



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 28, 2018
Ocean Ranger starting report:	steven.chouinard
Ship Name:	Princess Star
Ship Code:	PST
Is this a revision of a previous report (Y/N)?	No

1: SOx Emissions Controls

1.1 Describe the SECA compliance plan.

IMO designation of waters off of North American coasts as an area in which stringent international emissions standards will apply for ships. MARPOL Annex VI, provides new tiers of NOx and fuel sulfur controls. The ship uses HFO with EGCS underway, changes over to MGO at arrival and departure notifications. For the non-seafaring reader, arrival and departure times actually happen during maneuvering. The ship is currently involved with "in port" filtration. Intentions are to STAY on HFO in ports.

1.1 Completed by:

Steven Chouinard (steven.chouinard)

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.

The ship uses HFO with EGCS underway, changes over to MGO at arrival and departure notifications. For the non-seafaring reader, arrival and departure times actually happen during maneuvering. DGs #1,2,5 & 6 are equipped with ECOSPRAY EGCS's. DG 3 & 4 use MGO. Other combustion sources like boilers operated on MGO. Special areas like GB, CFJ, & HUB the ship reverts to MGO in all combustion sources.

1.2 Completed by:

Steven Chouinard (steven.chouinard)

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?

Ecospray unit affiliates: DG1, DG2, DG5 & DG6 / Sulzer 16ZAV40 Diesel Generators with IPCO Water Fuel Emulsion (WFE) Model ECO-DeSOx EGCS designed for 85% MCR, when using fuel with sulphur of 3.5% or less.

1.4 Completed by:

Steven Chouinard (steven.chouinard)

1.5 EGCS units make, number, model, locations, fuel limitations (sulfur %).

Ecospray, DG1, DG2, DG5 & DG6, are designed to meet IMO requirements using HFO @ up to 3.5% sulfur. DG 1 & 2 Fwd., DG room, Deck 1, DG 5 & 6 Aft. DG room Deck 1.

1.5 Completed by:

Steven Chouinard (steven.chouinard)

1.6 Scrubber type (closed, reagent cycle, combination or hybrid open-loop effluent to seawater)?

Operated underway in Open Loop Sea Water Exhaust Gas Cleaning System.

1.6 Completed by:

Steven Chouinard (steven.chouinard)

1.7 System status (operational, commissioning, under construction)?

Operational - Used underway in AK. "in port filtration installations ongoing." Will use HFO in ports but still revert to MGO for Main Propulsion purposes in Special Areas like GB, CFJ, & HUB.

1.7 Completed by:

Steven Chouinard (steven.chouinard)

1.8 Provide a process description and waste flow/chemicals used (Gaseous emissions, waste effluent, ash, spent reagents, etc.).

Starting from the seachest inlet, seawater is filtered before going to nozzles that spray into the tower. The liquid spray mixes with some pollution. Worthy of mentioning there is an element of steam production that is created through thermal transformation in the funnel. There's a demister that helps condense the steam at the top of the tower. Weighted down acidic soot fall out is directed into drainage to the systems mixing chamber. Dilution caused with the additional seawater. If the effluent passes the muster of monitoring parameters it is discharged overboard. Sulfuric acid is a treated byproduct but it was discussed there is no chemical injection processes. Ash is apparently secreted as the use of "in port filters" are desired to control the optics while ships are discharging open loop stationary.

1.8 Completed by:

Steven Chouinard (steven.chouinard)

1.9 What scrubber process parameters are monitored (flow capacities, pH, other)?

Control feature monitoring indicates pH, Turbidity, PAH, & Flow. Wash water & effluent Inlet pressures + flow rates. Exhaust gas pressure, temperatures before & after EGCS (for comparison monitoring purposes) load on the Diesel Generator.

1.9 Completed by:

Steven Chouinard (steven.chouinard)

1.10 For seawater intake/effluent, please provide port locations (PS/STB Frame number, etc.). Additional notes can include distance below waterline and angles.

Combustion sources - DG1, DG2, DG5 & DG6
sea water suction = 4605mm above keel,
frame #56-60 pipe diameter DN700, parallel
to keel.
DG1 - Overboard centerline = 6310mm
above keel, frame #48-52, pipe diameter
DN400, Angle - parallel to keel.
DG2 - Overboard centerline = 6970mm
above keel, frame #48-52, pipe diameter
DN400, Angle - parallel to keel.
DG5 - Overboard centerline = 6310mm
above keel, frame #44-48, pipe diameter
DN400, Angle- parallel to keel.
DG6 - Overboard centerline = 6970mm
above keel, frame #44-48, pipe diameter
DN400, Angle- parallel to keel.
The pipes are 90 degrees to hull in and out.
Intakes are located on Deck 1 and wash
water discharges are on Deck 2 just
underneath of the incinerator.

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.

No apparent change.

2.1 Completed by:

Steven Chouinard (steven.chouinard)

2.2 Are ballast water tanks used for wastewater storage?

Yes

2.2 Completed by:

Steven Chouinard (steven.chouinard)

2.3 Ballast Water system: brief description of the combined piping system if tanks used for both.

Ballast water tank lines branch off from a main line system.

