



2009 Assessment of Cruise Ship Environmental Effects in Washington



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For more information contact:

Water Quality Program
3190 160th Ave SE
Bellevue, WA 98008-5452

Phone: 425-649-7000

Washington State Department of Ecology - www.ecy.wa.gov

- Headquarters, Olympia 360-407-6000
- Northwest Regional Office, Bellevue 425-649-7000
- Southwest Regional Office, Olympia 360-407-6300
- Central Regional Office, Yakima 509-575-2490
- Eastern Regional Office, Spokane 509-329-3400

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2009 Assessment of Cruise Ship Environmental Effects in Washington

*by
Amy Jankowiak*

Water Quality Program
Washington State Department of Ecology
Bellevue, Washington

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Executive Summary

A Memorandum of Understanding (MOU) between Department of Ecology (Ecology), the NorthWest CruiseShip Association (NWCA) and the Port of Seattle was originally signed on April 20, 2004, and has been amended four times since. This MOU covers large passenger ships that are members of the NWCA. It does not cover ships such as Alaska Marine Highway ferries, shipping vessels, small passenger ships or boats.

The MOU prohibits discharges of both blackwater and graywater to Washington state waters from all cruise ships except discharges treated with advanced wastewater treatment systems (AWTS) and when stringent requirements are met. Such systems have been and are being installed in cruise ships serving the Alaska market as required by the state of Alaska. AWTS are installed to provide treatment that meets or exceeds Alaska's requirements under federal law.

The MOU defines the subject waters as being consistent with Washington marine waters. It requires sampling and monitoring of wastewater discharges and allows for vessel inspections by Ecology. The MOU includes additional elements, such as:

- Sewage sludge (biomass) discharges are prohibited within 12 nautical miles from shore and within the Olympic Coast National Marine Sanctuary.
- No discharges within a half a mile of shellfish beds.
- Specific sampling regimen, testing, and reporting are required.
- Continuous monitoring for turbidity and disinfection with capability to shutdown immediately.
- Advanced notification and documentation are required from ships planning to discharge via an AWTS.
- Cruise ships must comply with Washington's more restrictive hazardous-waste laws, are prohibited from dumping garbage into state waters and may only discharge oily bilge water per regulation.

The MOU continues to be a valuable tool in meeting the goal of protecting Washington's marine waters from cruise-ship waste water. The requirement for discharges to be treated with AWTS ensures only high quality effluent is discharged. The requirement to allow vessels to be inspected leads to increased compliance. The need to understand the requirements of the MOU has called for increased communication between Ecology, and the cruise lines and vessel staff.

The cruise lines and vessels operating under the MOU were in compliance throughout the 2009 season. Some notable successes include, sampling results for conventional pollutants continue to show excellent effluent quality, and increased waste minimization efforts.

The cruise-ship MOU has resulted in several benefits to Washington's environment:

- It ensures that we have a water-quality strategy in place for large passenger vessels.

- It increases Ecology's understanding of the operational practices of the cruise industry, and increases the cruise industry's understanding of the environmental concerns in Washington.
- It forges a new and valuable partnership between state regulators, the cruise industry and other interested parties.
- It doesn't lessen the state's authority to enforce Washington's water quality laws.

Admittedly, the MOU also has its limitations:

- Compliance is voluntary.
- Enforceability is limited to those federal and state water quality laws that continue to apply to cruise ships.
- Applicability is limited. Cruise ships that do not make a port call while in Washington waters or are not a member of the NorthWest CruiseShip Association are not covered by the MOU.

The Department of Ecology recommends that:

1. The MOU continue to be used as a complement to environmental regulations until state specific regulations for cruise ship waste management in Washington State are put in place.
2. Ecology continues to inspect ships that are subject to the MOU, including closely looking at wastewater management and the management of other waste streams.
3. The parties of the MOU continue to work together on evaluating discharges from cruise ships into MOU waters. Parties to the MOU will also meet to discuss and make recommendations on how best to proceed in regard to evaluating future proposed amendments to the MOU and how to best take public input on proposed amendments. The parties of the MOU will continue to meet in regard to future MOU funding mechanisms to support Ecology staff on maintaining and implementing the MOU..
4. The cruise lines conduct a thorough review of records on an on-going basis throughout the season as well as at the end of the system to evaluate compliance, and that all recommendations made in inspection reports are implemented.

1. Introduction

1.1 Assessment report

The purpose of this report is to assess the performance of the cruise industry for environmental impacts to state waters for the 2009 cruise season. The goals of this report are to:

1. Analyze the overall compliance with the Memorandum of Understanding.
2. Evaluate the performance of the advanced wastewater treatment systems.
3. Make recommendations in relation to the matters discussed in the report.

This report also presents general background information and detailed appendices of wastewater sampling data. Issues and concerns related to the discharge of bilge and ballast water are beyond the scope of this report.

1.2 Cruise industry operations in Washington State

NorthWest CruiseShip Association's (NWCA) Celebrity Cruises, Holland America Line, Norwegian Cruise Line, Princess Cruises, and Royal Caribbean Cruises Ltd. operated regularly scheduled cruises of large ships between Seattle and Alaska. Most of these large ships have a capacity of about 2,000 to 4,200 persons on board. Carnival's SPLENDOR, a member of the NorthWest CruiseShip Association also made one call to Seattle in 2009 and is scheduled to make 18 calls in 2010. Non – NWCA members, Residensea's THE WORLD, and Fred Olsen's BLACKWATCH each made one call to Seattle in 2009. Alaska's Marine Highway runs regular cruises out of Bellingham to Alaska. The ships have a passenger/crew capacity of about 175 to 225.

This report centers on the operations of the large cruise ships that are covered under a Memorandum of Understanding (MOU); however, more is being learned about the operations of the smaller passenger vessels. Some smaller cruise lines, such as CruiseWest and Linblad Expeditions, run cruises on the Columbia and Snake Rivers, Puget Sound, and in British Columbia and Alaska. Linblad Expeditions also runs cruises through the San Juan Islands.

Large cruise ships have operated out of Seattle since 1999. The cruise business is one of the fastest growing business segments at the Port of Seattle. The Port has had two berths suitable for large vessels at its new Terminal 91 (replacing the use of the two berths at Terminal 30). There is one berth at Pier 66. Sailings departed Seattle on Fridays, Saturdays, Sundays, every other Thursday and occasionally on other weekdays between the end of April 2009 and the end of October 2009. The figure below shows the rising number of passengers enjoying Alaska-bound cruises since 1999.

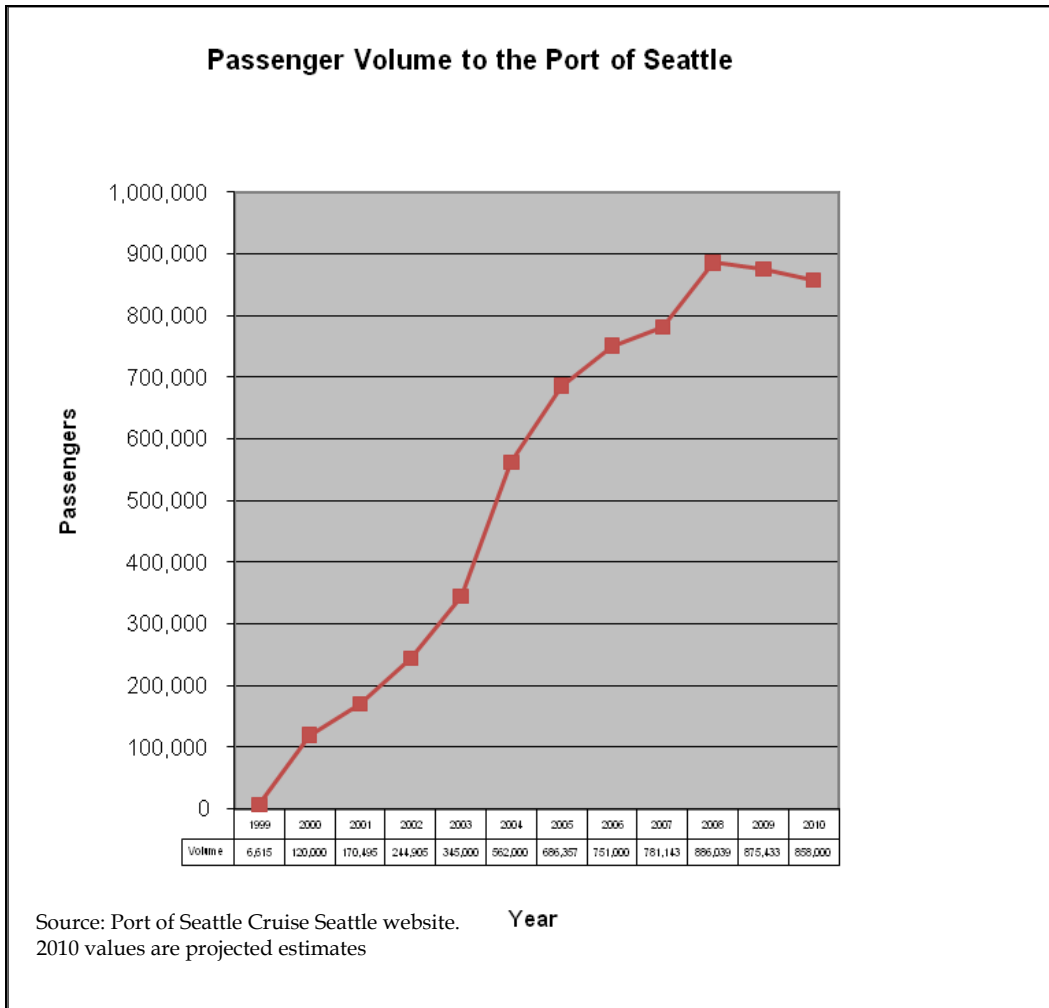


Figure 1. Passenger Volume

Cruise ships have been operating under a rather ambiguous set of environmental standards. Cruise ships and their wastewater treatment systems have been excluded from many of the U.S. environmental laws and regulations that land-based industries must meet. Recently, the Environmental Protection Agency has issued a vessel general permit for commercial vessels greater than 79 feet. The permit covers various discharge types including, but not limited to, graywater, oily bilge, pool/spa water, and ballast water. The permit does not cover blackwater unless it is combined with graywater.

Several other environmental standards may apply to certain vessels. The United States Coast Guard (USCG) certifies marine sanitation devices to meet certain operational standards for performance but does not monitor wastewater effluent quality. Large ships operate under International Convention for the Prevention of Pollution from Ships (MARPOL), an environmental treaty drafted by the International Maritime Organization (IMO). Annex IV of MARPOL addresses the disposal of sewage. The U.S. did not sign Annex IV; therefore, it is not mandatory that ships follow Annex IV in the United States. Most large ships have adopted the “Cruise Industry Waste Management Practices and Procedures” put forth by the Cruise Lines International Association (CLIA).

The NorthWest CruiseShip Association (NWCA) consisted of the following member lines during the 2009 season:

- | | |
|--------------------------|----------------------------------|
| 1. Carnival Cruise Lines | 6. Norwegian Cruise Line |
| 2. Celebrity Cruises | 7. Princess Cruises |
| 3. Crystal Cruises | 8. Regent Seven Seas Cruises |
| 4. Disney Cruise Line | 9. Royal Caribbean International |
| 5. Holland America Line | 10. Silversea Cruises |

In 2009, 99% of port calls by large vessels to Seattle were made by NWCA member ships. Table 1 below depicts the member lines, the ships visiting Seattle, the number of port calls and the persons on board.

Table 1. 2009 Cruise Ships Calling to Ports in Washington

Vessel Operator	Vessel Name	2009 Number of Port Calls ¹	Total Persons on Board ²
NWCA MEMBERS			
Carnival Cruise Line	SPLENDOR	1	4156
Celebrity Cruises	INFINITY	19	3379
Celebrity Cruises	MERCURY	8	2785
Celebrity Cruises	MILLENIUUM	1	3450
Holland America Line	AMSTERDAM	23	2027
Holland America Line	STATENDAM	2	1846
Holland America Line	VOLENDAM	1	2079
Holland America Line	WESTERDAM	21	2716
Holland America Line	ZAANDAM	22	2079
Norwegian Cruise Line	NORWEGIAN PEARL	20	3476
Norwegian Cruise Line	NORWEGIAN STAR	20	3340
Princess Cruise Line	GOLDEN PRINCESS	20	3658
Princess Cruise Line	PACIFIC PRINCESS	10	1062
Princess Cruise Line	SAPPHIRE PRINCESS	1	3916
Princess cruise Line	STAR PRINCESS	20	3748
Royal Caribbean	MARINER OF THE SEAS	7	4299
Royal Caribbean	RHAPSODY OF THE SEAS	18	2435 + crew
Royal Caribbean	SERENADE OF THE SEAS	2	2950
Total		216	
NON NWCA MEMBERS			
Fred Olsen	BLACKWATCH	1	1198
Residensea	THE WORLD	1	600+ crew

¹ Numbers come from Port of Seattle 2009 Cruise Ship Sailing Schedule and the Port of Seattle staff and annual reports from the cruise lines.

² Numbers come from Alaska DEC 2009 Large Commercial Vessel Discharge Status and research. Actual # of passengers/crew may vary.

The Port of Seattle's schedule for 2010 includes a total of 222 port calls from the following vessels: Carnival Cruise Line's CARNIVAL SPIRIT, Celebrity Cruises INFINITY, MERCURY and MILLENIUUM, Holland America Line's AMSTERDAM, OOSTERDAM, ROTTERDAM, VOLENDAM, and ZAANDAM, Norwegian Cruise Line PEARL and STAR, Princess Cruises' GOLDEN PRINCESS, ROYAL PRINCESS, and SAPPHIRE PRINCESS, and Royal

Caribbean's RHAPSODY OF THE SEAS. All of the vessels scheduled are part of the NorthWest CruiseShip Association.

1.3 Memorandum of Understanding summary

On April 20, 2004, a Memorandum of Understanding (MOU) between Ecology, the NorthWest CruiseShip Association (NWCA) and the Port of Seattle was signed. The MOU covers ships that are members of the NWCA, and therefore does not cover ships such as the Alaska Marine Highway ferries, or any of the small ships. The MOU bans cruise-ship wastewater discharges (blackwater and graywater), except from vessels with advanced treatment systems (AWTS). The MOU allows continuous discharge in Washington waters from these AWTS with stringent provisions. Sewage sludge (biomass) may only be discharged more than 12 miles from shore and not within the Olympic Coast National Marine Sanctuary. The MOU specifies a sampling regime, testing, reporting and limit requirements, and requires advanced notification and documentation from ships planning to discharge. The MOU also specifies that the ships comply with Washington's more restrictive hazardous waste laws and stipulates that garbage may not be discharged in state waters.

The MOU and related documents are available on Ecology's website at:
http://www.ecy.wa.gov/programs/wq/wastewater/cruise_mou/index.html

A copy of the current MOU (Amendment No.4) is included in Appendix A.

1.4 MOU funding

Ecology, the Port of Seattle, the NWCA and its member lines finalized a process via an agreement to recover costs incurred by Ecology associated with implementing the MOU. A funding agreement for the 2006, 2007, 2008, 2009 and 2010 seasons were signed and employed.

The parties of the MOU will need to re-evaluate the funding mechanism to provide for funding beyond 2010.

2. MOU Requirements

2.1 Description of requirements

Applicability of MOU:

The MOU applies to cruise ships that are part of the NorthWest CruiseShip Association (NWCA) and only to those member ships making a call at a port in Washington. NWCA member ships that do not make a port call in Washington are not subject to the provisions of the MOU while transiting off the Washington coast. All the ships subject to the MOU are engaged in cruise itineraries greater than one-day duration.

Great care was taken in developing the geographic area in which the terms of the MOU apply. Washington's definition of "waters of the state" reaches to the international border with Canada. The cruise industry agreed to recognize Washington's definition of state waters for the purposes of the MOU. The "Waters subject to this MOU" are defined as including the Puget Sound and the Strait of Juan de Fuca south of the international boundary with Canada. Off the west coast of Washington, "Waters subject to this MOU" include the belt of seas measured from the line of ordinary low water along that portion of the coast which is in direct contact with the open sea and the line marking the seaward limit of inland waters, and extending seaward a distance of three miles, as illustrated in Appendix iii of the MOU. The definition of the "waters subject to this MOU" is inclusive of the marine waters of the state as defined in Washington law. See figure 2 below.

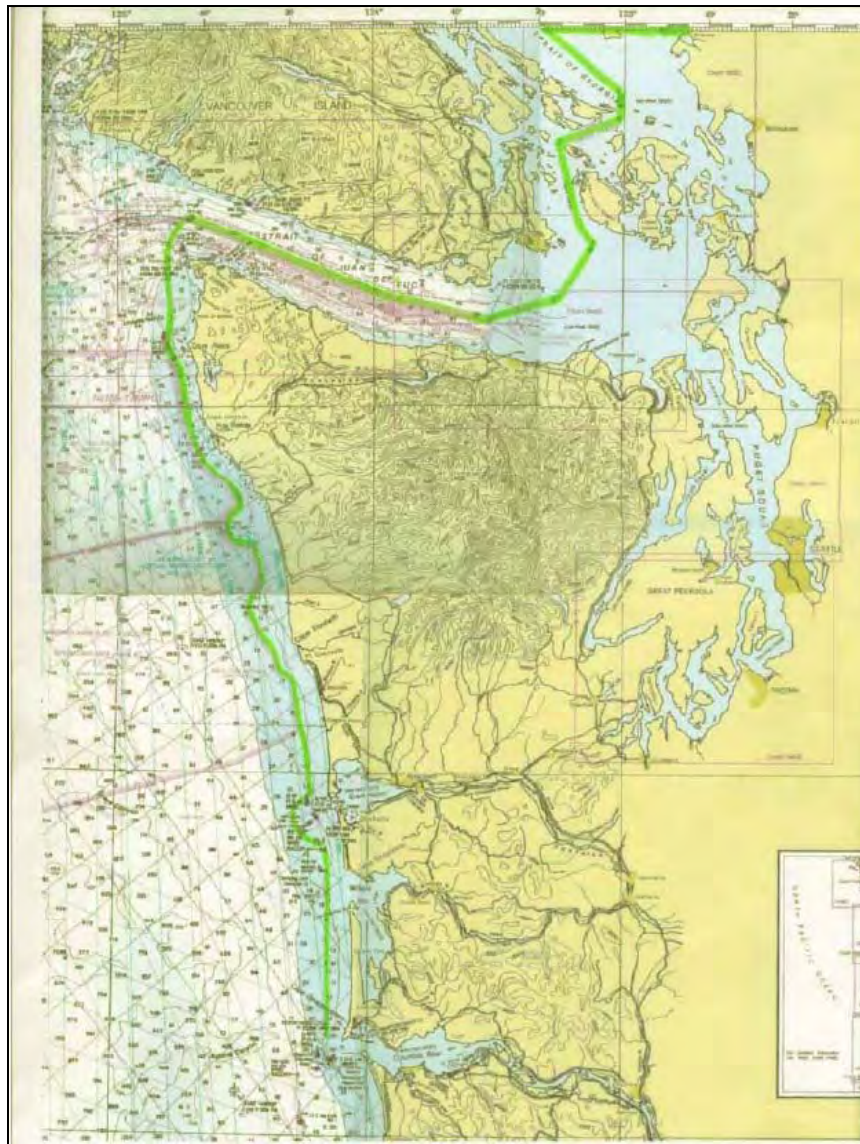


Figure 2. Map of "Waters subject to this MOU"

Wastewater discharges

The MOU defines “blackwater” as wastes from toilets, urinals, medical sinks and other similar facilities, and “graywater” as including drainage from dishwasher, shower, laundry, bath, galley drains and washbasin drains.

Advanced wastewater treatment systems (AWTS) are systems that meet the higher standards and testing regime as set out in federal law, Title XIV, Certain Alaska Cruise Ship Operations, Section 1404(c). The AWTS are systems such as the Zenon and Hamworthy membrane biological reactor ultrafiltration system, the Scanship biological reactor and ultrafiltration system, and the Rochem reverse osmosis ultrafiltration system. Table 2 identifies the type of treatment in use during the 2009 season by NWCA member ships.

Table 2. 2009 Vessels and Wastewater Treatment

Vessel Operator	Vessel Name	Blackwater (BW) Treatment System Manufacturer	Graywater (GW) Treatment System Manufacturer	Type of Treatment System
NWCA MEMBERS				
Carnival Cruise Line	SPLENDOR	Unknown	Unknown	Unknown
Celebrity Cruises	INFINITY	Zenon	Mixed with BW	AWTS: Zenon is a bioreactor and ultrafiltration system.
Celebrity Cruises	MERCURY	Traditional MSD - Biopure	None	Non AWTS: traditional Marine Sanitation Device with aeration, settling and chlorination
Celebrity Cruises	MILLENIUM	Hydroxyl	Hydroxyl	AWTS: Hydroxyl is a biological reactor and ultrafiltration system.
Holland America Line	AMSTERDAM	Traditional MSD - Hamworthy	None	Non AWTS: Traditional Marine Sanitation Device
Holland America Line	STATENDAM	Zenon	Mixed with BW	AWTS: Zenon is a bioreactor and ultrafiltration system.
Holland America Line	VOLENDAM	Zenon	Mixed with BW	AWTS: Zenon is a bioreactor and ultrafiltration system.
Holland America Line	WESTERDAM	Rochem	Rochem	AWTS: Rochem is a reverse osmosis or ultrafiltration system
Holland America Line	ZAANDAM	Zenon	Mixed with BW	AWTS: Zenon is a bioreactor and ultrafiltration system.
Norwegian Cruise Line	NORWEGIAN PEARL	Scanship	Mixed with BW	AWTS: Scanship is a biological reactor and ultrafiltration system.
Norwegian Cruise Line	NORWEGIAN STAR	Scanship	Mixed with BW	AWTS: Scanship is a biological reactor and ultrafiltration system.
Princess Cruise Line	GOLDEN PRINCESS	Hamworthy Bioreactor	Mixed with BW or held	AWTS: Hamworthy is a biological reactor and ultrafiltration system.
Princess Cruise Line	PACIFIC PRINCESS	Hamworthy Bioreactor	Mixed with BW or held	AWTS: Hamworthy is a biological reactor and ultrafiltration system.
Princess Cruise Line	SAPPHIRE PRINCESS	Hamworthy Bioreactor	Mixed with BW or held	AWTS: Hamworthy is a biological reactor and ultrafiltration system.
Princess Cruise Line	STAR PRINCESS	Hamworthy Bioreactor	Mixed with BW	AWTS: Hamworthy is a biological reactor and ultrafiltration system.
Royal Caribbean	MARINER OF THE SEAS	Unknown	Unknown	Unknown
Royal Caribbean	RHAPSODY OF THE SEAS	Hamman/NAVALIS	NAVALIS (under-going start-up)	Non AWTS: Traditional Marine Sanitation Device with aeration, settling and chlorination
Royal Caribbean	SERENADE OF THE SEAS	Scanship	Mixed with BW	AWTS: Scanship is a biological reactor and ultrafiltration system.
NON NWCA MEMBERS				
Fred Olsen	BLACKWATCH	Unknown	Unknown	Unknown
Residensea	THE WORLD	Scanship	Mixed with BW	AWTS: Scanship is a biological reactor and ultrafiltration system.

The MOU prohibits discharges of untreated blackwater and untreated graywater within waters subject to the MOU from any type of treatment system. The MOU also bans discharges of treated blackwater and treated graywater unless treated with an AWTS which meets the Alaska requirements and under these terms:

- The ships are allowed to discharge \geq one nautical mile away from its berth and \geq 6 knots with the submittal of documentation and provisions including 24-hour continuous monitoring for turbidity and UV disinfection, and emergency shutdown for treatment upsets.
- The ships are allowed to discharge within one nautical mile of berth with further documentation and provisions including 24-hour continuous turbidity or equivalent monitoring and UV disinfection, emergency shutdown for treatment upsets, and ultraviolet light disinfection immediately prior to discharge.

All ships discharging within waters subject to the MOU must:

- Not discharge within 0.5 miles of bivalve shellfish beds that are recreationally harvested or commercially approved to harvest. For the 2008 season, this includes three areas (President's Point, Apple Tree Cove, and Tyee Shoal).
- Immediately stop all discharges when high turbidity occurs and when a disinfection system upset occurs (and make appropriate notifications).
- Sample the effluent once per month while in Washington using a Washington state-certified laboratory.
- Meet the limitations on discharge as set in Alaska regulation.
- Split samples with Ecology upon request.
- Conduct Whole Effluent Toxicity (WET) testing once every two years for homeported vessels and once every 40 calls for other vessels (applies to continuous discharge approved vessels only).
- Provide test results provided to Alaska.
- Notify Ecology prior to sampling and allow Ecology to conduct inspections to verify compliance with the MOU (all vessels).
- Notify Ecology of any material changes made to the system.

The MOU prohibits the discharge of residual solids from the treatment system (sludge or biomass) in waters subject to the MOU, within 12 nautical miles from shore, and within the Olympic Coast National Marine Sanctuary. Residual solids are defined as including grit or screenings, ash generated during the incineration of sewage sludge and sewage sludge, which is solid, semi-solid, or liquid residue generated during the treatment of domestic sewage in a treatment works and includes scum or solids removed in advanced wastewater treatment processes.

The discharge of oily bilge water is prohibited if not in compliance with applicable federal and state laws. Vessels typically discharge at less than 15 parts per million, and some are more stringent at 10 or five parts per million.

Hazardous waste:

Per the MOU, Washington and the NWCA agreed to a uniform application procedure for the EPA national identification number under the Resource Conservation and Recovery Act (RCRA). The MOU details that Washington has the right to inspect all records upon request for hazardous waste management. NWCA member lines shall provide an annual report regarding the total hazardous waste offloaded in Washington. NWCA agrees to comply with the guidelines for certain waste streams per Washington regulations.

Solid waste:

The discharge of solid waste (garbage) is prohibited in waters subject to the MOU.

2.2 Alaska requirements and certification

The U.S. Congress enacted Title XIV – Certain Alaskan Cruise Ship Operations in December 2000. The law creates wastewater standards for vessels. The regulations to implement the law (AS 46.03.460 – AS 46.03.490 and 18 AAC 69) became effective in July 2001 and November, 2002, and are enforced by the United States Coast Guard. Under the legislation, large cruise ships may discharge blackwater and graywater in Alaska while underway and law allows continuous discharge of blackwater and graywater that meet more stringent standards through a certification process. A ship approved by the U.S. Coast Guard to discharge continuously must sample their wastewater twice per month.

In August 2006, a ballot measure added new requirements to the Alaska Commercial Passenger Vessel Environmental Compliance Program. The new statute requires vessels to obtain a wastewater discharge permit for the discharge of any treated sewage, graywater, or other wastewater into marine waters of the state. The General Permit has stringent monitoring and reporting requirements as well as interim and final effluents limits.

All of the cruise ships subject to the Washington Cruise MOU are also subject to the Alaska requirements.

3. Documentation of Discharges from Advanced Wastewater Treatment Systems per the MOU

3.1 Documentation required

Discharges \geq one nautical mile and six knots:

Documentation is required for discharges from an AWTs occurring one nautical mile or more away from a ship's berth. The ship must be moving at a speed at or greater than 6 knots. The documentation must identify the type of treatment system in use on the ship, include schematic diagrams of the system and show that the system is certified by the United States Coast Guard. In addition, vessel specific information on how the ship's system meet 24-hour continuous turbidity or equivalent monitoring and UV monitoring, and documentation of system design that demonstrates emergency shut-down capacity.

Discharges within one nautical mile (continuously):

When the discharge occurs within one nautical mile of berth, the cruise ship operator is required to submit the above documentation. In addition, vessel specific information that all treated effluent will receive final polishing with ultraviolet light immediately prior to discharge, copies of water quality test results for the past six months and a vessel specific plan that identifies storage capacities and notification procedures.

3.2 2009 approvals

Ship(s) receiving approval to discharge one mile or more from berth while traveling at a speed of 6 or more knots:

There were no approvals for discharge at greater than one mile from berth and 6 knots.

Ships receiving approval to discharge while at berth or at a distance less than one nautical mile from berth (continuously):

The Norwegian Cruise Line NORWEGIAN PEARL and NORWEGIAN STAR submitted documentation that the systems were certified by the USCG for continuous discharge in Alaska for the 2009 season. Schematics and other documentation were also provided. Ecology staff reviewed the documentation and on May 5, 2009 sent a letter detailing approval for continuous discharge.

Table 3. 2009 Approval to Discharge

Vessel Operator	Vessel Name	Discharging in Washington ¹ ≥ 1nm from berth and ≥ 6 knots		Discharging in Washington ¹ continuously (at berth or within 1 nm of berth)		Date Approved
		BW	GW	BW	GW	
Carnival Cruise Line	SPLENDOR	NO	NO	NO	NO	NA
Celebrity Cruises	INFINITY	NO	NO	NO	NO	NA
Celebrity Cruises	MERCURY	NO	NO	NO	NO	NA
Celebrity Cruises	MILLENIUM	NO	NO	NO	NO	NA
Holland America Line	AMSTERDAM	NO	NO	NO	NO	NA
Holland America Line	STATENDAM	NO	NO	NO	NO	NA
Holland America Line	VOLENDAM	NO	NO	NO	NO	NA
Holland America Line	WESTERDAM	NO	NO	NO	NO	NA
Holland America Line	ZAANDAM	NO	NO	NO	NO	NA
Norwegian Cruise Line	NORWEGIAN PEARL	YES	YES	YES	YES	May 5, 2009
Norwegian Cruise Line	NORWEGIAN STAR	YES	YES	YES	YES	May 5, 2009
Princess Cruise Line	GOLDEN PRINCESS	NO	NO	NO	NO	NA
Princess Cruise Line	PACIFIC PRINCESS	NO	NO	NO	NO	NA
Princess Cruise Line	SAPPHIRE PRINCESS	NO	NO	NO	NO	NA
Princess Cruise Line	STAR PRINCESS	NO	NO	NO	NO	NA
Royal Caribbean	MARINER OF THE SEAS	NO	NO	NO	NO	NA
Royal Caribbean	RHAPSODY OF THE SEAS	NO	NO	NO	NO	NA
Royal Caribbean	SERENADE OF THE SEAS	NO	NO	NO	NO	NA

BW = Blackwater; GW = Graywater; NA = not applicable

¹ Washington waters refers to the "waters subject to this Memorandum of Understanding (MOU)" as defined in the MOU signed April 20, 2004 and as amended.

4. Sampling per the MOU

4.1 Sampling required

Alaska requires twice-monthly sampling of conventional pollutants, as well as sampling of additional pollutants as part of the Alaska general permit. Per the MOU, the vessels that are approved for discharge are required to sample the quality of the treated effluent using a Washington state-certified laboratory at least one time per month while at port in Seattle during each cruise season. The cruise lines must use the sampling requirements set up by the USCG, Captain of the Port, Southeast Alaska Policy for conventional pollutants continued compliance monitoring regime. The MOU requires that the following parameters be sampled: pH, Biochemical Oxygen Demand (BOD), Fecal Coliform, Total Suspended Solids (TSS), and Residual Chlorine (RC).

Whole effluent toxicity testing

Whole effluent toxicity (WET) testing is required for vessels that are approved to discharge continuously, once every 2 years for homeported vessels (20 or more calls/turnarounds per season) and once per 40 port calls or turnarounds for all other vessels. WET testing guidelines were developed specifically for cruise ships by Ecology and are available on Ecology's website on cruise ships.

http://www.ecy.wa.gov/programs/wq/wastewater/cruise_mou/WETtestguideMOU2008.pdf

For the 2009 season, there were no WET tests required. The only vessels approved for discharge continuously in 2009 were the NOREGIAN PEARL and NORWEGIAN STAR. Norwegian Cruise line submitted test reports for WET testing in 2008. A synopsis of previous results are included in annual reports for those seasons.

Copies of the cruise ship WET test reports can be provided upon request.

4.2 Sampling data

Sampling results were received for the cruise ships that were approved for discharge in waters subject to the MOU:

- Norwegian Cruise Line's PEARL and STAR

Sampling results were compared to the limits established by Alaska/the Washington Cruise MOU and are also compared to Washington's water quality standards. Sampling results are summarized for all data received in Appendix B.

Table 4 below shows the results for the cruise ships during the approval period and within Washington/Alaska voyages.

Table 4. Sample Results - Cruise Ships Approved for Discharge into Washington Waters

SHIP: NORWEGIAN PEARL							
		pH	BOD	TSS	Chlorine Residual	Fecal Coliform	Comments
		St. Units	mg/l	mg/l	mg/l	#/100 ml	
MOU/Alaska Limits ¹		6-9	30/45	30/45	10 ug/l	20 / 40	
WA State Water Quality Standards ²		7.0-8.5	NA	NA	13 / 7.5 ug/l	14 / 43	
Sample Date	Location/ Lab						
5/12/09	Juneau/Admiralty/Microbac	6.92	6.9	7	ND	ND	
5/17/09	Seattle/Pace Analytical	6.7	ND	5	ND	ND	
5/19/09	Juneau/Admiralty/Microbac	6.74	4.7	6	ND	ND	
5/26/09	Juneau/Admiralty/Microbac	6.93	2.8	ND	ND	ND	Unannounced
6/2/09	Juneau/Admiralty/Microbac	6.90	ND	4	ND	ND	
6/9/09	Juneau/Admiralty/Microbac	6.90	4.8	14	ND	ND	
6/14/09	Seattle/Pace Analytical	6.5	ND	10	ND	ND	
7/7/09	Juneau/Admiralty/Microbac	6.80	ND	26	ND	112	
7/12/09	Seattle/Pace Analytical	6.7	ND	2	ND	ND	
7/14/09	Juneau/Admiralty/Microbac	6.64	NA	NA	ND	ND	
7/14/09	Juneau/Admiralty	NA	NA	NA	NA	ND	
7/14/09	Juneau/Admiralty	6.65	2.1	ND	ND	ND	
7/21/09	Juneau/Admiralty	NA	NA	NA	NA	ND	
7/21/09	Juneau/Admiralty	NA	NA	NA	NA	ND	
7/21/09	Juneau/Admiralty	NA	NA	NA	NA	ND	
7/28/09	Juneau/Admiralty/Microbac	6.28	2.6	ND	ND	ND	Unannounced and priority pollutants
7/28/09	Juneau/Admiralty	NA	NA	NA	NA	4	
7/28/09	Juneau/Admiralty	NA	NA	NA	NA	ND	
8/4/09	Juneau/Admiralty/Microbac	6.60	ND	ND	ND	ND	
8/18/09	Juneau/Admiralty/Microbac	6.68	5	ND	ND	ND	
8/30/09	Seattle/Spectra	6.42	ND	2	ND	ND	
9/1/09	Juneau/Admiralty/Microbac	6.59	ND	ND	ND	ND	
9/8/09	Juneau/Admiralty/Microbac	6.67	ND	4	ND	ND	
9/13/09	Seattle/Spectra	6.8	4.8	2.8	ND	ND	

	MINIMUM	6.28	ND	ND	ND (<0.1)	ND	met Seattle sampling requirement
	AVERAGE		3.0	6.3			
	MAXIMUM	6.93	6.9	26	ND (<0.1)	112	
	GEOMETRIC MEAN					2.43	

SHIP: NORWEGIAN STAR							
		pH	BOD	TSS	Chlorine Residual	Fecal Coliform	Comments
		St. Units	mg/l	mg/l	mg/l	#/100 ml	
MOU/Alaska Limits¹		6-9	30/45	30/45	10 µg/l	20 / 40	
WA State Water Quality Standards²		7.0-8.5	NA	NA	13 / 7.5 µg/l	14 / 43	
Sample Date	Location/ Lab						
4/29/09	Juneau/Admiralty/Microbac	7.03	3.6	5	ND	ND	
5/5/09	Juneau/Admiralty/Microbac	7.01	ND	ND	ND	ND	
5/12/09	Juneau/Admiralty/Microbac	7.02	3.6	9	ND	ND	
5/16/09	Seattle/Pace Analytical	6.9	ND	ND	ND	ND	
5/18/09	Juneau/Admiralty/Microbac/R&M	6.9	2.6	ND	ND	ND	
6/9/09	Juneau/Admiralty/Microbac	7.1	3	4	ND	ND	
6/13/09	Seattle/Pace Analytical	7.1	4.2	5	ND	ND	
6/16/09	Juneau/Admiralty/Microbac	6.76	5.9	ND	ND	ND	
7/7/09	Juneau/Admiralty/Microbac	6.93	7	4	ND	ND	
7/11/09	Seattle/Pace Analytical	7.0	6.6	2	ND	ND	
7/14/09	Juneau/Admiralty/Microbac	6.88	12.3	ND	ND	ND	
7/28/09	Juneau/Admiralty/Microbac	7.14	11	ND	ND	ND	
7/28/09	Juneau/Admiralty/Microbac	NA	8.2	4	NA	ND	Unannounced and priority pollutants
8/4/09	Juneau/Admiralty/Microbac	7.04	13	ND	ND	2	
8/11/09	Juneau/Admiralty/Microbac	7.05	14.1	4	ND	2	
8/15/09	Seattle/Spectra	7.07	ND	5.5	ND	ND	
9/1/09	Juneau/Admiralty/Microbac	6.74	ND	ND	ND	4	
9/8/09	Juneau/Admiralty/Microbac	6.78	18	ND	ND	5	
9/12/09	Seattle/Spectra	6.6	17	5.2	ND	21	
	MINIMUM	6.6	ND	ND	ND (<0.1)	ND	met Seattle sampling requirement
	AVERAGE		7.3	4.4			
	MAXIMUM	7.14	18	9	ND (<0.1)	21	
	GEOMETRIC MEAN					2.46	

ND = Non Detect, value in box is the detection level. Unannounced sampling includes other parameters not listed above.
 NA = Not Applicable. Sample not required, nor taken.

BOD = Biochemical Oxygen Demand - or organics; TSS = Total Suspended Solids

mg/l = milligrams per liter; ug/l = micrograms per liter; #/100 ml = coliforms per 100 milliliters

¹MOU/Alaska limits from Title XIV, Certain Alaska Cruise Ship Operations, Section 1404(c) /40CFR 133.102

BOD and TSS: 30-day average shall not exceed 30 mg/l, 7-day average shall not exceed 45 mg/l

Fecal Coliform: geometric mean of any 30-day period shall not exceed 20 fecal coliform/100 ml and not more than 10% of the samples exceed 40 fecal coliform/100 ml

²Washington State Water Quality Standards for Surface Waters of the State of Washington Chapter 173-201A WAC

Fecal Coliform: shall not exceed a geometric mean of 14 colonies/100 ml and not more than 10% of a samples shall exceed a geometric mean of 43 colonies/100 ml

pH: 7-8.5 with a human-caused variation within less than 0.2

chlorine: 13 µg/l is the acute limit (1-hour average); 7.5 µg/l is the chronic limit (4-day average)

For the ships that discharged from the AWTS's, the results were in compliance with the Washington MOU and Alaska limits. However, when the samples were compared to Washington's water quality standards, pH would have violated the standards at the point of discharge. The discharges from the cruise ships does not account for a mixing zone. On-land sewage treatment plants do have mixing zones, with typical pH limits of 6.0-9.0, with some

exception. The results from the cruise ships for the parameters listed as above are generally as good as or better than most of the on-land plants.

Random unannounced samples were taken by the Alaska Department of Environmental Conservation in Alaska throughout the season. The samples taken included other parameters than the conventional pollutants detailed in Table 4. Copies of laboratory results received by Ecology can be obtained through Ecology's public disclosure office.

The sample results submitted by the lines included some results for other parameters required as part of the Alaska General Permit including copper, zinc, nickel, and ammonia. Ammonia ranged from 2.3 mg/l to 66 mg/l. Dissolved copper ranged from 2.5 µ/l to 43 µ/l. Dissolved nickel ranged from 4.9 µ/l to 18 µ/l. Dissolved zinc ranged from 31 µ/l to 110 µ/l. These results are included in Appendix B.

5. Inspections

5.1 Inspections per the MOU

Seven different vessels were inspected by Ecology staff throughout the 2008 season. A list of vessels inspected is included in Table 5. The inspections were per the MOU and included a walkthrough of the wastewater systems, a review of discharge records, a review of notification and discharge procedures, and a review of other wastestreams. The inspections typically also included sampling for vessels approved to discharge. Results are included in the inspection reports.

In general, the ship's wastewater systems were operating well and produced high quality effluent. There is more process control sampling being done on board the vessels. Discharge protocols are thorough and include verifications.

Recommendations included statements to continue to work towards high functioning wastewater systems.

It was noted that during the inspections, many of the vessels have greatly increased their waste minimization efforts. Increased recycling rates, minimization of materials used, decreased water usage, and reusing more items has all contributed to the overall minimization of wastes being burned or sent to a landfill.

As not all vessels could be inspected, copies of discharge documents were requested and received for all vessels from the date of inspection till the end of the season for those inspected and for the entire season for those not inspected. Upon review, no violations of the MOU were discovered.

Copies of the inspection reports are included in Appendix C.

Table 5. 2009 Vessel Inspections

Vessels Inspected	Date Inspected
PACIFIC PRINCESS (Princess Cruise Line)	July 9, 2009
NORWEIAN PEARL (Norwegian Cruise Line)	July 19, 2009
WESTERDAM (Holland America Line)	July 26, 2009
NORWEGIAN STAR (Norwegian Cruise Line)	August 8, 2009
RHAPSODY OF THE SEAS (Royal Caribbean)	September 4, 2009
ZAANDAM (Holland America Line)	September 18, 2009
MERCURY (Celebrity Cruises)	October 5, 2009

6. Compliance

6.1 Compliance with MOU requirements

There were no reported incidents of non-compliance with any provision of the MOU.

Letters detailing compliance with the MOU from member lines are included in Appendix D.

7. Shellfish and Viruses

In 2007, The Washington State Department of Health issued a report from a study to examine the potential human health impacts from virus discharges from large passenger vessels. Their results indicate that, when AWTS are fully functional, viral discharges from large cruise ships should not cause illness through shellfish. However, if the treatment systems malfunction, virus discharges from cruise ships may reach some shellfish beds at levels that may lead to illness. The Department of Health report identifies recommendations to limit the risk of an unacceptable discharge. Recommendations include:

- No discharge should occur within 0.5 nautical miles of bivalve shellfish beds that are recreationally harvested or commercially approved to harvest.
- Cruise ships should withhold discharge when a system upset occurs.
- DOH should be notified immediately in the event of an AWTS upset.

The full report can be found at: www.doh.wa.gov/ehp/sf/Pubs/cruise-ship-report.pdf

The recommendations were incorporated into the MOU via the 2008 amendments.

2009 was the first season with full implementation of the shellfish protection amendments. Norwegian Cruise Line submitted all required and requested information related to the new

provisions and received approval for continuous discharge. The line implemented discharge protocols to prevent discharges within 0.5 nautical miles from identified shellfish beds. No upsets of the treatment system or disinfection system occurred.

8. Annual Review and Amendments

The MOU specifies that all of the parties agree to at least one annual meeting to review the effectiveness of the MOU. The annual meeting was held on January 20, 2010. The Port of Seattle, the Department of Ecology, representatives from the NorthWest CruiseShip Association and some of its member lines (Norwegian Cruise Line, Princess Cruises, Holland America Line, and Royal Caribbean/Celebrity Cruises), the Department of Health, as well as other interested parties convened for the meeting. Agenda items included:

- Welcome and Introductions.
- Compliance with the 2009 season.
- Updates – Alaska requirements, EPA Vessel Discharge Permit, MOU funding, WET testing.
- MOU Amendments – proposals and discussion.
- Looking Ahead.
- Comments/Discussion from cruise lines and interested parties.

Three amendments were proposed. Two were received prior to the meeting and one was introduced during the meeting. The first proposal was presented by the Olympic Coast National Marine Sanctuary (OCNMS) and requested that the MOU be modified to eliminate discharges in the OCNMS of any wastewater (treated or untreated) from cruise ships in sanctuary waters. The second proposal was presented by Friends of the Earth and requested that the MOU be amended to ban all discharges while the vessels are at dock. The third proposal was presented by People for Puget Sound and proposed to ban incineration in waters of the MOU. The proposals were discussed.

During the annual meeting, interested parties requested a 30-day public comment period for review of the proposed amendments. A 30-day public comment period was held, ending March 22, 2010 and more than 600 public comments were received. To summarize, the majority of the comments were from web form (one of two different forms). Of the comments that were received, all but two were in support of the amendments.

The parties of the MOU met by phone-conference call on April 1, 2010 and discussed the public comments received and the positions of the MOU parties on each amendment. For an amendment to go through, all three signing parties, the Department of Ecology, the Port of Seattle and the NorthWest CruiseShip Association must agree on the amendments. Agreement was not reached on any of the amendments and therefore, no amendments will be adopted at this time.

The meeting notes are included in Appendix E.

The parties of the MOU also discussed reviewing and revising the process for amending the MOU. The parties have met separately on this process and are working out the details of a proposed method that will involve public input.

9. Conclusions

9.1 Overall

The Memorandum of Understanding continues to be a key tool in protecting water quality by having requirements in place to only allow discharges from advanced wastewater treatment systems, allowing for inspections to verify compliance, and building communication with the cruise lines and vessel staff on requirements of the MOU.

The cruise lines and vessels operating with the MOU had a successful season and were in compliance throughout. The sampling results for conventional pollutants continue to show excellent effluent quality.

Advantages to the MOU include having something in place to protect water quality, building a partnership with the cruise industry and other key stakeholders, and being able to inspect and evaluate the quality of treatment from the ships that discharge. Limitations of the MOU include the inability to effectively enforce on what is essentially a voluntary agreement, and the lack of coverage under the MOU for large passenger ships that are not members of the NorthWest CruiseShip Association.

9.2 Recommendations

1. The Department of Ecology recommends that the MOU continue to be used as a complement to environmental regulations until state specific regulations for cruise ship waste management in Washington State are put in place.
2. Ecology recommends that Ecology continue to inspect ships that are subject to the MOU, including closely looking at wastewater management and the management of other waste streams.
3. It is recommended that the parties of the MOU continue to work together on evaluating discharges from cruise ships into MOU waters. The parties to the MOU will also meet to discuss and make recommendations on how best to proceed in regard to evaluating future proposed amendments to the MOU and how to best take public input on proposed amendments. The parties to the MOU will continue to meet in regard to future MOU funding mechanisms to support Ecology staff on maintaining and implementing the MOU.
4. It is recommended that the cruise lines conduct a thorough review of records on an on-going basis throughout the season as well as at the end of the system to evaluate compliance, and that all recommendations made in inspection reports be implemented.

**Appendix A. Amendment No. 4 of the
Memorandum of Understanding, Cruise
Operations in Washington State**

Memorandum of Understanding Cruise Operations in Washington State

**Originally signed April 20, 2004
Amendment No. 4 dated May 19, 2008**

**Washington State Department of Ecology
Northwest Cruise Ship Association
Port of Seattle**

MEMORANDUM OF UNDERSTANDING

This Memorandum of Understanding, originally signed on April 20, 2004 is amended by and between the State of Washington, the Port of Seattle, and the Northwest Cruise Ship Association, hereinafter referred to as NWCA, representing the international cruise lines identified in *Appendix i*.

Whereas the State of Washington is charged with the responsibility of protecting and conserving Washington's environmental resources in relation to the Cruise Industry's environmental practices in Washington; and

Whereas the United States Coast Guard, herein referred to as USCG, has Federal jurisdiction over environmental matters in navigable waters in the United States; and

Whereas the Port of Seattle is charged with providing the services and facilities to accommodate the transportation of passengers, including cruise ship passengers, while protecting and enhancing the environment of the Port of Seattle; and

Whereas, the NWCA is a non-profit entity organized for the purpose of representing member cruise lines which operate in and about waters subject to this Memorandum of Understanding (MOU), whose current membership is identified in *Appendix i*; and

Whereas, the NWCA has adopted the "**Cruise Industry Waste Management Practices and Procedures**" as promulgated by the Cruise Industry's trade association, the Cruise Lines International Association, herein referred to as CLIA, which practices and procedures are attached hereto as *Appendix ii*; and

Whereas, NWCA cruise vessels operate in international waters and move passengers to destinations worldwide and, consequently, those cruise vessel waste management practices must take into account environmental laws and regulations in many jurisdictions and international treaties and conventions; and

Whereas, the NWCA, the State of Washington as represented by the Washington Department of Ecology (Ecology), the USCG and the Port of Seattle have met to develop waste management practices that preserve a clean and healthy environment and demonstrate the Cruise Industry's commitment to be a steward of the environment; and

Whereas, research is ongoing to establish the impact of ships' wastewater discharges on the ocean environment, and the results of this research will be taken into account in periodic review of the wastewater discharge practices described in this Agreement; and

Whereas, the cruise industry recognizes Washington's fragile marine environment and is committed to help protect this environment;

Now therefore, based upon mutual understanding, the parties enter into this Memorandum of Understanding to implement the following environmental goals, policies and practices:

Definition of terms for the purpose of this agreement:

“blackwater” means waste from toilets, urinals, medical sinks and other similar facilities;

"cruise ship" means any vessel that is owned or operated by a member of the NWCA;

“disinfection system upset” means disinfection below levels of four log (99.99%) inactivation of norovirus based on expected results assuming a minimum intensity of ultraviolet (UV) lights used for disinfecting effluent or other shipboard administrative controls as may be accepted by the Washington Department of Health..

“graywater” includes drainage from dishwasher, shower, laundry, bath, galley drains and washbasin drains;

“monitoring for disinfection effectiveness” means using measuring equipment to determine the intensity of ultraviolet (UV) lights used for disinfecting effluent, or other shipboard administrative controls as may be accepted by the Washington Department of Health.

“oily bilge water” includes bilge water that contains used lubrication oils, oil sludge and slops, fuel and oil sludge, used oil, used fuel and fuel filters, and oily waste.

“residual solids” includes grit or screenings, ash generated during the incineration of sewage sludge and sewage sludge, which is solid, semi-solid, or liquid residue generated during the treatment of domestic sewage in a treatment works. Sewage sludge includes, but is not limited to, domestic septage; scum or solids removed in primary, secondary, or advanced wastewater treatment processes; and a material derived from sewage sludge.

“solid waste” means all putrescible and nonputrescible solid and semisolid wastes including, but not limited to, garbage, rubbish, ashes, industrial wastes, swill, sewage sludge, demolition and construction wastes and recyclable materials [RCW 70.95.030 (22), Solid Waste Management: Reduction and Recycling].

“waters subject to this Memorandum of Understanding (MOU)” include the Puget Sound and the Strait of Juan de Fuca south of the international boundary with Canada; and for off the west coast, the belt of the seas measured from the line of ordinary low water along that portion of the coast which is in direct contact with the open sea and the line marking the seaward limit of inland waters, and extending seaward a distance of three miles as illustrated in *Appendix iii*.

1. Applicability

1.1 The State of Washington agrees that the performance required by the NWCA under the terms of this Memorandum of Understanding shall be directed only to its member cruise lines. The NWCA acknowledges that its members operate cruise vessels engaged in

cruise itineraries greater than one day duration; and further that its members do not operate one-day attraction ships or casino gambling ships. This agreement only applies to voyages during which the commercial passenger vessel actually calls at a port in the State of Washington.

- 1.2 The State of Washington and Port of Seattle accepts the CLIA Industry Standard E-01 – 01, titled *Cruise Industry Waste Management Practices and Procedures (Appendix ii)* as CLIA member policy in the management of solid waste, hazardous wastes and wastewaters in waters subject to this MOU. In addition to the CLIA Practices, the member vessels of NWCA operating in Washington agree to allow Ecology to conduct a minimum of one vessel inspection per season to verify compliance with the MOU and agree to comply with the following unique practices while operating in waters subject to this MOU:

2.1 Wastewater Management

In recognition of the sensitive nature of Washington’s marine environment, the NWCA agrees to the following:

- 2.1.1 to prohibit the discharge of untreated blackwater, untreated graywater, and solid waste within waters subject to this MOU (*Appendix iii*); and to prohibit the discharge of oily bilge water if not in compliance with applicable federal and state laws within waters subject to this MOU.
- 2.1.2 other than as set forth in section 2.1.3 below, to prohibit the discharge of treated blackwater and treated graywater in waters subject to this MOU.
- 2.1.3 the discharge of treated blackwater and treated graywater from ships equipped with advanced wastewater treatment systems (AWTS) which meet the higher standards and the testing regime set out in federal law, Title XIV, Certain Alaska Cruise Ship Operations, Section 1404 (c) (*Appendix vi*) is allowed under the following conditions:
- A. For discharges if the ship is at least one nautical mile away from its berth at a port in Washington and is traveling at a speed of at least 6 knots:
- 1) No later than 60 days prior to the date the cruise ship wishes to commence discharge of AWTS-treated effluent, the cruise line shall submit the following vessel specific information to Ecology
 - a. Documentation on the type of treatment system in use on the ship including schematic diagrams of the system.
 - b. Documentation that the system is certified by the United States Coast Guard for continuous discharge in Alaska. If the certification has not yet been provided by the Coast Guard at the time the other documentation is submitted to Ecology, it may be submitted less than 60 days prior to commencement of discharge but in no event less than 30 days prior to the commencement of discharge.

- c. Provision for daily twenty-four hour continuous turbidity or equivalent monitoring of the quality of the effluent generated by the AWTS and, beginning in 2009, daily twenty-four hour continuous monitoring for disinfection effectiveness.
- d. Documentation of system design that demonstrates the AWTS can be automatically shut down if monitoring of treated effluent indicates high turbidity or, beginning in 2009, a disinfection system upset; or documentation that demonstrates that operational controls exist to insure system shut down if monitoring of treated effluent indicates high turbidity or, beginning in 2009, a disinfection system upset. An example of an acceptable operational control is a system that has the continuous monitoring device alarmed as to immediately alert engineering staff on watch to shut down overboard discharges from the system in the event of high turbidity levels or disinfection ineffectiveness in the treated effluent.

B. For continuous discharge:

- 1) No later than 60 days prior to the date a cruise ship wishes to commence discharge of AWTS effluent, the cruise line shall submit the following vessel specific information to Ecology:
 - a. Documentation on the type of treatment system in use on the ship including schematic diagrams of the system.
 - b. Documentation that the system is certified by the United States Coast Guard for continuous discharge in Alaska. If the certification has not yet been provided by the Coast Guard at the time the other documentation is submitted to Ecology, it may be submitted less than 60 days prior to commencement of discharge but in no event less than 30 days prior to commencement of discharge.
 - c. Provision for daily twenty-four hour continuous turbidity or equivalent monitoring of the quality of the effluent generated by the AWTS and, beginning in 2009, daily twenty-four hour continuous monitoring for disinfection effectiveness.
 - d. Documentation of system design that demonstrates the AWTS can be automatically shut down if monitoring of treated effluent indicates high turbidity or, beginning in 2009, a disinfection system upset; or documentation that demonstrates that operational controls exist to insure system shut down if monitoring of treated effluent indicates high turbidity or, beginning in 2009, a disinfection system upset. An example of an acceptable operational control is a system that has the continuous monitoring device alarmed as to immediately alert engineering staff on watch to shut down overboard discharges from the system in the event of high turbidity levels or disinfection ineffectiveness in the treated effluent.
 - e. Documentation that all treated effluent will receive final polishing for disinfection immediately prior to discharge.
 - f. Copies of water quality tests results taken from the AWTS effluent during the preceding six months.

- g. A vessel specific plan that: identifies how effluent will be stored until the AWTS is repaired and which indicates the storage capacity of holding tanks; and includes a notification protocol for notifying Ecology of system shut down which occurs while within waters subject to this MOU.

If Ecology determines that the documentation provided is insufficient, it shall so notify the cruise line. The cruise line shall provide supplemental documentation as requested by Ecology. If Ecology and the cruise line are unable to agree on the supplemental documentation and cruise line elects to discharge from the AWTS, cruise line understands that any such discharge will not have been approved by Ecology and further that Ecology may take appropriate action, including, but not limited to, publicizing, such fact.

Any cruise ship discharging from an AWTS in waters subject to this MOU operates within the shipping lanes and this effectively means that vessels are more than a half a mile from shellfish beds with the possible exception of President's Point, Apple Tree Cove and Tyee Shoal for the 2008 cruise season. For specific information relative to shellfish protection measures, see *appendix x*.

C. The vessels that have submitted documentation under A or B above agree to:

- 1) Not discharge within 0.5 nautical miles of bivalve shellfish beds that are recreationally harvested or commercially approved to harvest as identified annually by the Department of Ecology. This season's locations include President's Point, Apple Tree Cove and Tyee Shoal as referenced in *Appendix x*.
- 2) Immediately stop all discharges when high turbidity occurs and, beginning in 2009, when a disinfection system upset condition occurs.
- 3) Immediately notify the Washington State Department of Health in the event of a disinfection system upset at (360) 236-3330 during office hours or (360) 786-4183 after hours (24 hour pager). The agreement to provide this notice is based on the understanding by NWCA that the Department of Health will not publicize the information provided unless it reasonably determines that a discharge presents a material public health risk.
- 4) Sample the quality of the treated effluent using a Washington state-certified laboratory at least one time per month while at port in Washington during each cruise season using the sampling requirements established per the United States Coast Guard, Captain of the Port, Southeast Alaska Policy for conventional pollutants continued compliance monitoring regime and as referenced in *Appendix vi*. Parameters sampled include pH, Biochemical Oxygen Demand (BOD), Fecal Coliform, Total Suspended Solids (TSS), and Residual Chlorine (RC).
- 5) Meet the limitations on discharge as set in Alaska regulations (*Appendix vi*) for BOD, TSS, pH, Fecal Coliform and Residual Chlorine.¹
- 6) Split samples with Ecology upon Ecology's request when sampling is conducted in Washington waters.

- 7) For vessels that have submitted documentation under B above (continuous discharge), conduct Whole Effluent Toxicity (WET) Testing once every two years for vessels homeported² in Washington and once every 40 port calls or turnarounds to a port in Washington for all other vessels.
- 8) Provide Ecology with duplicates of test results obtained for and provided to the State of Alaska to enable Ecology to monitor the quality of the effluent from such systems.
- 9) Notify Ecology at least a week in advance of sampling and to allow Ecology staff access to the ship in order to observe sampling events.
- 10) Notify Ecology if any material changes are made to the system.

Note 1: There is a presumption that meeting Alaska's standards means that Washington's Water Quality Standards are likely being met and that if Alaska's standards are not being met, Washington's Water Quality Standards are not being met.

Note 2: A "homeported" vessel is a vessel that makes a call or does a turnaround at a port in Washington at least 20 times per year.

2.1.4 The discharge of residual solids from either a type 2 marine sanitation device or an advanced waste water treatment system is prohibited in waters subject to this MOU, within 12 nautical miles from shore, and within the entire boundaries of the Olympic Coast Marine Sanctuary. All parties acknowledge that most of the Olympic Coast National Marine Sanctuary lies beyond 3 miles of shore and therefore is outside the jurisdiction of the State of Washington.

2.2 Hazardous Waste Management

2.2.1 The CLIA in consultation with NWCA has developed, in conjunction with the Environmental Protection Agency (EPA), a national practice for the assigning of an EPA Identification Number to each cruise ship as the "generator" of hazardous wastes, which recognizes the multi-jurisdictional itineraries of a cruise vessel. EPA also proposes that the state where company offices are located may issue the national identification numbers provided the criteria and information submitted required for obtaining the number is standard for the United States. The State of Washington and NWCA agree to a uniform application procedure for the EPA national identification number in accordance with the Resource Conservation Recovery Act (RCRA) (*Appendix v*). The State of Washington shall have the right to inspect all such records upon written request to the cruise vessel operator. The State of Washington recognizes that in some cases EPA Identification Numbers may not be required under federal law for conditionally exempt small quantity generators.

2.2.2 *Appendix ii* includes the uniform procedure adopted by the NWCA for the application of RCRA to cruise vessels disposing of hazardous wastes in the State of Washington. The State of Washington accepts this procedure as the appropriate process for vendor selection and management of hazardous wastes in Washington. NWCA member lines agree to provide an annual report regarding the total hazardous waste offloaded in Washington by each cruise vessel.

2.2.3 The NWCA acknowledges that the state of Washington regulates some hazardous wastes differently than EPA and agrees, within the waters subject to this MOU, to comply with the guidelines for specific waste streams found in *Appendix vii*.

- 2.2.4 The State of Washington and NWCA agree that all hazardous waste disposal records required by RCRA for cruise vessels entering a Washington port shall be available to the State of Washington upon written request to the cruise vessel operator.
3. The State of Washington and the NWCA understand that the U.S. Coast Guard (USCG) has Federal jurisdiction over environmental matters in navigable waterways in the United States and conducts passenger ship examinations that include review of environmental systems, Safety Management System (SMS) documentation and such MARPOL-mandated documents as the Oil Record Book and the Garbage Record Book. Additionally, NWCA member cruise vessels will integrate such industry standards into SMS documentation that ensure compliance through statutorily required internal and third party audits.
 4. The USCG has developed guidelines relating to the inspection of waste management practices and procedures, which have been adopted by the cruise industry. The State of Washington accepts the USCG Navigation and Vessel Inspection Circular and Environmental Systems Checklist (*Appendix iv*), which will be incorporated into USCG 840 Guidebook as the procedure to conduct waste management inspections on board cruise vessels. To reduce administrative burden on the cruise ship industry, the State of Washington agrees to first request from the USCG any records for cruise vessels entering waters subject to this MOU to the extent that those records are covered by the Memorandum of Agreement, dated May 25th, 2001, between the State of Washington Department of Ecology and the USCG. Other USCG records will be provided to the State directly by the NWCA member lines upon request.
 5. The State of Washington recognizes that waste management practices are undergoing constant assessment and evaluation by cruise industry members. It is understood by the State of Washington and the NWCA that the management of waste streams will be an on-going process, which has as its stated objectives both waste minimization and pollution prevention. Consequently, all parties agree to continue to work with each other in good faith to achieve the stated objectives. This may require additional meetings with the parties to this Agreement to discuss specific issues applicable to the cruise industry in the U.S.
 6. The NWCA acknowledges that its operating practices are required to comply with the applicable provisions of the Marine Mammal Protection Act, the Invasive Species Act and the State of Washington Ballast Water Management law, RCW Ch. 77.120. The NWCA agrees to acknowledge and comply with appropriate rules and regulations related to the Olympic Coast National Marine Sanctuary, including but not limited to the regulations for implementing the National Marine Sanctuary Program (subparts A through E and subpart O of Title 15, Chapter IX, Part 922 of the Code of Federal Regulations) and the International Maritime Organization (IMO) "Area To Be Avoided" off the Washington Coast.
 7. This agreement does not prohibit discharges made for the purpose of securing the vessel or saving life at sea, provided that all reasonable precautions have been taken for the purpose of preventing or minimizing the discharge.

8. All parties acknowledge that ongoing discussions of environmental goals are recognized as a necessary component to the successful implementation of management practices for waste minimization and reduction.
9. Compliance, Modification and Review of MOU: NWCA members agree to immediately self-report non-compliance with any provision of this MOU to the Department of Ecology at the following 24-hour number: 425-649-7000. By December 1st of each year, a report shall be submitted to the Department of Ecology detailing the compliance with this MOU for each vessel within the NWCA that calls to a port in Washington for the previous cruise season. The reports should follow the format included in *Appendix viii*. All parties acknowledge that this MOU is not inclusive of all issues, rules or programs that may arise in the future. The State of Washington reserves the right to enter into additional MOUs to address or refine such issues, to take enforcement action in response to violations of state law, or to pursue appropriate legislation. All parties agree to at least one annual meeting to review the effectiveness of the MOU, such meeting to be scheduled, if feasible, during October of each year. The State of Washington and NWCA reserve the right to cancel this MOU upon 90 days written notice.
10. The Port of Seattle and Ecology entered into an interagency agreement for the purpose of providing funding for Ecology personnel to further the intent of the MOU. The Port of Seattle is acting solely as a pass-through contracting entity to facilitate the collection of funds from the individual NWCA members to provide payment to Ecology on behalf of the NWCA members. The interagency agreement as included in *Appendix ix* may be amended or renewed separately from this MOU at any time by the parties of the agreement without amending the MOU.

Appendix xi includes a summary of amendments.

IN RECOGNITION OF THE MUTUAL UNDERSTANDINGS DISCUSSED HEREIN THE PARTIES HERETO AFFIX THEIR SIGNATURES. THIS AMENDMENT SHALL BE EFFECTIVE UPON THE DATE AND SIGNATURE OF THE FINAL SIGNING PARTY, THE DEPARTMENT OF ECOLOGY.


Washington Department of Ecology

5/19/08
Date


Port of Seattle


Northwest Cruise Ship Association

APPENDICES
MEMORANDUM OF UNDERSTANDING

Appendix i	List of NWCA Member Lines
Appendix ii	CLIA Standards
Appendix iii	Navigational Chart of the waters subject to this MOU
Appendix iv	USCG Navigation & Vessel Inspection Circular and Environmental Systems Checklist
Appendix v	Uniform application procedure for EPA National ID Number as per Resource Conservation Recovery Act.
Appendix vi	Alaska Regulations
Appendix vii	Washington Hazardous Waste Management Best Management Practices
Appendix viii	Boilerplate Compliance Letter
Appendix ix	Interagency Agreement (cost-recovery)
Appendix x	Bivalve Shellfish Beds
Appendix xi	Summary of Amendments

Appendix i

List of NWCA Member Lines

Carnival Cruise Lines
Celebrity Cruises
Crystal Cruises
Holland America Line
Norwegian Cruise Lines
Princess Cruises
Regent Seven Seas
Royal Caribbean Cruises
Silversea Cruises

Appendix ii

CLIA INDUSTRY STANDARD

CRUISE INDUSTRY WASTE MANAGEMENT PRACTICES AND PROCEDURES

The members of the Cruise Lines International Association (CLIA) are dedicated to preserving the marine environment and in particular the pristine condition of the oceans and other waters upon which our vessels sail. The environmental standards that apply to our industry are stringent and comprehensive. Through the International Maritime Organization, the United States and flag and port states, CLIA has developed consistent and uniform international standards that apply to all vessels engaged in international commerce. These standards are set forth in the International Convention for the Prevention of Pollution from Ships (MARPOL). The international standards of MARPOL have in turn been adopted by the United States and augmented by additional national legislation and regulation. The U.S. has jurisdiction over both foreign and domestic vessels that operate in U.S. waters where U.S. laws, such as the Federal Water Pollution Control Act, the Act to Prevent Pollution from Ships, the Ports and Waterways Safety Act, and the Resource Conservation and Recovery Act - which applies to hazardous waste as it is landed ashore for disposal, apply. The U.S. Coast Guard enforces both international conventions and domestic laws.

The cruise industry commitment to protecting the environment is demonstrated by the comprehensive spectrum of waste management technologies and procedures employed on its vessels.

CLIA members are committed to:

- a. Designing, constructing and operating vessels, so as to minimize their impact on the environment;
- b. Developing improved technologies to exceed current requirements for protection of the environment;
- c. Implementing a policy goal of zero discharge of MARPOL, Annex V solid waste products (garbage) and equivalent US laws and regulations by use of more comprehensive waste minimization procedures to significantly reduce shipboard generated waste;
- d. Expanding waste reduction strategies to include reuse and recycling to the maximum extent possible so as to land ashore even smaller quantities of waste products;
- e. Improving processes and procedures for collection and transfer of hazardous waste; and

- f. **Strengthening comprehensive programs for monitoring and auditing of onboard environmental practices and procedures in accordance with the International Safety Management Code for the Safe Operation of Ships and for Pollution Prevention (ISM Code).**

INDUSTRY WASTE MANAGEMENT STANDARDS: CLIA member cruise vessel operators have agreed to incorporate the following standards for waste stream management into their respective Safety Management Systems.

1. **Photo Processing, Including X-Ray Development Fluid Waste:** *Member lines have agreed to minimize the discharge of silver into the marine environment through the use of best available technology that will reduce the silver content of the waste stream below levels specified by prevailing regulations.*
2. **Dry-cleaning waste fluids and contaminated materials:** *Member lines have agreed to prevent the discharge of chlorinated dry-cleaning fluids, sludge, contaminated filter materials and other dry-cleaning waste byproducts into the environment*
3. **Print Shop Waste Fluids:** *Member lines have agreed to prevent the discharge of hazardous wastes from printing materials (inks) and cleaning chemicals into the environment.*
4. **Photo Copying and Laser Printer Cartridges:** *Member lines have agreed to initiate procedures so as to maximize the return of photo copying and laser printer cartridges for recycling. In any event, these cartridges will be landed ashore.*
5. **Unused And Outdated Pharmaceuticals:** *Member lines have agreed to ensure that unused and/or outdated pharmaceuticals are effectively and safely disposed of in accordance with legal and environmental requirements.*
6. **Fluorescent And Mercury Vapor Lamp Bulbs:** *Member lines have agreed to prevent the release of mercury into the environment from spent fluorescent and mercury vapor lamps by assuring proper recycling or by using other acceptable means of disposal.*
7. **Batteries:** *Member lines have agreed to prevent the discharge of spent batteries into the marine environment.*
8. **Bilge and Oily Water Residues:** *Member lines have agreed to meet or exceed the international requirements for removing oil from bilge and wastewater prior to discharge.*
9. **Glass, Cardboard, Aluminum and Steel Cans:** *Member lines have agreed to eliminate, to the maximum extent possible, the disposal of MARPOL Annex V wastes into the marine environment. This will be achieved through improved reuse and recycling opportunities. They have further agreed that no waste will be discharged into the marine environment unless it has been properly processed and can be discharged in accordance with MARPOL and other prevailing requirements.*
10. **Incinerator Ash:** *Member lines have agreed to reduce the production of incinerator ash by minimizing the generation of waste and maximizing recycling opportunities.*

11. **Graywater:** *[For ships traveling regularly on itineraries beyond the territorial waters of coastal states], member lines have agreed that graywater will be discharged only while the ship is underway and proceeding at a speed of not less than 6 knots¹; that graywater will not be discharged in port and will not be discharged within 4 nautical miles from shore or such other distance as agreed to with authorities having jurisdiction or provided for by local law except in an emergency, or where geographically limited. Member lines have further agreed that the discharge of graywater will comply with all applicable laws and regulations. For vessels whose itineraries are fully within US territorial waters, discharge shall comply fully with U.S. and individual state legislation and regulations.*
12. **Blackwater:** *CLIA members have agreed that all blackwater will be processed through a Marine Sanitation Device (MSD), certified in accordance with U.S. or international regulations, prior to discharge. For ships traveling regularly on itineraries beyond territorial coastal waters, discharge will take place only when the ship is more than 4 miles from shore and when the ship is traveling at a speed of not less than 6 knots.¹ For vessels whose itineraries are fully within US territorial waters, discharge shall comply fully with U.S. and individual state legislation and regulations.*

Some member cruise lines are field-testing wastewater treatment systems that utilize advanced technologies. These onboard wastewater treatment systems, which are currently being referred to as advanced wastewater purification (AWP) systems, are designed to result in effluent discharges that are of a high quality and purity; for example, meeting or surpassing secondary and tertiary effluents and reclaimed water. Effluents meeting these high standards would not be subjected to the strict discharge limitations previously discussed.

Each CLIA cruise vessel operator has agreed to utilize one or more of the practices and procedures contained in the attached “*Cruise Industry Waste Management Practices and Procedures*” in the management of their shipboard waste streams. Recognizing that technology is progressing at a rapid rate, any new equipment or management practices that are equivalent to or better than those described, and which are shown to meet or exceed international and federal environmental standards, will also be acceptable. Member lines have agreed to communicate to CLIA the use of equivalent or other acceptable practices and procedures. As appropriate, such practices and procedures shall be included as a revision to the attached document. As an example, when improved systems for treating blackwater and graywater are perfected and shown to meet the requirements for MSDs and accepted by appropriate authorities, the new systems and associated technology will be included in the attachment as a revision.

CLIA and its Environmental Committee will continue to work with the U.S. Coast Guard, the U.S. Environmental Protection Agency and other appropriate agencies to further implement the above commitments.

¹ For vessels operating under sail, or a combination of sail and motor propulsion, the speed shall not be less than 4 knots.

ATTACHMENT: *CRUISE INDUSTRY WASTE MANAGEMENT PRACTICES AND PROCEDURES*

Revised: November 12, 2006

Effective for non-prior ICCL members: July 1, 2007

Appendix ii (cont.)

Attachment to CLIA Standard

CRUISE INDUSTRY WASTE MANAGEMENT PRACTICES AND PROCEDURES

REVISED: (November 27, 2006)

The cruise industry is dedicated to preserving the marine environment and oceans upon which our ships sail. As a stated industry standard, CLIA members have adopted aggressive programs of waste minimization, waste reuse and recycling, and waste stream management set forth in the following. In addition, CLIA members are working in a number of areas to identify and implement new technologies in order to improve the environmental performance of their ships. CLIA member lines currently have agreed to utilize waste management practices and procedures, which meet or exceed the stringent standards as set forth in international treaties and applicable U.S. laws.

Introduction

The cruise industry is inextricably linked to the environment. Our business is to bring people to interesting places in the world, over the water. Recognizing the future of the industry depends on a clean and healthy environment; cruise industry senior management is committed to stewardship of the environment and establishing industry practices that will make CLIA member cruise ship operators leaders in environmental performance.

This document outlining member line practices has been developed under the auspice of the industry's professional organizations, the Cruise Lines International Association (CLIA), the Florida Caribbean Cruise Association (FCCA), and the Northwest Cruise Ship Association (NWCA). The purpose of this document is to set forth cruise industry waste management practices and procedures that CLIA member cruise vessel operators have agreed to incorporate into their respective Safety Management Systems.

In the development of industry practices and procedures for waste management, the members of the Cruise Lines International Association have endorsed policies and practices based upon the following fundamental principles:

- Full compliance with applicable laws and regulations;
- Maintaining cooperative relationships with the regulatory community;
- Designing, constructing and operating vessels, so as to minimize their impact on the environment;
- Embracing new technology;
- Conserving resources through purchasing strategies and product management;
- Minimizing waste generated and maximize reuse and recycling;
- Optimizing energy efficiency through conservation and management;
- Managing water discharges; and
- Educating staff, guests and the community.

Discussion

Just as on shore, ship operations and passengers generate waste as part of many daily activities. On ships, waste is generated while underway and in port. Because ships move, the management of these wastes becomes more complicated than for land-based activities, as the facilities and laws change with the location of the ship. Facilities on the ships as well as management practices must be designed to take into account environmental laws and regulations around the world and the various local and state laws and regulations. Moreover, because waste management ultimately becomes a local activity, the local port infrastructure, service providers, and local waste disposal vendors are factors in the decision-making processes.

On an international level, environmental processes are an important part of the International Maritime Organization's (IMO's) policies and procedures for the maritime industry. CLIA member lines have agreed to incorporate environmental performance into Safety Management Systems (SMS) and MARPOL mandated Waste Management Manuals. Under agreements and laws specific to many nations, these programs are routinely reviewed by Port States to ensure compliance. For example, in the United States, the US Coast Guard has jurisdiction over environmental matters in ports and waterways and conducts passenger ship examinations that include review of environmental systems, SMS documentation and such MARPOL-mandated documents as the Oil Record Book and the Garbage Record Book. Within the United States, environmental laws and regulations apply include the Clean Water Act, the Refuse Disposal Act, the Resource Conservation and Recovery Act, The Clean Air Act, the Oil Pollution Act of 1990, and the Pollution Prevention Act, to name a few, which apply to all ships within U.S. waters.

The industry effort to develop waste management practices and procedures has focused on the traditional high volume wastes (garbage, graywater, blackwater, oily residues (sludge oil) and bilge water), pollution prevention, and the small quantities of hazardous waste produced onboard. In the process, CLIA members have shared waste management strategies and technologies, while focusing on a common goal of waste reduction.

The process of waste reduction includes waste prevention, the purchasing of products that have recycled content or produce less waste (e.g. source reduction), incineration, and recycling or reuse of wastes that are generated. The ultimate goal is to have the waste management culture absorbed into every facet of cruise vessel operation. A fully integrated system beginning with the design of the vessel should address environmental issues at every step.

Management practices for waste reduction should start before a product is selected. Eco-purchasing and packaging are vital to the success of any environmental program, as are strategies to change packaging, processes and management to optimize the resources used.

The commitment of the industry to this cooperative effort has been quite successful, as companies have shared information and strategies.

Industry Standard Waste Handling Procedures

CLIA member lines have agreed that hazardous wastes and waste streams onboard cruise vessels will be identified and segregated for individual handling and management in accordance with appropriate laws and regulations. They have further agreed, hazardous wastes will not be discharged overboard, nor be commingled or mixed with other waste streams.

- A. **Hazardous Waste Collection and Storage onboard Ship:** *CLIA member lines have agreed that specific procedures for hazardous waste collection, storage and crew training will be addressed in each ship's SMS or equivalent onboard instruction in the Case of US registry vessels.*
- B. **Photo Processing, Including X-Ray Development Fluid Waste:** *CLIA member lines have agreed to eliminate the discharge of silver from these sources into the marine environment through the use of best available technology that will reduce the silver content of the waste stream below levels specified by prevailing regulations or by treating all photo processing and x-ray development fluid waste (treated or untreated) as a hazardous waste and landing ashore in accordance with RCRA requirements.*

There are several waste streams associated with photo processing operations that have the potential to be regulated under the Resource Conservation and Recovery Act (RCRA). These waste streams include spent fixer, spent cartridges, expired film and silver flake.

Photographic fixer removes the unexposed silver compounds from the film during the developing process. The spent fixer can have as much as 2000-3000 parts per million (ppm) of silver. Silver bearing waste is regulated by RCRA as a hazardous waste if the level of silver exceeds 5 ppm as determined by the Toxicity Characteristic Leaching Procedure (TCLP) test.

Silver recovery units may be used to reclaim the silver from the used fixer waste stream. There are two types of recovery units. These are active (with electricity) and passive (without electricity) units. The active unit uses electricity to plate silver onto an electrode. The passive unit uses a chemical reaction between steel wool and silver to remove most of the silver from solution. Utilizing the best available technology, the equipment currently onboard CLIA member cruise ships is conservatively estimated to reduce the silver content of this effluent below 4 mg/l (milligrams/l or ppm)

Handling Method 1 Employed by Member Lines:

Treat used photographic and x-ray development fluids to remove silver for recycling.

Verify that the effluent from the recovery unit is less than 5 parts per million (ppm) silver, as measured by EPA-approved methodology.

After treatment, the residual waste stream fluid is non-hazardous and landed ashore as industrial waste.

Handling Method 2 Employed by Member Lines:

Used photographic and x-ray development fluids, either treated or untreated, may be assumed to be a hazardous waste. In this event, they are landed ashore in accordance with the requirements of the Resource Conservation and Recovery Act (RCRA).

- C. **Dry-cleaning waste fluids and contaminated materials:** *CLIA member lines have agreed to prevent the discharge of chlorinated dry-cleaning fluids, sludge, contaminated filter materials and other dry-cleaning waste byproducts into the environment.*

Shipboard dry cleaning facilities use a chlorinated solvent called perchlorethylene (also known as PERC or tetrachloroethylene) as a dry cleaning fluid. This is the approved dry cleaning solvent for these units. Operators must receive specific required training for the correct use of this chemical and its associated precautions. This solvent should be used in accordance with all safety procedures including appropriate personal protective equipment (PPE).

The dry cleaning units produce a small volume waste from condensate, the bottoms of the internal recovery stills, waste products from button and lint traps, spent perchloroethylene and filter media. This waste is comprised of dirt, oils, filters material, and spent solvent. Each ship utilizing these dry-cleaning units produces approximately two pounds of waste material weekly. However, the amounts may vary greatly by season and passenger load. This material is classified as hazardous waste under RCRA and must be disposed of accordingly.

Handling Method 1 Employed by Member Lines:

Perchloroethylene (PERC) and other chlorinated dry-cleaning fluids, contaminated sludge and filter materials are hazardous waste and landed ashore in accordance with the requirements of RCRA.

- C. **Print Shop Waste Fluids:** *CLIA member lines have agreed to prevent the discharge of hazardous wastes from printing materials (inks) and cleaning chemicals into the environment.*

Print shop waste may contain hazardous waste. Printing solvents, inks and cleaners all may contain hydrocarbons, chlorinated hydrocarbons, and heavy metals that can be harmful to human and aquatic species. Recent advances in printing technology and substitution of chemicals that are less hazardous reduces the volume of print shop waste generated and reduces the impact of these waste products.

CLIA member lines have agreed to utilize, whenever possible, printing methods and printing process chemicals that produce both less volume of waste and less hazardous waste products, that shipboard printers will be trained in ways to minimize printing waste generated, and that alternative printing inks such as soy based, non-chlorinated hydrocarbon based ink products will be used whenever possible. The member lines have further agreed that all print shop waste including waste solvents, cleaners, and cleaning cloths will be treated as hazardous waste, if such waste contains chemical components that may be considered as hazardous by regulatory definitions, and that all other waste may be treated as non-hazardous.

Handling Method 1 Employed by Member Lines:

When using traditional or non-soy based inks and chlorinated solvents, all print shop waste is treated as hazardous, and discharged ashore in accordance with RCRA.

Handling Method 2 Employed by Member Lines:

Shipboard printing processes use non-toxic based printing ink such as soy based, non-chlorinated solvents, and other non-hazardous products to eliminate hazardous waste products.

- D. Photo Copying and Laser Printer Cartridges:** *CLIA member lines have agreed to initiate procedures so as to maximize the return of photocopying and laser printer cartridges for recycling, and in any event, have agreed that these cartridges will be landed ashore.*

Increased use of laser and photo copying equipment on shore as well as onboard ship results in the generation of increased volumes of waste cartridges, inks, and toner materials. CLIA member lines have agreed to use only such inks, toners and printing/copying cartridges that contain non-hazardous chemical components, and that none of these cartridges or their components should be disposed of by discharge into the marine environment. In recognition of the member lines' goal of waste minimization, they have further agreed these cartridges should, whenever possible, be returned to the manufacturer for credit, recycling, or for refilling.

Handling Method Employed by Member Lines:

CLIA member lines have agreed that wherever possible, photo copying and laser printer cartridges will be collected, packaged and returned for recycling and when this is not possible, that these materials will not be discharged into the sea or other bodies of water but will be handled as other shipboard waste that is landed ashore for further disposal.

- F. Unused And Outdated Pharmaceuticals:** *CLIA member lines have agreed to ensure that unused and/or outdated pharmaceuticals are effectively and safely disposed in accordance with legal and environmental requirements.*

In general ships carry varying amounts of pharmaceuticals. The pharmaceuticals carried range from over-the-counter products such as anti-fungal creams to prescription drugs such as epinephrine. Each ship stocks an inventory based on its itinerary and the demographics of its passenger base. CLIA member lines have agreed that all pharmaceuticals will be managed to ensure that their efficacy is optimized and that disposal is done in an environmentally responsible manner.

CLIA member lines have further agreed that when disposing of pharmaceuticals, the method used will be consistent with established procedures, and that pharmaceuticals and medications which are off specification or which have exceeded their shelf-life, and stocks that are unused and out of date, cannot be used for patients and therefore will be removed from the ship. Further, each regulatory jurisdiction has a posting of listed pharmaceuticals that must be considered hazardous waste once the date has expired or the item is no longer considered good for patient use.

Through onboard management of the medical facility, CLIA member lines have agreed that stocks of such listed pharmaceuticals are returned to the vendor prior to date of expiration. Pharmaceuticals that are being returned and which have not reached their expiration date are shipped using ordinary practices for new products.

Safety and Health

CLIA member lines have agreed that all expired listed pharmaceuticals will be handled in accordance with established procedures and all personnel handling this waste will receive

appropriate training in the handling of hazardous materials. As guidance, the US Environmental Protection Agency (EPA) has issued a report that clarifies the fact that residuals, such as epinephrine, found in syringes after injections are not considered an acutely hazardous waste by definition and may be disposed of appropriately in sharps containers. Member lines have agreed that all Universal Precautions will be adhered to when handling sharps.

Handling Method 1 Employed by Member Lines:

Establish a reverse distribution system for returning unexpired, unopened non-narcotic pharmaceuticals to the original vendor.

Handling Method 2 Employed by Member Lines:

Appropriately destroy narcotic pharmaceuticals onboard ship in a manner that is witnessed and recorded.

Handling Method 3 Employed by Member Lines:

Land listed pharmaceuticals in accordance with local regulations. Listed pharmaceuticals are a hazardous waste having chemical compositions which prevent them from being incinerated or disposed of through the ship's sewer system. Listing of such pharmaceuticals may vary from state to state.

Handling Method 4 Employed by Member Lines:

Dispose of other non-narcotic and non-listed pharmaceuticals through onboard incineration or landing ashore.

- G. Fluorescent and Mercury Vapor Lamp Bulbs:** *CLIA member lines have agreed to prevent the release of mercury into the environment from spent fluorescent and mercury vapor lamps by assuring proper recycling or by using other acceptable disposal methods.*

Fluorescent and Mercury Vapor lamps contain small amounts of mercury that could potentially be harmful to human health and the environment. To prevent human exposure and contamination of the environment, CLIA member lines have agreed that these lamps will be handled in an environmentally safe manner. Recycling of mercury from lamps and other mercury containing devices is the preferred handling method and is encouraged by various states. The recycling of fluorescent lamps and high intensity discharge (HID) lamps keeps potentially hazardous materials out of landfills, saves landfill space and reduces raw materials production needs.

The recycling of fluorescent and HID lamps is a proven technology capable of reliably recovering greater than 99 percent of the mercury in the spent lights. At the recycling facility, this is done by using a crush-and-sieve method. In this process, the spent tubes are first crushed and then sieved to separate the large particles from the mercury containing phosphor powder. The phosphor powder is collected and processed under intense heat and negative pressure, a process called retorting. The mercury is volatilized and then recovered by condensation. The glass particles are segregated and recycled into other products such as fiberglass. Aluminum components are also recycled separately.

Storage and handling of used lamp bulbs pose no compatibility problems. Disposal of the glass tubes can be accomplished by (1) processing with shipboard lamp crusher units that filter and adsorb the mercury vapor through H.E.P.A. and activated carbon or (2) by keeping the glass tubes intact for recycling ashore. The intact lamps or crushed bulbs are classified as "Universal Waste" when they are shipped to a properly permitted recycling facility; as such, testing is not required. The filters are disposed of as a hazardous waste in accordance with applicable US EPA or other prevailing laws and regulations.

Handling Method Employed by Member Lines:

- (1) Fluorescent and mercury vapor lamps are collected and processed aboard by lamp crusher units and disposed of as stated above; or
- (2) Fluorescent and mercury vapor lamps are collected intact and landed for recycling or disposal in accordance with prevailing laws and regulations.

H. Other Mercury Containing Products: *CLIA Member lines have agreed to prevent the discharge of mercury containing products into the sea.*

Reduction in use: Where feasible, CLIA members will reduce the use of mercury containing products.

Disposal: Once mercury-containing products are no longer able to be used, or require disposal, these products shall be landed ashore as universal or hazardous waste as appropriate.

I. Batteries: *CLIA member lines have agreed to prevent the discharge of spent batteries into the marine environment.*

If not properly disposed of, spent batteries may constitute a hazardous waste stream. Most of the large batteries are on tenders and standby generators. Small batteries used in flashlights and other equipment and by passengers, account for the rest. There are four basic types of batteries used.

Lead-acid batteries – These are used in tenders and standby generators. They are wet, rechargeable, and usually six-celled. They contain a sponge lead anode, lead dioxide cathode, and sulfuric acid electrolyte. The electrolyte is corrosive. These batteries require disposal as a hazardous waste, unless recycled or reclaimed.

Lead-acid batteries use sulfuric acid as an electrolyte. Battery acid is extremely corrosive, reactive and dangerous. Damaged batteries will be drained into an acid-proof container. A damaged and leaking battery is then placed in another acid-proof container, and both the electrolyte and the damaged battery placed in secure storage for proper disposal as a hazardous waste.

Nickel-cadmium (NiCad) batteries – These are usually rechargeable, and contain wet or dry potassium hydroxide as electrolyte. The potassium hydroxide is corrosive and the cadmium is a characteristic hazardous waste. Therefore, NiCad batteries will be disposed of as hazardous waste, unless recycled or reclaimed.

Lithium batteries – These are used as a power source for flashlights and portable electronic equipment. All lithium batteries will be disposed of as hazardous waste, or sent out for reclamation.

Alkaline batteries – These are common flashlight batteries and are also used in many camera flash attachments, cassette recorders, etc. They should be recycled, properly disposed or reclaimed.

Handling Method Employed by Member Lines:

Spent batteries are collected and returned for recycling and/or disposal in accordance with prevailing regulations. Discarded batteries are isolated from the refuse waste stream to prevent potentially toxic materials from inappropriate disposal. The wet-cell battery-recycling program is kept separate from the dry battery collection process. Intact wet-cell batteries are sent back to the supplier. Dry-cell batteries are manifested to a licensed firm for recycling.

- J. Bilge and Oily Water Residues:** *CLIA member lines have agreed to meet or exceed the international requirements for removing oil from bilge and wastewater prior to discharge.*

The area of the ship at the very bottom of the hull is known as the bilge. The bilge is the area where water collects from various operational sources such as water lubricated shaft seals, propulsion system cooling, evaporators, and other machinery. All engine and machinery spaces also collect oil that leaks from machinery fittings and engine maintenance activities. In order to maintain ship stability and eliminate potential hazardous conditions from oil vapors in engine and machinery spaces, the bilge spaces should be periodically pumped dry. In discharging bilge and oily water residues, both international regulations (MARPOL) and United States regulations require that the oil content of the discharged effluent be less than 15 parts per million and that it not leave a visible sheen on the surface of the water.

All ships are required to have equipment installed onboard that limits the discharge of oil into the oceans to 15 parts per million when a ship is en route and provided the ship is not in a special area where all discharge of oil is prohibited. Regulations also require that all oil or oil residues, which cannot be discharged in compliance with these regulations, be retained onboard or discharged to a reception facility. The equipment and processes implemented onboard cruise ships to comply with these requirements are complex and sophisticated.

The term “*en route*” as utilized in MARPOL (73/78) Regulation 9(b) is taken to mean while the vessel is underway. The U.S. Coast Guard has informed CLIA that it agrees with this meaning of “*en route*.”

In accordance with MARPOL (73/78) Regulation 20 and as appropriate, US regulations (33CFR151.25), CLIA member lines have agreed that every cruise ship of 400 gross tons and above shall be provided with an oil record book which shall be completed on each occasion whenever any of numerous specified operations take place in the ship and that operations include:

- a. Ballasting or cleaning of fuel oil tanks,
- b. Discharge of dirty ballast or cleaning water from the fuel oil tanks above,
- c. Disposal of oily residues,
- d. And discharge of bilge water that accumulated in machinery spaces.

Requirements regarding the keeping of an Oil Record Book as well as the form of the Oil Record Book are also found in MARPOL and in U.S. Coast Guard regulations (33CFR151).

Handling Method Employed by Member Lines:

Bilge and oily water residue are processed prior to discharge to remove oil residues, such that oil content of the effluent is less than 15 ppm as specified by MARPOL Annex 1.

- K. Glass, Cardboard, Aluminum and Steel Cans:** *CLIA member lines have agreed to eliminate, to the maximum extent possible, the disposal of MARPOL Annex V wastes into the marine environment. This will be accomplished through improved reuse and recycling opportunities. They have further agreed that no waste will be discharged into the marine environment unless it has been properly processed and can be discharged in accordance with MARPOL and other prevailing requirements.*

Management of shipboard generated waste is a challenging issue for all ships at sea. This is true for cruise vessels, other commercial vessels, military ships, fishing vessels and recreational boats. Waste products in the past were made from natural materials and were mostly biodegradable. Today's packaging of food and other products present new challenges for waste management. A large cruise ship today can carry over three thousand passengers and crew. Each day, an average cruise passenger will generate two pounds of dry trash and dispose of two bottles and two cans.

A strategy of source reduction, waste minimization and recycling has allowed the cruise industry to significantly reduce shipboard generated waste. To attain this, CLIA member lines have agreed to adopt a multifaceted strategy that begins with waste minimization to decrease waste from provisions brought onboard. This means purchasing in bulk, encouraging suppliers to utilize more efficient packaging, reusable packaging, and packaging materials that are more environmentally friendly—those that can be more easily disposed of or recycled. In fact, through this comprehensive strategy of source reduction, total waste on passenger vessels has been reduced by nearly half over the past ten years.

Another important component of the industry's waste reduction strategy is product or packaging recycling. Glass, aluminum, other metals, paper, wood and cardboard are, in most cases, recycled. Wood and cardboard may be incinerated when appropriate.

Handling Method Employed by Member Lines:

MARPOL Annex V ship waste is minimized through purchasing practices, reuse and recycling programs, landing ashore and onboard incineration in approved shipboard incinerators. Any Annex V waste that is discharged at sea will be done in strict accordance with MARPOL and any other prevailing requirements.

- L. Incinerator Ash:** *CLIA member lines have agreed to reduce the production of incinerator ash by minimizing the generation of waste and maximizing recycling opportunities, and that the discharge of incinerator ash containing hazardous components will be prevented through a program of waste segregation and periodic ash testing.*

Incinerator ash is not normally a hazardous waste. Through relatively straightforward waste management strategies, items that would cause the ash to be hazardous are separated from the waste stream and handled according to accepted hazardous waste protocols. In general, source segregation for waste streams is foundational for onboard waste management and is incorporated into the waste management manual required by MARPOL. Waste management for onboard waste streams include the following: source reduction, minimization, recycling, collection, processing and discharge ashore. This allows the incinerator to be used primarily for food waste, contaminated cardboard, some plastics, trash and wood.

Member lines have agreed that incinerator ash will be tested at least once quarterly for the first year of operation to establish a baseline and that testing may then be conducted once a year. The member lines have further agreed that a recognized test procedure will be used to demonstrate that ash is not a hazardous waste. A recognized test procedure includes the following metals as indicators for toxicity - arsenic, barium, cadmium, chromium, lead, mercury, selenium, and silver. Special attention is placed on the removal of batteries from the incinerator waste stream. The use of incinerators saves landfill space and prevents the build up of material onboard that could become the breeding ground for insects, rodents and other vermin.

Handling Method Employed by Member Lines:

Proper hazardous waste management procedures are to be instituted onboard each ship to assure that waste products, which will result in a hazardous ash, are not introduced into the incinerator. Non-hazardous incinerator ash may be disposed of at sea in accordance with MARPOL Annex V. Ash identified as being hazardous is disposed of ashore in accordance with RCRA.

M. Wastewater reclamation

Because of the amounts of fresh water involved, and its restricted availability onboard ship (all fresh water must be either purchased or generated onboard), fresh water is a valuable commodity. Therefore, water management is extremely important and takes the form of both minimizing water usage and the potential reclamation and reuse of water for non-potable purposes. Many CLIA companies are researching new technology and piloting graywater treatment systems onboard their vessels. CLIA member operators also take numerous steps in onboard water management. Water management techniques include:

- a. Use of technical water (for example: air conditioning condensate) where possible.
- b. Use of water recovery systems (for example: filtering and reuse of laundry water – last rinse use for first wash).
- c. Reclamation and reuse as technical water (flushing toilets, laundry, open deck washing) of properly treated and filtered wastewaters.
- d. Active water conservation (for example: use of reduced flow showerheads, vacuum systems for toilets, vacuum food waste transportation and laundry equipment that utilizes less water).

N. Graywater: *For ships traveling regularly on itineraries beyond the territorial waters of coastal states, CLIA member lines have agreed to discharge graywater only while the ship is underway and proceeding at a speed of not less than 6 knots¹; that graywater will not be discharged in port and will not be discharged within 4 nautical miles from shore or such other distance as agreed to with authorities having jurisdiction or provided for by local law except in an emergency, or where geographically limited. The member lines*

have further agreed that the discharge of graywater will comply with all applicable laws and regulations. For vessels whose itineraries are fully within US territorial waters, discharge shall comply fully with U.S. and individual state legislation and regulations.

The term graywater is used on ships to refer to wastewater that is generally incidental to the operation of the ship. The International Maritime Organization (IMO) defines graywater as including drainage from dishwasher, shower, laundry, bath and washbasin drains. The US Clean Water Act (formally know as the Federal Water Pollution Control Act) includes galley, bath and shower water in its definition of graywater. The US regulations implementing this act do not include a further definition of gray water. However, the regulations do include a provision that exempts all of the wastewater included in the IMO definition and other discharges incidental to the operation of a ship from the Clean Water Act's permitting program (formally known as the National Pollution Discharge Elimination System (NPDES) program). Finally, the US Coast Guard regulations include provisions that essentially combine the two definitions from the IMO and the Clean Water Act. None of the definitions of graywater include blackwater (discussed below) or bilgewater from the machinery spaces. Recent U.S. Legislation places limits on the discharge of graywater in the Alaska Alexander Archipelago.

Handling Method Employed by Member Lines:

Graywater is discharged only while ships are underway and proceeding at a speed of not less than 6 knots, in recognition that dispersal of these discharges is desirable and that mixing of these waters, which are discharged approximately 10-14 feet below the surface, by the action of the propellers and the movement of the ship, provides the best dispersal available.

- O. Blackwater:** *Waste from toilets, urinals, medical sinks and other similar facilities is called "blackwater." CLLA members have agreed that all blackwater will be processed through a Marine Sanitation Device (MSD), certified in accordance with U.S. or international regulations, prior to discharge. For ships traveling regularly on itineraries beyond the territorial water of coastal states, discharge will take place only when the ship is more than 4 miles from shore and when the ship is traveling at a speed of not less than 6 knots.¹*

For vessels whose itineraries are fully within US territorial waters, discharge shall comply fully with U.S. and individual state legislation and regulations.

P. Advanced Wastewater Purification Systems:

To improve environmental performance, cruise lines are testing and installing wastewater purification systems that utilize advanced technologies. These onboard wastewater treatment systems are designed to result in effluent discharges that are of a high quality and purity; for example, meeting or surpassing standards for secondary and tertiary effluents and reclaimed water. Effluents meeting these high standards would not be subjected to the strict discharge limitations previously discussed.

¹ For vessels operating under sail, or a combination of sail and motor propulsion, the speed shall not be less than 4 knots.

Q. Training and Educational Materials

Training is an important and ongoing part of every position and tasking onboard cruise ships. Not only is training necessary for the safe and economical operation of a ship, it is required by numerous international conventions and flag state regulations. The International Convention on Standards of Training Certification and Watchkeeping (STCW) for example, sets forth requirements for knowledge, experience and demonstrated competency for licensed officers of the deck and engineering departments and for ratings forming part of the navigation or engineering watch. Equivalent national standards apply to ships in United States registry. These detailed requirements address not only the navigation of the ship but also the proper operation of the shipboard machinery and knowledge of and ability to assure compliance with the environmental protection requirements of MARPOL and the safety regulations of The International Convention on Safety of Life at Sea (SOLAS). SOLAS also requires that the ship's training manual (which contents are prescribed by regulation) be placed in the crew messes and recreation rooms or in individual crew cabins.

CLIA member lines have developed programs that raise the level of environmental awareness on the part of both the passengers and the crew. Each ship's crew receives training regarding shipboard safety and environmental procedures. Advanced training in shipboard safety and environmental management procedures is provided for those directly involved in these areas. Those directly responsible for processing wastes are given specific instruction in their duties and responsibilities and in the operation of the various equipment and waste management systems. Specific actions that our member lines have taken to train employees and increase passenger awareness include:

- a. Announcements over the public address system and notices in ship newsletters that caution against throwing any trash overboard,
- b. Signage and colorful posters placed in crew and passenger areas encouraging environmental awareness and protection,
- c. Safety and environmental information booklets in crew cabins and crew lounges,
- d. Regular meetings of ship safety and environmental committees consisting of officers and crew from all departments to review methods of improving performance, including better and more effective environmental practices.

For ships on an international voyage, STCW, SOLAS, the International Management Code for the Safe Operation of Ships and for Pollution Prevention (ISM Code), require that training be fully documented. Individual training is documented in each crewmember's file. Ship training exercises, such as fire drills and emergency response exercises, are documented in the appropriate ship's logs. All of these training documents are required to be available for oversight examination by both the ship's flag state inspectors and by port state authorities such as the United States Coast Guard.

Placards warning of the prohibition of the discharge of oil are posted on all ships operating in the navigable waters of the United States as required by U.S. Coast Guard regulations (33CFR155.450). Additionally, as part of required shipboard waste management plans, both Coast Guard regulations (33CFR151.59) and MARPOL (Annex V Regulation 9) require the posting of placards that notify the passengers and the crew of the disposal requirements for garbage. These placards are to be written in the official language of the State whose flag the ship is entitled to fly and also in English or French if neither of these is the official

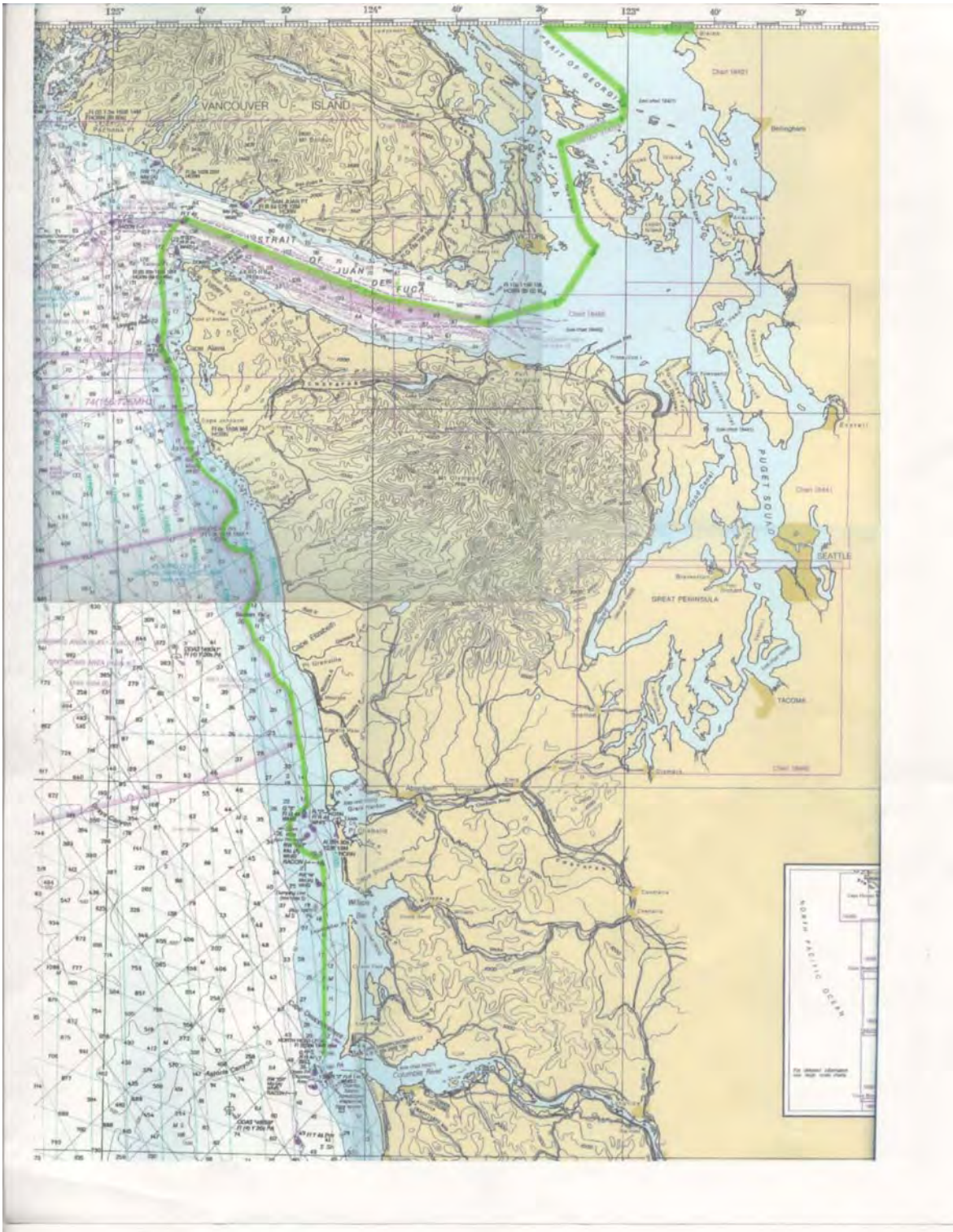
language. Once again, oversight of compliance with these requirements is conducted by ISM audits and frequent inspections by flag states and the United States Coast Guard.

For those ships on an international voyage, the Safety of Life at Sea Convention mandates compliance with the ISM Code. This comprehensive Code requires that each vessel operating company and each vessel participate in a very strictly defined management program, under both internal and external audit and regulatory oversight that sets forth detailed procedures for assuring compliance with safety, environmental protection, emergency response and training mandates.

Equivalent equipment, practices and procedures

CLIA member lines have agreed that the use of equivalent or other acceptable practices and procedures shall be communicated to CLIA. As appropriate, such practices and procedures shall be included as a revision to this document. As an example, when improved systems for treating blackwater and graywater are perfected, shown to meet the requirements for MSDs and accepted by appropriate authorities for the treatment of graywater, the new systems and associated technology will be included together with their impact on the current standard of discharging graywater only while underway.

Appendix iii: Navigational Chart of Waters Subject to this MOU



Appendix iv



Commandant
United States Coast Guard

2100 Second Street, S.W.
Washington, DC 20593-0001
Staff Symbol: G-MOC-2
Phone: (202) 267-2978
Fax: (202) 267-0506
Email: fldr-g-moc@comdt.uscg.mil

COMDTPUB P16700.4
NVIC 04-04

13 FEBRUARY 2004

NAVIGATION AND VESSEL INSPECTION CIRCULAR NO. 04-04

Subj: ENVIRONMENTAL INSPECTION CHECKLIST; ADDENDUM TO FOREIGN PASSENGER VESSEL EXAMINATION BOOK, CG-840

- Ref:**
- (a) General Accounting Office (GAO) Report of February 2000 on "MARINE POLLUTION - Progress Made to Reduce Marine Pollution by Cruise Ships, but Important Issues Remain."
 - (b) Title XIV "Certain Alaskan Cruise Ship Operations" contained in Section 1(a)(4) of Public Law 106-554 enacted on December 21, 2000
 - (c) 33 CFR 159, Subpart E – Discharge of Effluents in certain Alaskan Waters by Cruise Vessel Operations
 - (d) Memorandum of Understanding (MOU) dated March 14, 2000 entered between Florida Department of Environmental Protection (FDEP) and the Florida-Caribbean Cruise Association (FCCA), a representative of the cruise industry in Florida
 - (e) International Council of Cruise Lines (ICCL) Industry Standard E-01-01, "Waste Management Practices and Procedures"

1. **PURPOSE.** As the result of a GAO report and Bluewater Network petition, the FCCA, FDEP, and the Coast Guard began discussing the means to improve and ensure the compliance of large passenger vessels with existing Federal and state environmental standards. These discussions have resulted in the checklist contained in Enclosure 1. This checklist is an extensive list of possible inspection items related to pollution prevention equipment, operation, plans and records. It is intended as a job aid to be used by Coast Guard personnel during certificate of compliance examinations onboard foreign-flagged passenger vessels. Additionally, this document does not change or establish new Coast Guard authorities, but is intended to provide

Distribution - SDL No. 141

	a	b	c	d	e	f	g	h	i	j	k	l	m	n	o	p	q	r	s	t	u	v	w	x	y	z
A																										
B	*	1	1											1				1								1
C					1							1	1	1												
D	1										1															
E														1	1											
F																										
G																										
H																										

NON-STANDARD DISTRIBUTION: B:a G-MOC, G-MO-1, G-MSE (1)

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a framework and focus on responsibilities currently possessed. This checklist will be incorporated into a future revision of the existing Foreign Passenger Vessel Examination Book, CG-840.

2. ACTION. Officers in Charge Marine Inspections (OCMIs) and their designated marine inspectors should:
 - a. Bring this circular to the attention of appropriate individuals in the marine industry within their zones, especially those in the industry who are not members of ICCL. This circular is available on the world-wide web at: <http://www.uscg.mil/hq/g-m/nvic/index.htm>. Internet release authorized.
 - b. Follow the guidance in this circular while conducting Certificate of Compliance examinations on foreign-flag passenger vessels, choosing one of the five waste streams to inspect.
 - c. If any non-conformities are noted between the procedures listed in the vessel's Safety Management System (SMS) documentation and the actual procedures being followed on the ship, notify the Company immediately and follow the guidance contained in NVIC 4-98. If major non-conformities are identified, an OCMI should use risk-based decision-making and exercise discretion with regard to the level of control action utilized on the vessel.
 - d. If deficiencies or discrepancies are noted in the execution of the hazardous waste management program, notify the applicable Environmental Protection Agency (EPA) office or the State Resource Conservation and Recovery Act (RCRA) program office immediately.
3. DIRECTIVES AFFECTED. The existing Foreign Passenger Vessel Examination Books CG-840, CV1, CV2 and CV3 will be revised to include the checklist contained in Enclosure (1), as soon as practicable.
4. BACKGROUND.
 - a. From 1993 to 1998, nearly 2400 documented cases of pollution by foreign-flagged vessels were investigated, of which nearly four percent involved passenger vessels. As a result, Congress requested the GAO to examine the nature and extent of cruise ship involvement in these incidents; current and planned federal agency enforcement efforts; and cruise company actions to prevent future recurrences of pollution incidents. On February 1, 2000, the GAO completed a report to Congress, reference (a), recommending that the Coast Guard initiate discussions with the cruise ship industry, other federal and state agencies, and environmental groups as appropriate, on the need for improved water quality standards for gray water and black water discharged from cruise ships and other vessels. In addition, the report recommended an assessment of the need to periodically monitor the water quality of these discharges. This GAO report is available on the world-wide web for review at <http://frwebgate.access.gpo.gov/cgi-bin/useftp.cgi?IPaddress=162.140.64.21 &filename=rc00048.pdf&directory=/diskb/wais/data/gao>.

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- b. At the time reference (a) became public, federal responsibilities were in place for various vessel waste stream control systems including effluent from the oily water separators, effluent from the sewage treatment plants, hazardous waste, and garbage. Subsequently, legislation was passed and regulations were promulgated (see references (b) and (c)) that expanded federal responsibilities to include requirements for gray water discharge and for monitoring and sampling of black water and gray water waste streams on cruise ships in Alaska¹.
 - c. On March 14, 2000, the Florida Caribbean Cruise Association (FCCA) signed a MOU with the Florida Department of Environmental Protection (FDEP), reference (d), that is available for review on the world-wide web at http://www.iccl.org/resources/fdep_mou.htm. Under this MOU, the FDEP recognized ICCL's Industry Standard E-01-01, "Waste Management Practices and Procedures," reference (e), as meeting or exceeding the standards set forth in Florida laws and applicable regulations. Though not a party to the MOU, the Coast Guard participated in discussions that resulted in the MOU. In the MOU, the FDEP recognized the Coast Guard as the primary federal agency with responsibility for examining passenger vessel waste streams. As a result, the Coast Guard worked in conjunction with FDEP and ICCL to develop a checklist related to monitoring of hazardous waste and disposal.
5. DISCUSSION. The enclosed checklist reflects the collective work of the USCG, FCCA and FDEP and has been tested for use by several Coast Guard Marine Safety Offices. The checklist is not a listing of all items to be inspected; rather the marine inspector should use it as a reminder of the various items that may be examined during a certificate of compliance examination of a foreign passenger vessel. As always, the marine inspector's experience, knowledge, and judgment will determine the depth and scope of each examination. However, each marine inspector should select at least one waste stream for a thorough and detailed inspection during every annual or periodic foreign passenger vessel examination. The stream selection will be based on the marine inspector's discretion, taking into account the inspector's impression about the condition of the various waste stream systems on board the vessel. The selection will also be based on the need to inspect all systems over a reasonable period of time, whether a particular waste stream is applicable for examination (e.g. there may be no requirement applicable to gray water at the port of examination or the vessel does not discharge/offload hazardous waste), and maintaining randomness so that the operator has no advance knowledge of the waste stream that may be selected. During the examination, the operator should be able to present to the marine inspector a clear description of the practices and procedures for handling each waste stream and also to produce such records, as the inspector might need to verify compliance with these guidelines. In performing pollution prevention examinations, inspectors should be especially familiar with the contents of the Marine Safety Manual (MSM), Volume II, Material Inspection, Section B, Chapter 6, "Pollution Prevention," and Section C, Chapter 2, Paragraph K, "Marine Sanitation Devices" and this NVIC. Marine inspectors should also be familiar with ICCL's Industry Standard E-01-01 "Waste Management Practices and Procedures", reference (e), and the vessel's Safety Management System (SMS) documentation, which should address all the elements discussed in

¹ Presently, there are no other federal requirements applicable to the control or filtering of gray water discharge from foreign-flagged passenger ships.

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this standard. Note reference (e) is available at the ICCL website at [http://www.iccl.org/resources/exhibit a.pdf](http://www.iccl.org/resources/exhibit_a.pdf). If any elements are not addressed there should be a rationale for its omission. The different waste streams may be categorized as follows:

- a. Oil pollution prevention systems: include the oily water separator, the fuel/lubricating oil transfer, and sludge containment system. The marine inspector should verify that the oily water separator is operating within the desired range; that the alarms are working; that crew is knowledgeable and operating instructions are posted; and that maintenance is carried out at regular intervals. Actual piping may be verified against the approved piping diagram if the marine inspector notices modifications made to the system.
- b. Black water system: includes marine sanitation devices (MSDs) and other systems to treat, store, and discharge sewage. The checklist is designed to guide the marine inspector through some basic questions to ascertain whether the system is working as designed and that the crew is properly trained in its operation. For example, does the MSD appear to be properly installed? Is the MSD approved for use on this particular vessel (USCG Approved, IMO or Administration Approved to MARPOL Annex IV)? Is there adequate capacity or throughput for the number of persons on board? Are maintenance procedures being followed, including procedures outlined in the vessel's SMS? Are there records of expendables being ordered: filters, chemicals, et cetera? Are the units operating within the manufacturer's design specifications? Are there clear and simple operating instructions? Is the crew knowledgeable in the use of the equipment/system?
- c. Hazardous waste: includes dry cleaning (containing Perchloroethylene, or commonly-called "PERC") waste, used paints and thinners that contain hazardous substances, silver-bearing photo-processing waste, cleaning solutions and other items that contain hazardous substances. Each vessel may vary in both the type and volumes of hazardous waste generated depending on the technology and processes used aboard. This checklist is designed to evaluate onboard management of hazardous waste streams, to ensure that hazardous constituents are not released into the environment, and that accountability is demonstrated via adequate waste disposal records.
- d. Non-hazardous waste: includes shipboard garbage including plastics and synthetic material, medical waste, food wastes and recyclables such as glass, cardboard, aluminum and metal cans. Items to be checked should include: disposal and incineration records; waste sorted to prevent hazardous waste from entering the non-hazardous waste stream; no plastics or synthetics discharge overboard; separate and proper disposal of hazardous and non-hazardous incinerator ash; and proper disposal of cooking grease from grease traps.
- e. Gray water system: includes discharges from galley, sinks, washbasin drains, showers, and baths, excluding drains and sinks from medical spaces. These may be held in large tanks before being pumped overboard. The handling and discharge of gray water will *vary* from ship to ship and the inspector should ensure the procedures followed by the ship correspond to those described in its SMS documentation. If gray water is directed to MSD systems, the marine inspector shall ensure that combined gray water/black water throughput does not exceed the throughput of the MSD systems. Other waste streams such as hazardous waste

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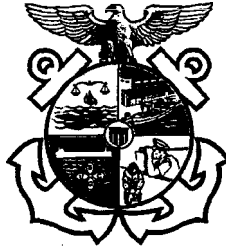
or medical waste must also not be mixed with gray water. Drains from hospitals, photo labs (if hazardous substances are used and stored therein), and slops, must be separate from the gray water system.



T. H. GILMOUR
Rear Admiral, U. S. Coast Guard
Assistant Commandant for Marine Safety,
Security, and Environmental Protection

Encl: (1) Foreign Passenger Vessel Pollution Survey Exam Book (CG-840 PSEB)

United States Coast Guard



**FOREIGN PASSENGER VESSEL
POLLUTION SURVEY EXAM BOOK**
(FOR ALL PASSENGER VESSELS)

Name of Vessel	Flag <input type="checkbox"/> No Change
IMO Number	Case Number
Date Completed	
Location	
Senior Marine Inspectors / Port State Control Officers	
1.	5.
2.	6.
3.	7.
4.	8.

Use of Foreign Passenger Vessel Pollution Survey Exam Book

This Checklist is an extensive list of possible examination items related to pollution prevention equipment, operation, plans and records. It is intended as a job aid to be used by Coast Guard senior marine inspectors during boardings of foreign-flagged passenger vessels. It is not the Coast Guard's intention to inspect all the items listed in the checklist at every exam; rather the inspector should use it as a reminder of the various items that may be examined during a foreign passenger vessel certificate of compliance examination. As always, the inspector's experience, knowledge, and judgment will determine the depth and scope of each examination; however, the inspector should select at least one waste stream for a thorough and detailed inspection. The stream selection will be based on the marine inspector's discretion, taking into account the inspectors impression about the condition of the various waste stream systems on board the vessel, weighing the need to inspect all systems over a reasonable period of time, and maintaining randomness so that the operator has no advance knowledge of the waste stream that may be selected.

It is incumbent on the vessel operator to be familiar with this checklist. The individuals responsible for different segments of the various waste streams should be able to present to the inspector a clear description of the practices and procedures for handling each waste stream and also to produce such records, as the marine inspector might need, to verify compliance with these guidelines. Inspectors should obtain a clear picture about the selected waste stream(s) and associated environmental processes by observing onboard practices and through questioning of the individuals that perform these practices. Inspectors should avoid circumstances in which a shore-side representative is the sole company liaison during the environmental inspection.

As a port state responsibility, marine inspectors and port state control officers must verify that the vessels and their crews are in substantial compliance with international conventions and applicable U.S. laws. The marine inspectors and port state control officers, based on their observations, must determine the depth and scope of the examination.

This document does not establish or change Federal laws or regulations. References given are only general guides. Refer to IMO publications, United States Code, Code of Federal Regulations, the Port State Control Job Aid, NVIC's, and any locally produced guidance for specific regulatory references. Marine inspectors should be especially familiar with all equipment standards and the contents of the Marine Safety Manual (MSM), Volume II, Material Inspection, Section B, Chapter 6, "Pollution Prevention," Section C, Chapter 2, Paragraph K, "Marine Sanitation Devices," and Volume IV, Technical, Chapter 3, Section K, "Special Engineering Applications for Pollution Prevention".

NOTE: Guidance on how to examine foreign passenger vessels for compliance with pollution prevention equipment standards, can be found in NVIC_-04.

Conducting the exam

- Complete Certificates/Equipment Data/Records information (Section A).
- Review SMS Environmental Procedures (Section B).
- Examine MSD, OWS, Garbage logs, Oil Record Book as per CG-840 Exam books.
- Determine if gray water requirements apply in the vessel's AOR and in inspection zone (If not, do not select C2)
- Make waste stream selection for a detailed exam (Section C)

Section

- C1 Oil Pollution Handling Waste Stream (Bilge, Sludge, Fuel, Lube Oil etc)
- C2 Gray Water Waste Stream
- C3 Black Water/Sewage Waste Stream
- C4 Hazardous Waste Stream
- C5 Non-hazardous Waste Stream

NOTE: Many items listed are not mandatory requirements, but fall under the umbrella of "Management Policy". Marine inspectors should be familiar with ICCL's Industry Standard E-01-01 "Waste Management Practices and Procedures," and SMS documentation on all cruise ships should address all the elements discussed in this standard. If any elements are not addressed there should be a rationale for its omission. If the areas listed are corporate policy as set out in the company's SMS documentation, then the vessel should be held accountable for the actions as required in 33 CFR 96 and SOLAS Chapter IX. If state or local laws exist that are more stringent than U.S. or international law, then the local or state laws must be followed. These vessels are not exempt simply because they are a foreign-flagged vessel.

Pre-inspection Items

- Review MISLE records
 - Deficiency History
 - Critical Profile
 - Review Court-ordered requirements and environmental audit reports, if applicable
- CG Activity History
Print Center for Disease Control Green Sheet
<http://www2.cdc.gov/nceh/vsp/vspmain.asp>

Post-inspection Items

- Issue letters/certificates to vessel
- Issue Port State Control Report of Inspection-Form A
- Issue Port State Control Report of Inspection-Form B (if needed)
- Complete COC endorsement (include "Waste Stream" area inspected)
- MISLE activity case

Certificates / Reports (complete at annual exam or to update MISLE Certificate data)

Name of Certificate	Issuing Agency	ID #	Port Issued	Issued Date	Expiration Date	No Change	Endorsement Date
International Oil Pollution Prevention (leave blank if completed in the CVE 840 book)							
International Sewage Pollution Prevention Certificate (if issued)							
International Anti-Fouling System Certificate (if issued)							
State Certificates of Emission (only if applicable)							
State Certificates of Ballast Water (only if applicable)							

Equipment Data

Equipment Name	Capacity	US or MEPC Approval Nr	Authority/Agency	No Change	Date of approval/acceptance
Oil Water Separator	Throughput				
Oil Water Separator	Throughput				
Oil Water Separator	Throughput				
Waste Oil Holding Tank(s) Capacity(ies)					
Marine Sanitation Device Certificate of Type Test	Volume/day				
Marine Sanitation Device Certificate of Type Test	Volume/day				
Marine Sanitation Device Certificate of Type Test	Volume/day				
Black Water Tank Capacity					
Grey Water Tank Capacity					

Pollution Records

	Date	Location	Amount
Last time bunkers were taken on			
Next time bunkers will be taken on			
Last time sludge/oily bilge water pumped ashore			
Last operation of OWS or overboard discharge			
Garbage incinerated			
Garbage discharged overboard at sea			
Garbage discharged ashore			
Required U.S. Ballast Water Report			

SECTION A
Certificates/Equipment Data/Records
Information

<p>Section B Environmental Procedures</p>
--

Environmental Procedures can be found in the ship's Safety Management System (SMS) documentation or in company policies and maintenance manuals, inspection logs, oil record books, etc. Marine inspectors should question the ship staff on procedures and normal operations, and compare the answer to what is written in procedures and manuals. For each waste stream, persons with specific responsibilities should be questioned at each step in the waste handling process. Inspectors should require being shown specific process step by the person responsible for that step. Inspectors should ask extensive questions regarding availability of documents and supporting material relevant to the individual performing the specific activity in the waste handling process. Other questions should focus upon training provided and reporting procedures when problems with waste management processes are identified.

- Person-in-charge designated and qualified (certificated/licensed) 33 CFR 155.700
 - Transfer equipment tests and inspections 33 CFR 156.170
 - Declaration of Inspection (available and retained for at least one month) ISM Code/SMS
 - Ship to provide PMS logs and required PMS activities for the selected waste stream for verification. 33 CFR 96
 - Verify SMS incorporates PMS activities and logs for all Waste Streams.
 - Court required logs to track oil usage in systems having oil to sea interfaces (if applicable)
 - Recent environmental audit reports when available
 - Oil Record book (Part 1) (spot-check)
 - Each operation signed by person-in-charge
 - Each complete page signed by master
 - Book maintained for 3 years MARPOL Annex. 1/20
 - Use of proper codes and version for vessel 33 CFR 151.25
 - Transfer receipts/manifest match oil record book entries
 - OWS rates not exceeding design criteria
 - Incinerator rates not exceeding design criteria
 - Consistent bilge water management patterns
 - Comparison of oil record book entries to vessel's daily tank sounding book
 - Shipboard Oil Pollution Emergency Plan MARPOL Annex.
 - Approved by Administration (class society) 1/26.1
 - Updated and current 33 CFR 151.26
 - In English and working language of crew
 - Correct contact numbers for National and Local Authorities (Port Authorities for ports visited not every COTP)
 - Immediate Actions List
 - Non Mandatory Provisions (if listed in SOPEP). Spill kits located and inspected
 - MARPOL Annex V
 - Placard posted
 - Record book
 - Garbage management plan
 - Non-Hazardous Waste Disposal Documentation (if applicable) MARPOL Annex V/9
 - EPA Generator ID# _____ (if applicable)
 - Records
 - Non-Hazardous Waste Manifests
 - Recycling policy being followed (requires a detailed assessment) U.S. Local Regulations as applicable
 - Hazardous Waste Disposal Documentation (if applicable)
 - EPA Generator ID# _____ (if applicable) Shipboard policy SMS
 - Records
 - Uniform Hazardous Waste Manifests
 - Land Disposal Restriction Notification Certification Forms (LDR) 40 CFR 262
 - Shipping Document for Regulated Medical Waste Shipboard policy SMS
 - Interview Person(s) responsible for landing of wastes
 - Specialized training for Responsible person(s) and related documentation
 - Evidence of disposal in other countries to bona fide receivers documented

Oil pollution prevention systems include, but are not limited to, the oily water separator, other filtering or flocculation devices, bilge water management, fuel/lubricating/waste oil transfer, purifier and lantern space sludge collection, transfer and containment systems. Marine inspectors should verify that the oily water separator is operating within the required range; that the alarms are working and sound at appropriate levels; that crew is knowledgeable and operating instructions are posted; that maintenance is carried out at regular intervals and repairs are documented; and that system operation and maintenance are in accordance with the vessel's SMS. Marine inspectors should verify the actual pollution prevention system piping against vessel's approved piping diagrams, if modifications such as blanked off tees, connections points, hoses, or temporary piping segments associated with these systems are observed.

- Oily Water Separator (OWS)**
 - Verify bilge piping, no modifications & matches approved diagram (direct to OWS, to holding tank, etc.)
 - No blanked flanges, pipe caps, or dead-ended valves, or tees on inlet or outlet piping
 - Evidence of bolting/unbolting of associated piping segments
 - Recent paint on pipe segments
 - Observe general housekeeping and cleanliness
 - Witness operational test of OWS, evaluate operator competency. System operating in published ranges
 - Verify unit is processing contaminated source. Operate system for sufficient time (15 minute minimum) to identify reduction in contaminated source
 - Test 15 ppm Oil Content Meter and alarm
 - On units with multiple Oil Content Meters, compare readings
 - Ensure sample analyzed by Meter is OWS output (Trace sample line for presence of unacceptable clean water connection)
 - Verify no electrical bypasses, jumpers, extra switches on or within unit or Meter control panel
 - Verify system automatically re-circulates (3-way valve) or shuts down when >15ppm. Verify proper operation of valve
 - Verify proper operation of system backflush or oil purge cycle
 - Visually sample processed water for gross contamination (sheen or visible oil)
 - Compare ship's operational maintenance routine with actual Preventative Maintenance conducted. Request proof/documentation of maintenance completed (used consumables from OWS, receipts of service, technician reports, contractor disposal records)
 - Review meter calibration records
 - Review strip charts if fitted
 - Examine other machinery space overboard piping for unusual connections
 - Review records pertaining to system repairs

- Oil Pollution placard posted 33 CFR 155.450
- Oil Transfer Procedures 33 CFR 154.340
 - Posted / available in crew's language 33 CFR 155.720
 - Person in Charge (PIC) fluent in English or language mutually agreed upon w/ shoreside PIC 33 CFR 155.750
 - Format in CFR order or cross reference index page 33 CFR 154.310
 - List/description of products carried by vessel
 - Description of transfer system including a line diagram of piping system (pumps, vents, valves, alarms, shutoffs, etc.)
 - Number of persons required on duty
 - Duties by title of each person
 - Means of communication (two-way voice)
 - Procedures to top off tanks and disconnect
 - Procedures to report oil discharges
 - Emergency response procedures (fire, spill, human exposure)

- Standard discharge connection MARPOL Annex 1/19
- Fuel/lube/sludge oil fill, vent & overflow discharge containment 33 CFR 155.430
 - Size (<1600GT/2 bbl, >1600GT 1 bbl) 33 CFR 155.320
 - Fixed (Built after 30Jun74) or Portable (before 30Jun74)
 - Drains
 - Scupper closures

- Prohibited oil spaces (no oil/hazardous substances carried fwd of collision bulkhead) 33 CFR 155.470

- Lighting at each Transfer Operations Work Area 33 CFR 155.790
 - Adequate
 - Located/Shielded to not interfere with navigation
- Oil transfer hose (if vessel uses to transfer in U.S. waters) including Lifeboat/Tender Hoses 33 CFR 155.800/805
 - Condition 33 CFR 154.500
 - Markings (MAWP, Mfg. Date, Test date) - 33 CFR 156.170
 - Hose assembly requirements (blanked off if not new, gas free or in use)
 - Tests and inspections
- Bilge Water Management MARPOL Annex I
 - Examine machinery space bilges (stem to stem)
 - Contamination / oily residues in bilges on bulkheads, piping, structures, within roseboxes
 - Leakage from systems and engines into machinery spaces (may not be seen during port ops)
 - Engine oil usage, quantities, where lost, consumed or in bilges
 - Evidence of recent cleaning of systems, equipment and components
 - Status of oily bilge water tanks, last cleaned, at capacity
 - Adequate capacity all tanks
 - Levels of tanks during inspection — high or low?
 - If tanks near full — what are the vessel's processing plans?
 - Evidence of detergent usage (Note- emulsions cannot separate in gravity separator and are likely to result in discharges over 15 PPM)
 - Other methods to discharge bilge water
 - Evidence of excess water ingress, pump glands, seals, valve glands
 - Portable (diaphragm /other) pumps present
 - Hoses, fittings, and connections in areas — usage unknown
 - Unlocked overboard valves on bilge, bilge & ballast, salt water service
 - Seal management program-used
 - Designated clean or exempted areas — oil free status
 - Lifeboat / Security / Tender vessel engineering systems leak free
 - Lifeboat / Security / Tender vessel bilges clean
 - Lifeboat / Security / Tender vessel- oily bilge handling when leakages present (when in use off vessel or once reloaded)
- Waste/Sludge oil incineration
 - Tests and inspections
 - Record keeping
 - Incinerator operates with sludge / waste oils
 - Clean / dirty furnace, evidence of use
 - Operators capable & prove operation
 - Purifier sludge tanks full / empty
 - Connections to bilge main or other areas
 - Transfer pump operable
 - Transfer pump to sludge system, ashore, incinerator settler only
 - Estimated quantities of sludge produced — normal or excessive (fuel sludge production can exceed 2% of total fuel used)
- Systems with Oil to Sea Interfaces
 - Oil lubricated stern tubes, bow and stern thruster seals, fin stabilizer seals, etc.
 - Exterior examination in way of systems for evidence of leaking seals
 - Presence of barrels, drums, hoses, pumps, and other equipment/supplies/arrangements necessary to refill systems at equipment.
 - Check consumption records if SMS or environmental compliance programs require such records.

<u>Section C2</u> <u>Gray Water Waste Stream</u>

Gray water system includes discharges from galley, sinks, washbasin drains, showers, and baths. These may be held in large tanks before being pumped overboard. The handling and discharge of gray water will vary from ship to ship and the marine inspector should ensure the procedures followed by the ship correspond to those described in its SMS documentation. If gray water is pumped through a/the Marine Sanitation Device(s) (MSD), ensure that the total volume does not exceed the MSD's capacity. Other waste streams such as hazardous waste or medical waste (RCRA biomedical wastes) must not be mixed with gray water. Drains from hospitals (U.S. restriction), photo labs (if commingled with hazardous wastes), slops, must be separate from the gray water system.

Sources

- Galley (ex. Dishwashers, floor drains, sinks)
- Showers/Baths & washbasin drains
- Laundry
- Deck drains throughout vessel

(Clean Water Act)
 33 USC 1251 et seq.
 33 CFR 159.300
 Subpart E for (D17)
 Local Regulations
 ISM Code
 33 CFR 96

- Prohibited Sources (hazardous materials, bilges, photo shop & print shop if hazardous wastes are commingled, hospital spaces (U.S. only), etc.)
- Evidence of other drained fluids into scuppers or other entry points (photo lab, hospital, specialty spaces)
- Drains from spaces containing machinery (fan rooms, hotel equipment, etc.) oil free or segregated
- Connections to the Black Water System (if permitted in MSD Operation Manual, if so, is MSD capacity sufficient?)
- Connections to Ballast Water System
- Number of tanks
- Total tank capacity _____ m3
- Volume Produced _____ (m3 per day)
- Maximum number of days in port without discharging.
- Current capacity sufficient for persons on board and time in port?
- Review vessel's gray water handling procedures (SMS).
- Ensure that Quality Assurance / Quality Control Plan is vessel specific.
- Is Gray water processed and discharged?
- What are Gray water disposal procedures: Shore and at Sea. (company policy)
- Does vessel have sampling procedures? (if so, review)
- Types of tests performed, equipment and useable testing supplies readily available?
- Sampling equipment/supplies useable and available?
- How often do they take samples? Review samples record book.
- What are the state, federal and local regulations for gray water discharge?
- Responsible crew interviewed
- Disposal and Records
 - Shore (receipts available)
 - At sea (logs maintained)
 - Sampling/Testing (logs maintained)
 - Note some gray water treatment employs advanced ultra-filtration systems, these systems claim to reduce gray water waste by 85% - 90%, or more.
 - Alaska - Effective July 2001, Operators of cruise vessels carrying 500 or more passengers & transiting applicable waters of Alaska are restricted in where they may discharge effluents & will be required to perform testing of sewage & gray water discharges. The Coast Guard will inspect, monitor, & oversee this process to ensure compliance with applicable water quality laws & regulations. (33 CFR 159)

Black water system includes MSDs and other systems to collect, treat, store, and discharge sewage. This checklist is designed to guide the marine inspector through some basic questions to ascertain whether the system is working as designed and that the crew is properly trained in its operation. For example, does the MSD appear to be properly installed? Is there adequate capacity for the number of persons on board? Are maintenance procedures, including SMS procedures, being followed? Are there records of expendables being ordered: filters, chemicals, et cetera? Are the units operating within the manufacturer's design specifications? Are there clear and simple operating instructions? Is the crew knowledgeable in the use of the equipment/system?

- | | |
|---|--|
| <ul style="list-style-type: none"> ☐ Sources <ul style="list-style-type: none"> • Toilets, Urinals, scuppers • All Drainage from Medical Premises (U.S. restriction) • System installed, maintained and operated in accordance with approved plans and manufacturers specifications. • Tank Capacity and Volume Produced • Current volume in tanks • Modifications documented
 ☐ Operations and Treatment (new section) <ul style="list-style-type: none"> • Chemical/Biological treatment & protective equipment • Chemical Treatment Level • Sufficient chemicals, additives, approved cleaning materials onboard. (enzymes, "Gamazyme", chlorine) • Compressors operating, inlet filters maintained • Vacuum system operable, if applicable • Flow indicators clear — indicating flow • Last system cleaning • Macerator operating maintenance • Methods to dilute discharge? • Operating instructions/SMS procedures
 ☐ U.S. Marine Sanitation Device Requirements <ul style="list-style-type: none"> • Type (II, III) • Nameplate (Should be designed to resist efforts of removal or efforts to alter the information) • Placard • Proper operation (macerators, treatment chemicals) and structural integrity, no leaks
 • Certificate of Type Test. <u>For Foreign Flag Vessels in U. S. Waters</u>
 A foreign flag vessel that has a "Certificate of Type Test" under MARPOL Annex IV indicating that its sewage treatment plant meets the test requirements of Resolution MEPC.2 (VI) of the International Maritime Organization (IMO) will be accepted by the Coast Guard as being in compliance with 33 CFR 159.7(b) or (c). The Certificate of Type Test must be issued by or on behalf of a government that is a party to the MARPOL convention. Such a plant will be considered as fully equivalent to a Coast Guard certified Type II MSD as long as the unit is in operable condition. However, the unit may not be labeled as USCG certified. U.S. registered vessels will continue to be required to have Coast Guard certified MSDs per 33 CFR 159.
 ☐ Standard Discharge Connection (NLT 27 Sep 03) <ul style="list-style-type: none"> • New ships 200 gross tons and above • New ships less than 200 gross tons and carry more than 10 persons. • Existing ships 200 gross tons and above and exiting ship less than 200 gross tons and carry more than 10 persons after 27 Sep 13 (10 years after the date entry into force of Annex IV)
 ☐ Disposal <ul style="list-style-type: none"> • Shore (last done, reasons?) • Overboard valves secured • MSD bypass piping noted? (Condition of valves, pipe tees and caps, evidence of frequent usage) • At sea (provide proof of discharge location) • Logged position, speed (if required by management) MARPOL Annex IV* <ul style="list-style-type: none"> • When comminuted and disinfected greater than 3 miles. 33 CFR 159 • Company policy followed? • When not comminuted or disinfected greater than 12 miles. • Both to be discharged while ship is underway at greater than 4 knots.
Locations of discharges compared to deck logs. • Not in EPA "No Discharge Zones" • Connections to the gray water system (effluent routed to gray water system to dilute effluent?) | <p>MARPOL Annex IV*
40 CFR 140.3 & .4
33 CFR 159.57
33 CFR 159.7
33 CFR 159.55
33 CFR 159.59
MARPOL Annex IV/9*
40 CFR 140.3
MARPOL Annex IV/11 *
Resolution MEPC.2(VI)
33 CFR 159.65
NVIC 9-82
ISM Code
33 CFR 96</p>
<p>33 CFR 159</p>
<p>MARPOL Annex IV/2*
MARPOL Annex IV/10*</p>
<p>MARPOL Annex IV*
33 CFR 159.7
40 CFR 140.4
40 CFR 136</p> |
|---|--|

- Alaskan Waters:
Effective July 2001, Operators of cruise vessels carrying 500 or more passengers and transiting applicable waters of Alaska are restricted in where they may discharge effluents and will be required to perform testing of sewage and gray water discharges. The Coast Guard will inspect, monitor, and oversee this process to ensure compliance with applicable water quality laws and regulations. (33 CFR 159).

Sampling/Testing

- Lab analysis of fecal coliform/total suspended solids in effluent (recorded on ISPP if issued)
 - Results of residual chlorine content in effluent testing
 - Calibration records for dosing pump/proportioner

* Although the United States is not signatory to MARPOL Annex IV, the requirements of Annex IV may be enforced for those vessels that have committed to comply with Annex IV requirements in addition to 33 CFR Part 159 requirements as part of the vessels' SMS. This commitment is typical for ICCL Member vessels and many other cruise ships.

Hazardous waste must be handled in accordance with the ship's SMS. If such waste is disposed of in U. S. waters, the SMS hazardous waste handling procedures must meet or exceed 40 CFR Part 262 requirements. Hazardous waste includes dry cleaning (PERC) waste, used paints and thinners that contain hazardous substances, silver-bearing photo-processing waste, cleaning solutions and other similar items. Each vessel may vary in both the type and volumes of hazardous waste generated depending on the technology and processes aboard ship. This checklist is designed to evaluate on-board management of hazardous waste streams and to ensure that hazardous constituents are not released into the environment, disposed of properly and that accountability is demonstrated via adequate waste disposal records.

Hazardous Waste

40 CFR 262
49 CFR 173
RCRA
SARA Title III
42 USC 11002(a)(3) 40
CFR 355 App A / B ISM
Code
33 CFR 96

- Has the company conducted a waste determination? Through Process Knowledge or Waste Analysis (circle one)? If not, hazardous waste may not be landed.
- Have responsible personnel received initial and refresher training? Has the training been documented?
- Is there any evidence that hazardous wastes are being incinerated, diluted, neutralized, or evaporated as a means of disposal.
- Is there any evidence (e.g. lack of disposal records) of hazardous material being discharged overboard?
- Are hazardous wastes being properly stored, maintained, labeled, and placarded? Note any observations made of deficiencies, dates and nature of repairs.
- Are proper storage devices available?
- Waste not commingled
- Quantities on board consistent with receipt/disposal documentation?
- Does the crew have ready access to spill control and decontamination equipment?
- Are records maintained and manifests completed for potential hazardous waste streams, for example:
 - Silver Bearing Photo Processing Waste (developers, wash water, Silver Recovery Units)
 - X-Ray equipment
 - Print Shop Waste (inks, dyes, cleaning solvents)
 - Used Solvents, Paints & Thinners
 - Fluorescent/Mercury Vapor Bulbs
 - Batteries (universal wastes): Nickel Cadmium (Nicad); Lead Acid; Lithium; Alkaline
 - Certain Pharmaceuticals/Narcotics
 - Dry Cleaning Waste (PERC, lint, sludge, filters, condensate water)
- Aerosol Cans
- Cleaning Solutions (de-scalers, acids, bases, other corrosives)
- Expired pyrotechnics (from safety equipment and entertainment use)
- Rags contaminated with hazardous wastes (also - in approved storage containers?)
- Incinerator ash if contaminated with toxic/hazardous substances (plastics containing heavy metals)
- Do records reflect reasonable accumulations of waste with respect to the capacity of the vessel, its age, technologies onboard, and amounts of repair/maintenance?
 - Used lead acid batteries not mixed and kept dry?

- Records of hazardous consumables kept updated
Used and unused

Shipboard Records
ISM Code
33 CFR 96

The following excerpt from 40 CFR 262 regarding Resource Conservation and Recovery Act (RCRA) requirements is provided for background information only. The Federal or State RCRA program office must be consulted if any clarifications are needed for a particular situation.

HAZARDOUS WASTE HANDLING REQUIREMENTS

§ 262.11 Hazardous waste determination.

A person who generates a solid waste, as defined in 40 CFR 261.2, must determine if that waste is a hazardous waste using the following method: (a) Determine if the waste is listed as a hazardous waste in subpart D of 40 CFR part 261.

(c) Or if not listed in subpart D of 40 CFR part 261, generator must determine if the waste is identified in subpart C of 40 CFR part 261 by either:

- (1) Testing the waste according to the methods set forth in subpart C of 40 CFR part 261
- (2) Applying knowledge of the hazard characteristic of the waste in light of the materials or the processes used.

262.12 EPA identification numbers.

(a) A generator must not treat, store, dispose of, transport, or offer for transportation, hazardous waste without having received an EPA identification number from the Administrator.

262.20 General requirements.

- (a) A generator who transports, or offers for transportation, hazardous waste for offsite treatment, storage, or disposal must prepare a Manifest OMB control number 2050-0039 on EPA form 8700-22, and, if necessary, EPA form 8700-22A, according to the appendix to part 262.
- (b) Generator must designate on manifest one facility that is permitted to handle the waste described on the manifest.

262.23 Use of the manifest.

- (a) The generator must:
 - (1) Sign the manifest certification by hand; and
 - (2) Obtain the handwritten signature of the initial transporter and date of acceptance on the manifest; and
 - (3) Retain one copy, in accordance with § 262.40(a) and give the transporter the remaining copies of the manifest.

262.30, .31, .32 & .33 Packaging, Labeling, Marking and Placarding.

Before transporting hazardous waste or offering hazardous waste for transportation off-site, a generator must package, label, mark and placard the waste in accordance with the applicable Department of Transportation regulations on packaging under 49 CFR parts 172, 173, 178, and 179. Before transporting hazardous waste or offering hazardous waste for transportation off-site, a generator must mark each container of 110 gallons or less used in such transportation with the following words and information displayed in accordance with the requirements of 49 CFR 172.304: **HAZARDOUS WASTE Federal Law Prohibits Improper Disposal. If found, contact the nearest police or public safety authority or the U.S. Environmental Protection Agency. Generator's Name and Address ----- . Manifest Document Number -----.**

262.34 Accumulation time.

A generator may accumulate hazardous waste on-site for 90 days or less for large quantity generator and 180 days or less for small quantity generator, without a permit or without having interim status.

The date upon which each period of accumulation begins must be clearly marked and visible for inspection on each container and while being accumulated on-site, each container and tank is labeled or marked clearly with the words, "Hazardous Waste."

§ 262.40 Recordkeeping.

- (a) A generator must keep a copy of each manifest signed in accordance with § 262.23(a) for three years or until he receives a signed copy from the designated facility which received the waste. This signed copy must be retained as a record for at least three years from the date the waste was accepted by the initial transporter.
- (b) A generator must keep a copy of each Biennial Report and Exception Report for a period of at least three years from the date of the report.
- (c) A generator must keep records of any test results, waste analyses, or other determinations made in accordance with § 262.11 for at least three years from the date that the waste was last sent to on-site or off-site treatment, storage, or disposal.

Non-hazardous wastes include shipboard garbage containing plastics and synthetic material, certain medical wastes, food wastes and recyclables such as glass, cardboard, aluminum and metal cans. Items to be checked should include waste sorted to prevent hazardous waste from entering the non-hazardous waste stream; no plastics or synthetics are to be discharged overboard, separate; proper disposal of hazardous (i.e. containing residual plastics or un-burnt food waste) and non-hazardous incinerator ash; and proper disposal of cooking grease from grease traps.

- Shipboard Garbage Management Plan
 - Shipboard garbage properly handled in accordance with Garbage Management Plan
 - Garbage Record Book entries
 - Type, amount, location, date/time
 - Receipts
 - Each entry signed by Officer-in-Charge and each page by Master
 - Any reports of alleged inadequacy of port reception facilities for garbage on file
 - Person-in-Charge Designated
 - No plastics or synthetics discharged overboard
 - Waste sorted to prevent hazardous waste entering non-hazardous waste stream or incinerated. Separate defined storage areas for hazardous/non-hazardous — no commingled waste.
 - Signage in working language of crew and in English, French or Spanish
 - Incinerator ash if discharged overboard free of plastic residue (clinkers) or free of unburned food wastes if landed ashore.
 - Trash chutes clean, free from oil residue (No oil stains on decks, side of hull adjacent to trash chutes)
 - Foreign Food Wastes handled per APHIS regulations
 - Medical Wastes-incinerated or manifested as Bio-Hazardous Waste.
 - Discharged outside of special areas only (when special area restrictions are in effect)
 - Incinerator operation observed (if in operation)
- Garbage Pollution Placards posted

33 CFR 151.63
 MARPOL Annex V
 MARPOL Annex V/9
 MARPOL Annex V/3
 7 CFR 330.400
- Procedures to minimize amount of potential garbage
 - Is vessel encouraging ship suppliers to consider alternate means of packing, use of other than plastics? Examine stores being loaded.
 - Is vessel using reusable packing? Examine stockpiles for use
 - Is waste generated while in port disposed to shore reception facility prior to sailing? Examine waste being offloaded.
- Recycling
 - Is ships crew following policy for recycling. Interview crewpersons in varied work areas, casino, galley, housekeeping, etc. with recycling responsibilities for procedures used.
- Maintenance and repair conducted on equipment
 - Incinerator
 - Grinders
 - Valves and flappers on chutes
- Human factors
 - Warning signs posted around equipment.
 - Master and crew familiar with essential shipboard garbage handling procedures.
 - Personal protective equipment available, functioning and in place (ILO 134).
 - Sanitation, from a health standpoint, being maintained (ILO 147).

MARPOL Annex V/
 33 CFR 151

AGENT

Vessel representative hired by the ship's owners. Ship's agent may be tasked with various jobs such as: ensuring proper vessel documentation and compliance.

AUTOMATIC STOPPING DEVICE

Is a control mechanism that ensures discharge of an oily water separator is stopped when the oil content of the effluent exceeds 15 parts per million (PPM). The automatic stopping device may be initiated by the operation of the oil content meter.

BALLAST

Used to improve the stability and control the draft of a ship. (In Ballast - having only ballast for a load)

BLACK OIL

A viscous and black or very dark brown colored oil. Depending on the quantity spilled, oil tends to quickly spread out over the water surface to a thickness of about one-millimeter.

BLACK WATER (sewage)

Examples - possible sources toilets, urinals and drainage from medical facilities (U.S. restriction).

COC

Certificate of Compliance, CG Form 3585.

COTP

Captain of the Port.

CWA

Clean Water Act.

CVE

Control Verification Examination is the examination of vessel for compliance with SOLAS requirements and applicable U. S. regulations. More properly referred to as the Passenger Vessel Certificate of Compliance Examination.

DISPERSION

The breaking up of an oil slick into small droplets which are mixed into the water column as a result of breaking waves and other sea surface turbulence.

EFFLUENT

To flow out. (Waste material, refuse, and sewage)

EMULSIFICATION

The formation of a water - in - oil mixture. In the environment, the tendency for emulsification to occur varies with different oils and is much more likely to occur under high-energy conditions (wind and waves). Emulsions may also be formed by surfactants, including detergents, which cause the oil and water to mix, or by mechanical means such as pressure washing or pump action.

EPA

Environmental Protection Agency

EQUIPMENT HAVING AN OIL TO SEA INTERFACE

Equipment that uses a seal to prevent leakage of oil into the sea. Examples, oil-lubricated stern tube seals, hydraulically-driven stabilizer fin seals, bow and stern thruster seals. An indicator that system seals are leaking to the sea may be evidence of frequent filling of system reservoirs, presence of barrels, drums, hoses, pumps, and other equipment/supplies/arrangements necessary to refill systems. Some ships' SMS or environmental compliance programs may require that records of refilling such systems are kept. If so, these records should be checked.

15 PPM ALARM

An alarm that activates when the effluent passing through oil-filtering equipment exceeds 15 parts per million (ppm) of oil.

GRAY WATER

Includes discharges from galley, sinks, washbasins, drains, showers and baths. These may be held in large tanks prior to being discharged overboard (State, Fed, regulation permitting).

HSSC

International Convention to Harmonized System of Survey and Certification.

ICCL

International Council of Cruise Lines, a cruise ship industry association which participates in industry standards and policy development process to promote all measures that foster a safe, secure, healthy cruise ship environment.

ICLL

International Convention for Load Lines.

IMO

International Maritime Organization; a specialized agency of the United Nations concerned solely with maritime affairs. IMO is responsible for international treaties, conventions, resolutions and codes to improve maritime safety.

ISM Code

International Safety Management Code. (Chapter IX of SOLAS)

MARPOL

The International Convention for the Prevention of Pollution from Ships, 1973 as modified by the Protocol of 1978.

MSC

Maritime Safety Committee. One of five technical committees of the IMO which deals with issues such as aids to navigation, vessel equipment and construction, manning requirements, handling dangerous cargoes, hydrostatic and marine casualty information.

MSD

Marine Sanitation Device.

OIL CONTENT METER

An instrument used to measure continuously the oil content of the effluent in the OWS output line, in parts per million, to ensure that the operation does not contravene the convention.

OIL FILTERING EQUIPMENT

Equipment that uses any combination of a separator, filter or coalescer, and also a single unit designed to produce an effluent with oil content less than 15 parts per million (ppm). (MARPOL Annex I, Reg 16)

OILY WATER SEPARATOR (OWS)

The basic principle of oil / water separation is their difference in specific gravity. The specific gravity of most oils is less than water; therefore, it will naturally float to the top of an oil and water solution. Small droplets of oil float to the top much slower than large droplets. This is due to the large surface area to mass ratio. To speed up the process of separation, OWS units form larger oil droplets out of smaller ones, thus decreasing the surface area to mass ratio. The increased mass of the oil droplet increases its buoyancy, thus causing it to rise more quickly. Gravitational-based systems are not effective processors of oil-water emulsions formed by detergents or mixtures containing high specific gravity oils.

PASSENGER SHIP

A ship which carries more than 12 passengers.

PMS

Preventative Maintenance System

QUALIFIED INDIVIDUAL (QI)

The person authorized by the responsible party to act on their behalf, authorize expenditures and obligate organization's resources.

