



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

Northwest Regional Office

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Inspection Date September 10, 2013	Permit Number NA	County King	Receiving Waters Marine Waters	Ecology Inspector Amy Jankowiak
Entry Time 9:15 am	Photos Taken	Samples Taken	Inspection Announced	Discharges to: <input checked="" type="checkbox"/> Surface Water
Exit Time 11:30 am	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Ground Water <input type="checkbox"/> Dewater <input type="checkbox"/> POTW
Name and Location of Site Inspected: CARNIVAL MIRACLE, Carnival Cruise Lines Pier 91 Seattle, Washington				Additional Participants/Inspectors: Kevin Leung, Ecology Jessica Engel, Ecology
On-Site Representative(s): <i>Name/Title/Phone/e-mail</i> Vinay Suresh Bodke, Environmental and OCC Safety Officer (EOSO) MIENVOFF@carnival.com				
Responsible Official(s): <i>Name/Title/Address/Phone/e-mail</i> Rabih Boudargham, Carnival, Environmental Operations Director 3655 NW 87 Avenue Miami, FL 33178-2428 (305) 599-2600 rboudargham@carnival.com				Other Facility Data: Notification made to Ben Fisch and Rabih Boudargham on August 14, 2013

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 checked="" 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	
Turbidity or Equivalent: Last Calibration: Trigger Level for Early Alarm: 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	
Disinfection Effectiveness Monitoring:	
<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:	

NOT APPLICABLE

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 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	
Turbidity or Equivalent: Last Calibration:		
Trigger Level for Early Alarm:		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	
Disinfection Effectiveness Monitoring:		
<input type="checkbox"/>	Auto Shut Down or Operational Controls to Insure System Shut Down if Disinfection System Upset Occurs	NOT APPLICABLE
<input type="checkbox"/>	Disinfection System Operated and Maintained Properly	
Disinfection System:		

Section D: General (Approved to Discharge)

<input type="checkbox"/>	No Discharges Within 1/2 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 appear to be in the OCNMS, MOU waters or Washington state waters (MOU related waters).
<input checked="" type="checkbox"/>	Wastewater Discharges protocol per MOU and managed properly	The discharge protocols appear to be 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 appear to be handled per MOU requirements.
<input checked="" type="checkbox"/>	Hazardous Waste Managed Properly	Hazardous waste appears to be handled per MOU requirements.
<input checked="" type="checkbox"/>	WA Hazardous Waste Guidelines Followed (Appendix vii)	Hazardous waste guidelines appear to be handled per the MOU and guidelines.

<input checked="" type="checkbox"/> Solid Waste Managed Properly (zero garbage discharge)	Solid waste appears to be managed per MOU requirements.
<input checked="" type="checkbox"/> Photo/X-Ray Waste Managed Properly (fluids, cartridges,...) and landed ashore	Photo and x-ray waste appears to be handled per MOU requirements.
<input checked="" type="checkbox"/> Dry-Cleaning Wastes and Byproducts (fluids, sludge, filter materials...) Managed Properly (PERC – haz waste – landed ashore)	Dry cleaning waste products appear to be managed per MOU requirements – no dry cleaning occurs on this vessel.
<input checked="" type="checkbox"/> Unused/Outdated Pharmaceuticals Managed Properly (safely disposed of)	Unused or outdated pharmaceuticals appear to be managed per MOU requirements, with the possible exception of some expired pharmaceuticals being crushed and sent to the black water system.
<input checked="" type="checkbox"/> Fluorescent and Mercury Vapor Lamp Bulbs Managed Properly (prevent release of mercury)	Fluorescent and mercury vapor lamp bulbs appear to be managed per 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 appear to be managed per MOU requirements.
<input checked="" type="checkbox"/> Incinerator Ash Managed Properly and minimized volume (haz waste segregation and annual testing)	Incinerator ash appears to be managed per MOU requirements.
<input checked="" type="checkbox"/> Oily Bilge Water Managed Properly (<15 ppm, no visible sheen and underway)	Oily bilge water appears to be managed per 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)	Ballast water appears to be managed per MOU requirements.
<input checked="" type="checkbox"/> OCNMS rules and regs followed	The discharge protocol appears to be consistent with MOU requirements to not occur in the OCNMS.

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 appears to be handled per MOU requirements.
<input checked="" type="checkbox"/> How is maintenance performed on the outside of the vessel (paint chipping, painting, etc)	Outside vessel maintenance appears to be handled per MOU requirements.
<input checked="" type="checkbox"/> Sculleries and Galleys – type of detergents and degreasers used (phosphate free and non-toxic)?	Galleys appear to use phosphate free and non-toxic detergents and degreasers.
<input checked="" type="checkbox"/> How are food waste discharges handled (prevention of erroneous materials)?	Food waste appears to be handled per MOU requirements.
<input checked="" type="checkbox"/> Medical sinks/floor drains, chem. stor areas wastes go where (plugged, blackwater, bilge)?	Medical sinks/floor drains appear to be handled per MOU requirements.
<input checked="" type="checkbox"/> Where is pool and spa water discharged? Dechlorinated/debrominated and underway?	Pool and spa water appears to be handled per MOU requirements.
<input checked="" type="checkbox"/> What type of fuel is used and percent sulfur content?	<1% sulfur content 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

Amy Jankowiak, Washington State Department of Ecology (Ecology) Northwest Regional Office, Water Quality Program (NWRO-WQ), along with Kevin Leung, NWRO-WQ and Jessica Engel, NWRO-WQ conducted the inspection of the Carnival Cruise Lines CARNIVAL MIRACLE on September 10, 2013. The main contact on board the CARNIVAL MIRACLE was Vinay Suresh Bodke, Environmental and OCC Safety Officer (EOSO) for the CARNIVAL MIRACLE. Prior notification of the visit was given on August 14, 2013 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 CARNIVAL MIRACLE is not approved to discharge in MOU waters.

The CARNIVAL MIRACLE was placed into service in 2004 and is 963 feet long with a width of 105.7 feet. The vessel has approximately 2124 passengers and 934 crew.

The CARNIVAL MIRACLE is scheduled for 190 port calls in Seattle and conducts one week cruises to Alaska turning around on Tuesday's between May 7, 2013 and September 10, 2013.

Inspection

We arrived and boarded the ship (photos #01 and #02) at about 9:15 am and began with introductions and a plan for the day with Vinay Suresh Bodke, EOSO. We discussed various waste streams and discharge protocols. We toured the garbage and recycling areas, hazardous waste storage, food waste and the incinerators. We then reviewed discharge records and protocols in the Engine Control Room (ECR) and then viewed the marine sanitation devices (MSDs), and the oily water separators. We then went over notification and navigation on the Bridge (photos #21 and #22) and then finalized with a debriefing and we disembarked the vessel at about 11:30 am.

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

About one hour prior to approaching discharge boundaries, 12 miles from shore and outside of the OCNMS, the Bridge staff notifies the Engine Control Staff (Officers on Watch) of the location and to stop all discharges. Discharges are also not started up until outside of MOU related waters. The ECR staff confirms the locations. The Bridge staff and the ECR staff log the discharges and they are also recorded electronically. The discharge ports are padlocked with the keys in the ECR and the Engineer on Watch in charge of the keys. 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 port location, effluent type, and volumes. Discharges of blackwater, graywater, wastewater residual solids, oily bilge, and food waste occur outside of 12 nautical miles from land (outside of MOU related waters). No discharges of any kind occur in the Olympic Coast National Marine Sanctuary OCNMS. All wastewater discharge records that were reviewed appeared to be in compliance with the MOU and did not occur in MOU waters, Washington State waters or the Olympic Coast National Marine Sanctuary (OCNMS) (MOU related waters).

Residual solids from the MSDs are collected, drummed and sent to shore for proper disposal.

Oily bilge water is treated with a two oily water separators (OWSs) (photos #16 and #17). A white box (photo #18) is used to only allow discharges at less than 15 ppm oil content maximum, though discharges are typically lower between 6-7 ppm. All discharges from the OWSs take place outside of MOU related waters.

Ballast water exchanges do not typically occur on this route. If an exchange was necessary, permission would first be sought from the Carnival Cruise Lines office.

There are two salt water swimming pools, and two Jacuzzis. All pool water is discharged outside of MOU related waters and Jacuzzi water is sent to the graywater tanks for discharge outside of MOU related waters.

Food waste is collected in various locations, is sorted and then sent through a pulper (photo #08). Galley waste water goes through a grease separator where the grease is either incinerated or sent to shore. The galley water is discharged outside of MOU related waters along with the pulped food waste. Certain food waste is collected and incinerated if it does not go into the pulper. Cooking oil is reused in the fuel tanks after being filtered. Filtered materials go to the food waste system. Records reviewed were consistent with these protocols. Sorting is periodically checked and monitored to ensure only allowed food waste gets discharged. Galleys use phosphate free and non-toxic detergents and degreasers.

Decks runoff goes overboard with best management practices in place to ensure only water goes overboard. Only freshwater is used for cleaning the deck and outside vessel and cleaning is not done in port. Paint chipping and painting is not done in Seattle. In locations where it does occur, procedures are followed to prevent discharges.

No dry cleaning occurs on the vessel eliminating the production of chemical such as PERC. X-rays are done digitally also eliminating any chemical use.

Any photo waste is collected, drummed (photo #06) and sent ashore as hazardous waste. Fluorescent bulbs (photo #05) are offloaded as universal waste and not crushed on board. Hazardous waste materials include items such as oily rags, incinerator ash, aerosols, sharps, used cartridges and filters, and expired chemicals. Hazardous waste (photo #04) is offloaded in Seattle on this voyage. Hazardous waste logs were reviewed and appear to be consistent with MOU requirements.

Unused or outdated pharmaceuticals and narcotics are sent back to the manufacturer or crushed and sent to the blackwater system. The disposal of pharmaceuticals to the black water system may not be consistent with Cruise Lines International Association (CLIA) standards and therefore the MOU which accepts the CLIA standards. Ecology recommends that the pharmaceutical disposal policy on the ship be reviewed for consistency with the CLIA standards. Medical facility drains go to the blackwater MSDs. Some dry garbage, paper, and some cardboard are incinerated. Incinerators (photo #07) are only operated once outside of 5 nautical miles from land. Incinerator ash is offloaded as hazardous waste and tested annually to ensure non-metals status. Recent results have passed for non-metals.

Solid waste (garbage, recyclables, etc) is collected sorted and either reused, recycled, incinerated or offloaded to shore as appropriate. Materials such as glass (photo #03), metals, plastic, aluminum, and some cardboard is recycled. The garbage record book was reviewed and showed consistency with requirements.

1% or less sulfur content fuel is used throughout the route.

Freshwater is bunkered in and produced on board. The vessels sea chest uses an antifouling system (photo #20).

Black water and Gray water:

The CARNIVAL MIRACLE uses four FORMAT traditional Type II MSDs to treat blackwater (photos #10 and #11). Blackwater is collected by vacuum to collection tanks and then to a feed unit that disperses the blackwater to the four units. The unit volumes can be seen electronically in the ECR (photo #09). Each unit (photo #13) includes screening, aeration, settling and chlorination (photos #12 and #15). Chlorine dosing can be adjusted (photo #14), but monitoring is not done for the systems. The MSDs are cleaned and checked about once a month. Laundry graywater is collected in a separate tank and held for overboard discharge outside of MOU related waters without treatment. Accommodation, sink, shower galley and Jacuzzi water is sent to graywater holding tanks and held for overboard discharge outside of MOU related waters without treatment.

Conclusions and Recommendations

Discharge protocols were clear and thorough.

It is recommended that the pharmaceutical disposal policy on the ship be reviewed for consistency with the CLIA standards.

Attachments:

Photographs

Copies to:

Rabih Boudargham, Carnival, Environmental Operations Director

Vinay Suresh Bodke, EOSO, CARNIVAL MIRACLE

Mark Toy, Health

Greg Wirtz, NWCCA

Donna Spalding, NWCCA

Stephanie Jones Stebbins, Port of Seattle

Kevin Fitzpatrick, Ecology

Mark Henley, Ecology

Amy Jankowiak, Ecology

Central Files: Carnival Cruise Lines – CARNIVAL MIRACLE; WQ 6.1

Section H: Signatures

<p><u>Name and Signature of Inspector:</u> Amy Jankowiak </p>	<p><u>Agency/Office/Telephone:</u> Department of Ecology Northwest Regional Office Water Quality Program Municipal Compliance Specialist 425-649-7195</p>	<p><u>Date</u> 12/16/13</p>
<p><u>Name and Signature of Reviewer:</u> Mark Henley </p>	<p><u>Agency/Office/Telephone:</u> Department of Ecology Northwest Regional Office Municipal Unit Supervisor 425-649-7103</p>	<p><u>Date</u> 12/16/13</p>



PHOTO #:01 DATE: SEPTEMBER 10, 2013
TAKEN BY: AMY JANKOWIAK FILE No.:IMG_035
DESCRIPTION: CARNIVAL MIRACLE VESSEL



PHOTO #:02 DATE: SEPTEMBER 10, 2013
TAKEN BY: AMY JANKOWIAK FILE No.:IMG_036
DESCRIPTION: CARNIVAL MIRACLE VESSEL



PHOTO #:03 DATE: SEPTEMBER 10, 2013
TAKEN BY: AMY JANKOWIAK FILE No.:IMG_004
DESCRIPTION: GARBAGE/RECYCLING - GLASS RECYCLING



PHOTO #:04 DATE: SEPTEMBER 10, 2013
TAKEN BY: AMY JANKOWIAK FILE No.:IMG_005
DESCRIPTION: HAZARDOUS WASTE STORAGE - AERSOLS

Note - Date Stamp is inaccurate - should be 09/10/13

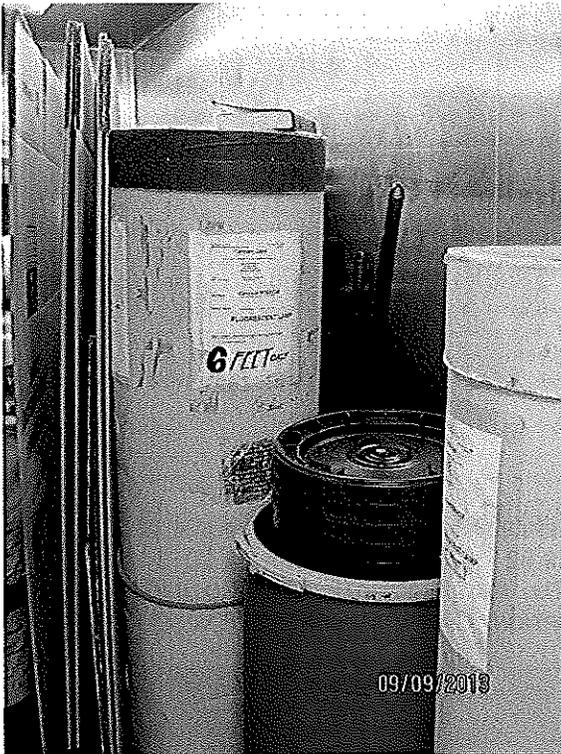


PHOTO #:05 DATE: SEPTEMBER 10, 2013
TAKEN BY: AMY JANKOWIAK FILE No.:IMG_006
DESCRIPTION: HAZARDOUS WASTE - LAMPS

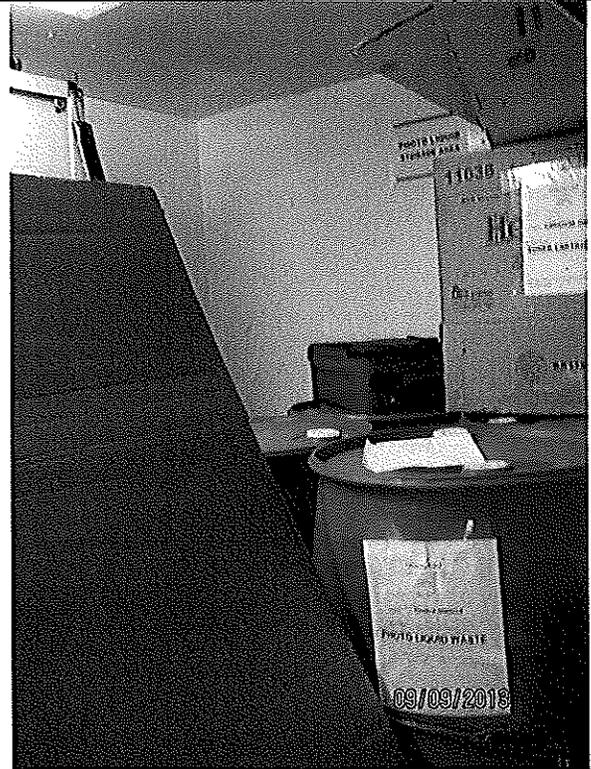


PHOTO #:06 DATE: SEPTEMBER 10, 2013
TAKEN BY: AMY JANKOWIAK FILE No.:IMG_007
DESCRIPTION: HAZARDOUS WASTE - PHOTO WASTE AND CARTRIDGES



PHOTO #:07 DATE: SEPTEMBER 10, 2013
TAKEN BY: AMY JANKOWIAK FILE No.:IMG_008
DESCRIPTION: INCINERATOR

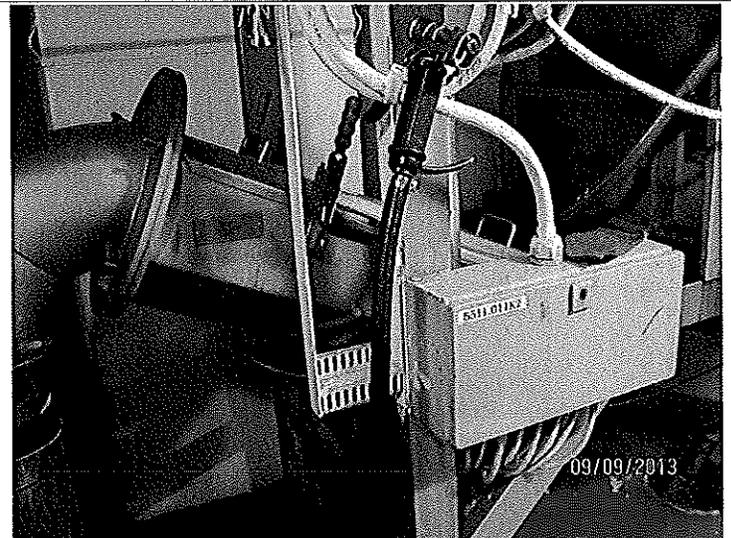


PHOTO #:08 DATE: SEPTEMBER 10, 2013
TAKEN BY: AMY JANKOWIAK FILE No.:IMG_010
DESCRIPTION: FOOD WASTE PULPER

Note - Date Stamp is inaccurate - should be 09/10/13

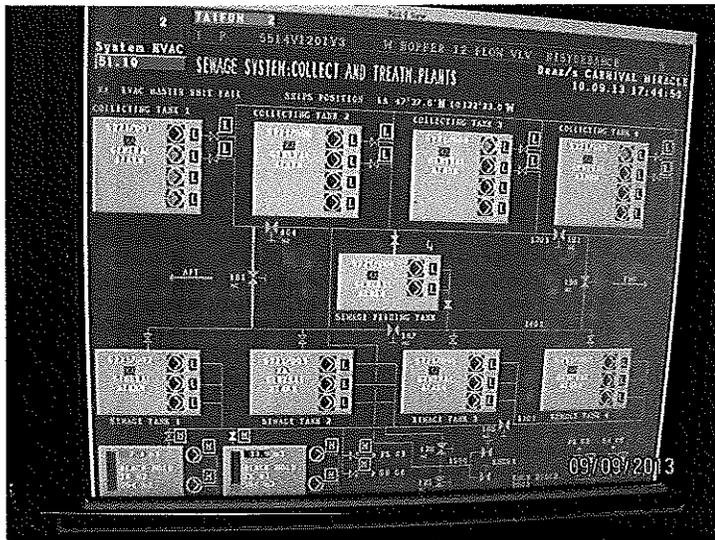


PHOTO #:09 DATE: SEPTEMBER 10, 2013
TAKEN BY: AMY JANKOWIAK FILE No.:IMG_013
DESCRIPTION: MSD SYSTEM SCREEN SHOT IN ECR

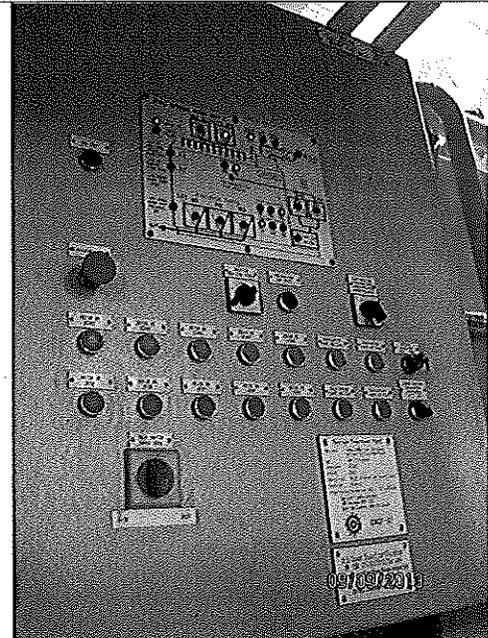


PHOTO #:10 DATE: SEPTEMBER 10, 2013
TAKEN BY: AMY JANKOWIAK FILE No.:IMG_014
DESCRIPTION: MSD CONTROLS

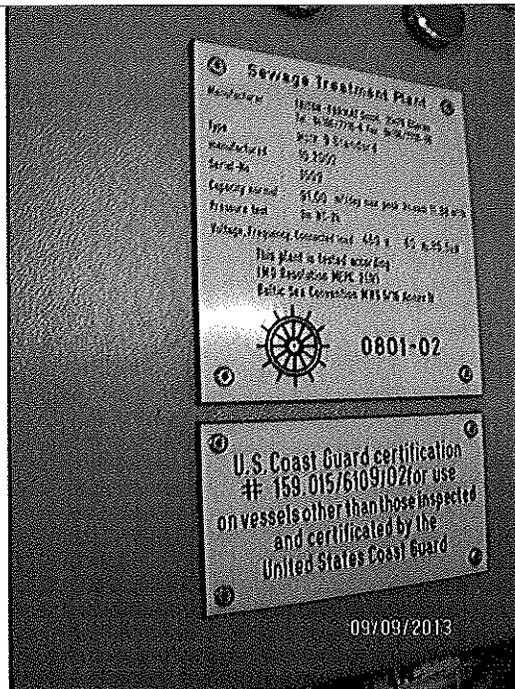


PHOTO #:11 DATE: SEPTEMBER 10, 2013
TAKEN BY: AMY JANKOWIAK FILE No.:IMG_015
DESCRIPTION: MSD - TRITON FORMAT SIGNAGE

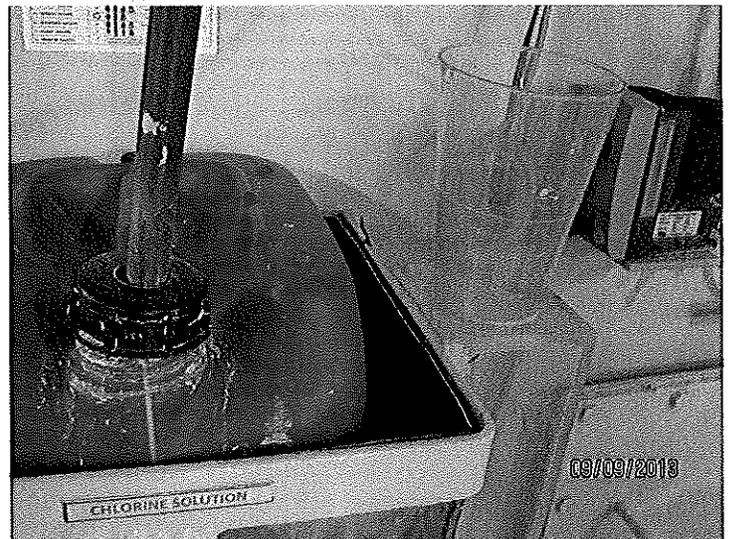


PHOTO #:12 DATE: SEPTEMBER 10, 2013
TAKEN BY: AMY JANKOWIAK FILE No.:IMG_017
DESCRIPTION: MSD CHLORINE SOLUTION TANK

Note - Date Stamp is inaccurate - should be 09/10/13

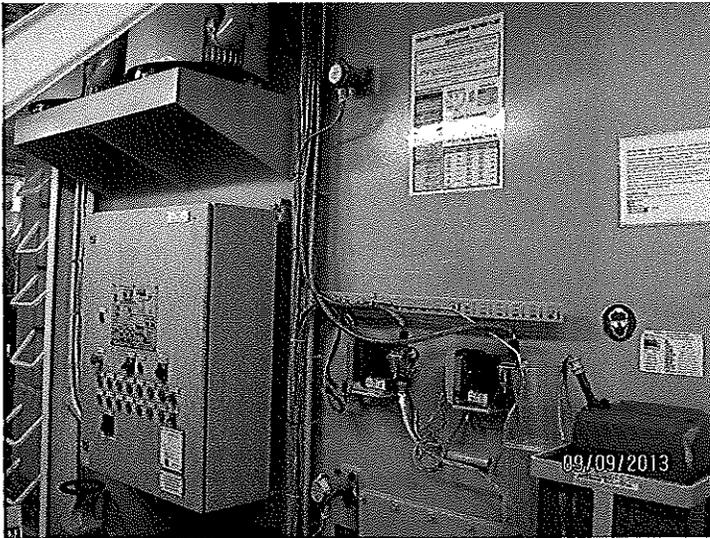


PHOTO #:13 DATE: SEPTEMBER 10, 2013
TAKEN BY: AMY JANKOWIAK FILE No.:IMG_028
DESCRIPTION: MSD TREATMENT TANK



PHOTO #:14 DATE: SEPTEMBER 10, 2013
TAKEN BY: AMY JANKOWIAK FILE No.:IMG_029
DESCRIPTION: MSD CHLORINE DOSING

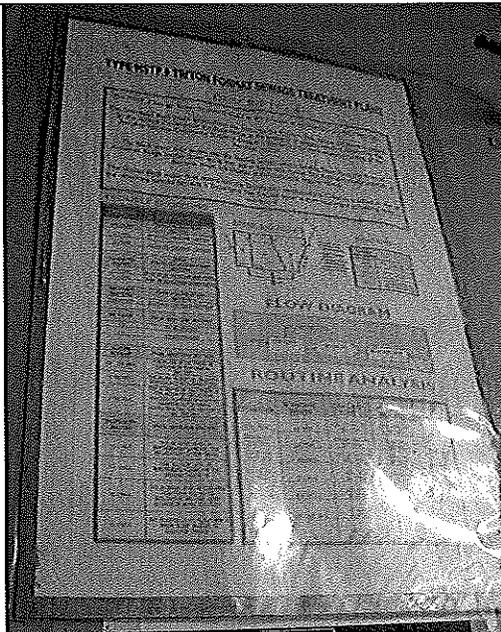


PHOTO #:15 DATE: SEPTEMBER 10, 2013
TAKEN BY: AMY JANKOWIAK FILE No.:IMG_032
DESCRIPTION: MSD SIGNAGE – FLOW AND PROCESS INFO

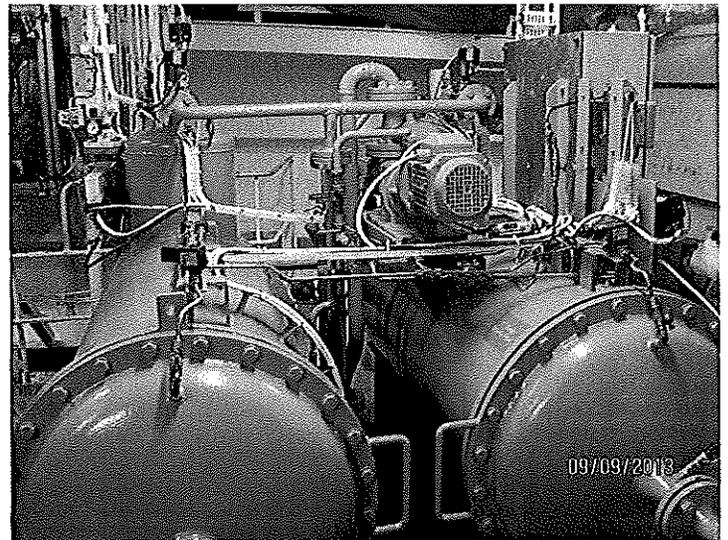


PHOTO #:16 DATE: SEPTEMBER 10, 2013
TAKEN BY: AMY JANKOWIAK FILE No.:IMG_018
DESCRIPTION: OILY WATER SEPARATORS (OWS) FOR BILGE WATER

Note – Date Stamp is inaccurate – should be 09/10/13

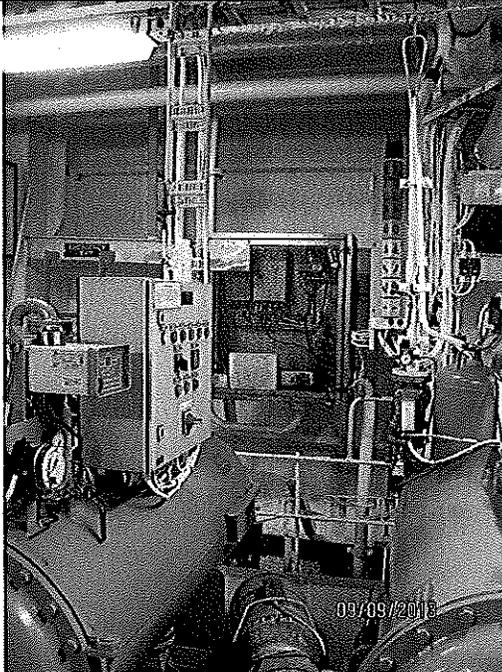


PHOTO #:17 DATE: SEPTEMBER 10, 2013
TAKEN BY: AMY JANKOWIAK FILE No.:IMG_019
DESCRIPTION: OWS WHITE BOX



PHOTO #:18 DATE: SEPTEMBER 10, 2013
TAKEN BY: AMY JANKOWIAK FILE No.:IMG_023
DESCRIPTION: OWS WHITE BOX

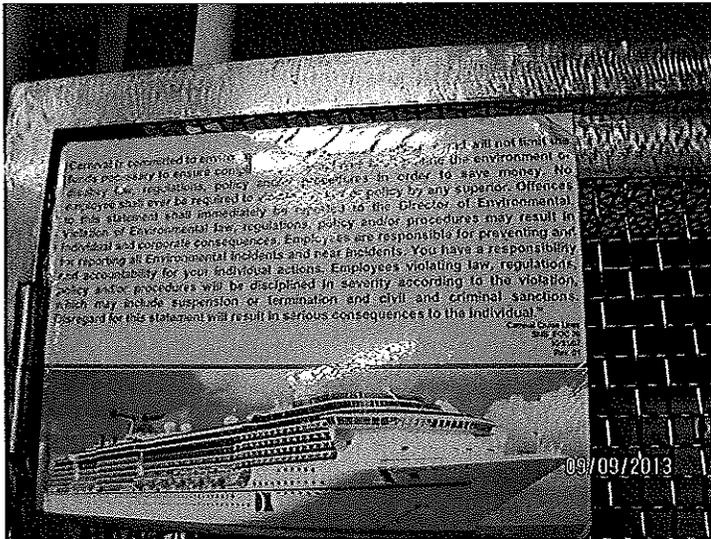


PHOTO #:19 DATE: SEPTEMBER 10, 2013
TAKEN BY: AMY JANKOWIAK FILE No.:IMG_024
DESCRIPTION: ENVIRONMENTAL RESPONSIBILITY SIGNAGE

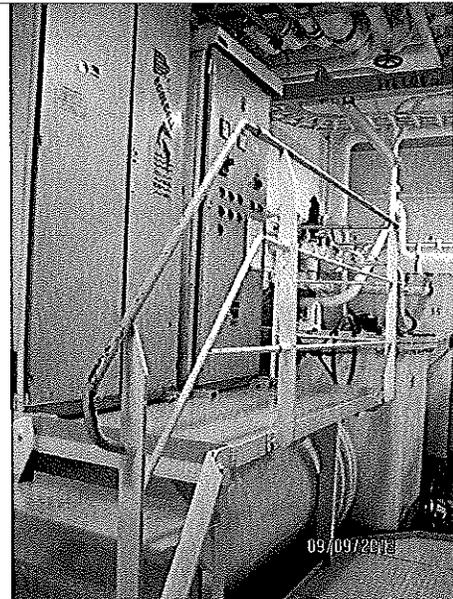


PHOTO #:20 DATE: SEPTEMBER 10, 2013
TAKEN BY: AMY JANKOWIAK FILE No.:IMG_030
DESCRIPTION: ANTI-FOULING SYSTEM

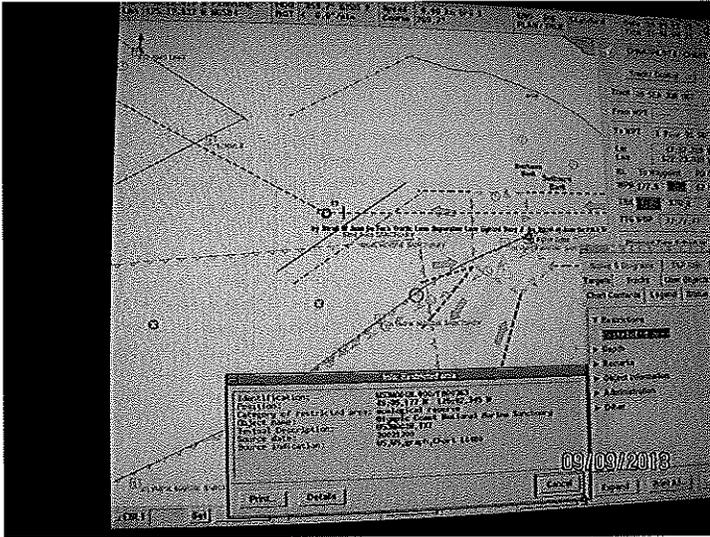


PHOTO #21 DATE: SEPTEMBER 10, 2013
TAKEN BY: AMY JANKOWIAK FILE No.:IMG_033
DESCRIPTION: NAVIGATION SCREEN SHOT – OCNMS AREA

PHOTO #22 DATE: SEPTEMBER 10, 2013
TAKEN BY: AMY JANKOWIAK FILE No.:IMG_034
DESCRIPTION: VIEW FROM BRIDGE