyed by the TA and by ABS. On completion of all related work the vessel must be undocked and secured alongside at the Contractor's facility.
- 11.1.A.3 ABS must complete initial inspection of the hull in the 24 hrs period that follows the dock being clear of water and before the hull is washed.

11.1.B References

11.1.B.1 Equipment Data – Not Used

11.1.B.2 Drawings

- 11.1.B.2.1 All Drawings are listed in the General Notes.

11.1.B.3 Regulations

FSSM Procedures	Title	Included Yes/No
Publications		
Standards		
Regulations		

	Canada Shipping Act 2001	No
	Hull Inspection Regulations (C.R.C., C. 1432)	No

11.1.C Technical

- 11.1.C.1 The Contractor must afford the ship's crew the opportunity, alongside and prior to docking, to complete a tank condition report (soundings). The report must be signed by the TA and the Contractor's Dock Master. This report must be included in the shipyards final docking report.
- 11.1.C.2 A docking report must be completed which indicates current tank condition, docking plan and block locations and be in accordance with the Documentation section of the General Notes.
- 11.1.C.3 The TA must be afforded the opportunity to review the docking report prior to docking.
- 11.1.C.4 The Contractor must demonstrate that all support locations are in accordance with the docking plan. The Contractor must ensure that the docking blocks align with the vessel's internal support structure.
- 11.1.C.5 The Contractor must also ensure that all tank docking plugs are accessible and not obscured by the docking blocks.
- 11.1.C.6 The Contractor must supply all labor, materials and facilities required for the berthing, mooring, dry-docking and storage of the vessel with the dimensions as outlined.
- 11.1.C.7 The Contractor must prepare blocks and necessary shoring to maintain the true alignment of the vessel's hull and machinery throughout the docking period while the vessel is dry docked.
- 11.1.C.8 The vessel must be dry-docked such that all docking plugs, transducers, anodes and sea inlet grids are clear and accessible. A minimum clearance of 1.3 meters (4 feet) must be available between the keel and the dry dock. If any hull fittings are covered, the Contractor is to be responsible for all labor and materials required to make alternative arrangements to drain tanks and/or move blocks to gain access to areas of specified work. Please refer to Docking plan (AF6097-10000-14). The Contractor must make sure there is enough room between the blocks, the speed log and the echo sounder.
- 11.1.C.9 The Contractor must record which block setup is used for docking the vessel, as stated in Section G 1.7

- 11.1.C.10 The Contractor must provide a ground cable between the vessel and the dock while the vessel is dry-docked as per TCMS Ship Safety Bulletin 6/89.
- 11.1.C.11 The Contractor must advise the TA of the details of any major changes in the distribution of weights on the vessel while the vessel is dry-docked. This information must be given to the TA prior to the undocking of the vessel.
- 11.1.C.12 The Contractor must ensure that no transducers or any other underwater device are damaged or obscured by the docking blocks.
- 11.1.C.13 The TA must be afforded the opportunity to inspect all arrangements carried out by the Contractor prior to flooding the dock.
- 11.1.C.14 The Contractor must supply shore crews, tugs, divers and whatever facilities may be required for the safe and correct dry-docking and undocking of the vessel.
- 11.1.C.15 The Contractor must take the following measures as soon as practical after docking:
- i) All keel and bilge blocks must be inspected and wedged up if necessary to ensure good hull contact and minimize hull sagging during the dry-dock period.
 - ii) The entire hull (approximately 580 m²) must be pressure washed at minimum 5000 psi from the keel to the bulwarks, including the rudders and sea chests. Marine growth must be hand scraped prior to pressure washing; allow for 30 square meters of heavy marine growth to be hand scraped and disposed.
 - iii) The Contractor must remove chest grates to remove mud and debris in the seachest. Technical authority must inspect before grate and put back in place and tack welded.
 - iv) Hull framing numbers must be marked on the hull every five frame spaces to facilitate an ABS/TCM hull survey.
- 11.1.C.16 The Contractor must allow for a total of 10 hours (non-continuous) of man lift services for the ABS surveyor for inspection purposes.
- 11.1.C.17 Before the hull is washed and as soon as possible after the ship is docked and the dock is clear of water the Contractor must afford the opportunity for ABS to inspect the Hull. The Contractor must afford the TA the opportunity to attend at the time of ABS inspection.

- 11.1.C.18 Upon the completion of pressure washing the hull and marking the hull frame spacing the contractor must afford the opportunity for ABS to inspect the hull. The Contractor must afford the TA the opportunity to attend at the time of ABS inspection.
- 11.1.C.19 Prior to undocking, the Contractor must provide a tank condition report to be verified by TA in accordance with the Documentation section of the General Notes.
- 11.1.C.20 Any changes in quantities or location of tank contents from the original tank condition report (soundings) must be noted and agreed upon as Satisfactory for Undocking by the TA and the Contractors Dock Master.
- 11.1.C.21 The dock must not be flooded until the approval of the TA has been given.
- 11.1.C.22 Flooding of the dock must proceed until the water is 12 inches below the level at which the ship will float. Flooding must then cease until the Contractor has completed an inspection of all underwater fittings and found all to be water tight. The Contractor must afford the TA the opportunity to conduct the same inspection prior to continuation of flooding. Upon confirmation of water tight integrity flooding will continue.

11.1.D Proof of Performance

11.1.D.1 Inspections

- 11.1.D.1.1 Inspections must be completed as detailed.

11.1.D.2 Testing/Trials

- 11.1.D.2.1 The new echo-sounder will be tested at the dock and at sea. The trial at sea should be of one hour including 15 minutes at full away.

11.1.D.3 Certification

- 11.1.D.3.1 The Contractor must afford ABS the opportunity to conduct a survey of the hull below and above the water line for the purpose of receiving a credit for the vessel's continuous survey. The TA must be informed and must be afforded the opportunity to attend with ABS. A 48 hours' notice is required.

11.1.D.4 Documentation (Reports/Drawings/Manuals)

- 11.1.D.4.1 The Contractor must provide a Docking Report in accordance with the Documentation section of the General Notes.

- 11.1.D.4.2 The Contractor must provide Tank Soundings, before and after docking in accordance with the Documentation section of the General Notes.
- 11.1.D.4.3 The Contractor must provide the following information to the TA prior to the close of the contract:
- a) Kilowatt hour meter readings at connection and at disconnection;
 - b) Oil Disposal Certificates;
 - c) coating system report.
 - d) Docking plan: The Contractor must provide a re-drawn Docking Plan showing the positions of blocks in accordance with the Drawings section of the General Notes G 1.7. The document must be reviewed by the Technical Authority before the dry-dock is flooded.
- 11.1.D.5 **Training – Not Used**

11.2 EXISTING SIMRAD ECHOSOUNDER REMOVAL

11.2.A References

11.2.A.1 Equipment Data

11.2.A.1.1 Simrad 38/200 Combi D transducer

11.2.A.2 Drawings & Documents

11.2.A.2.1 All Drawings are listed in the General Notes. The following Drawings are to be considered as Guidance Drawings as defined in the Drawings section of the General Notes.

Drawing Number	DRAWING TITLE
165215_38-200	Transducer Installation Manual

11.2.B Statement of Work

11.2.B.1 The contractor must electrically isolate the transducer and echo sounder system.

11.2.B.2 The existing wire from the transducer will require to be removed making note of how it was wired into the junction box.

11.2.B.3 The contract must allow the TA to inspect the electrical wiring before the electrical isolation is removed.

11.3 TRANSDUCER INSTALLATION AND NEW BLISTER

11.3.A Identification

11.3.A.1 The intent of this specification is to install a transducer blister on the hull to provide a mounting location for a new Airmar transducer and the existing EM log sensor. The transducer blister will provide a clean flow of water across the transducers and prevent damage in the event of log strikes.

11.3.A.2 The Contractor must install the GSM transducer blister and install the GSM transducers.

11.3.B References

11.3.B.1 Equipment Data

11.3.B.1.1 The following table lists the transducers that are currently installed, and the work to be carried out to each:

ID	Vendor	Model	Action
<i>A</i>	<i>Simrad</i>	<i>ES70</i>	<i>No Change</i>
<i>B</i>	<i>Sperry</i>	<i>EM-Log Sensor FNF III, Type 4874</i>	<i>Relocate to new Blister</i>

11.3.B.2 Drawings & Documents

11.3.B.2.1 The following Drawings are to be considered as Guidance Drawings as defined in the Drawings section of the General Notes.

