State of Washington Department of Ecology

Cruise Ship Memorandum of Understanding, Cruise Operations in Washington State Inspection Report

Northwest Regional Office

P.O. Box 330316
Shoreline, WA 98133

Phone: (425) 213-4230

Inspection Date	Permit Number	County	Receiving Waters	Ecology Inspector
July 14, 2024	NA	King	Marine Waters	Evan Dobrowski
Entry Time 9:00 am **Exit Time** 11:30 am	**Photos Taken** ☒ Yes ☐ No	**Samples Taken** ☐ Yes ☒ No	**Inspection Announced** ☒ Yes ☐ No	**Discharges to:** ☒ Surface Water ☐ Ground Water ☐ Dewater ☐ POTW

Name and Location of Site Inspected:
Majestic Princess, Princess Cruise Lines
Pier 91, Seattle, Washington

Additional Participants/Inspectors:
Jessica Kasmari, Ecology

On-Site Representative(s): ***Name/Title/Phone/e-mail***
Constantin Samoila
e:

Responsible Official(s): ***Name/Title/Address/Phone/e-mail***
Patrick J. McGuire, Vice President Environmental Operations and Policy
Princess Cruises
24305 Town Center Drive, Santa Clarita, CA
p: (206)-225-6328 e: PMcGuire@PrincessCruises.com

Other Facility Data:
Notification made to Patrick Mcguire on June 27, 2024

Flag: United Kingdom

Section A: Areas Evaluated

☒ Black/Gray Wastewater System	☒ Residual Solids	☒ Records/Reports	☒ Hazardous Waste/ Solid Waste	☐ Sampling/Monitoring
☒ Discharge Locations	☒ Operation & Maintenance	☒ Sludge Handling/ Disposal	☒ Oily Bilge Water	☒ Other

Section B: For Vessels Discharging ≥ 1nm from Berth and ≥ 6 Knots Only [2.1.3(A)]

☐	Schematics Match Black/Gray Wastewater System	
☐	Operations as Described in Submitted Documentation	
☐	Daily 24-hour Continuous Monitoring for Turbidity or Equivalent Monitoring	
☐	Turbidimeter or Equivalent Monitoring Equipment Functioning Properly	
☐	Auto Shut Down or Operational Controls to Insure System Shut Down if High Turbidity Occurs	
	Turbidity or Equivalent: Last Calibration: Trigger Level for Early Alarm: Trigger Level for Shutdown: Recorded Turbidity/Equivalent Levels Above Triggers:	
☐	Daily 24-hour Continuous Monitoring for Disinfection Effectiveness	
☐	Disinfection Effectiveness Monitoring Equipment Functioning Properly	
	Disinfection Effectiveness Monitoring:	
☐	Auto Shut Down or Operational Controls to Insure System Shut Down if Disinfection System Upset Occurs	
☐	Disinfection System Operated and Maintained Properly	
	Disinfection System:	

NOT APPLICABLE

Section C: For Vessels Discharging Continuously [2.1.3(B)]	
☐ Schematics Match Black/Gray Wastewater System	
☐ Operations as Described in Submitted Documentation	
☐ Daily 24-hour Continuous Monitoring for Turbidity or Equivalent Monitoring	
☐ Turbidimeter or Equivalent Monitoring Equipment Functioning Properly	
☐ Auto Shut Down or Operational Controls to Insure System Shut Down if High Turbidity Occurs	
Turbidity or Equivalent: Last Calibration: Trigger Level for Early Alarm: Trigger Level for Shutdown: Recorded Turbidity/Equivalent Levels Above Triggers:	
☐ Daily 24-hour Continuous Monitoring for Disinfection Effectiveness	
☐ Disinfection Effectiveness Monitoring Equipment Functioning Properly	
Disinfection Effectiveness Monitoring: NOT APPLICABLE	
☐ Auto Shut Down or Operational Controls to Insure System Shut Down if Disinfection System Upset Occurs	
☐ Disinfection System Operated and Maintained Properly	
Disinfection System:	
Section D: General (Approved to Discharge)	
☐ No Discharges Within ½ Miles From Shellfish Beds/ Protocol (President's Point, Apple Tree Cove, Tyee Shoal, Middle Point (near Pt Townsend))	
☐ Discharges Immediately Stopped When High Turbidity Occurs	
☐ Discharges Immediately Stopped When Disinfection System Upset Occurs	
☐ Immediate Notifications Made to WA Department of Health for Disinfection System Upset	
☐ Sampling Conducted 2/month, 1/month in Seattle (BOD, TSS, Fecal Coliform, pH, Chlorine Residual)	
☐ Whole Effluent Toxicity Testing 1 per 2 Years (homeported) or 1/40 Calls for Continuous	
Section E: General	
☒ Wastewater Discharge Records Review	Discharge records were reviewed (blackwater/graywater/residual solids) and are maintained properly. No discharges found to be in the OCNMS, MOU waters or Washington state waters (MOU related waters).
☒ Wastewater Discharges protocol per MOU and managed properly	The discharge protocols are consistent with MOU requirements to not occur in MOU related waters.
☒ Residual Solids Managed Properly/Disposal Protocol per MOU	Residual solids protocols are consistent with MOU requirements.
☒ Hazardous Waste Managed Properly	Hazardous protocols are consistent with MOU requirements.
☒ WA Hazardous Waste Guidelines Followed (Appendix vii)	Hazardous waste protocols are consistent with MOU requirements.

☒ Solid Waste Managed Properly (zero garbage discharge)	Solid waste protocols are consistent with MOU requirements. Solid waste discharge records were reviewed and are maintained properly. No discharges or releases of solid wastes were found to be inconsistent with MOU requirements.
☒ Photo/X-Ray Waste Managed Properly (fluids, cartridges,…) and landed ashore	Photo and x-ray waste protocols are consistent with MOU requirements. There is no Photo or x-ray waste on this vessel due to digital development.
☒ Dry-Cleaning Wastes and Byproducts (fluids, sludge, filter materials…) Managed Properly (PERC – haz waste – landed ashore)	Dry cleaning protocols are consistent with MOU requirements.
☒ Unused/Outdated Pharmaceuticals Managed Properly (safely disposed of)	Unused or outdated pharmaceuticals are disposed of either by incineration via red medical bag wastes and witnessed by lead nurse or are brought ashore as hazardous waste when necessary. Expired IV fluids, saline solutions, and injectables are discarded down medical center drains.
☒ Fluorescent and Mercury Vapor Lamp Bulbs Managed Properly (prevent release of mercury)	Fluorescent and mercury vapor lamp bulbs protocols for management are consistent with MOU requirements.
☒ Waste Reduction/Reuse/Recycling Opportunities Maximized (glass, cardboard, aluminum & steel cans)	Waste reduction/reuse/recycling opportunities appear to be maximized per MOU requirements.
☒ Batteries Managed Properly (recycled, reclaimed, disposed of properly)	Batteries management protocols are consistent with MOU requirements.
☒ Incinerator Ash Managed Properly and minimized volume (haz waste segregation and annual testing)	Incinerator ash management is consistent with MOU requirements.
☒ Oily Bilge Water Managed Properly (<15 ppm, no visible sheen and underway)	Oily bilge water protocols are consistent with MOU requirements.
☒ Ballast Water Managed Properly (per Wash regs –reporting, treated or if open sea exchange >200 nm from outside EEZ, 50nm if not EEZ)	The vessel employs ballast water treatment in MOU related waters consistent with MOU requirements.
☒ OCNMS rules and regs followed	The discharge protocols are consistent with MOU requirements and are to not occur in OCNMS waters.
Additional General Questions	
☒ How is deck runoff and hull cleaning handled (scuppers…) (non-toxic/phosphate free cleaners, biodegradable)	Deck runoff and hull cleaning protocols are consistent with MOU requirements.
☒ How is maintenance performed on the outside of the vessel (paint chipping, painting, etc)	Outside vessel maintenance protocols are consistent with MOU requirements.
☒ Sculleries and Galleys – type of detergents and degreasers used (phosphate free and non-toxic)?	Restaurants and galleys use detergents and degreasers that are non-toxic and phosphate free.
☒ How are food waste discharges handled (prevention of erroneous materials)?	Food waste discharge protocols are consistent with MOU requirements.
☒ Medical sinks/floor drains, chem. stor areas wastes go where (plugged, blackwater, bilge)?	Medical sinks/floor drains are reported as connected to blackwater.
☒ Where is pool and spa water discharged? Dechlorinated/debrominated and underway?	Pool and spa water protocols are consistent with MOU requirements.
☒ What type of fuel is used and percent sulfur content?	<0.1% sulfur fuel content or EGCS treated equivalent is used throughout the route.

Other:

Section F: Sampling Results

Parameter	Results
Biochemical Oxygen Demand 5-Day (BOD_5)	
Total Suspended Solids (TSS)	
Fecal Coliform	
Residual Chlorine	
pH	
Ammonia, Nitrogen	

NOT APPLICABLE

Section G: Summary of Findings/Comments

Introduction

Evan Dobrowski, Washington State Department of Ecology (Ecology) Northwest Regional Office, Water Quality Program (NWRO-WQ) conducted the inspection of the Princess Cruise Lines, MAJESTIC PRINCESS on July 14, 2024. The main contact on board the MAJESTIC PRINCESS was Constantin Samoila, Environmental Officer (EO) for the vessel; Alessandro Costaguola, Staff Chief Engineer also accompanied us for part of the inspection. Jessica Kasmari, Ecology Water Quality Program also joined us for the inspection. Prior notification of the visit was given on June 27, 2024, for security protocol. The purpose of the inspection was to evaluate compliance with the *Memorandum of Understanding Cruise Operations in Washington State* (MOU), as amended. The MAJESTIC PRINCESS is not approved to discharge wastewater in MOU waters.

The MAJESTIC PRINCESS launched in February of 2016 and had its maiden voyage in April of 2017. The cruise ship is 1,082 feet long and 126 feet wide with a 28-foot draft. The passenger capacity is approximately 3560 with about 1346 crew. There are 19 decks with four engines, and two Azipods. The MAJESTIC PRINCESS is scheduled for 22 port calls in Seattle for weekly cruises to Alaska between May 15, 2024, and October 10, 2024.

Inspection

We arrived and boarded the ship at 9:00 a.m. and began with introductions and a plan for the day with Constantin Samoila, EO. We discussed various waste streams and discharge protocols as well as locations of discharges in the Engine Control Room (ECR). In the ECR we viewed records and screen shots to assist with the discussion of the treatment systems. We toured the AWP, food waste system and bilge treatment. We then looked at the EGCS bleed-off treatment unit. We finalized with a brief debriefing and disembarked the vessel at 11:30 a.m.

Discharge Types and Protocols in MOU waters, Washington State waters or the Olympic Coast National Marine Sanctuary (OCNMS) (MOU related waters):

The discharge protocols start with voyage plans for each itinerary prior to that route. A matrix is developed for each route upon a detailed review of locations for allowed discharges, holding ability of the various waste streams, and other requirements. The voyage plan for the Seattle/Alaska route details no discharges in MOU related waters. Discharges are stopped at about 13 miles prior to MOU related waters. This vessel stops in Victoria prior to Seattle. Discharges are resumed 13 miles out of MOU related waters or per Canadian requirements. Maps show the area of stopped discharge prior to entering the OCNMS and Strait of Juan de Fuca.

If a discharge is to occur, the Bridge contacts the ECR staff when nearing a discharge location. Confirmations are made between the Bridge and ECR and discharge ports are opened. All discharges are logged in the NAPA system as well as in the ECR for certain discharge types. Treated sewage and graywater discharges are allowed in Canadian waters and then off again prior to MOU related waters. For black water and gray water, the latitude and longitude coordinates are recorded in the *Sewage and Graywater Discharge Record Book.* The date, time and location of both the start and the stop of the discharges are recorded, along with the discharge port, volume, effluent type, flow rate, and speed. The EGCS is off at about 4 nautical miles and put into closed loop per company policy.

