Parks Canada Research Vessel
David Thompson
Drydocking 2022

Specification No:
5P047-220172

Revision:
V1.1

Prepared by:

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G1.0 GENERAL

G 1.0 GENERAL NOTES

G 1.1 Identification

G 1.1.1 Identification

G 1.1.1.1 These General Notes describe the requirements applicable to all accompanying Technical Specifications.

G 1.1.2 Vessel Details

Name:	*David Thompson*
Port of Registry:	Ottawa
Official Number:	814696
Type:	Research Vessel
Year Built:	1992
Class:	ABS A1 AMS Government Survey Vessel (ABS ID 91270390)
Certificate:	ABS Class Certificate (Expiry Nov 7th 2022)
Principal Dimensions:	
Length (Overall)	28.97 m
Length (btw Perp.)	26.50 m
Breadth (Moulded)	8.80 m
Depth (Moulded)	4.07 m
Design Draught (Mean)	3.35 m
Displacement :	G.R.T. 239 Tonnes N.R.T 93 Tonnes
Speed:	11.5 knots
Propulsion:	Caterpillar 3512 rated 954 kW
Propeller Type:	Heimdal K500

G 1.1.3 Equipment

G 1.1.3.1 Not Used.

G 1.2 References

G 1.2.1 Regulations

G 1.2.1.1 All regulations, standards, publications, and procedures listed below are to be used as reference. The Contractor will ensure all work completed in the specification is done to all pertinent federal and provincial regulations and standards. Parks Canada

procedures are to be used as a guide if no other regulation takes precedence. As a fully classed vessel, all work must be done to the standards of the American Bureau of Shipping.

G 1.2.1.2 In the following table "Included – Yes" means that the document will be provided by Parks Canada 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**
FSM – Coast Guard	Fleet Safety Manual (Latest Edition) including: 7.A.12 Potable Water Quality 7.B.2 Fall Protection 7.B.3 Entry Into Confined spaces 7.B.4 Hotwork 7.B.5 Lockout and Tagout 7.B.6 Electrical Safety – Working on Energised Electrical Conductors or Circuit Parts 7.C.4 Towing Operations 10.A.7 Contractor Safety and Security	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
	ABS Rules for Steel Ships < 90 m	Yes
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	Canadian Coast Guard Welding Specification	No
SSPC	The Society for Protective Coatings	No
ISO 8501-1:2007	Preparation of steel substrates before application of paints and related products	No
ISO 10816-1:1995	Mechanical vibration -- Evaluation of machine vibration by measurements on non-rotating parts -- Part 1: General guidelines	No
	CAD standard	
Specifications		
	PAINT SPECIFICATIONS – RV David Thompson (2022).	Yes
A21-10-02	Stability Book Rev 1	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

G 1.2.2 Guidance Drawings

G 1.2.2.1 The following Drawings are to be considered as Guidance Drawings as defined in the Drawings section of the General Notes. Once listed, a drawing name is not repeated in this list – see specific specification section.

Drawing Number	DRAWING TITLE
A21 H93-00	General Arrangement
A21 H93-6	Construction Sections (2 sheets)
A21 H93-7	Framing Profile and Details (2 sheets)
A21 H93-8	Longitudinal, Transverse & Steel Minor Bulkheads
A21 H93-9	Deck Structure
A21-H93-12	Deck House Structure and Details
A21 H93-13	Sea Chests
H93-19	Air Handling Unit Seating
A21 H93-20	Shafting – Stern Tube Arrangement
A21 H93-21	Steering Gear and Rudder Arrangement Details REV B
A21 H93-31	Bilge, Fire, and Deckwash Diagram
A21 H93-38	Vent Fill & Sounding Diagram
A21 H93-40	Fuel Oil System Diagram
A21 H93-47	Vent Fill & Sounding Physical
A21 H93-51-1	Machinery Arrangement Sheet 1 of 2
A21 H93-51-2	Machinery Arrangement Sheet 2 of 2
A21 H93-48	Insulation Plan
A21 H93-60	Accommodation Air Ducting Supply & Return 1 of 1 Rev C
A21 H93-65	Name Plates, Hull Marks, and Paint Schedule (2 Sheets)
A21 H93-066	Docking Plan and Cathodic Protection
A21 101-88	Marine Gear shaft coupling
A21 103-478-5	Lines Plan & Offsets (Peter S. Hatfield Ltd) 1 of 1
A21 105-77	Propeller hub
A21 108-096	Propeller Arrangement
A21 108-097	Shaft Arrangement
A21 109-002	Heimdal Marine Gear
A21 H93-105	Electric Circuit – Heaters
Docking Plan 2002	Docking Plan produced by Allied Shipbuilding, 2002 (sheet 1 of 2)
Docking Plan 2002	Docking Plan produced by Allied Shipbuilding, 2002 (sheet 2 of 2)
Docking Plan ‘C’	Docking Plan produced by Allied Shipbuilding, 2018
A21 H93-62	Transducer Arrangement 1 of 1 Rev B
296-T1-2_1 Sht1	New Transducer Pod

G.1.2.3 Abbreviations

ABS	American Bureau of Shipping (Classification Society)
ACM	Asbestos Containing Material
CA	Contract Authority (PSPC)
CFM	Contractor Furnished Material and/or equipment
CLC	Canada Labour Code
CSA	Canadian Standards Association
CWB	Canadian Welding Bureau
FSM	Fleet Safety Manual (CCG)
FSR	Manufacturer's Field Service Representative
GSM	Government Supplied Material and/or equipment
HC	Health Canada
IEEE	Institute of Electrical & Electronic Engineers Inc.
kW	kilowatt
kWh	kilowatt-hour
MSDS	Material Safety Data Sheet
NDT	Non Destructive Testing
OHS	Occupational Health and Safety
PCA	Parks Canada Agency
PSPC	Public Services and Procurement Canada (formerly PWGSC)
PWGSC	Public Works and Government Services Canada (now PSPC)
RO	Recognized Organization as defined by Canada Shipping Act.
SDNR	Screw Down Non-Return (valve)
SDSL	Screw Down Screw Lift (valve)
TA	Technical Authority Parks Canada, or delegated Representative.
TC	Transport Canada
TCMS	Transport Canada Marine Safety
TI	Technical Inspector – PCA delegated.

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 Parks Canada, the Safety Management System of Parks Canada 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 1.4.3 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 by Parks Canada 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 – RV David Thompson (2022).

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, 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) including all GSM must be stored in a humidity controlled heated space of sufficient size.

G 1.4.13.2 All equipment and items , including all GSM, 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. ABS, HC, Environment Canada or others as indicated by individual specifications. Any arising ABS inspection fees are to be billed by ABS directly to Parks Canada Agency, all other inspection and certification fees to be paid directly by Contractor.

G 1.4.14.2 The RV *David Thompson* is presently operating under an ABS Class Certificate with expiry Nov 7th 2022. Parks Canada's representative at ABS for Class survey of the vessel is Mr. Abdullah Jamaly, Senior Surveyor, ABS Eastern Canada Division, tel 1-613-569-5446, cell 1-709-730-6922.

G 1.4.14.3 Documentation generated by the above inspections and/or surveys indicating that the inspections and/or surveys were conducted (i.e. original signed and dated certificates) must be provided to the TA in accordance with the "Documentation" Section of these General Notes.

G 1.4.14.4 The Contractor must not substitute inspection by the TA for the required regulatory inspections.

G 1.4.14.5 The Contractor must provide timely advance notification (minimum of 2 working days) of scheduled regulatory inspections to the TA so they may witness the inspection.

G 1.4.15 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. The contractor, with the concurrence of the TI/TA, may cut away and remove sections of side shell plating and equipment mounted thereto to facilitate removal and/or replacement of engine room machinery. If so, the contractor must ensure such openings in the hull are secure against all manner of safety hazards, including fall prevention, and inclement weather while open. The contractor must close up and re-weld openings made in the hull when work requiring their use is complete. 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 1.4.17.3 The contractor may remove the hatches at the engine room aft bulkhead and at the after quarter deck to facilitate transit of engine room machinery. If so, the contractor must ensure that the hatches are secure against all manner of safety hazards, including fall prevention, and inclement weather while open. The contractor must re-install and seal these hatches when work requiring their use is complete.

G 1.4.17.4 The contractor may use the engine room hoist and track rails to remove and replace engine room machinery. If so, a track rail extension, extending from the engine room through the after hold and terminating adjacent to and below the after quarterdeck hatch must be provided by Parks Canada staff. It must be the responsibility of the contractor to install and remove this rail. The contractor must ensure that the hatches remain open and the hoist track rail remains in place for the duration of all engine room work.

G 1.4.17.5 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 1.4.17.6 Temporary lifting points installed by the contractor must be removed prior to transfer of custody with welds ground flush, and paint coatings applied in accordance with the PAINT SPECIFICATIONS – RV David Thompson (2022).

G 1.4.17.7 Manufacturer's recommended removal clearances must be allowed for.

G 1.4.17.8 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: ***5P033-160859/A – DATA BOOK – 2022-03-31 – 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 ABS, 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 or Bentley Microstation who will create or modify drawings that result from the work.

G 1.6.3 Drawing drives 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 drive. Drives must be labeled As-Fitted drawings for those drawings that have been approved and finalized.

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

G 1.6.6 The Contractor must furnish all drawings required by sub-contractors, trades and other consultants.

G 1.6.7 Schematic drawings of systems must include all pertinent system information, including sizes, dimensions, labeling, equipment locations, and all information relating to system fittings.

G 1.6.8 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/Microstation drawings where original AutoCAD/Microstation drawings are provided. If no AutoCAD/Microstation 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) Parks Canada -- RV *David Thompson*;

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 TCMS 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.

G 1.9 Piping

G 1.9.1 All materials used for potable water systems are to be suitable for that use and for the intended pressure and temperatures.

G 1.9.2 All piping to be as per the Material Standard for Pipes, Valves and Fittings.

G 1.9.3 The Contractor must ensure that new pipe joint methods are compatible with existing vessel methods and equipment. Specialized tools required for pipe connections are to be supplied to the R/V David Thompson if the equipment does not already exist on board.

G 1.9.4 Transition joints between old and new piping are to exceed the strength of the original piping.

G 1.9.5 Piping to be well supported at regular intervals and supported such that no rattling of pipes occur during use of when shut off.

G 1.9.6 The Contractor must maintain fire ratings accordingly as piping transitions through fire zones.

G 1.9.7 Thermal insulation must be fitted on all piping of the following systems: hot water heating, hot potable water, uncontaminated seawater, refrigeration piping, fresh water cooling (where the surface temperature exceeds 50 ºC), and hydraulic piping exposed to ambient conditions.

G 1.9.8 The Contractor must insulate all pipes or fittings which pass through insulated bulkheads, decks, or tanks to the same standard for a distance of at least 0.45 meters from the insulated side of bulkhead, deck, or tank.

G 1.9.9 All pipe insulation and penetrations must be intended for use on ships and in compliance with SOLAS and the FTP Code. All pipe insulation must be a minimum ½" W.T. Armaflex "Class O" or equivalent.

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 will be delivered by Parks Canada to the contractor's facility.

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 240 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 must be determined at the end of the contract once the meter has been read. The contractor is to bid on 8,000 kWh. The final power consumption total must 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 WORKSPACE INSPECTIONS

S 1.7.1 Before the Contractor starts any work on the vessel, the Contractor's Quality Assurance Representative and the TA must walk through each space and area where work is to take place, including access and removal routes and areas adjacent to those where the work is to be done as a result of this specification. The Walk-through must occur during vessel demobilization and the Contractor's Quality Assurance Representative must identify all items that are to be removed or secured prior to the Contractor assuming Care and Custody of the Vessel.

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

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

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

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

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

S 1.8 FIRE PROTECTION

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

S 1.8.2 The Contractor must ensure the isolation, removal, installation and reactivation of the shipboard fire detection and suppression systems or any components thereof, is performed by a qualified technician. When the shipboard fire detection or fire suppression system is deactivated or disabled by the Contractor during the contract period, the system must be recertified by a qualified technician prior to the end of the work period, as fully functional. A signed and dated original copy of the certificate must be delivered according to the Documentation section of the General Notes.

S 1.8.3 The Contractor must have a certified fire contractor disable the fixed fire system at the start of the work period and the same fire contractor enable and re-certify the fixed fire system at the completion of the work. A signed and dated original copy of the certificate must be delivered according to the Documentation section of the General Notes.

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

S 1.8.5 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 1.9 PROJECT FACILITIES

S 1.9.1 Contractor must allow access for TI/TA and Parks Canada staff to shore side washrooms and wash spaces.

S 1.9.2 The vessel's toilets and sewage system are out bounds, and not to be used during the work period.

11.0 HULL & RELATED STRUCTURES

11.1 DOCKING AND UNDOCKING

11.1.A Scope

A.1 The intent of this specification it is to conduct docking and undocking activities for the purpose of conducting an underwater hull survey by ABS and other work specified.

A.2 The vessel must be docked at the Contractor's facility, and the vessel hull must be surveyed by the TI/TA and by ABS. On completion of all related work the vessel must be undocked and secured alongside at the Contractor's facility.

11.1.B References

B.1 Equipment Data – see Appendix A

B.2 Drawings

Drawing Number	Description
Docking Plan 'C'	Docking Plan produced by Allied Shipbuilding (2018)
Docking Plan 2002 (1 of 2)	Docking Plan produced by Allied Shipbuilding, 2002.
Docking Plan 2002 (2 of 2)	Docking Plan produced by Allied Shipbuilding, 2002
A21 H93-00	General Arrangement
A21 103-478-5	Lines Plan & Offsets (Peter S. Hatfield Ltd) 1 of 1 Rev B
A21 H93-62	Transducer Arrangement 1 of 1 Rev B
296-T1-2_1 Sht1	New Transducer Pod
Report no.	**REPORT TITLE**
A21-10-02	Stability Book Rev 1

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 which indicates current tank condition, docking plan and block locations and be in accordance with the Documentation section of the General Notes. The TA must be afforded the opportunity to review the docking report prior to docking. Docking Plan 'C' should be used as the template for block placement.

C.3 Care must be taken that no keel or bilge blocks come in contact with any fitted sounders, the multi-beam sonar pod, or other underwater appendages.

C.4 The TI/TA or their nominees must be fully satisfied prior to docking that all support locations are in accordance with the updated 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. Blocks must be of a sufficient height to allow the rudder and tail shaft to be withdrawn.

C.5 The TI/TA or their nominees must inspect all arrangements carried out by the contractor prior to flooding the dock.

C.6 The Contractor must inform the Chief Engineer of the vessel when electrical generation on board the vessel is to be discontinued.

C.7 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.8 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 (a total combined area of 512 square meters), including the rudder and sea chests. Marine growth must be hand scraped prior to pressure washing; allow for 50 square meters of heavy marine growth to be hand scraped.

iii) The outer deck must be pressure washed to remove all shell, debris, and fouling.

C.9 The Contractor must provide a total of 6 hours (non-continuous) of man lift services, with operator, for the ABS surveyor for inspection purposes. This number will be adjusted via PSPC 1379 Work Arising Procedure if necessary.

C.10 Upon the completion of pressure washing the hull, the Contractor must co-ordinate for ABS to inspect the hull. The Contractor must provide the TA the opportunity to attend at the time of ABS inspection.

C.11 The contractor must ensure that all docking plugs have been properly replaced and viewed by (TI/TA) before any flooding procedures.

C.12 Prior to undocking, the Contractor will provide a tank condition report to be verified by TI/TA.

C.13 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.14 The dock must to be flooded until the approval of the TI/TA has been given.

C.15 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.

C.16 The Contractor must be responsible for all such services as may be required for the safe and proper departure of the vessel from the dry dock.

C.17 The vessel must then be removed from dry-dock by the Contractor and secured alongside at an agreed upon location. The Contractor must allow a minimum of one day (24 hours) after completion of all work at this location with Contractor supplied shore power to allow ship's personnel to run up all vessel systems and ensure proper operation. The Contractor must supply and maintain a suitable Gangway at the alongside facility.

11.1.D Proof of Performance

D.1 Inspections

D.1.1 The Contractor must consult with the ABS to determine any required inspections. The Contractor is responsible for scheduling all ABS inspections.

D.1.2 The Contractor must provide ABS the opportunity to conduct a survey of the hull below and above the water line. The TA must be informed and must be afforded the opportunity to attend with ABS.

D.2 Certification

D.2.1 The TI/TA is responsible to ensure that the survey credit is received from ABS.

D.3 Documentation

D.3.1 The Contractor must provide a Docking Report in accordance with the Documentation section of the General Notes.

D.3.2 The Contractor must provide Tank Soundings, before and after docking in accordance with the Documentation section of the General Notes.

11.2 HULL AND LOWER DECK ULTRASONIC TESTING

11.2.A Identification

A.1 The contractor must hire a sub-contractor which is recognised by the American Bureau of Shipping to conduct ultrasonic hull thickness surveys of the hull. The sub-contractor must undertake extensive hull and tank thickness measurements as soon as possible after the ship has been docked, power washed, and temporary frame markings have been added. The contractor must quote on having the surveyor on site for two 8 hour days. Extra days or time to be prorated and handled thru PWGSC 1379 action. The time taken to furnish the report is to be bid on exclusive of the two 8 hour days.

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

A.3 Hull or structural repairs identified thru the UTS testing are subject to PWGSC 1379 work arising.

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.

Drawing Number	DRAWING TITLE
A21 H93-6	Construction Sections (2 sheets)
A21 H93-7	Framing Profile and Details (2 sheets)
A21 H93-8	Longitudinal, Transverse & Steel Minor Bulkheads
Report No.	**REPORT TITLE**
E17-273-001	Data David Thompson ABS Special_Survey

E17-273-001	David Thompson Reference 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:

FSM Procedures	Title	Included Yes/No
Publications		
	ABS Rules for Steel Ships < 90 m – Part 7: Rules for Survey after Construction 2017	Yes
Standards		
Regulations		

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 days of testing on site with shots taken of random areas inside and outside the hull at locations determined on site in accordance with ABS guidelines.

C.3 The contractor must provide a man lift to facilitate the survey. The contractor is to bid on supplying a man lift for two days during the Ultrasonic inspection.

C.4 The hull survey must include nominally one and one-half days with shots covering internal areas and frames of the underwater hull as requested by the TA. Suspect areas throughout the vessel. will be specified by attending surveyor. The primary areas of focus include:

i) Two (2) transverse sections within the amidships 0.5L, avoiding those spaces previously gauged.

ii) Internals in forepeak ballast tank.

iii) Wind-and-water strakes, port and starboard, full length.

iv) All exposed main deck full length and representative exposed superstructure deck plating (poop, bridge and forecastle decks).

v) Flat keel plating full length.

vi) Additional bottom plates in way of cofferdams, machinery spaces and aft ends of tanks.

vii) The survey must include internal surfaces of the sea chests inside the engine room. The survey must include the sea chest top, forward side and sea water pipework leading from sea chest.

C.5 Any resulting hull repairs will be by 1379 action. Additional time requested by TA will be by 1379 action.

C.6 The time taken to prepare the test report in 11.2 D.4.1 below is to be bid separately from the actual time on site in 11.2.C.

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 PRESSURE TEST OF KEEL AND BILGE KEELS

11.3.A Identification

A.1 The contractor must pressure test the keel and bilge keels in the presence of the TI/TA

11.3.B References

B.1 Equipment Data - Not Used

B.2 Drawings – See Below

Drawing Number	DRAWING TITLE	Number of Sheets
A21 H93-6	Construction Sections	2
A21 H93-7	Framing Profile and Details	2

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		

11.3.C Statement of Work

C.1 The contractor must, in the presence of the TI/TA, remove the drain plugs from the 4 sections of the centre keel, and the port and starboard bilge keels.

C.2 The Contractor must air test the 4 sections of the centre keel, and the port and starboard bilge keels to a pressure of 3-4 psi using a manometer. Any required repairs must be by PWGSC 1379 action.

C.3 The contractor must reinstall and seal the drain plugs with an appropriate sealing compound. The sealing compound must be applied and hardened up in the presence of the TI/TA.

11.3.D Proof of Performance

D.1 Inspection Points

D.1.1 TI/TA to witness all pressure tests

D.2 Testing/Trials

D.2.1

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

11.4 ZINC ANODES

11.4.A Identification

A.1 The intent of this specification is to renew the cathodic protection anodes on the vessel.

11.4.B References

B.1 Equipment Data - Not Used

B.2 Drawings – H93-66 Docking Plan and Cathodic Protection, June 2000

Drawing Number	DRAWING TITLE	Number of Sheets
H93-66	Docking Plan and Cathodic Protection, June 2000	1

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		

11.4.C Statement of Work

C.1 For quotation purposes the contractor must quote on the replacement of all zinc anodes with Martyr Commercial Anodes (or equivalent) as follows:

a) 20 - 10.65 kg Z19 Zinc anodes for hull mount

b) 8 - 2.25 kg Z4 Zinc anodes for sea chests

c) 8 – 5.35 kg Z3 Zinc anodes for the rudder and bow thruster tunnel

C.2 The contractor must remove all existing zinc anodes. The Contractor must remove all weld scabs and gouges caused by removal of existing anodes by welding over and grinding flush.

C.3 Anode straps and fairing plates must be primed and painted in accordance with the Coatings and Surface Treatment Schedule. Prior to the installation of anodes, the Contractor must complete the coating application to areas behind the anode straps.

C.4 The contractor must attach the replacement CFM zinc anodes in the same positions on the hull from which the worn anodes were removed.

C.5 The Contractor must protect all anodes from paint overspray until underwater paintwork is complete.

11.4.D Proof of Performance

D.1 Inspection Points

D.1.1 Contractor must provide the TA the opportunity to visually inspect the condition of the anodes before removal.

D.2 Testing/Trials – Not Used

D.3 Certification – Not Used

D.4 Documentation – Not Used

11.5 SEA INLET SURVEY

11.5.A Identification

A.1 The intent of this specification item is to prepare the sea inlets for ABS inspection.

A.2 All openings to the sea must be examined internally and externally by the ABS Surveyor.

11.5.B References

B.1 Equipment Data – Refer to Appendix B for valve details

B.2 Drawings and Documents

B.2.1 All Drawings and Documents are listed in the General Notes.

Drawing Number	DRAWING TITLE
A21 H93-13	Sea Chests
A21 H93-6	Construction Sections (2 sheets)
A21 H93-7	Framing Profile and Details (2 sheets)

B.3 Regulations and Standards

B.3.1 All Regulations and Standards are listed in the General Notes. The Contractor must ensure all work completed in this section meets these Regulations and Standards as well as any other pertinent Federal/Territorial Regulation.

11.5.C Statement of Work

C.1 The Contractor must provide the TA and the ABS the opportunity to inspect all sea inlets for the purpose of receiving a survey credit under the vessel's continuous survey.

C.2 The hull must be docked so that shell grids are accessible for inspection and removal.

C.3 The Contractor must remove all sea inlet and strainer plates. All openings in the plates must be mechanically cleaned to remove all marine growth. Preparation, painting, re-installation, and securing of the grates must be included. Grates must be blasted and then primed and painted in accordance with the PAINT SPECIFICATIONS – RV David Thompson (2022)

C.4 The Contractor must remove the bow thruster grates. All openings in the grates must be mechanically cleaned to remove all marine growth. Preparation, painting, re-installation, and securing of the grates must be included. Grates must be blasted and then primed and painted in accordance with the Coatings and Surface Treatment Schedule.

C.5 The Contractor must remove all marine growth from the sea inlets and the bow thruster tunnel. All internal surfaces of the sea chests and thruster tunnel must be hydro blasted with a minimum 3000 PSI fresh water, the remainder of debris must be removed using hand scraping and powered tools. Contractor to quote on 200 liters of debris disposal. TA must be given the opportunity to view the condition of the sea inlets and the bow thruster tunnel before cleaning.

C.6 After satisfactory inspection of the sea inlets and bow thruster tunnel by the ABS Surveyor and the TA, the Contractor must reinstall and secure the grates. The Contractor must supply and install new 316L stainless steel nyloc fasteners for securing the grates. In addition, grates are to be tack welded in place. Hardening up of any grates, guard bars, docking plugs, and manhole covers must be witnessed by the TA.

11.5.D Proof of Performance

D.1 Inspection Points

D.1.1 The Contractor must consult with the ABS to determine any required inspections. TA to be informed of any required ABS inspections.

D.1.2 The TA must inspect the sea chest before cleaning.

D.1.3 The TA and ABS Surveyor must inspect the sea chests after cleaning.

D.1.4 The TA and ABS Surveyor must inspect the bow thruster coatings and anodes prior to installing sea inlet gratings and before undocking.

D.1.5 The Contractor must conduct weld inspections and NDT in accordance with the CCG Welding Specification. Any defects found are to be repaired at Contractor's expense.

D.2 Testing/Trials

D.2.1 The Contractor must ensure that all manholes are leak free during the floating of the vessel. The Contractor will pause the floating of the vessel just before it comes off the blocks for 15 minutes while the manholes are witnessed by the TA for leaks.

11.6 SHIP SIDE VALVES SURVEY

11.6.A Identification

A.1 The intent of this specification item is to remove and layout for inspection by ABS all overboard ship side valves.

A.2 All overboard discharge valves must be examined internally and externally by the ABS Surveyor for the purpose of receiving a survey credit as part of the vessel's continuous survey system.

11.6.B References

B.1 **Equipment Data** – see Appendix B

B.2 **Drawings –** not used

B.3 **Regulations and Standards –**not used

11.6.C Statement of Work

C.1 The Contractor must dismantle, clean and examine all valve parts for defects.

C.2 The contractor must lap and blue all disks and seats to prove true. The contractor must quote on one bluing per valve. Additional work must be done by PWGSC 1379 action.

C.3 The Contractor must visually inspect all removed valves and report any deficiencies as they are identified, to the TA and make recommendations for their repair or replacement. Any required repairs or replacements of valves will be CFM via PSPC 1379 Work Arising Procedure.

C.4 The contractor must lay out the valves for survey by the TI/TA and ABS inspector.

C.5 The contractor must reassemble all valves using new CFM packing and jointing materials of correct grade and dimensions.

C.6 The contractor is to replace the galley sink Globe SDNR valve with a new GSM Gate valve of the same dimensions.

C.7 The contractor must reinstall the valves into the ship and prove their operation in the presence of the TI/TA.

11.6.D Proof of Performance

D.1 Inspection Points

D.1.1 The Contractor must consult with the ABS to determine any required inspections. TA to be informed of any required ABS inspections.

D.1.2 The Contractor must afford the opportunity to ABS and the TA to inspect all valves, both when disassembled and once reinstalled on the vessel.

D.2 Testing/Trials

D.2.1 The Contractor must provide the ABS Surveyor and the TA the opportunity to witness valve pressure testing.

D.2.2 The Contractor must operationally test and inspect all valves that were serviced and their connections during the flooding of the dock and during the sea-trials.

D.3 Certification

D.3.1 The Contractor is responsible for ensuring that the ABS has approved all aspects of the valve overhaul. ABS sign-off of regulatory items inspected will be the responsibility of the CE.

D.4 Documentation

D.4.1 Documentation must be in accordance with the Documentation section of the General Notes.

D.4.2 The Contractor must provide a list of all materials used.

11.7 SEA WATER COOLING PIPING MODIFICATIONS

11.7.A Identification

A.1 The intent of this specification item is to modify the M/E seawater cooling piping to be rerouted back to the sea chests.

11.7.B References

B.1 **Equipment Data** – GSM Brass Fittings (awaiting quote)

B.2 **Drawings –** Insert Sea water cooling diagram (modified)

B.3 **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:

FSM Procedures	Title	Included Yes/No
FSM – Coast Guard	Fleet Safety Manual	Yes
Publications		
	ABS Rules for Steel Ships < 90m	Yes
Standards		
CT-043-EQ-EG-001-E	Canadian Coast Guard Welding Specification	Yes
Regulations		

11.7.C Statement of Work

GSM Materials: 3" Brass 3 way valve, 2x 3" to 1.5" adaptor, 2x 1.5" brass ball valve, 2x 1.5" brass check valve

C.1 The Contractor must modify the existing overboard piping from the main engine sea water cooler.

C.2 The contractor is to install a GSM 3 way ball valve – butt welded. One port from the sea water cooler, one port directing to the existing overboard and the last port directing to new piping to the sea chests.

C.3 The contractor is to install new 1.5" brass piping to each sea chest through a 3" GSM brass Tee fitting reduced down to 1.5" brass piping. A GSM 1.5" brass ball valve is to be fit directly to the side of each sea chest by means of a brass socket welded flange. Both ball valves must have a GSM 1.5" brass check valve welded inline before the Tee fitting.

C.4 The sea water return can use the spare blanked flanges at bottom middle of each sea chest. Brass piping to have a CFM socket welded brass flange installed in order to mate with the sea chest. The ball valve handles must be fit in a way guaranteeing full range of motion without obstruction from other piping.

C.5 All new piping will need to be amply supported to minimize potential damage from vibration. Additional pipe hangars will need to be added once the new piping layout is confirmed.

11.7.D Proof of Performance

D.1 Inspection Points

D.1.1 The Contractor must consult with the ABS to determine any required inspections. TA to be informed of any required ABS inspections.

D.1.2 The Contractor must afford the opportunity to the TA to inspect all valves and piping, prior and post installation on the vessel.

D.2 Testing/Trials

D.2.1 The Contractor must provide the ABS Surveyor and the TA the opportunity to witness valve/piping pressure testing.

D.2.2 The Contractor must operationally test and inspect all valves that were added and their connections during the flooding of the dock and during the sea-trials.

D.3 Certification

D.3.1 Not used

D.4 Documentation

D.4.1 Documentation must be in accordance with the Documentation section of the General Notes.

D.4.2 The Contractor must provide a list of all materials used

11.8 PAINTING AND HOARDING REQUIREMENTS

11.8.A Identification

A.1 Parks Canada Agency will be contracting an International Paint representative - Mr. Kevin Leigh, JBI Coatings, cell 519-328-6601, Kevin @jbicoatings.com, directly as its technical inspector for all coating system work. International Paint/JBI Coatings will be given full authority by Parks Canada Agency to perform technical inspections. The contractor must present International Paint a coating time line and update International Paint of any changes.

A.2 The contractor must have its own NACE Paint inspector to ensure their own QA. This must be CFM.

A.3 The contractor must hoard the vessel to ensure they meet the coating requirements as laid out in the International PAINT SPECIFICATION - RV David Thompson (2022), and related technical data sheets. Environmental conditions/parameters of the coatings to be applied must be adhered to, and maintained both during application and throughout curing as denoted in the technical data sheets of the products being applied.

A.4 The International PAINT SPECIFICATIONS – RV David Thompson (2022) document provides separate specifications for the complete Renewal or Repair of the following:

1) Underwater Hull

2) Topside Hull

3) Inside of Bulwarks

4) Rail & Deck Fittings

5) Weather Deck

6) Freshwater Tanks

7) Grey Water Tank

8) Forepeak Tank

9) Superstructure Deck

10) Superstructure

11) Superstructure Mast

12) Steering Gear

11.8.B References

B.1 Equipment Data

B.1.1 Parks Canada Agency will furnish the Contractor with a coating plan (see PAINT SPECIFICATIONS – RV David Thompson (2022)).

B.2 Reports

B.2.1 A full paint specification will be issued by the TI/TA (see PAINT SPECIFICATIONS – RV David Thompson (2022)).

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
	PAINT SPECIFICATIONS – RV David Thompson (2022)	Yes

11.8.C Statement of Work

C.1 Paint Representative:

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

C.1.2 The Contractor must provide the International technical inspector a complete coating schedule at the start of the docking and must inform them of any changes.

C.2 Hoarding of Hull and other Areas:

C.2.1 The Contractor must hoard the vessel hull to ensure they meet the coating requirements as laid out in the Interspec PAINT SPECIFICATIONS – RV David Thompson (2022). The Contractor is advised that inclement weather must be anticipated during the Work Period and the Contractor must include the cost of hoarding the hull in its bid.