Drawing Number	DRAWING TITLE
18-48-428-01	CCGS MSPV Transducer Blister R0
AF6097-63100-01	Paint Schedule

11.3.B.2.2 The following documents are to be considered as Reference Documents.

VENDOR	SENSOR	Document Number	TITLE
<i>Simrad</i>	<i>A Simrad ES70</i>	<i>346061</i>	<i>Operator Manual Simard ES70 Fish finding echo sounder</i>
<i>Sperry Marine</i>	<i>B EM-Log Sensor FNF III, Type 4874</i>	<i>CCG 349429</i>	<i>Installation, Maintenance and Service Instructions 004874 Rev.A</i>

<i>Airmar</i>	<i>C</i>	<i>Airmar CM265 LH</i>	<i>N/A</i>	<i>Transducers Broadband / Chirp</i>
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11.3.B.3 Regulations and Standards

11.3.B.3.1 The following Standards and Regulations apply to work carried out in this section. The Contractor must ensure all work completed in this section meets these Standards and Regulations as well as any other pertinent Federal/Territorial Regulation or Standard:

FSSM Procedures	Title	Included Yes/No
Publications		
Standards		
CSA CWB Standards W59	Canadian Standards Association - Welded Steel Construction (Metal Arc Welding)	No
IACS Rec47 SARQS	IACS Recommendation No 47 - Shipbuilding and Repair Quality Standard	No
CT-043-eq-eg-001-E	Canadian Coast Guard – Welding Specification	Yes
18-080-000-SG-003	Canadian Coast Guard – Paints and Coatings Standard	Yes
FC 08-2007	Canadian Coast Guard – Fleet Identity Color Standard	Yes
Regulations		
LR SSC	Lloyd's Register of Shipping Rules and Regulations for the design and Construction of Special Service Craft, 2013	No
C.R.C., c. 1431	Transport Canada Hull Construction Regulations, 2014	No

11.3.B.4 **Abbreviations**

11.3.B.4.1 The following abbreviations are used throughout this specification:

IACS	International Association Classification Societies
ISO	International Standards Organization
MT	Weld inspection by Magnetic Particle Inspection
PQR	(Weld) Procedure Qualification Record
PT	Weld inspection by Dye Penetrant Inspection
RT	Weld inspection by Radiographic Inspection
UT	Weld inspection by Ultrasonic Inspection

11.3.C Statement of Work

11.3.C.1 General

- 11.3.C.1.1 Transducers are extremely sensitive sensors. The Contractor must take all necessary precautions to prevent the transducers and their cables from all forms of damage, including mechanical, heat, and electromagnetic. All other cables, pipes, and equipment in way of work areas are to be protected from the same. The Contractor must remove all transducers away from the welding area during hot work.
- 11.3.C.1.2 The Contractor must remove the existing transducer B and its existing transducer blister. The existing transducer B and the new transducer C must be mounted in the new transducer blister. Transducer A must remain unchanged. All Transducers are GSM.
- 11.3.C.1.3 Any existing internal structure that has been damaged by the installation or removal of the transducers must be repaired by the Contractor as per the surrounding structure (note frames 25 and 26, ABS Grade A, thickness to match existing hull plate thickness).
- 11.3.C.1.4 New material only must be used for the fabrication of the blister and any structural repairs.
- 11.3.C.1.5 The Contractor must reinstall any interference items that were temporarily stripped out for access and must return the affected areas to the condition in which they were found. It is the responsibility of the Contractor to repair any damage caused during construction.

11.3.D Welding Requirements

- 11.3.D.1.1 The Contractor must provide documents and give access to a Coast Guard third auditor to conduct a pre-weld audit, access must be given to all location where welds for this specific project take place. For the pre-weld audit, the Contractor must provide approved welding procedure signed by welding engineer depend on type of material and consumable used.
- 11.3.D.1.2 The Contractor must provide CWB certificate at least division 2 according to standard CSAW59.1 CSA47.1
- 11.3.D.1.3 All welding and weld inspection must be in accordance with the CCG Welding Specification CT-043-eq-eg-001.

- 11.3.D.1.4 For structural steels > 3 mm in thickness, welding must meet the requirements of CSA Standards W47.1 and W59.1, except as modified by the CCG Welding Specification CT-043-eq-eg-001. All welders must be certified four position according to approved procedure.
- 11.3.D.1.5 The Contractor must provide documentation to the TA clearly identifying compliance with the welding certification requirements specified herein and the CCG Welding Specification CT-043-eq-eg-001. Typical documents include but are not necessarily limited to: Letter of Validation, Welding Procedures, Welder Performance Qualification Cards, Inspection Personnel Qualification Cards, Inspection Reports, etc.
- 11.3.D.1.6 The CCG Welding Specification is an owner's requirement. It supports both CSA Standards and Rules for welding. The IACS materials and welding working group ruled that CSA Standards for welding may be used. In the event of a conflict, the CSA standards will take precedence.
- 11.3.D.1.7 All fillet welding must be double continuous unless noted otherwise. All fillet welds are to be 6.4mm leg length (4.5mm throat thickness). Unless noted otherwise in the design drawings, all butt welds are to be full penetration.

11.3.D.2 **Weld Inspections**

- 11.3.D.2.1 The Contractor must conduct weld inspections in accordance with the CCG Welding Specification CT-043-eq-eg-001.
- 11.3.D.2.2 All welds are to be subject to 100% visual inspection.
- 11.3.D.2.3 All full penetration butt and T-joint welds are to be UT inspection need as details below, in this formula $L =$ Overall Length in meters, $B =$ Greatest Moulded Breadth in meters and $D =$ Moulded Depth at Side, in meters, measured at $L/2$, example: A lifeboat 15 meters in length having a breadth of 4.5 meters and a moulded depth of 2 meters will require, - 1000 mm – butts or seams - 500 mm x 500 mm– intersecting butts & seams total UT should be 6 shots.
- 11.3.D.2.4 All full penetration butt and T-joint welds are to be subject to 5% MT/PT and 5% RT/UT.
- 11.3.D.2.5 All partial penetration butt and T-joint welds are to be subject to 5% MT/PT.
- 11.3.D.2.6 Welds are to be NDT tested by an approved person in accordance with the requirements of CSA CWB W59, CCG Welding Specification CT-043-eq-eg-001,

and ISO 9712:2005 International Standards for NDT. In the event of any conflict between the two requirements, CSA CWB W59 must take precedence. Copies of the NDT testing must be provided to the TA in accordance with the Documentation section of the General Notes. Any defects found are to be repaired at Contractor's expense.

11.3.D.3 **Strip-Out**

- 11.3D.3.1 The Contractor must completely remove transducer B with the full length of cable attached. Cables must be disconnected at their termination point. Care must be taken to ensure that the cables are not damaged in any way during removal.
- 11.3.D.3.1 The Contractor must strip out the existing transducer blister and mounting ring for transducer B.

11.3.D.4 **Transducer Blister Installation**

- 11.3.D.4.1 The Contractor install the transducer blister in accordance with drawing 18-48-428-01.
- 11.3.D.4.2 The Contractor must install watertight cable glands in the hull in accordance with the guidance design and the reference drawings. Cable Glands must be watertight and must be suitable for underwater through-hull applications. The cable glands must be sized appropriately for the cable that will pass through the gland. Cable glands must be installed where the cables pass through the cofferdam top plating.
- 11.3.D.4.3 The Contractor must install the transducer blister in accordance with the guidance drawing.
- 11.3.D.4.4 The transducer blister must be of non-watertight construction, with air and drain holes provided in accordance with the guidance drawings. These openings are to allow the structure to flood and drain when the vessel is in the water.
- 11.3.D.4.5 The blister has a vertical 19mm thick steel plate at the front to prevent logs, ropes and flotsam from becoming trapped by the blister. The leading edge of this must be ground smooth by the Contractor with a 19mm diameter rounded profile along the entire length.
- 11.3.D.4.6 The Contractor must fit the leading edge of the blister with a 1-1/4" diameter schedule 80 pipe. The purpose of this pipe must be minimize flow separation (and consequently turbulent flow).

- 11.3.D.4.7 The Contractor must grind all edges of the blister smooth in accordance with the guidance drawing.
- 11.3.D.4.8 The Contractor must weld the transducer blister to the hull in accordance with the guidance drawing.
- 11.3.D.4.9 The Contractor must install a new top plate and cover plate in accordance with the guidance drawing. This top plate must form a fully watertight enclosure.

11.3.D.5 **Transducer Installation**

- 11.3.D.5.1 The Contractor must install the transducers in the new transducer blister in the locations specified on the guidance drawing. Mounting must be in accordance with the requirements of the reference documentation for the respective transducer. The transducer must be oriented correctly with the forward direction oriented towards the bow of the vessel.
- 11.3.D.5.2 The Contractor must route the cables for transducers C to the terminating equipment as per the existing sensor cable routing and arrangement
- 11.3.D.5.3 The Contractor must run the cable from Transducer C to the Electronics room using the existing cable run for Transducer B. The contractor is to leave a 3m termination loop at the end of the cable in the Electronics room.
- 11.3.D.5.4 The Contractor must run the cable for Transducer C from the electronics room to the bridge terminating at the chart table and leaving a 3m cable loop at each end.

11.3.D.6 **Painting**

- 11.3.D.6.1 All painting must be in accordance with Canadian Coast Guard Paints and Coatings Standard 18-080-000-SG-003. The specification of the paint must be confirmed with the Owner prior to application.
- 11.3.D.6.2 The Contractor must paint the transducer blister and cofferdam in accordance with the CCG paint and hull coatings specification. All new material must be painted, and any existing paint that is disturbed or damaged in any way during the work must be stripped and repaired in accordance with the CCG Paint and Hull coatings specification.
- 11.3.D.6.3 All fixtures and adjacent surfaces must be properly protected during painting. All new surfaces must be thoroughly clean and dry and free of grease or oil before painting is commenced. All plates and shapes used in construction and all areas in

way of new paint must have surface preparation performed according to the paint manufacturer's specifications to completely remove scale, rust, and other surface contaminants.

- 11.3.D.6.4 The Contractor must take care when applying paint to the inside of angled members and other difficult areas to ensure full build-up of coatings is attained.
- 11.3.D.6.5 Removal and disposal of all hazardous wastes from painting (residuals) must be in accordance with local and provincial environmental regulations.
- 11.3.D.6.6 All new steel and welded areas must be painted prior to the installation of the transducers. All transducers installed at the time of painting are to be protected from paint. Transducer is not to be painted.
- 11.3.D.6.7 The Contractor must apply primer coats to clean metal surfaces per the manufacturer's specifications. Primer must be uniform, free of pinholes and holidays, and compatible with specified coating systems. The method of application and all work must be performed in strict accordance with the manufacturer's instructions and as specified herein.

11.3.E Proof of Performance

11.3.E.1 Inspection points

- 11.3.E.1.1 The Contractor must afford the TA an opportunity to witness all welding carried out during the installation of the new transducer blister. The contractor and the TA must agree on inspection points and schedule prior to the start of the work.
- 11.3.E.1.2 The Contractor must carry out weld inspections in accordance with the CCG Welding Specification CT-043-eq-eg-001.

11.3.E.2 Testing/Trials

- 11.3.E.2.1 The Contractor must ensure that all glands are leak free during the floating of the vessel.

11.3.E.3 Certification

- 11.3.E.3.1 The Contractor must provide a copy of the class society material certificate for each plate used in accordance with the Documentation section of the General Notes.
- 11.3.E.3.2 The Contractor must provide copies of all company or individual welding certificates indicating compliance with CSA regulations referenced. All certificates must be

provided to the TA in accordance with the Documentation section of the General Notes.

11.3.E.3.3 NDT technician: Individuals performing and interpreting liquid penetrant, magnetic particle, radiographic and ultrasonic inspections shall be currently qualified by the National Non Destructive Testing Certification Body of Natural Resources Canada (NRCAN) to CAN/CGSB 48.9712 Level 2 or Level 3. Level 1 personnel may only observe and/or assist Level 2 and Level 3 personnel perform the inspections

11.3.E.3.4 Calibration certificates for all transducers affected by this project must be provided to the TA.

11.3.E.4 **Documentation**

11.3.E.4.1 The Contractor must submit to the TA a report of all NDT test results in accordance with the Documentation section of the General Notes.

11.3.E.4.2 For each inspection method, a copy of the examining individual's current year qualification certificate shall be attached to the initial interpretation or verification report supplied to the Delegated Representative. If a new validation year is entered or if a different individual is used, new qualification certificates shall be supplied with any subsequent interpretation report being submitted

11.3.E.4.3 The Contractor must provide copies of all approved welding procedures in accordance with the Documentation section of the General Notes.

11.3.E.4.4 Drawing indicating location of all plate used with its corresponding mill certificate number in accordance with the Drawings section of the General Notes.

11.3.E.5 **Training – Not Used**

The following documents are to be considered as Reference Documents.

VENDOR	SENSOR	Document Number	TITLE	
<i>Simrad</i>	<i>A</i>	<i>Simrad ES70</i>	<i>346061</i>	<i>Operator Manual Simard ES70 Fish finding echo sounder</i>

VENDOR	SENSOR	Document Number	TITLE	
<i>Sperry Marine</i>	<i>B</i>	<i>EM-Log Sensor FNF III, Type 4874</i>	<i>CCG 349429</i>	<i>Installation, Maintenance and Service Instructions 004874 Rev.A</i>
<i>Airmar</i>	<i>C</i>	<i>Airmar CM265 LH</i>	<i>N/A</i>	<i>Transducers Broadband / Chirp</i>

12.0 PROPULSION AND MANEUVERING

12.1 SEA TRIALS

12.1.A Identification

- 12.1.A.1 The intent of this specification is to trial the vessel prior to reacceptance.
- 12.1.A.2 The Contractor must conduct dock trials and sea trials sufficient to test all equipment that has been overhauled or repaired during the docking or alongside.

12.1.B References

12.1.B.1 Equipment Data - Not Used

12.1.B.2 Drawings

- 12.1.B.2.1 All Drawings are listed in the General Notes.

12.1.B.3 Regulations and Standards

- 12.1.B.3.1 The following Standards and Regulations apply to work carried out in this section; The Contractor must ensure all work completed in this section meets these Standards and Regulations as well as any other pertinent Federal/Territorial Regulation or Standard:

FSSM Procedures	Title	Included Yes/No
Publications		
Standards		
Regulations		
	Canada Shipping Act 2001	No
	Marine Machinery Regulations (SOR/90-264)	No
	Lloyd's Register, Rules & Regulations for the Classification of Special Service Craft.	

12.1.C Statement of Work

- 12.1.C.1 The CCG will provide sufficient officers and crew to command and crew the vessel for doc trials and for sea trials.
- 12.1.C.2 The Contractor must provide sufficient employees on board for a sea trial of not less than one (1) hour duration including not less than 15 (15) minutes of full away (100% load).
- 12.1.C.3 **Optional Tug:** The Contractor must provide a price for a tug escort for 2 hours to escort the vessel to sea trials if deemed necessary by the Coast Guard.

12.1.D Proof of Performance

12.1.D.1 Inspection Points

- 12.1.D.1.1 The ship will not depart on trials until the Chief Engineer and Captain are satisfied that it is in a condition for safe departure from the dock.

12.1.D.2 Testing/Trials

12.1.D.3 Certification

- 12.1.D.3.1 Certificates in accordance with the Documentation section of the General Notes.

12.1.D.4 Documentation – Not used

12.1.D.5 Training – Not Used

13.0 POWER GENERATION SYSTEMS

13.1 NOT USED

14.0 POWER DISTRIBUTION SYSTEMS

14.1 NOT USED

15.0 AUXILIARY SYSTEMS

15.1 NOT USED

16.0 DOMESTIC SYSTEMS

16.1 NOT USED

17.0 DECK EQUIPMENT

17.1 NOT USED

19.0 CONTROL SYSTEMS

19.1 NOT USED