2.3 Completed by:

Steven Chouinard (steven.chouinard)

2.4 Ballast Water treatment installation? If yes, describe operation/system specifics.

Manufacturer: Hyde Guardian, product name - UG 11042PCR1, model #HG250. Hyde Guardian is operated and sampled twice per year.
Specific purpose is to prevent the spread of water borne invasive species. Ballast water is treated with the BWTS as it enters and leaves the ships ballasting system. First seawater is passed through a filtration system that has a powerful disinfecting unit. The filter train removes sediment and large organisms. U/V lighting deactivates or damages the DNA of organisms, either killing them or making them sterile. De-ballasted Water undergoes U/V treatment before discharged.

2.4 Completed by:

Steven Chouinard (steven.chouinard)

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 water has been reported in AK so far in 2018 during the AK cruising season. Appears some ballast water was moved for tank flushing on 042818.

2.5 Completed by:

Steven Chouinard (steven.chouinard)

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 major upgrades have been made to the ships propulsion system for over a year.

3.1 Completed by:

Steven Chouinard (steven.chouinard)

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.

3.2 Completed by:

Steven Chouinard (steven.chouinard)

3.3 Are there any changes from the previous Additional Observation projects (section 3) on the incinerators make, model, fuel used, capacity?

No changes.

3.3 Completed by:

Steven Chouinard (steven.chouinard)

3.4 Average Hotel power (kW) in port and underway?

In port 6.5 MW / underway 8.5 MW.

3.4 Completed by:

Steven Chouinard (steven.chouinard)

3.5 Average fuel consumption in port and underway?

Stationary: 2.4m³ / hr and Underway 6.6m³ / hr.

3.5 Completed by:

Steven Chouinard (steven.chouinard)

4: Food Waste Garbage Handling

4.1 How is food waste handled and disposed of?

Pulper system directs food waste to storage tank, then is dumped outside >12 nm.

4.1 Completed by:	Tougher items like fruit skins, shells, and bones are manifested for offloading in VAN. Steven Chouinard (steven.chouinard)
4.2 Average food waste production per day (kgs/day)?	3m3 / day.
4.2 Completed by:	Steven Chouinard (steven.chouinard)
4.3 Is the food waste de-watered? If yes, provide dewatering volumes and handling information.	Yes, pulper water is classed as galley GW and discharged @>4nm. Daily production in the neighborhood of 3-4m3 / day.
4.3 Completed by:	Steven Chouinard (steven.chouinard)
4.4 How are glass bottles, broken crockery, and ceramics handled?	Crushed and put into thick plastic bags with suitable tote for offloading.
4.4 Completed by:	Steven Chouinard (steven.chouinard)
4.5 How is food waste monitored and/or recorded?	From the computer panel monitors in the Incinerator room. Volume is recorded in NAPA GRB.
4.5 Completed by:	Steven Chouinard (steven.chouinard)

5: Sea Water Intakes

5.1 List all of the seawater intakes (chests); include the locations, frame, side (PS/SB) or compartment.	Three sea chests, FORE, MID & AFT, location ER compartment Deck 1 P & Stbd with crossover piping. Frames descending from stern to bow. Sea chests: Fr. #64-68, 108-112, 196-200.
5.1 Completed by:	Steven Chouinard (steven.chouinard)
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?	Regular basket filters changed over and cleaned once per month.
5.2 Completed by:	Steven Chouinard (steven.chouinard)
5.3 How is debris and mud from filtration/strainers handled?	The sediments / marine waste is collected and sealed and stored in steel drums for offloading to a reputable garbage contractor in VAN.
5.3 Completed by:	Steven Chouinard (steven.chouinard)
5.4 Marine Growth Protection Systems in the sea intakes. Description of the control systems and information on chemicals if used.	Ultrasound System. Anti fouling - In ultrasonic systems, ultrasonic waves inhibit marine growth. Ultrasonic waves sent over pipe surfaces prevent attachments of sea organisms with no toxic substances.
5.4 Completed by:	Steven Chouinard (steven.chouinard)
5.5 Hull cleaning in place in Alaska 2018?	Hull was cleaned in December, 2017, during dry dock. FW rinsing occurs in AK.
5.5 Completed by:	Steven Chouinard (steven.chouinard)

6: General

6.1 Is vessel crew cooperative on this project?	Yes
6.1 Completed by:	Steven Chouinard (steven.chouinard)
6.2 Do you feel the vessel has a clear understanding of compliance requirements?	Yes
6.2 Completed by:	Steven Chouinard (steven.chouinard)
6.2 Completed by:	steven.chouinard

Z: Signature & Submit

Ocean Rangers contributing to this report:	Steven Chouinard (steven.chouinard)
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Princess Star Consolidated Additional
Observations
Ocean Ranger Signature:

2018-06-07

Reference # - CAO-20180607-
1880301750

A handwritten signature in black ink, consisting of a stylized 'S' followed by a 'U'.