CCGS Vector
Docking Refit 2017

Specification No: F1782-17C814

Work Period: Nov 8thth 2017 to Jan 3rdth 2018

Viewing Date and Location:

0900 July 30th Prince Rupert

Prepared by:
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V8L 4B2

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G1.0 GENERAL

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G 1.0 GENERAL NOTES

G 1.1 Vessel Particulars

G 1.1.1 Details

Name:	Vector
Type:	Mid Shore Science
Year Built:	1967
Principal Dimensions	
Length Overall:	39.74 m
Tonnage, displ:	557
Max Shaft Speed	300 RPM
Propulsion	Caterpillar 3508 rated 825 HP
Propeller Type	KaMeWa CPP

G 1.1.2 Equipment - Not Used

Equipment	Make	Model	Serial#

G 1.2 References

G 1.2.1 Regulations

G 1.2.1.1 All current editions of regulations, standards, publications, and procedures listed below must be used as reference. The Contractor must ensure all work completed in the specification is done to all pertinent federal and provincial regulations and standards. CCG procedures must be used as a guide if no other regulation takes precedence.

G 1.2.1.2 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.

FSM Procedures	Title	Included Yes/No
FSM	Fleet Safety Manual (Latest Edition)	Yes
Publications		
TP 127	Ships Electrical Standards	No
TP 3669	Standards for Navigating Appliances and Equipment	No
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

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
CT-043-EQ-EG-001-E	Welding Specification Canadian Coast Guard	Yes
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
	CAD standard	
Technical Documents		
	International Paint InterSpec.	Yes
Regulations		
MOHS	Maritime Occupational Health and Safety	No
CSA	Canada Shipping Act 2001	No
Machinery Regs.	Marine Machinery Regulations	No
Hull Regs.	Hull Inspection Regulations	No
Canada Labour Code	Canada Labour Code	No
WorkSafe BC.	Occupational Health and Safety (OHS) Regulation http://www2.worksafebc.com/publications/OHSRegulation/Home.asp?_ga=1.6448368.352535453.1408987357	No

G 1.2.2 Guidance Drawings

G 1.2.2.1 The following Drawings must be considered as Guidance Drawings as defined in the Drawings section of the General Notes.

G 1.2.2.2 Additional Drawings are listed in Annex A

Drawing Number	REFERNENCE DRAWING TITLE
1359-10	Docking Plan Allied "A" Dock
	GA Main Deck
1359-07	Gondola Arrangement
1359-2	Gondola Structural Details
293 H-6	Shell Expansion
293-H-24	Accommodation Ventilation Mechanical & Natural Main deck 2005
293-701-01	Sea Water / Fresh Water Diagram
23-721-01	Black water / Grey water Diagram

G 1.2.2.3 Listed are the tanks found on board the CCGS Vector with their Location by frame number and capacity (Where available). These are to be used as reference only and will not supersede any specification.

TCM Field No.	**Tank name**	**Location**	**Capacity (m^3)**
	#1 FW Tank	Port frame 1-4	5.581
	#2 FW Tank	Stbd Frame 1-4	5.581
	#3 FW Tank	Port Frame 4-6	6.1
	#4 FW Tank	Stbd Frame 4-6	6.1
	#5 FO Day Tank	Center Frame 7-16	7.589
	#6 Flume (Seawater)	Frame 32-36	26.121
	#7 FO Tank	Port Frame 36-41	20.070
	#8 FO Tank	Stbd Frame 36-41	20.068
	#9 FO Tank	Port Frame 41-51	14.949
	#10 FO Tank	Stbd Frame 41-51	15.105
	#11 FW Tank	Port Frame 52-56	8.233
	#12 FW Tank	Stbd Frame 52-56	6.016
	#13 FW Tank	Port Frame 56-62	10.533
	#14 FW Tank	Stbd Frame 56-62	6.436
	#15 Non Potable Water	Frame 74-80	10.755
	#17 Hydraulic Oil	Frame 13-16	0.803
	#19 Lube Oil	Frame 16-18	0.864
	#21 Dirty Oil	Frame 22-26	0.478

G 1.2.3 Abbreviations

ACM	Asbestos Containing Material
CA	Contract Authority (PWGSC)
CCG	Canadian Coast Guard
CFM	Contractor Furnished Material and/or equipment
CLC	Canada Labour Code
CSA	Canadian Standards Association
CWB	Canadian Welding Bureau
DFO/CCG	Department of Fisheries and Oceans, Canadian Coast Guard
DFT	Dry Film Thickness
FSM	Fleet Safety Manual (CCG)
FSR	Manufacturer's Field Service Representative
GSM	Government Supplied Material and/or equipment
HC	Health Canada
IACS	International Association of Classification Societies
IEEE	The Institute of Electrical & Electronic Engineers Inc.
ITS – ME	Integrated Technical Services, Marine Engineering
ITS – E&I	Integrated Technical Services, Electronics & Informatics
LOA	Length Overall
MSDS	Material Safety Data Sheet
NDT	Non Destructive Testing
OHS	Occupational Health and Safety
PWGSC	Public Works and Government Services Canada
SSMS	Safety & Security Management System
RO	Recognized Organization as defined by Canada Shipping Act.
TA	Technical Authority -CCG Superintendent, Marine Engineering Western Region, or her delegated Representative.
TBS	Treasury Board of Canada Secretariat
TCMS	Transport Canada Marine Safety
TI	Technical Inspector – CCG delegated.
VCA	Vessel Condition Survey
VLE	Vessel Life Extension
WCB	WorkSafe BC

G 1.3 Conditions and Definitions

G 1.3.1 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 labour 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 labour and materiel to complete the reinstallation;

c) 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;

d) the word "remove" means that the Contractor must provide all labour and materiel to disconnect mechanically and electrically and remove the unit, equipment, materiel, or system in its entirety. Part of the removal process is to blank openings, restore disturbed insulation and paint;

e) the word "relocate" means that the Contractor must provide all labour 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;

f) 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);

g) 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;

h) the word "disassemble" means that the Contractor must provide all labour 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 labour 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 ANNEX G - PROCEDURE FOR PROCESSING UNSCHEDULED WORK 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 labour 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 labour 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 labour 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/systems after a satisfactory installation And the inspection to make the equipment/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. It may be conducted before and after disassembly.

G 1.4 Miscellaneous Information

G 1.4.1 Occupational Health and Safety

G 1.4.1.1 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 mess facilities. The Contractor must provide the necessary amenities as required.

G 1.4.1.2 Where "Safety Management System" is referenced in this document, it is referring to the Contractor's Safety Management System, which must be in effect while in the Contractor's Care and Custody and must be in accordance with the applicable OHS regulations and procedures.

G 1.4.1.3 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.

G 1.4.1.4 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 1.4.1.5 Areas that pose a hazard as a result of the specification work must 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 1.4.2 Lead Paint and Paint Coatings

G 1.4.2.1 The Contractor must not use lead based paints.

G 1.4.2.2 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.

G 1.4.3 Asbestos Containing Materials (ACM)

G 1.4.3.1 The Contractor must use insulation and brake material that contains 0% ACM.

G 1.4.3.2 The Contractor will be supplied the most recent Asbestos Risk Assessment Report and Asbestos Management Plan by CCG prior to Assumption of Custody.

G 1.4.3.3 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 1.4.3.4 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 1.4.3.5 The Contractor must provide an “Observation Report (OR)” with reference to any concerns or intentions in regards to asbestos containing materials not already specified. The Contractor is to identify any materials that are suspected to contain asbestos prior to any work being initiated. Any approved work resulting from the OR will follow the Additional Work Procedures.

G 1.4.4 Confined Spaces

G 1.4.4.1 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 1.4.4.2 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 1.4.5 Hot Work

G 1.4.5.1 The Contractor must, as a minimum, ensure the following items are followed when conducting hot work while the vessel is 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 1.4.5.2 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 in accordance with the specification item generating the required work.

G 1.4.6 Work Aloft

G 1.4.6.1 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 1.4.7 Electrical Equipment

G 1.4.7.1 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 1.4.7.2 Any lock-out requirements onboard the vessel during the contract period must be conducted in accordance with the safety management system.

G 1.4.7.3 The TA must be notified of all such ongoing work.

G 1.4.8 Workplace Hazardous Materials Information System (WHIMS)

G 1.4.8.1 The Contractor must provide the TA with Material Safety Data Sheets (MSDS) for all Contractor and sub-contractor supplied WHIMS controlled products. MSDS sheets are to be the formats requested in the Documentation section of the General Notes.

G 1.4.8.2 All MSDS sheets must be maintained in accordance with OHS procedures.

G 1.4.8.3 The TA will provide the Contractor with access to MSD sheets for all controlled products on the ship for all specified work items on request.

G 1.4.9 Smoking in the Work Space

G 1.4.9.1 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 1.4.10 Touch-up / Disturbed Paint

G 1.4.10.1 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 - CCGS VECTOR INTERSPEC.

G 1.4.11 Contractor Furnished Materials (CFM) and Tools

G 1.4.11.1 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 1.4.11.2 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 1.4.11.3 The Contractor must provide all equipment, devices, tools and machinery such as cranage, staging, scaffolding, hoarding, man-lift and rigging necessary for the completion of the work in this specification.

G 1.4.11.4 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 1.4.12 Government Supplied Materials (GSM) & Tools

G 1.4.12.1 All tools are Contractor supplied unless otherwise stated in the technical specifications.

G 1.4.12.2 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 1.4.12.3 Any GSM not specifically stated in the Technical Specification must be received by the Contractor and stored in a humidity controlled heated space of sufficient size. These activities are to be covered by the Procedures for Design Change or Additional Work. (PWGSC 1379).

G 1.4.13 Storage

G 1.4.13.1 Equipment (i.e. covers, cowling and other items that may need to be removed and stored) must be stored in stored in a humidity controlled heated space of sufficient size.

G 1.4.13.2 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 1.4.14 Regulatory Inspections and/or Class Surveys

G 1.4.14.1 The Contractor must contact, coordinate, schedule, and be completely prepared for all regulatory inspections and surveys by the applicable authority: i.e. TCMS, HC, Environment Canada or others as indicated by individual specifications. TCMS inspection fees to be billed by TCMS directly to Coast Guard.

G 1.4.14.2 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 1.4.14.3 The Contractor must not substitute inspection by the TA for the required regulatory inspections.

G 1.4.14.4 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 1.4.14.5 The Contractor must pay all costs and fees associated with TCMS, HC, Environment Canada, or any other Inspection required by the specification unless otherwise indicated.

G 1.4.15 Contractor Inspections

G 1.4.15.1 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 1.4.15.2 The Contractor must take a before picture of conditions prior to removing any items. These photos must be in accordance with the Documentation section of the General note, named according to the applicable specification section.

G 1.4.15.3 Prior to the close out of any item, the Contractor must afford the TA the opportunity to verify that 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 1.4.16 Recording of Work in Progress

G 1.4.16.1 The TA may record any work in progress using various means including, but not limited to photography and video, digital or film.

G 1.4.17 Access for Maintenance, Installation, and Removal.

G 1.4.17.1 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 1.4.17.2 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 unless marked otherwise

G 1.4.17.3 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 Interspec paint specification.

G 1.4.17.4 Manufacturer's recommended removal clearances must be allowed for.

G 1.4.17.5 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 1.4.18 Assembly of Components

G 1.4.18.1 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 1.4.18.2 Covers, cowlings and components damaged by the Contractor must be replaced with a new CFM cover, cowling, or component.

G 1.4.18.3 Where torque specifications are not provided by the manufacturer, standard SAE nut and bolt torques must be used.

G 1.4.19 Protection of Equipment

G 1.4.19.1 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 1.4.19.2 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 1.4.19.3 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 1.4.19.4 Any damage to surfaces, equipment, furnishings or decor incurred prior to acceptance must be returned to As Delivered condition by the Contractor.

G 1.4.19.5 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 1.4.19.6 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 1.4.19.7 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 1.4.19.8 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 1.5 Documentation

G 1.5.1 Documentation is identified as a deliverable in the specification item requesting it.

G 1.5.2 Data Book

G 1.5.2.1 The Contractor must provide all 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 below.

G 1.5.2.2 All copies of documents generated as a result of specified deliverables will be referred to as the "Data Book".

G 1.5.2.3 The Contractor must provide the TA all the files generated as part of the Data Book. These 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 must have its own folder named according to the specification item. For example "G1.0 General Notes".

G 1.5.2.4 Any documentation, media, and reports, that are the result of Additional Work, must also be included as part of the Data Book.

G 1.5.3 File Naming

G 1.5.3.1 File naming must be in the following format: *Specification#.# – Date (yyyy-mm-dd) – File Name Describing Information*. For Example: "G1.0 – 2013-12-01 – Details of file naming.pdf".

G 1.5.4 E-mails

G 1.5.4.1 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: ***F1782-15C730 – DATA BOOK – 2014-11-30 – G1.0 General Notes .*** Files sent by e-mail must also be included in the "Data Book".

G 1.5.5 File Formatting

G 1.5.5.1 All documentation, reports, test results, certificates, or data obtained by the contractor in paper form must be scanned into unprotected (preferably searchable) Adobe PDF formatted files and named according to the File Naming section of this specification.

G 1.5.5.2 All reports, test results, certificates, or raw data obtained by the contractor in electronic format must be converted to unprotected Adobe 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 1.5.6 Photos

G 1.5.6.1 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 1.5.7 Measurements, Calibrations, and Readings.

G 1.5.7.1 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 1.5.7.2 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 1.5.7.3 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 1.5.8 Test Inspection Records and Certificates

G 1.5.8.1 Test Inspection Records and Certificates are identified as a deliverable in the individual specification item requesting them.

G 1.5.8.2 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 1.5.8.3 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 1.5.8.4 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 TCM, the TA, 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 1.6 Drawings

G 1.6.1 This section, to be referred to as the Drawings section of the General Notes, is intended to be used as the minimum standards when specified deliverables are drawings.

G 1.6.2 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 1.6.3 The Contractor must comply with the Canadian Coast Guard National CAD Standards titled "*Computer Aided Design (CAD) using AUTOCAD*" provided.

G 1.6.4 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 1.6.5 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 1.6.6 The Contractor must prepare all the working drawings necessary for the project requirements and modernization work.

G 1.6.7 The Contractor must furnish all drawings required by sub-Contractors, trades and other consultants.

G 1.6.8 Schematic drawings of systems must include all pertinent system information, including sizes, dimensions, labeling, equipment locations, and all information relating to system fittings.

G 1.6.9 The Contractor must have in place a complete system of documenting and controlling all drawing revisions affected by the work. Drawing numbering system and titles must match the original drawings for clarity and include a revision number with date.

G 1.6.10 Guidance Drawings

G 1.6.10.1 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 1.6.10.2 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 1.6.10.3 Specification deviations must be documented using an Observation Report.

G 1.6.11 As Fitted Drawings

G 1.6.11.1 As-Fitted Drawings are identified as a deliverable in the specification item requesting them.

G 1.6.11.2 Upon completion of specified work, the Contractor must transfer the mark-ups from any working drawings. These drawings become the As-Fitted drawings for the project work. The Contractor is responsible for providing as-fitted drawings affected by the project work to the TA prior to completion of the contract. The 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 1.6.11.3 Plotted drawings must be on standard ANSI paper sizes.

G 1.6.11.4 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 1.7 Manuals

G 1.7.1 This section, to be referred to as the Manuals section of the General Notes, is intended to be used as the minimum standards when specified deliverables are manuals.

G 1.7.2 General

G 1.7.2.1 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) CCGS Vector;

b) Equipment Identification;

c) Equipment Manufacturer;

d) Date.

G 1.7.2.2 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 1.7.2.3 A master index must be provided at the beginning of each binder indicating all items included in each section.

G 1.7.2.4 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 1.7.2.5 A copy of the final reviewed and approved As-Fitted drawing(s) must be provided within the maintenance manual.

G 1.7.2.6 One (1) electronic copy of each manual must be provided in accordance with the Data Book section of this specification.

G 1.7.2.7 Two (2) paper copies of manuals and data sheets must be supplied in English for all Contractor Furnished Equipment items.

G 1.7.3 Operation Manuals – As-Fitted

G 1.7.3.1 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 1.7.3.2 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 1.7.4 Maintenance Manuals – As-Fitted

G 1.7.4.1 Maintenance manuals must include:

a) Manufacturer's maintenance instructions for each item of the equipment requiring maintenance activity;

b) Instructions must include installation instructions, part numbers, part lists, master drawings and exploded views with part identification for all mechanical, electrical and electronic parts, 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 1.8 Identification

G 1.8.1 Nameplates

G 1.8.1.1 Nameplates are identified as a deliverable in the individual specification item requesting them.

G 1.8.1.2 All nameplates must be in English, except where required in English and French by TCM for reasons of emergency operation.

G 1.8.1.3 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 1.8.1.4 The type of nameplates must suit the location in the vessel as specified below:

G 1.8.1.5 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.

G 1.8.1.6 Engraved on Metal:

a) 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.

G 1.8.1.7 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 1.8.2 Wire Labelling

G 1.8.2.1 Wire Labelling is identified as a deliverable in the individual specification item requesting them.

G 1.8.2.2 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 1.8.2.3 All wiring in panels specified to be labelled must be labeled with the Cable Number and their conductor # unless otherwise specified in equipment installation drawings.

CCGS Vector
Docking Refit 2017

Specification No: F1782-17C814

S1.0 SERVICES

Prepared by:

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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.

S 1.1.2 The Contractor must supply all material, hoses, cables, etc. and labour 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, cranage, 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 Vessel is to be sailed to the contractor's facility and picked up from the contractor's facility by crews from the Canadian Coast Guard.

S 1.2.2 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 1.2.3 The length of the dock must be a minimum of 90% of the keel length of the vessel.

S 1.2.4 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 1.2.5 The Contractor must be responsible for all movements of the vessel, including berthing and mooring of the vessel for the contract period and arrangements and costs for line handlers, tugs, and pilots.

S 1.3 MOORING LINES

S 1.3.1 The Contractor must provide the labour 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 all labour and services required for the installation and removal of all gangways, complete with handrails, safety nets, and lighting for the duration of the contract.

S 1.4.2 Any movement of the gangway required by the Contractor is the responsibility of the Contractor.

S 1.4.3 The Contractor must provide gangways in accordance with TCM, Worksafe BC, and Canada Labour laws and regulations.

S 1.4.4 The Contractor is to provide 2 separate means of egress from the vessel for the entire work period

S 1.5 ELECTRICAL POWER

S 1.5.1 The Contractor must supply 460 Volt Alternating Current, 60 hertz, 3 Phase, 100 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 the 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 contractor is to bid on 50,000 Kw/hr**. The final power consumption total shall be prorated and adjusted up or down by PWGSC 1379 action.

S 1.6 ACCOMMODATION/MACHINERY AREA DECK PROTECTION

S 1.6.1 The Contractor must supply and install at minimum ¼" hard board deck covering protection on all accommodation decks that workers will access during this work period. Hard board edges and joints must be taped and damaged protection must be repaired within 24 hours of receiving damage.

S 1.6.2 The Contractor must protect decks in machinery spaces from damage to structure and coating systems during the process of specified work. Damage to the coating systems or structure of machinery spaces decks must be repaired by the Contractor. Any coatings must be applied according to manufacturer's specifications.

S 1.6.3 Removal and storage of components that may be subject to damage during the work period, such as deck plates, grating, etc. is the responsibility of the Contractor.

S 1.7 HEATING

S 1.7.1 The Contractor must supply the heating required onboard and around the vessel to facilitate specified work.

S 1.8 WORKSITE INSPECTIONS

S 1.8.1 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 1.8.2 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 1.8.3 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 1.8.4 Upon completion of the contract, the Contractor must return the vessel to the As-Delivered state of cleanliness.

S 1.8.5 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 1.8.6 Copies of all photos, documentation, and inspection sign off sheets must be provided in accordance with the Documentation section of the General Notes.

S 1.9 FIRE PROTECTION

S 1.9.1 The Contractor must ensure protection against fire 24 hours/day and 7 days/week throughout the contract period.

S 1.9.2 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 1.9.3 The Contractor must have a certified fire contractor disable the fixed fire system at the start of the work period and the contractor must have a certified fire contractor enable the fixed fire system at the completion of work.

S 1.9.4 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 1.9.5 The contractor must at a minimum fit two fire stations on the vessel during the work period. Each station will have a 2" minimum charged supply line feeding two 1.5" 75 foot attack lines with a minimum pressure of 80 psi to be maintained using 2 hoses simultaneously.

S 1.10 PROJECT FACILITIES

S 1.10.1 The Contractor must provide 1 secure office space. The space must have 2 separate desks; one for the TA and delegates, and one for the CA. The space is for the exclusive use of Government personnel, must be within suitable distance to rest rooms, and must be environmentally controlled. The space must be available from one week prior to the work commencing to two weeks after vessel acceptance.

S 1.10.2 Each desk must include a minimum of 2 chairs; and have a minimum of 2 electrical plugin sockets per desk.

S 1.10.3 Contractor must provide 3 reserved parking spots adjacent to offices specified. Parking spaces are for the exclusive use of Government Personnel. The three spots must be marked "Reserved CCGS Vector"

S 1.10.4 Contractor must allow access for ship's crew to shore side gender appropriate washrooms and wash spaces.

S 1.10.5 Contractor must provide an on-site garbage container for the crew to access in order to dispose of up to three 25 liter garbage bags per week from project facilities or from vessel.

S 1.11 SECURITY

S 1.11.1 The Contractor must provide security for the vessel during quiet hours at the contractor facility. Security rounds must be conducted at minimum every 4 hours during quiet hours 7 days a week including holidays during the entire work period.

S 1.11.2 Contractor provided Security log books are to be signed during every set of rounds in the following spaces –

Engine Room

Steering Flats

Bridge

Crew Mess

CCGS Vector
Docking Refit 2017

Specification No: F1782-17C814

10.0 SAFETY AND SECURITY

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10.1 TIE IN GALLEY FAN SHUT DOWN TO MAIN FAN SHUT DOWN

10.1.A Identification

A.1 The galley exhaust fan requires to be tied into the main fan shut downs at the bridge and outside Mates cabin.

10.1.B References

B.1 Equipment Data

B.2 Drawings

B.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.

B.3 Regulations and Standards

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		

10.1.C Statement of Work

C.1 The Contractor must wire the existing galley exhaust fan to shut down when the emergency fan shut down button are closed on the bridge and outside Mates cabin and when shut down is closed locally.

C.2 The Contractor is responsible to supply and pull wire, install transits and terminate connections.

C.3 The Contractor must prove the operation of the shutdown in the presence of the TI/TA.

C.4 The Contractor is advised that there is a shutdown system used for accommodation air fitted in the science wash space on the Foc'sle deck.

10.1.D Proof of Performance

D.1 Inspection Points

D.1.1 Inspection will be done by TI/TA, and members of Natural Resource Canada

D.2 Testing/Trials - Not Used.

D.3 Certification – Not Used

D.4 Documentation

D.5 Training – Not Used

10.2 ASBESTOS ABATEMENT LAUNDRY ROOM AND FOC'SLE

10.2.A Identification

A.1 Removal and disposal of asbestos containing materials (ACM) from the Laundry Room and Foc'sle. ACM has been identified as present in woven textile wrap canvas pipes.

A.2 The asbestos containing pipe will be clearly visible during the viewing. The asbestos consists of 40 feet of ACM-clad ½" pipe.

10.2.B References

B.1 Reference Study

B.1.2 The following report is to be used as a reference for exact locations and approximate quantities of ACM identified in the engine room of the subject vessel.

Report Produced By:	REPORT TITLE	Report Date
AREC	CCGS Vector Asbestos Inventory Review	2017
Pinchin West	CCGS Vector Asbestos Survey	2016
North West Environmental	CCGS Vector Asbestos Insulation Report	2013

B.2 Drawings

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

B.3 Regulations and Standards

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

	Title	Included Yes/No
Regulations	Occupational Health and Safety Regulation, B.C. Reg. 296/97, WorkSafe BC	No
	Transportation of Dangerous Goods Regulations SOR/2008-34, Transportation of Dangerous Goods Act.	No
Publications	Safe Work Practices for Handling Asbestos, WorkSafe BC, 2012 Edition.	No

10.2.C Statement of Work

C.1 Work Description and Requirements

C.1.1 The contractor must show clearly on their schedule that they will start the asbestos abatement work at the start of the work period.

C.1.2 The contractor must comply with all aspects of the above stated Regulations and referenced publications.

C.1.3 The contractor must file a Notice of Project (NOP) with WorkSafe BC, in writing or by fax, at least 24 hours before starting the project.

C.1.4 The Contractor must conduct a risk assessment for asbestos exposure, develop an exposure control plan, write safe work procedures, and implement necessary controls as well as ensure that workers and supervisors are adequately instructed and trained.

C.1.5 The Contractor must keep written records of all training.

C.1.6 The contractor must ensure that all workers working in the area containing asbestos use proper PPE such as disposable Tyvek coveralls (or similar) with integral head covering that fits snugly at the wrists and ankles, booties, half-face respirator with P100 HEPA cartridges. All vacuum cleaners used shall be fitted with HEPA filters.

C.1.7 The Contractor must have an Exposure Control Plan and a Respirator Plan in place.

C.1.8 The Contractor must clearly mark the designated work area boundary and Place signs around the work area warning people not to enter the work area unless authorized to do so.

C.1.9 The contractor must temporarily remove or relocate any interference items such as but not limited to lighting, wire ways, junction boxes, electrical boxes and switches etc.

C.1.10 All temporarily removed items must be re-installed following the ACM removal, cleanup and pipe re-insulation.

C.1.11 The asbestos will be clearly marked during the viewing. The asbestos consists of 40 feet of ACM-clad ½" pipe.

C.1.12 The asbestos containing pipes and woven are to be removed and replaced with (CFM) pipe of the same dimension, material and quality.

C.1.13 New pipe lagging must be installed (CFM) on sections removed using non ACM marine rated material upon completion of ACM removal.

C.1.14 After the removal of ACM the affected area shall be cleaned using a vacuum with HEPA filter, wiping with damp cloth or by wet sweeping or mopping.

C.1.15 For the disposal of asbestos waste the contractor must ensure that all waste materials are placed in impervious containers — (poly bags at least 0.15 mm (0.006 in. or 6 mil) thick) — inside the asbestos work area, seal the containers, and label or tag them "ASBESTOS." Asbestos waste should be double-bagged.

C.1.16 Before removing the sealed containers from the work area, the Contractor must decontaminate the outside of the containers by damp-wiping or by cleaning with a HEPA vacuum.

C.1.17 The contractor must package the sealed impervious containers so that they will not be punctured during handling and transportation to the disposal site. This is normally done by double-bagging them.

C.1.18 The Contractor must make prior arrangements with the appropriate authorities to deliver asbestos waste to assigned dump sites and inform transport drivers of precautions they must take. Transport vehicles may be required to display signs or placards specifying the nature of the cargo (see the Transport of Dangerous Goods Act).

C.1.19 The Contractor may choose to replace the pipe sections if deemed more cost effective. The Contractor then must replace the removed pipe with ½" seamless copper pipe.

10.2.D Proof of Performance

D.1 Inspection

D.1.1 Following the completion of the work and prior to removal of any containment the Contractor must arrange for an inspection by a qualified third party inspector to assess the work area and to provide the TA with an Asbestos Clearance Document. The contractor shall notify the TA at least five working days prior to the inspection giving the TA the opportunity to witness the inspection.

D.1.2 The Contractor is to provide the TI/TA a disposal certificate to ensure Asbestos is properly discarded as per WCB regulations.

10.3 SONAR SPACE EMERGENCY LIGHTING

10.3.A Identification

A.1 The vessel's Sonar Compartment is to have 3 emergency lights installed.

10.3.B References

B.1 Equipment Data

B.2 Drawings

B.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
1446-52-02-R1	24V Distribution Panel
V07-293-E-3	115 Volt 24 Volt Emergency Lighting

B.3 Regulations and Standards

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		

10.3.C Statement of Work

C.1 The Contractor must install 3 GSM LED emergency lights in the Sonar space. 1 at the entrance and two in the lower space. The Contractor is to install 3 welded brackets to support the new lights. All other components other than the LED lights are CFM.

C.2 The Contractor must wire the 3 lights from the 24 Volt Main Batteries emergency system located abaft the bridge. The Contractor may use an existing 24 Volt feed in the deck head located in the accommodation space. The Contractor is to use approved marine wire with an AWG of 14 minimum. The Contractor may use existing wire ways.

C.3 The Contractor must install water and fire tight penetrations into the sonar space. The Contractor may use an existing penetration if agreed to by the TI/TA.

C.4 The Contractor must ensure that the lights automatically turn on in the event of a black out.

10.3.D Proof of Performance

D.1 Inspection Points

D.1.1 Inspection will be done by TI/TA, and International Paint

D.2 Testing/Trials - Not Used.

D.3 Certification – Not Used

D.4 Documentation

D.5 Training – Not Used

CCGS Vector
Docking Refit 2017

Specification No: F1782-17C814

11.0 HULL AND RELATED STRUCTURES

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11.1 DOCKING AND UNDOCKING

11.1.A Scope

A.1 The vessel must be docked at the Contractor's facility, and the vessel hull must be surveyed by the TI/TA. On completion of all related work the vessel must be undocked and secured alongside at the Contractor's facility.

11.1.B References

B.1 Equipment Data – Not Used

B.2 Drawings

Drawing Number	Description
1359-10	Docking Plan Allied "A"
V07-293-H-139	Capacity Plan

B.3 Regulations

FSM Procedures	Title	Included Yes/No
Publications		
Standards		
Regulations		
	Canada shipping Act 2001	No

11.1.C Statement of Work

C.1 The Contractor must complete a tank condition report (soundings). The report must be signed by the TI/TA and the Contractor's Dock Master.

C.2 A docking report must be completed.

C.3 T**he vessel as per the** 2015 Docking position which is exactly as shown in the drawing CCGS Vector Docking Plan – Allied "A" This is to allow touch up of areas covered by blocks during the last docking.

C.4 The contractor should note the presence of a "gondola" extending over 3' below the ships keel– NO KEEL BLOCKS are to be placed below it.

C.5 Care must be taken that no keel or bilge blocks come in contact with any fitted sounders or other underwater appendages.

C.6 The TI/TA or their nominees must be fully satisfied prior to docking 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 and that there must be no shell plate deformation in way of the docking blocks (Note changes in hull thickness identified on the Shell Expansion Plan). The contractor must also ensure that all tank docking plugs are accessible and not obscured by the docking blocks. The contractor must ensure that no transducers or any other underwater device are damaged or obscured by the docking blocks. Blocks must be of a sufficient height to allow the rudder and tail shaft to be withdrawn.

C.7 The TI/TA or their nominees must inspect all arrangements carried out by the contractor prior to flooding the dock.

C.8 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.

C.9 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 must be pressure washed at minimum 3000 psi from the keel to the bulwarks, including the rudder and sea chests. Marine growth must be hand scraped prior to pressure washing; allow for 40 square meters of heavy marine growth to be hand scraped.

C.10 The contractor must ensure that all docking plugs have been properly reinstalled and viewed by (TI/TA) before any flooding procedures.

C.11 Prior to undocking, the Contractor will provide a tank condition report to be verified by TI/TA.

C.12 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 TI/TA and the Contractor's Dock Master.

C.13 The dock must not be flooded until the approval of the TI/TA has been given.

C.14 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 proven to the satisfaction of the TI/TA that all underwater fittings are water tight. Upon confirmation of water tight integrity flooding will continue.

11.1.D Proof of Performance

D.1 Inspections

D.1.1 Testing must be witnessed by the TA.

D.1.2 Testing/Trials – Not Used

D.2 Certification

D.2.1 Not used

11.2 HULL AND SUPERSTRUCTURE ULTRASONIC TESTING

11.2.A Identification

A.1 The hull and superstructure require a UTS survey.

A.2 Prior to commencing work there must be a meeting attended by the contractor, TA and sub-contractor to review the drawings and past reports to determine the areas for inspection.

11.2.B References

B.1 Equipment Data

B.1.1 The sub-contractor must use digital instrumentation capable of the Double Echo method to measure plate thickness through existing paint coatings.

B.2 Drawings

B.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.

B.2.2 The drawing

Drawing Number	DRAWING TITLE
V07-293-H-6	Shell Expansion
Report No.	**REPORT TITLE**
V07-M-05	CCGS Vector Ultrasonic Hull Thickness Measurements Elander 2014

11.2.C Statement of Work

C.1 The necessary surface preparation must be made for the instrument used.

C.2 The hull survey must include two eight hour days of testing on site with shots taken of random areas inside and outside the hull at locations determined on site and of pipe work in accordance with Lloyd's guidelines.

C.3 The superstructure survey must include one 8 hours day with shots taken as directed by the TI/TA.

C.4 The contractor must provide a man lift to facilitate the survey. The contractor is to bid on supplying a man lift for 2 days during the Ultrasonic inspection.

C.5 The survey must include

i) The hull thickness surveyor must pay particular attention to the bow thruster compartment in way of the existing concrete repair.

ii) The survey must include internal surfaces of the sea bay across the engine room. The survey must include the sea bay top, forward side and sea water pipework leading from sea bay and to the main engine and generators.

iii) The survey must also complete an ultrasonic thickness test to establish the condition of the main engine sea strainer, jacket water cooler and sea water piping to the overboard discharge valve.

iv) The survey must include areas of the super structure and once the Lab material has been stripped out.

v) The TI/TA will direct the subcontractor with additional shots within the 3 day period.

C.6 The time taken to prepare the test report is to be not included in the 3 days of on-site testing.

C.7 Travel time is exclusive of the 3 days of on-site testing.

C.8 Any resulting hull repairs will be by 1379 action. Additional time requested by TA will be by 1379 action.

11.2.D Proof of Performance

D.1 Inspection Points

D.1.1 Testing must be witnessed by the TA.

D.2 Testing/Trials – Not Used

D.2.1 Details of any tests or trials

D.3 Certification

D.3.1 A copy must be provided of the calibration certificate for the instrument used.

D.4 Documentation

D.4.1 Any test results which indicate wastage requiring plate replacement must be brought to the attention of the TA immediately by an Observation Report.

D.4.2 The complete test results must be presented in electronic format. The final test report including readings of all shots taken must be provided as soon as possible to the contractor and to the TA.

D.5 Training – Not Used

11.3 CATHODIC PROTECTION AND SEA BAY

11.3.A Identification

A.1 EMCS Canada must inspect the sea bay and replace the sea Bay anodes.

A.2 The Contractor must inspect with the TI/TA the fitted hull zincs and replace as directed

11.3.B References

B.1 Equipment Data – Not used

B.2 Drawings & Documents – Not used

B.3 Regulations and Standards

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:

FSM Procedures	Title	Included Yes/No
Publications		
Standards	Interspec Paint Specification	Yes
Regulations		

11.3.C Statement of Work for Impressed Current System (Sea Bay)

C.1 The contractor must remove the sea bay grates and power wash the sea bay. The existing protective deposit on sea bay must remain.

C.2 The Contractor must engage the services of Electrolytic Marine Corrosion Service Ltd. (EMCS) as a Field Service Representative (FSR) to assist in the overhaul of the impressed current system. Contact: Richard Polkey, EMCS Industries Ltd. 2066 Henry W. Sidney Tel: 250 656-5366 Fax: 250 656-5388

C.3 All internal surfaces of the sea bay must be inspected by Electrolytic Marine Corrosion Services LTD and the International Paint rep.

C.4 All anodes must be disconnected, removed and disposed by the contractor.

C.5 GSM supplied anodes must be installed reconnected and continuity tested to the satisfaction of the FSR, TI/TA.

C.6 The system must be inspected and adjusted by the FSR. Any discrepancies must be dealt with thru PWGSC 1379 action.

C.7 Additional cleaning and scraping of sea bays, if required, will be thru PWGSC 1379 action.

C.8 The sea bays grates must be reinstalled by the contractor prior to flooding of the drydock.

11.3.D Statement of Work for Hull Zinc Anodes

D.1 All external hull and both bow thruster tunnel anodes and mounting bars must be examined by the TI/TA. Contractor must quote on anode replacing must replace 5 Z-3's, 5 Z-4's and 10 Z-22's.

D.2 The Contractor must prepare the hull surface for welding where the new anodes are to be fitted, and remove all traces of the old anodes.

D.3 After the new anodes are welded in place, all weld splatter must be removed and disturbed paint must be feathered to minimize the transition to intact coating and then touched up to return to the original condition. Prior to the overall painting of the underwater hull all anodes must be masked and all masking must be removed and witnessed by the TA prior to undocking of vessel.

11.3.E Proof of Performance

E.1 Inspection Points

E.1.1 The TI/TA must inspect the Seabay with EMCS.

E.2 Testing/Trials – Not Used

E.3 Certification – Not Used

E.4 Documentation

E.4.1 The Contractor's final report must include details of the anodes replaced, quantity, and location.

E.5 Training – Not Used

11.4 PAINTING AND HOARDING REQUIREMENTS

11.4.A Identification

A.1 The Canadian Coast Guard will be contracting International Paint contact - Mr. Keegan Gemmil, Account Executive, International Paint, tel 604 2, cell 604 315 4347, Keegan.Gemmill@akzonobel.com directly as its technical inspector for all coating system work. International Paint will be given full authority by The Canadian Coast Guard to perform technical inspections. The contractor must present International Paint a coating time line and update International Paint of any changes.

A.2 Keegan Gemmill may designate another NACE inspector within International Paint to act as technical inspector if agreed to by the TI/TA

A.3 The Contractor must hoard the vessel to ensure they meet the coating requirements as laid out in the Interspec.

11.4.B References

B.1 Equipment Data

B.1.1 Canadian Coast Guard will furnish the contractor with a coating plan.

B.2 Reports

B.2.1 A full paint specification is included in the Appendix

B.3 Regulations and Standards

B.1.2 Not Used

B.4 Technical Documents

B.4.1 The following Technical Documents apply to work carried out in this section; The Contractor must ensure all work completed in this section meets these Technical Documents as well as any other pertinent Federal/Territorial Regulation or Standard:

Number	Title	Included Yes/No
	International Paint InterSpec	Yes

11.4.C Statement of Work

C.1 Paint Representative

C.1.1 The Contractor must allow International Paint full access to the vessel during any working hours and will report directly to the TA.

C.1.2 The Contractor must provide International Paint a complete coating time line at the start of the docking and inform them of any changes.

C.1.3 The Contractor must not apply any coating into the fresh water tanks without the presence of the TA and Keegan Gemmil or his delegate.

11.4.D Statement of Work

D.1 Hoarding

D.1.1 The Contractor must hoard the vessel to ensure they meet the coating requirements as laid out in the International Interspec. The Contractor is advised that inclement weather must be anticipated in British Columbia during the times specified in this docking and the contractor is responsible to include the cost of adequate hoarding in their bid. Coast Guard will not pay for additional repairs to the hoarding unless temperatures fall below -5C for 3 consecutive days during application of coatings or more than 40cm of snow accumulates and damages the hoarding or winds are recorded at the closet Environment Canada Weather Station of over 70 km per hour and damage the hoarding after the hoarding has been established.

11.4.E Proof of Performance

E.1 Inspections

E.1.1 The Contractor must follow the quality control requirements identified in the Paint Specification and Product Data Sheets, including the hold points.

E.2 Testing/Trials – Not Used

E.3 Certification -

E.3.1 Not Used

E.4 Documentation (Reports/Drawings/Manuals)

E.4.1 The Canadian Coast Guard has directly contracted with International Paint and International paint will be forwarding the Canadian Coast Guard a report and underwater coating certificates.

E.5 Training – Not Used

11.5 PAINTING OF SHIPS HULL BELOW WATERLINE

11.5.A Identification

NOTE: This specification provides the requirement of areas to be prepared and treated. The Interspec technical specification provides the technical requirement for method and standard of preparation, product type, number and thickness of coatings, etc.

A.1 The vessel's hull must be spot repaired.

A.2 The vessel must receive a single overall coating.

11.5.B References

B.1 Equipment Data

B.1.1 The existing underwater hull coating system consists of:

i) 2 coats Intershield 300HS

ii) 1 coat Intergard 263

iii) 2 coats Interspeed 640

iv) average dft 800 microns

Standards	Interspec Paint Specification	Yes

B.2 Drawings & Documents

Drawing Number	Description

B.3 Regulations and Standards

B.3.1 As indicated in the Interspec document.

11.5.C Statement of Work

C.1 Immediately after docking, hull openings must be securely plugged as may be necessary to prevent contamination of the area below and to avoid ingress of sand or other contaminants. Scuppers must be plugged as necessary and all appropriate measures taken to ensure that weather conditions or any other factors do not jeopardize the quality of the finished work. Water discharge must be directed away from ship side.

C.2 The propeller, shaft, stern tube, bow thruster, zincs, sonar, sounders, transducers, underwater cameras and all other fittings must be properly protected during all refit operations to avoid damage from sandblasting or any other cause. Before undocking the ship, all temporary protective materials and coatings must be removed and witnessed by the TI/TA.

C.3 No sandblasting operations must be performed when there is a risk of mechanical, pneumatic or electrical components becoming contaminated by the ingress of abrasive materials. For this reason, every effort must be made by the contractor to ensure that all sandblasting work is completed before machinery disassembly. When this is not possible, the contractor must take the appropriate measures to ensure that all vulnerable machinery items are protected in an efficient and effective manner. All davit wires and crane wires must be completely wrapped to prevent entry of grit. The Contractor must supply and install all coverings.

C.4 For bidding purposes the area of the vessel's underwater hull repair area is 20 individual random areas of 3 square meters each"

C.5 The Contractor must paint the underwater hull section as per the Inspec with one overall coat.

C.6 **For bidding purposes the area of the vessel's underwater hull is 695.70 square meters.**

C.7 The underwater hull surface includes the hull, rudder, thruster tubes, rudder trunk, gondola and all sea bays.

C.8 Disposal of all sand grit and paint chips are to be the responsibility of the contractor. The contractor is to provide certificate of disposal as part of their QA documents.

11.6 PAINTING OF HULL ABOVE WATERLINE

11.6.A Identification

NOTE: This specification provides the requirement of areas to be prepared and treated. The Interspec technical specification provides the technical requirement for method and standard of preparation, product type, number and thickness of coatings, etc.

A.1 The vessel's hull is to spot sandblasted and painted above the water line.

A.2 Painting of other areas such as equipment pedestals are as mentioned in this document and in the attached Interspec technical specification by International Paint.

11.6.B References

B.1 Equipment Data

B.1.1 The existing above water hull coating system consists of:

i) 2 coats Intershield 300

ii) 1 coat Intergard 263

iii) 1 coat Interlac 665 finish colour Red RAL 3000

iv) average dft 625 microns

Standards	Interspec Paint Specification	Yes

B.2 Drawings & Documents

B.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

B.3 Regulations and Standards

B.3.1 As indicated in the Interspec document.

11.6.C Statement of Work

C.1 No sandblasting operations will be performed when there is a risk of mechanical, pneumatic or electrical components becoming contaminated by the ingress of abrasive materials. For this reason, every effort must be made by the contractor to ensure that all sandblasting work is completed before machinery disassembly. When this is not possible, the contractor must take the appropriate measures to ensure that all vulnerable machinery items are protected in an efficient and effective manner.

C.2 Immediately after docking scuppers must be plugged as necessary and all appropriate measures taken to ensure that weather conditions or any other factors do not jeopardize the quality of the finished work. Water discharge must be directed away from ship side.

C.3 The Contractor must prepare and paint 100% the areas of the above water hull as detailed in the separate Interspec Paint Specification.

C.4 The Contractor is to bid on 20 separate areas to spot repair at 3 square meters as per Interspec.

C.5 The above water hull consists of the entire hull area from the waterline to the inside surface of the bulwarks including the rail tops. For bidding purposes the area of the vessel’s hull above water is 245 square meters, including identification markings.

C.6 Identifying insignias, stripes, vessel's name, port of registry, load line, etc. must be given two coats of white paint as specified in the Interspec specification. All the identification markings must be painted; decals must not be used except where decals were previously fitted.

C.7 The identifying stripe border and rope fairleads must be given two coats black paint as specified in the Interspec specification.

11.6.D Proof of Performance

D.1 Inspection Points

D.1.1 The Contractor must follow the quality control requirements identified in the Paint Specification, including the hold points.

D.1.2 All paint work preparation must be in accordance with manufacturer recommendations and under guidance of the CCG contracted NACE certified Inspector and printed reports must be provided. The inspector must view the work prior to commencement of painting, and after each coating. The shipyard must inform the NACE Inspector from International Paint (contact Mr. Keegan Gemmil)

D.2 Testing/Trials – Not Used

D.3 Certification - Not Used

D.4 Documentation –

D.4.1 The Canadian Coast Guard has directly contracted with International Paint and International paint will be forwarding the Canadian Coast Guard a report.

D.5 Training – Not Used

11.7 REMOVAL OF FORWARD CRANE BASE AND FOC'SLE DECK PAINTING

11.7.A Identification

NOTE: This specification provides the requirement of areas to be prepared and treated. The Interspec technical specification provides the technical requirement for method and standard of preparation, product type, number and thickness of coatings, etc.

A.1 The forward crane hydraulic power pack associated hydraulic piping and pedestal is to be removed, protected and returned to Coast Guard.

A.2 The vessel's forward section of the Foc'sle deck is to be sand blasted prepared as per Interspec.

11.7.B References

B.1 Equipment Data

i) See Interspec

Standards	Interspec Paint Specification	Yes

B.2 Drawings & Documents

B.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
V07-687-3-1	Bi-Metallic Connection Repair

B.3 Regulations and Standards

B.3.1 As indicated in the Interspec document.

11.7.C Statement of Work

C.1 No sandblasting operations will be performed when there is a risk of mechanical, pneumatic or electrical components becoming contaminated by the ingress of abrasive materials. For this reason, every effort must be made by the contractor to ensure that all sandblasting work is completed before machinery disassembly. When this is not possible, the contractor must take the appropriate measures to ensure that all vulnerable machinery items are protected in an efficient and effective manner.

C.2 The Windlass must be removed prior to sandblasting. The shims must be attached to the Windlass to help with reinstallation. All hydraulic lines to be capped.

C.3 The Contractor must remove the navy board under the crane foundations and hydraulic and electrical penetrations and repair the heat disturbed coating underneath and replace the navy board.

C.4 The Contractor must cut out remaining steel crane foundations and grind flush to deck and dispose.

C.5 The Contractor must remove the hydraulic penetrations and electrical penetrations and weld in a steel insert of 12” by 12” using 3/8” Lloyds A Steel inserts are to be inspected TI/TA and vacuum boarded by the Contractor prior to the Contractor painting.

C.6 The Contractor must cap lines and remove the forward hydraulic power pack, protect it and then it must be placed on the aft deck prior to departure.

C.7 The Contractor must terminate the electric wiring into the existing junction box next to the power pack.

C.8 The Contractor must prepare and paint 50 square meters of the areas of the Foc’sle deck forward of frame 62 as detailed in the Interspec Paint Specification.

C.9 After sandblasting the TI/TA is to inspect the bi-metallic joint with the contractor. Any repairs found will be subject to PWGSC 1379 action.

C.10 The Contractor must reinstall the Windlass after completion of work.

11.7.D Proof of Performance

D.1 Inspection Points

D.1.1 The Contractor must follow the quality control requirements identified in the Paint Specification, including the hold points.

D.1.2 All paint work preparation must be in accordance with manufacturer recommendations and under guidance of the CCG contracted NACE certified Inspector and printed reports must be provided. The inspector must view the work prior to commencement of painting, and after each coating. The shipyard must inform the NACE Inspector from International Paint (contact Mr. Keegan Gemmil)

D.2 Testing/Trials – Not Used

D.3 Certification - Not Used

D.4 Documentation –

D.4.1 The Canadian Coast Guard has directly contracted with International Paint and International paint will be forwarding the Canadian Coast Guard a report.

D.5 Training – Not Used

11.8 PAINTING OF SONAR BILGES AND COMPARTMENT

11.8.A Identification

NOTE: This specification provides the requirement of areas to be prepared and treated. The Interspec technical specification provides the technical requirement for method and standard of preparation, product type, number and thickness of coatings, etc.

A.1 The vessel's Sonar Compartment is to be prepared as per Interspec.

11.8.B

11.8.C References

C.1 Equipment Data

C.2 Regulations and Standards

C.2.1 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	**InterSpec**	**Yes**
Regulations		

11.8.D Statement of Work

D.1 The Contractor must prepare and paint 100% the areas of the Sonar Compartment as detailed in the separate Interspec Paint Specification.

D.2 For bidding purpose the area of the Sonar Bilge including deck plate supports is 92 square meters

D.3 For Bidding purpose the area of the Sonar Compartment bulkhead and deck head is100 square meters

D.4

11.8.E Proof of Performance

E.1 Inspection Points

E.1.1 Inspection will be done by TI/TA, and International Paint

E.2 Testing/Trials - Not Used.

E.3 Certification – Not Used

E.4 Documentation

E.5 The Canadian Coast Guard has directly contracted with International Paint and International paint will be forwarding the Canadian Coast Guard a report.

E.6 Training – Not Used

11.8.F Proof of Performance

F.1 Inspection Points

F.1.1 Inspection will be done by TI/TA, and International Paint

F.2 Testing/Trials - Not Used.

F.3 Certification – Not Used

F.4 Documentation

F.5 The Canadian Coast Guard has directly contracted with International Paint and International paint will be forwarding the Canadian Coast Guard a report.

F.6 Training – Not Used

11.9 PAINTING OF BOW THRUSTER BILGES AND COMPARTMENT AND REPLACEMENT OF HPU HOLD DOWN ISOLATORS.

11.9.A Identification

NOTE: This specification provides the requirement of areas to be prepared and treated. The Interspec technical specification provides the technical requirement for method and standard of preparation, product type, number and thickness of coatings, etc.

A.1 The vessel's Bow Thruster Compartment is to be prepared as per Interspec.

A.2 The isolation dampeners are to be replaced on each HPU

11.9.B References

B.1 Equipment Data

B.1.1 CCGS Vector Interspec

11.9.C Statement of Work

C.1 The Contractor must prepare and paint 100% the areas of the Bow Thruster Compartment as detailed in the separate Interspec Paint Specification.

C.2 The Contractor must replace the 8 fitted isolation dampers on the 2 HPU base plates with new CFM BR1-L isolation dampeners from Lo-Rez. Contact Richard Hordyk (604) 879-2974 ext. #1.

C.3 While replacing the isolation dampers the Contractor must prepare the area underneath the HPU base plates and bottoms of base plates. These areas are part of the included square meters below.

C.4 For bidding purpose the area of the Bow Thruster compartment bilge including deck plate supports is 55 square meters.

C.5 For bidding purpose the area of the Bow Thruster Compartment bulkhead and deck head is 65 square meters.

C.6 This work is to be done after completion of the Collision Bulkhead Replacement.

11.9.D Proof of Performance

D.1 Inspection Points

D.1.1 Inspection will be done by TI/TA, and International Paint

D.2 Testing/Trials - Not Used.

D.3 Certification – Not Used

D.4 Documentation

D.5 The Canadian Coast Guard has directly contracted with International Paint and International paint will be forwarding the Canadian Coast Guard a report.

11.9.E Proof of Performance

E.1 Inspection Points

E.1.1 Inspection will be done by TI/TA, and International Paint

E.2 Testing/Trials - Not Used.

E.3 Certification – Not Used

E.4 Documentation

E.5 The Canadian Coast Guard has directly contracted with International Paint and International paint will be forwarding the Canadian Coast Guard a report.

E.6 Training – Not Used

11.10 GONDOLA INSPECTION

11.10.A Identification

A.1 The Gondola must be inspected by the TI/TA, Hydrographic Services Canada and Natural Resources Canada

11.10.B References

B.1 Equipment Data

B.1.1 Not Used.

B.2 Drawings

B.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
V07-1358-1	Proposed Transducer Gondola Arrangement Sheet 1 of 1 Rev 0.pdf
V07-1359-2	Gondola Structural Details Sheet Rev 0
V07-1359-3	Gondola Structural Details Sheet 2 of 2 Rev.0.
V07-1359-07	Vector Gondola Arrangement Sheet 1 of 1 Rev 0

11.10.C Statement of Work

C.1 Contractor Responsibility – After hull cleaning the Gondola is to be opened up for inspection. All covers must be removed in the presence of the TI/TA. Marine growth must be cleaned off the multi beam and sounder units with a plastic scraper.

C.2 Contractor Responsibility - The contractor should expect to find 50 litres of heavy marine growth and sediment inside, this must be carefully cleaned to not damage the instruments inside. Bid on 16 hours for removal of marine growth and careful cleaning and wiping down of the inside of the Gondola, additional cleaning if agreed to is thru PWGSC 1379 action.

C.3 Contractor Responsibility - Zinc anode must be inspected, replacement will be by 1379 PWGSC action.

C.4 Contractor Responsibility - Hydro graphic Services Canada and Natural Resources Canada must be afforded an opportunity for an inspection and conduct repairs before

the unit is sealed by the contractor using CFM materials. Closing up of the Gondola must be done in the presence of the TI/TA.

11.10.D Proof of Performance

D.1 Inspection Points – Not Used

D.2 Testing/Trials – Not Used

D.3 Certification – Not Used

D.4 Documentation

D.4.1 The contractor is to include in their QA documents that the gondola has been cleaned, the amount of debris removed and if the zincs were replaced.

D.5 Training – Not Used

11.11 FRESH WATER TANK INSPECTION (TCM SURVEY) AND VENT RENEWAL

11.11.A Identification

A.1 5 water tanks require inspection and vent replacement.

11.11.B

B.1 Equipment Data

B.1.1 The existing paint system is Interline 925 Epoxy Coating

B.1.2 List of Tanks.

Description	Frame Location	Surface Area	TCM Field No.
Fresh Water #13	Stbd Frame 52-56	544 ft2	10.553
Fresh Water #14	Port Frame 56-62	544 ft2	6.436
Fresh Water #3	Port frame 4-8	480 ft2	5.581
Fresh Water #4	Stbd Frame 8-8	430 ft2	5.581
Fore Peak Tank #15	Frame 74-80	318 ft2	10.755

Reference Documents	
Application Guideline	Interline 925 Epoxy Coating - Potable Water Tanks.pdf

B.2 Drawings

B.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
V07-293-M-20	Arrangement1 and Details of Air Vents, Sounding and Freshwater Filling

B.3 Regulations and Standards

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:

	Title	**Included Yes/No**
FSM Procedures		
7.A.12	Potable Water Quality	YES
Publications		
Standards		
	Health Canada Guidelines for Canadian Drinking Water Quality.	No
Regulations		
	Canada Shipping Act 2001, Safe Working Practices Regulations	No

11.11.C Statement of Work

C.1 Contractor must clean out and ensure all tank vent lines, suction and fill lines have been thoroughly cleaned out.

C.2 The Contractor must remove one vent per tank from the roust-a-bout decking fitting and inspect the deck penetration. Repairs thru PWGSC 1379 action.

C.3 The Contractor must replace and coat vents and pipe work for #3, #4, #13 and #14 above the roust-a-bout with "Wolfe" approved vents similar to the ones installed in tank #1 and #2 and pipe suitable for fresh water. The pipe work must be coated externally.

C.4 The Contractor must use a new roust-a-bouts

C.5 The Contractor must open and certify as gas free.

C.6 The Contractor must inspect with the TI/TA the tank coatings. Any Repairs to tank coating will be thru PWGSC 1379 action.

C.7 If required the Contractor must follow the surface preparation and application guidelines contained in the Paint Specification. The Paint Manufactures Representative must be present during the entire application process **No coatings must be applied without International Paint Representative attendance**. New air hoses must be supplied by the contractor and used.

C.8 After completion of final inspection by the TI/TA, the tanks listed in 11.9.B.2 tanks and the ship's fresh water system must be super-chlorinated in accordance with the procedures laid out in the Coast Guard Fleet Safety Manual (FSM) procedure Potable Water Quality 7.A.12. On completion of super-chlorination the tanks must be drained and flushed twice before being returned to service. The contractor must be responsible to dispose of all water used to treat the fresh water tanks, allowing for volume specified in the tank table B 1.2 per fill for each of tanks, including or in addition to the de-chlorination of the super-chlorinated water.

C.9 All tanks must be inspected by TI/TA and International Paint upon completion any required repairs prior to and after hydrostatic testing If requested by TCM), then closed up using new contractor supplied manhole gaskets and new fasteners. The TI /TA shall witness the hardening up of all manholes and closures after a final inspection.

C.10 The Contractor must quote on air testing 2 psi maximum for a minimum of 3 hours on tanks 3, 4, 13, 14.

C.11 The Contractor must quote on hydrostatically testing tanks 3, 4, 13, 14.

C.12 Tank 15 will be tested as per Appendix B collision bulkhead repair.

C.13 The contractor must arrange Transport Canada inspection.

11.11.D Proof of Performance

D.1 Inspection Points

D.1.1 Once all work has been completed and the tank is cleaned of all debris and work by-products, the contactor must arrange for inspection and survey of the potable water tank by TCM or delegate.

D.1.2 Prior to application if required, the contractor must inform the TI/TA and the representative from International Paint. No coatings must take place without the presence of the representative from International Paint without written consent from the TA.

D.2 Testing/Trials

D.2.1 The contractor must arrange for testing of potable water tank upon competition of all work described above and system in accordance with the Annual Testing of Potable Water as specified in the Canada Drinking Water Guidelines as prescribed by Health Canada. To verify this, the following procedure must be followed for each tank:

vi) The tanks must be filled with fresh water, super-chlorinated, de-chlorinated and then drained in accordance with the CCG Fleet Safety manual (FSM) Potable Water Quality Guidelines contained in section 7.A.12 prior to filling for testing as specified above.

vii) The potable water distribution system must be super chlorinated as per FSM. The main charcoal media filter must be bypassed and locked out while system super chlorination takes place.

viii) The tanks must be filled with potable water to approximately fifty (50) percent of the working volume of the tank.

ix) The tanks must be allowed to remain stagnant for forty eight (48) hours before samples are taken.

x) One (1) blank water sample must be collected from the freshwater supply line used to fill the tank.

xi) Two annual water samples must be taken from the water inside the tanks. The results must be returned to the TI/TA prior to the vessel's departure.

xii) Samples from the distribution system must be taken in accordance with FSM.

xiii) The water samples listed above must be sent to an accredited laboratory for analysis. The water samples must be tested for all the parameters identified in the FSM.

D.3 Certification

D.3.1 The TA is responsible to ensure that the Survey Record Book is signed off by TCM or delegate.

D.3.2 The contractor must coordinate TCM inspection and must obtain water test reports.

D.4 Documentation

D.4.1 The contractor must include all test reports in their final documentation. The contractor must provide evidence of acceptable tank water quality; prior to acceptance of the potable tank refit work by the CCG. The super chlorination and testing must be completed near the end of the work period

D.5 Training – Not Used

11.12 FLUME TANK INSPECTION (TCM) COATING REPAIR AND VENT RENEWAL

11.12.A Identification

NOTE: This specification provides the areas to be prepared and treated. The Interspec technical specification provides the technical requirement for method and standard of preparation, product type, number and thickness of coatings, etc.

A.1 The Flume tank requires inspection and coating repairs. The 2 sounding tubes and 2 vents pipes and vents require replacing.

A.2 The Flume tank requires a new fill tube installed.

11.12.B References

B.1 Equipment Data

B.1.1 The existing paint system is undefined

B.1.2 List of Tanks.

Reference Documents	
Application Guideline	CCGS Vector Interspec

B.2 Drawings

B.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
V07-293-M-20	Arrangement1 and Details of Air Vents, Sounding and Freshwater Filling

B.3 Regulations and Standards

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:

	Title	**Included Yes/No**
FSM Procedures		
Publications		
Standards		
Regulations		

11.12.C Statement of Work

C.1 The Flume tank is to be prepared and coated as per the Interspec.

C.2 The contractor is to bid on 20 random .25 square meter repairs.

C.3 Contractor must clean out and ensure all tank vent lines, suction and fill lines have been thoroughly cleaned out.

C.4 The Contractor must remove the 2 sounding pipes from the main deck in their entirety and replace with existing dimension hot dipped galvanized pipe work and coat as per Interspec.

C.5 The Contractor must crop out the vent pipes from the main deck and replace them with existing dimension hot dipped galvanized pipe work and coated as per Interspec.

C.6 The Contractor must inspect the supports that secure the pipe to the railing or house works.

C.7 The Contractor must perform a NDT dye penetrant test in the presence of the TI/TA on penetrations into the tank or into a deck.

C.8 The Contractor is to install a new 2" fill line to the main deck. This fill line must be a new penetration into the deck and into the tank. The new fill line us to be located on the starboard side above the flume tank and placed outboard along the railing with the 2" pipe secured to the railing with a welded bracket. There must be a ball valve and cam lock fitted on the end.

C.9 The contractor must quote on air testing 2 psi maximum for a minimum of 3 hours.

C.10 The contractor must quote on a hydrostatic test the tank

C.11 The contractor must arrange Transport Canada inspection.

11.12.D Proof of Performance

D.1 Inspection Points

D.1.1 Once all work has been completed and the tank is cleaned of all debris and work by-products, the contactor must arrange for inspection and survey of the Flume tank by the TA and TCM.

D.1.2 Prior to application, the contractor must inform the TI/TA and the representative from International Paint.

D.2 Testing/Trials

D.3 Certification

D.3.1 The TA is responsible to ensure that the Survey Record Book is signed off by TCM or delegate.

D.3.2 The contractor must coordinate TCM inspection.

D.4 Documentation

D.4.1 The contractor must include all test reports in their final documentation.

D.5 Training – Not Used

Identification

11.12.E Proof of Performance

E.1 Inspection Points

E.1.1 Inspection will be done by TI/TA, and International Paint

E.2 Testing/Trials - Not Used.

E.3 Certification – Not Used

E.4 Documentation

E.5 The Canadian Coast Guard has directly contracted with International Paint and International paint will be forwarding the Canadian Coast Guard a report.

E.6 Training – Not Used

11.13 FUEL TANK INSPECTION, CLEAN (TCM INSPECTION), QUICK CLSOING VALVE OVERHAUL AND VENT REPLACEMENT

11.13.A Identification

A.1 The following diesel fuel tanks require cleaning and inspection from transport Canada.

A.2 The following diesel fuel tanks require new vents.

A.3 The following diesel tanks require their quick closing valves inspected

11.13.B References

B.1 Equipment Data

Description	Volume (litres)	TCM Field No.
Diesel Fuel #9	14500	3L009
Diesel Fuel #10	14500	3L010

B.2 Drawings

B.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

B.3 Regulations and Standards

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		

11.13.C Statement of Work

C.1 The tanks will be emptied by CG prior to arrival using ships pumps.

C.2 The contract must remove up to 500 litres of diesel and dispose per tank.

C.3 The contractor must scrape and wire brush internal surfaces as required to remove all sludge, dirt, scale, residue and corrosion products.

C.4 The contractor must remove up to 100 litres per tank of all sludge, dirt, scale, residue and corrosion products and dispose.

C.5 The Contractor must inspect remove the vent at the roust-a-bout and inspect the pipe leading into each tank

C.6 The Contractor must renew the 3 fuel vents on #8 and 2 fuel vents on #7 with new ”Wolfe Style” Class Approved fuel vents and replace the pipe work from the roust-a-bout to the vent and coat. Estimated coating area of vents is 4 square meters

C.7 The Contractor must use a new roust-a-bout when installing the new vents on each tank.

C.8 The Contractor must renew the one vent fitted for fuel tank #9 and #10 with new “Wolfe Style” Class Approved fuel vents and replace the pipe from the roust-a-bout to the vent and coat. Estimated coating area is 2 square meters.

C.9 The Contractor must use new roust-a-bouts.

C.10 The Contractor must remove the quick closing valves from #9 and #10 fuel tanks for inspection. The Contractor must disassemble the valves and lay them out for inspection for the TI/TA. The Contractor must reassemble the valves with new packing and sealant. Additional work required on the valves is subject to PWGSC 1379 action.

C.11 The Contractor must lubricate the pull wires for the quick closing valves.

C.12 The Contractor must arrange Transport Canada Inspection.

11.13.D Proof of Performance

D.1 Inspection Points

D.1.1 Inspection will be done by TI/TA, and International Paint

D.2 Testing/Trials - Not Used.

D.3 Certification – Not Used

D.4 Documentation

D.5 The Canadian Coast Guard has directly contracted with International Paint and International paint will be forwarding the Canadian Coast Guard a report.

D.6 Training – Not Used

11.13.E Proof of Performance

E.1 Inspection Points

E.1.1 Inspection will be done by TI/TA, and International Paint

E.2 Testing/Trials - Not Used.

E.3 Certification – Not Used

E.4 Documentation

E.5 The Canadian Coast Guard has directly contracted with International Paint and International paint will be forwarding the Canadian Coast Guard a report.

E.6 Training – Not Used

11.14 FORWARD HATCH RENEWAL

11.14.A Identification

A.1 The forward hatch requires replacement hatch equipped with a spring to assist with the opening installed into the aluminum fore deck

11.14.B References

B.1 Equipment Data

B.2 Drawings

B.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
	Add Hatch Drawing

B.3 Regulations and Standards

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		

11.14.C Statement of Work

C.1 The Contractor must crop out the existing hatch and dispose.

C.2 The Contractor must install a new GSM approved marine hatch (note aluminum) that is spring assisted. The Contractor must take care to not warp the decking or damage the steel aluminum interface by minimizing welding times.

C.3 The Contractor must repair all disturbed coatings on either side as per Interspec.

C.4 The Contractor must Coat the hatch in red as per Interspec

11.14.D Proof of Performance

D.1 Inspection Points

D.1.1 Inspection will be done by TI/TA, and members of Natural Resource Canada

D.2 Testing/Trials –

D.1.2 The welds are to be inspected by the TI/TA

D.1.3 The hatch is to be chalk and hose tested in the presence of the TI/TA

D.1 Certification – Not Used

D.2 Documentation

D.3 Training – Not Used

11.15 BASE FABRICATION AND INSTALLATION

11.15.A Identification

A.1 The existing hull mounted base port side frame 6 requires removal and a new base fabricated and installed.

A.2 The base a will be readily visible during the viewing.

11.15.B References

B.1 Equipment Data

B.1.1 The base is ¾" plate 12"x18" with 6 taped ½" NC threaded holes.

B.2 Drawings

B.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

B.3 Regulations and Standards

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		

11.15.C Statement of Work

C.1 The Contractor must carry crop out the base on the port side and dispose.

C.2 The Contractor must build an exact copy of the fitted base on the starboard side.

C.3 The Contractor must weld the new base.

C.4 The Contractor must repair coating systems on the hull above water and within #3 fresh water tanks as per the Interspec and in conjunction with the tank inspection.

11.15.D Proof of Performance

D.1 Inspection Points

D.1.1 Inspection will be done by TI/TA, and members of Natural Resource Canada

D.2 Testing/Trials - Not Used.

D.3 Certification – Not Used

D.4 Documentation

D.5 Training – Not Used

11.16 REPLACEMENT GONDOLLA MOUNTED 12KZ GSM TRANSDUCER AND ADCP INSTALLATION

11.16.A Identification

A.1 The 12kz Gondola mounted transducer is broken and requires replacement.

A.2 A new ADCP is to be installed in the Gondola.

11.16.B References

B.1 Equipment Data

B.2 Drawings

B.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

B.3 Regulations and Standards

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		

11.16.C Statement of Work

C.1 The Contractor must carry out all the work identified in Appendix C Gondola modifications.

11.16.D Proof of Performance

D.1 Inspection Points

D.1.1 Inspection will be done by TI/TA, and members of Natural Resource Canada

D.2 Testing/Trials - Not Used.

D.3 Certification – Not Used

D.4 Documentation

D.5 Training – Not Used

11.17 RANGING THE ANCHOR AND CHAIN REPLACEMENT (TCM INSPECTION)

11.17.A Identification

A.1 The two anchors are to be ranged in conjunction with 11.18, the assembly inspected and 2 shots of chain replaced on each anchor and 1 additional shot added to each side.

11.17.B References

B.1 Equipment Data

B.2 Drawings

B.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

B.3 Regulations and Standards

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		

11.17.C Statement of Work

C.1 The Contractor must range both anchors in conjunction with 11.18

C.2 The Contractor is to inspect the chain with the TI/TA. The TI/TA will designate with the Contractor which 2 shots from each anchor are to be replaced

C.3 The Contractor is to replace 2 shots on each anchor assembly with GSM anchor chain and Kenter shackles.

C.4 The Contractor is to add 1 additional shot of GSM anchor chain with GSM Kenter shackles to the port and starboard anchor assembly.

C.5 The Contractor is to paint 2 links white on either side of the Kenter shackles and paint the Kenter shackle red for all shots on either anchor assembly.

C.6 The Contractor must make fast the bitter end in the presence of the TI/TA and load the anchor chain via the ships windlass after conclusion of work in 11.18.

C.7 The Contractor must arrange inspection with Transport Canada

11.17.D Proof of Performance

D.1 Inspection Points

D.1.1 Inspection will be done by TI/TA, and UTS subcontractor.

D.2 Testing/Trials - Not Used.

D.3 Certification – Not Used

D.4 Documentation

D.5 Training – Not Used

11.18 ANCHOR POCKET INSPECTION

11.18.A Identification

A.1 The two anchor pockets require visual and UTS inspection once ground tackle has been removed from vessel. It is believed corrosion or damage is impairing the let go of the anchor. Damage is not readily visible until after the chain will be removed and vessel in dry dock.

11.18.B References

B.1 Equipment Data

B.2 Drawings

B.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

B.3 Regulations and Standards

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		

11.18.C Statement of Work

C.1 The contractor must inspect the anchor pocket for corrosion with the TI/TA and must direct the subcontractor to take 20 UTS shots around each anchor pocket.

C.2 Repairs found required to the anchor pockets subject PWGSC 1379 action.

11.18.D Proof of Performance

D.1 Inspection Points

D.1.1 Inspection will be done by TI/TA, and UTS subcontractor.

D.2 Testing/Trials - Not Used.

D.3 Certification – Not Used

D.4 Documentation

D.5 Training – Not Used

11.19 COLLISION BULKHEAD REPLACEMENT (TCM)

11.19.A Identification

A.1 The collision bulkhead requires replacement

11.19.B References

B.1 Equipment Data

B.2 Drawings

B.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
	All drawings contained in Appendix B

B.3 Regulations and Standards

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:

FSM Procedures	Title	Included Yes/No
Publications		
Standards		
Regulations		

11.19.C Statement of Work

C.1 The contractor is to carry out all work as required in Appendix B Collision Bulkhead Replacement.

C.2 The Contractor must arrange the attendance of Transport Canada for an inspection.

11.19.D Proof of Performance

D.1 Inspection Points

D.1.1 Inspection will be done by TI/TA, and International Paint and TCM

D.2 Testing/Trials - Not Used.

D.3 Certification – Not Used

D.4 Documentation

D.5 Training – Not Used

CCGS Vector
Docking Refit 2017

Specification No: F1782-17C814

12.0 PROPULSION AND MANEUVERING

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12.1 DOCK AND SEA TRIALS

12.1.A Identification

A.1 The contractor must conduct dock trials and sea trials sufficient to test all equipment that has been overhauled or repaired during the work period.

12.1.B References

B.1 Equipment Data - Not Used

B.2 Drawings – Not Used

Drawing Number	DRAWING TITLE	Number of Sheets

B.3 Regulations and Standards

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:

FSM Procedures	Title	Included Yes/No
Publications		
Standards		
Regulations		

12.1.C Statement of Work

C.1 The CCG will provide sufficient officers and crew to command and crew the vessel for dock trials and for sea trials.

C.2 Westec to be on site for an 8 hour dock trial for commissioning of the bow thrusters exclusive of travel time. Time required beyond 8 hours on site to be subject to 1379 action.

C.3 The Contractor must provide one senior electrician and one senior fitter for a sea trial of 8 hours.

C.4 The Contractor must provide a water taxi service to pick up their personnel at the conclusion of the sea trial.

12.1.D Proof of Performance

D.1 Inspection Points

D.1.1 The ship will not depart and start sea trials until the Chief Engineer and Captain are satisfied that it is in a safe condition.

D.2 Testing/Trials

D.2.1 Specific trials requirements are in individual specification items or will be provided by the FSR.

D.3 Certification – Not Used

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

D.4 Documentation

D.4.1 The contractor must provide readings taken during the trials and any FSR reports in the final documentation.

D.5 Training – Not Used

12.2 BOW THRUSTER INSPECTION

12.2.A Identification

A.1 The two fitted bow thruster required inspection.

12.2.B References

B.1 Equipment Data - Not Used

B.2 Drawings – Not Used

Drawing Number	DRAWING TITLE	Number of Sheets

B.3 Regulations and Standards

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:

FSM Procedures	Title	Included Yes/No
Publications		
Standards		
Regulations		

12.2.C Statement of Work

C.1 The Contractor sub-contractor the OEM Westec Equipment of North Vancouver to inspect the two bow thruster motors and blades.

C.2 The Contractor must stage the area on either side of the bow thruster and provide a 100 litre container to capture and dispose of up to 50 litres of hydraulic oil.

C.3 The Contractor must remove the grates

C.4 Westec is to inspect motors and blades of the bow thrusters and replace seals. Additional repairs found required to be subject to PWGSC 1379 action.

C.5 The Contractor is to paint the area in the bow thruster tunnel (2) as per 11.5 Under Water Hull

C.6 The Contractor is to replace the grates.

C.7 The Contractor is to top up the hydraulic tank to the regular working level with up to 100 litres of GSM oil.

12.2.D Proof of Performance

D.1 Inspection Points

D.1.1 Westec will lay out for inspection the hydraulic motors for the TA prior to reassembly.

D.2 Testing/Trials

D.3 Certification – Not Used

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

D.4 Documentation

D.4.1 Westec is to provide the contractor a report to the contractor which must be included in the QA documentation

D.5 Training – Not Used

CCGS Vector
Docking Refit 2017

Specification No: F1782-17C814

13.0 ELECTRICAL SYSTEMS

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13.1 SWITCHBOARD INSPECTION

13.1.A Identification

The Switchboard is to be inspected by EIM Canada of 27353 58 Crescent, Langley, BC V4W 3W7 the OEM of the switchboard contact is Jim Mah at (778) 373-9601

A.1

13.1.B References

B.1 Equipment Data

B.2 Drawings

B.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

B.3 Regulations and Standards

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		

13.1.C Statement of Work

C.1 The Contractor must sub contract IEM Canada to perform a switchboard inspection including checking of tightness of all electrical connections in the switch board and thermal imaging during the first week of the contract

C.2 IEM Canada is to bid on 8 hours on site aboard Vector for 2 technicians

C.3 IEM Canada is to bid separately for travel cost

C.4 Any repairs found is to be handled thru PWGSC 1379 action

13.1.D Proof of Performance

D.1 Inspection Points

D.2 Testing/Trials - Not Used.

D.3 Certification – Not Used

D.4 Documentation

D.4.1 The Contractor must forward the IEM switchboard inspection report to Canada.

D.5 Training – Not Used

13.2 SHIPS BATTERY RENEWALS

13.2.A Identification

A.1 The ships service batteries, GMDS batteries and Emergency Lighting batteries abaft the wheel house are to be renewed with GSM Super B 12V160E-ZC Lithium Ion Batteries and system wiring changed.

A.2 The total number of GSM batteries to be installed is 11.

13.2.B References

B.1 Equipment Data

B.1.2 See Manual SB12V160E in Reference and Drawings 13.2

B.1 Drawings

B.1.1 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
	Vector 24 Volt Battery System Britmar

B.2 Regulations and Standards

B.2.1 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		

13.2.C Statement of Work

C.1 The Contractor must sub contract Britmar Marine Ltd to aid with the install of the Batteries. The Contractor must quote on having Britmar on site for two 8 hour days.

C.2 The Contractor must bid separately for Britmar's travel cost.

C.3 The Contractor must disconnect the 24 Volt main and GPS Batteries and dispose

C.4 The Contractor must modify the aluminium cabinet to add a new aluminum shelf for an additional 2 batteries.

C.5 The Contractor must install the new GSM batteries and GSM solenoids

C.6 The Contractor must install CFM marine wire and install the new battery system as per the drawing by Britmar

C.7 The Contractor must have Britmar and TI/TA present prior to commissioning the system.

13.2.D Proof of Performance

D.1 Inspection Points

D.2 Testing/Trials - Not Used.

D.3 Certification – Not Used

D.4 Documentation

D.5 Training – Not Used

13.3 SHIPS UPS BATTERY REPLACEMENT AND SERVICE

13.3.A Identification

A.1 The two Always On Uninterruptable Power Systems must be inspected and serviced. The UPS batteries are to be replaced.

13.3.B References

B.1 Equipment Data

B.1.1 2 UPS Systems GES-602-TN11ABS Marine UPS external and battery bank.

B.1.2 Batteries (40 total) are a Yuasa REW45012

B.2 Drawings

B.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.

Reference
Yuasa REW45-12 Technical Data Sheet

B.3 Regulations and Standards

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		

13.3.C Statement of Work

C.1 The Contractor power down each UPS and clean the interior of the unit and filters with a Vacuum.

C.2 The Contractor must replace all batteries with 40 new CFM Yuasa REW45012 batteries.

C.3 The Contractor must inspect all connections for tightness and corrosion.

C.4 Additional repairs or batteries that require replacement are handled thru PWGSC 1379 process.

