



## 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:	Jun 3, 2018
Ocean Ranger starting report:	chris.schneider
Ship Name:	Royal Caribbean Explorer
Ship Code:	REX
Is this a revision of a previous report (Y/N)?	No

### 1: SOx Emissions Controls

1.1 Describe the SECA compliance plan.	MGO is planned for all combustion. Wartsilla hybrid scrubber is currently being installed, which would eventually permit REX to burn HFO.
1.1 Completed by:	Chris Schneider (chris.schneider)
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.	No

#### 1.a: SOx Emissions Controls

### 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.	Forward tanks BWT 1-1155.6 m3, 2-276.8 m3, 3-457.7m3, double bottom tanks BWT 4-271.9m3, 5P-379.5m3, 5C-408.6m3, 5P-379.5m3, 6P-231m3, 6S-245.8m3.
2.1 Completed by:	Chris Schneider (chris.schneider)
2.2 Are ballast water tanks used for wastewater storage?	All ballast tanks can be used for waste water.
2.2 Completed by:	Chris Schneider (chris.schneider)
2.3 Ballast Water system: brief description of the combined piping system if tanks used for both.	Ballast tanks are used for WW, REX comes into AK waters with empty tanks as the WW that was held in these tanks is discharged @ > 13nm from land. Tanks are flushed outside 13nm, and empty when the REX enters US waters.
2.3 Completed by:	Chris Schneider (chris.schneider)
2.4 Ballast Water treatment installation? If yes, describe operation/system specifics.	System has not been commissioned so is not in use. See Table 3 for BWTS information.
2.4 Completed by:	Chris Schneider (chris.schneider)
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 ballasting operations are planned in AK waters.

3.5 Completed by:

Chris Schneider (chris.schneider)

### 3: Combustion Sources

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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.

3.1 Completed by:

Chris Schneider (chris.schneider)

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:

Chris Schneider (chris.schneider)

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:

Chris Schneider (chris.schneider)

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

This is not tracked, but while we were at the dock in Skagway the load on DG 4 (the only engine running) was 6 Mega Watt, with 1500 liter/hour the flow rate of MGO to the engine according to the flow meter.

3.4 Completed by:

Chris Schneider (chris.schneider)

### 4: Food Waste Garbage Handling

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4.1 How is food waste handled and disposed of?

Bones, shells, pineapples and banana peels are sorted and removed if possible from the food waste stream grinders and screen pressing. These wastes are incinerated or they may cause complications to the equipment.

4.1 Completed by:

Chris Schneider (chris.schneider)

4.2 Average food waste production per day (kgs/day)?

1.91m3/day was the average food waste produced from May through August of 2017. 1.75m3/day was the average in May of 2018.

4.2 Completed by:

Chris Schneider (chris.schneider)

4.3 Is the food waste de-watered? If yes, provide dewatering volumes and handling information.

Food waste is de-watered, but the volumes are not tracked.

4.3 Completed by:

Chris Schneider (chris.schneider)

4.4 How are glass bottles, broken crockery, and ceramics handled?

All of these are recycled.

4.4 Completed by:

Chris Schneider (chris.schneider)

4.5 How is food waste monitored and/or recorded?

Environmental Operations Log and Garbage Record Book.

4.5 Completed by:

Chris Schneider (chris.schneider)

### 5: Sea Water Intakes

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5.1 List all of the seawater intakes (chests); include the locations, frame, side (PS/SB) or compartment.

2 sea chests are in the Main Engine Room 1 (port and starboard), and 2 are in Generator Room 1 (port and starboard).

5.1 Completed by:

Chris Schneider (chris.schneider)

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?

Monthly work order to manually clean the strainer, or more frequently if needed.

5.2 Completed by:

Chris Schneider (chris.schneider)

5.3 How is debris and mud from filtration/strainers handled?

It is incinerated.

5.3 Completed by:

Chris Schneider (chris.schneider)

5.4 Marine Growth Protection Systems in the sea intakes. Description of the control systems and information on chemicals if used.

Cathelco ICCp is used.

5.4 Completed by:

Chris Schneider (chris.schneider)

5.5 Hull cleaning in place in Alaska 2018?

Plans do not include performing hull cleaning.

5.5 Completed by:

Chris Schneider (chris.schneider)

## **6: General**

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6.1 Is vessel crew cooperative on this project?

Crew was helpful gathering information, especially the EO and the Engineering Officers.

6.1 Completed by:

Chris Schneider (chris.schneider)

6.2 Do you feel the vessel has a clear understanding of compliance requirements?

Yes they seem to be a well trained crew.

6.2 Completed by:

Chris Schneider (chris.schneider)

## **Z: Signature & Submit**

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Ocean Rangers contributing to this report:

Chris Schneider (chris.schneider)

Ocean Ranger Signature:

