CROWLEY
People Who Know

Consolidated Additional Observations

This questionnaire combines all standard Additional Observation Questions in one condensed questionnaire.
1. SOx Emissions Controls
2. Ballast Water Project
3. Combustion Source Project
4. Food Waste Project
5. Sea Intake Project

Findings can be reported in the spaces provided for each item; feel free to use additional space for notes and information. Sketches, diagrams, photos of handwritten notes, or copies of schematics are welcome.

Several questions are checks on previous Additional Observations, check these against the previous observations. If a ship is required to have an additional observation project on a section below, skip the section below. For example if a combustion source project is required leave the section in this project blank.

A: General Information

Report Start Date:	May 31, 2018
Ocean Ranger starting report:	mark.farley
Ship Name:	Princess Ruby
Ship Code:	PRU
Is this a revision of a previous report (Y/N)?	No

1: SOx Emissions Controls

1.1 Describe the SECA compliance plan.	DG number 2 & DG number three have EGCS "open" loop system installed. These two DGs are currently operating on RMG 380 with sulphur content of 1.46% DG 1,4,5, & 6 operate on LSMGO only, currently operating on LSMGO with sulphur content of 0.00067% Boilers (two onboard) and incinerator (one onboard) operate on LSMGO only, currently operating on LSMGO with sulphur content of 0.00067%.
1.1 Completed by:	Mark Farley (mark.farley)
1.2 How does the vessel control SOX emissions in the ECA? Provide description. If the vessel used low sulfur fuels in AK describe the fuel switches and which combustion sources are operated on low fuel sulfur, and when.	Two EcoSpray "open loop" units on DG number two & DG number three while underway and during maneuvering. The remaining DGs operated only on LSMGO as do the two boilers and one incinerator.
1.2 Completed by:	Mark Farley (mark.farley)
1.3 Is the vessel operating or installing an exhaust gas scrubber system in the 2018 Alaska Cruise Season? If yes, complete section 1A. Otherwise skip to section 2.	Yes

1.a: SOx Emissions Controls

1.4 Which combustion sources are coupled with the EGCS system?	DG number 2 & DG number 3
1.4 Completed by:	Mark Farley (mark.farley)
1.5 EGCS units make, number, model, locations, fuel limitations (sulfur %).	Tower Unit Model: ECO-DSOx Manufacture: ECO SPRAY
1.6 Scrubber type (closed, reagent cycle, combination or hybrid open-loop effluent to seawater)?	Wet open loop type.
1.6 Completed by:	Mark Farley (mark.farley)

1.7 System status (operational, commissioning, under construction)?	Currently DG number two and DG number three are operated underway and during maneuvering.
1.7 Completed by:	Mark Farley (mark.farley)
1.8 Provide a process description and waste flow/chemicals used (Gaseous emissions, waste effluent, ash, spent reagents, etc.).	Only waste is "in port" filters, which are currently 40 micron. Environmental Officer stated that the micron filters might be changed to 100 micron. Filters are stored in drums to be offloaded in Victoria,B.C.
1.8 Completed by:	Mark Farley (mark.farley)
1.9 What scrubber process parameters are monitored (flow capacities, pH, other)?	Turbidity, PAH, pH, SO2/CO2, flow rate of seawater, and pressure.
1.9 Completed by:	Mark Farley (mark.farley)
1.10 For seawater intake/effluent, please provide port locations (PS/STB Frame number, etc.). Additional notes can include distance below waterline and angles.	Stbd side frame 56-60 compartment 5 for seawater sea chest for both DG number two and three.
1.10 Completed by:	Mark Farley (mark.farley)

2: Ballast Water

2.1 Check the previous Additional Observation Reports (section 1.1) list of tanks used for Ballast Water storage. Including volumes and locations. List any changes.	Same as information from 2017 report, no changes.
2.1 Completed by:	Jonathan Driggers (jonathan.driggers)
2.2 Are ballast water tanks used for wastewater storage?	Yes
2.2 Completed by:	Jonathan Driggers (jonathan.driggers)
2.3 Ballast Water system: brief description of the combined piping system if tanks used for both.	Common seawater pipe is run to all tanks. Tanks can be filled/emptied using Bilge/Ballast pumps and tank isolation valves. Pumps and valves are remotely operated using vessel's IMACS system. For filling of tanks, it is also possible to gravity fill, without using the Bilge/Ballast pumps. If it is necessary to use Ballast Tanks for holding of WW, a seperate line is in place, as well as seperate WW pumps and isolating valves. Programming safeguards are in place so that Ballast Water isolation valves and WW isolation valves CAN NOT be both opened at the same time, to aid in preventing contamination.
2.3 Completed by:	Jonathan Driggers (jonathan.driggers)
2.4 Ballast Water treatment installation? If yes, describe operation/system specifics.	Yes; Hyde Guardian Model HG250, with a flow rate of 250 cubic meters/hour, and a design pressure of 10 bar. Water being pumped into ballast tanks is directed through a filter system that removes sediment and larger organisms. From the filter train, the water passes through a U/V disinfection unit, that deactivates or damages the DNA of organisms, killing them or making them unable to reproduce. When deballasting, water passes through the U/V unit again, before being discharged overboard.
2.4 Completed by:	Jonathan Driggers (jonathan.driggers)
2.5 Ballast Water operations in AK waters (overboard intake/discharge, etc.)? Include the last date of ballast water discharges. Typically in the ballast water logs.	No Ballast Ops done in AK waters.
2.5 Completed by:	Jonathan Driggers (jonathan.driggers)

