



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

<b>Inspection Date</b> May 23, 2025	<b>Permit Number</b> NA	<b>County</b> King	<b>Receiving Waters</b> Marine Waters	<b>Ecology Inspector</b> Evan Dobrowski
<b>Entry Time 9:00 AM</b>	<b>Photos Taken</b> <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<b>Samples Taken</b> <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<b>Inspection Announced</b> <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<b>Discharges to:</b> <input checked="" type="checkbox"/> Surface Water <input type="checkbox"/> Ground Water <input type="checkbox"/> Dewater <input type="checkbox"/> POTW
<b>Exit Time 11:00 AM</b>				

<b>Name and Location of Site Inspected:</b> ANTHEM OF THE SEAS, Royal Caribbean Group Pier 91, Seattle, Washington	<b>Additional Participants/Inspectors:</b> Sylvia Graham, Ecology
<b>On-Site Representative(s): Name/Title/Phone/e-mail</b> Melissa Bastos, Environmental Officer An_environmentalofficer@rccl.com	
<b>Responsible Official(s): Name/Title/Address/Phone/e-mail</b> John Hanley, Manager, Environmental Regulatory Compliance & Sustainability Royal Caribbean Group 1050 Caribbean Way, Miami, FL 33132 e: jhanley@rccl.com	<b>Other Facility Data:</b> Notification made to John Hanley on May 8, 2025 Flag - Bahamas IMO # 9656101

**Section A: Areas Evaluated**

<input checked="" type="checkbox"/> Black/Gray Wastewater System	<input checked="" type="checkbox"/> Residual Solids	<input checked="" type="checkbox"/> Records/Reports	<input checked="" type="checkbox"/> Hazardous Waste/ Solid Waste	<input type="checkbox"/> Sampling/Monitoring
<input checked="" type="checkbox"/> Discharge Locations	<input checked="" type="checkbox"/> Operation & Maintenance	<input checked="" type="checkbox"/> Sludge Handling/ Disposal	<input checked="" type="checkbox"/> Oily Bilge Water	<input checked="" type="checkbox"/> Other

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

<input type="checkbox"/> Schematics Match Black/Gray Wastewater System	
<input type="checkbox"/> Operations as Described in Submitted Documentation	
<input type="checkbox"/> Daily 23-hour Continuous Monitoring for Turbidity or Equivalent Monitoring	
<input type="checkbox"/> Turbidimeter or Equivalent Monitoring Equipment Functioning Properly	
<input type="checkbox"/> Auto Shut Down or Operational Controls to Ensure System Shut Down if High Turbidity Occurs	
<u>Turbidity or Equivalent:</u> Last Calibration: Trigger Level for Early Alarm: <span style="margin-left: 100px;">Trigger Level for Shutdown:</span> Recorded Turbidity/Equivalent Levels Above Triggers:	
NOT APPLICABLE	
<input type="checkbox"/> Daily 23-hour Continuous Monitoring for Disinfection Effectiveness	
<input type="checkbox"/> Disinfection Effectiveness Monitoring Equipment Functioning Properly	
<u>Disinfection Effectiveness Monitoring:</u>	
<input type="checkbox"/> Auto Shut Down or Operational Controls to Ensure System Shut Down if Disinfection System Upset Occurs	
<input type="checkbox"/> Disinfection System Operated and Maintained Properly	
<u>Disinfection System:</u>	

**Section C: For Vessels Discharging Continuously [2.1.3(B)]**

<input type="checkbox"/>	Schematics Match Black/Gray Wastewater System	
<input type="checkbox"/>	Operations as Described in Submitted Documentation	
<input type="checkbox"/>	Daily 23-hour Continuous Monitoring for Turbidity or Equivalent Monitoring	
<input type="checkbox"/>	Turbidimeter or Equivalent Monitoring Equipment Functioning Properly	
<input type="checkbox"/>	Auto Shut Down or Operational Controls to Ensure System Shut Down if High Turbidity Occurs	
<u>Turbidity or Equivalent:</u> Last Calibration: Trigger Level for Early Alarm: _____ Trigger Level for Shutdown: Recorded Turbidity/Equivalent Levels Above Triggers:		
<input type="checkbox"/>	Daily 23-hour Continuous Monitoring for Disinfection Effectiveness	
<input type="checkbox"/>	Disinfection Effectiveness Monitoring Equipment Functioning Properly	
Disinfection Effectiveness Monitoring: <div style="font-size: 48px; opacity: 0.5; font-weight: normal;">NOT APPLICABLE</div>		
<input type="checkbox"/>	Auto Shut Down or Operational Controls to Ensure System Shut Down if Disinfection System Upset Occurs	
<input type="checkbox"/>	Disinfection System Operated and Maintained Properly	
Disinfection System:		

**Section D: General (Approved to Discharge)**

<input type="checkbox"/>	No Discharges Within ½ Miles from Shellfish Beds/ Protocol (President's Point, Apple Tree Cove, Tye Shoal, Middle Point (near Pt Townsend))	
<input type="checkbox"/>	Discharges Immediately Stopped When High Turbidity Occurs	
<input type="checkbox"/>	Discharges Immediately Stopped When Disinfection System Upset Occurs	
<input type="checkbox"/>	Immediate Notifications Made to WA Department of Health for Disinfection System Upset	
<input type="checkbox"/>	Sampling Conducted 2/month, 1/month in Seattle (BOD, TSS, Fecal Coliform, pH, Chlorine Residual)	
<input type="checkbox"/>	Whole Effluent Toxicity Testing 1 per 2 Years (homeported) or 1/40 Calls for Continuous	

**Section E: General**

<input checked="" type="checkbox"/>	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). Further review will be done following the end of the season.
<input checked="" type="checkbox"/>	Wastewater Discharges protocol per MOU and managed properly	The discharge protocols are consistent with MOU requirements to not occur in MOU related waters.
<input checked="" type="checkbox"/>	Residual Solids Managed Properly/Disposal Protocol per MOU	Residual solids protocols are consistent with MOU requirements.
<input checked="" type="checkbox"/>	Hazardous Waste Managed Properly	Hazardous protocols are consistent with MOU requirements.
<input checked="" type="checkbox"/>	WA Hazardous Waste Guidelines Followed (Appendix vii)	Hazardous waste protocols are consistent with MOU requirements.
<input checked="" type="checkbox"/>	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 waste were found to be inconsistent with MOU requirements.
<input checked="" type="checkbox"/> 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.
<input checked="" type="checkbox"/> Dry-Cleaning Wastes and Byproducts (fluids, sludge, filter materials...) Managed Properly (PERC – Haz waste – landed ashore)	Dry cleaning protocols are consistent with MOU requirements. There is no dry cleaning on this vessel.
<input checked="" type="checkbox"/> 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.
<input checked="" type="checkbox"/> 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.
<input checked="" type="checkbox"/> Waste Reduction/Reuse/Recycling Opportunities Maximized (glass, cardboard, aluminum & steel cans)	Waste reduction/reuse/recycling opportunities appear to be maximized per MOU requirements.
<input checked="" type="checkbox"/> Batteries Managed Properly (recycled, reclaimed, disposed of properly)	Batteries management protocols are consistent with MOU requirements.
<input checked="" type="checkbox"/> Incinerator Ash Managed Properly and minimized volume (Haz waste segregation and annual testing)	Incinerator ash management is consistent with MOU requirements.
<input checked="" type="checkbox"/> Oily Bilge Water Managed Properly (<15 ppm, no visible sheen and underway)	Oily bilge water protocols are consistent with MOU requirements.
<input checked="" type="checkbox"/> 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.
<input checked="" type="checkbox"/> OCNMS rules and regs followed	The discharge protocols are consistent with MOU requirements and are not to occur in OCNMS waters.

**Additional General Questions**

<input checked="" type="checkbox"/> 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.
<input checked="" type="checkbox"/> How is maintenance performed on the outside of the vessel (paint chipping, painting, etc)	Outside vessel maintenance protocols are consistent with MOU requirements.
<input checked="" type="checkbox"/> 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.
<input checked="" type="checkbox"/> How are food waste discharges handled (prevention of erroneous materials)?	Food waste discharge protocols are consistent with MOU requirements.
<input checked="" type="checkbox"/> Medical sinks/floor drains, chem. stor areas wastes go where (plugged, blackwater, bilge)?	Medical sinks/floor drains are reported as connected to blackwater.
<input checked="" type="checkbox"/> Where is pool and spa water discharged? Dechlorinated/debrominated and underway?	Pool and spa water protocols are consistent with MOU requirements.
<input checked="" type="checkbox"/> 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 <sub>5</sub> )	<b>NOT APPLICABLE</b>
Total Suspended Solids (TSS)	
Fecal Coliform	
Residual Chlorine	
pH	
Ammonia, Nitrogen	

**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 Royal Caribbean Cruises Ltd. ANTHEM OF THE SEAS on May 23, 2025. The main contact on board the ANTHEM OF THE SEAS was Melissa Bastos, Environmental Officer (EO) for the vessel. Sylvia Graham, Ecology Water Quality Program also joined us for the inspection. Prior notification of the visit was given on May 8, 2025, 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 ANTHEM OF THE SEAS is not approved to discharge wastewater in MOU waters.

The ANTHEM OF THE SEAS launched in February of 2015. The cruise ship is 1139 feet long and 136 feet wide with a 29-foot draft. The passenger capacity is approximately 4180 with about 1500 crew. There are 16 decks with four engines, two Azipods, and four bow thrusters. The ANTHEM OF THE SEAS is scheduled for 23 port calls in Seattle for weekly cruises to Alaska between May 8, 2025, and October 6, 2025.

## Inspection

We arrived and boarded the ship (photo #01) at 9:00 a.m. and began with introductions and a plan for the day with Melissa Bastos, 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 (photo #6) and screen shots (photo #12) to assist with the discussion of the treatment systems. We toured the AWP, EGCS, food waste system and bilge treatment. 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 (photo #2 and #3) 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* (photo #6). 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

Scanship Advanced Wastewater Treatment System or Advanced Wastewater Purification (AWP):

There is one AWP on the vessel. Black water, which includes toilet waste, and infirmary drains moves by vacuum to one of five Evac collection tanks (photo #17). 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 to the biostep (photo #18). 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 biostep for biological treatment (biofilm on rotating plastic pieces – air added with blowers. A defoamer can be used to control foam prior to the biostep.

After the biostep, liquid moves to a dosing unit where a mix of polymers and coagulants are added. Liquid then moves to one of two Dissolved Air Flotation (DAF) (clarification via dissolved air flotation tanks) (photo #19). An air and water mixture is added to the bottom of the flotation tanks to keep turbulence at the bottom and to allow the solids to rise to the top, along with the help of the chemical addition. Skimmers on the top skim the solids into a sludge pocket which is then pumped to the bioresidue tanks and to the decanter for drying and incineration. Some solids are sent back to the biostep for biological enhancement. Liquid flow then moves to one of the two polishing filters for ultrafiltration.

Liquid flow then moves to ultraviolet (UV) light disinfection. There are two UV units, one on standby. Flow from the UV units is either discharged directly overboard via the discharge port or is re-circulated to the mixing tanks. Grease from the galleys is collected to prevent it from entering and interfering with the Scanship 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) is monitored continuously at UV disinfection, as is the W/m2 (intensity). 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 of two Marine flocc oily water separators (OWS). This includes pumping oily bilge water to a settling tank, then onto processing in the MarinFloc 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 (photo #22) 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 they are 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.

#### Pools:

There are nine pools, and six whirlpools are all freshwater. Pools and whirlpools are emptied outside directly overboard if outside of MOU related waters, or if necessary, when inside, the water is sent to the graywater mixing tanks.

#### Food Waste:

Food waste is sent from the galleys to food waste holding tanks. From there, the food waste goes through a pulper – food press. The liquid from the pulper goes to the graywater mixing tanks and the AWP. The food goes to a biowaste dryer and incineration. Any food waste that can't be pulped is incinerated. A grease separator collects grease from the galleys and is combined with used cooking oil for onshore recycling. Food waste discharges are logged into the NAPA system.

#### Outside Vessel:

Deck washing 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. At the time of inspector deck washing was only done with freshwater in Seattle and no other exterior maintenance was expected.

#### Laundry:

Dry cleaning is not done on board. 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 (2) 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. Currently in Seattle the only thing being offloaded is pallets.

**EGCS:**

The vessel has four main engines and two emergency generators. 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 RCCL policy to be in closed loop within 4 nautical miles. The vessel uses two separate Wartsila hybrid EGCS on board which is a wet hybrid open-loop or closed-loop system to minimize the sulfur oxide emissions (SOx). In closed-loop, water is pumped from a process water tank up the scrubber. Water is sprayed at the exhaust and is sent down the tower to the process tank. A de-aeration tank is used to settle the exhaust solids. Washwater is then treated by a centrifugal solids separator. A bleed-off treatment unit is used in closed-loop which includes the addition of coagulant, caustic soda, and flocculant/polymer. The vessel has the ability to hold the bleed-off water for about 72 hours, depending on the sulfur content of the fuel and treatment. If the treated bleed-off is above the VGP limits, it recirculates for treatment. 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<sup>3</sup>/day), with a capacity of 153 m<sup>3</sup>/day. At the time of inspection one of the EGCS systems was offline due to an overheating issue which caused the misters to melt and the system was in the process of being rebuilt. During that time the engines associated with this EGCS will only be running marine gas oil with low sulfur content.

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:**

- John Hanley, Sr. Analyst, Environmental Operations and Compliance, RCCL
- Elizabeth Hackley, RCCL
- ANTHEM OF THE SEAS, Environmental Officer, RCCL
- Alex Adams, Port of Seattle
- Amy Jankowiak, Ecology
- Evan Dobrowski, Ecology
- Sylvia Gram, Ecology
- Central Files: Royal Caribbean Cruises Ltd – ANTHEM OF THE SEAS 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

October 3, 2025

**PHOTO ADDENDUM – ANTHEM OF THE SEAS**  
 Royal Caribbean Group May 23, 2025



Photo # 1 Image: IMG\_2772 Date: 5/23/2025  
 Taken by: Evan Dobrowski  
 Description: Photo of M/V ANTHEM OF THE SEAS



Photo # 2 Image: IMG\_2771 Date: 5/23/2025  
 Taken by: Evan Dobrowski  
 Description: Photo of Passage Plan Seattle to Juneau

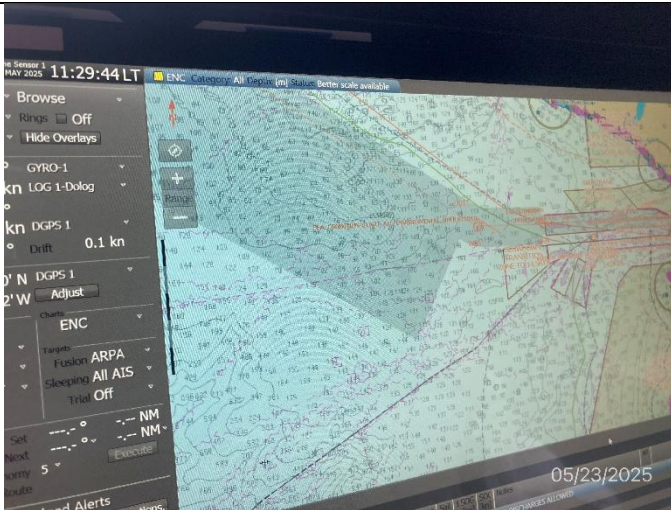


Photo # 3 Image: IMG\_2770 Date: 5/23/2025  
 Taken by: Evan Dobrowski  
 Description: Photo of map documenting environmental conditions/discharge locations.



Photo # 4 Image: IMG\_2763 Date: 5/23/2025  
 Taken by: Evan Dobrowski  
 Description: Photo of EGCS tower being repaired due to overheating. The black section is the plastic interior EGCS material that is being replaced.

**PHOTO ADDENDUM – ANTHEM OF THE SEAS**

Royal Caribbean Group May 23, 2025



Photo # 5 Image: IMG\_2762 Date: 5/23/2025  
 Taken by: Evan Dobrowski  
 Description: Photo replacement misters for damaged EGCS tower.

Vessel's Name: Anthem of the Seas IMO Number: 9659101

#	DISCHARGE	DATE	TIME (24 HRS)	LAT	LONG	DISCHARGE PORTS	EFFLUENT TYPE	VOLUME (M3)	FLOW RATE (L/MIN)	MINIMUM SPEED (KTS)	PERSON-IN-CHARGE
#1	START	May 18 2025	22:15	15° 57' 52.22 N	106° 52' 46.51 W	3057	AWP	64	100	16.1	Sign: [Signature] Date: May 18, 2025
	STOP	May 18 2025	23:17	15° 58' 10.09 N	106° 50' 48.81 W	3057	AWP	34	100	16.1	Sign: [Signature] Date: May 18, 2025
#2	START	May 19 2025	08:46	58° 53' 22.04 N	155° 45' 20.96 W	3057	AWP	34	100	18.4	Sign: [Signature] Date: May 19, 2025
	STOP	May 19 2025	09:37	58° 52' 49.71 N	155° 45' 18.21 W	3057	AWP	34	100	18.4	Sign: [Signature] Date: May 19, 2025
#3	START	May 19 2025	12:30	58° 53' 28.04 N	155° 42' 42.61 W	3057	AWP	97	100	8.9	Sign: [Signature] Date: May 19, 2025
	STOP	May 19 2025	10:59	58° 54' 09.31 N	155° 45' 39.61 W	3057	AWP	97	100	8.9	Sign: [Signature] Date: May 19, 2025
#4	START	May 19 2025	21:50	57° 58' 21.21 N	157° 06' 35.14 W	3057	AWP	76	100	20.6	Sign: [Signature] Date: May 19, 2025
	STOP	May 19 2025	23:30	57° 56' 35.11 N	157° 05' 32.11 W	3057	AWP	76	100	20.6	Sign: [Signature] Date: May 19, 2025
#5	START	May 19 2025	01:57	58° 04' 22.71 N	154° 59' 59.11 W	3057	AWP	111	100	20.8	Sign: [Signature] Date: May 19, 2025
	STOP	May 19 2025	02:10	58° 08' 22.61 N	154° 55' 49.21 W	3057	AWP	111	100	20.8	Sign: [Signature] Date: May 19, 2025

NOTES: Please sign and date any remarks made.

Master's Signature: [Signature] Date: May 22 2025

Page 24 of 100

Photo # 6 Image: IMG\_2717 Date: 5/23/2025  
 Taken by: Evan Dobrowski  
 Description: Photo of discharge logbook entries.



Photo # 7 Image: IMG\_2722 Date: 5/23/2025  
 Taken by: Evan Dobrowski  
 Description: Photo of laundry chemical dispensing system.

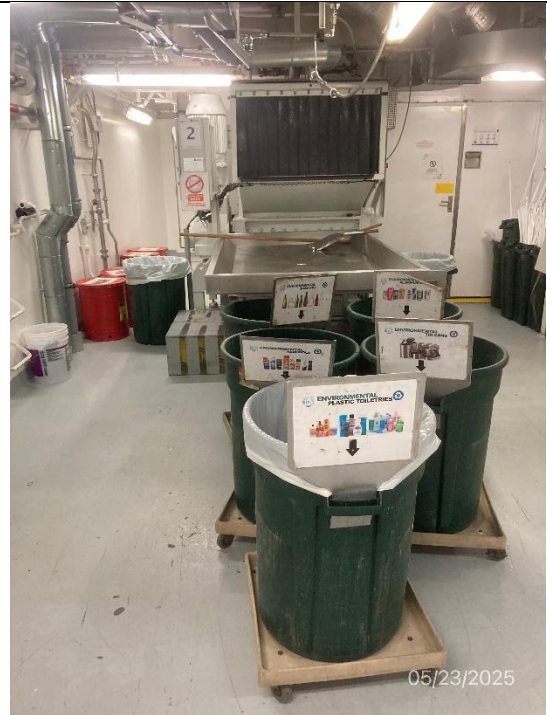


Photo # 8 Image: IMG\_2727 Date: 5/23/2025  
 Taken by: Evan Dobrowski  
 Description: Photo of waste separation station with chute to incinerator in background.

**PHOTO ADDENDUM – ANTHEM OF THE SEAS**

Royal Caribbean Group May 23, 2025



Photo # 9 Image: IMG\_2731 Date: 5/23/2025  
Taken by: Evan Dobrowski  
Description: Photo of interior of waste storage locker.



Photo # 10 Image: IMG\_2732 Date: 5/23/2025  
Taken by: Evan Dobrowski  
Description: Photo of interior of waste storage locker.



Photo # 11 Image: IMG\_2735 Date: 5/23/2025  
Taken by: Evan Dobrowski  
Description: Photo of two incinerators.

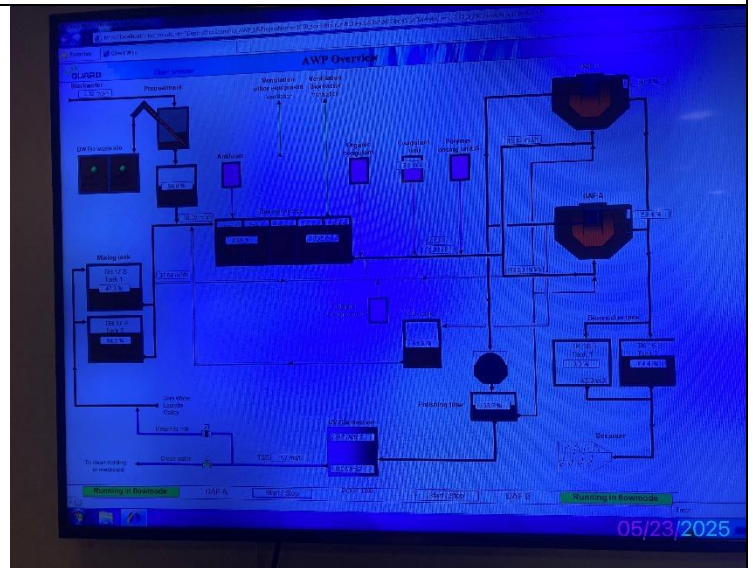


Photo # 12 Image: IMG\_2739 Date: 5/23/2025  
Taken by: Evan Dobrowski  
Description: Photo of computer screen schematic overview of the wastewater treatment process onboard.

**PHOTO ADDENDUM – ANTHEM OF THE SEAS**

Royal Caribbean Group May 23, 2025



Photo # 17 Image: IMG\_2742 Date: 5/23/2025  
Taken by: Evan Dobrowski  
Description: Photo of wastewater treatment system collection unit.



Photo # 18 Image: IMG\_2744 Date: 5/23/2025  
Taken by: Evan Dobrowski  
Description: Photo showing wastewater membrane bioreactor.



Photo # 19 Image: IMG\_2746 Date: 5/23/2025  
Taken by: Evan Dobrowski  
Description: Photo showing wastewater treatment DAF system.



Photo # 20 Image: IMG\_2748 Date: 5/23/2025  
Taken by: Evan Dobrowski  
Description: Photo showing wastewater treatment system overboard valve.

**PHOTO ADDENDUM – ANTHEM OF THE SEAS**

Royal Caribbean Group May 23, 2025

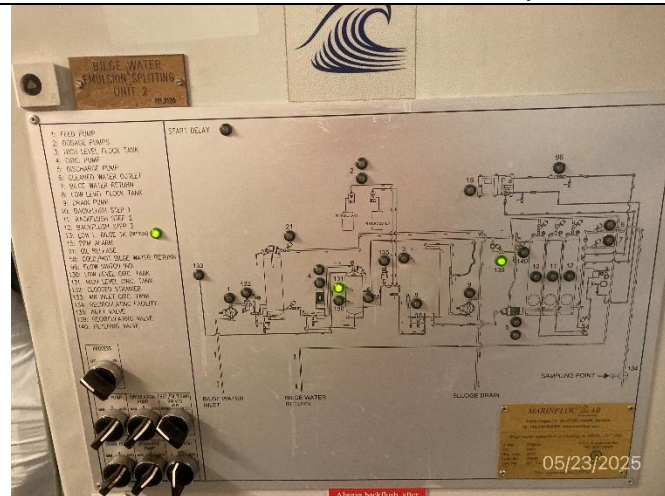


Photo # 21 Image: IMG\_2750 Date: 5/23/2025  
Taken by: Evan Dobrowski  
Description: Photo showing bilge water treatment schematic system overview.



Photo # 22 Image: IMG\_2752 Date: 5/23/2025  
Taken by: Evan Dobrowski  
Description: Photo showing White box system with lock on bottom.

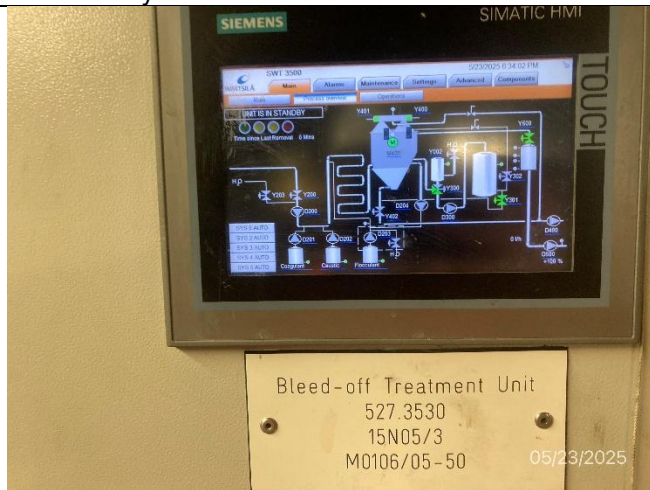


Photo # 23 Image: IMG\_2760 Date: 5/23/2025  
Taken by: Evan Dobrowski  
Description: Photo showing EGCS bleed off treatment system schematic.

Intentionally left blank