Part 1: SCOPE

1.1 The intent of this statement of work shall be to provide the CCGS Cygnus with a new Marine Sewage and Grey Water Collection / Treatment System complete with vacuum collection.

Part 2: STANDARDS

2.1 The supplied unit shall meet Transport Canada Marine Safety (TCMS) approval for marine sanitation devices as per "Vessel Pollution and Dangerous Chemical Regulations" re: Marine Sanitation Devices.

2.2 The supplied unit shall be approved for a minimum of 22 persons to a maximum of 36 persons.

2.3 The Marine Sanitation Device shall have an Effluent Discharge in accordance with Annex IV of MARPOL Resolution MEPC 159(55):

- **2.3.1** fecal coliform count is equal to or less than a geometric mean of 100/100 mL;
- **2.3.2** the total suspended solids content of effluent is equal to or less a geometric mean of 35 mg/L;
- **2.3.3** the 5-day biochemical oxygen demand (BOD) of effluent is equal to or less than a geometric mean of 25 mg/L;
- **2.3.4** the chemical oxygen demand (COD) of effluent is equal to or less than a geometric mean of 125 mg/L;
- **2.3.5** the pH of the effluent is between 6.0 and 8.5; and
- **2.3.6** the total residual chlorine content of the effluent is equal to or less than 0.5 mg/L.

Part 3: TECHNICAL DESCRIPTION

3.1 <u>Marine Sanitation Device</u>

3.1.1 The arrangement of the marine sanitation device shall consist of separate chambers for aeration, settling, and disinfection.

3.1.2 The marine sanitation device shall be designed for retrofitting on an existing vessel and allow for transport through existing openings in the ship.

a) Maximum component size – 655mm x 1220mm (26" x 48")

b) Maximum assembled footprint size – 2440mm x 1830mm x 1525mm high (96" x 72" x 60" high)

3.1.3 Tank internals to be coated with polyamide epoxy coating or equivalent where construction is of mild steel.

3.1.4 Electrical Supply: 1) 460V, 3ph, 60 Hz – max load 4.8 kW.
2) 460V, 3ph, 60 Hz – max load 4.8 kW.

3.1.5 Control panel to be 110V with IP55 enclosure, circuit protection, fuses, and main motor protection with circuit breakers, emergency stop and indicator lights and/or display showing system alarms, blower operation, effluent discharge pump operation, automated valve positions, etc.

3.1.6 The unit shall have a means of effluent disinfection and neutralization prior to discharge.

3.1.7 The unit shall be capable of discharging with an 18m head pressure.

3.2 **Vacuum Collection Unit**

3.2.1 The unit shall have a stainless steel ejector housing and centrifugal ejector pump.

3.2.2 The unit shall be capable of providing 15" Hg vacuum on the sanitary system.

3.2.3 Electrical Supply: 460V, 3ph, 60 Hz – max load 4.8 kW

3.2.4 Control Panel to be 110V with IP55 enclosure, circuit protection, fuses complete with vacuum indication, operating lights and/or display, and vacuum switch operation of pumping units.

Part 4: DELIVERABLES

4.1 The unit shall be supplied with TCMS or equivalent Class approval for operation as a Marine Sanitary Device.

4.2 The bids shall include delivery including all tariffs and duties FOB to Canadian Coast Guard Warehouse, 13 Akerley Blvd., Dartmouth, NS, B3B 1J6.

4.3 The Contractor shall supply installation instructions, including drawings and required piping requirements for both the Marine Sanitation Device and the Vacuum Collection Unit.

4.4 The Contractor shall supply 3 copies of the manufacturer's Operation and Maintenance manuals for the Marine Sanitation Device and Vacuum Collection Unit.

4.5 The Contractor shall include a list of all recommended spares for the Marine Sanitation Device and shall include these items on the total bid submission.

4.6 Bid to include supply of any chemicals necessary for operation for a six month period.

4.7 Bid to include indication of closest Factory Authorized Service Representative and service facility for the devices as outlined above.