3: Combustion Sources

3.1 Are there any changes from the previous Additional Observation projects (Section 2.1) on the propulsion system question on brief description of propulsion and power systems used on board (Diesel direct/reduction gears/PTO's DE, FP, CPP Azipod, etc.)?	No changes from 2017 report and information.
3.1 Completed by:	Jonathan Driggers (jonathan.driggers)
3.2 Are there any changes from the previous Additional Observation projects (Section 1.1) on the list of the combustion equipment used for Power/Propulsion (make/model/output)?	No changes from 2017 report.
3.2 Completed by:	Jonathan Driggers (jonathan.driggers)
3.3 Are there any changes from the previous Additional Observation projects (section 3) on the incinerators make, model, fuel used, capacity?	No changes from 2017 report.
3.3 Completed by:	Jonathan Driggers (jonathan.driggers)
3.4 Average Hotel power (kW) in port and underway?	In port 8-10 Megawatts Underway. 18-19 Megawatts
3.4 Completed by:	Jonathan Driggers (jonathan.driggers)
3.5 Average fuel consumption in port and underway?	Average daily consumption HFO: The 12.6 mW generators (#2,3,5 &6) consume 43.2 MT per 24hrs; the 8.6 mW generators (#1&4) consume 28.8 MT per 24hrs. min load 65% , average 79 %. Average daily consumption MGO: The 12.6 mW generators (#2,3,5 &6) consume 48.0 MT per 24hrs; the 8.6 mW generators (#1&4) consume 33.6 MT per 24hrs.
3.5 Completed by:	Jonathan Driggers (jonathan.driggers)

4: Food Waste Garbage Handling

4.1 How is food waste handled and disposed of?	Food waste is either pulped, dewatered, and stored in tanks (two onboard with capacity of 4 m3 each) to be discharged >12 nm underway. Food waste that can not be pulped is put into 1 m3 totes to be offloaded in Victoria,B.C. for composting.
4.1 Completed by:	Mark Farley (mark.farley)
4.2 Average food waste production per day (kgs/day)?	4 m3 per day
4.2 Completed by:	Mark Farley (mark.farley)
4.3 Is the food waste de-watered? If yes, provide dewatering volumes and handling information.	Yes food waste is dewatered and water is stored in WW tank to be discharged > 12 nm.
4.3 Completed by:	Mark Farley (mark.farley)
4.4 How are glass bottles, broken crockery, and ceramics handled?	Bottles are crushed with glass crusher in garbage sorting area, then stored until offloaded in Victoria,B.C. Broken crockery and ceramics are stored in Gaylord boxes until offloaded in Victoria,B.C.
4.4 Completed by:	Mark Farley (mark.farley)
4.5 How is food waste monitored and/or recorded?	Food waste is monitored by volume in dewatered pulped food tanks by automation. Other food waste is monitored in food totes (each is 1 m3). Entries made in NAPA electronic log book under garbage record book for pulped dewatered food waste to sea and for offloading of food totes in Victoria,B.C.
4.5 Completed by:	Mark Farley (mark.farley)

5: Sea Water Intakes

5.1 List all of the seawater intakes (chests); include the locations, frame, side (PS/SB) or compartment.	Total of 7 sea chests onboard, including 1 for Scrubber System: *Port side, frames 64-68 *Starboard side, frames 64-68 *Port side, frames 108-112 *Starboard side, frames 108-112 *Port side, frames 196-200 *Starboard side, frames 196-200 *Starboard side, frames 56-60 (for Scrubber System)
5.1 Completed by:	Jonathan Driggers (jonathan.driggers)
5.2 List filtration systems for each intake. Describe how filter systems are maintained. What is the frequency of cleaning? Is this performed in Alaska?	Basket strainers, pulled and cleaned monthly or as needed. Baskets pulled and cleaned in AK waters.
5.2 Completed by:	Jonathan Driggers (jonathan.driggers)
5.3 How is debris and mud from filtration/strainers handled?	Debris and mud offloaded outside AK waters.
5.3 Completed by:	Jonathan Driggers (jonathan.driggers)
5.4 Marine Growth Protection Systems in the sea intakes. Description of the control systems and information on checmicals if used.	Marelco ICCP (Impressed Current Cathodic Protection) System.
5.4 Completed by:	Jonathan Driggers (jonathan.driggers)
5.5 Hull cleaning in place in Alaska 2018?	Vessel has no plans to have hull cleaned in AK.
5.5 Completed by:	Jonathan Driggers (jonathan.driggers)

6: General

6.1 Is vessel crew cooperative on this project?	Yes
6.1 Completed by:	Jonathan Driggers (jonathan.driggers)
6.2 Do you feel the vessel has a clear understanding of compliance requirements?	Yes
6.2 Completed by:	Jonathan Driggers (jonathan.driggers)
6.3 Are there other remarks/ comments the OR wants to share?	No
6.2 Completed by:	jonathan.driggers

Z: Signature & Submit

Ocean Rangers contributing to this report:	Mark Farley (mark.farley) Jonathan Driggers (jonathan.driggers)
Ocean Ranger Signature: