DEPARTMENT OF ECOLOGY
State of Washington

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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Bellevue, WA 98008

Phone: (425) 649-7000
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Inspection Date	Permit Number	County	Receiving Waters	Ecology Inspector
September 8, 2013	NA	King	Marine Waters	Amy Jankowiak

Entry Time 9:20 am	Photos Taken	Samples Taken	Inspection Announced	Discharges to: ☒ Surface Water
Exit Time 11:54 am	☒ Yes ☐ No	☐ Yes ☒ No	☒ Yes ☐ No	☐ Ground Water ☐ Dewater ☐ POTW

Name and Location of Site Inspected:
GOLDEN PRINCESS, Princess Cruises
Pier 91
Seattle, Washington

Additional Participants/Inspectors:
Biniam Zelelow, Ecology

On-Site Representative(s): *Name/Title/Phone/e-mail*
Rumen Georgiev, Occupational Safety & Environmental Officer
Npdoseo1@princesscruises.com

Responsible Official(s): *Name/Title/Address/Phone/e-mail*
Andrew Lorenzana, M.E., Director Environmental Operations
Princess Cruises
24200 Magic Mountain Parkway, Santa Clarita, CA 91355-1283
661-753-2755; alorenzana@princesscruises.com

Other Facility Data:
Notification made to Andrew Lorenzana on September 4, 2013

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:

NOT APPLICABLE

☐	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 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:	

NOT APPLICABLE

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 appear to be in the OCNMS, MOU waters or Washington state waters (MOU related waters), with the exception of the May 19, 2013 discharges, reported to Ecology with details below.
☒	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.
☒	Residual Solids Managed Properly/Disposal Protocol per MOU	Residual solids appear to be handled per MOU requirements.
☒	Hazardous Waste Managed Properly	Hazardous waste appears to be handled per MOU requirements.
☒	WA Hazardous Waste Guidelines Followed (Appendix vii)	Hazardous waste guidelines appear to be handled per the MOU and guidelines.

☒	Solid Waste Managed Properly (zero garbage discharge)	Solid waste appears to be managed per MOU requirements.
☒	Photo/X-Ray Waste Managed Properly (fluids, cartridges,...) and landed ashore	Photo and x-ray waste appears to be handled per MOU requirements.
☒	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.
☒	Unused/Outdated Pharmaceuticals Managed Properly (safely disposed of)	Unused or outdated pharmaceuticals appear to be managed per MOU requirements.
☒	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.
☒	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 appear to be managed per MOU requirements.
☒	Incinerator Ash Managed Properly and minimized volume (haz waste segregation and annual testing)	Incinerator ash appears to be managed per MOU requirements.
☒	Oily Bilge Water Managed Properly (<15 ppm, no visible sheen and underway)	Oily bilge water appears to be managed per 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)	Ballast water goes through a Hyde Marine, USCG approved treatment system with filtration and ultraviolet disinfection, allowed per the MOU.
☒	OCNMS rules and regs followed	The discharge protocol appears to be consistent with MOU requirements to not occur in the OCNMS.
	Additional General Questions	
☒	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.
☒	How is maintenance performed on the outside of the vessel (paint chipping, painting, etc)	Outside vessel maintenance appears to be handled per MOU requirements.
☒	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.
☒	How are food waste discharges handled (prevention of erroneous materials)?	Food waste appears to be handled per MOU requirements.
☒	Medical sinks/floor drains, chem. stor areas wastes go where (plugged, blackwater, bilge)?	Medical sinks/floor drains appear to be handled per MOU requirements.
☒	Where is pool and spa water discharged? Dechlorinated/debrominated and underway?	Pool and spa water appears to be handled per MOU requirements.
☒	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)	
Total Suspended Solids (TSS)	
Fecal Coliform	
Residual Chlorine	
pH	
Ammonia, Nitrogen	

NOT APPLICABLE

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 Biniam Zelelow, NWRO-WQ conducted the inspection of the Princess Cruises GOLDEN PRINCESS on September 8, 2013. The main contact on board the GOLDEN PRINCESS was Rumen Georgiev, Occupational Safety and Environmental Officer (OSEO) for the GOLDEN PRINCESS. Prior notification of the visit was given on September 4, 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 GOLDEN PRINCESS is not approved to discharge in MOU waters.

The GOLDEN PRINCESS was placed into service in 2001 and is 951 feet long with a width of 118 feet. The vessel has a approximately 2978 passengers and 1000 crew.

The GOLDEN PRINCESS is scheduled for 20 port calls in Seattle and conducts one week cruises to Alaska turning around on Sundays between May 12, 2013 and September 22, 2013.

Inspection

We arrived and boarded the ship (photos #01 and #02) at about 9:20 am and began with introductions and a plan for the day with Rumen Georgiev, OSEO. We discussed various waste streams and discharge protocols. We toured the garbage and recycling areas, hazardous waste storage, and the incinerators. We then reviewed discharge records and protocols in the Engine Control Room (ECR) (photos # 19 and #20) and then viewed the oily water separators, the Hamworthy Membrane Bio-Reactors (MBR) advanced wastewater treatment system (AWTS), the sampling laboratory, the ballast water treatment system and the Sea Chest. We then went over notification and navigation on the Bridge and then finalized with a debriefing and we disembarked the vessel at about 11:54 am.

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

The discharge protocol starts with a plan before departure via a detailed Voyage Plan for the entire passage from berth to berth. There is also a briefing with Navigation (Nav) prior to each departure. About 30 minutes prior to approaching discharge boundaries, the Bridge staff notifies the Engine Control Staff (Officers on Watch) of the location and what discharges are allowed. The ECR staff confirms the locations. The Bridge staff logs the locations and sends an e-mail to the ECR with a copy to the ESEO. The discharge ports are padlocked with the keys (photo #23) 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* (photo #21). 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), with the exception of one discharge from May 19, 2013 which was reported to Ecology. See further detail below.

Enviro Pilot (photo #22) is a new system used on the ship that helps give information to engineers in the ECR and the Bridge staff. The system records discharge and navigation information electronically and is in a trial period.

Residual solids from the AWTS are collected and either incinerated or discharged 12 miles outside of MOU related waters.

Oily bilge water is treated with a two oily water separators, a static one (photo #26) and a centrifical one (photos #24 and #25). A white box (photo #27) is used to only allow discharges at less than 15 ppm oil content maximum, though discharges are typically lower between 3-7 ppm.

Ballast water is treated with a Hyde Marine USCG approved system (photo #39). The system filters the ballast water and then disinfects with ultraviolet light (UV). Samples are taken both going in the system and out to assure treatment (photo #40).

There are two big swimming pools, one small one and several Jacuzzis. They are all filled with fresh water. All pool and Jacuzzi discharges with graywater (outside MOU related waters). If there is cause to discharge due to incidents in the water, the discharge is chlorinated and dechlorinated first.

Food waste is collected in various locations, is sorted and then sent through a pulper with 25 milimeter screens. Water in the pulpers is recycled. Pulped food waste and galley water is discharged outside of MOU related waters. An old food

chute is locked and not used. Items such as bones, fish skin and some food items are composted (photos #10 and #11) on board in the cold room. The compost is then sealed and offloaded in Canada for beneficial use. Cooking oil is recycled as biodiesel. Records reviewed were consistent with this protocol. 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. 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 and sent through a silver recovery system (photos #06 and #07). The treated waste is then incinerated as non-hazardous waste when tests show less than 5 ppm silver. Tests results are logged (photo #08). Used filters (photo #15) go back to the company for recycling. Fluorescent bulbs (photo #13) are offloaded as hazardous waste and not crushed on board. Hazardous waste materials include items such as oily rags, incinerator ash, some aerosols which are punctured with aerosol removal system (photo #12), sharps, used cartridges and filters, and expired chemicals. Hazardous waste is offloaded in Victoria, Canada only on this voyage. Hazardous waste logs were reviewed and appear to be consistent with MOU requirements.

Unused or outdated pharmaceuticals and narcotics are typically incinerated, although some may be sent back to the manufacturer. There are no drains in the medical facility. Sharps are off-loaded as bio-hazardous waste and red bagged medical waste (photo #18) is incinerated. Oily rags, dry garbage, paper, and some cardboard are incinerated. Some paper, cartons, light plastics and food contaminated materials are incinerated. Incinerators (photos #16 and #17) are only operated once underway and 3-4 miles prior to port they are stopped. No incineration occurs in the OCNMS. 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 (photos #03, #04, and #14) and either reused, recycled, incinerated (photo #09) or offloaded to shore as appropriate. Materials such as glass (mixed color), metals, plastic (photo #05), 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 via reverse osmosis. The vessels sea chest uses cathodic copper and ultrasonic for antifouling (photo #41).

Black water and Gray water System:

The GOLDEN PRINCESS uses three Hamworthy MBR AWTS units to treat black water and most graywater. One of the MBR treats blackwater only while the other two treat graywater. Galley water and some laundry water is untreated and is discharged outside of 12 miles while some laundry water goes to the MBR. Black water, which includes toilet waste and infirmary drains is collected by vacuum to collection tanks. Gray water which includes sink and shower water and is piped to a buffer tank. From the buffer and collection tanks, flow moves to the screen press. The solids are screened into bags and are then sent to the incinerator. The liquid moves to the 1st stage of the membrane bioreactor where aeration occurs. From the 1st stage, flow moves to the Russell Filters (inter-stage filters. The inter-stage filtered solids are returned back to the screen press. The interstage filters (photo #29) are checked and cleaned by running hours and filters are changed. The liquid moves onto the 2nd stage of the MBR for further aeration. From the 2nd stage MBR, flow is sent to the membrane modules (photo #30) for ultrafiltration. There are 16 membrane modules that are cleaned by backwash every two weeks with water and a chemical cleaner (photo #31). Approximately every two months they go through a deep clean with chemical cleaners. There are at least three spare membranes on board. Effluent from the membrane modules are sent to a permeate tank where turbidity is monitored. Flow then combines with the other two MBR's at the UV Permeate tank. From the UV Permeate tank, effluent moves through the ultraviolet (UV) disinfection system. The UV system (photos #32 and #33) is cleaned by hand washing periodically in addition to automated cleaning. Disinfected effluent either goes directly overboard or to a holding tank if not in an approved area for discharge. Currently, effluent from the permeate tanks is held and discharged outside of MOU related waters. Turbidity, oxygen, TSS (total suspended solids/turbidity), air pressure, running hours and production are all measured electronically. The staff has a small laboratory (photos #35, #36, #37, and #38) on board where they sample (photo #34) for process control for coliform, chlorine, TSS, and ammonia. Samples are also taken by an external laboratory several times a month.

Follow-up to MOU-unauthorized discharge of May 19, 2013:
On May 20, 2013, Ecology received notification from Princess Cruises of a discharge of MBR treated effluent that occurred on May 19, 2013 from the GOLDEN PRINCESS that was in violation of the MOU. Ecology requested information about the discharges and Princess Cruises responded with the requested information. The attached e-mail includes the responses. During the inspection, Ecology also discussed the violation with vessel staff. The discharge occurred after the vessel left Victoria, BC on its way to Seattle. Typically the MBRs discharge in Canadian waters and stop the discharge prior to entering MOU waters. On May 19, 2013, the notification from the Bridge to the ECR staff to shut off the discharge did not occur and approximately 105 cubic meters of treated effluent was discharged for about 3 and a half hours into MOU waters. The MOU requires a vessel to seek approval from Ecology prior to any discharges. The GOLDEN PRINCESS did not have approval to discharge, therefore all discharges that occurred on May 19, 2013 were in violation of the MOU. Improvements in communication, cross-checking and vigilance were cited as responses to prevent reoccurrence. During the inspection staff cited the root cause of the incident as a communication error due to new procedures and different roles in various locations. To avoid future unauthorized discharges, staff cited that a change in protocol includes clear time frames for discharges in Canada prior to entering MOU waters and assuring that the discharge ports are closed with cross checking. Ecology recommends that for future sailings in MOU waters that all Princess vessels follow clear protocols to avoid unauthorized discharges and assure that all new/returning staff are clear on the communication requirements and protocols for discharges.

Conclusions and Recommendations

It is recommended that staff continue to work towards high functioning wastewater treatment systems. Records were orderly and appeared consistent with the MOU.

Ecology recommends that for future sailings in MOU waters that all Princess vessels follow clear protocols to avoid unauthorized discharges and assure that all new/returning staff are clear on the communication requirements and protocols for discharges.

Attachments:
Photographs
E-mail related on 5/19/13 unauthorized discharge

Copies to:
Andrew Lorenzana, M.E.,Director, Environmental Operations, Princess Cruises
Rumen Georgiev, Occupational Safety & Environmental Officer (OSEO), GOLDEN PRINCESS
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: Princess Cruises – GOLDEN PRINCESS; WQ 6.1

Section H: Signatures

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

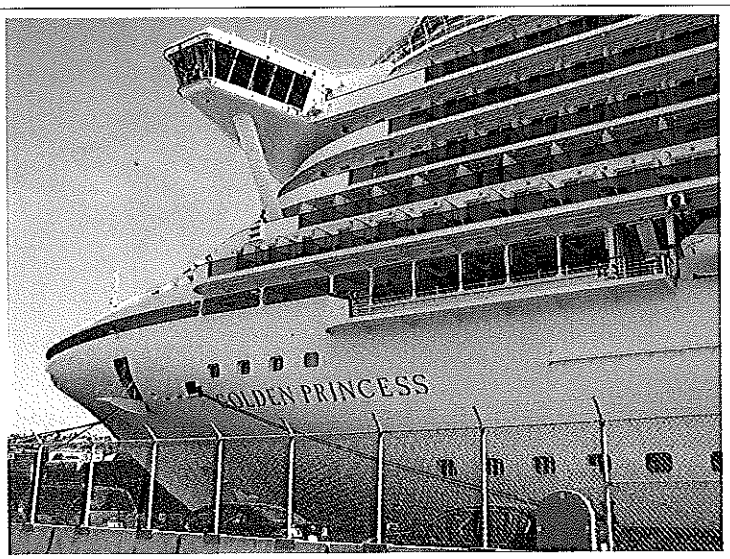

PHOTO #:01 DATE: SEPTEMBER 8, 2013
TAKEN BY: AMY JANKOWIAK FILE NO.: P9080528
DESCRIPTION: VESSEL

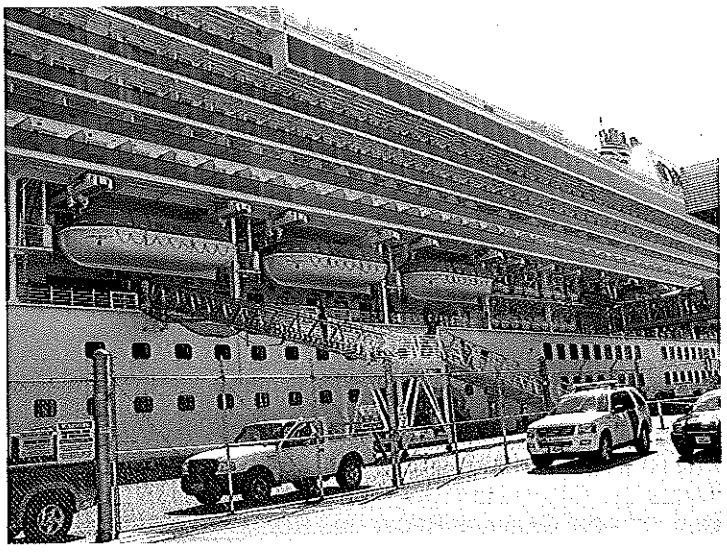

PHOTO #:02 DATE: SEPTEMBER 8, 2013
TAKEN BY: AMY JANKOWIAK FILE NO.: P9080529
DESCRIPTION: VESSEL

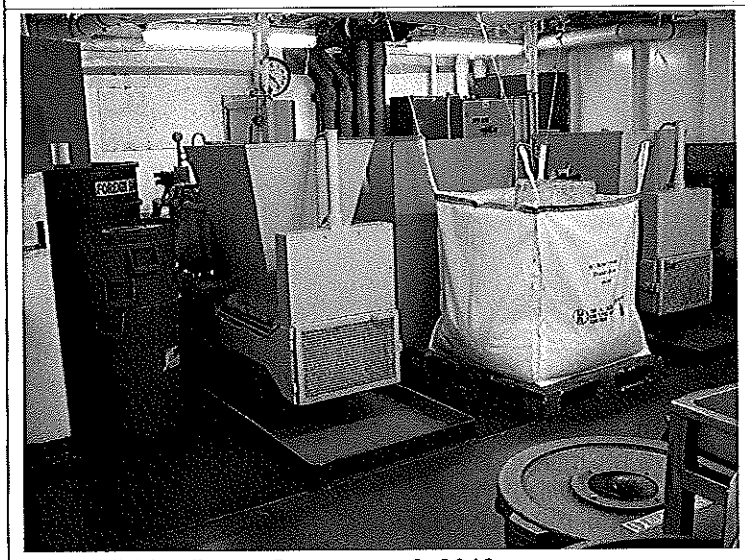

PHOTO #:03 DATE: SEPTEMBER 8, 2013
TAKEN BY: BINIAM ZELELOW FILE NO.: P9080463
DESCRIPTION: GARBAGE/RECYCLING ROOM - CRUSHERS

PHOTO #:04 DATE: SEPTEMBER 8, 2013
TAKEN BY: BINIAM ZELELOW FILE NO.: P9080464
DESCRIPTION: GARBAGE/RECYCLING ROOM – SORTING TABLE

PHOTO #:05 DATE: SEPTEMBER 8, 2013
TAKEN BY: BINIAM ZELELOW FILE NO.: P9080468
DESCRIPTION: GARBAGE/RECYCLING ROOM – PLASTIC RECYCLING

PHOTO #:06 DATE: SEPTEMBER 8, 2013
TAKEN BY: BINIAM ZELELOW FILE NO.: P9080469
DESCRIPTION:PHOTO WASTE SILVER RECOVERY UNIT (SRU)

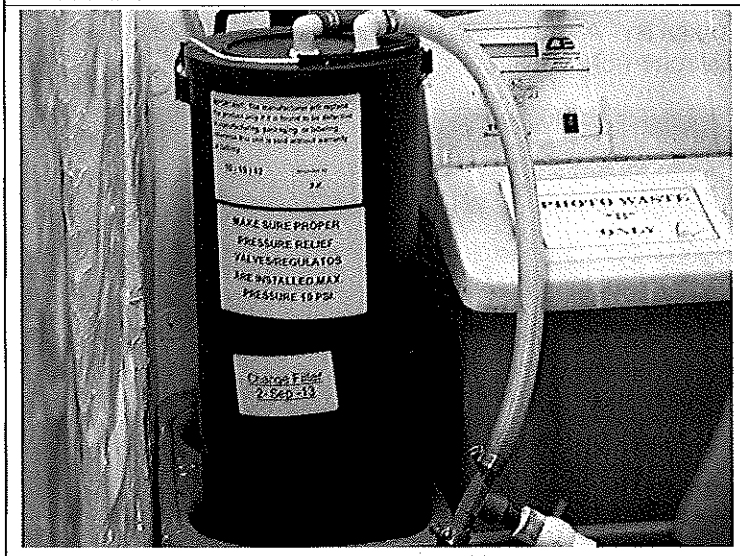

PHOTO #:07 DATE: SEPTEMBER 8, 2013
TAKEN BY: BINIAM ZELELOW FILE NO.: P9080470
DESCRIPTION: PHOTO WASTE SILVER RECOVERY UNIT (SRU)

PHOTO #:08 DATE: SEPTEMBER 8, 2013
TAKEN BY: BINIAM ZELELOW FILE NO.: P9080487
DESCRIPTION: PHOTO WASTE SILVER RECOVERY UNIT (SRU) LOG

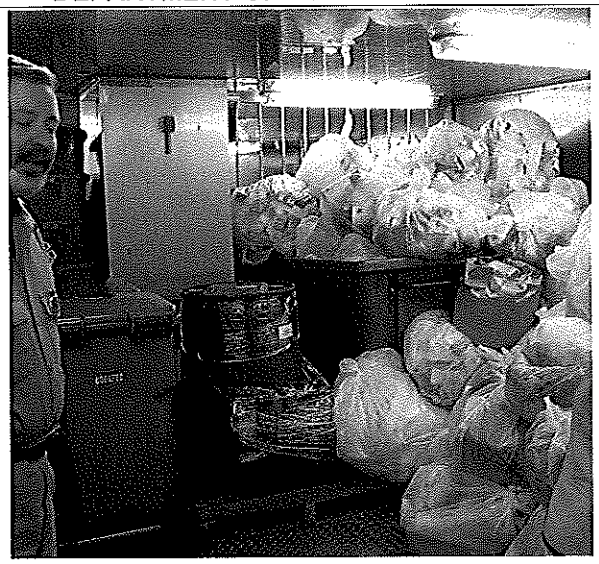

PHOTO #:09 DATE: SEPTEMBER 8, 2013
TAKEN BY: BINIAM ZELELOW FILE NO.: P9080473
DESCRIPTION: COLD STORAGE – GARBAGE FOR INCINERATION

PHOTO #:10 DATE: SEPTEMBER 8, 2013
TAKEN BY: BINIAM ZELELOW FILE NO.: P9080474
DESCRIPTION: COLD STORAGE – COMPOST BINS

PHOTO #:11 DATE: SEPTEMBER 8, 2013
TAKEN BY: BINIAM ZELELOW FILE NO.: P9080475
DESCRIPTION: COLD STORAGE – COMPOST BINS

PHOTO #:12 DATE: SEPTEMBER 8, 2013
TAKEN BY: BINIAM ZELELOW FILE NO.: P9080477
DESCRIPTION: COLD STORAGE – HAZARDOUS WASTE/AEROSOL PUNCTURER

PHOTO #:13 DATE: SEPTEMBER 8, 2013
TAKEN BY: BINIAM ZELELOW FILE NO.: P9080480
DESCRIPTION: COLD STORAGE – HAZARDOUS WASTE/FLUORESCENT BULBS

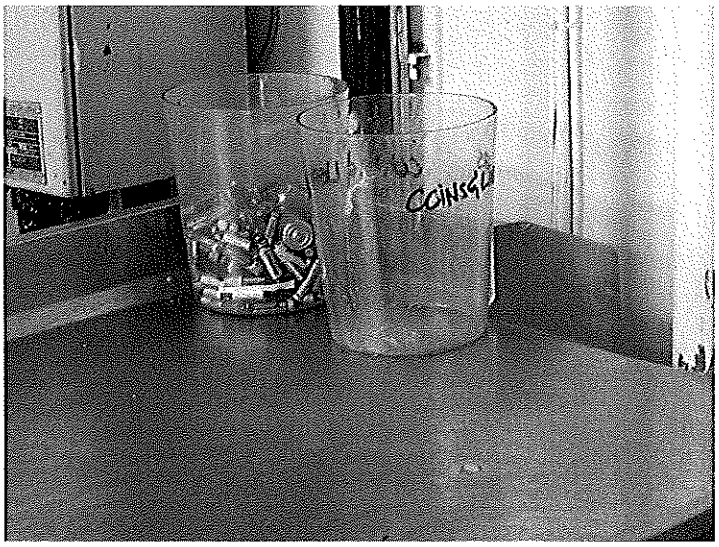

PHOTO #:14 DATE: SEPTEMBER 8, 2013
TAKEN BY: BINIAM ZELELOW FILE NO.: P9080484
DESCRIPTION: GARBAGE/RECYCLING ROOM – BATTERIES

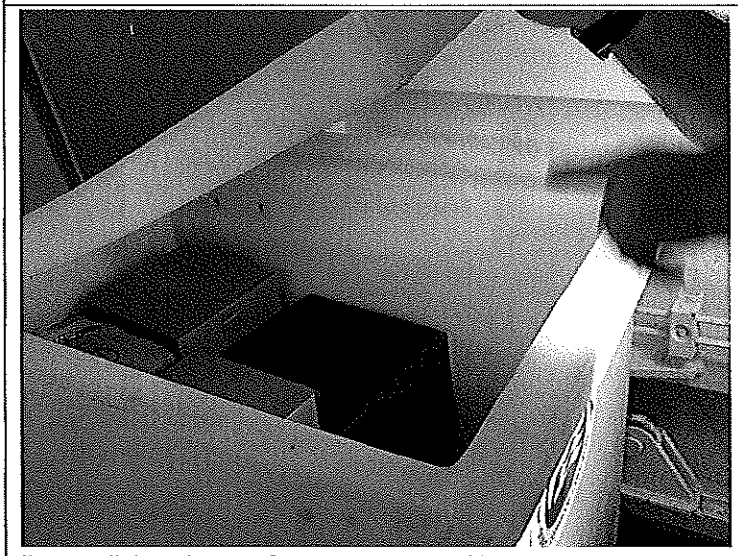

PHOTO #:15 DATE: SEPTEMBER 8, 2013
TAKEN BY: BINIAM ZELELOW FILE NO.: P9080486
DESCRIPTION: USED FILTERS (SRU) TO GO BACK TO COMPANY

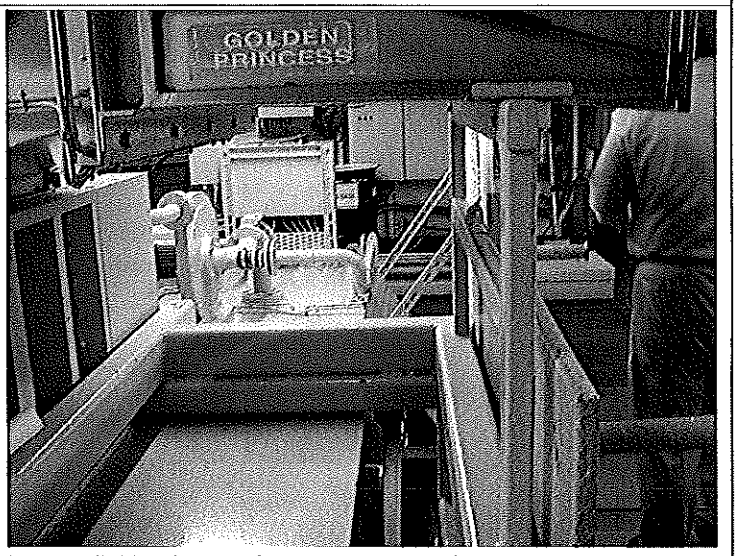

PHOTO #:16 DATE: SEPTEMBER 8, 2013
TAKEN BY: BINIAM ZELELOW FILE NO.: P9080488
DESCRIPTION: INCINERATORS

PHOTO #:17 DATE: SEPTEMBER 8, 2013
TAKEN BY: BINIAM ZELELOW FILE NO.: P9080490
DESCRIPTION: INCINERATORS

PHOTO #:18 DATE: SEPTEMBER 8, 2013
TAKEN BY: BINIAM ZELELOW FILE NO.: P9080491
DESCRIPTION: MEDICAL WASTE (RED BAGGED) FOR INCINERATION

PHOTO #:19 DATE: SEPTEMBER 8, 2013
TAKEN BY: BINIAM ZELELOW FILE NO.: P9080492
DESCRIPTION: ENGINE CONTROL ROOM (ECR) - OPACITY READINGS

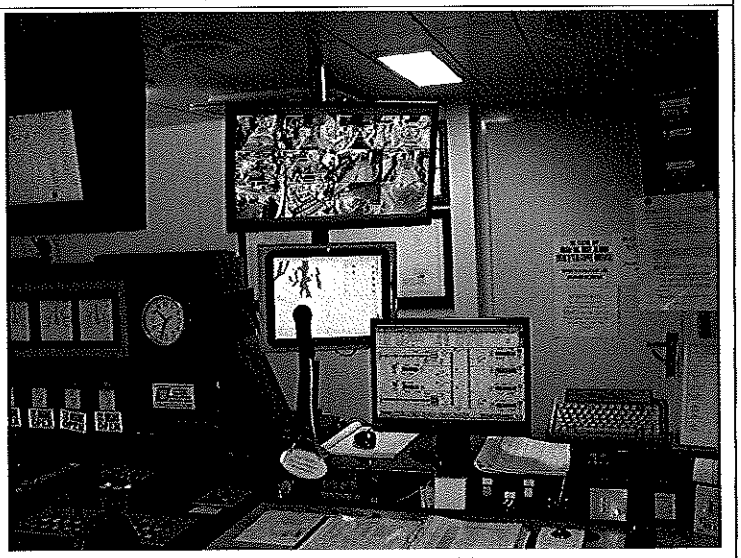

PHOTO #:20 DATE: SEPTEMBER 8, 2013
TAKEN BY: BINIAM ZELELOW FILE NO.: P9080493
DESCRIPTION: ECR – M ONITORS

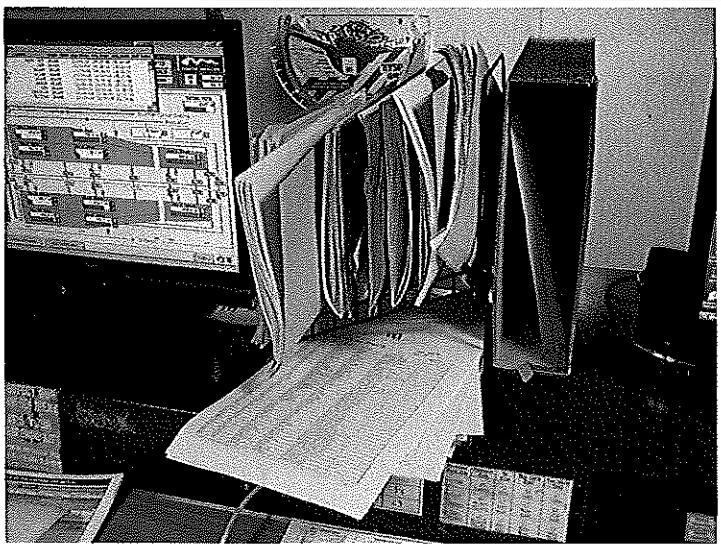

PHOTO #:21 DATE: SEPTEMBER 8, 2013
TAKEN BY: BINIAM ZELELOW FILE NO.: P9080494
DESCRIPTION: ECR – LOG BOOKS

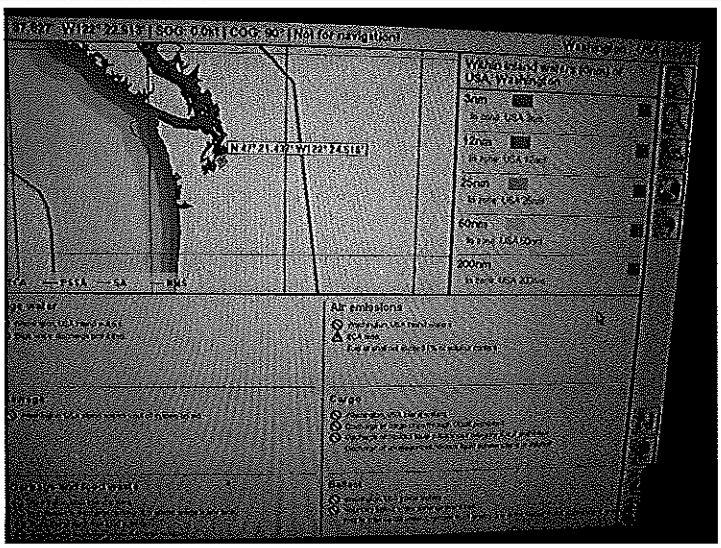

PHOTO #:22 DATE: SEPTEMBER 8, 2013
TAKEN BY: BINIAM ZELELOW FILE NO.: P9080495
DESCRIPTION: ECR – ENVIRO PILOT SYSTEM

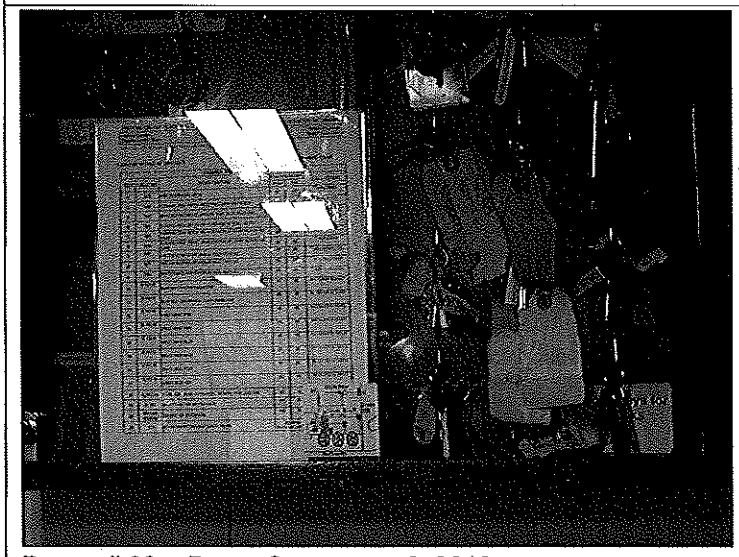

PHOTO #:23 DATE: SEPTEMBER 8, 2013
TAKEN BY: BINIAM ZELELOW FILE NO.: P9080496
DESCRIPTION: ECR – DISCHARGE PORT KEYS

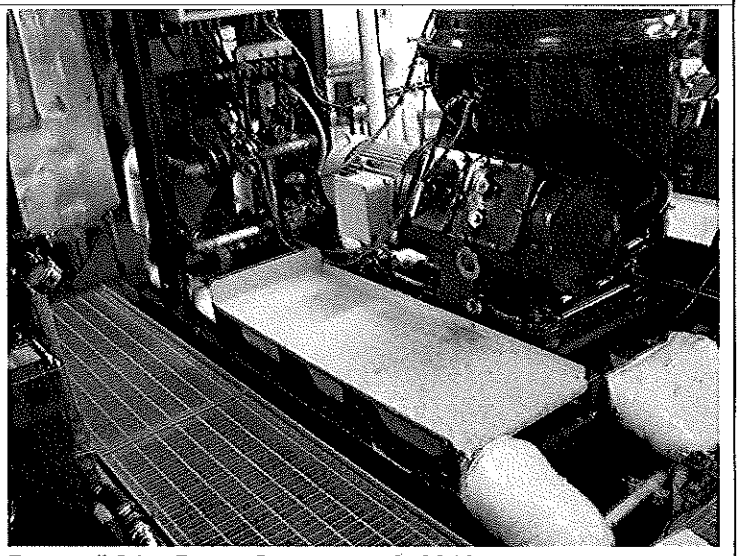

PHOTO #:24 DATE: SEPTEMBER 8, 2013
TAKEN BY: BINIAM ZELELOW FILE NO.: P9080498
DESCRIPTION: OILY WATER SEPARATOR FOR BILGE (OWS) – CENTRIFUGE SYSTEM

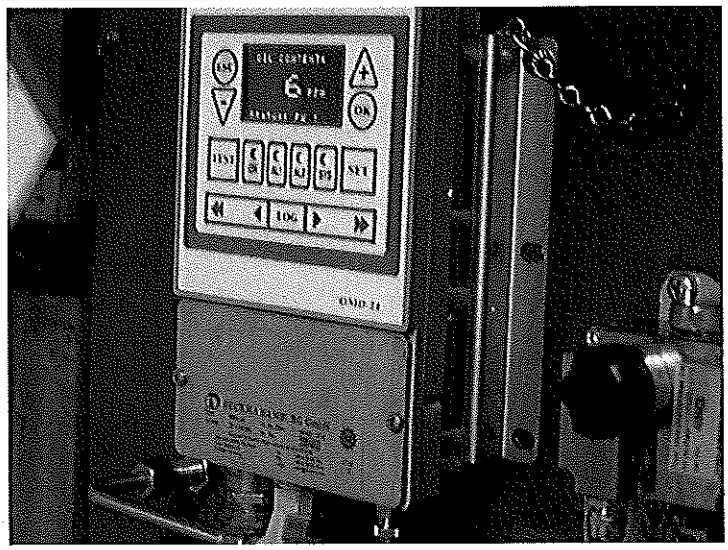

PHOTO #:25 DATE: SEPTEMBER 8, 2013
TAKEN BY: BINIAM ZELELOW FILE NO.: P9080502
DESCRIPTION: OILY WATER SEPARATOR FOR BILGE (OWS) – CENTRIFUGE SYSTEM – OIL CONTENT METER

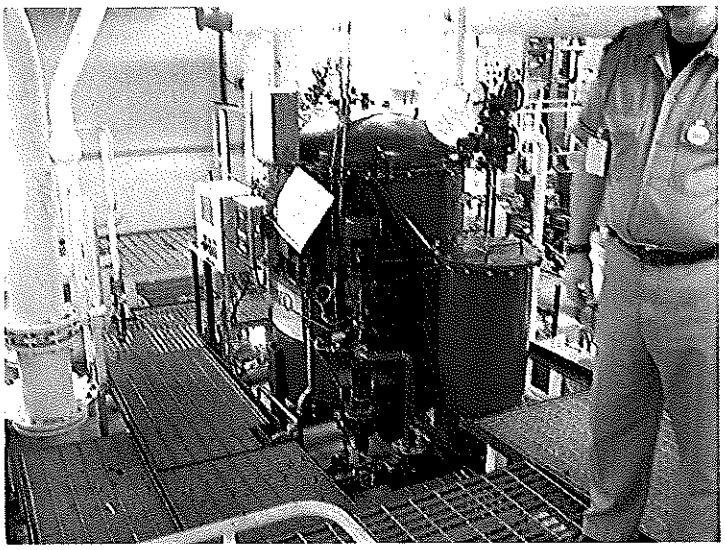

PHOTO #:26 DATE: SEPTEMBER 8, 2013
TAKEN BY: BINIAM ZELELOW FILE NO.: P9080504
DESCRIPTION: OWS STATIC SYSTEM

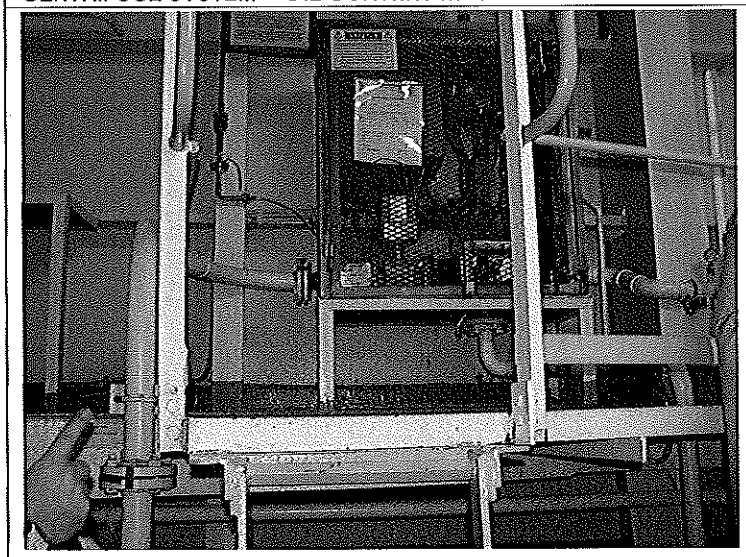

PHOTO #:27 DATE: SEPTEMBER 8, 2013
TAKEN BY: BINIAM ZELELOW FILE NO.: P9080527
DESCRIPTION: OWS WHITE BOX

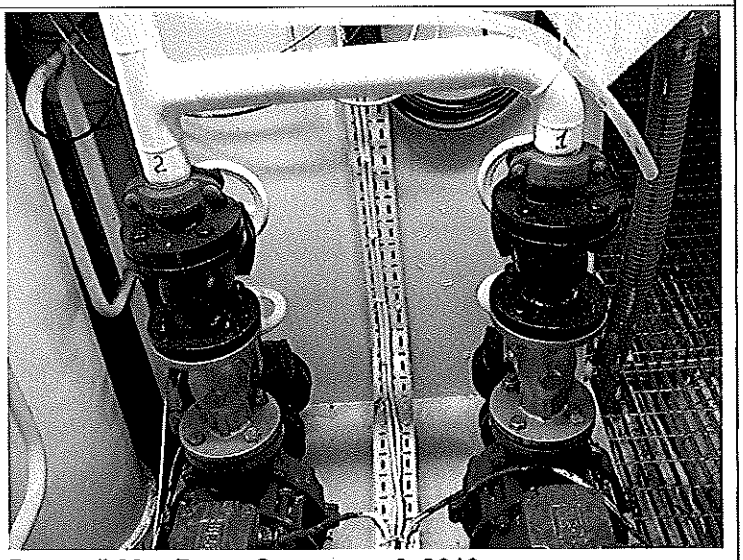

PHOTO #:28 DATE: SEPTEMBER 8, 2013
TAKEN BY: BINIAM ZELELOW FILE NO.: P9080506
DESCRIPTION: PUMPS TO HAMWORTHY MBR

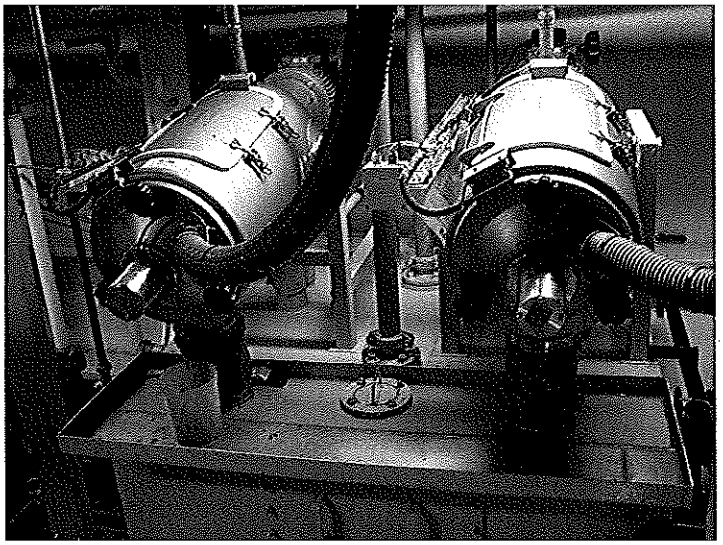

PHOTO #:29 DATE: SEPTEMBER 8, 2013
TAKEN BY: BINIAM ZELELOW FILE NO.: P9080507
DESCRIPTION: HAMWORTHY – INTERSTAGE FILTERS

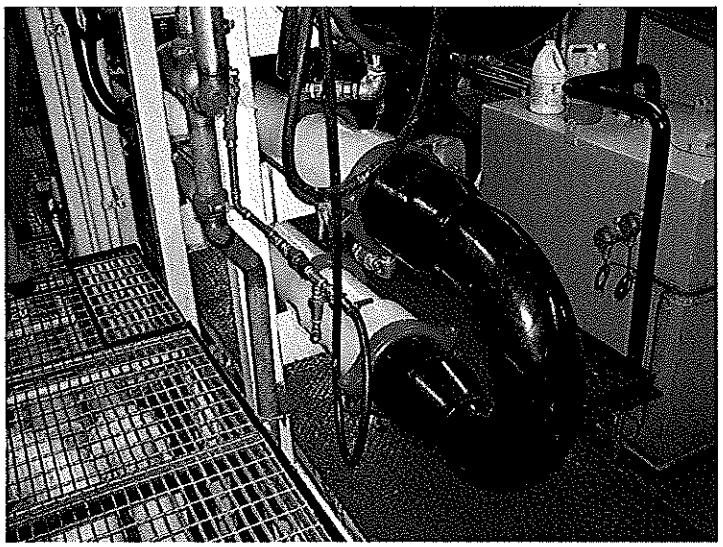

PHOTO #:30 DATE: SEPTEMBER 8, 2013
TAKEN BY: BINIAM ZELELOW FILE NO.: P9080508
DESCRIPTION: HAMWORTHY – MEMBRANE FILTERS

PHOTO #:31 DATE: SEPTEMBER 8, 2013
TAKEN BY: BINIAM ZELELOW FILE NO.: P9080511
DESCRIPTION: HAMWORTHY CLEANERS FOR MEMBRANES

PHOTO #:32 DATE: SEPTEMBER 8, 2013
TAKEN BY: BINIAM ZELELOW FILE NO.: P9080518
DESCRIPTION: HAMWORTHY – UV PANEL

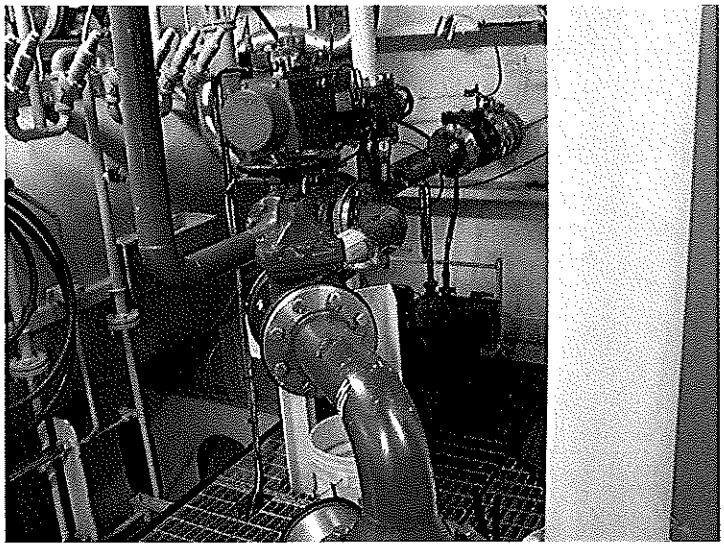

PHOTO #:33 DATE: SEPTEMBER 8, 2013
TAKEN BY: BINIAM ZELELOW FILE NO.: P9080519
DESCRIPTION: HAMWORTHY – UV TO OVERBOARD OR RECIRCULATE TO TANK

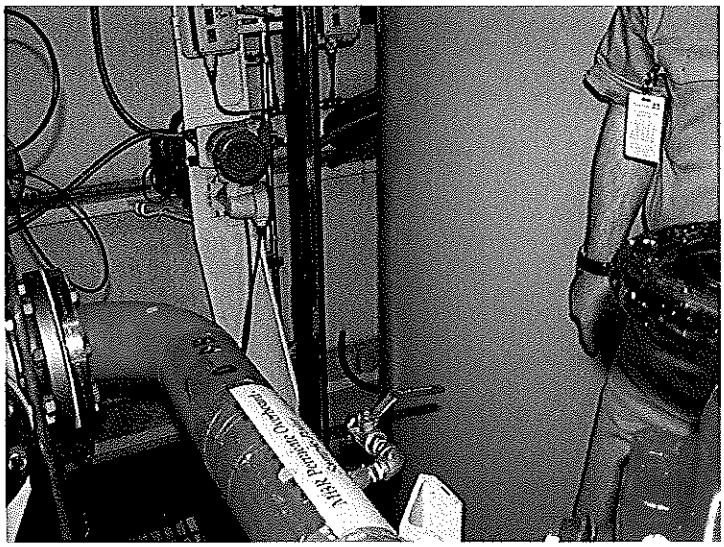

PHOTO #:34 DATE: SEPTEMBER 8, 2013
TAKEN BY: BINIAM ZELELOW FILE NO.: P9080520
DESCRIPTION: HAMWORTHY – EFFLUENT SAMPLING POINT FOR DISCHARGE

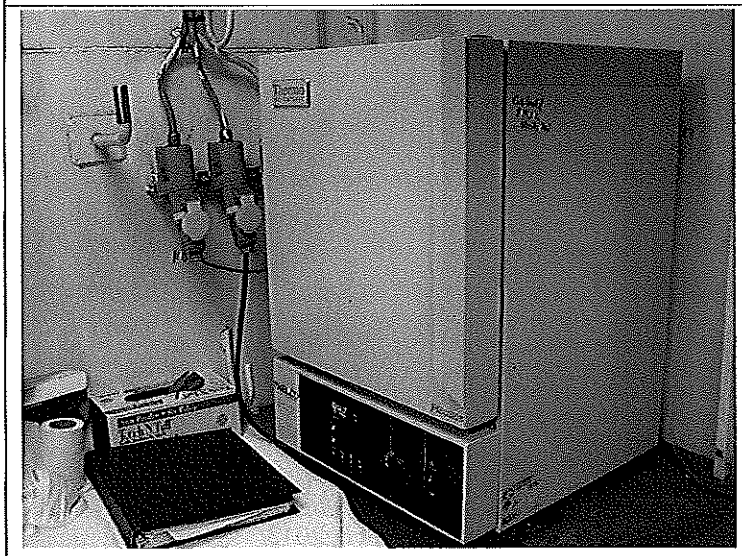

PHOTO #:35 DATE: SEPTEMBER 8, 2013
TAKEN BY: BINIAM ZELELOW FILE NO.: P9080512
DESCRIPTION: SAMPLING LABORATORY – INCUBATOR

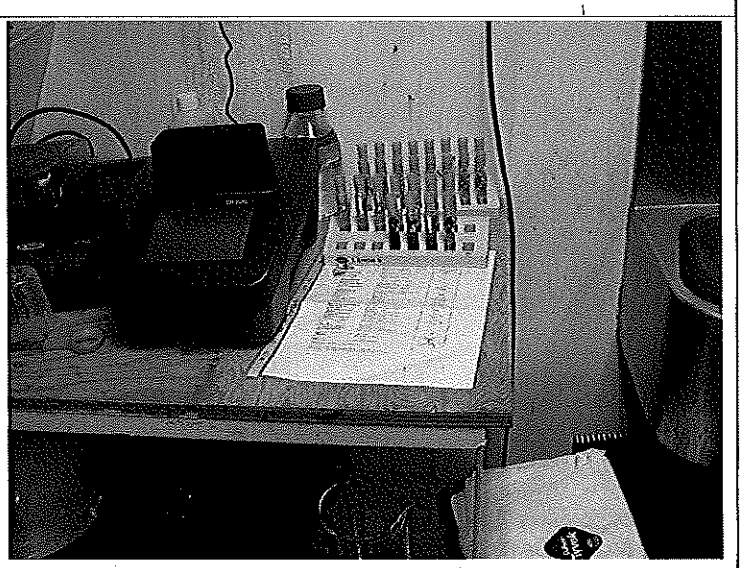

PHOTO #:36 DATE: SEPTEMBER 8, 2013
TAKEN BY: BINIAM ZELELOW FILE NO.: P9080514
DESCRIPTION: SAMPLING LABORATORY – AMMONIA

PHOTO #:37 DATE: SEPTEMBER 8, 2013
TAKEN BY: BINIAM ZELELOW FILE NO.: P9080515
DESCRIPTION: SAMPLING LABORATORY – HACH (CHLORINE, TURBIDITY)

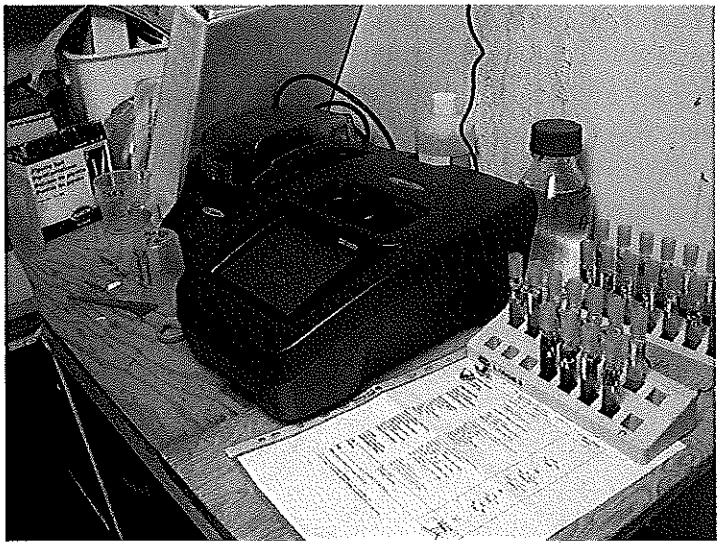

PHOTO #:38 DATE: SEPTEMBER 8, 2013
TAKEN BY: BINIAM ZELELOW FILE NO.: P9080516
DESCRIPTION: SAMPLING LABORATORY

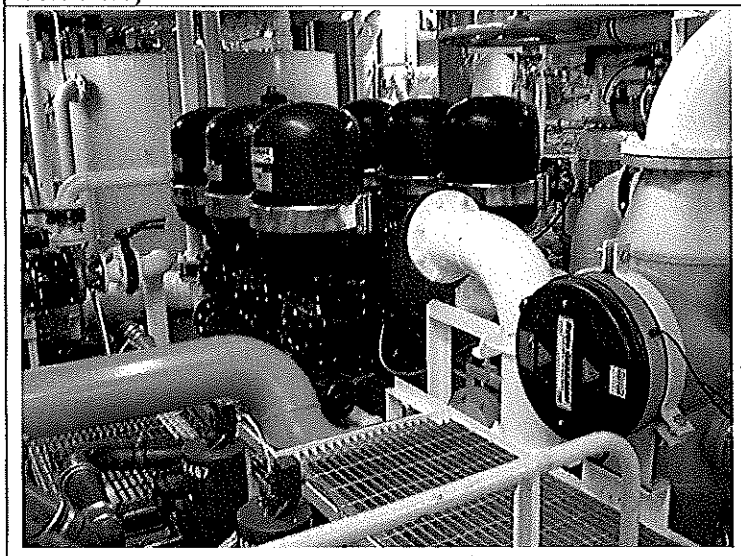

PHOTO #:39 DATE: SEPTEMBER 8, 2013
TAKEN BY: BINIAM ZELELOW FILE NO.: P9080523
DESCRIPTION: BALLAST WATER TREATMENT SYSTEM

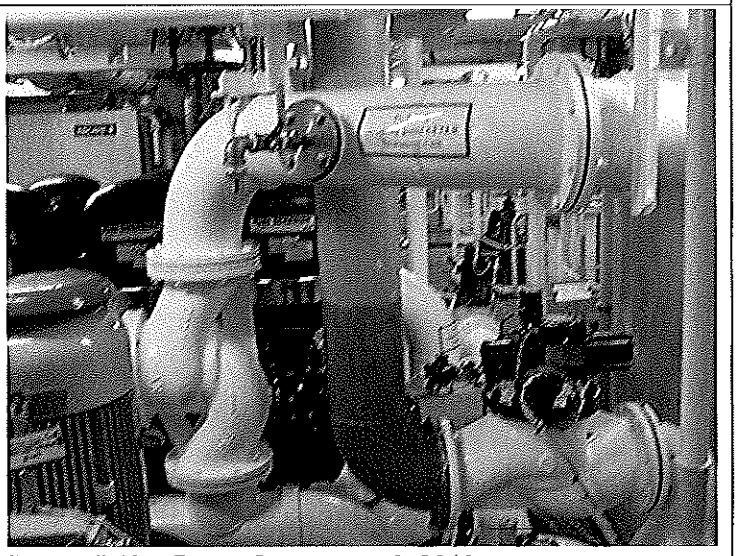

PHOTO #:40 DATE: SEPTEMBER 8, 2013
TAKEN BY: BINIAM ZELELOW FILE NO.: P9080525
DESCRIPTION: BALLAST WATER TREATMENT SYSTEM SAMPLE PIPES (BEFORE TREATMENT – FAR PIPE WITH SIGN, AFTER TREATMENT – CLOSER PIPE WITH SIGN)

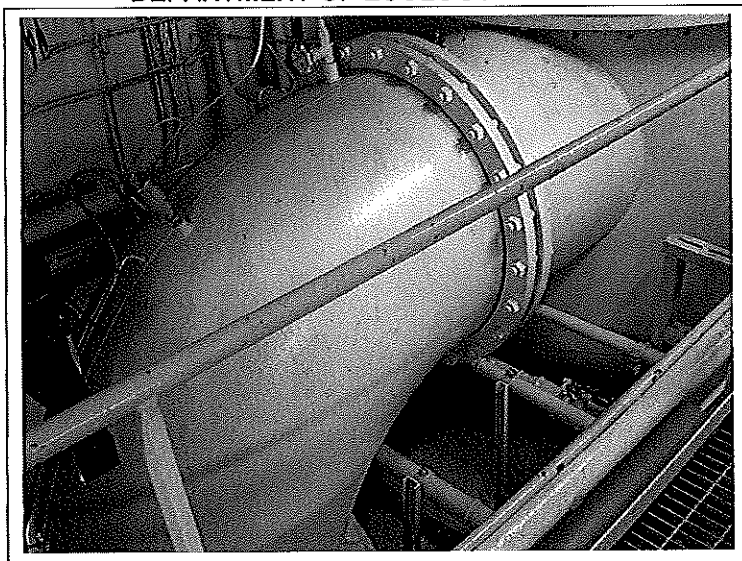

PHOTO #:41 DATE: SEPTEMBER 8, 2013
TAKEN BY: BINIAM ZELELOW FILE NO.: P9080526
DESCRIPTION: SEA CHEST ULTRASONIC

Jankowiak, Amy (ECY)

From: alorenzana@princesscruises.com
Sent: Friday, June 21, 2013 4:22 PM
To: Jankowiak, Amy (ECY)
Subject: Golden Princess discharges 5/19 b
Attachments: Sewage and Greywater Discharge Record Book - incident 19 May 2013-pdf.zip

Dear Amy,

Please find the response to your questions.

Sincerely,

Andrew Lorenzana, M.E.
Director, Environmental Operations
Princess Cruises & Carnival Australia
Office: 661-753-2755

- the cause of the discharges (how it occurred, who authorized, etc.);

On 19 May 2013 at 00:20 hrs the ship set sail from Victoria, Canada to Seattle. While in port of Victoria and in BC Canadian waters all 3 MBR were discharging permeate overboard as per Company's Fleet Reg, ENV 4.1 Env worldwide standards BC Canada.

At 01:07 hrs (ship's position: 48*14.2 N; 123*28.8 W) the ship entered Washington state waters, where all MBRs discharges should be closed as per Company's Fleet Reg, ENV 4.1 Env worldwide standards, Washington state. Authorization for opening / closure of environmentally sensitive overboard discharges is given by Navigational officers of the watch, in this case officers on watch 00:00 – 04:00. The usual practice is when approaching limits and/or boundaries, where certain actions (opening / closures of overboard valves or incinerators) have to be undertaken by the Engineers on the watch, is they to be notified by the Bridge and thenafter authorization to be confirmed by internal e-mail. In our case instructions to close overboard MBR permeate at 01:07 hrs was not given by the Bridge to the Engine Control Room. After conducting a detailed investigation, it appeared that the Voyage Overview board had not been properly updated by the previous watch 20:00 - 24:00 and the board showed "MBR closed", thus leaving a wrong impression to the OOW 00:00 - 04:00 that MBR system has been shut down. The root cause of this incident is lack of communication on the Bridge between watches.

- how long they occurred;

At 04:43 hrs after a call received by ECR, it was realised that MBRs are still running overboard. An immediate order was given to shut them down and this was done at 04:44 hrs, ship's position: 47*41.8N; 122*27.5W. Total MBR run time in Washington state waters 3 hrs and 37 min

- the volume of the discharges; - Total volume of MBR permeate discharge in Washington State waters was 105 m3.

- what location the discharges occurred (lat/longs, copy of discharge record book for those days); - ship's position given in item 1 above. Copy of the Sewage and Greywater book attached herewith.

- a description of the quality of the discharge;

MBR discharges are treated black and grey water and the produced permeate is strictly controlled for certain parameters. Below are sampling results taken on board on 20 May 2013.

Weekly	Date	Fecal Coliforms	Total Cl	Free	pH	Total Suspended	Ammonia

sampling		e.coli (fecal coliforms bacteria) # of wells (under UV light)	Total coliforms per 100 milliliters	ppm	Cl ppm	6.5-8.5	Solids mg/l	mg / l
MBR # 1	20-May-13	< 1	1	0.05	0.03	7.45	11	
MBR # 2	20-May-13	< 1	< 1	0.06	0.02	7.1	8	
MBR # 3	20-May-13	< 1	< 1	0	0	8.1	4	
Overboard	20-May-13	< 1	< 1	0.05	0.01	7.9	9	18.4

- whether or not a pre-season discharge plan was completed (with a copy if there was one);

A detailed Voyage Plan for the entire passage from berth to berth (Seattle to Seattle) has been prepared and made available to the Bridge team through ECDIS. Nav brief for Victoria departure on 18 May 2013 has been held on 14 May 2013 in Ketchikan at 15:00 hrs. Captain and all deck officers have been present.

Briefing for Victoria departure has been held on 18 May 2013 at 23:00 hrs in the presence of Captain, Staff Captain and Watchkeeping officers (S2OFF, 3OFF, 2OFF)

- current protocol for discharges of black water and gray water in MOU waters;

All Washington State and USA regulations are prescribed in Company's Fleet Regs and on this basis all environmentally sensitive areas are outlined in ECDIS and available to all Bridge Officers.

- what steps are being taken to prevent reoccurrence;

Increased vigilance, cross checking of fellow action and improved communication

- and any other pertinent information.

The ship is equipped with Advanced Treatment system, which consists of 3 Hamworthy Membrane Bioreactor (MBR), USCG type II including an UV system at final output of the 3 MBRs. Golden Princess does not discharge untreated sewage overboard. All black water mixed with some grey water is treated by MBR # 1. The rest 2 MBRs treat grey water only. The final effluent from all MBRs is then pumped from the membranes into a permeate tank, where it's circulated through Ultra Violet (UV) System for further disinfection before it is finally pumped overboard where permitted.

Regards

Rumen Georgiev
Occupational Safety & Environmental Officer (OSEO)
mv Golden Princess
Ext. 14013 - Pager 103

From: "Jankowiak, Amy (ECY)" <AJAN461@ecy.wa.gov>
To: "alorenzana@princesscruises.com" <alorenzana@princesscruises.com>,
Cc: "Henley, Mark (ECY)" <MAHE461@ecy.wa.gov>, "Fitzpatrick, Kevin (ECY)" <KFIT461@ecy.wa.gov>
Date: 05/28/2013 08:23 AM
Subject: Golden Princess discharges 5/19

Andrew,

I received your voicemail of May 20, 2013 regarding the GOLDEN PRINCESS discharges from May 19, 2013. I would like to request a written report of the events including, but not limited to:

- the cause of the discharges (how it occurred, who authorized, etc.);
- how long they occurred;
- the volume of the discharges;
- what location the discharges occurred (lat/longs, copy of discharge record book for those days);
- a description of the quality of the discharge;
- whether or not a pre-season discharge plan was completed (with a copy if there was one);
- current protocol for discharges of black water and gray water in MOU waters;
- what steps are being taken to prevent reoccurrence;
- and any other pertinent information.

Sincerely,
Amy

Amy Jankowiak
Department of Ecology, Northwest Regional Office
Water Quality Program
3190 160th Avenue SE, Bellevue WA 98008
(425) 649-7195 ajan461@ecy.wa.gov

TSO ECR.1.20 Sewage and Greywater Discharge Record Book

Vessel: GOLDEN PRINCESS Official Number: 731308 Month/Year: MAY/2013 Page 11

DAY	START TIME	START LAT	START LONG	DISCH PT(s)	EFF TYPE	FLOW (L/MIN)	P-I-C SIGN	DAY	STOP TIME	STOP LAT	STOP LONG	VOL (M/T)	MIN SPD(Kt)	P-I-C SIGN	REMARKS
14	0:56	54°17'9N	131°04'0W	B	GW	1481	PGz-t-J	14	1:47	54°40'5N	131°15'1W	77	15	PGz-t-J	GALLEY WATER AUTODISCHARGE
14	0:56	54°17'9N	131°04'0W	A	TSG	762	PGz-t-J	14	1:47	54°40'5N	131°15'1W	40	15	PGz-t-J	MBR HOLDING DISCHARGE
14	0:56	54°17'9N	131°04'0W	A	GW	192	PGz-t-J	14	1:47	54°40'5N	131°15'1W	10	15	PGz-t-J	GALLEY WATER HOLDING DISCH.
14	04.52	55°33,9N	131°25,9W	F	TGW	343	~~HF~~	15	05.20	57°39,2N	133°43,7W	~~1468~~ 383	14	HF	MBR 2,3 AUTODISCHARGE
14	16.45	55 23,4 N	131°46,0W	F	TSG	60	HF	15	05.20	57°39.2N	133°43,7W	45	14	HF	MBR 1 AUTODISCHARGE
15	08 10:20	57°48,1'N	133°47,6'W	F	TGW	450	DdlL	16	04.30	54°16,4 N	135°23,0W	491	17	HF	MBR 2&3 AUTODISC.
15	10:20	57°48,1'N	133°47,6'W	F	TSG	100	DdlL	15	12:10	58°14,8'N	134°19,1W	11	17	PGz-t-J	MBR 1 AUTODISC.
15	13:20	Along Side JUNEAU		H	GW		PGz-t-J	15	21:05	—	—	192	—	DdlL	GALLEY DISCHARGE TO SHORE FACILITY
15	22:28	58° 16,9'N	134° 23,6'W	F	TSG	77	DdlL	16	04.30	54°16,4N	135°23,0W	28	15	HF	MBR1 AUTODISCHARGE
16	17.13	59° 24,6N	135°21,4W	F	TSG	89	HF	18	12:22	48° 30,5N	125°13,4W	230	16	Bkj k	MBR1 AUTODISCHARGE
16	17.13	59° 24,6N	135°21,4W	F	TGW	331	HF	18	12:22	48° 30,5N	125°13,4W	857	16	Bkj k	MBR2,3 AUTODISCHARGE
17	05.15	56° 43,0N	134°24,8'W	A	GW	3630	HF	17	10:18	54°06,8'N	133°46,8'W	3100 350	19	DdlL	GW HOLDING DISCHARGE
17	05.44	55° 33,5N	134°21,7W	B	GW	331	HF	18	12:22	48° 30,5N	125° 13,4W	608	16	Bkj k.	GALLY WATER AUTO DISCHARGE
17	07:55	54° 52,8'N	134°05,4'W	C	OTH	245	DdlL	17	10:18	54°06,8'N	133°46,8'W	35	19	DdlL	TRIDENT 3 DISCHARGE
18	08:17	49° 13,8'N	126° 47,7'W	C	OTH	238	DdlL	18	09:20	49°01,4'N	126° 22,3'W	15	18	DdlL	TRIDENT 3 DISCHARGE
18	17 17	48° 15,3 N	123°26,8W	F	TSG	156	HF	19	04.44	47° 41,8 N	122°27,5W	107	15	HF	MBR1 AUTODISCHARGE
18	17.17	123 28,6W	48° 15,3	F	TGW	386	HF	19	04.44	47° 41,8N	122°27,5W	265	15	HF	MBR2 AUTODISCHARGE
19	20:13	48° 14,6 W	123°31,5'W	F	TSG	45	Bkj k	21	04.55	55°14,6N	131°26,3W	88	12	HF	MBR1 AUTODISCHARGE
19	20:13	48° 14,6'W	123°31,5'W	F	TGW	352	Bkj k.	22	05.30	57°41,8N	133°43,4W	1211	16	HF	MBR 2-3 AUTODISCHARGE
19	20:42	48° 15,9'N	123°41,5'W	B	GW	~~427~~ 398 KB	Bkj k.	20	23:56	54°05,7'N	131°02,8W	~~692~~ 691 CB	16	Bkj k	GALLEY WATER AUTODISCHARGE

CE's Signature: [signature] Date: 25/04/13 Master's Signature: [signature] Date: 25/5/13