CCGS Harp
Storage & Refit
February 3, 2020 – April 1, 2020

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VESSEL CHARACTERISTICS

SHIP PARTICULARS:

Gross Registered Tonnage	179.2 Tonnes
Net Registered Tonnage	69.2 Tonnes
Displacement at design waterline	225 Tonnes
Length Overall	24.5 meters (80.4 Feet)
Length Between Perpendiculars	21.5 meters (70.5 Feet)
Breadth Moulded	7.5 meters (24.6 Feet)
Depth moulded at midships	3.4 meters (11.2 Feet)
Draft at design waterline	2.4 meters (7.9 Feet)
Frame spacing	0.5 meters (1.64 Feet)

REQUIREMENTS
INTENT

The intent of this specification is to describe the necessary work and services involved in carrying out a refit for the ship. All work specified herein and services shall be carried out to the satisfaction of the Project Engineer, Small Vessels.

RESPONSIBLE INDIVIDUAL

The individual responsible for the vessel during the refit period is Craig Norman, Project Officer Office #: 552-6333 Cell. #: 697-5422. Terry Hunt 552-6362.

PERIOD OF REFIT

1) The vessel will arrive at contractor's facilities on February 3 - 2020 to be docked. Shore power services to be supplied and connected at this time.

2) The dates may change due to operational requirements of the vessel. Dates will only change in case of an emergency situation.

3) Contractor shall supply the shore power cable from shore power connection on dock to shore power connection on aft deck of the vessel. Note Ships shore power cable shall not be used.

4) Contractor shall submit quote for each individual spec item.

5) Refit will commence when vessel out of the water.

6) Ship will be handed over to contractor for refit on February 3 -2020 at 10:00 hours.

7) Contractor shall provide security of the ship from February 3, 2020 to April 1 - 2020. Total days in storage & refit is 57 days. These dates may change due to ships operational requirements.

8) Security shall be as per Public Works and Government Services Contract Annex I – Vessel Custody Security watches.

9) In the event of loss of shore power to ship and if power can be restored in one hour the Person responsible for the vessel shall be informed.

10) Refit work period shall commence on February 3 -2020 and be completed by April 1-2020. These dates may change due to operational requirements.

11) Contractor shall supply all material, equipment and parts required to perform this work unless otherwise stated.

12) Contractor shall be responsible to dock the vessel and undock the vessel using a certified docking master or other qualified person approved by the owner's representative.

13) Contractor shall reference the docking plan from the Chief Engineer on board the vessel.

14) Contractor shall prepare the blocks and necessary shoring to maintain true alignment of the vessels hull and machinery throughout the dry docking period.

15) Contractor shall have support posts on the stern overhung section of the vessel and left in position until the ship is undocked.

16) Contractor shall dock the vessel so that all docking plugs, transducers, anodes and sea inlet grids are clear and accessible. If any hull fittings are covered, contractor shall be responsible for all Labour and materials required to make the alternative arrangements to drain the tanks as required and or move blocks to gain access to the area of the specified work.

17) Contractor shall be responsible for the safe transfer of the ship from its pre docking berth or location onto its docking blocks. During docking radio contact is to be maintained between the vessels Commanding Officer and the Contractors Docking officer. The contract is to include in its bid, tug and or pilotage services as required.

18) Prior to docking, all tanks on vessel to be sounded and contents recorded in Chief Engineer's log. Copy of the soundings to be signed by Commanding Officer, Chief Engineer and contractors Docking Master. Contractor shall receive a copy of the tank soundings.

19) Contractor shall water blast the hull within two hours after the vessel comes out of the water at a minimum pressure of 2000 pounds per square inch. (psi.) to remove marine growth and allow for preliminary inspection.

20) Contractor shall remove the sea grid chests on the port and starboard side. Contractor shall water blast inside and the Chief Engineer to carry out an inspection. After cleaning and inspection is carried out contractor shall reinstall the sea grids and secure as per removal.

21) Contractor shall drain three water ballast tanks and one potable water tank by removing the docking plugs .Contractor shall get the docking plug drawing from the Chief Engineer on board the vessel. .After the tanks are drained contractor shall install the docking plug in each tank with new contractor supplied approved gasket and sealant. Chief Engineer to witness the installation of the docking plug.

22) Contractor shall not remove or transfer any contents of the vessel without first checking with the Chief Engineer.

23) Prior to flooding /undocking contractor shall re-check the security of the keel / blocks and docking plugs in the presence of the owners representative.

24) The condition of the vessel shall be the same as the condition at time of docking.

25) At undocking, all tanks to be refilled to obtain the same draft and trim as the time of docking and the conditions agreed by Contractors Docking Master, Commanding Officer and the Chief Engineer.

EXPOSURE AND PROTECTION OF EQUIPMENT

The contractor shall ensure that the ship and equipment are protected from damage due to exposure, movement of materials, sand grit or shot blasting, airborne particles from sand, grit or shot blasting, welding grinding, burning, gouging, painting or airborne particles of paint.

LIGHTING AND VENTILATION

The Contractor shall ensure that the area around the vessel is illuminated.

CLEANLINESS

a) The Contractor shall ensure that the area around the ship will be kept in a neat condition and parts, lumber, cradles etc. shall not be stored in close proximity to the vessel.
b) The area to be kept clear of stored items shall be an area that is 5 feet away from any vertical line dropped from the widest point of the ship, both Port and Stbd.; The furthest point Aft and the furthest point Fwd. on the vessel.

RESTRICTED ACCESS

a) Access on board the vessel during the lay-up is strictly prohibited unless authorized by the Project Officer for the CCGS Harp or Chief engineer.

STAGING

a) Contractor shall supply one gangway to provide safe access to the vessel throughout the refit period. Gangway is to have sufficient lighting and rigged with safety net.

ELECTRICAL REQUIREMENTS

a) Contractor shall supply shore power 575 volts, 3 phase and 100 amps .
b) Harp has a shore power meter installed on ship that shall be used to calculate shore power consumption.

SECURITY

a) Refit of the vessel shall include contractor doing 24 hour a day and 7 days a week security on the vessel.

b) In the event of an alarm goes off on board the vessel, contractors personal will be available so they can go onboard to investigate. The types of alarms that are incorporated into the alarm system are fire detection, bilge alarm system and temperature sensing, etc.

c) In the event the temperature on board goes down below 7 degree Celsius or above 40 degree Celsius contractor shall notify the vessels owner contact person.

d) Contact Person.
Craig Norman.
Project Officer
Office # 552 - 6333
Cell # 697-5422
E-Mail craig.norman@dfo-mpo.gc.ca

e) Contractor personal shall be familiarized with the vessel.

REFIT PRE-AMBLE

1) INTENT

The intent of this specification is to describe the necessary work involved in carrying out the ships Annual refit. All work specified herein and all repairs, inspections and renewals are to be carried out to the satisfaction of the owners representative and, where applicable, the attending ABS Inspector.
Unless otherwise specifically stated, the Owners representative is the Chief Engineer.

2) MANUFACTURES RECOMMENDATIONS.

The overhaul and installation of all machinery and equipment specified herein shall be as per the manufactures applicable instructions, drawings and specifications.

3) TESTING AND RECORDS

All test results, calibrations, measurements and readings are to be properly tabulated, compiled and two typed copies shall be presented to the Owners Representative and attending surveyors.

4) WORKMANSHIP

The contractor shall use fully qualified, certified and competent tradesmen and supervision to ensure a uniform high level of workmanship as judged by normally accepted shipbuilding standards and to the Owners satisfaction.

5) FACILITIES

Quotation shall include all of the necessary Labour and equipment required for the erection of access staging, rigging, lighting .tugs, pilotage, necessary cranage and line handling.

6) MATERIALS AND SUBSTITUTIONS

All material shall be supplied by the contractor and all material shall be new and unused unless otherwise specified. All replacement material in the form of

jointing, packing, insulation, small hardware, oils, lubricants, cleaning solvents, preservatives, paints, coatings etc. shall be in accordance with the equipment manufactures_drawings, manuals or instructions. Where no particular item is specified, or where substitution must be made, the owners representative must approve all material offered.

7) REMOVALS

Any items of equipment to be removed and subsequently reinstalled in order to carry out work specified or for access to carry out the work specified, shall be jointly inspected for damages prior to removal by both the contractor and the Owners representative.

8) EXPOSURE AND PROTECTION OF EQUIPMENT

The contractor shall provide adequate temporary protection for any equipment or area affected by this refit. The contractor shall take proper precautions to maintain in a proper state of preservation any machinery, equipment, fittings, stores or items of outfit which might become damaged by exposure, movement of materials, sand grit or shot blasting, welding, grinding, burning, gouging, painting or airborne particles from paint. Any damage shall be the responsibility of the contractor. Government furnished equipment and materials shall be received by the contractor and stored in a secure warehouse or storeroom having a controlled environment appropriate to the equipment as per the manufactures instructions.

9) LIGHTING AND VENTILATION

Temporary lighting and or temporary ventilation required by the contractor to carry out any item of this specification shall be supplied, installed and maintained in a safe working condition by the contractor and removed upon the completion of the work.

10) CLEANINESS

The contractor shall at all times, maintain the work areas in which his personnel have access in a clean condition and free from debris. Upon completion of this refit, the contractor shall ensure that the vessel is in a clean condition, free from all foreign material in any system or location placed there as a result of this refit. The contractor shall provide adequate temporary protection for any equipment

or areas affected by this refit. The contractor shall dispose of any and all oil and water residue, which accumulates in the machinery space bilges as a result of any refit work detailed in this specification.

11) ABSESTOS

Any and all insulation materials shall be asbestos free and approved for the required application.

12) ENTRY INTO ENCLOSED SPACES

The contractor shall abide by the Coast Guard Enclosed Space Entry Policy. The policy is listed in the Safety Annex as section 7.D.9 and section D9 (N). Entry certificates shall clearly state the type of work permitted and shall be renewed as required by the regulations. Additional copies of these certificates shall be posted in conspicuous locations for the information of ship and contractor personnel. (See preamble item # 22.)

13) HOTWORK

Any item of work involving the use of heat in its execution requires that the contractor advise the owners' representatives prior to starting such heating and upon its completion. The contractor shall be responsible for maintaining a competent and properly equipped fire watch during and for one full hour after all hot work. The fire watch shall be arranged such that all sides of surfaces being worked on are visible and accessible. The contractor shall provide sufficient fire extinguishers and a fire watch during any such heating and until work has cooled. Ships fire extinguishers shall not be used except in an emergency. The contractor shall abide by the Coast Guard Hot Work Policy. The policy is listed in the Safety Annex as section 7.D.11 and section 7.D.11(N).The contractor shall be responsible to ensure the contractors personnel including any subcontractors shall follow the policy.(See Preamble item # 22)

14) PAINTING

All new and disturbed steelwork that will not be on the underwater wetted surfaces of the ship hull shall be protected with one coat of marine primer (Contractor supplied) unless otherwise specified in specification.

15) WELDING

Welding shall be in accordance with the Canadian Coast Guard Welding Specifications for ferrous Materials, Revision 4. The Contractor shall be currently certified by the Canadian Welding Bureau (CWB) in accordance with CWB 47.1 latest revision division I ,II, III, at the time of bid closing. The contractor may be required to provide approved procedure data sheets for each type of joint and welding position that will be involved in this construction.
The contractor may be required to supply a current Welders Certificate for each individual welder that will be involved in this construction.

16) SMOKING

The public Service Smoking Policy forbids smoking in all Government ships in area inside the ship where shipyard personnel will be working. The contractor shall inform shipyard workers of this policy and ensure that it is compiled to.

17) RESTRICTED AREAS

The following areas are out of bounds to shipyard personnel except to perform work as required by the specification, all cabins, offices, wheelhouse, Control Room, Engineers office, public washrooms, cafeteria, dining room and lounge area.

18) ELECTRICAL STANDARDS

Any electrical installations or renewals shall be in accordance with the latest edition of the following marine standards.
(a) TP 127E-TC Marine Safety Electrical Standards.
(b) IEEE Standard 45- Recommended Practice for Electrical Installation on Shipboard.
If any cable installed within this contract is found to be damaged, shorted, or opened as a result of the manner of the installation, the entire length of cable shall be replaced and installed at no cost to the Department. Plastic tie wraps may be used to secure wires in panels or junction boxes only.

19) DRAWINGS

All drawings and drawings revisions that the contractor is requested to do in the execution of this contract shall be of a quality equal to that of the drawings that are requested to be updated. For example, drawings that have been lettered and dimensioned in a professional matter shall not be updated using freehand. Prints and reproducible that a contractor is required to provide shall be made on one piece of paper.

20) TRANSDUCERS

The contractor shall not paint the transducers and all transducers are to be afforded the necessary protection during hull cleaning, blasting, burning, welding, and coating operations.

21) OWNERS REPRESENTATIVE

Throughout this document, there is made reference to the Owners Representative. For the purpose of this document, the Owners Representative is defined as the Chief Engineer of the Vessel.

22) Safety ANNEX

The contractor shall follow the Coast Guard Policies as outlined in the attached Safety Annex. This Annex contains excerpts from the Fisheries and Oceans Canada, Canadian Coast Guard Fleet Safety Manual (DFO 5737) and deals with contractor responsibilities for items such as hot work, Confined Space Entry, Diving, Diving operations, and Dry Docking.
An electronic copy of the Fleet Safety Manual (Adobe Acrobat PDF version) can be found at http://142.130.14.20/fleet-flotte/Safety/main ehtm.

H - 1 PRODUCTION CHART

1. SCOPE:

1.1 The intent of this specification shall be to have the contractor provide a bar chart prior to refit start date showing the start and completion dates for each item of work.

2. REFERENCES:

2.1 Guidance Drawings/Nameplate Data

2.1.1 N/A.

2.2 Standards

2.2.1 N/A.

2.3 Regulations

2.3.1 N/A

2.4 Owner Furnished Equipment

2.4.1 The contractor shall supply all materials, equipment, and parts required to perform the specified work unless otherwise stated.

3. TECHNICAL DESCRIPTION

3.1 General

3.1.1 The successful contractor shall supply three copies of a detailed bar chart showing the planned work schedule for the ships refit. These bar charts shall be presented to the Public Works Contracting Authority Officer 48 hours prior to the ships arrival at the Contractors premises. The bar charts shall show for each specific item, the start date, the manpower loading, the duration and the completion date..

3.1.2 The bar charts shall be updated weekly to reflect the actual production on the refit and changes to the anticipated completion dates of each individual specification item.

3.1.3 Contractor shall provide three copies of each weekly update to the Chief Engineer prior to each weekly production meeting..

3.1.4 The Contractor shall include on the updates to the production chart any work arising from PWGSC 1379 action and indicate how the additional work will impact the completion schedule for the vessel.

3.2 Location

3.2.1 N/A

3.3 Interferences

3.3.1 Contractor is responsible for the identification of interference items, their temporary removal, storage and refitting to vessel.

4. PROOF OF PERFORMANCE:

4.1 Inspection

4.1.1 All work shall be completed to the satisfaction of the Chief Engineer.

4.2 Testing

4.2.1 N/A

4.3 Certification

N/A

5. DELIVERABLES:

5.1 Drawings/Reports

5.1.1 Contractor shall supply Chief Engineer with type written copies of what work was carried out when the work is complete.

5.2 Spares

5.2.1 N/A

5.3 Training

5.3.1 N/A

5.4 Manuals

5.4.1 N/A

H - 2 SERVICES

Part 1: SCOPE:

1.1 The intent of this specification shall be to have the Contractor provide the services to the vessel while in dry dock and a float during the complete refit period and disconnected on termination of refit. The Contractor shall provide all material to the point of onboard connection.

1.2 This work shall be carried out in Conjunction with the following:

Part 2: REFERENCES:

2.1 Guidance Drawings/Nameplate Data

2.4.1.

2.2 Standards

2.4.1.

2.3 Regulations

2.4.1.

2.4 Owner Furnished Equipment

2.4.1. The contractor shall supply all materials, equipment, and parts required to perform the specified work unless otherwise stated.

Part 3: TECHNICAL DESCRIPTION:

3.1 General

3.1.1. The Contractor shall supply Shore Power of 575 VAC, 3 Phase, 100 Amp complete with cable and fittings. The Contractor shall quote on supplying 50,000 KWH and unit cost per additional kilowatt hour. The 50,000 KWH will be adjusted up or down at the end of the refit using PWGSC 1379 action. (see electrical requirement section) .Meter readings shall be taken and witnessed by the Contractor and Owners Representative prior to connection and upon disconnection of the service.

3.1.2. A copy of meter reading shall be given to dockyard and Chief Engineer upon connection of shore power. Reading shall be recorded in Chief Engineers log book.

3.1.3. Contractor shall include in quote the services of certified electrician to connect shore power to ship at start of refit and disconnect shore power from ship when refit is completed.

3.1.4. Contractor shall supply the required approved shore power cable from connection ashore to the shore power connection box on after deck on ship. .NOTE: Ships shore power cable shall not be used for refit period..

3.1.5. Water connection to the ships fire main at 60 psi, 1 ½ inch diameter fire hose with water pressure being maintained at all times. Drain to be provided to prevent freezing. Contractor to quote on $10m^3$ per day and to provide a rate per m^3 for additional water to be adjusted up or down by 1379 action.

3.1.6. Potable water connection at 45 psi, 1 inch diameter to be connected to the ships potable water system, with drain to prevent freezing.

3.1.7. Contractor supplied boarding gangway to be supplied and rigged complete with safety net handrails and lighting. Gangways shall be rigged to the satisfaction of the Commanding Officer.

3.1.8. A Contractor supplied garbage container shall be placed on the ground close to the vessel. Refuse shall be removed daily from the vessel. The garbage container shall be emptied when 75 % full.

3.1.7. Disposal of 1000 liters of oily water mixture from tanks and bilges as required. Contractor shall quote cost per each additional 100 liters. The Contractor shall use the services of a qualified disposal agent who shall comply with all Provincial Laws and provide evidence of proper disposal.

3.1.8 The interior decks of the vessel are to be covered for protection using "Deck Protection Flooring Mask" or equivalent. This covering is to be installed at the beginning of refit and maintained in good condition throughout the entire refit, The protective floor covering shall be removed at the end of the refit.

3.2 Location

3.2.1. Throughout ship.

3.3 Interferences

3.2.1. Contractor is responsible for the identification of interference items, their temporary removal, storage and refitting to vessel.

Part 4: PROOF OF PERFORMANCE:

4.1 Inspection

4.1.1. All work shall be completed to the satisfaction of the Chief Engineer.

4.2 Testing

N/A

4.3 Certification

N/A

Part 5: DELIVERABLES:

5.1 Drawings/Reports

5.1.1 N/A.

5.2 Spares

N/A

5.3 Training

N/A

5.4 Manuals

N/A

H - 3 HULL CLEANING AND PAINTING

Part: 1 SCOPE:

1.1 The intent of this specification shall be contractor shall remove all marine growth and completely hydro blast the hull using a minimum pressure of 2000 pounds per square inch (psi) from the keel to the main deck. New underwater hull coating and coating from the water line to the main deck, including the complete bow area above the waterline shall be applied.

1.2 N/A.

Part: 2 REFERENCES:

2.1 Guidance Drawings/Nameplate Data

2.1.1 N/A.

2.2 Standards

2.2.1 All coatings shall be applied according to manufacturer's specifications.
2.2.2 N/A.

2.3 Regulations

2.3.1 Contractor shall comply with Fleet Safety Manual.
2.3.2 Contractor shall comply with all Provincial Regulations and the Canada Labour Code.

2.4 Owner Furnished Equipment

2.4.1 The contractor shall supply all materials, equipment, and parts required to perform the specified work unless otherwise stated.

Part: 3 TECHNICAL DESCRIPTION

3.1 General

3.1.1 Contractor shall inform Chief Engineer prior to commencement of work.

3.1.2 Coast Guard to provide NACE Inspector. All coating to be applied und his supervision.

3.1.3 The area of the hull from the keel to the waterline including appendages is 264 m2. The area from the waterline to the main deck, including the complete bow area above the waterline is 93 m2. shall bid on cleaning and coating the hull. The contractor shall submit with the bid, a unit cost for cleaning and coating per m2 of additional area which can be adjusted up or down by using PWGSC 1379 action.

3.1.4 Contractor shall hydro blast the entire hull portion of the ship including rudders, nozzles and skeg. Contractor shall ensure that all marine growth is removed. Contractor shall water wash the hull to remove any soluble salts.

3.1.5 Contractor shall ensure that all bare steel areas are sandblasted to SA-2.5 Near White surface with existing edges feathered. The contractor shall bid on 40 m2 of bare area and shall include a unit cost to blast any additional area. The actual area will be adjusted using PWGSC 1379 action.

3.1.6 Contractor shall mechanical clean to SSPC-SP-3 the hull from the keel to the main deck, including rudders, nozzles, skeg, and the complete hull above the waterline, to provide a suitable surface for new paint application as per manufactures specifications.

3.1.7 If sand sweeping is carried out contractor shall ensure that every opening into the vessel where grit can gain entry is suitably covered. All traces of grit used for sweep and sand blasting shall be removed by the contractor. The contractor shall be responsible for ensuring that the hull is clear and clean prior to, during and immediately after the coating application.

3.1.8 Contractor shall plug deck scuppers and discharges as well as take other measures necessary to prevent liquids from contaminating areas being prepared or coated. The contractor shall also take measures to ensure that no damage, unnecessary cleaning or any repairs result from either the hull preparation process or the coating application. Measures shall also be taken to ensure that surfaces and equipment other than those specified are not coated and that inlets or discharges in the shell will not be blocked by the coating. Deck machinery and other gear susceptible to damage by grit or coating material shall also be protected as necessary.

3.1.9 Contractor shall supply and apply the following to the underwater portion:
a) One complete coat of International Paints Intershield 300 Series (Bronze) at 5-6 mils DFT.

b) One coat of International Paints Intershield ENA 300 Series Epoxy (Aluminum) at 5-6 mils DFT to all bare areas.

c) One complete coat of International Paints Intershield BRA 642 Antifouling (Black) at 4 mils DFT up to the waterline. The antifouling paint shall be applied at a maximum of 24 hours prior to the vessel being placed in the water.

3.1.10 Contractor shall draw and mark off the waterline which runs across the stern and forward from the 2.9 meter draft aft to the 2.3 meter draft forward. The contractor shall supply and apply from the waterline up to the main deck level, including the complete bow portion above the waterline, the following:

a) Two complete coats of International Paints Interprime 665(CPA099 Red) at 2-3 mils DFT per coat.
b) Two complete coast of International Paints Interlac Red CLA162 at 1.5 -2 mils DFT per coat.

3.1.11 Contractor shall reapply the CG white stripe complete with black outline on both sides of the vessel and shall reapply all markings using International Paints Interlac CLA163 665 Marine Enamel(white) and CLA164 for black.

3.1.12 N/A.

3.2 Location

3.2.1 N/A

3.3 Interferences

3.3.1 Contractor is responsible for the identification of interference items, their temporary removal, storage and refitting to vessel.

Part: 4 PROOF OF PERFORMANCE:

4.1 Inspection

4.1.1 All work shall be completed to the satisfaction of the Chief Engineer

4.2 Testing

4.2.1 N/A.

4.3 Certification

4.3.1 N/A

Part: 5 DELIVERABLES:

5.1 Drawings/Reports

5.1.1 Contractor shall supply Chief Engineer with type written copies and one electronic copy of what work was carried out when the work is complete.

5.2 Spares

5.2.1 N/A

5.3 Training

5.3.1 N/A

5.4 Manuals

5.4.1 N/A

H - 4 SEA BAY CLEANING AND PAINTING

Part 1: SCOPE:

1.1 The intent of this specification shall be contractor to open the sea bay and sea chests for cleaning , inspection and painting.

1.2 This work shall be carried out in Conjunction with the following: Dry docking

Part 2: REFERENCES:

2.1 Guidance Drawings/Nameplate Data

2.1.1 N/A

2.2 Standards

2.2.1 N/A

2.3 Regulations

2.3.1 N/A

2.4 Owner Furnished Equipment

2.4.1. The contractor shall supply all materials, equipment, and parts required to perform the specified work unless otherwise stated.

Part 3: TECHNICAL DESCRIPTION:

3.2 General

3.1.1. Contractor shall inform Chief Engineer prior to commencement of work.

3.1.2. The contractor shall remove the sea bay grids and thoroughly clean the sea inlets using hydro blasting and shall remove all loose or damaged coatings.

3.1.3. The contractor shall remove the docking plug and allow the sea bay to drain. The docking plug shall remain in the custody of the Chief Engineer.

3.1.4. The contractor shall remove the cover from the sea bay and clean internally, also remove any loose or damaged coatings using hand power tools only.

3.1.5. The contractor shall bid on cleaning, and coating a total area of 22m² allowing for 2.2m² of bare areas. The contractor shall submit with the bid a unit cost for the cleaning, blasting and coating of any additional area. The actual area completed will be increased or decreased using PWGSC 1379 action.

3.1.6. The contractor shall sandblast all bare areas in the sea inlets to SA 2.5 Near White surface with the existing edges feathered back.

3.1.7. The contractor shall use hand power tools only to prepare any bare areas inside the sea bay.

3.1.8. The contractor shall apply:

24 One coat of International Paints Intershield 300 Series (bronze) at 5-6 mils DFT to all bare areas

25 One complete coat of International Paints Intershield 300 Series (bronze) 5-6 mils DFT

26 One complete coat International Paints Intershield BRA 640 (BRA642) Antifouling (black) at 4 mils DFT.

3.1.8 The contractor shall reinstall the docking plugs and manhole cover using contractor supplied gaskets and locking arrangements.

3.4 Location

3.2.1. Sea Bay Frames 25-26 Entrance at engine room fwd
Sea Chests Frames 20-22 Under water hull

3.5 Interferences

3.2.1. Contractor is responsible for the identification of interference items, their temporary removal, storage and refitting to vessel.

Part 4: PROOF OF PERFORMANCE:

4.2 Inspection

4.1.2. All work shall be completed to the satisfaction of the Chief Engineer. All work to be inspected by Chief Engineer and Transport Canada Marine Safety Inspector before sea bays and sea chests closed up.

4.2 Testing

4.2.1 Final coating thickness to be recorded

4.3 Certification

4.3.1

Part 5: DELIVERABLES:

5.5 Drawings/Reports

5.1.1 Contractor shall supply Chief Engineer with type written copies and one electronic copy of what work was carried out when the work is complete.

5.6 Spares
N/A

5.7 Training
N/A

5.8 Manuals
N/A

H - 5 ANODES

Part: 1 SCOPE:

1.1 The intent of this specification shall be contractor to remove existing anodes and install all new zinc Anodes on hull.

1.2 This work shall be carried out in Conjunction with the Dry Docking Specification.

Part: 2 REFERENCES:

2.1 Guidance Drawings/Nameplate Data

2.1.1 N/A.

2.2 Standards

2.2.1 N/A.

2.3 Regulations

2.3.1 Contractor shall comply with Fleet Safety Manual.
2.3.2 Contractor shall comply with all Provincial Regulations and the Canada Labour Code.

2.4 Owner Furnished Equipment

2.4.1 The contractor shall supply all materials, equipment, and parts required to perform the specified work unless otherwise stated.

Part: 3 TECHNICAL DESCRIPTION

3.1 General

3.1.1 Contractor shall inform Chief Engineer prior to commencement of work.

3.1.2 Contractor shall quote on remove existing anodes and supply /install all new zinc anodes. There are 32 anodes in total:
24 anodes 24 lb each
8 anodes that are 12 lb .

3.1.3 Contractor shall quote per additional 12 lb and 24 lb anode to supply and install which can be adjusted up or down by 1379 action.

3.1.4 Contractor shall ensure that the area around each anode is properly coated in accordance with the requirements with the hull coating section.

3.1.5 N/A

3.2 Location

3.2.1

ANODES	LOCATION	TYPE
10	Hull	24 lb
4	Rudders	24 lb
4	Kort Nozzles	24 lb
1	Sea Bay Cover	24 lb
5	Sea Chests	24 lb
8	Stern tubes	12 lb

3.2.2 N/A.

3.3 Interferences

3.3.1 Contractor is responsible for the identification of interference items, their temporary removal, storage and refitting to vessel.

Part: 4 PROOF OF PERFORMANCE:

4.1 Inspection

4.1.1 All work shall be completed to the satisfaction of the Chief Engineer.
4.1.2 N/A.

4.2 Testing

4.2.1 N/A.

4.3 Certification
N/A

Part: 5 DELIVERABLES:

5.1 Drawings/Reports

5.1.1 Contractor shall supply Chief Engineer with type written copies and one electronic copy of what work was carried out when the work is complete.

5.2 Spares

5.2.1 N/A

5.3 Training

5.3.1 N/A

5.4 Manuals

5.4.1 N/A

H-1 PORT DAY & PORT BUNKER FUEL TANKS.

Part 1: SCOPE:

1.1 The intent of this specification shall be to open up and clean Port Day and Port Bunker fuel oil tanks for the 5 year inspection for Transport Canada.

Part 2. REFERENCES:

2.1 Guidance Drawings/Nameplate Data.

2.1.1 N/A.

2.2 Standards

2.2 N/A

2.3 Regulations.

2.3.1 Contractor shall comply with the Fleet Safety Manual.
2.3.2 Contractor shall comply with all Provincial Regulations and the Canada Labour Code.

2.4 Owner Furnished Equipment.

2.4.1 The contractor shall supply all materials, equipment, and parts required to perform the specified work unless otherwise stated.

Part 3: TECHNICAL DESCRIPTION:

3 General

3.1 Contractor shall inform Chief Engineer prior to commencement of work.

3.2 Contractor shall confirm that the fuel oil system is isolated, locked out and tagged prior to starting work.

3.3 Contractor shall pump the approximately 3600 litres of fuel oil from the Port Day Tank and approximately 7500 litres of fuel oil from the Port Fuel Oil Storage tank into contractor supplied clean storage tank for storage while the fuel oil tanks are being cleaned. The transferring of fuel and storage to be included into the price.

3.4 Chief Engineer to inspect contractor supplied storage tank prior to transferring the fuel from the ship. This storage tank shall not be located on board the ship.

3.5 Contractor will have to move work bench and storage cabinet on the Port side cargo hold to access manhole covers for the fuel oil tanks.

3.6 Tanks to be vented to the atmosphere when opened up and during the duration the tanks are opened up.

3.7 The tanks to be gas freed by a certified chemist. Certificate shall specify Safe For Persons. Contractor shall post a copy of the certificate at the entrance to the affected spaces.

3.8 The remaining fuel and sludge in the bottom of the tank to be pumped ashore by contractor and disposed of by the contractor as per regulations. Contractor shall have this included into the cost.

3.9 The entire tank to be cleaned out and wiped dry.

3.10 The tanks to be inspected by the C/E and ABS Inspector before the tanks are closed up.

3.11 Contractor shall install the manhole covers using new approved gaskets.

3.12 Contractor shall prepare and perform hydrostatic test on the fuel oil tanks as required per Transport Canada Regulations. Testing to be witnessed by Chief Engineer and ABS Inspector.

3.13 Contractor shall transfer fuel from the storage tank back to the fuel oil tanks on the ship.

3.2 Location.

3.2.1 Port Deep #1 Fuel oil Tank.(Frames 5-10)
Port Day Tank (Frames 10- 12)

3.2 Interferences.

3.3.1 Contractor is responsible for the identification of interference items, their temporary removal, storage and refitting to vessel.

Part 4: PROOF OF PERFORMANCE:

4.1 Inspection

4.1.1 All work shall be completed to the satisfaction of the Chief Engineer and Transport
Canada Inspector.

4.1Testing. Hydrostatic or Air Test as required by Transport Canada Inspector.

4.2Certification

4.3.1 N/A. .

Part 5: DELIVERABLES:

5.1 Drawings/Reports.

5.1.1.1 Contractor shall supply to Chief Engineer two type written copies of what work was carried out when the work is complete.

5.2 Spares
N/A

5.3 Training
N/A

5.4 Manuals
N/A

H-7 POTABLE WATERTANK CLEANING AND PAINTING

Part 1: SCOPE:

1.1 The intent of this specification shall be to open the potable water tank for cleaning and inspection and painting

1.2 This work shall be carried out in Conjunction with the following:

Part 2: REFERENCES:

2.1 Guidance Drawings/Nameplate Data

2.1.1.

2.2 Standards

2.1.2. Fleet safety Manual Section 7.F.12 Potable Water Quality

2.3 Regulations

2.1.3.

2.4 Owner Furnished Equipment

2.1.4. The contractor shall supply all materials, equipment, and parts required to perform the specified work unless otherwise stated.

Part 3: TECHNICAL DESCRIPTION:

3.1 General

3.1.1. The contractor shall quote on repairing 5 m^2 of bare areas. The tank size is 10 m^3. The contractor shall submit with the bid a unit cost for the cleaning and coating of any additional area. The actual area will be increased or decreased using PWGSC 1379 action.

3.1.2. The contractor shall drain the tank and thoroughly clean the complete tank. All rust, scale and loose paint shall be scraped to clean metal. All debris shall be moved ashore. All bare areas shall be power tool cleaned to SSPC-SP3 Power Tool Clean with profile and feathered back to sound edges.

3.1.3. The contractor will adhere to manufacturer's instructions for drying times. The coating will be applied with brush and rollers, as recommended by the paint manufacturer.

3.1.4. The contractor will keep the surface of the metal at least 5 degrees Celsius above the dew point. The ambient temperature during the curing period will be maintained above 16 degrees Celsius and the maximum relative humidity will be not more than 95% as recommended by the manufacturer. There will be absolutely no paint thinners used when mixing the paint for coating the fresh water tanks.

3.1.5. The contractor shall include in the bid price the cost of equipment required to maintain the temperature and humidity to maintain this environment as required by the manufacturer for the coating to cure. The contractor will supply sufficient personnel to maintain this equipment on a 24 hour basis until the paint is cured. The contractor shall supply an enclosure to maintain these conditions. This will be monitored by the Coast Guard contracted National Association of Corrosion Engineers (NACE) Inspector.

3.1.6. The contractor shall supply and apply Two Coats of Royal Coatings Easy Prime 3-5 mils DFT to all bare areas.

3.1.7. The contractor shall supply and apply Two Coats of Royal Coatings Easy Flex 3-5 mils DFT to all bare areas.

3.1.8. The contractor shall ensure that the tank is inspected by the attending TCMS Inspector and the Commanding Officer.

3.1.9. The contractor shall close up the tank using new contractor supplied gaskets same as removed.

3.1.10. The contractor shall fill the tank with fresh water and super chlorinate in accordance with the directions in the Fleet safety Manual 7.F. 12 Potable water Quality. The total volume of the tank is $10m^3$. The contractor shall remove and dispose of the chlorinated water in accordance with all Provincial and Federal regulations. The cost of disposal shall be included in the contractors bid.

3.1.11. After completion of all work, samples of fresh water are to be taken from the tank and the water source, they are to be sent to an accredited laboratory for analysis. Laboratory to be approved by owner's representative. The Chief Engineer or his delegate shall witness the taking of a water sample from the fresh water tank. The testing completed on the water shall be as set out in the Coast Guard Fleet Safety Manual Section 7.F.12 Potable Water Quality, paragraph 3.6.7. (28 parameter test) A copy of the test certificate shall be delivered to the Captain or Chief Engineer. The contractor shall make arrangements to have the samples taken and reports sent to the ship. The contractors bid shall include the cost of arranging the water testing and delivery of samples to the laboratory.

3.2 Location

3.2.1. This is a double bottom tank located port and stbd of center line frames 33-38

3.3 Interferences

3.2.1. Contractor is responsible for the identification of interference items, their temporary removal, storage and refitting to vessel.

Part 4: PROOF OF PERFORMANCE:

4.1 Inspection

4.1.3. All work shall be completed to the satisfaction of the Chief Engineer and Commanding Officer

4.2 Testing

4.2.1 As per Technical Description

4.3 Certification

4.3.1 As per Technical Description

Part 5: DELIVERABLES:

5.1 Drawings/Reports

5.1.1

5.2 Spares

N/A

5.3 Training

N/A

5.4 Manuals

N/A

H-8 SEWAGE TANK INSPECTION AND COATING TOUCHUP

Part 1: SCOPE:

1.1 The intent of this specification shall be to clean, inspect, coat as necessary and return the sewage system treatment tank to service.

1.2 This work shall be carried out in Conjunction with the following: E - 18

Part 2: REFERENCES:

2.1 Guidance Drawings/Nameplate Data

2.2 Standards

The sewage system treatment tank is considered a confined space under the Safety Management System.

2.3 Regulations

2.4 Owner Furnished Equipment

The contractor shall supply all materials, equipment, and parts required to perform the specified work unless otherwise stated.

Part 3: TECHNICAL DESCRIPTION:

General

3.1 All effluent is to be disposed of by the Contractor.

3.2 Disposal certificates to be provided to PWGSC.

3.3 The contractor shall pump out the sewage treatment plant and dispose of contents ashore. The effluent, sludge and any solid wastes are to be disposed of in accordance with local environmental regulations. 19000litres to be considered for initial pump down of system.

3.4 With the ship's Electrical Officer the contractor is to ensure the Lockout/Tagout is in place. The contractor is to supply his/her own locks and tags but complete the vessel's Lockout/Tag-out procedure.

3.5 Manhole covers to be removed to gain access to tank internals.

3.6 Ventilation to be provided from the sewage tank to an open deck and over the side of the vessel for the entire period the sewage tank is opened.

3.7 Prior to the commencement of cleaning, all tanks are to be certified gas free for worker entry by a marine chemist and certificates posted in conspicuous locations as required by the CLC. All Contractor workers entering any tanks are to be qualified as per CLC.

3.8 Tank internals to be pressure washed clean. All water remaining in tank after cleaning is to be pumped out and disposed of ashore by Contractor.

3.9 The tank internals including all piping and air manifolds are to be cleaned of all traces of effluent and liquid using a detergent and sanitized using disinfectant. MSDS for the cleaning and sanitizing chemicals to be provided to Chief Engineer before cleaning begins.

3.10 Cleanout plugs in the manifolds are to be removed and manifolds cleaned of any debris. Cleanout plugs to be reinstalled following inspection by the Chief Engineer.

3.11 All liquid remaining in tank after cleaning is to be pumped out and disposed of ashore by Contractor.

3.12 Tank to be rag wiped dry after cleaning.

3.13 Internals then to be cleaned to prepare surfaces for coating. Power tool cleaning to be to standard SSPC-SP-3.

3.14 All dirt and debris remaining in tanks after cleaning shall be removed ashore and disposed of by the Contractor

3.15 Contractor to supply any ventilation equipment required for the gas free Certificate and the certificate's continued validity for the duration of the work. Contractor also to supply ventilation as required during the cleaning and coating of tank internals.

3.16 All associated air piping on the tank top as well as all internal passages, orifices and piping are to be proven clear. Switch column to be disconnected from its piping, inlet and outlet openings and internals column to be thoroughly cleaned and reconnected.

3.17 After completion of thorough cleaning, bare metal surfaces to be primed with Royal Coatings Easy Prime. Tank internals are then to be given one coat of Royal Coatings Easy Novo – bid on 10 m2 with a unit cost per m2 for adjustment purposes. The level switches, probes and orifices are to be protected during painting to ensure operational integrity.

3.18 Upon completion, all level switches, probes and alarms shall be cleaned, inspected and function tested.

3.19 After sufficient time for coating to cure has passed, the contractor is to install the manhole covers using new contractor supplied gaskets and the tanks are to be refilled to the operating level with clean fresh water.

3.20 The ship's crew will pump down and shut down the ships vacuum system to allow the holding tank to be cleaned. Contractor will remove the tank cover and pressure wash the inside of the tank and remove all residues ashore. As shut down of this tank takes the ship's sewage system out of operation, cleaning is to be done in a timely manner to ensure the system is out of service for the shortest amount of time.

3.21 The float switches are to be cleaned and proven fully functional.

3.22 Tank is to be inspected and closed up again using a new contractor supplied gasket. System is to be put back in service and to be proven fully functional upon completion.

3.23 All work is to the satisfaction of the Chief Engineer.

3.24 Location

3.24.1 The sewage system is located in the Forward storage room.
3.24.2 The ship's sewage overboard discharge fitting is located on the Main Deck, stbd side at Frame 18.

3.25 Interferences

Contractor is responsible for the identification of interference items, their temporary removal, storage and refitting to vessel.

Part 4: PROOF OF PERFORMANCE:

4.1 Inspection

All work shall be completed to the satisfaction of the Chief Engineer.

4.2 Testing
N/A

4.3 Certification
N/A

Part 5: DELIVERABLES:

5.1 Drawings/Reports

N/A

5.2 Spares
N/A

5.3 Training
N/A

5.4 Manuals
N/A

H-11 SLUDGE TANK.

Part 1: SCOPE:

1.1 The intent of this specification shall be contractor shall open up sludge tank for 5 year survey for Transport Canada Marine Safety Inspector.

Part 2: REFERENCES:

2.1 Guidance Drawings/Nameplate Data

2.1.1 N/A.

2.2 Standards

2.2.1 N/A.

2.3 Regulations

2.3.1 Contractor shall comply with the Fleet Safety manual.

2.3.2 Contractor shall comply with all Provincial Regulations and the Canada Labour Code..

2.4 Owner Furnished Equipment.

2.4.1The contractor shall supply all materials, equipment, and parts required to perform the specified work unless otherwise stated.

Part 3: TECHNICAL DESCRIPTION:

3.1 General

3.1.1 Contractor shall inform Chief Engineer prior to commencement of work.

3.1.2 Contractor shall confirm sludge tank is empty prior to starting work.

3.1.3 Contractor to open sludge tank is to be open for cleaning and inspection. The manhole is to be removed and all sludge to be removed ashore and disposed of by the contractor.

3.14 Contractor to supply any ventilation equipment required for the gas free Certificate and the certificate's continued validity for the duration of the work. Contractor also to supply ventilation as required during the cleaning and coating of tank internals.

3.15 All associated air piping on the tank top as well as all internal passages, orifices and piping are to be proven clear.

3.1.6 Contractor shall have the sludge tank gas freed by certified personnel.
3.1.7 The tank is to be cleaned internally.
3.1.8 Upon completion of cleaning the tank is to be inspected by the Chief Engineer and Transport Canada Marine Safety Inspector.

3.1.9 Contractor shall close up the tank using new approved contractor supplied gasket.

3.1.10 The tank fill pipe and vent are to be sealed and the tank hydrostatically tested as required by Transport Canada Ship Safety Inspector.

3.2 Location.

3.2.1 Engine room Stbd Frames 12-15.

3.3 Interferences.

3.3.1 Contractor is responsible for the identification of interference items, their temporary removal, storage and refitting to vessel.

Part 4: PROOF OF PERFORMANCE:

4.1 Inspection

4.1.1 All work shall be completed to the satisfaction of the Chief Engineer and TCMS Inspector

4.2 Testing

4.2.1 Hydrostatic test to be witnessed by Chief Engineer and Transport Canada Marine Safety Inspector.

4.3 Certification
N/A

Part 5: DELIVERABLES:

5.1 Drawings/Reports.

5.1.1 Contractor shall supply Chief Engineer two typewritten copies of what work was carried out when the work is complete.

5.2 Spares : N/A

5.3Training : N/A

NON-SKID APPLICATION TO EXPOSED DECKS
Part 1: SCOPE:

1.1 The intent of this specification shall be to have the contractor remove the existing non-skid application applied to main deck only and apply new non-skid system as directed by the NACE Inspector.

1.2 This work shall be carried out in Conjunction with the following: Drydocking

Part 2: REFERENCES:

2.1 Guidance Drawings/Nameplate Data

2.2 Standards

2.3 Regulations

2.4 Owner Furnished Equipment

2.4.1. The contractor shall supply all materials, equipment, and parts required to perform the specified work unless otherwise stated.

Part 3: TECHNICAL DESCRIPTION:

3.1 General

3.1.1 The contractor shall mechanically and using an abrasive blasting, remove the applied non-skid coating to the aluminum on all exposed decks.

3.1.2 The contractors bid shall bid on a main deck area that's 78m2 for profiling and application. The contractor shall include the unit costs per m2 for additional areas.

3.1.3 The Contractor shall abrasive blast the whole deck area to SSPC-SP10, to achieve a profile of 1.5 to 2.0 mils using a 40 mesh size particulate as blast media. Extreme care shall be taken to ensure that the blast pressure does not embed blast medium into deck surface. Any fitted deck fixtures that do not have non-skid applied must be protected from blasting and painting. Suitable protection of blast particulate intrusion into the wheelhouse and/or venting must be made and complete cleanup of the particulate and removed paint, must be made before new application started.

3.1.4 The Contractor shall apply.

Paint Products							
#	Purpose	Product	Colour	Code	Mix Ratio	Mix With	Thinner/ Cleaner
1	Primer	Intershield 300	Bronze	ENA300/A	2.50:1	ENA303	GTA220
2	Intermediate	Intershield 6GV	Dark Grey	EGA650	3:1	EGA651	GTA220
3	Finish	Interthane 990	Mid-Graphite	PHT806/A	6:1	PHA046	GTA056

3.2 Location

3.2.1. All exposed decks

3.3 Interferences

3.3.1. The Contractor is responsible for the identification of interference items, their temporary removal, storage and refitting to vessel. Pictures to be taken of interference items before removal and after reinstall.

Part 4: PROOF OF PERFORMANCE:

4.1 Inspection

4.1.1. All work shall be completed to the satisfaction of the Chief Engineer. Contractor shall inspect the operation of trim tabs before and during sea trials.

4.2 Testing
N/A

4.3 Certification
N/A

Part 5: DELIVERABLES:

5.1 Drawings/Reports

5.2 Spares N/A

5.3 Training N/A

5.4 Manuals N/A

HD-1 STORM VALVES

Part 1: SCOPE:

1.1 The intent of this specification shall be for the contractor to remove the valves and open up for inspection for Transport Canada and reinstall the storm valves.

1.2 This work shall be carried out in Conjunction with the Dry – Docking Specification.

Part 2: REFERENCES:

2.1 Guidance Drawings/Nameplate Data

2.1.1 N/A

2.2 Standards

2.2.1 N/A.

2.3 Regulations

2.3.1Contractor shall comply with

a) Fleet Safety Manual.
b) Latest edition of all provincial regulations

2.4 Owner Furnished Equipment

2.4.1. The contractor shall supply all materials, equipment, and parts required to perform the specified work unless otherwise stated.

Part 3: TECHNICAL DESCRIPTION:

3.1 General

3.1.1. Contractor shall inform Chief Engineer prior to starting work.

3.1.2. Contractor shall remove the storm valves for cleaning inspection and overhaul.

3.1.3. Contractor shall disassemble and ensure that all internal components of the valves are cleaned and inspected by the Chief Engineer and TCMS Inspector before assembled.

3.1.2 The contractor shall lap in all valve seats and install new valve stem packing and gaskets when assembling, and reinstall the valves using new flange gaskets, and new bolts, nuts and washers.

3.1.3 The contractor shall report to the Chief Engineer any faults found with any valve which may require valve repair or replacement. Repairs or replacement are subject to ABS inspectors discretion and will be handled by 1379 action.

3.3 Location

3.2.1.

Storm Valve List			
Description	Location	Size(inch)	Qty
Toilet Disch & Check Valve	Void Space Port	3	1
Toilet Disch	Lower Accom Washroom Port	2	1
Scupper Disch	Void Space Stbd	3	1
Scupper Disch	Lower Accom Port	2	1
Machinery Disch	Engine Room Port	6	1
Machinery Disch	Engine Room Stbd	6	1
Pumps Disch	Engine Room Port	6	1
Pumps Disch	Engine Room Stbd	6	1
Blank Disch	Engine Room Stbd	1	1
Watermaker Disch	Engine Room Stbd	1	1
# 1 Gen Disch	Engine Room Port	2	1
# 2 Gen Disch	Engine Room Port	2	1

3.3 Interferences

3.3.1 Contractor is responsible for the identification of interference items, their temporary removal, storage and refitting to vessel.

Part 4: PROOF OF PERFORMANCE:

4.1 Inspection

4.1.1. All work shall be completed to the satisfaction of the Chief Engineer and ABS Inspector.

4.2 Testing
N/A

4.3 Certification
N/A

Part 5: DELIVERABLES:

5.1 Drawings/Reports

5.1.1 Contractor shall supply Chief Engineer two type written copies of what work was carried out when the work is complete.

5.2 Spares
N/A

5.3 Training
N/A

5.4 Manuals
N/A

HD-2 SEA SUCTION VALVES

Part 1: SCOPE:

1.1 The intent of this specification shall be contractor to remove, open up for Transport Canada 5 year inspection, overhaul and reinstall the sea suction valves .

Part 2: REFERENCES:

2.1 Guidance Drawings/Nameplate Data

2.1.1 N/A

2.2 Standards

2.2.1 N/A

2.3 Regulations

2.3.1 Contractor shall comply with Fleet Safety Manual..

2.3.2 Contractor shall comply with all Provincial Regulations and the Canada Labour Code.

2.4 Owner Furnished Equipment.

2.4.1 The contractor shall supply all materials, equipment, and parts required to perform the specified work unless otherwise stated.

Part 3: TECHNICAL DESCRIPTION:

3.1General

3.1.1 Contractor shall inform Chief Engineer Prior to starting work.

3.1.2 Contractor shall remove the sea suction valves listed below in section 3.2.

3.1.3 Contractor shall disassemble the valves and clean the 2 sea strainers in the 6 inch Pipe. All internal components of the valves are cleaned and inspected by the Chief Engineer and TCMS Inspector before refitting.

3.1.4 Contractor shall lap in all valve seats and install new valve stem packing and gaskets when assembling, and reinstall the valves using new flange gaskets and new bolts, nuts and washers.

3.1.5 The contractor shall report to the Chief Engineer any faults found with any valve which may require valve repair or replacement. Repairs or replacement are subject to ABS inspectors discretion and will be handled by 1379 action.

3.2 Location.

3.2.1

Sea Suction Valve List			
Description	Location	Size(inch)	Qty
Sea Chest Vent-Butterfly	E/R Port Frame 20-22	6	1
Sea Chest Outlet-Butterfly	E/R Port Frame 20-22	6	1
Sea Bay Inlet-Butterfly	E/R Port Frame 24-25	6	1
Generator Suction-SDNR	E/R Port Frame 24-25	1 ½	1
Main Engine Suction-SDNR	E/R Port Frame 24-25	3	1
Main Engine Suction-SDNR	E/R Port Frame 24-25	3	1
Sea Chest Vent-Butterfly	E/R Port Frame 20-22	2	1
Sea Chest Air-SDNR	E/R Port Frame 20-22	¾	1
Sea Chest Air-SDNR	E/R Port Frame20-22	¾	1
Sea Chest Outlet-Butterfly	E/R Port Frame 20-22	8	1
Fire Pump Inlet-Butterfly	E/R Port Frame 20-22	6	1
Sea Chest vent-Butterfly	E/R Stbd Frame 20-22	6	1
Sea chest Outlet-Butterfly	E/R Stbd Frame 20-22	6	1
Sea Bay Inlet-Butterfly	E/R Stbd Frame 20-22	6	1
Sanitary Pump Suction-SDNR	E/R Stbd Frame 24-25	1 ¼	1
Air Comp Suction-SDNR	E/R Stbd Frame 24-25	1	1
Stern Tube Suction-SDNR	E/R Stbd Frame 24-25	1 ¼	1
Bilge/Fire Pump Suction-Butterfly	E/R Stbd Frame 24-25	2 ½	1
Bilge/Ballast Pump Suction-Butterfly	E/R Stbd Frame 24-25	2 ½	1
Generator Suction-SDNR	E/R Stbd Frame 24-25	1 ½	1
Sea Chest Air-SDNR	E/R Stbd Frame 24-25	¾	1
Watermaker Suction-Butterfly	E/R Stbd Frame 24-25	2	1

3.3 Interferences

3.3.1 Contractor is responsible for the identification of interference items, their temporary removal, storage and refitting to vessel.

Part 4: PROOF OF PERFORMANCE:

4.1 Inspection

4.1.1 All work shall be completed to the satisfaction of the Chief Engineer and TCMS Inspector.

4.2 Testing

4.2.1. All Valves are to be checked for leaks when vessel is being launched.

4.3 Certification
N/A

Part 5: DELIVERABLES:

5.1 Drawings/Reports

5.1.1 Contractor shall supply Chief Engineer two type written copies of what work was carried out when the work is complete.

5.2 Spares: N/A

5.3 Training; N/A

5.4 Manuals; N/A