



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 20, 2018
Ocean Ranger starting report:	robert.layko
Ship Name:	Holland Westerdam
Ship Code:	HWE
Is this a revision of a previous report (Y/N)?	No

1: SOx Emissions Controls

1.1 Describe the SECA compliance plan.

Ship has 4 Diesel engines connected with Scrubber systems. #2 and #4 have a discharge filter being used while ship is in port. #1 and #5 have Scrubbers installed but no in port filter fitted. #3 DG does not have a scrubber system installed. It is set up for MGO while in Alaska. There is also a Gas Turbine that only uses low sulfur MGO that can be used if needed.

1.1 Completed by:

Robert Layko (robert.layko)

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.

Since I have been on board (05/15/18) ship has been running their Scrubber system with HFO being used. They switched over to low sulfur MGO before entering Glacier Bay National Park. #2 DG and #4 have been used while in port. It has a wash water discharge filter in use for this. DG#3 can also be used on MGO (no Scrubber installed on this generator)

1.2 Completed by:

Robert Layko (robert.layko)

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?

4 DGs have Scrubber systems installed. #2 and #4 are being used while ship is in port. These engines have a extra Wash Water filter being used. #1 and #5 are being used while ship is under way.

1.4 Completed by:

Robert Layko (robert.layko)

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

Model: ECO-DeSOx
DeSOx Towers are fitted for Units #1 and 2

1.5 Completed by:

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

1.6 Completed by:

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

1.7 Completed by:

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

1.8 Completed by:

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

1.9 Completed by:

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

1.10 Completed by:

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.

in the Aft Stack. Units #4 and #5 are in the fwd stack.

All related monitoring equipment, Wash water pumps, Sea water pumps, sea water strainers, are on the Stbd side lower incinerator room. (For Scrubbers #1, #2, and #4). Suction and discharge for # 5 is on the port side engine spaces Evaporator room.

Sock filters are located in garbage handling room.

Fuel limitations are for fuels not over 2% sulfur content.

Robert Layko (robert.layko)

Open Loop Scrubber systems used.

Robert Layko (robert.layko)

Operational

Robert Layko (robert.layko)

On DG #2 and DG#4 there is an In Port filter being used. (Located in stack area) the spent WW is filtered through this. This filter has a back flush system used to prevent filter from plugging up. It is a mesh type strainer (80 microns) which is cleaned once a month (more often if needed) the carbon/ soot collected here is being bagged up and offloaded as nonHazardous waste.

There are also 2 "Sock" type filters used for all DGs with Scrubbers installed. (One in use and one in Standby) These are located in the garbage handling area. When the back pressure gets to high they automatically switch over and then are changed out. These to are bagged/boxed up for off load as non Hazardous waste.

Robert Layko (robert.layko)

Flow rate, pH, pAH, tribity, SO2-CO2 Ratios, temperatures, SW Pressure and exhaust gas pressure.

Robert Layko (robert.layko)

DG, #1, #2, #4, are between frames 86 to 94 Stbd side. (Discharge WW)

DG, #5 is at frame 130 on the port side. (Discharge WW)

Robert Layko (robert.layko)

List of tanks used for ballast water.

WB FP (292m3 Fresh Water)

WB 1C BWE 15th April 2018 Pacific Water 359m3

WB 2P BWE 15th April 2018 Pacific Water 351 m3

WB 2S BWE 15th April 2018 Pacific Water 351m3

WB 8P BWE 16th April 2018 Pacific Water 298m3

WB 8S BWE 16th April 2018 Pacific Water 298m3

EM WB 3C Emergency Water Ballast. (Pressed with fresh water) 244m3

EM WB 4C Emergency Water Ballast 212m3

2.1 Completed by:

EM WB 5C Emergency Water Ballast 244m3
EM WB 6C Emergency Water Ballast 249m3
Robert Layko (robert.layko)

2.2 Are ballast water tanks used for wastewater storage?

Yes some Ballast tanks are being used for
Waste water.

WB 3P Grey Water 205m3
WB 3S Grey Water 205m3
WB 4C Grey Water 212m3
WB 5P Grey Water 330m3
WB 5C Untreated Black Water 218m3
WB 5S TSG 330m3
WB 6C Grey Water 249m3
WB 7C Permeate 289m3
WB 8C Grey Water 609m3
Robert Layko (robert.layko)

2.2 Completed by:

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

Ballast water is managed by performing
ballast water exchange in accordance with
IMO resolution MEPC.124(53) Guidelines for
Ballast Water Exchange (G6)
Tanks holding WW are being monitored by
ABB systems monitoring. If the ships speed
goes below 6 knots their is an alarm.
Ballast overboards are being monitored by
ABB Alaska sailing zone monitoring.
This ABB system includes outside 12nm 12-4
nm and 4-0 nm. The ships location is
selected on bridge.
Two ballast pumps are being used. There is
one fwd and one aft Ballast pump #1
discharges through overboard #A
The aft ballast pump #2 discharges through
port #B. Both located on the port side.

2.3 Completed by:

Robert Layko (robert.layko)

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

No treatment system is installed at this time.
Exemption letter from CG aboard. Plans are
in the works for installing a Ballast Water
treatment system during the next Dry
Docking.

2.4 Completed by:

Robert Layko (robert.layko)

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 exchanges are be done in
Alaska. Ship uses heeling tanks to maintain
trim and uses waste water tanks used for
trim/ stability.

2.5 Completed by:

Robert Layko (robert.layko)

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.)?

There are 4 Diesel Generator Engines being
used. And one Gas Turbine Engine available.
DG # 1 and DG # 4 are Wartsila 16ZA40S
MCR: 11,520 kW
Speed: 514 rpm
Cycle: 4-stroke
#1 serial no: 12442
#4 serial no: 12343

DG #2 and #5 are Wartsila 12ZA40S
MCR: 8,640 kW
Speed: 514 rpm
Cycle: 4-stroke
#2 serial no: 12346
#5 serial no: 12345

These Engines drive Generators to provide
power to propulsion including 3 Bow
Thrusters, 2 Azipods. Hotel load including Air

3.1 Completed by:

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)?

3.2 Completed by:

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

3.3 Completed by:

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

3.4 Completed by:

3.5 Average fuel consumption in port and underway?

3.5 Completed by:

Conditioning. Engine room and all equipment being used..

Robert Layko (robert.layko)

(1) DG #1; 16 cylinder; Wartsila ZAV40S; 11-MW/12,000-HP
(2) DG #2; 12 cylinder; Wartsila ZAV40S; 8-MW/11,000-HP
(3) DG #3; 16 cylinder; Wartsila ZAV40S; 11-MW/12,000-HP
(4) DG #4; 16 cylinder; Wartsila ZAV40S; 11-MW/12,000-HP
(5) DG #5; 12 cylinder; Wartsila ZAV40S; 8-MW/11,000-HP
(6) Gas turbine; GE LM-2500+; 20-MW/29,500-HP
(7) Emergency diesel generator; Isotta Fraschini Motor; V1713T3TE

Wesley Whittier (wesley.whittier)

One incinerator was removed to allow space for Exhaust Gas Cleaning System

Currently one incinerator onboard Westerdam:

Scanship A/S 1400S; burns MGO

Wesley Whittier (wesley.whittier)

Approximately 5-6MW in port and underway

Wesley Whittier (wesley.whittier)

In port: 15-20MT

Underway: 80-90MT

Wesley Whittier (wesley.whittier)

4: Food Waste Garbage Handling

4.1 How is food waste handled and disposed of?

Food waste is macerated, pulped, dried and discharged overboard.

Food waste is separated in all the galleys. Soft foods go to the food storage tank for processing. Food waste that can not be processed is kept in cold storage for offload in Vancouver.

4.1 Completed by:

Wesley Whittier (wesley.whittier)

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

Approximately 0.9 cubic meters per day

4.2 Completed by:

Wesley Whittier (wesley.whittier)

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

Food waste is dewatered in the food press. The water is directed to a drain tank and to GW tank 5P, which is also the biomass tank. When permitted this tank is discharged outside 12NM.

4.3 Completed by:

Wesley Whittier (wesley.whittier)

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

Offloaded in Vancouver as USDA waste

4.4 Completed by:

Wesley Whittier (wesley.whittier)

4.5 How is food waste monitored and/or recorded?

Electronically in NAPA

4.5 Completed by:

Wesley Whittier (wesley.whittier)

5: Sea Water Intakes

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

(1) Aft Sewage Room; port - main sea chest on forward crossover
(2) Aft Sewage Room; starboard - main sea

chest on forward crossover
(3) Fwd Engine Room; port - main sea chest on aft crossover
(4) Incinerator Room; starboard - main sea chest on aft crossover
(5) Evaporator Room; port - Scrubber #5 intake
(6) Incinerator Room; starboard - Scrubber #1, 2 & 4

5.1 Completed by:

Wesley Whittier (wesley.whittier)

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-type filters; AMOS scheduled maintenance job - 2 month schedule or sooner if required

5.2 Completed by:

Wesley Whittier (wesley.whittier)

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

Discharged outside 12NM or offloaded ashore as garbage

5.3 Completed by:

Wesley Whittier (wesley.whittier)

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

Cathodic protection with anodes; no chemicals used

5.4 Completed by:

Wesley Whittier (wesley.whittier)

5.5 Hull cleaning in place in Alaska 2018?

No; last hull cleaning was performed March/April 2018 in San Diego

5.5 Completed by:

Wesley Whittier (wesley.whittier)

6: General

6.1 Is vessel crew cooperative on this project?

Yes; Environmental Officer, Chief Engineer and Second Engineers were all very cooperative

6.1 Completed by:

Wesley Whittier (wesley.whittier)

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

Yes; both knowledgeable officers and crew onboard the Westerdam

6.2 Completed by:

Wesley Whittier (wesley.whittier)

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

No; I appreciate all the time given to me by the Environmental Officer, Chief Engineer and Second Engineers; all were very cooperative

6.2 Completed by:

robert.layko
wesley.whittier

Z: Signature & Submit

Ocean Rangers contributing to this report:

Robert Layko (robert.layko)
Wesley Whittier (wesley.whittier)

Ocean Ranger Signature:

