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
June 7, 2024	NA	King	Marine Waters	Evan Dobrowski
Entry Time 9:00AM	**Photos Taken**	**Samples Taken**	**Inspection Announced**	**Discharges to:** ☒ Surface Water
Exit Time 11:30AM	☒ Yes ☐ No	☐ Yes ☒ No	☒ Yes ☐ No	☐ Ground Water ☐ Dewater ☐ POTW

Name and Location of Site Inspected:
CELEBRITY EDGE, Celebrity Cruises/Royal Caribbean Cruises Ltd.
Pier 91
Seattle, Washington

Additional Participants/Inspectors:
Cody Ennis, Ecology

David Fujimoto, Port of Seattle

On-Site Representative(s): ***Name/Title/Phone/e-mail***
Georgios Efthymiou, Environmental Officer

Responsible Official(s): ***Name/Title/Address/Phone/e-mail***
John Hanley, Manager, Environmental Regulatory Compliance & Sustainability
Royal Caribbean Cruises Ltd.
1050 Caribbean Way, Miami, FL 33132
e: jhanley@rccl.com

Other Facility Data:
Notification made to John Hanley on May 23, 2024
Flag - Malta
IMO # 9812705

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:	
☐	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). Further review will be done following the end of the season.
☒	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 Royal Caribbean Cruises Ltd. CELEBRITY EDGE on June 7, 2024. The main contact on board the CELEBRITY EDGE was Georgios Efthymiou, Environmental Officer (EO) for the vessel. Cody Ennis, Ecology Water Quality Program also joined us for the inspection as well as David Fujimoto with Port of Seattle. Prior notification of the visit was given on May 23, 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 CELEBRITY EDGE is not approved to discharge wastewater in MOU waters.

The CELEBRITY EDGE launched in January of 2018 and had its maiden voyage in December of 2018. The cruise ship is 1,004 feet long and 128 feet wide with a 28-foot draft. The passenger capacity is approximately 2918 with about 1,377 crew. There are 15 decks with five engines, two Azipods, and 4 tunnel thrusters. The CELEBRITY EDGE is scheduled for 18 port calls in Seattle for weekly cruises to Alaska between May 17, 2024, and September 13, 2024.

Inspection

We arrived and boarded the ship at 9:00 a.m. and began with introductions and a plan for the day with Georgios Efthymiou, 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 wastestreams, 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

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. 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. 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). 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 floc 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 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.

Pools:

There are three pools, and four whirlpools. Pools and whirlpools are empties 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 on-shore recycling. 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:

Dry cleaning is done onboard using DF-2000 fluid. 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 five 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 RCCL policy to be in closed loop within 4 nautical miles. The vessel uses a Wartsila hybrid EGCS on board which is a wet hybrid open-loop or closed-loop system to minimize the sulfur oxide emissions (SOx). There are two separate systems. 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, sweater 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:
John Hanley, Sr. Analyst, Environmental Operations and Compliance, RCCL
Elizabeth Hackley, RCCL
Georgios Efthymiou, Celebrity Cruises
Cameron Harris-Browne, RCCL
Alex Adams, Port of Seattle
David Fujimoto Port of Seattle
Amy Jankowiak, Ecology
Evan Dobrowski, Ecology
Cody Ennis, Ecology
Central Files: Royal Caribbean Cruises Ltd – CELEBRITY EDGE WQ 6.1

Section H: Signatures

Name and Signature of Inspector:	Agency/Office/Telephone:	Date
Evan Dobrowski, Compliance Specialist *Evan Dobrowski*	Department of Ecology Northwest Regional Office Compliance Specialist 425-213-4230	August 15, 2024

PHOTO ADDENDUM – CELEBRITY EDGE
CELEBRITY CRUISE LINES - ROYAL CARIBBEAN CRUISE LINE
JUNE 7, 2024

Photo # 1 Image: IMG_1672 Date: 6/7/2024
Taken by: Evan Dobrowski
Description: EGCS overview screen

Photo # 2 Image: IMG_1673 Date: 6/7/2024
Taken by: Evan Dobrowski
Description: Garbage Discharge log

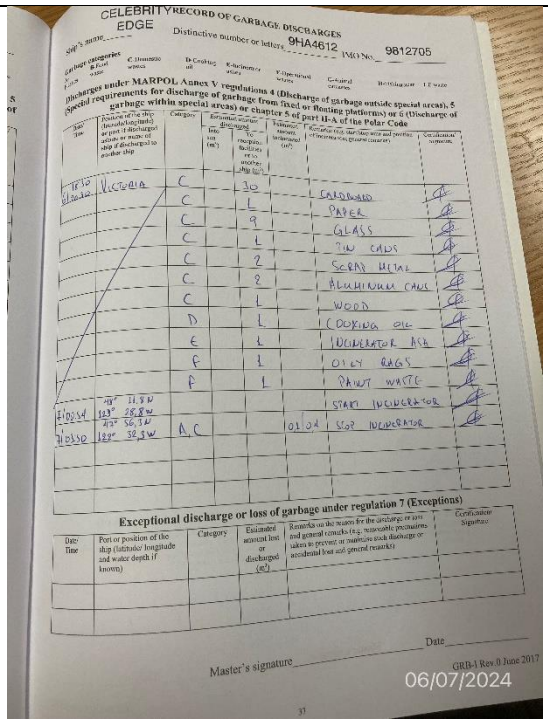


Photo # 3 Image: IMG_1674 Date: 6/7/2024
Taken by: Evan Dobrowski
Description: Garbage Discharge log

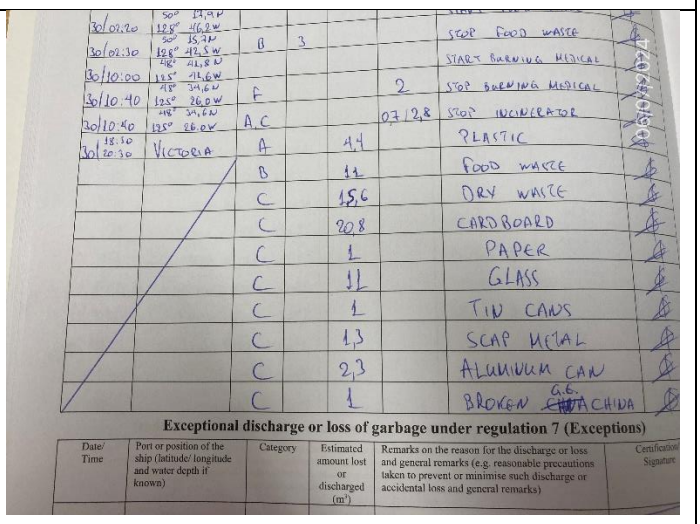
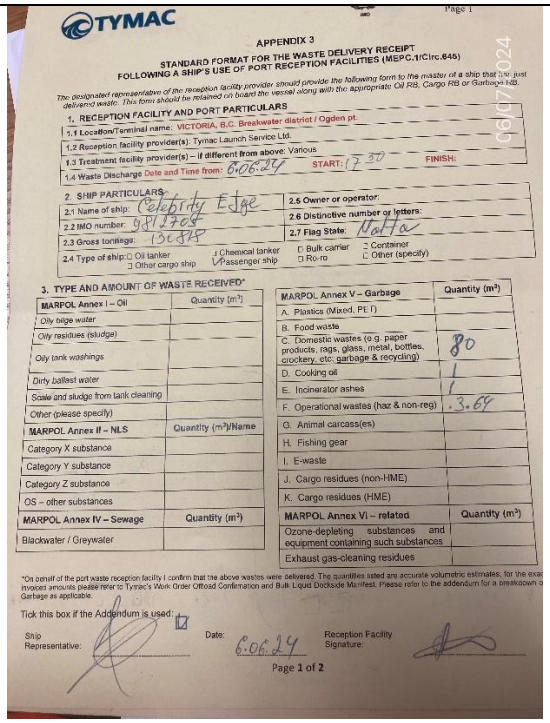


Photo # 4 Image: IMG_1675 Date: 6/7/2024
Taken by: Evan Dobrowski
Description: Garbage Discharge log



TYMAC

APPENDIX 3
STANDARD FORMAT FOR THE WASTE DELIVERY RECEIPT
FOLLOWING A SHIP'S USE OF PORT RECEPTION FACILITIES (MEPC.1/Circ.645)

The designated representative of the reception facility provider should provide the following form to the master of a ship that has just delivered waste. This form should be retained on board the vessel along with the appropriate Oil RB, Cargo RB or Garbage MB.

1. RECEPTION FACILITY AND PORT PARTICULARS
1.1 Location/Terminal name: VICTORIA, B.C. Breakwater district / Ogden pt.
1.2 Reception facility provider(s): Tymac Launch Service Ltd.
1.3 Treatment facility provider(s) – if different from above: Various
1.4 Waste Discharge Date and Time from: 6.06.24 START: 17.30 FINISH:

2. SHIP PARTICULARS
2.1 Name of ship: Celebrity Edge
2.2 IMO number: 9PI2705
2.3 Gross tonnage: 130818
2.4 Type of ship: ☐ Oil tanker ☐ Chemical tanker ☐ Bulk carrier ☐ Container ☐ Other cargo ship ☑ Passenger ship ☐ Ro-ro ☐ Other (specify)
2.5 Owner or operator:
2.6 Distinctive number or letters:
2.7 Flag State: Malta

3. TYPE AND AMOUNT OF WASTE RECEIVED*

MARPOL Annex I – Oil	Quantity (m³)
Oily bilge water	
Oily residues (sludge)	
Oily tank washings	
Dirty ballast water	
Scale and sludge from tank cleaning	
Other (please specify)	

MARPOL Annex II – NLS	Quantity (m³)/Name
Category X substance	
Category Y substance	
Category Z substance	
OS – other substances	

MARPOL Annex IV – Sewage	Quantity (m³)
Blackwater / Greywater	

MARPOL Annex V – Garbage	Quantity (m³)
A. Plastics (Mixed. PE !)	
B. Food waste	
C. Domestic wastes (e.g. paper products, rags, glass, metal, bottles, crockery, etc. garbage & recycling)	80
D. Cooking oil	1
E. Incinerator ashes	1
F. Operational wastes (haz & non-reg)	3.68
G. Animal carcass(es)	
H. Fishing gear	
I. E-waste	
J. Cargo residues (non-HME)	
K. Cargo residues (HME)	

MARPOL Annex VI – related	Quantity (m³)
Ozone-depleting substances and equipment containing such substances	
Exhaust gas-cleaning residues	

On behalf of the port waste reception facility I confirm that the above wastes were delivered. The quantities listed are accurate volumetric estimates, for the exact invoices amounts please refer to Tymac's Work Order Offload Confirmation and Bulk Liquid Dockside Manifest. Please refer to the addendum for a breakdown of Garbage as applicable.

Tick this box if the Addendum is used: ☑

Ship Representative: Date: 6.06.24 Reception Facility Signature:

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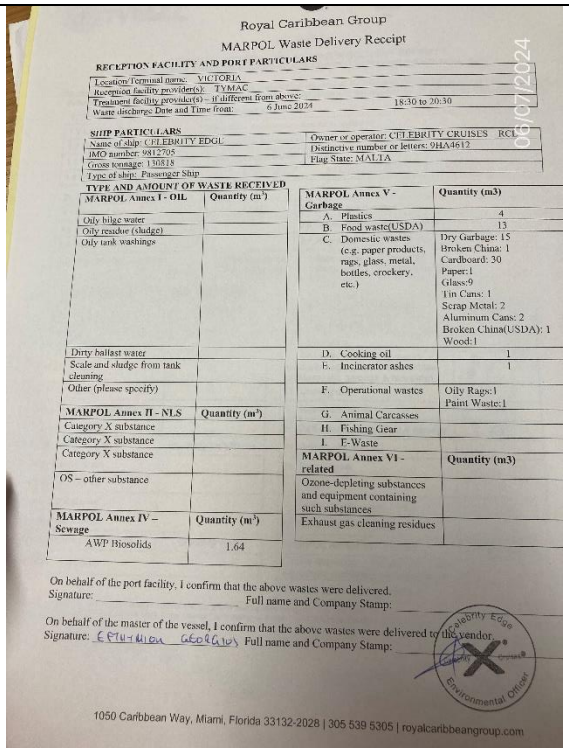
06/07/2024

Photo # 5 Image: IMG_1676 Date: 6/7/2024
Taken by: Evan Dobrowski
Description: Waste Delivery Receipt



Royal Caribbean Group
MARPOL Waste Delivery Receipt

RECEPTION FACILITY AND PORT PARTICULARS
Location/Terminal name: VICTORIA
Reception facility provider(s): TYMAC
Treatment facility provider(s) – if different from above:
Waste discharge Date and Time from: 6 June 2024 18:30 to 20:30

SHIP PARTICULARS
Name of ship: CELEBRITY EDGE
IMO number: 9812705
Gross tonnage: 130818
Type of ship: Passenger Ship
Owner or operator: CELEBRITY CRUISES RCL
Distinctive number or letters: 9HA4612
Flag State: MALTA

TYPE AND AMOUNT OF WASTE RECEIVED

MARPOL Annex I - OIL	Quantity (m³)
Oily bilge water	
Oily residue (sludge)	
Oily tank washings	
Dirty ballast water	
Scale and sludge from tank cleaning	
Other (please specify)	

MARPOL Annex II - NLS	Quantity (m³)
Category X substance	
Category X substance	
Category X substance	
OS – other substance	

MARPOL Annex IV – Sewage	Quantity (m³)
AWP Biosolids	1.64

MARPOL Annex V - Garbage	Quantity (m3)
A. Plastics	4
B. Food waste(USDA)	13
C. Domestic wastes (e.g. paper products, rags, glass, metal, bottles, crockery, etc.)	Dry Garbage: 15 Broken China: 1 Cardboard: 30 Paper:1 Glass:9 Tin Cans: 1 Scrap Metal: 2 Aluminum Cans: 2 Broken China(USDA): 1 Wood:1
D. Cooking oil	1
E. Incinerator ashes	1
F. Operational wastes	Oily Rags:1 Paint Waste:1
G. Animal Carcasses	
H. Fishing Gear	
I. E-Waste	

MARPOL Annex VI - related	Quantity (m3)
Ozone-depleting substances and equipment containing such substances	
Exhaust gas cleaning residues	

On behalf of the port facility, I confirm that the above wastes were delivered.
Signature: Full name and Company Stamp:

On behalf of the master of the vessel, I confirm that the above wastes were delivered to the vendor.
Signature: Full name and Company Stamp:

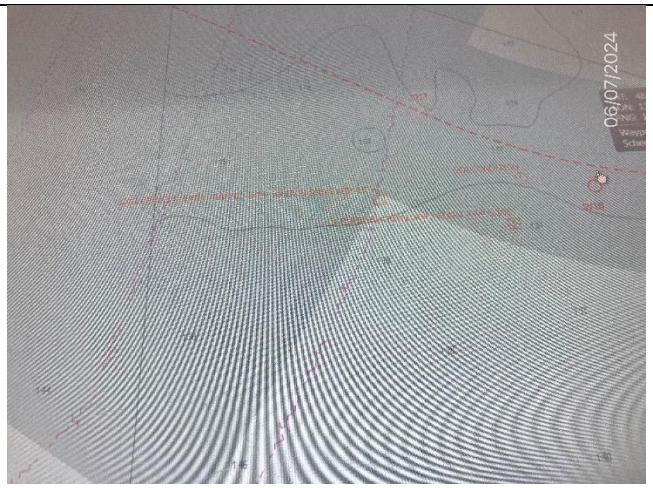
1050 Caribbean Way, Miami, Florida 33132-2028 | 305 539 5305 | royalcaribbeangroup.com

06/07/2024

Photo # 6 Image: IMG_1677 Date: 6/7/2024
Taken by: Evan Dobrowski
Description: Waste Delivery Receipt

06/07/2024

Photo # 7 Image: IMG_1678 Date: 6/7/2024
Taken by: Evan Dobrowski
Description: Voyage map



06/07/2024

Photo # 8 Image: IMG_1679 Date: 6/7/2024
Taken by: Evan Dobrowski
Description: Voyage map

PHOTO ADDENDUM – CELEBRITY EDGE
CELEBRITY CRUISE LINES - ROYAL CARIBBEAN CRUISE LINE
JUNE 7, 2024

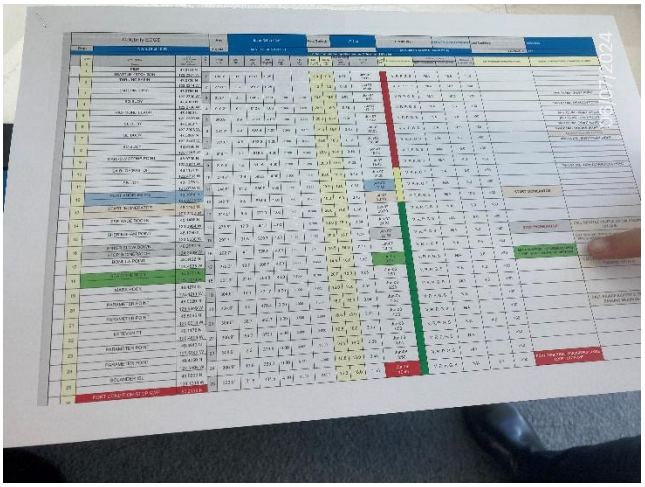


Photo # 9 Image: IMG_1680 Date: 6/7/2024
Taken by: Evan Dobrowski
Description: Environmental Discharge plan

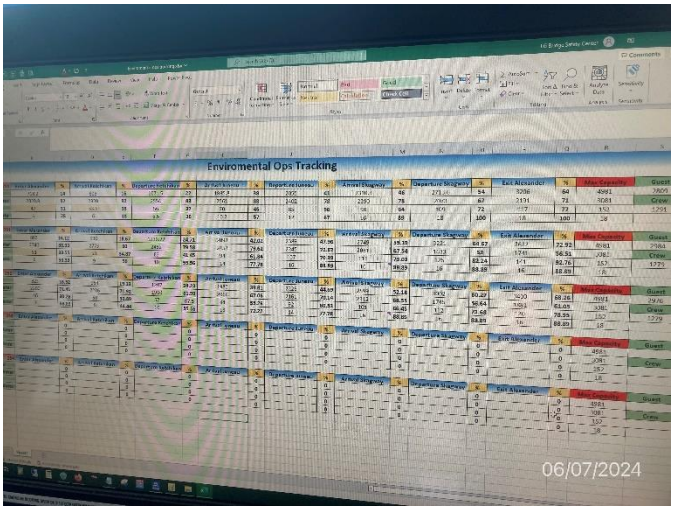


Photo # 10 Image: IMG_1681 Date: 6/7/2024
Taken by: Evan Dobrowski
Description: Environmental Operations Tracking

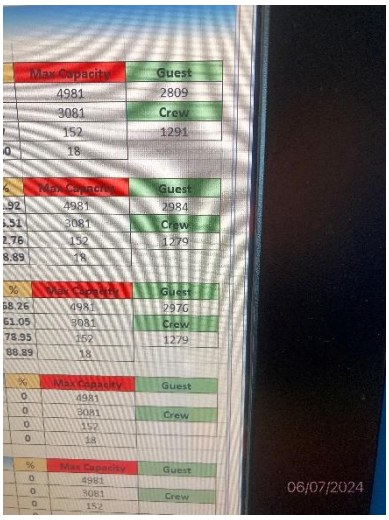


Photo # 11 Image: IMG_1682 Date: 6/7/2024
Taken by: Evan Dobrowski
Description: Guest and Crew capacity logs

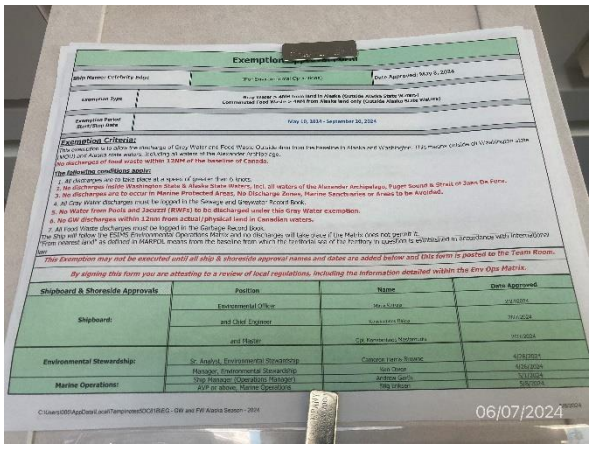


Photo # 12 Image: IMG_1683 Date: 6/7/2024
Taken by: Evan Dobrowski
Description: Gray Water and Food Waste Discharge Requirements.

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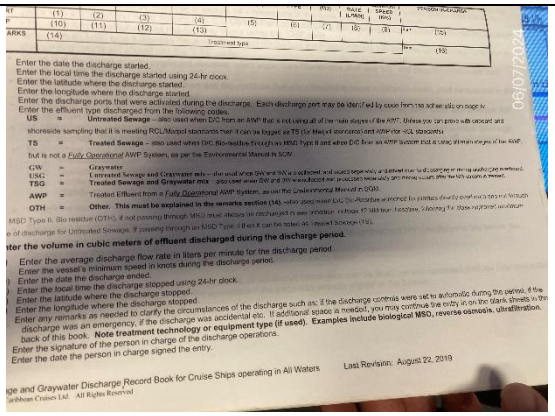

Photo # 13 Image: IMG_1684 Date: 6/7/2024
Taken by: Evan Dobrowski
Description: Blackwater and Gray water discharge logs

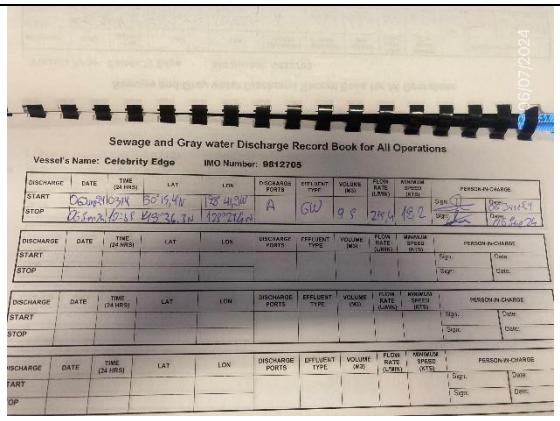

Photo # 14 Image: IMG_1685 Date: 6/7/2024
Taken by: Evan Dobrowski
Description: Blackwater and Gray water discharge logs

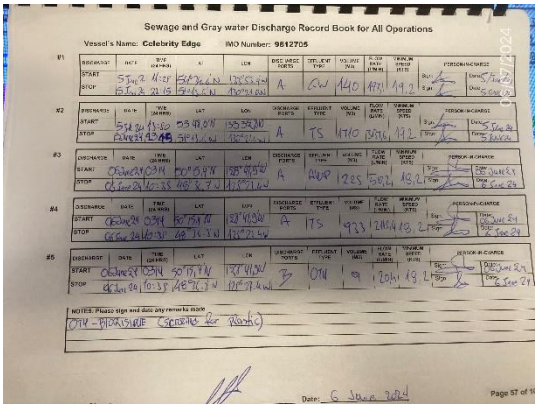

Photo # 15 Image: IMG_1686 Date: 6/7/2024
Taken by: Evan Dobrowski
Description: Blackwater and Gray water discharge logs

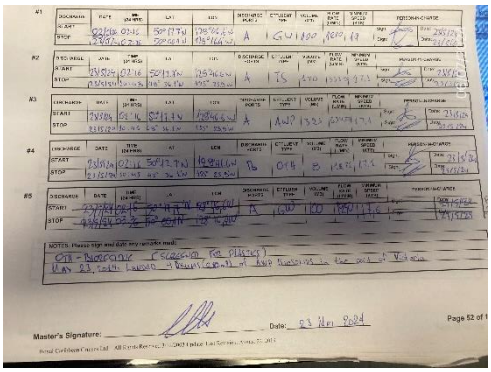

Photo # 16 Image: IMG_1687 Date: 6/7/2024
Taken by: Evan Dobrowski
Description: Blackwater and Gray water discharge logs

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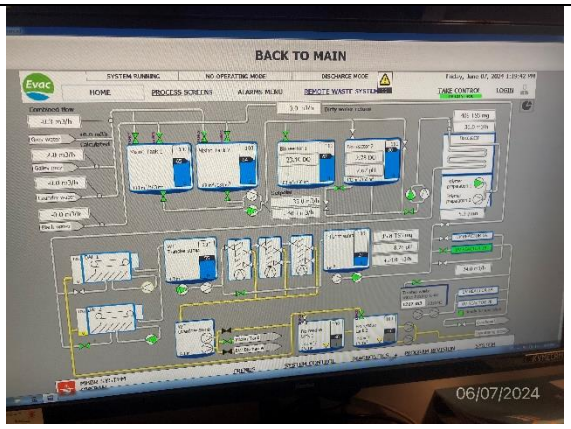

Photo # 17 Image: IMG_1688 Date: 6/7/2024
Taken by: Evan Dobrowski
Description: Treatment system overview

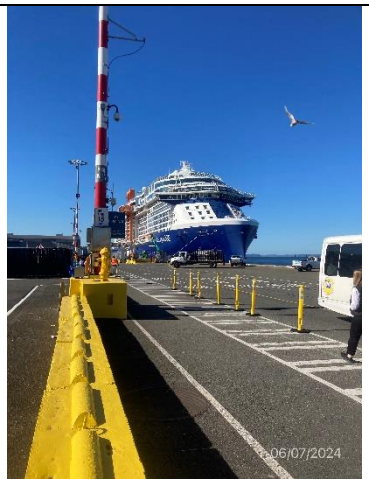

Photo # 18 Image: IMG_1689 Date: 6/7/2024
Taken by: Evan Dobrowski
Description: M/V Celebrity Edge

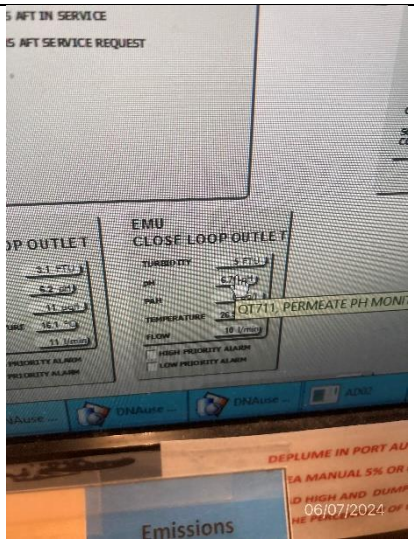

Photo # 19 Image: IMG_1690 Date: 6/7/2024
Taken by: Evan Dobrowski
Description: Screen showing EGCS in closed loop operation.

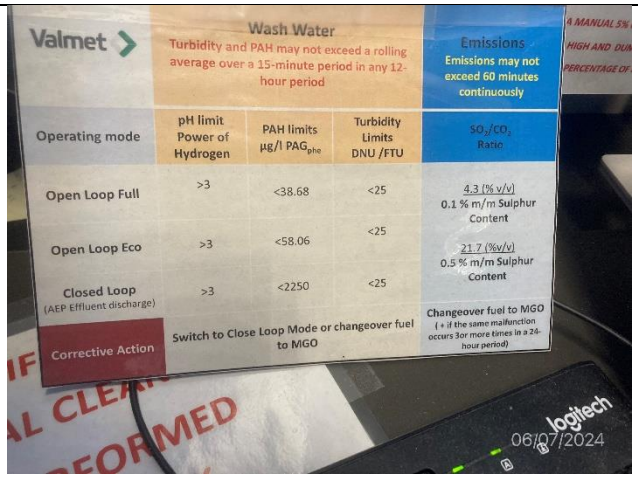

Photo # 20 Image: IMG_1691 Date: 6/7/2024
Taken by: Evan Dobrowski
Description: EGCS discharge parameter requirements.

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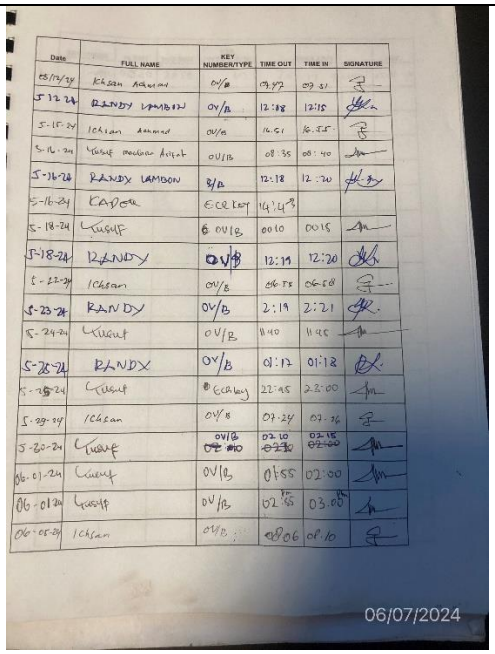

Photo # 21 Image: IMG_1692 Date: 6/7/2024
Taken by: Evan Dobrowski
Description: Discharge valve key log

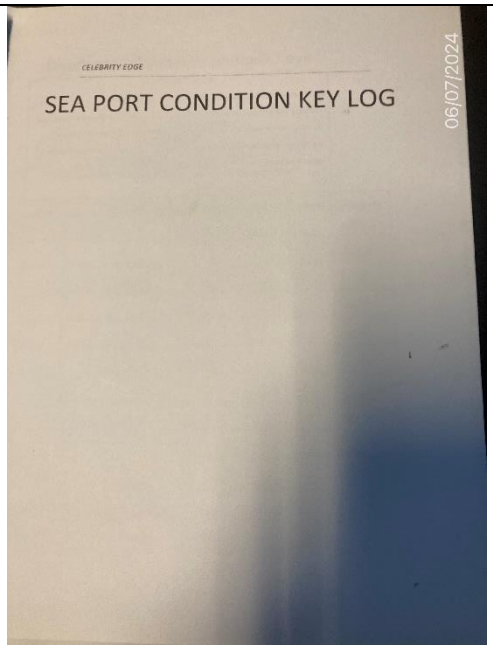

Photo # 22 Image: IMG_1693 Date: 6/7/2024
Taken by: Evan Dobrowski
Description: Discharge valve key log

Photo # 23 Image: IMG_1694 Date: 6/7/2024
Taken by: Evan Dobrowski
Description: Engine 2

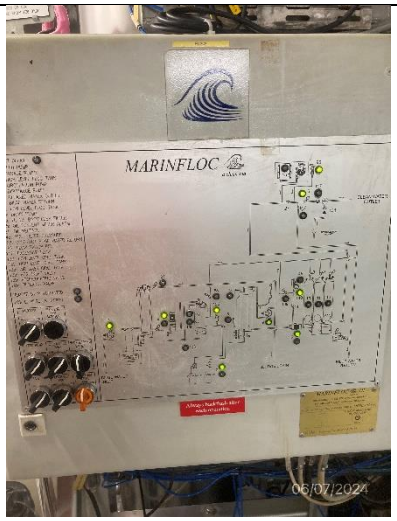

Photo # 24 Image: IMG_1695 Date: 6/7/2024
Taken by: Evan Dobrowski
Description: Mainfloc bilge system overview.

Photo # 25 Image: IMG_1696 Date: 6/7/2024
Taken by: Evan Dobrowski
Description: Bilge alarm system

Photo # 26 Image: IMG_1697 Date: 6/7/2024
Taken by: Evan Dobrowski
Description: Bilge water filters.

Photo # 27 Image: IMG_1698 Date: 6/7/2024
Taken by: Evan Dobrowski
Description: Whitebox with locks secured

Photo # 28 Image: IMG_1699 Date: 6/7/2024
Taken by: Evan Dobrowski
Description: DAF units

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Photo # 29 Image: IMG_1700 Date: 6/7/2024
Taken by: Evan Dobrowski
Description: UV treatment systems

Photo # 30 Image: IMG_1701 Date: 6/7/2024
Taken by: Evan Dobrowski
Description: Sewage treatment filters

Photo # 31 Image: IMG_1702 Date: 6/7/2024
Taken by: Evan Dobrowski
Description: DAF unit with lid open

Photo # 32 Image: IMG_1703 Date: 6/7/2024
Taken by: Evan Dobrowski
Description: Sewage treatment UV filter unit.

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Photo # 33 Image: IMG_1704 Date: 6/7/2024
Taken by: Evan Dobrowski
Description: Sewage overboard valve in the closed position

Photo # 34 Image: IMG_1705 Date: 6/7/2024
Taken by: Evan Dobrowski
Description: Sewage overboard valve in the closed position

Photo # 35 Image: IMG_1706 Date: 6/7/2024
Taken by: Evan Dobrowski
Description: Sewage treatment pipe flocculator

Photo # 36 Image: IMG_1707 Date: 6/7/2024
Taken by: Evan Dobrowski
Description: Sewage treatment pipe flocculator

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Photo # 37 Image: IMG_1708 Date: 6/7/2024
Taken by: Evan Dobrowski
Description: Flocculant hopper and mixing tank

Photo # 38 Image: IMG_1709 Date: 6/7/2024
Taken by: Evan Dobrowski
Description: Flocculant used in hopper

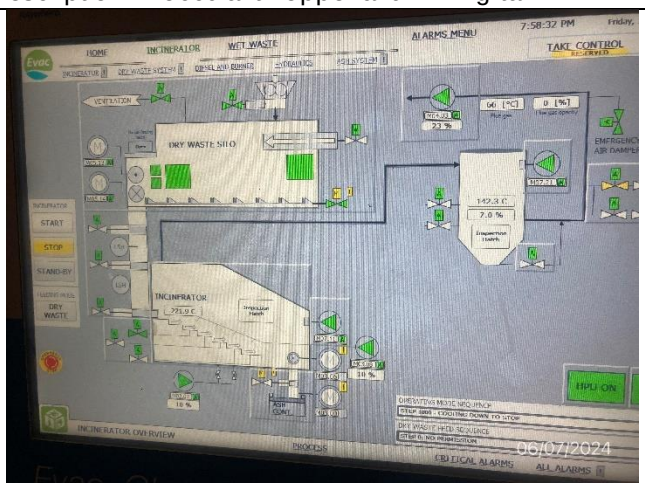

Photo # 39 Image: IMG_1710 Date: 6/7/2024
Taken by: Evan Dobrowski
Description: Incinerator overview

Photo # 40 Image: IMG_1711 Date: 6/7/2024
Taken by: Evan Dobrowski
Description: EGCS sludge outlet valve in closed position

Photo # 41 Image: IMG_1712 Date: 6/7/2024
Taken by: Evan Dobrowski
Description: Valmet Seawater Cyclone – Part of EGCS system.

Photo # 42 Image: IMG_1713 Date: 6/7/2024
Taken by: Evan Dobrowski
Description: Valmet Seawater Cyclone – Part of EGCS system.

Photo # 43 Image: IMG_1714 Date: 6/7/2024
Taken by: Evan Dobrowski
Description: EGCS filter housing

Photo # 44 Image: IMG_1715 Date: 6/7/2024
Taken by: Evan Dobrowski
Description: EGCS bag filter

Photo # 45 Image: IMG_1716 Date: 6/7/2024
Taken by: Evan Dobrowski
Description: Optifilter Aft Terminal box

Photo # 46 Image: IMG_1717 Date: 6/7/2024
Taken by: Evan Dobrowski
Description: Bio Sludge Dewatering press

Photo # 47 Image: IMG_1718 Date: 6/7/2024
Taken by: Evan Dobrowski
Description: Blackwater Screening units

Photo # 48 Image: IMG_1719 Date: 6/7/2024
Taken by: Evan Dobrowski
Description: Blackwater Screening units

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Photo # 49 Image: IMG_1720 Date: 6/7/2024
Taken by: Evan Dobrowski
Description: Bio Sludge Dewatering press

Photo # 50 Image: IMG_1721 Date: 6/7/2024
Taken by: Evan Dobrowski
Description: Bio Sludge Dewatering press

Photo # 51 Image: IMG_1722 Date: 6/7/2024
Taken by: Evan Dobrowski
Description: Broken plates for recycling

Photo # 52 Image: IMG_1723 Date: 6/7/2024
Taken by: Evan Dobrowski
Description: Densifier

Photo # 53 Image: IMG_1724 Date: 6/7/2024
Taken by: Evan Dobrowski
Description: Shredder

Photo # 54 Image: IMG_1725 Date: 6/7/2024
Taken by: Evan Dobrowski
Description: Glass Crusher

Photo # 55 Image: IMG_1726 Date: 6/7/2024
Taken by: Evan Dobrowski
Description: Recycling cans for segregating flammables

Photo # 56 Image: IMG_1727 Date: 6/7/2024
Taken by: Evan Dobrowski
Description: Used cooking oil storage

Photo # 57 Image: IMG_1728 Date: 6/7/2024
Taken by: Evan Dobrowski
Description: Waste storage locker

Photo # 58 Image: IMG_1729 Date: 6/7/2024
Taken by: Evan Dobrowski
Description: Waste storage locker

Photo # 59 Image: IMG_1730 Date: 6/7/2024
Taken by: Evan Dobrowski
Description: Waste storage locker

Photo # 60 Image: IMG_1731 Date: 6/7/2024
Taken by: Evan Dobrowski
Description: Laundry Chemical Storage locker.

Photo # 61 Image: IMG_1732 Date: 6/7/2024
Taken by: Evan Dobrowski
Description: Laundry Chemical Storage locker.

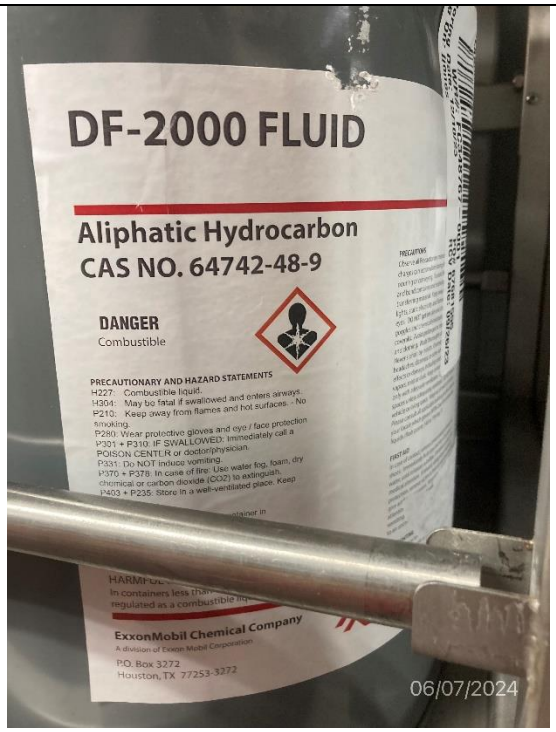

Photo # 62 Image: IMG_1733 Date: 6/7/2024
Taken by: Evan Dobrowski
Description: Laundry chemical DF-2000

Photo # 63 Image: IMG_1734 Date: 6/7/2024
Taken by: Evan Dobrowski
Description: Laundry chemical DF-2000

Photo # 64 Image: IMG_1735 Date: 6/7/2024
Taken by: Evan Dobrowski
Description: Laundry chemical DF-2000

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Photo # 65 Image: IMG_1736 Date: 6/7/2024
Taken by: Evan Dobrowski
Description: Laundry chemicals in use.

Photo # 66 Image: IMG_1737 Date: 6/7/2024
Taken by: Evan Dobrowski
Description: Laundry chemicals in use.

Photo # 67 Image: IMG_1738 Date: 6/7/2024
Taken by: Evan Dobrowski
Description: Laundry chemicals in use.