Discharge Types

Wartsila Membrane Bioreactor Wastewater Treatment System or Membrane Bioreactor (MBR):
There are two MBR's on the vessel and the system is designed to treat both black and grey water; but can be used in several methods to segregate black and grey water. The first step is a prescreening press which filters out coarse solids for both black and grey water. The second step is an aerated blackwater/greywater holding tank which feed to the MBR 1st stage of antifoam dosing and mixing. After this is the biological processing followed by a two stage MBR fine filtration process.
Black water, which includes toilet waste, and infirmary drains moves by vacuum to Evac collection tanks. From the collection tanks, it goes to the screener. Solids are sent to the biowaste tank, then to the incinerator and liquid moves to a tank and is then pumped through the system. Gray water consists of sink, shower, galley water, laundry water and potentially pool water and is collected in one of two mixing tanks. From the mixing tanks, the liquid moves to the 5-step MBR for treatment. A defoamer can be used to control foam prior to the MBR treatment. Grease from the galleys is collected to prevent it from entering and interfering with the Wartsila MBR AWP.

The cruise line uses a maintenance system for work orders and maintenance. Manufacturer recommendations for maintenance of each piece of equipment is included in the system which triggers staff when maintenance is required. Total suspended solids (TSS) (equivalent to turbidity) are monitored continuously. If TSS exceeds 30 mg/l, the system automatically stops discharging and recirculates back to the mixing tank. PH is also monitored for adjustments and trigger the chemical additions of coagulant and polymer. There are several monitors throughout the system that are used to access controls as well as in the ECR. Coliform, chlorine, COD, TSS and pH is monitored regularly on board the vessel for system optimization and sampling is done an outside lab as required for Alaska DEC on this route. Random blackwater/graywater discharge records were reviewed during the inspection and showed no discharges in MOU related waters.

Bilge:

Oily bilge water is treated with one centrifugal oily water separators (OWS). This includes pumping oily bilge water to a settling tank, then onto processing in the OWS. From there the clean bilge goes to the Clean Bilge Tank and is then discharged if in an area approved – outside of MOU related waters. A white box is used to only allow discharges at less than 5 ppm oil content

maximum. Any treated bilge that does not meet that level is sent by y-valve to the dirty bilge tank and onto the dirty bilge settling tank for re-processing. The discharge protocol is to discharge treated oily bilge at less than 5 ppm outside of MOU related waters, at sea. The EO confirmed that he is not aware of any rerouting of oily bilge and that any staff can report concerns. Reports can be made through the staff/line or through the IMO whistleblower reporting. The OWS were off and recirculating during the inspection and not discharging.

Ballast:
Ballast water is treated on board with a separator system and UV disinfection. Stability is typically managed with the various tanks on the vessel and little ballast water is needed.

Pools:
There are four pools, and eight whirlpools. Pools and whirlpools are empties outside directly overboard if outside of MOU related waters, or if necessary, when inside MOU waters, the water is sent to the graywater mixing tanks.

Food Waste:
Food waste is sorted by hand and sent from the galleys to ten biodigesters if soft food all liquids go to the food waste holding tanks. If hard food, it goes to the bio-grinders and then to the incinerator or offloaded to shore. A grease separator collects grease from the galleys and is combined with used cooking oil for onshore recycling in Victoria. Food waste discharges are logged in the NAPA system.

Outside Vessel:
Deck wash is done with NPDES VGP allowed materials (non-toxic, phosphate free, biodegradable cleaners) and processes. Outside vessel maintenance such as paint chipping and painting follows a SOP with the Port of Seattle and Best Management Practices are used when conducting work. It is first cleared with agents and port approval. BMPs include secondary containment for paint and two staff per painting, one to assure paint is contained.

Laundry:
No dry cleaning is done onboard this vessel. Laundry water is sent to graywater and discharged outside of MOU related waters.

Hazardous Waste and Incineration:
Hazardous waste is not offloaded in Seattle, only in Victoria on this route. Incinerators are not used in port, only underway.

Medication:
Unused or outdated pharmaceuticals are sent to the incinerator for disposal. Narcotics are sent to the blackwater system in the medical facility for security and keeping the narcotics from leaving the medical facility. Drains from the medical facility go to the blackwater tanks.

Solid Waste:
Solid waste (garbage, recyclables, etc) is collected, sorted, and either reused, recycled, incinerated or off-loaded to shore in Victoria on this route as appropriate.

EGCS:
The vessel has four main engines. ECA fuel-sulfur compliance is achieved either through the use of marine gas oil at about 0.01% sulfur content (below the 0.1% sulfur content fuel ECA limit), or with higher sulfur heavy fuel oil (HFO) – typically 1.4-2.7% sulfur, treated by the EGCS to achieve equivalent emissions. The vessel was bunkering fuel during the inspection. It is the policy to utilize low sulfur fuel within 4 nautical miles. The vessel uses a four exhaust gas cleaning system units on board which is an open-loop system to minimize the sulfur oxide emissions (SOx). In open-loop, water is pumped from the seachest up the tower. A continuous monitoring system (CMS) is used to continuously monitor the discharge water, as well as influent for certain parameters. PAH, temperature, turbidity and pH are monitored at the effluent discharge. The bleed-off discharge is typically about 50 cubic meters per day (m_3/day), with a capacity of 153 m_3/day.

Conclusions and Recommendations
The protocols for discharges are clear. Records were orderly and appeared consistent with the MOU. The treatment systems appear to be operating well.

Attachments:
Photographs

Copies to:
Patrick J. McGuire, Vice President, Environmental Operations and Policy, Princess Cruise Lines
Mimi Lang, Coordinator, Environmental Operations and Policy, Princess Cruise Lines
Alex Adams, Port of Seattle

Amy Jankowiak, Ecology
Evan Dobrowski, Ecology
Jessica Kasmari, Ecology
Central Files: Princess Cruise Lines – MAJESTIC PRINCESS WQ 6.1

Section H: Signatures		
Name and Signature of Inspector: 	Agency/Office/Telephone: Department of Ecology Northwest Regional Office Water Quality Program 206-594-0175	Date January 7, 2025

PHOTO ADDENDUM – MAJESTIC PRINCESS
PRINCESS CRUISE LINES JULY 14, 2024

Photo # 1 Image: IMG_1797 Date: 7/14/2024
Taken by: Evan Dobrowski
Description: Photo of M/V Majestic Princess

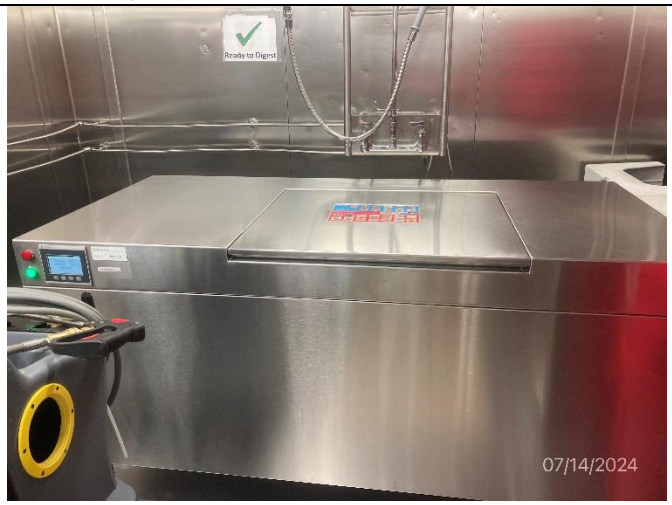

Photo # 2 Image: IMG_1798 Date: 7/14/2024
Taken by: Evan Dobrowski
Description: Photo of Bi Hi-Tech Digester

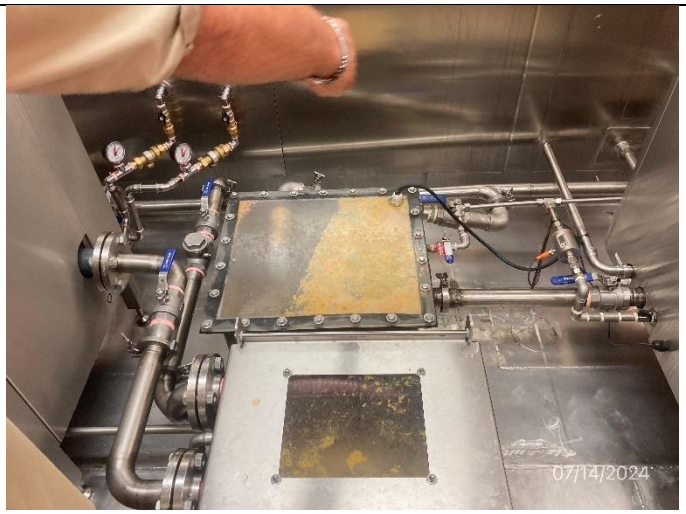

Photo # 3 Image: IMG_1801 Date: 7/14/2024
Taken by: Evan Dobrowski
Description: Photo of Biodigester and Biogrinder outlets.

Photo # 4 Image: IMG_1802 Date: 7/14/2024
Taken by: Evan Dobrowski
Description: Photo of Hungry Giant organics recycling unit.

PHOTO ADDENDUM – MAJESTIC PRINCESS
PRINCESS CRUISE LINES JULY 14, 2024

Photo # 5 Image: IMG_1803 Date: 7/14/2024
Taken by: Evan Dobrowski
Description: Photo of fuel transfer room.

Photo # 6 Image: IMG_1807 Date: 7/14/2024
Taken by: Evan Dobrowski
Description: Photo of sorting room trash holding area.

Photo # 7 Image: IMG_1808 Date: 7/14/2024
Taken by: Evan Dobrowski
Description: Photo of sorting room battery and aerosol can storage.

Photo # 8 Image: IMG_1809 Date: 7/14/2024
Taken by: Evan Dobrowski
Description: Photo of used cooking oil storage.

PHOTO ADDENDUM – MAJESTIC PRINCESS
PRINCESS CRUISE LINES JULY 14, 2024

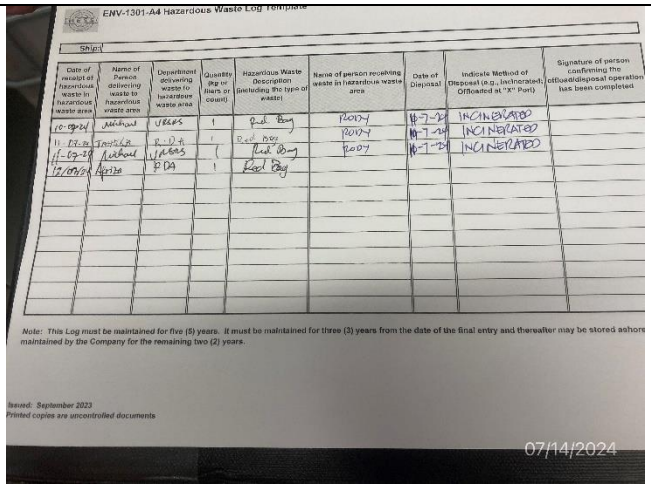

Photo # 9 Image: IMG_1810 Date: 7/14/2024
Taken by: Evan Dobrowski
Description: Photo of Hazardous Waste Log

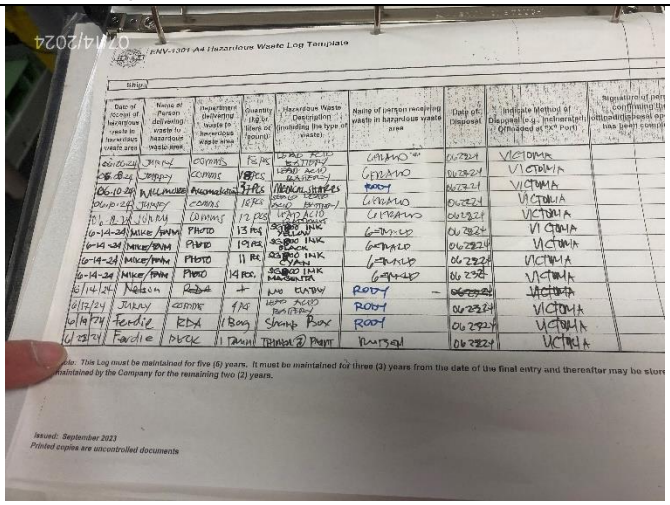

Photo # 10 Image: IMG_1811 Date: 7/14/2024
Taken by: Evan Dobrowski
Description: Photo of Hazardous Waste Log

Photo # 11 Image: IMG_1813 Date: 7/14/2024
Taken by: Evan Dobrowski
Description: Photo of incinerator shoot inside garbage sorting room.

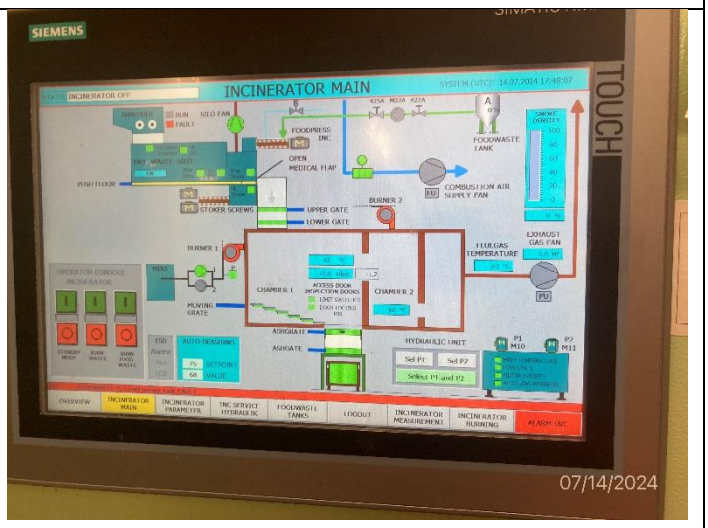

Photo # 12 Image: IMG_1816 Date: 7/14/2024
Taken by: Evan Dobrowski
Description: Photo of incinerator schematic

PHOTO ADDENDUM – MAJESTIC PRINCESS
PRINCESS CRUISE LINES JULY 14, 2024

Photo # 13 Image: IMG_1822 Date: 7/14/2024
Taken by: Evan Dobrowski
Description: Photo of keylock system.

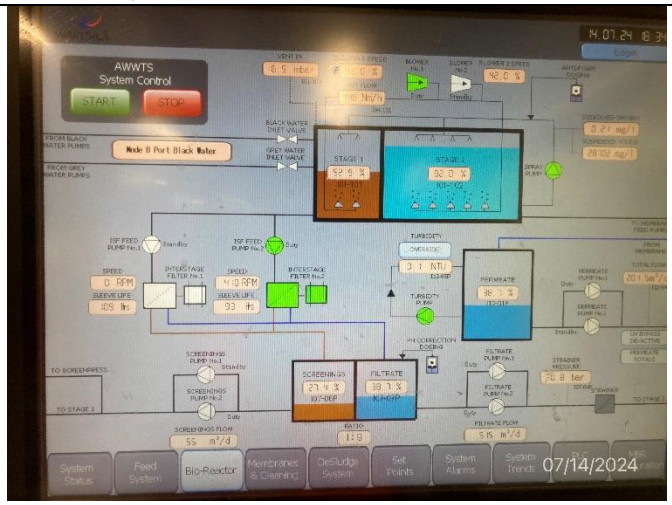

Photo # 14 Image: IMG_1823 Date: 7/14/2024
Taken by: Evan Dobrowski
Description: Photo of Wartsila MBR schematic.

Photo # 15 Image: IMG_1824 Date: 7/14/2024
Taken by: Evan Dobrowski
Description: Photo of Wartsila MBR system Screen Press.

Photo # 16 Image: IMG_1828 Date: 7/14/2024
Taken by: Evan Dobrowski
Description: Photo of Wartsila MBR isolation valves.

PHOTO ADDENDUM – MAJESTIC PRINCESS
PRINCESS CRUISE LINES JULY 14, 2024

Photo # 17 Image: IMG_1833 Date: 7/14/2024
Taken by: Evan Dobrowski
Description: Photo showing UV tank for MBR system.

Photo # 18 Image: IMG_1838 Date: 7/14/2024
Taken by: Evan Dobrowski
Description: Photo showing bilge water centrifugal separator.

Photo # 19 Image: IMG_1841 Date: 7/14/2024
Taken by: Evan Dobrowski
Description: Photo showing double locked marinfloc white box system.

Photo # 20 Image: IMG_1844 Date: 7/14/2024
Taken by: Evan Dobrowski
Description: Photo showing overboard discharge with electronic locking system.

PHOTO ADDENDUM – MAJESTIC PRINCESS
PRINCESS CRUISE LINES JULY 14, 2024

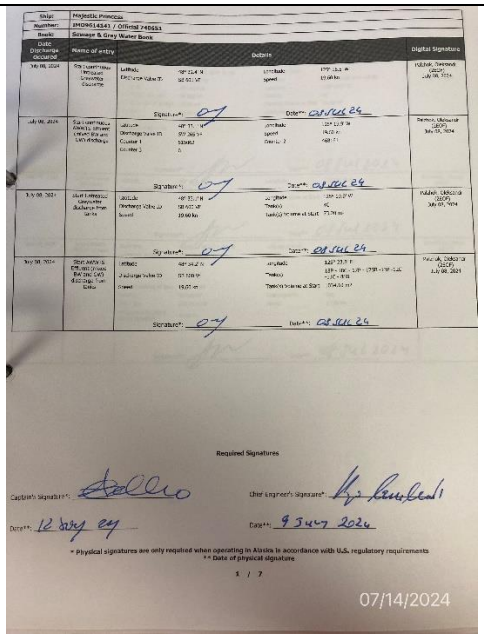

Photo # 21 Image: IMG_1845 Date: 7/14/2024
Taken by: Evan Dobrowski
Description: Photo showing sewage/grey water log book.

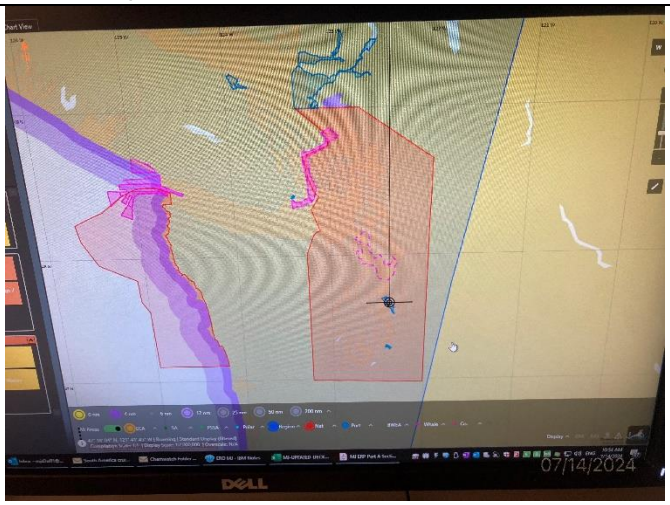

Photo # 22 Image: IMG_1849 Date: 7/14/2024
Taken by: Evan Dobrowski
Description: Photo showing environmental control areas map.

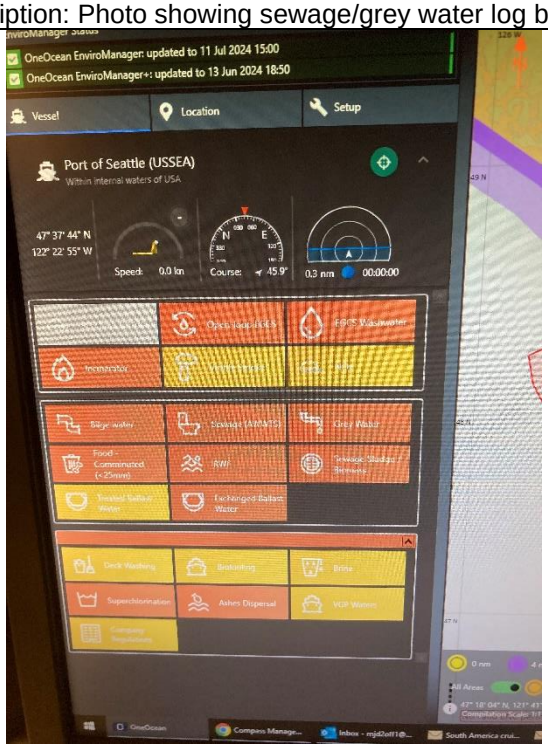

Photo # 23 Image: IMG_1850 Date: 7/14/2024
Taken by: Evan Dobrowski
Description: Photo showing OneOcean EnviroManager data.

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