C.2.2 The Contractor must provide a schedule and plan for hoarding, including how they will allow access for any hull repairs or machinery renewals.

C.2.3 The Contractor must hoard the areas around temporary hull openings, that are made for equipment removals and installations, so as to protect the new equipment while it is being skidded into the ship.

C.2.4 Canada will not pay for any additional hoarding or repairs to the hoarding unless at least one of the following conditions is recorded at the Environment and Climate Change Canada buoy or land station closest to the Contractor's work site:

i) Temperatures fall below -5.0 degrees Celsius for more than 72 consecutive hours; or

ii) The accumulation of more than 40.0 centimetres of snow; or

iii) Steady winds over 45.0 km/h; or

iv) Wind gusts over 75.0 km/h.

C.2.5 The data from the Environment and Climate Change Canada buoy or land station closest to the Contractor's work site must be used for measuring and verifying the parameters above as well as to provide the recorded environmental conditions.

C.2.6 The location of the Environment Canada buoy or land stations can be found at http://weather.gc.ca/marine/weatherConditions-currentConditions_e.html?mapID=02&siteID=16200&stationID=WHC.

C.2.7 The conversion rates identified in the Environment and Climate Change Canada Weather and Meteorology Glossary available at http://www.ec.gc.ca/meteo-weather/default.asp?lang=En&n=B8CD636F-1&def=show0FA7E4EE1 will be used in the event that any of the recorded data needs to be converted to the measurement units used in the parameters above.

C.3 Coatings:

C.3.1 All coatings identified in the PAINT SPECIFICATIONS – RV David Thompson (2022), and all ancillary materials must be CFM unless specifically noted otherwise.

C.3.2 All coatings must be in suitable condition for application. They must be stored, prepared and applied in strict accordance with procedures and methods as recommended by the manufacturer. They must not be time expired or subject to any other form of deterioration. The paint inspector must approve all materials immediately prior to their application.

C.3.3 The Contractor must utilize the latest version of the product data sheets for any coatings called for in the Interspec Paint Specification.

C.3.4 The Contractor must protect all fixtures and adjacent surfaces during painting and, upon completion of work, any over-spray or paint spots must be removed.

C.3.5 The Contractor must ensure all surfaces to be painted are thoroughly clean, dry and free of grease or oil before painting is commenced. All plates and shapes used in construction and all areas in way of new paint must have surface preparation performed according to the Interspec Paint Specification to completely remove scale, rust, and other surface contaminants.

C.3.6 The Contractor must paint all new steel work and weld affected areas to match the as per the Interspec Paint Specification.

C.3.7 Removal and disposal of all hazardous wastes from surface prep and painting (residuals) must be in accordance with local and provincial environmental specific regulations.

11.8.D Proof of Performance

D.1 Inspections

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

D.2 Testing/Trials – Not Used

D.3 Certification -

D.3.1 Not Used

D.4 Documentation (Reports/Drawings/Manuals)

D.4.1 The Parks Canada Agency has directly contracted with International Paint and International Paint will be forwarding the Parks Canada Agency a report and underwater coating certificates.

D.5 Training – Not Used

11.9 PAINTING OF SHIP'S HULL BELOW WATERLINE

11.9.A Identification

NOTE: This specification provides the requirement of areas to be prepared and treated. The PAINT SPECIFICATIONS – RV David Thompson (2022) 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 below the waterline must be sandblasted and painted, as per "Underwater Hull – Renew" in the supplied International PAINT SPECIFICATIONS – RV David Thompson (2022).

11.9.B References

B.1 Equipment Data

B.1.1 The existing underwater hull coating system (applied in 2017) consists of:

i) 2 coats Intershield 300HS

ii) 1 coat Intergard 263

iii)2 coats Interspeed 640

iv) average dft 550 microns

Standards		
	PAINT SPECIFICATIONS – RV David Thompson (2022)	Yes

B.2 Drawings & Documents

Drawing Number	Description
A21 H93-65	Name Plates, Hull Marks, and Paint Schedule

B.3 Regulations and Standards

B.3.1 As indicated in the PAINT SPECIFICATIONS – RV David Thompson (2022) document.

11.9.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, electro-magnetic speed log sensor, 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 The Contractor must paint all exterior hull surfaces (immersed). For bidding purposes, the area of the vessel's underwater hull is 300 square meters.

C.5 The underwater hull surface includes the hull, rudder, bow thruster tube, sonar tube, rudder trunk, the multi-beam echo sounder pod (both exterior/interior), and all sea chests.

C.6 The contractor must also quote on complete coating system as per the PAINT SPECIFICATIONS – RV David Thompson (2022) including all materials, supplies and labour. All coatings must be applied in accordance with the manufacturer's instructions. Re-coat times must be adhered to.

C.7 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.

11.9.D Proof of Performance

D.1 Inspections

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

D.1.2 All paint work preparation must be in accordance with manufacturer recommendations and under guidance of the PCA 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.

D.2 Testing/Trials – Not Used

D.3 Certification -

D.3.1 Not Used

D.4 Documentation (Reports/Drawings/Manuals)

D.4.1 Parks Canada Agency has directly contracted with International Paint and International paint will be forwarding the Parks Canada Agency a report and underwater coating certificates.

D.5 Training – Not Used

11.10 PAINTING OF SHIP'S HULL ABOVE WATERLINE

11.10.A Identification

NOTE: This specification provides the requirement of areas to be prepared and treated. The PAINT SPECIFICATIONS – RV David Thompson (2022) technical specification provides the technical requirement for method and standard of preparation, product type, number and thickness of coatings, etc.

A.1 The topside of the hull from the waterline to the rail must be "Repaired" as per the supplied International PAINT SPECIFICATIONS – RV David Thompson (2022). For bidding purposes the Contractor should consider an area of 212 square meters, including markings, for section A.1.

A.2 Additional areas of the vessel's hull above the waterline consisting of the entirety of: 1) the inside of the bulwarks, stern cargo hatch coaming, and steering gear access hatch coaming; 2) the cap rail, towing bit, HIAB deck crane seat, rope fairleads and assorted deck fittings, and; 3) the main deck and save-alls, must all be "Repaired" as per the supplied International PAINT SPECIFICATIONS – RV David Thompson (2022). For bidding purposes, the Contractor should anticipate (for section A.2) a total of 25 square meters (representing 30 random locations of 0.5 square meters each) for repair/touch up (TU). Furthermore, a total area of 220 square meters* should be considered (for section A.2) for the full coat (FC) detailed in the International PAINT SPECIFICATIONS – RV David Thompson (2022) for the "Renewed" of these areas.

* This 220 square meter area represents a total of 110 square meters for the main deck, coamings, and upstand surface plus 110 square meters for the remaining surfaces (cap rail, bulwark, tow bit, crane seat, and assorted deck fittings). The forward 3 frames (P&S) of the bulwarks are to be considered as part of the cap rail and painted black(approximately 9 square meters).

A.3 The aluminium superstructure and higher are detailed in the following section. However, the vertical steel upstand (approximately 15 cm in height) spanning between the horizontal main deck and the bi-metallic coupling for joining the vertical aluminium walls of the house works is to be treated the same as the main deck proper (and is included in the square meter area given in A.2).

11.10.B References

B.1 Equipment Data

B.1.1 The existing coating system on the topside of the hull (applied in 2017) consists of:

i) 1 coat Intershield 300

ii) 1 coat Intergard 263

iii)2 coats Interlac 665

Standards	PAINT SPECIFICATIONS – RV David Thompson (2022)	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
A21 H93-65	Name Plates, Hull Marks, and Paint Schedule

B.3 Regulations and Standards

B.3.1 As indicated in the PAINT SPECIFICATIONS – RV David Thompson (2022) document.

11.10.C Statement of Work

C.1 The Contractor must prepare and paint the areas outlined above as detailed in the separate PAINT SPECIFICATIONS – RV David Thompson (2022) document. 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.

viii) All wires must be completely wrapped to prevent entry of grit. The Contractor must supply and install all coverings.

ix) The crane wires, blocks, and pins must be completely wrapped to prevent entry of grit. The Contractor must supply all coverings.

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 Vessel name (three off), port of registry, load line (port and starboard), draft marks (port and starboard, bow and stern), bow thruster warning sign (two off) etc. must be given two coats of white paint as specified in the PAINT SPECIFICATIONS – RV David Thompson (2022) specification. All the identification markings must be painted; decals must not be used except where decals were previously fitted.

11.10.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 Parks Canada Agency 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. Kevin Leigh)

D.2 Testing/Trials – Not Used

D.3 Certification - Not Used

D.4 Documentation –

D.4.1 Parks Canada Agency has directly contracted with International Paint and International paint will be forwarding the Parks Canada Agency a report.

D.5 Training – Not Used

11.11 PAINTING OF SHIP'S SUPERSTRUCTURE

11.11.A Identification

NOTE: This specification provides the requirement of areas to be prepared and treated. The PAINT SPECIFICATIONS – RV David Thompson (2022) technical specification provides the technical requirement for method and standard of preparation, product type, number and thickness of coatings, etc.

A.1 The aluminum superstructure must be "Renewed" as per the supplied International PAINT SPECIFICATIONS – RV David Thompson (2022). For bidding purposes the Contractor should consider an area of 175 square meters, including markings, for section A.1.

11.11.B References

B.1 Equipment Data

B.1.1 The existing coating system on the superstructure consists of:

i) 1 coat Intershield 300

ii) 1 coat Intergard 263

iii) 2 coats Interlac 665

Standards	PAINT SPECIFICATIONS – RV David Thompson (2022)	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
A21 H93-65	Name Plates, Hull Marks, and Paint Schedule

B.3 Regulations and Standards

B.3.1 As indicated in the PAINT SPECIFICATIONS – RV David Thompson (2022) document.

11.11.C Statement of Work

C.1 The Contractor must prepare and paint the areas outlined above as detailed in the separate PAINT SPECIFICATIONS – RV David Thompson (2022) document. 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.

x) All wires & lighting fixtures must be completely wrapped to protect against damage and prevent entry of grit. The Contractor must supply and install all coverings.

xi) The crane wires, blocks, and pins must be completely wrapped to prevent entry of grit. The Contractor must supply all coverings.

xii) All portholes and windows are to be protected from abrasive blasting materials and overspray. The contractor must supply all coverings.

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 painted Canada wordmark on the side of the superstructure is to be blasted and removed to bare metal. After the superstructure is painted; the contractor must install two Canada wordmark vinyl decals, Port & Starboard, centered underneath the bridge windows. The vinyl decals are to be GSM.

11.11.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 Parks Canada Agency 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. Kevin Leigh)

D.2 Testing/Trials – Not Used

D.3 Certification - Not Used

D.4 Documentation –

D.4.1 Parks Canada Agency has directly contracted with International Paint and International paint will be forwarding the Parks Canada Agency a report.

D.5 Training – Not Used

11.12 PAINTING OF STEERING GEAR

11.12.A Identification

NOTE: This specification provides the requirement of areas to be prepared and treated. The PAINT SPECIFICATIONS – RV David Thompson (2022) technical specification provides the technical requirement for method and standard of preparation, product type, number and thickness of coatings, etc.

A.1 The steering gear compartment must be "Renewed" as per the supplied International PAINT SPECIFICATIONS – RV David Thompson (2022). For bidding purposes the Contractor should consider an area of 40 square meters, including markings, for section A.1.

11.12.B References

B.1 Equipment Data

B.1.1 The existing coating system in the Steering Gear consists of:

i) 3 Coats Interbond 998

ii) ALBI Clad Spray On fireproofing/anti-condensation insulation (bulkheads)

Standards	PAINT SPECIFICATIONS – RV David Thompson (2022)	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
A21 H93-65	Name Plates, Hull Marks, and Paint Schedule

B.3 Regulations and Standards

B.3.1 As indicated in the PAINT SPECIFICATIONS – RV David Thompson (2022) document.

11.12.C Statement of Work

C.1 The contractor is to anticipate needing to remove 20 L of water and rust/debris in the compartment bilges prior to painting. The contractor will be responsible for removing and storing the compartment deck plates for the duration of the painting process. They are to be returned after the process is complete.

C.2 The contractor is to anticipate a total area of 10 meters squared requiring rust repair and touch up to existing material.

C.3 The Contractor must prepare and paint the areas outlined above as detailed in the separate PAINT SPECIFICATIONS – RV David Thompson (2022) document. 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.

xiii) All wires & lighting fixtures must be completely wrapped to protect against damage and prevent entry of grit. The Contractor must supply and install all coverings.

xiv) All electrical control boxes are to be protected and covered from overspray. The contractor must supply all coverings.

C.4 The contractor is to apply a top coat of ALBI Clad – Spray on insulation to the bulkheads and deckhead in the space where it has been disturbed.

11.12.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 Parks Canada Agency 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. Kevin Leigh)

D.2 Testing/Trials – Not Used

D.3 Certification - Not Used

D.4 Documentation –

D.4.1 Parks Canada Agency has directly contracted with International Paint and International paint will be forwarding the Parks Canada Agency a report.

11.13 FIRE PUMP SURVEY

11.13.A Identification

A.1 The contractor is to overhaul and lay out the internals of the fire pump for surveyor inspection.

A.2 The contractor is to inspect pump isolation valves. Valves are to be disassembled for surveyor inspection, lapped and reassembled with new CFM packing material and gaskets.

11.13.B References

B.1 Equipment Data

B.1.1 Fire Pump is: Plad Equipment Ltd. - Iron A/S - RS65-50/160 - Serial # 51840

B.1.2 Pump Suction Valve: 2.5" Globe SDNR Valve, Flanged, Bronze

B.1.3 Pump Discharge Valve: 2" Gate Valve, Flanged, Bronze

B.2 Drawings and Manuals

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	Number of Sheets
H93-31	Bilge, Fire & Deckwash Diagram	1

Number	MANUAL TITLE
	PLAD Pumps – Fire, Bilge, E-fire

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		

11.13.C Statement of Work

C.1.1 The contractor must electrically isolate and lockout power supply to pump.

C.1.2 The Contractor must remove both isolation valves and dismantle, clean and examine all valve parts for defects.

C.1.3 The contractor must lap and blue all disks and seats to prove true. The contractor must quote on one bluing per valve. Additional work must be done by PWGSC 1379 action.

C.1.4 The Contractor must visually inspect all removed valves and report any deficiencies as they are identified, to the TA and make recommendations for their repair or replacement. Any required repairs or replacements of valves will be CFM via PSPC 1379 Work Arising Procedure.

C.1.5 The contractor must lay out the valves for survey by the TI/TA and ABS inspector.

C.1.6 The contractor must reassemble all valves using new CFM packing and jointing materials of correct grade and dimensions.

C.1.7 The contractor must reinstall the valves into the ship and prove their operation in the presence of the TI/TA.

C.1.8 The contractor is to remove and disassemble the fire pump to allow for ABS surveyor inspection.

C.1.9 The contractor is to check the components of the rotating element and perform all necessary repairs. Clearances between the impeller and sealing rings are to be measured and recorded. Contractor is to clean and inspect pump housing for excessive wear down and pitting.

C.1.10 New wear rings to be installed if internal measurements are past acceptable limits. Wear rings to be GSM if required.

C.1.11 Following inspection, contractor to reassemble pump using a new GSM mechanical seal and radial ball bearings (2). Contractor to close up pump using CFM gaskets of equivalent characteristics as material mentioned in manual.

C.1.12 The contractor is to reinstall the pump taking care to ensure shaft alignment is exact, shim material to be CFM. Shaft flexible coupling to be replaced with GSM.

11.14 EMERGENCY FIRE PUMP SURVEY

11.14.A Identification

A.1 The contractor is to overhaul and lay out the internals of the emergency fire pump for surveyor inspection.

A.2 The contractor is to inspect pump isolation valves. Valves are to be disassembled for surveyor inspection, lapped and reassembled with new CFM packing material and gaskets.

11.14.B References

B.1 Equipment Data

B.1.1 Emergency Fire Pump is: Plad Equipment Ltd. - Iron A/S - RS50-40/125 - Serial # 51841

B.1.2 Pump Suction Valve: 2" Globe SDNR Valve, Flanged, Bronze

B.1.3 Pump Discharge Valve: 1.5" Globe SDNR Valve, Screwed, Bronze

B.2 Drawings and Manuals

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	Number of Sheets
H93-31	Bilge, Fire & Deckwash Diagram	1

Number	MANUAL TITLE
	PLAD Pumps – Fire, Bilge, E-fire

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		

11.14.C Statement of Work

C.1.1 The contractor must electrically isolate and lockout power supply to pump.

C.1.2 The Contractor must remove both isolation valves and dismantle, clean and examine all valve parts for defects.

C.1.3 The contractor must lap and blue all disks and seats to prove true. The contractor must quote on one bluing per valve. Additional work must be done by PWGSC 1379 action.

C.1.4 The Contractor must visually inspect all removed valves and report any deficiencies as they are identified, to the TA and make recommendations for their repair or replacement. Any required repairs or replacements of valves will be CFM via PSPC 1379 Work Arising Procedure.

C.1.5 The contractor must lay out the valves for survey by the TI/TA and ABS inspector.

C.1.6 The contractor must reassemble all valves using new CFM packing and jointing materials of correct grade and dimensions.

C.1.7 The contractor must reinstall the valves into the ship and prove their operation in the presence of the TI/TA.

C.1.8 The contractor is to remove and disassemble the fire pump to allow for ABS surveyor inspection.

C.1.9 The contractor is to check the components of the rotating element and perform all necessary repairs. Clearances between the impeller and sealing rings are to be measured and recorded. Contractor is to clean and inspect pump housing for excessive wear down and pitting.

C.1.10 New wear rings to be installed if internal measurements are past acceptable limits. Wear rings to be GSM if required.

C.1.11 Following inspection, contractor to reassemble pump using a new GSM mechanical seal and radial ball bearings(2). Contractor to close up pump using CFM gaskets of equivalent characteristics as material mentioned in manual.

C.1.12 The contractor is to reinstall the pump taking care to ensure shaft alignment is exact, shim material to be CFM. Shaft flexible coupling to be replaced with GSM.

12.0 PROPULSION AND MANOUEVERING

12.1 GEAR BOX INSPECTION

12.1.A Identification

A.1.1 The contractor must subcontract Nogva Heimdal Propulsion AS, Norway – contact Stein Arve Johnsen, stein.arve.johnsen@nogva.no, +47 93049055, for an Inspection and Service per the Operating Manual.

12.1.B References

B.1 Equipment Data

B.1.1 Marine gear is: Heimdal model HG342SSF, Serial number 36177, Build 0291

B.2 Drawings and Manuals

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	Number of Sheets
A21 109-002	Heimdal Marine Gear	1
A21 101-88	Marine Gear shaft coupling	

Number	MANUAL TITLE
A21-12-10	Heimdal Marine Gear HG342SSF
A21-12-03	Heimdal Propulsion CPP & Marine Gear Service and Parts Manual

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.1.1 The contractor must subcontract Nogva Heimdal Propulsion AS, Norway as manufacturer field service representative. Contact Stein Arve Johnsen, stein.arve.johnsen@nogva.no, +47 93049055, for an Inspection and Service per the Operating Manual.

C.1.2 Nogva Heimdal (subcontractor) must perform a 5 year Heimdal gear box inspection and service, as per Heimdal Propulsion AS CP Propeller & Marine Gear Service & Parts Manual.

C.1.3 Nogva Heimdal must conduct a borescope inspection of the main bearings, gears, and clutch stacks.

C.1.4 Nogva Heimdal must inspect the oil pump.

C.1.5 Nogva Heimdal must inspect the standby pump.

C.1.6 Nogva Heimdal must inspect the brake assembly and brake pad for signs of degradation.

12.1.D Proof of Performance

D.1 Inspection Points

D.1.1 The Contractor must provide a schedule of service to allow the TI/TA to witness the work, at its discretion.

D.2 Testing/Trials – Not Used

D.3 Certification

D.3.1 Not used

D.4 Documentation

D.4.1 The Documentation must be in accordance with the Documentation section of the General Notes.

D.4.2 The Contractor must provide a Quality Assurance (QA) report that includes the service report from Nogva Heimdal.

D.5 Training – Not Used

12.2 TAIL SHAFT

12.2.A Identification

A.1.1 The contractor must subcontract Nogva Heimdal Propulsion AS, Norway – contact Stein Arve Johnsen, stein.arve.johnsen@nogva.no, +47 93049055, for an Inspection and Service per the Operating Manual.

12.2.B References

B.1 Equipment Data

Propeller shaft is: Heimdal, build #0291, shaft diameter 170.00 mm

B.2 Drawings and Manuals

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	Number of Sheets
A21 101-88	Marine Gear Shaft Coupling	1
A21 108-096	Propeller Arrangement	1

Number	MANUAL TITLE
A21-12-10	CP Propeller & Marine Gear Service & Parts Manual -- Heimdal Propulsion AS

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.1.1 The contractor must subcontract Nogva Heimdal Propulsion AS, Norway as manufacturer field service representative. Contact Stein Arve Johnsen, stein.arve.johnsen@nogva.no, +47 93049055, for an Inspection and Service per the Operating Manual.

C.1.2 All required parts, seals, filters and oils must be CFM and supplied by the subcontractor.

C.1.3 Prior to docking the vessel, the tailshaft coupling must be undone and initial alignment readings taken and recorded in the presence of the TI/TA and Nogva Heimdal Ltd.

C.1.4 After docking, provision must be made to capture oil which will leak from the seals (total volume approximately 90 L). After the push/pull rod is disconnected and the inboard shaft seal clamp ring is removed, the shaft must be prevented from sliding backwards due to gravity.

C.1.5 After docking, the tailshaft and propeller assembly is to be removed and supported on suitable blocks. Shaft seals must be protected from damage.

C.1.6 Inspect all sliding surfaces on the inner and outer stern tube seals for corrosion. All bearing surfaces must be examined for wear and for corrosion.

C.1.7 The inside diameters of the inner and outer white metal stern tube bearings and the outside diameters of the shaft must be measured and recorded and the readings presented to the TI/TA. The center bearing is inaccessible inside the sterntube.

C.1.8 The tailshaft must be disassembled, all parts cleaned and laid out for inspection.

C.1.9 Tailshaft inner and outer seals and outer seat must be replaced. Control rod sealing ring (aka O- ring, Heimdal Part # #8S0050, #33 on drawing #108-096) must be replaced (CFM). Contractor to prove seals do not leak.

C.1.10 Final shaft clearances must be taken and recorded. Preliminary shaft alignment must be checked before undocking. Final alignment must be taken when the vessel is afloat and witnessed by the TI/TA prior to hardening up of the tailshaft coupling.

C.1.11 The tailshaft bearing oil header tank and stern tube oil must be cleaned, refilled with new oil and vented as required (GSM – 40 L. of Shell Turbo T-100)

C.1.12 The propeller shaft must be refilled with water repellant grease (no less than 40 L, Shell Gadus S2 V220 2 - GSM) in accordance with manufacturer's instructions.

C.1.13 The contractor must dispose of all used lubricants and oils in compliance with all environmental regulations.

C.1.14 Additional work found to be required outside of the specified service to be handled thru PWGSC 1379 action.

12.2.D Proof of Performance

D.1 Inspection Points

D.1.1 The TI/TA to witness the service. No work is to be done without the attendance of the TI/TA.

D.2 Testing/Trials – Not Used

D.3 Certification

D.3.1 Not used

D.4 Documentation

D.4.1 The Documentation must be in accordance with the Documentation section of the General Notes.

D.4.2 The Contractor must provide a Quality Assurance (QA) report that includes the service report from Nogva Heimdal.

D.5 Training – Not Used

12.3 PROPELLER INSPECTION

12.3.A Identification

A.1.1 The contractor must subcontract Nogva Heimdal Propulsion AS, Norway as manufacturer field service representative. Contact Stein Arve Johnsen,

stein.arve.johnsen@nogva.no, +47 93049055, for an Inspection and Service per the Operating Manual.

12.5.B References

B.1 Equipment Data

Propeller is: Heimdal model K500

B.2 Drawings and Manuals

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
A21 105-77	Propeller hub	1
A21 108-096	Propeller Arrangement	

Number	MANUAL TITLE
A21-12-10	CP Propeller & Marine Gear Service & Parts Manual -- Heimdal Propulsion AS
	RVDT - CPP Hub Shaft Greasing Procedure

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		

12.3.C Statement of Work

C.1.1 The contractor must subcontract Nogva Heimdal Propulsion AS, Norway as manufacturer field service representative. Contact Stein Arve Johnsen, stein.arve.johnsen@nogva.no, +47 93049055, for an Inspection and Service per the Operating Manual.

C.1.2 All required parts, seals, filters and oils are to be CFM and supplied by the subcontractor.

C.1.3 The propeller blades must be removed, cleaned, and prepared for inspection by the TI/TA and ABS surveyor. Any repairs necessary must be dealt with as a work arising action (PWGSC Form 1379).

C.1.4 Subsequent to inspection and acceptance, the propeller blades must be date marked and reinstalled using new seals.

C.1.5 The propeller must be packed with grease in the FULL ASTERN POSITION ONLY using water repellant grease (Shell Gadus S2 V220 2 – GSM Supply) as per manufacturer's instructions.

12.3.D Proof of Performance

D.1 Inspection Points

D.1.1 The TI/TA to witness the service. No work is to be done without the attendance of the TI/TA.

D.2 Testing/Trials – Not Used

D.3 Certification

D.3.1 Not used

D.4 Documentation

D.4.1 The Documentation must be in accordance with the Documentation section of the General Notes.

D.4.2 The Contractor must provide a Quality Assurance (QA) report that includes the service report from Nogva Heimdal.

D.5 Training – Not Used

12.4 STEERING GEAR INSPECTION

12.4.A Identification

A.1.1 The contractor must subcontract Kongsberg as MFSR during the steering gear survey. The TI/TA must be present during the inspection. ABS is to be informed by the contractor and given the opportunity to be present during the inspection.

A.1.2 The contractor under supervision of the MFSR must perform a steering gear inspection and service.

A.1.3 Contact Information:

Parts

Melanie Quilty
Spares Sales Support
Melanie.Quilty@km.kongsberg.com
Kongsberg Maritime Canada Ltd
142 Glencoe Drive
Mount Pearl, NL A1N 4S9
T: 1 (709) 748-7631
C: 1 (709) 730-1263

Service

Joanie Ellerbee
Resource Planner DMMC & EA&C – North America
Joanie.Ellerbie@km.kongsberg.com
Kongsberg Maritime, Inc.
Phone: +1-954-850-6705

12.4.B References

B.1 Equipment Data

Steering gear is: Tenfjord Electric Hydraulic Steering Gear
Model # SR562 Rotary Vane
Rudderstock diameter 160 mm.
Pressure pump: Tenfjord PU30 (electric motor 4Kw, 230VAC)

B.2 Drawings and Manuals

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
A21 H93-21	Steering Gear & Rudder Arrangement Details	1

Number	MANUAL TITLE

B.3 Regulations and Standards

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		

12.4.C Statement of Work

C.1.1 The contractor must subcontract Kongsberg, for an inspection and service per the Operating Manual.

C.1.2 All required parts, seals, filters and oils are to be supplied via the subcontractor. Any repairs necessary must be dealt with as a work arising action (PWGSC Form 1379).

C.1.3 The contractor must obtain wear down readings prior to the removal of the rudder and rudderstock.

C.1.4 The contractor must drain the expansion tank (approximately 60 L) and dispose of the hydraulic oil. The tank must be cleaned and inspected.

C.1.5 The contractor must drain the two service tanks (approximately 20 L each) and dispose of the hydraulic oil. The tanks must be cleaned and inspected.

C.1.6 The contractor must disconnect the two motor/pump units and remove them to a clean workspace.

C.1.7 The contractor must remove the actuator top cover, remove, clean and inspect all internal components. The TI/TA and ABS inspector are to be present during the inspection.

C.1.8 The contractor must replace the steering gear piston rings.

C.1.9 The contractor must clean and inspect the electric motors. Motor winding insulation must be tested. Bearing condition will be noted.

C.1.10 The contractor must disassemble the hydraulic pumps, clean and lay out all internal components for inspection by the TI/TA and ABS inspector.

C.1.11 The contractor must replace all seals and bearings.

C.1.12 The contractor must reassemble the actuator and install the top cover.

C.1.13 The contractor must reattach the motor/pump units.

C.1.14 The contractor must refill the steering gear service tanks with new oil and bleed the system.

C.1.15 The contractor must recalibrate (or replace with new) the pressure relief valves. PARKER PDS 101 (100 bar working pressure)

C.1.16 The contractor must refill the expansion tank with new oil (Esso Nuto H68 – CFM).

C.1.17 The contractor must obtain a full inspection report from Kongsberg and submit a copy to Parks Canada Agency with the contractors QA report.

12.4.D Proof of Performance

D.1 Inspection Points

D.1.1 The TI/TA to witness the service. No work is to be done without the attendance of the TI/TA.

D.2 Testing/Trials – Not Used

D.3 Certification

D.3.1 Not used

D.4 Documentation

D.4.1 The Documentation must be in accordance with the Documentation section of the General Notes.

D.4.2 The Contractor must provide a Quality Assurance (QA) report that includes the service report from Kongsberg.

D.5 Training – Not Used

12.5 RUDDER & RUDDER STOCK INSPECTION

12.5.A Identification

A.1.1 The contractor must subcontract Kongsberg as MFSR for the rudder and rudder stock inspection where appropriate. The TI/TA must be present during the inspection. ABS is to be informed by the contractor and given the opportunity to be present during the inspection.

A.1.2 The contractor must, where appropriate, conduct the inspection and service of the rudder and rudder stock under supervision of the MFSR

A.1.3 Contact Information:

Parts

Melanie Quilty
Spares Sales Support
Melanie.Quilty@km.kongsberg.com
Kongsberg Maritime Canada Ltd
142 Glencoe Drive
Mount Pearl, NL A1N 4S9
T: 1 (709) 748-7631
C: 1 (709) 730-1263

Service

Joanie Ellerbee
Resource Planner DMMC & EA&C – North America
Joanie.Ellerbie@km.kongsberg.com
Kongsberg Maritime, Inc.
Phone: +1-954-850-6705

12.5.B References

B.1 Equipment Data

B.2 Drawings and Manuals

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	Number of Sheets

A21 H93-21	Steering Gear and Rudder Arrangement Details REV B	

Number	MANUAL 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		

12.5.C Statement of Work

C.1.1 The contractor must subcontract Kongsberg, for an inspection and service of the rudder stock and rudder where appropriate.

C.1.2 All required parts, seals, filters and oils are to be supplied via the subcontractor.

C.1.3 Any repairs necessary must be dealt with as a work arising action (PWGSC Form 1379).

C.1.4 The contractor must obtain wear down readings prior to the removal of the rudder and rudderstock.

C.1.5 The contractor must check the rudder for water ingress by removing the drain plug in the presence of the TI/TA and ABS inspector.

C.1.6 The contractor must remove the rudder from the rudder stock, remove the rudder stock and transport to a repair facility.

C.1.7 The contractor must clean, measure and layout all components for inspection by the TI/TA and ABS inspector.

C.1.8 The contractor must, in the presence of the TI/TA and ABS inspector, pressure test the rudder to a maximum internal pressure of 3 psi with compressed air. Any leaks must be repaired and the rudder retested until the pressure integrity of the rudder is verified.

C.1.9 The contractor must gauge the rudder stock for truth and conduct dye penetrant NDT on all accessible critical areas.

C.1.10 The contractor must inspect the pintle bearing. If replacement is required, this will dealt with by PWGSC 1379 action.

C.1.11 The contractor must clean the rudder palm and conduct dye penetrant NDT.

C.1.12 The rudder stock gland must be repacked with 6 turns of 7/8 inch square packing (Chesterton 329 Stern-Lon or TA approved equivalent). Teflon or PTFE impregnated packing is not acceptable.

C.1.13 The contractor must reattach the rudder stock and rudder. All locking arrangements must be replaced and witnessed by the TI/TA and ABS inspector.

C.1.14 The contractor must realign the rudder and rudder stock so that the position senders and linkages for the autopilot and rudder position indicator are equidistant from the rudder stock and in the same geometric plane.

C.1.15 The contractor must conduct functional trials after assembly.

C.1.16 The contractor must submit a full inspection report detailing all findings, measurements and recommendations for repairs to Parks Canada Agency with the contractors QA report.

12.5.D Proof of Performance

D.1 Inspection Points

D.1.1 The TI/TA to witness the service. No work is to be done without the attendance of the TI/TA.

D.2 Testing/Trials – Not Used

D.3 Certification

D.3.1 Not used

D.4 Documentation

D.4.1 The Documentation must be in accordance with the Documentation section of the General Notes.

D.4.2 The Contractor must provide a Quality Assurance (QA) report that includes any service report from Kongsberg

D.5 Training – Not Used

12.6 BOW THRUSTER INSPECTION

12.6.A Identification

A.1.1 The TI/TA must be present during the inspection. ABS is to be informed by the contractor and given the opportunity to be present during the inspection.

A.1.2 The contractor is to coordinate service and parts from the OEM – Westec Equipment

Contact Information: Richard Sikich, 604-988-1130, richard@westecequipment.com

12.6.B References

B.1.1

B.1.2 **Drawings and Manuals:** 2017 Bow Thruster Report - CME

B.1.3 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

Number	MANUAL 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		

12.6.C Statement of Work

C.1.1 The subcontractor must perform an inspection and service of the bow thruster: removal of hub; cleaning, inspection, and polishing of blades; sampling of oil; removal of cover plate and installation of seals.

C.1.2 All required parts, seals, filters and oils are to be CFM.

C.1.3 Any repairs necessary must be dealt with as a work arising action (PWGSC Form 1379).

C.1.4 The Contractor must install all staging and remove the bow thruster grates(bolted). All openings in the grates must be mechanically cleaned to remove all marine growth.

C.1.5 The contractor must provide use suitable containers, oil absorbent pads and materials to deal with no less than 50 L of hydraulic oil during draining process.

C.1.6 The contractor must paint the bow thruster area as per the underwater paint specification, and renew zincs. after the removal of the thruster propeller. Grates to be reinstalled and secured with 316 stainless steel Nyloc fasteners

C.1.7 The contractor must provide a full inspection report detailing all findings, measurements and recommendations for repairs for submission to Parks Canada Agency with the subcontractors QA report.

12.6.D Proof of Performance

D.1 Inspection Points

D.1.1 The TI/TA to witness the service. No work is to be done without the attendance of the TI/TA.

D.2 Testing/Trials – Not Used

D.3 Certification

D.3.1 Not used

D.4 Documentation

D.4.1 The Documentation must be in accordance with the Documentation section of the General Notes.

D.4.2 The Contractor must provide a Quality Assurance (QA) report.

D.5 Training – Not Used

13.0 POWER GENERATION SYSTEMS

13.1 NOT USED

14.0 POWER DISTRIBUTION SYSTEMS

14.1 RUN WIRING FOR PMC REPEATERS

14.1.A Identification

A.1 The contractor is to run wiring from PMC control console (Engine Room) to two new locations for future PMC repeater installations

A.1.1 Location 1: Chief Engineer's cabin – Interior wall forward of head

A.1.2 Location 2: Galley/Mess – Inboard wall of the refrigeration unit

A.2 The contractor is to install new wire gland from vertical wire trunking between Engine room and the Bridge for this purpose.

A.2.1 Both types of cable are to be run from the main machinery console in the Engine Room up the main wire trunking and out to the main deck wire way in the deckhead. This initial run of cable need to be brought to the identified location in the C/E's cabin.

A.2.2 The repeater's will be wired in series. Both cables will need to be run from location 1 to location 2 with enough cable left on each side for final terminations.

14.1.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	CCG Fleet Safety Manual, 2012	Yes
TP 127	Ships Electrical Standards	No
Standards		
Regulations		

14.1.C Statement of Work –

Materials:

2 x two conductor power cable, wire gauge suitable for no more than 6% voltage drop over the required cable length – load is 24 Vdc, 1.1 A

2 x twelve conductor repeater point cable, 16 AWG minimum.

The contractor is to supply all material; cabling, banding, cable glands etc…

Approximate lengths are 15m MCR to Location 1, 12m Location 1 to Location 2. These values are approximate for quotation purposes only – not exact measurements.

C.1 The contractor is to run cabling from the engine room control console to the two Identified locations.

C.2 The contractor is to properly secure and band all new cabling in the wire ways as per marine electrical standards.

C.3 The contractor is to install new wire glands in the vertical trunking between engine room and bridge for new cabling.

C.4 TI/TA to mark final location for cable to be run to during work process.

C.5 The contractor is to make an opening in the destination bulkheads for the cable to be run through to await future repeater installations. Sufficient cabling must be left at each end of run for final termination.

C.6 The contractor is to resecure all deck head panels and obstruction items that may be removed during the installation process.

14.1.D Proof of Performance

D.1 Inspection Points

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

15.0 AUXILIARY SYSTEMS

15.1 FRESH WATER TANK CLEANING, INSPECTION AND REPAIR

15.1.A Identification

A.1 The contractor must open up and make ready for inspection the following freshwater tanks for ABS inspection (see Appendix A).

a) # 1 port fresh water tank

b) # 1 stbd fresh water tank

c) #2 port fresh water tank

d) #2 stbd fresh water tank

A.1.2 It is anticipated that the fresh water tanks will be pumped out prior to docking.

15.1.B References

B.1 Equipment Data - see Appendix A

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		

15.1.C Statement of Work

C.1 The Contractor must open the #1, port and starboard and the #2, port and starboard, potable water tanks for inspection. The Contractor must quote for the removal of up to 200 L of residual water and debris. The contractor must notify the TI/TA and ABS inspector when the tank has been prepared for inspection.

C.2 The Contractor must empty, ventilate, de-gas and certify each listed tank as "Safe for Personnel" and "Safe for Hot Work".

C.3 The Contractor must inspect and test the tank level senders (PMC float gauges) for defects.

C.4 The contractor must clean and examine all air vent pipes, gooseneck vents, sounding pipes and fittings, and suction/discharge pipes.

C.5 The Contractor must prepare and coat any bare metal, and repair any other deficiencies in the tank coatings identified by the TI/TA or ABS inspector, as per the PAINT SPECIFICATIONS – RV David Thompson (2022) document. The Contractor must quote for the repair of ten areas of 0.5 m^2 each, with any additional areas being subject to PWGSC 1379 action.

C.6 All repairs arising from the inspection must be dealt with by PWGSC 1379 process.

C.7 The contractor must supply and install new manhole gaskets of equivalent material to existing installation.

C.8 The Contractor must hydrostatically test, drain, open and wipe dry using lint free rags, all of the listed tanks.

C.9 The contractor must, after closing, super chlorinate the tanks as per included Parks Canada Chlorination & Treatment document. The contractor is to dechlorinate(using hydrogen peroxide) the tanks prior to disposing of all water used.

C.10 The contractor must, upon refilling the tank with potable water and subsequent to C.9, draw a sample from each of the four tanks for submission to Health Canada for analysis. Two copies of the results must be provided to the TI/TA.

C.11 No tank coating work is to take place without the NACE Inspector from International Paint approval.

15.1.D Proof of Performance

D.1 Inspection Points

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

D.5 Training – Not Used

15.2 GREY WATER HOLDING TANK CLEANING, INSPECTION AND REPAIR

15.2.A Identification

A.1 The contractor must open up and make ready for inspection the grey water holding tank for ABS inspection (see Appendix A).

A.1.1 The grey water tank is presently empty (save for approximately 100 L).

15.2.B References

B.1 Equipment Data - see Appendix A

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		

15.2.C Statement of Work

C.1 The Contractor must empty, ventilate, de-gas and certify the grey water holding tank as "Safe for Personnel" and "Safe for Hot Work".

C.2 The Contractor must open the grey water holding tank for inspection. The Contractor must notify the TI/TA and ABS inspector when the tank has been prepared for inspection.

C.3 The contractor must pressure wash, scrape, wire brush and wipe all internal surfaces as required to remove all scale, corrosion, sludge, residue and dirt. The Contractor must quote for the removal of up to 100 L of residual water and debris. All debris must be taken ashore for disposal.

C.4 The Contractor must inspect and test the tank level senders (PMC Float Gauges) for defects.

C.5 The Contractor must prepare and coat any bare metal as per the PAINT SPECIFICATIONS – RV David Thompson (2022) document. The Contractor must quote for the repair of three areas of 0.5 m^2 each.

C.6 Any additional repairs arising from the inspection must be dealt with by PWGSC 1379 process.

C.7 The contractor must supply and install new manhole gasket.

C.8 The Contractor must hydrostatically test, drain, open and wipe dry the tank using lint free rags.

15.2.D Proof of Performance

D.1 Inspection Points

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 The contractor must any FSR reports in the final documentation.

D.5 Training – Not Used

15.3 BILGE MAIN – PUMP SURVEY

15.3.A Identification

A.1 The contractor is to overhaul and lay out the internals of the bilge pump for surveyor inspection.

A.2 The contractor is to inspect pump isolation valves. Valves are to be disassembled for surveyor inspection, proved true and free of defects.

15.3.B References

B.1 Equipment Data

B.1.1 Bilge Pump is: Plad Equipment Ltd. - Iron A/S - RS65-50/160 - Serial # 51839

B.1.2 Pump Suction Valve: 2.5” Globe SDNR Valve, Flanged, Bronze

B.1.3 Pump Discharge Valve: 2” Gate Valve, Flanged, Bronze

B.2 Drawings and Manuals

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	Number of Sheets

H93-31	Bilge, Fire & Deckwash Diagram	1

Number	MANUAL TITLE
	PLAD Pumps – Fire, Bilge, E-Fire

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		

15.3.C Statement of Work

C.1.1 The contractor must electrically isolate and lockout power supply to pump.

C.1.2 The Contractor must remove both isolation valves and dismantle, clean and examine all valve parts for defects.

C.1.3 The contractor must lap and blue all disks and seats to prove true. The contractor must quote on one bluing per valve. Additional work must be done by PWGSC 1379 action.

C.1.4 The Contractor must visually inspect all removed valves and report any deficiencies as they are identified, to the TA and make recommendations for their repair or replacement. Any required repairs or replacements of valves will be CFM via PSPC 1379 Work Arising Procedure.

C.1.5 The contractor must lay out the valves for survey by the TI/TA and ABS inspector.

C.1.6 The contractor must reassemble all valves using new CFM packing and jointing materials of correct grade and dimensions.

C.1.7 The contractor must reinstall the valves into the ship and prove their operation in the presence of the TI/TA.

C.1.8 The contractor is to remove and disassemble the bilge pump to allow for ABS surveyor inspection.

C.1.9 The contractor is to check the components of the rotating element and perform all necessary repairs. Clearances between the impeller and sealing rings are to be measured and recorded. Contractor is to clean and inspect pump housing for excessive wear down and pitting.

C.1.10 New wear rings to be installed if internal measurements are past acceptable limits. Wear rings to be GSM if required.

C.1.11 Following inspection, contractor to reassemble pump using a new GSM mechanical seal and radial ball bearings (2). Contractor to close up pump using CFM gaskets of equivalent characteristics as material mentioned in manual.

C.1.12 The contractor is to reinstall the pump taking care to ensure shaft alignment is exact, shim material to be CFM. Shaft flexible coupling to be replaced with GSM.

15.4 BILGE MAIN - SUCTION VALVE MANIFOLD OVERHAUL

15.4.A Identification

A.1 The contractor is to assess internal condition of bilge suction manifold valves. Valves are to be proved true and free of defects.

A.2 In addition to the bilge manifold, the contractor is to remove and inspect the condition of the direct ER bilge suction and the fire/bilge main crossover valve. Valves are to be proved true and free of defects.

15.4.B References

B.1 Equipment Data

B.1.1 Bilge Suction Manifold: 2” Globe SDNR Valve (x7) Flanged, Bronze

B.1.2 Direct ER suction valve: 2” Globe SDNR Valve, Flanged, Bronze

B.1.3 Pump Suction Crossover valve: 2.5” Gate Valve, Flanged, Bronze

B.2 Drawings and Manuals

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	Number of Sheets
H93-31	Bilge, Fire & Deckwash Diagram	1

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		

15.4.C Statement of Work

C.1.1 The Contractor must remove valves and dismantle, clean and examine all valve parts for defects.

C.1.2 The contractor must lap and blue all disks and seats to prove true. The contractor must quote on one bluing per valve. Additional work must be done by PWGSC 1379 action.

C.1.3 The Contractor must visually inspect all removed valves and report any deficiencies as they are identified, to the TA and make recommendations for their repair or replacement. Any required repairs or replacements of valves will be CFM via PSPC 1379 Work Arising Procedure.

C.1.4 The contractor must lay out the valves for survey by the TI/TA and ABS inspector.

C.1.5 The contractor must reassemble all valves using new CFM packing and jointing materials of correct grade and dimensions.

C.1.6 The contractor must reinstall the valves into the ship and prove their operation in the presence of the TI/TA.

16.0 DOMESTIC SYSTEMS

16.1 BALLAST TANK CLEANING, INSPECTION AND REPAIR

16.1.A Identification

A.1 The contractor must open up and make ready for inspection the forepeak ballast tank for ABS Inspection.

16.1.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

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		

16.1.C Statement of Work

C.1 The Contractor must empty, ventilate, de-gas and certify the tank as "Safe for Personnel" and "Safe for Hot Work"

C.2 The contractor must pressure wash, scrape, wire brush and wipe all internal surfaces as required to remove all scale, corrosion, sludge, residue and dirt. The Contractor must quote for the removal of up to 200 L of residual water and debris. All debris must be taken ashore for disposal.

C.3 The contractor must clean and examine all air pipes, sounding pipes and fittings, and suction/discharge pipes.

C.4 The contractor is to inspect the forepeak isolation valve extended spindle. The universal joints are to be greased with a waterproof grease such as Shell Gadus S2 V220 2. Any repairs to be PWGSC 1379 action if required.

C.5 The contractor must notify the TI/TA and ABS inspector when the tank has been prepared for inspection.

C.6 The contractor must prepare and treat bare metal, and repair any deficiencies in the tank coating identified by the TI/TA or ABS inspector, as per the PAINT SPECIFICATIONS – RV David Thompson (2022) document. The Contractor must quote for the repair of three areas of 0.5 m^2 each, with any additional repairs subject to PWGSC 1379 Action.

C.7 The Contractor must replace the existing zinc anode.

C.8 Subsequent to inspection by the TI/TA and any testing the Contractor must close up the tank using a Contractor supplied nitrile manhole gasket.

C.9 The Contractor must hydrostatically test and drain the ballast tank.

16.1.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 the amount of debris removed and status of the zincs replaced.

D.5 Training – Not Used

16.2 FUEL OIL TANK CLEANING AND INSPECTION

16.2.A Identification

A.1 The contractor must open up and make ready for inspection the following fuel tanks for ABS Inspection (see Appendix A).

a) #1 port fuel oil tank

b) #1 stbd fuel oil tank

c) #2 port fuel oil tank

d) #2 stbd fuel oil tank

e) #3 port fuel oil tank

f) #3 stbd fuel oil tank

g) day tank

h) day tank overflow/sludge tank

A.1.2 It is anticipated that as much fuel as possible will be transferred from the listed tanks to the #1 port and starboard tanks prior to docking. The bidders must quote on removing and storing up to 1000 L. of fuel oil. The removed fuel oil must be stored in contractor supplied containers engineered for such storage.

A.1.3 Bidders must allow for approximately 200 L of debris per tank, excluding cleaning medium, for removal ashore for disposal.

A.1.4 The tanks must be hydro-statically tested per ABS requirement.

A.1.5 Upon completion of the inspection, testing, and closing up of the fuel oil tanks the stored clean fuel must be returned to the vessels storage tanks as indicated by the TI/TA at that time. The contractor may exchange the fuel removed with new fuel of the same quantity, type and grade.

16.2.B References

B.1 Equipment Data - Not Used

B.2 Drawings – Not Used

Drawing Number	DRAWING TITLE	Number of Sheets
A21 H93-38	Vent Fill & Sounding Diagram	
A21 H93-40	Fuel Oil System Diagram	
A21 H93-47	Vent Fill & Sounding Physical	

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	CCG Fleet Safety Manual, 2012	Yes
Standards		
Regulations		

16.2.C Statement of Work

C.1 The Contractor must empty, ventilate, de-gas and certify each listed tank as "Safe for Personnel" and "Safe for Hot Work"

C.2 The contractor must scrape, wire brush and wipe all internal surfaces as required to remove all scale, corrosion, sludge, residue and dirt. All internal surfaces must be cleaned with an appropriate cleaner such as Citrus Clean or an equivalent. All debris must be taken ashore for disposal.

C.3 The Contractor must inspect and test the tank level senders (PMC float gauges) for defects.

C.4 The contractor must clean and examine all air vent pipes, gooseneck vents, sounding pipes and fittings, and suction/discharge pipes.

C.5 The contractor must renew all sounding tubes using threaded stainless steel cam-lock fittings to close the tubes above the main deck. All tank vent flameproof gauze must be renewed.

C.6 The contractor must notify the TI/TA and ABS inspector when the tanks have been prepared for inspection.

C.7 The contractor must hydrostatically test, drain, open and wipe dry using lint free rags, all of the listed tanks.

C.8 Subsequent to inspection by the TI/TA and any testing the contractor must close up the listed tanks using contractor supplied nitrile manhole gaskets. The contractor must harden up all manholes, closures and docking plugs in the presence of the TI/TA.

16.2.D Proof of Performance

D.1 Inspection Points

D.1.1 The contractor must allow for inspection of the cleaned and repaired tanks by the TI/TA and ABS inspector as required

D.2 Testing/Trials

D.2.1 Tanks are to be hydrostatically tested as per ABS requirements

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.

Appendix A: Tank Schedule

List of Tanks, Locations, and Access Points

Listed are the tanks found on board the *David Thompson* with their location by frame number and capacity. These are to be used as reference only and will not supersede any specification.

Tank name	Location	Manhole	Capacity (nominal)
#1 FW Tank	Transom - Port frame 1	Steering compartment	7500 L
#1 FW Tank	Transom - Stbd Frame 1	Steering compartment	7500 L
#1 FO Tank	Port Frame 1.5 - 3	Hold	10000 L
#1 FO Tank	Stbd Frame 1.5 - 3	Hold	10000 L
#2 FO Tank	Port Frame 3 - 5	Hold	12000 L
#2 FO Tank	Stbd Frame 3 - 5	Hold	12000 L
#3 FO Tank	Port Frame 10 - 15	Engine room	5750 L
#3 FO Tank	Stbd Frame 10 -15	Engine room	5750 L
#2 FW Tank	Port Frame 16 - 19	Sonar compartment	3750 L
#2 FW Tank	Stbd Frame 16 - 19	Sonar compartment	3750 L
Day Tank	Centre Frame 5	Engine room	1012 L
Day Tank Overflow/Sludge Tank	Port Frame 6-7	Engine room	2000 L
Grey water Tank	Port Frame 8-9	Engine room	1500 L
Hydr. Oil Tank	Stbd Frame 8-9	Engine room	600 L

Appendix B: Overboard Valve Schedule

Qty.	type	location	service	description	size
2	Sea inlet	Port and stbd. Sea chest	Main Engine	Globe SDSL	3”
4	Sea inlet	Port and stbd. Sea chest	Port and stbd. SSG	Globe SDSL	1¼”
1	Sea inlet	stbd. Sea chest	Fire and bilge pumps	Globe SDNR	2½”
2	Sea inlet	Port and stbd. Sea chest	Air supply	Gate	½”
2	Sea inlet	Port and stbd. Sea chest	Vent	Gate	¾”
1	Sea inlet	Port aft engine room	R/O water maker	Gate	1½”
1	Sea inlet	Port fwd. workshop	Emergency fire pump	Globe SDNR	2”
1	Sea inlet	Transducer compartment	Sonar tube	Gate	6”
1	Sea inlet	Transducer compartment	Speed log	Gate	1½”
1	Overboard discharge	Mates cabin	Captain’s cabin grey water	Globe SDNR	1½”
1	Overboard discharge	Port mid engine room	Oil/water Separator	Globe SDNR	1”
1	Overboard discharge	Port aft engine room	Port SSG	Globe SDNR	1½”
1	Overboard discharge	Port aft engine room	Main engine	Globe SDNR	3”
1	Overboard discharge	Port fwd. engine room	Not used	Gate	2”
1	Overboard discharge	Port mid engine room	Port grey water	Globe SDNR	2”
1	Overboard discharge	Port mid engine room	Sewage	Globe SDNR	1”
1	Overboard discharge	Port mid engine room	R/O water maker	Globe SDNR	1½”
1	Overboard discharge	Stbd. aft engine room	Stbd. SSG	Globe SDNR	1½”
1	Overboard discharge	Stbd. aft engine room	Fire and bilge pumps	Globe SDNR	2”
1	Overboard discharge	Stbd. mid engine room	Galley sink	Globe SDNR **to replace with Gate Valve	2”
1	Overboard discharge	Port fwd. workshop	Emergency bilge suction (new 2010)	Globe SDNR	2”