13.3.D Proof of Performance

D.1 Inspection Points

D.2 Testing/Trials - Not Used.

D.3 Certification – Not Used

D.4 Documentation

D.5 Training – Not Used

CCGS Vector
Docking Refit 2017

Specification No: F1782-17C814

14.0 ELECTRICAL DISTRIBUTION SYSTEMS

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14.1 ANNUAL MEGGER SURVEY

14.1.A Identification

The contractor must perform the annual Megger survey on the vessel using the template Megger Survey Vector.

14.1.B References

B.1 Equipment Data

B.2 Drawings – Not Used

B.3 Regulations and Standards

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		
TP 127	Ships Electrical Standards	No
IEEE 45	Recommended practice for Electrical Installations on Shipboard	No
Standards		
Regulations		
	Canada Shipping Act 2001	No

14.1.C Statement of Work

C.1 The contractor must conduct the annual Megger in accordance with TP127e Megger Survey on the vessel using the attached template

C.2 Any deficiencies found during the survey will be actioned by PWGSC 1379.

14.1.D Proof of Performance

D.1 Inspection Points

D.1.1 The contractor is to allow the TA to inspect any deficiencies found.

D.2 Testing/Trials – Not Used

D.3 Certification

D.3.1 Not used.

D.4 Documentation

The contractor must include a report (completed version of Annex A) which includes results after any repairs have been actioned.

D.5 Training – Not Used

14.2 REPLACE MAIN SEARCHLIGHT HEAD UNIT

14.2.A Identification

The main manually operated searchlight head unit requires replacement

14.2.B References

B.1 Equipment Data

B.1.2 XE9664LG-HRF

B.1 Regulations and Standards

B.1.1 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		
TP 127	Ships Electrical Standards	No
IEEE 45	Recommended practice for Electrical Installations on Shipboard	No
Standards		
Regulations		
	Canada Shipping Act 2001	No

14.2.C Statement of Work

C.1 The contractor must remove the existing C&F Searchlight head unit

C.2 The contractor must supply one (CFM) Carlisle and Finch XE 9664LG-HRF with 60” manual controller search light head with K152-15X-1000 LED option NO substitutes are acceptable as this is a direct replacement that will fit the existing pedestal and power supply.

C.3 The existing power supply must be inspected by removal of the cover and checking condition of terminal strips, tightness and for signs of degradation.

C.4 The contractor must pull new 24 Volt wire from the bridge power supply, install a new penetration transit and switch in the deck head beside the searchlight manual handle for the docking assist LED light option.

14.2.D Proof of Performance

D.1 Inspection Points

D.1.1 The contractor is to allow the TA to inspect any deficiencies found.

D.2 Testing/Trials – Not Used

D.3 Certification

D.3.1 Not used.

D.4 Documentation

The contractor must include a report (completed version of Annex A) which includes results after any repairs have been actioned.

D.5 Training – Not Used

CCGS Vector
Docking Refit 2017

Specification No: F1782-17C814

15.0 AUXILARY SYSTEMS

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15.1 GREY WATER PUMP OVERHAUL

15.1.A Identification

A.1 The two pumps must be disassembled, inspected and re-assembled.

15.1.B References

B.1 Equipment Data

B.1.1 Gilkes Pump Model J60-220 TWQS. Serial Number 1773834

B.2 Drawings – Not Used

B.1.2 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	Number of Sheets

B.1 Regulations and Standards

B.1.1 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/Provincial Regulation or Standard:

	Title	Included Yes/No
Publications		
Standards		

15.1.C Statement of Work

C.1 The Contractor shall disassemble each pump. All parts shall be cleaned for inspection and measurements of wearable parts shall be taken and documented.

C.2 The pumps must be reassembled with CFM parts consisting of seals and gaskets.

C.3 Any repairs, parts or machining necessary will be done by PWGSC 1379 action.

C.4 A full condition report is to be prepared.

15.1.D Proof of Performance

D.1 Inspection Points

D.1.1 Inspection of disassembled pumps by TI/TA

D.2 Testing/Trials

D.2.1 Perform functional test to the satisfaction of TI/TA upon completion of overhaul.

D.3 Certification

D.4 Documentation

D.4.1 The Contractor must provide a Quality Assurance (QA) report.

D.5 Training – Not Used

15.2 MEDIUM DUTY WINCH PUMPS AND HYDRAULIC TANK

15.2.A Identification

A.1 The two pump unit is to be disassembled, inspected and re-assembled.

A.2 The cooler requires cleaning.

A.3 The hydraulic oil is to be changed.

A.4 The cooling pump requires renewal

15.2.B References

B.1 Equipment Data

B.1.1 2 Vickers 2520 hydraulic pumps in tandem.

B.1.2 Single shell and tube cooler 4" diameter by 30" body.

B.1.3 Hydraulic oil tank contains 200 litres of hydraulic oil Hydrex MV32

B.2 Drawings – Not Used

B.1.2 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	Number of Sheets

B.1 Regulations and Standards

B.1.1 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/Provincial Regulation or Standard:

	Title	Included Yes/No
Publications		

Standards		

15.2.C Statement of Work

C.1 The Contractor shall disassemble the pumps. All parts shall be cleaned for inspection and measurements of wearable parts shall be taken and documented.

C.2 A thorough inspection of the pump casing is to take place with any action required done by PWGSC 1379 action.

C.3 The pumps must be reassembled with CFM parts consisting of seals and gaskets.

C.4 Any repairs, parts or machining necessary will be done by PWGSC 1379 action.

C.5 A full condition report is to be prepared.

C.6 The seawater cooling pump must be replaced with a Goulds Water Technology LB1035 pump.

C.7 The existing seawater cooling pump is to be scrapped.

C.8 Sea water pipe work is to be inspected and repairs required are thru PWGSC 1379 action.

C.9 The Contractor must remove both ends of the cooler and remove the tube nest for cleaning ashore.

C.10 The Contractor must reinstall the tube nest and replace the end gaskets.

C.11 The Contractor must supply 2 extra cover gaskets for each bell end.

C.12 The hydraulic tank must be drained and the oil disposed of. The Contractor is to quote on disposing of 200 litres of oil.

C.13 The hydraulic tank must be wiped out with lint free cloths and not closed up until witnessed by the TI/TA.

C.14 The hydraulic tank must be refilled with 200 litres of Hydrex MV32. This oil is to be CFM supplied.

15.2.D Proof of Performance

D.1 Inspection Points

D.1.1 Inspection of disassembled pumps by TI/TA

D.2 Testing/Trials

D.2.1 Perform functional test to the satisfaction of TI/TA upon completion of overhaul.

D.3 Certification

D.4 Documentation

D.4.1 The Contractor must provide a Quality Assurance (QA) report.

15.3 CENTERLINE WINCH AND COOLING PUMP OVERHAUL

15.3.A Identification

A.1 The hydraulic pump and cooling pump must be disassembled, inspected and re-assembled.

15.3.B References

B.1 Equipment Data

B.1.1 Vickers 45V50A 1G12 pump

B.1.2 Cooler shell and tube type 5 1/8" diameter by 36" long

B.1.3 Cooling pump is a Viking Model 1HD-2B. 2" NPT inlet, 1 ½" NPT outlet. Centrifugal pump.

B.2 Drawings – Not Used

B.1.2 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	Number of Sheets

B.1 Regulations and Standards

B.1.1 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/Provincial Regulation or Standard:

	Title	Included Yes/No
Publications		
Standards		

15.3.C Statement of Work

C.1 The Contractor shall disassemble the hydraulic pump. All parts shall be cleaned for inspection and measurements of wearable parts shall be taken and documented.

C.2 The Contractor shall disassemble the cooling pump. All parts shall be cleaned for inspection and measurements of wearable parts shall be taken and documented.

C.3 A thorough inspection of each casing is to take place with any action required done by PWGSC 1379 action.

C.4 The pump must be reassembled with CFM parts consisting of seals and gaskets.

C.5 The cooler must be removed and tube nest cleaned. The cooler must be reassembled with new gaskets installed on both end bells.

C.6 The Contractor must furnish Canada with 2 spare cooler end gaskets for each bell end.

C.7 Any repairs, parts or machining necessary will be done by PWGSC 1379 action.

C.8 A full condition report is to be prepared.

15.3.D Proof of Performance

D.1 Inspection Points

D.1.1 Inspection of disassembled pump by TI/TA

D.2 Testing/Trials

D.2.1 Perform functional test to the satisfaction of TI/TA upon completion of overhaul.

D.3 Certification

D.4 Documentation

D.4.1 The Contractor must provide a Quality Assurance (QA) report.

D.5 Training – Not Used

15.4 OVERHAUL AFT CAPSTAN

15.4.A Identification

A.1 The aft capstan must be disassembled, inspected and re-assembled.

15.4.B References

B.1 Equipment Data

B.1.1 J. Swann Series No. ‘MC” 344 Mk2 Hydraulic Capstan

B.2 Drawings

B.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

B.3 Regulations and Standards

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		

15.4.C Statement of Work

C.1 The Contractor shall disassemble the Aft Capstan. All parts shall be cleaned for inspection and measurements of wearable parts shall be taken and documented.

C.2 A thorough inspection of Aft Capstan is to take place with any action required done by PWGSC 1379 action.

C.3 The capstan must be reassembled with CFM parts consisting of seals and gaskets.

C.4 Any repairs, parts or machining necessary will be done by PWGSC 1379 action.

C.5 A full condition report is to be prepared.

15.4.D Proof of Performance

D.1 Inspection Points

D.1.1 Inspection will be done by TI/TA

D.2 Testing/Trials - Not Used.

D.3 Certification – Not Used

D.4 Documentation

D.5 Training – Not Used

15.5 ANCHOR WINDLASS HYDRAULIC POWER PACK

15.5.A Identification

A.1 The hydraulic pump and cooler, cooling pump must be disassembled, inspected and re-assembled.

15.5.B References

B.1 Equipment Data

B.1.1 1 Vickers 25V14 and 1 Vickers 25V21 pumps in tandem

B.1.2 Cooler shell and tube type 5 1/8" diameter by 30" long

B.2 Drawings – Not Used

B.1.2 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	Number of Sheets

B.1 Regulations and Standards

B.1.1 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/Provincial Regulation or Standard:

	Title	Included Yes/No
Publications		
Standards		

15.5.C Statement of Work

C.1 The Contractor shall disassemble the two hydraulic pumps. All parts shall be cleaned for inspection and measurements of wearable parts shall be taken and documented.

C.2 The Contractor shall disassemble the cooling pump. All parts shall be cleaned for inspection and measurements of wearable parts shall be taken and documented.

C.3 A thorough inspection of each casing is to take place with any action required done by PWGSC 1379 action.

C.4 The pump must be reassembled with CFM parts consisting of seals and gaskets.

C.5 The cooler must be removed and tube nest cleaned. The cooler must be reassembled with new gaskets installed on both end bells.

C.6 The Contractor must renew the 40 litres of anti-freeze water mix.

C.7 The Contractor must furnish Canada with 2 spare cooler end gaskets for each bell end.

C.8 Any repairs, parts or machining necessary will be done by PWGSC 1379 action.

C.9 A full condition report is to be prepared.

15.5.D Proof of Performance

D.1 Inspection Points

D.1.1 Inspection of disassembled pump by TI/TA and TCM

D.1.2 The contractor is responsible for scheduling all TCM inspections.

D.2 Testing/Trials

D.2.1 Perform functional test to the satisfaction of TI/TA upon completion of overhaul.

D.3 Certification

D.4 Documentation

D.4.1 The Contractor must provide a Quality Assurance (QA) report.

D.5 Training – Not Used

15.6 RENEW BUTTERFLY VALVE SCIENCE LOOP

15.6.A Identification

A.1 The 2" butter fly valve in the Sonar Compartment that isolates the strainer for the science sample loop requires replacement.

15.6.B References

B.1 Equipment Data

B.1.1 2" stainless NVC butterfly valve

B.2 Drawings

B.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

B.3 Regulations and Standards

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:

FSM Procedures	Title	Included Yes/No
Publications		
Standards		
Regulations		

15.6.C Statement of Work

C.1 The contractor must replace the 2" stainless butterfly valve in the sonar compartment that isolated the science loop filter with a new NVC stainless butterfly valve (CFM) valve. The contractor must use new gaskets or sealant.

C.2 The contractor is to afford the TI/TA the opportunity to inspect the pipework once the valve is removed and before the new valve is installed. Pipe found to be in poor condition to be repaired thru PWGSC 1379 action.

15.6.D Proof of Performance

D.1 Inspection Points

D.1.1 Inspection will be done by TI/TA, and International Paint

D.2 Testing/Trials - Not Used.

D.3 Certification – Not Used

D.4 Documentation

D.5 Training – Not Used

15.7 SHIPS VALVE INSPECTION

15.7.A Identification

A.1 The following valves require inspection and will available at the viewing.

