



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:	richard.ekstrom
Ship Name:	Holland Noordam
Ship Code:	HNO
Is this a revision of a previous report (Y/N)?	No

1: SOx Emissions Controls

1.1 Describe the SECA compliance plan.

The ship has three diesel engines equipped with exhaust gas cleaning systems which are D.G. 1, 2 and 4. Engines 2 and 4 are equipped with in port filters and are used while in port. Engines 3 and 5 are dedicated MGO burners. The scrubbers are fully commissioned on the three engines which, when operationing within limits, comply with all SECA regulations.

1.1 Completed by:

Richard Ekstrom (richard.ekstrom)

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.

SOX emissions are controlled by the engines operating on scrubbers. A compliance computer records and can control necessary limits. To make a switch to low sulfur fuel (Glacier Bay) the bridge will notify the ECR well in advance; at the three hour mark and once again at the two hour mark. At the appropriate time fuel switch over will commence.

1.2 Completed by:

Richard Ekstrom (richard.ekstrom)

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?

Diesel Generator's 1, 2 and 4 have exhaust gas cleaning systems installed and operating.

1.4 Completed by:

Richard Ekstrom (richard.ekstrom)

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

The three EGCS units are: EcoSpray Water Flue Gas System Technologies. Lloyds Approval MTES WP 22064570 The DeSox towers are located in the DG 1, 2 and 4 funnels. They are designed to operate with fuel not exceeding 3.5% sulfur content.

1.5 Completed by:

Richard Ekstrom (richard.ekstrom)

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

The Noordam is operating open loop exhaust gas cleaning systems.

1.6 Completed by:

Richard Ekstrom (richard.ekstrom)

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

The system is operational.

1.7 Completed by:

Richard Ekstrom (richard.ekstrom)

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

No ash or sludge is produced by this system. The back wash filters are changed according to a set differential. The filters are disposable and are drained and offloaded as non hazardous waste. The drained filter water is offloaded as well.

1.8 Completed by:

Richard Ekstrom (richard.ekstrom)

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

SO₂/CO₂ ratio is measured and is not to exceed 4.3. pH is measured and is required to be 6 or more (EPA regulations now in effect allow for pH of 5.7 for a period of 10% of a given day). PAH is measured and is required to be <63 PPM. Turbidity is measured and is required to be <+25.0 FNU. Sea water intake temperature and overboard temperature are also recorded.

1.9 Completed by:

Richard Ekstrom (richard.ekstrom)

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

Sea chests are located in the aft engine room, P/S. The aft sewage room, P/S. Plus one sea intake in the incinerator room for the EGCS.

1.10 Completed by:

Richard Ekstrom (richard.ekstrom)

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.

The ballast, permeate and gray water tanks are as listed:

Forepeak: ballast water, capacity 496m³
2P and 2S: permeate, capacity 299m³ each
1 C: gray water, capacity 287 m³
3P and 3S: gray water, capacity 164m³ each
4C: permeate, capacity 170m³
5P: biomass, capacity 264m³
5C: Rochem gray water, capacity 175m³
5S: gray water, capacity 264m³
6C: gray water, capacity 200m³
7C: permeate, capacity 231m³
8p and 8 S: gray water, capacity 253m³ each
8C: gray water, capacity 488 m³
6C: emergency ballast capacity 335m³
5C: emergency ballast capacity 237m³
4C: emergency ballast capacity 228m³
3C: emergency ballast capacity 249m³

2.1 Completed by:

Richard Ekstrom (richard.ekstrom)

2.2 Are ballast water tanks used for wastewater storage?

Yes. The forepeak in Alaska has ballast. The rest of the tanks contain waste water. Trimming the ship, per the navigation officer's orders, is done by moving gray water, potable water or fuel to different tanks

2.2 Completed by:

Richard Ekstrom (richard.ekstrom)

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

There is one main line in the ballast system. However, there are separate pumps used for the ballast and the waste water system.

2.3 Completed by:

Richard Ekstrom (richard.ekstrom)

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

There is no ballast water treatment system onboard the Noordam

2.4 Completed by:

Richard Ekstrom (richard.ekstrom)

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.

The ship has no plans to ballast water in Alaska. The last ballasting done was May 28 when the ship was 50 miles outside Alaska waters and pumped out the fore peak at position: 59 degrees 16.2 minutes N and 146 degrees 58.9 minutes W. The depth was more than 200 meters and 350 tons of ballast were pumped back into the forepeak.

2.5 Completed by:

Richard Ekstrom (richard.ekstrom)

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.)?

The Noordam has two electrically driven azipods rated at 17.6 MW with 23,600 HP. The azipods have fixed blade propellers and 'pull' the ship through the water. The azipods rotate through a 360 degree motion, thus eliminating the need for stern thrusters

3.1 Completed by:

Richard Ekstrom (richard.ekstrom)

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)?

The Noordam has 5 diesel engines and one gas turbine, same as last year

Diesel Generators 1, 3 and 4 manufactured by Wartsila, each rated at 11 MW/15,000 hp and each with 16 cylinders

Diesel Generators 2 and 5 have 12 cylinders, made by Wartsila, rated at 8 MW each with 11,000 HP.

On gas turbine: GE LM-250 rated at 20 MW/29,500 HP

3.2 Completed by:

Richard Ekstrom (richard.ekstrom)

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

The incinerators are the same and are: Scanship Environmental SE which use MGO

3.3 Completed by:

Richard Ekstrom (richard.ekstrom)

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

Average of 6 MW in port and underway

3.4 Completed by:

Richard Ekstrom (richard.ekstrom)

3.5 Average fuel consumption in port and underway?

For this one week trip Seward to Vancouver the ship used 10,500 gallons of fuel which is an average of 1,500 gallons per day

3.5 Completed by:

Richard Ekstrom (richard.ekstrom)

4: Food Waste Garbage Handling

4.1 How is food waste handled and disposed of?

Food waste is separated at source. In the galleys yellow pails are used for separated food waste, which is then delivered to the garbage room. On a stainless steel table and sink food waste can be separated once again to separate out any waste that shouldn't be fed to the pulper. Food will be ground through the pulper, water will be pressed out

4.1 Completed by:

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

4.2 Completed by:

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

4.3 Completed by:

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

4.4 Completed by:

4.5 How is food waste monitored and/or recorded?

4.5 Completed by:

and the product will be sent to a storage silo where it will be stored until the ship is outside Alaskan waters and in an area where it can be discharged.

Richard Ekstrom (richard.ekstrom)

For the month of April calculated food waste was approximately 30m3, or an average of 1 m3/day

Richard Ekstrom (richard.ekstrom)

Yes, the food waste is dewatered. No record is kept of the volumes of water pressed out. That water is discharged to a gray water tank and pumped overboard in a permitted area.

Richard Ekstrom (richard.ekstrom)

Glass bottles are crushed and recycled. Broken crockery and ceramics are stored in large cardboard boxes to be offloaded as garbage.

Richard Ekstrom (richard.ekstrom)

On a screen in the ECR the watch engineer can see the volume of ground food waste in the silo. After discharge he will note the difference in the silo from the beginning figure and have the volume discharged. The quantities are logged in the NAPA garbage book.

Richard Ekstrom (richard.ekstrom)

5: Sea Water Intakes

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

Sea chests are located in the aft engine room, P/S. The aft sewage room, P/S. Plus one sea intake in the incinerator room for the EGCS.

5.1 Completed by:

Richard Ekstrom (richard.ekstrom)

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?

Cleaning is done monthly, or more often should the need arise. Strainer debris is put in barrels and landed ashore. Ship will clean the strainers in Alaska as per the schedule.

5.2 Completed by:

Richard Ekstrom (richard.ekstrom)

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

According to the 1st A/E the debris is put in barrels and landed ashore.

5.3 Completed by:

Richard Ekstrom (richard.ekstrom)

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

Sea water intakes are protected by a Cathelco system, employing a set of cathodes and anodes which puts a small amount of current in the water to inhibit or neutralize marine growth. The settings are at minimum, however a sacrificial anode will waste away and put a small deposit of copper in the sea. No chemicals are consumed.

5.4 Completed by:

Richard Ekstrom (richard.ekstrom)

5.5 Hull cleaning in place in Alaska 2018?

There is no hull cleaning currently planned in Alaska this season

5.5 Completed by:

Richard Ekstrom (richard.ekstrom)

6: General

6.1 Is vessel crew cooperative on this project?

Yes, EO would arrange meetings readily with knowledgeable people

6.1 Completed by:

Richard Ekstrom (richard.ekstrom)

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

Yes. As far as EGCS parameters the ship has a computer program in place which is connected in real time with the home office.

6.2 Completed by:

Richard Ekstrom (richard.ekstrom)

6.3 Are there other remarks/ comments the OR wants to share?

The water tests performed at the scrubber discharge seem like a good idea, especially if it can be determined if the discharge/sheen is harmful or not

6.2 Completed by:

richard.ekstrom

Z: Signature & Submit

Ocean Rangers contributing to this report:

Richard Ekstrom (richard.ekstrom)

Ocean Ranger Signature:

