



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

Name and Location of Site Inspected: QUEEN ELIZABETH, Cunard Lines Carnival Cruise Lines Pier 91, Seattle, Washington	Additional Participants/Inspectors: Megan Junod, Ecology
On-Site Representative(s): Name/Title/Phone/e-mail Rob McCulloch, Environmental Officer qeenv@cunard.co.uk	
Responsible Official(s): Name/Title/Address/Phone/e-mail David Smith, Sr. Manager, Environmental – Carnival UK P&O Cruise Lines e: David.Smith@pocruises.com	Other Facility Data: Notification made to David Smith and John Haeflinger on July 28, 2025 Flag: Bermuda

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 24-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 Insure System Shut Down if High Turbidity Occurs	
<u>Turbidity or Equivalent:</u> Last Calibration: Trigger Level for Early Alarm: NOT APPLICABLE Trigger Level for Shutdown: Recorded Turbidity/Equivalent Levels Above Triggers:	
<input type="checkbox"/> Daily 24-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 Insure System Shut Down if Disinfection System Upset Occurs	
<input type="checkbox"/> Disinfection System Operated and Maintained Properly	
Disinfection System:	

	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 ₅)	NOT APPLICABLE
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 Cunard Lines. QUEEN ELIZABETH on August 11, 2025. The main contact on board the QUEEN ELIZABETH was Rob McCulloch, Environmental Officer (EO) for the vessel. Megan Junod, Ecology Water Quality Program also joined us for the inspection. Prior notification of the visit was given on July 28, 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 QUEEN ELIZABETH is not approved to discharge wastewater in MOU waters.

The QUEEN ELIZABETH launched in January of 2010. The cruise ship is 964 feet long and 106 feet wide with a 26-foot draft. The passenger capacity is approximately 2000 with about 1000 crew. There are 16 decks with four engines, two Azipods, and three bow thrusters. The QUEEN ELIZABETH is scheduled for 12 port calls in Seattle for weekly cruises to Alaska between June 23, 2025, and September 25, 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 Rob McCulloch, 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 both paper and electronic records 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 a 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.

Discharge Types

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

There is two AWP on the vessel one for blackwater and one for greywater treatment. Black water, which includes toilet waste, and infirmary drains moves by vacuum to one of five 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 to the biostep to permeate, and finally overboard when allowed. 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.

After the biostep, liquid moves to a dosing unit where a mix of polymers and coagulants are added. 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 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 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 four pools, and four 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 biodigesters onboard. From there, liquid from the process goes to the graywater mixing tanks and the AWP while the dry solids go to the incinerator or discharged overboard when allowed. 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.

EGCS:

The vessel has four main engines and two emergency generators; five of these are running through the EGCS systems. 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. 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 before discharging or being held onboard in tanks. 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.

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 Haeflinger, Sr. Vice President Maritime Policy & Analysis, Carnival Corporation
David Smith, Senior Manager, Environmental – Carnival UK
QUEEN ELIZABETH, Environmental Officer, Cunard Lines
Alex Adams, Port of Seattle
Amy Jankowiak, Ecology
Evan Dobrowski, Ecology
Megan Junod, Ecology
Central Files: Carnival Cruise Lines – QUEEN ELIZABETH WQ 6.1

Section H: Signatures

<u>Name and Signature of Inspector:</u>	<u>Agency/Office/Telephone:</u>	<u>Date</u>
	Department of Ecology Northwest Regional Office Water Quality Program 206-594-0175	October 3, 2025

**PHOTO ADDENDUM – QUEEN ELIZABETH
CUNARD LINES AUGUST 11, 2025**



Photo # 1 Image: IMG_2933 Date: 8/11/2025
Taken by: Evan Dobrowski
Description: Photo of M/V QUEEN ELIZABETH

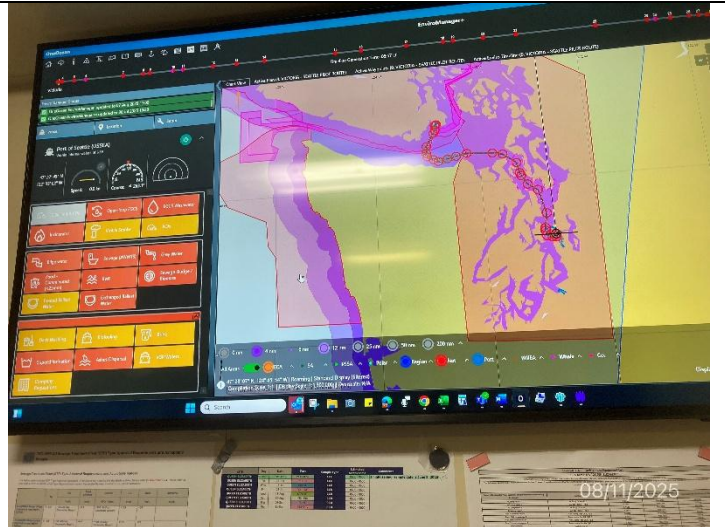


Photo # 2 Image: IMG_2936 Date: 8/11/2025
Taken by: Evan Dobrowski
Description: Photo of OneOcean software documenting environmental requirements within planned route from Victoria to Seattle.

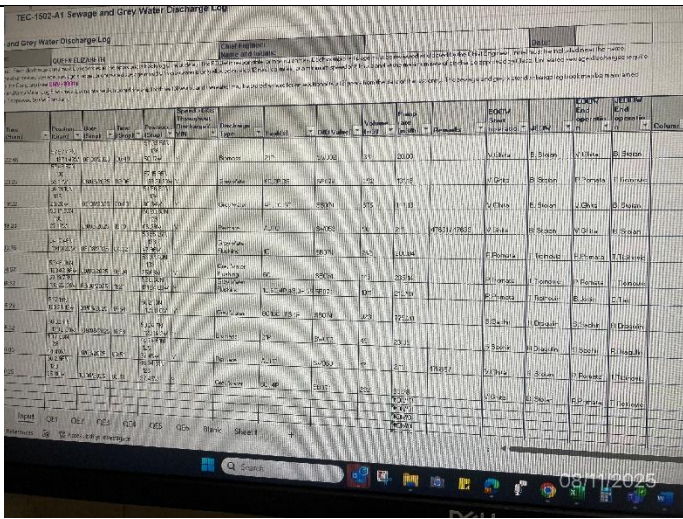


Photo # 3 Image: IMG_2938 Date: 8/11/2025
Taken by: Evan Dobrowski
Description: Photo of sewage and grey water discharge log.

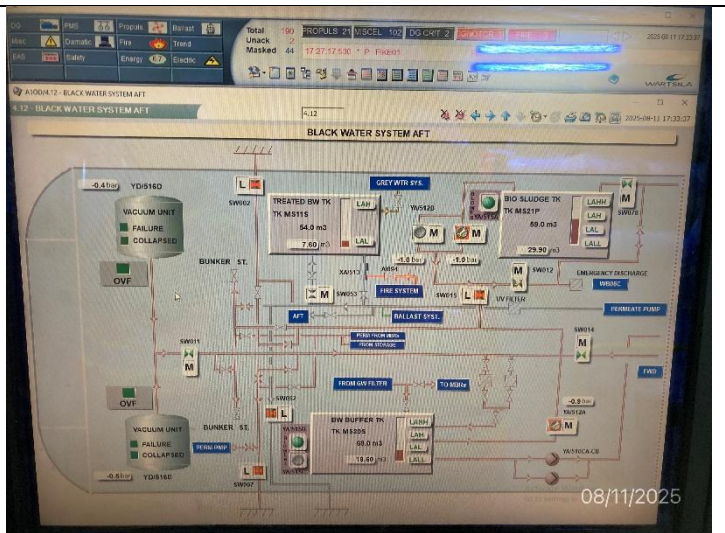


Photo # 4 Image: IMG_2939 Date: 8/11/2025
Taken by: Evan Dobrowski
Description: Photo of black water treatment system schematics.

PHOTO ADDENDUM – QUEEN ELIZABETH
CUNARD LINES AUGUST 11, 2025

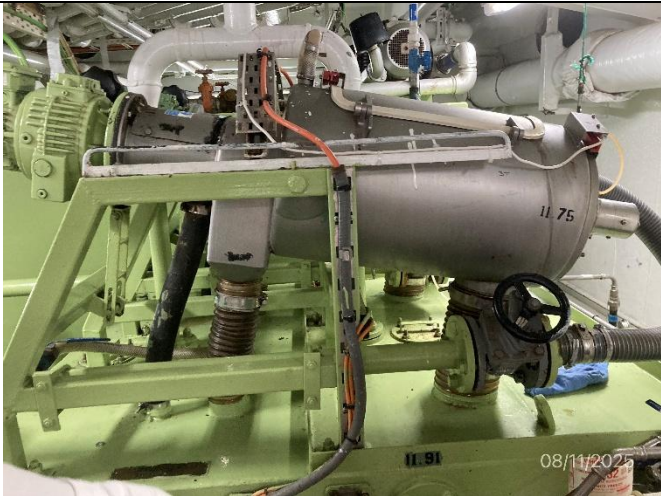


Photo # 5 Image: IMG_2943 Date: 8/11/2025
Taken by: Evan Dobrowski
Description: Photo of waste water treatment system screen press component.



Photo # 6 Image: IMG_2945 Date: 8/11/2025
Taken by: Evan Dobrowski
Description: Photo of blackwater MBR discharge valve with padlock.



Photo # 7 Image: IMG_2951 Date: 8/11/2025
Taken by: Evan Dobrowski
Description: Photo of bilge water separator.



Photo # 8 Image: IMG_2811 Date: 8/11/2025
Taken by: Evan Dobrowski
Description: Photo of White box with padlocks.

PHOTO ADDENDUM – QUEEN ELIZABETH
CUNARD LINES AUGUST 11, 2025



Photo # 9 Image: IMG_2956 Date: 8/11/2025
Taken by: Evan Dobrowski
Description: Photo of waste sorting area and incinerator chute.



Photo # 10 Image: IMG_2962 Date: 8/11/2025
Taken by: Evan Dobrowski
Description: Photo of waste management area with food waste and battery storage bins.



Photo # 11 Image: IMG_2965 Date: 8/11/2025
Taken by: Evan Dobrowski
Description: Photo of hazardous waste storage area.



Photo # 12 Image: IMG_2967 Date: 8/11/2025
Taken by: Evan Dobrowski
Description: Photo of hazardous waste storage area.

**PHOTO ADDENDUM – QUEEN ELIZABETH
CUNARD LINES AUGUST 11, 2025**



Photo # 17 Image: IMG_2969 Date: 8/11/2025
Taken by: Evan Dobrowski
Description: Photo showing food waste biodigester.

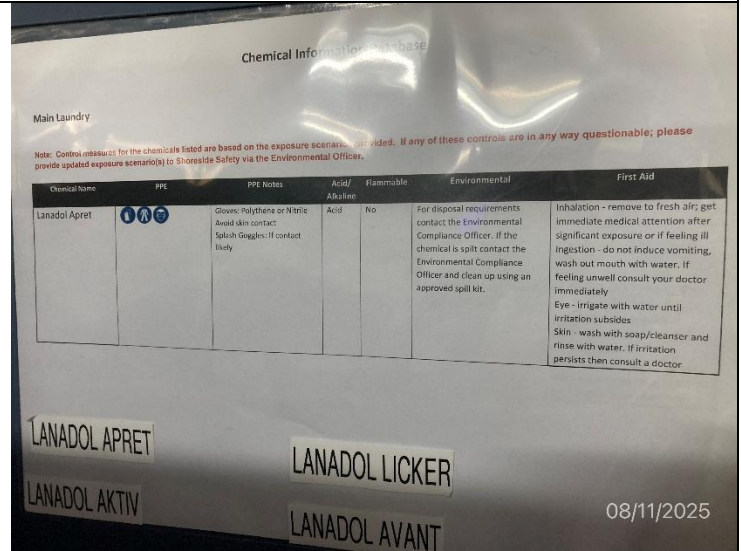


Photo # 18 Image: IMG_2971 Date: 8/11/2025
Taken by: Evan Dobrowski
Description: Photo showing chemical information for laundry chemical Lanadol Apret.



Photo # 19 Image: IMG_2973 Date: 8/11/2025
Taken by: Evan Dobrowski
Description: Photo showing filtrex unit for EGCS.



Photo # 20 Image: IMG_2974 Date: 8/11/2025
Taken by: Evan Dobrowski
Description: Photo showing filtration for EGCS.

**PHOTO ADDENDUM – QUEEN ELIZABETH
CUNARD LINES AUGUST 11, 2025**

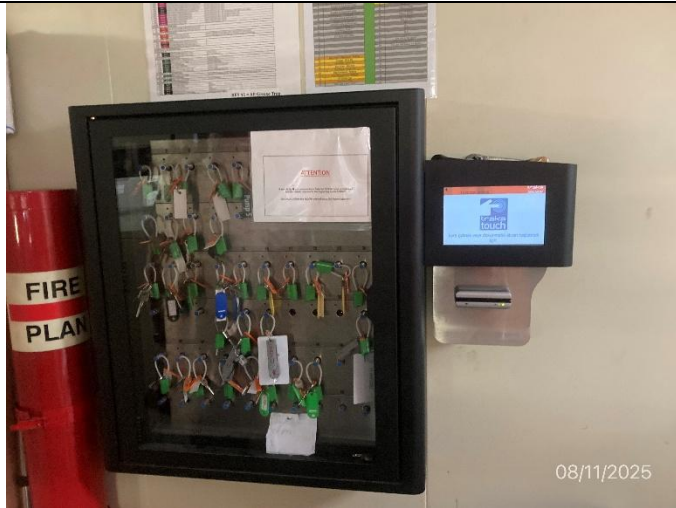


Photo # 21 Image: IMG_2975 Date: 8/11/2025
Taken by: Evan Dobrowski
Description: Photo showing locking key safe requiring badge to unlock.



Photo # 22 Image: IMG_2935 Date: 8/11/2025
Taken by: Evan Dobrowski
Description: Photo showing bunkering tug and barge in containment boom.

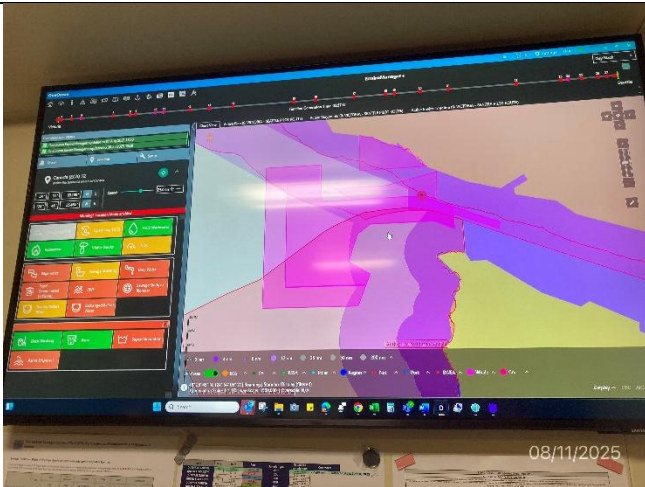


Photo # 23 Image: IMG_2937 Date: 8/11/2025
Taken by: Evan Dobrowski
Description: Photo showing ONEOCEAN environmental area near Olympic coast national marine sanctuary.

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