Valve Name	Location	Type	Size
Bilge Pump Direct Bilge Suction	Bilge Pump Suction Manifold	Right Angle Globe Valve	3”
Bilge Pump Sea Suction	Bilge Pump Suction Manifold	Right Angle Globe Valve	3”
Bilge Pump Bilge Main Suction	Bilge Pump Suction Manifold	Globe Valve	2 ½”
Bilge Pump Overboard Discharge	Fwd of Bilge Pump	Globe Valve	3”
Bilge Pump Discharge to Fire Main	Fwd of Bilge Pump	Right Angle Globe Valve	3”
Fire Pump Bilge Suction	Below Fire Pump	Right Angle Globe Valve	2 ½”
Fire Pump Sea Suction	Below Fire Pump	Right Angle Globe Valve	3”
Fire Pump Discharge to Fire Main	Above Fire Pump	Right Angle Globe Valve	3”
Fire Pump Discharge to Overboard	Above Fire Pump	Globe Valve	3”
Ballast Pump Suction from Stability Tank	Ballast Pump Suction Manifold	Right Angle Globe Valve	3”
Ballast pump Suction from Forepeak Tank	Ballast Pump Suction Manifold	Right Angle Globe Valve	3”
Ballast Pump Discharge to Stability Tank	Ballast Pump Discharge Manifold	Right Angle Globe Valve	3”
Ballast Pump Discharged to Forepeak Tank	Ballast Pump Discharge Manifold	Right Angle Globe Valve	3”
Port Fire Main Isolation Valve	Main deck, deck level, aft port breezeway	Gate Valve	3”

Stbd Fire Main Isolation Valve	Main deck, deck level, stbd aft breezeway	Gate Valve	3”

15.7.B References

B.1 Equipment Data

B.2 Drawings – Not Used

B.1.2 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	Number of Sheets

B.1 Regulations and Standards

B.1.1 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/Provincial Regulation or Standard:

	Title	Included Yes/No
Publications		
Standards		

15.7.C Statement of Work

C.1 The contractor must remove all 17 valves ensuring that each valve is marked carefully so that it goes back to the same location on the correct manifold and or location. Contractor must ensure the name plates on the valves are recorded before work starts and verify after work is completed that the valve name plates are on the correct valves.

C.2 The valves are to be laid out for inspection for the TA/TI prior to reassembly.

C.3 The contractor must disassemble for inspection, clean, and re-assemble the valves with new gaskets, packing material and lubrication. Any required repairs or machining required will be done through 1379 action.

15.7.D Proof of Performance

D.1 Inspection Points – Not used

D.2 Testing/Trials – Not Used

D.3 Certification – Not Used

D.4 Documentation – Not used

D.5 Training – Not Used

15.8 REVERSE OSMOSIS WATER MAKER INSTALLATION

15.8.A Identification

A.1 The Vector requires the installation of a GSM reverse osmosis water maker.

15.8.B References

B.1 Equipment Data

B.1.1 Searecovery AquaMatic 1800-2

B.2 Drawings

B.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

B.3 Regulations and Standards

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		

15.8.C Statement of Work

C.1 The Contractor must install the **GSM** Searecovery AquaMatic 1800-2 water maker in to the Bow Thruster Compartment.

C.2 The Contractor will be supplied with the GSM Seareovery AquaMatic 1800-2 water maker but all pipe, fittings, valves, wiring and external filters are to be CFM.

C.3 The Contractor must mount the water maker into a stainless steel save-all that is a minimum of 3" deep and has an area is larger than the foot print of the water maker pumps, filters and membranes. The save all must be bolted to brackets welded onto the hull / framing. Disturbed coatings must be repaired as per Interspec.

C.4 The Contractor must install a new isolation valve on the suction side and new 2" piping from the existing blank located on the stbd side.

C.5 The Contractor must install a 10 and 2 micron external filters up stream of the hp pump**.**

C.6 The contractor must supply stainless 1" supply line out of the water maker and into the engine room fresh water manifold.

C.7 The Contractor must supply the water maker with an electrical connection that is compliant with TP127e.

C.8 The Contractor must install a 1" rejection line to the fitted and blanked overboard located Port side Bow Thruster Compartment.

C.9 The system must be run up and proved to be functioning properly and then cleaned and inhibited as per the Sea Recovery Operators manual.

15.8.D Proof of Performance

D.1 Inspection Points

D.1.1 Inspection will be done by TI/TA, and International Paint

D.2 Testing/Trials - Not Used.

D.3 Certification – Not Used

D.4 Documentation

D.5 The Canadian Coast Guard has directly contracted with International Paint and International paint will be forwarding the Canadian Coast Guard a report.

D.6 Training – Not Used

CCGS Vector
Docking Refit 2017

Specification No: F1782-17C814

19.0 Accommodation

Prepared by:
Marine Engineering Western Region
P.O. Box 6000
9860 W. Saanich Rd.
Victoria BC
V8L 4B2

19.1 REPLACEMENT OF MAIN DECK WINDOWS AND PORTHOLES

19.1.A Identification

A.1 Main Deck Window List

Crew's mess, port side. Two 16" non-opening aluminum portholes, through-bolted and gasketed, with deadlights fitted. The fwd one is cracked.

Crew's mess, stbd side. One fully opening, welded aluminum porthole, with deadlight.

Outside Cook's cabin, stbd side by entry door. 14", welded aluminum, fully opening porthole fitted with deadlight.

Inside Cook's cabin. 14", welded aluminum, fully opening porthole fitted with deadlight.

Engineers' Workshop. 14", welded aluminum, fully opening porthole fitted with deadlight.

Officers' Washroom, Main Deck. 14", welded aluminum, fully opening porthole fitted with deadlight and privacy glass.

Galley. 14", welded aluminum, fully opening porthole fitted with deadlight.

MCR. Window is 20" high x 17" wide, through-bolted aluminum with a locking bar that controls the window when open. Window opens inwards.

19.1.B References

B.1 Reference Study

Report Produced By:	REPORT TITLE	Report Date

B.2 Drawings

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

B.3 Regulations and Standards

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

	Title	Included Yes/No
Regulations	Occupational Health and Safety Regulation, B.C. Reg. 296/97, WorkSafe BC	No
	Transportation of Dangerous Goods Regulations SOR/2008-34, Transportation of Dangerous Goods Act.	No
Publications	Safe Work Practices for Handling Asbestos, WorkSafe BC, 2012 Edition.	No

19.1.C Statement of Work

C.1.1 The Contractor is to consider the mastic on the windows to be ACM asbestos contain The Contractor must remove all windows following the below procedures.

C.1.2 The Contractor must show clearly on their schedule that they will start the asbestos abatement work at the start of the work period.

C.1.3 The Contractor must comply with all aspects of the above stated Regulations and referenced publications.

C.1.4 The Contractor must file a Notice of Project (NOP) with WorkSafe BC, in writing or by fax, at least 24 hours before starting the project.

C.1.5 The Contractor must conduct a risk assessment for asbestos exposure, develop an exposure control plan, write safe work procedures, and implement necessary

controls as well as ensure that workers and supervisors are adequately instructed and trained.

C.1.6 The Contractor must keep written records of all training.

C.1.7 The Contractor must ensure that all workers working in the area containing asbestos use proper PPE such as disposable Tyvek coveralls (or similar) with integral head covering that fits snugly at the wrists and ankles, booties, half-face respirator with P100 HEPA cartridges. All vacuum cleaners used shall be fitted with HEPA filters.

C.1.8 The Contractor must have an Exposure Control Plan and a Respirator Plan in place.

C.1.9 The Contractor must clearly mark the designated work area boundary and Place signs around the work area warning people not to enter the work area unless authorized to do so.

C.1.10 The Contractor must temporarily remove or relocate any interference items such as but not limited to lighting, wire ways, junction boxes, electrical boxes and switches etc.

C.1.11 All temporarily removed items must be re-installed following the ACM removal, cleanup and pipe re-insulation.

C.1.12 After the removal of ACM the affected area shall be cleaned using a vacuum with HEPA filter, wiping with damp cloth or by wet sweeping or mopping.

C.1.13 For the disposal of asbestos waste the contractor must ensure that all waste materials are placed in impervious containers — (poly bags at least 0.15 mm (0.006 in. or 6 mil) thick) — inside the asbestos work area, seal the containers, and label or tag them “ASBESTOS.” Asbestos waste should be double-bagged.

C.1.14 Before removing the sealed containers from the work area, the Contractor must decontaminate the outside of the containers by damp-wiping or by cleaning with a HEPA vacuum.

C.1.15 The Contractor must package the sealed impervious containers so that they will not be punctured during handling and transportation to the disposal site. This is normally done by double-bagging them.

C.1.16 The Contractor must make prior arrangements with the appropriate authorities to deliver asbestos waste to assigned dump sites and inform transport drivers of precautions they must take. Transport vehicles may be required to display signs or placards specifying the nature of the cargo (see the Transport of Dangerous Goods Act).

C.1.17 The Contractor must remove and install new CFM windows and portholes as per A.1 Main Deck Window List with windows purchased thru Earls Marine Enclosures of 9725 192 St, Surrey, BC V4N 4C7 (604) 888-9498, Beclawet of 90 Hanna Ct S, Belleville, ON K8P 5H2 (613) 966-5611 or an equal quality vendor. All replacement windows or portholes must be replaced with windows of equal quality and strength.

C.1.18 The Contractor must fit the new windows and portholes by the same method as per the original installation. All welds into aluminum are to be inspected by the TI/TA prior to coatings.

C.1.19 Any repairs to the superstructure discovered after removing panelling are subject to PWGSC work arising.

C.1.20 The Contractor must dispose of existing windows as per A.1 Main Deck Window List except for 2 portholes with deadlights that the TI/TA will choose to be kept as spares.

C.1.21 The Contractor must recoat any disturbed areas as per Interspec.

19.1.D Proof of Performance

D.1 Inspection

D.1.1 The Contractor must hose test all windows replaced in the presence of TI/TA.

19.2 VECTOR LAB REFURBISHMENT

19.2.A Identification

A.1 The Vector's lab requires strip out and refurbishment

19.2.B Drawings

B.1.1 All Drawings are listed in Appendix A Lab Refurbishment.

B.1 Regulations and Standards

B.1.2 All Regulations and Standards are listed in Appendix A Lab Refurbishment.

19.2.C Statement of Work

C.1 The Contractor must perform the work as set out in Appendix A Lab Refurbishment Specification.

19.2.D Proof of Performance

D.1 Inspection points

D.1.1 The Contractor must afford the TA the opportunity to verify that the work is completed as detailed in Appendix A.

19.2.E Testing/Trials

E.1.1 The Contractor must afford the TA the opportunity to verify that the work is completed as detailed in Appendix A.

19.2.F Certification

F.1.1 All components must be type approved with type approval certificates provided to the TA in accordance with the Documentation section of the General Notes.

19.2.G Documentation

G.1.1 The Contractor must supply the following drawings in accordance with the Drawings section of the General Notes.

19.3 DECK REPAIR MAIN ALLEY

19.3.A Identification

A.1 The main alley decking requires repair.

19.3.B Statement of Work

B.1 The Contractor must remove 6 meters square of epoxy decking from the area just outside the lab door into the main alley way of the ship in front of the Fosters fridge where it has delaminated from the steel underneath.

B.2 The Contractor must UTS the steel underneath. Steel repairs subject to 1379 action.

B.3 The Contractor must resurface 6 square meters of decking with new epoxy coating.

B.4 The Contractor is to use the same colour of decking as specified for the lab.

19.3.C Proof of Performance

C.1 Inspection points

C.1.1 The Contractor must afford the TA the opportunity to verify the steel prior to application of epoxy.

19.3.D Certification

D.1.1 All components must be type approved with type approval certificates provided to the TA in accordance with the Documentation section of the General Notes.

19.4 REPLACE MONYO SAMPLE PUMP

19.4.A Identification

A.1 The Monyo pump located in the bow thruster space requires replacement.

Frame: 2L6_SSQ Trim: AAA Serial: AM15606

19.4.B Statement of Work

B.1 The Contractor must remove the existing Monyo sampling pump and return it to Canada.

B.2 The Contractor must inspect the stainless suction and discharge lines with any repairs actioned by PWGSC 1379.

B.3 The Contractor must install a new CFM Monyo pump.

19.4.C Proof of Performance

C.1.1 The Contractor must run up the pump with assistance from the TI/TA

19.4.D Certification

D.1.1 All components must be type approved with type approval certificates provided to the TA in accordance with the Documentation section of the General Notes.

19.5 REPLACE ENGINE ROOM DOOR

19.5.A Identification

A.1 The Engine Room door requires replacement.

Door size 30”x82”

19.5.B Statement of Work

B.1 The Contractor must remove and discard the existing door.

B.2 The Contractor must supply (CFM) a class approved Podszuck class A60 fire door with a window of 12”x18”

B.3 The Contractor must install the door.

B.4 The Contractor is to note the door is 8-10 weeks delivery.

B.5 The Contractor may contact Earls Marine Enclosures of 9725 192 St, Surrey, BC V4N 4C7 (604) 888-9498 as they are one supplier of engine room doors.

19.5.C Proof of Performance

C.1.1 The Contractor must ensure a good seal and fit in the presence of TI/TA

19.5.D Certification

D.1.1 All components must be type approved with type approval certificates provided to the TA in accordance with the Documentation section of the General Notes.