RCRA

Resource Conservation and Recovery Act (RCRA), was enacted by the U.S. in 1976 to address the issue of how to safely manage and dispose of the huge volumes of municipal and industrial hazardous waste generated nationwide.

RECOVERABLE OIL

Oil that is in a thick enough layer on the water to be recovered by conventional techniques and equipment. Only black or dark brown oil, mousse, and heavy sheens (dull brown) are generally considered thick enough to be effectively recovered by skimmers.

SEPARATION EQUIPMENT

A device designed to remove enough oil from an oil-water mixture to provide a resulting mixture with an oil content of less than 100ppm, or 15ppm, such as an Oily Water Separator (OWS).

SLICK

Oil spilled on the water, which absorbs energy and dampens out the surface waves making the oil appear smoother or slicker than the surrounding water.

SHEEN

A sheen is a very thin layer of oil (less than 0.0001 inches or 0.003mm) floating on the water surface and is the most common form of oil seen in the later stages of a spill. According to their thickness, sheens vary in color ranging from dull brown for the thicker layers to rainbows, grays silvers and almost transparent for the thinnest layers.

SLUDGE TANKS

Tanks used to contain sludge formed by fuel and lube oil purifiers and from other sources or cleaning activities. Sludge is not readily processed by many oily water separators and frequently requires treatment ashore or incineration. Every ship of 400 GT or more must be provided with a tank or tanks of adequate capacity, in regard to type of machinery and length of voyage, to receive the oil residues (sludge) that cannot be dealt with otherwise in accordance with MARPOL Annex I.

SMS

Safety Management System (sometimes referred to as an SQM). Required by the ISM Code and Chapter IX of SOLAS.

SOLAS

Safety of Life at Sea. The International Convention for the Safety of Life at Sea.

SOPEP

Shipboard Oil Pollution Emergency Plan. (MARPOL Annex I, Reg. 26)

STCW

The International Convention on Standards of Training, Certification and Watchkeeping for Seafarers.

TANKER

Is a self-propelled vessel constructed or adapted for the carriage of bulk liquid cargoes of oil or hazardous materials.

TRANSFER

Any movement of oil or hazardous material to, from or within a vessel by means of pumping, gravitation, or displacement.

Appendix v

MEMORANDUM SUBJECT: Cruise Ship Identification Numbers and State Required Annual Reporting Components

FROM: Elizabeth Cotsworth, Director Office of Solid Waste
TO: RCRA Senior Policy Managers

Regions 1-10

Over the last several months, the Environmental Protection Agency (EPA), Office of Solid Waste has been working with Region 4, Region 9, Region 10, and ten states having cruise ship traffic to facilitate national acceptance of one EPA hazardous waste identification (ID) number per individual cruise ship. This came about because the ships were receiving different numbers from each state in which hazardous waste was off-loaded. Having multiple identification numbers causes the ships to create and maintain duplicate copies of hazardous waste management records, leading to an increased paperwork burden.

Through meetings and conference calls, the participants on this project reached an agreement on the issue. Today, we are asking that individual cruise ships be assigned only one EPA hazardous waste identification number as a generator of hazardous waste for purposes of the Resource Conservation and Recovery Act. The following procedures would apply:

- a) A cruise ship would determine its American-based home port state (the state in which it has corporate offices or its main port of call).
- b) After determining the home port state, the cruise line will notify the selected state or corresponding EPA regional office of its hazardous waste activities.
- c) The cruise ship will identify its hazardous waste generator size in accordance with 40 CFR 261.5(c).
- d) The home port state or EPA regional office will issue an EPA hazardous waste identification number for each individual cruise ship using the current established procedure. The number will reflect the home port state initials and ten alphanumeric characters.

We are recommending that the state or region consider using a ship = s registry number, which is known as the International Maritime Organization (IMO) number, as part of the EPA hazardous waste identification number. The IMO number is generally a five to seven digit number; zeros can be added before or after the number to reach the ten characters required for the EPA hazardous waste identification number. Using the IMO number will allow for coordination with the Coast Guard, as this is the number they use most often.

After the identification number is assigned, it will remain with that ship and be used on all hazardous waste manifests regardless of where the waste is off-loaded in the U.S. The assignment of the EPA ID number will not impact the applicability of state-specific RCRA requirements. For example, when waste is off-loaded in a state, the cruise ship will comply with that particular state = s RCRA requirements whether or not that state assigned the ID number. The ship will be required to provide records to the individual state as required by state law.

Many of the states who will not be issuing the ID number expressed an interest in obtaining

information provided by the cruise ship in either an annual or biennial report to its home port state. This request for annual report information can be addressed through the existing Biennial Reporting System (BRS). The attachment to this memo provides more specific information on how the ID numbers and annual reports will be incorporated into the EPA = s BRS databases.

If you have any questions, please contact Teena Wooten at (703) 308-8751.

Attachment (1)

cc: Key RCRA Contacts, Regions 1 - 10

RCRA Enforcement Contacts, Regions 1 - 10

RCRA Data Management Contacts, Regions 1-10

Tom Kennedy, Association of State and Territorial Solid Waste
Management Officials (ASTSWMO)

Anne Dobbs, Texas Natural Resource Conservation Commission (TNRCC)

Dangerous Waste Site Identification Form

Site ID



Washington State Department of Ecology
Hazardous Waste Information
P.O. Box 47658
Olympia, WA 98504-7658
(800) 874-2022 (within state)
(360) 407-6170

Web site: www.ecy.wa.gov/programs/hwtr

For Ecology Use Only		Date Received:	
Form	Reviewed	Entered	Verified
Site ID			
GM			
WR			
OI			

1. Reason for Submittal

- To provide **New** Notification of Regulated Waste Activity (complete entire form)
- To provide **Revised** Site Identification information (complete entire form)
- To **Withdraw** Site Identification Number (skip sections 10 and 11)
- To **Reactivate** Site Identification Number (complete entire form) Effective Date: _____ (mm/dd/yyyy)
- A component of the **Dangerous Waste Annual Report** (skip section 11) Reporting Year: _____ (yyyy)

2. RCRA Site ID Number:

3. Site Location Information

Company Name: _____

Site Address: _____

City/State/Zip: _____

County: _____

Tax Registration Number: _____

NAICS Code: _____

Type of Business: _____

4. Company Mailing Address

Name: _____

Mail Address: _____

City/State/Zip: _____

Country: _____

5. Legal Owner

Name: _____

Mail Address: _____

City/State/Zip: _____

Phone Number (Ext): (____) _____

Owner Since: _____ (mm/dd/yyyy)

Owner Type: Federal State County Municipal
 District Private Tribal Other

6. Land Owner

Name: _____

Mail Address: _____

City/State/Zip: _____

Phone Number (Ext): (____) _____

Owner Type: Federal State County Municipal
 District Private Tribal Land
 Puyallup Trust Other

Dangerous Waste Site Identification Form (continued)

Site ID

RCRA Site ID Number:

7. Site Operator

Name: _____

Mail Address: _____

City/State/Zip: _____

Phone Number (Ext): (____) _____

Operator Since: _____ (mm/dd/yyyy)

Operator Type: Federal State County Municipal
 District Private Tribal Other

8. Site Contact

Name: _____

Mail Address: _____

City/State/Zip: _____

Phone Number (Ext): (____) _____

Email Address: _____

9. Form Contact

Name: _____

Mail Address: _____

City/State/Zip: _____

Phone Number (Ext): (____) _____

Email Address: _____

10. Type of Regulated Waste Activity (Mark the appropriate boxes for activities that apply to your site)

A. Hazardous Waste Activities

1. Generator of Hazardous Waste

(Choose only one of the following four categories)

a. LQG: Large Quantity Generator (Greater than 2,200 lbs/mo)

b. MQG: Medium Quantity Generator (Between 220 – 2,200 lbs/mo)

c. SQG: Small Quantity Generator (Less than 220 lbs/mo)

d. XQG: No Regulated Waste Generated

2. Frequency of Generation

(Choose only one of the following three types)

a. Monthly

b. Batch

c. One-time only

3. Transporter of Hazardous Waste

a. Transport own waste

b. Transport for commercial purposes

4. Recycler of On-Site Waste

(i.e., on-site use, reuse or reclamation of a waste after it has been generated)

5. Transfer Facility of Hazardous Waste

6. Permit-by-Rule (PBR)

7. Treatment-by-Generator (TBG)

8. Generator of Mixed Radioactive Waste

9. Importer of Hazardous Waste

10. Treatment, Storage, Disposal or Recycling (TSDR) Facility

(Note: A RCRA Permit is required for this activity)

11. 24-Hour Recycler of Off-Site Waste

(i.e., Immediate Recycler)

12. Dangerous Waste Fuel Activity

a. Generator of dangerous waste fuel

b. Generator marketing to burner

c. Other marketers (i.e., blender, distributor, etc.)

d. Burner (indicate type of combustion unit)

1. Utility boiler

2. Industrial boiler

3. Industrial furnace

e. Deferrals/Exemptions (in federal registry only)

1. Smelter deferral

2. Small quantity exemption

3. Other (specify):

Dangerous Waste Site Identification Form (continued)

Site ID

RCRA Site ID Number:

B. Universal Waste Activities

1. Large Quantity Handler of Universal Waste
(Mark all boxes that apply)

	<u>Generate</u>	<u>Accumulate</u>
a. Batteries	<input type="checkbox"/>	<input type="checkbox"/>
b. Mercury containing thermostats	<input type="checkbox"/>	<input type="checkbox"/>
c. Lamps	<input type="checkbox"/>	<input type="checkbox"/>

2. Destination Facility for Universal Waste
(Note: A RCRA Permit is required for this activity)

C. Used Oil Activities

1. Off-specification used oil burner Indicate type(s) of combustion devices

- 1. Utility boiler
- 2. Industrial boiler
- 3. Industrial furnace

2. Used oil transporter Indicate type(s) of activity(s)

- a. Transporter
- b. Transfer facility

3. Used oil processor/re-refiner Indicate type(s) of activity(s)

- a. Process
- b. Re-refine

4. Used Oil Fuel Marketer

- a. Directs shipment of used oil to used oil burner
- b. First claims the used oil meets the specifications

11. Description of Hazardous Wastes

A. Waste Codes for Federally Regulated Hazardous Wastes: Identify those codes that best describe your waste. (e.g., D001 – Ignitable, D002 – Corrosive, D003 – Reactive, etc.)

B. Waste Codes for State Regulated (i.e., non-Federal) Hazardous Wastes: Identify those codes that best describe your waste. (e.g., WT02 – Toxic, WP02 – Persistent, WL02 – Labpack, WSC2 – Solid Corrosive, etc.)

12. Comments

Additional sheets may be attached for comments if needed.

13. Certification

This form cannot be processed without a signature

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Signature

Date

Name (print or type)

Title

If you have special accommodation needs or require this document in an alternative format, please contact the Hazardous Waste and Toxics Reduction Program at 1-800-833-6388 (TTY) or quick dial 711-833-6388 (TTY).

14. Electronic Submittals

I am interested in the electronic filing of my Dangerous Waste Annual Reporting and Site Identification information to Ecology over the Internet. Ecology will issue a PIN number, along with electronic filing instructions, in a letter addressed to the Form Contact in Section 9 on this form.

Appendix vi

Alaska Regulations

Title XIV – Certain Alaskan Cruise Ship Operations

SEC. 1404. LIMITATIONS ON DISCHARGE OF TREATED SEWAGE OR GRAYWATER.

.....

(c) Until such time as the Administrator promulgates regulations under paragraph (b) of this section, treated sewage and graywater may be discharged from vessels subject to this Title in circumstances otherwise prohibited under paragraphs (a)(1) and (a)(2) of this section, provided that—

- (1) the discharge satisfies the minimum level of effluent quality specified in 40 CFR 133.102, as in effect on the date of enactment of this Section;
- (2) the geometric mean of the samples from the discharge during any 30-day period does not exceed 20 fecal coliform/100 ml and not more than 10% of the samples exceed 40 fecal coliform/100 ml;
- (3) concentrations of total residual chlorine may not exceed 10.0 µg/l; and,
- (4) prior to any such discharge occurring, the owner, operator or master, or other person in charge of a cruise vessel, can demonstrate test results from at least five samples representative of the effluent to be discharged, taken from the vessel on different days over a 30-day period, conducted in accordance with the guidelines promulgated by the Administrator in 40 CFR Part 136, which confirm that the water quality of the effluents proposed for discharge is in compliance with paragraphs (1), (2) and (3) of this subsection. To the extent not otherwise being done by the owner, operator, master or other person in charge of a cruise vessel pursuant to section 1406, the owner, operator, master or other person in charge of a cruise vessel shall demonstrate continued compliance through periodic sampling. Such sampling and test results shall be considered environmental compliance records that must be made available for inspection pursuant to section 1406 (d) of this Title.

Title 40 CFR 133.102 Secondary treatment.

The following paragraphs describe the minimum level of effluent quality attainable by secondary treatment in terms of the parameters—BOD₅, SS and pH. All requirements for each parameter shall be achieved except as provided for in §§ 133.103 and 133.105.

(a) *BOD₅*.

- (1) The 30-day average shall not exceed 30 mg/l.
- (2) The 7-day average shall not exceed 45 mg/l.
- (3) The 30-day average percent removal shall not be less than 85 percent.

(4) At the option of the NPDES permitting authority, in lieu of the parameter BOD5 and the levels of the effluent quality specified in paragraphs (a)(1), (a)(2) and (a)(3), the parameter CBOD5 may be substituted with the following levels of the CBOD5 effluent quality provided:

- (i) The 30-day average shall not exceed 25 mg/l.
- (ii) The 7-day average shall not exceed 40 mg/l.
- (iii) The 30-day average percent removal shall not be less than 85 percent.

(b) *SS*.

- (1) The 30-day average shall not exceed 30 mg/l.
- (2) The 7-day average shall not exceed 45 mg/l.
- (3) The 30-day average percent removal shall not be less than 85 percent.

(c) *pH*. The effluent values for pH shall be maintained within the limits of 6.0 to 9.0 unless the publicly owned treatment works demonstrates that: (1) Inorganic chemicals are not added to the waste stream as part of the treatment process; and (2) contributions from industrial sources do not cause the pH of the effluent to be less than 6.0 or greater than 9.0.

Appendix vii

Hazardous Waste Management

This Appendix is to be used as guidance for hazardous waste discharged in Washington State waters or landed ashore in Washington. The following is a list of Resource Conservation Recovery Act (RCRA) and Washington State Criteria hazardous waste that may be found on cruise ships, and appropriate guidance for its discharge or offloading from the ship.

Terms

Hazardous Waste – Includes all hazardous waste as defined by RCRA and Chapter 173-303 of the Washington Administrative Code (WAC), where Washington State Criteria hazardous waste is defined.

Publicly Owned Treatment Works (POTW) - Ecology's Hazardous Waste Toxics Reduction (HWTR) Program will acknowledge Advanced Wastewater Treatment Systems (AWTS) as a substitute for a POTW. Type 2 Marine Sanitation Devices (MSDs) are not considered a POTW for purposes of this MOU.

WASTE STREAMS

Antifreeze- Excluded as a hazardous waste if recycled. (WAC 173-303-522)

Aqueous Degreasing - If the resulting waste is hazardous it can be treated to remove the hazard and the resulting effluent can be sent to the AWTS or Oily Water Separator. If no treatment is performed it can be landed ashore for proper disposal.

Batteries & Mercury Containing Thermostats - These are universal waste if sent for recycling. (Ecology Publication Number 98-407, Universal Waste Rule for Batteries and Mercury Containing Thermostats)

Spent Lead Acid Batteries - Spent lead-acid batteries are conditionally excluded if recycled. (WAC 173-303-520)

Cathode Ray Tubes (CRTs) - Excluded if recycled, otherwise are to be managed as a hazardous waste. (Ecology Publication Number 02-04-017, Interim Enforcement Policy Conditional Exclusion for Cathode Ray Tubes* and Related Electronic Wastes)

Dry Cleaner – Perchloroethylene (PERC) and other chlorinated dry cleaning fluids, contaminated sludge and filter materials are hazardous waste and must be landed ashore in accordance with RCRA requirements.

Florescent Tubes - Handling procedures for fluorescent tubes do not allow for crushing of the bulbs. (WAC 173-303-573 and Ecology Focus Sheet, Publication # 00-04-020, Universal Waste Rule for Dangerous Waste Lamps)

HVAC - CFC's or HCFC's are excluded as a hazardous waste if recycled. (WAC 173-303-506)

Filters from HVAC units that use Halogenated Organic Compounds (HOC's) as fire retardants would be a State Criteria hazardous waste and must be managed as such.

Mercury Switches - Are a hazardous waste and must be managed as such.

Painting - Discarded Paints & Cleanup Solvents. All spent paints and solvents must be properly designated and if hazardous waste, managed as such.

PCB's - Regulated as a state hazardous waste if they come from transformers, capacitors and bushings if PCB's are from 2ppm to 50ppm. If PCB's are above 50 ppm they must be managed as a TSCA waste. (WAC 173-303-9940)

Pharmaceuticals - Drugs that designate as RCRA waste, but that are not controlled substances must be sent ashore as hazardous waste. If the drug is a RCRA waste and a controlled substance, contact the US Drug Enforcement Agency (DEA) about suitable destruction methods and then manage the residue from destruction as a hazardous waste (disposal to water, regular garbage or incineration would be illegal). If the drug is not a RCRA waste, regardless whether it is a controlled substance or not, it can be incinerated on board or sent ashore for incineration at a facility permitted to incinerate municipal solid waste. (WAC 173-303-071(n))

Photo Waste - Silver can be removed from fixer and the resulting effluent would be allowed to go to an advanced wastewater treatment system (AWTS), but not to graywater or to a Type 2 MSD. If the fluids can not go to the AWTS, they must be landed ashore in accordance with RCRA requirements. (Ecology Publication 94-138R, A Guide For Photo Processors)

Printer Wastes - Inks, solvents and rags, used for cleaning, will need to be properly designated, and if hazardous waste, managed as such.

Spray Cans – Cans that are not empty must be properly designated, and if hazardous waste, managed as such.

Solvent Degreasing - Solvents, when used, must be properly designated, and if hazardous waste, managed as such.

Appendix viii

Regional Director
Washington State Department of Ecology
Northwest Regional Office
3190 160th Avenue SE
Bellevue, WA 98008-5452

Dear Director:

Re: Washington Cruise MOU Compliance Report: XXXX (enter year) Cruise Season

Section 9 of the Memorandum of Understanding for Cruise Operations in Washington State (signed XXX (enter signature date)), requires an annual submittal detailing the compliance with the MOU for the each vessel within the NWCA that calls to a port in Washington for the previous cruise season. Please accept this letter on behalf of XXX (name your cruise line) for the XXXX (enter year) cruise season.

The following ships operated Washington waters during XXXX (enter year):

- Name the ship or ships; list the port of call and the dates.

XXX's operations in Washington State addressed the following key provisions of the MOU as follows:

Section 2.1 Wastewater Management. XXX managed its wastewater in compliance with this section as follows:

[Choose one or more options as appropriate]

- In compliance with Section 2.1.1 and 2.1.2, XXX held all treated and untreated gray and black water while in Washington waters and did not discharge solid waste or oily bilge water if not in compliance with applicable federal and state laws while in Washington waters. List the ships that held their effluent and describe the type of treatment system each ship in this category has. Based on a thorough review of ships' logs and records we certify that our ship(s) complied with these provisions of the MOU. XXX will make these records available to Ecology upon request.
- In compliance with Section 2.1.3 (A), XXX submitted the information required to allow discharge of treated wastewater one mile from berth to Ecology on XX date for the following ship(s): ----- . Describe the type of treatment system each ship in this category has. Approval of the information was received from Ecology on XX date.
- In compliance with Section 2.1.3 (B), XXX submitted information supporting its request to discharge treated wastewater continuously to Ecology on XX date for the following ship(s) --

---. Describe the type of treatment system each ship in this category has. Approval to discharge while at berth was received from Ecology on XX date.

Section 2.1.3 (C)(1-3) Shellfish and “upset” conditions. Based on a review of XXX ship’s logs and records, XXX certifies that we complied with the prohibition on discharging within 0.5 nautical miles of bivalve shellfish beds that are recreationally harvested or commercially approved to harvest as identified annually by the Department of Ecology and that any “upset” conditions were stopped and immediately reported to the Washington State Department of Health.

Section 2.1.3 (C)(4-10) Other discharge approval requirements. Based on a review of XXX ship’s logs and records and other knowledge, XXX certifies that the requirements in this section were met.

Section 2.1.4 Discharge of Residual Solids. Based on a review of XXX ships’ logs and records, XXX certifies that we complied with the prohibition on discharging residual solids coming from any type of treatment system within 12 nautical miles from shore and within the Olympic Coast National Marine Sanctuary. XXX will make these records available to Ecology upon request.

Section 2.2.1 through 2.2.4 Hazardous Waste Management. Based on a review of XXX ship’s logs and records, XXX certifies that Hazardous Wastes were managed in accordance with these sections of the MOU. XXX will make these records available to Ecology upon request. Add a description of how hazardous waste is managed while in Washington.

Section 6. Marine Mammal Protection Act, Invasive Species Act, and the Washington Ballast Water Management Act. Based on a review of XXX ship’s logs and records, XXX certifies that the provisions of the above laws were implemented as required by these laws. XXX will make these records available to Ecology upon request. Add a description of how compliance with these laws was achieved.

Section 9. Immediate self-reporting to Ecology of any incidences of non-compliance with any provisions of the MOU. Describe any incidences of non-compliance and when they were reported to Ecology and any corrective actions taken.

I hereby certify that the above information is true and can be verified through documentation. If you have any questions or concerns, please call me at XXX-XXX-XXXX.

Sincerely,

Name
Position/Title
Company

Appendix ix

2007 Agreement

INTERAGENCY AGREEMENT NO. C007032

BETWEEN

THE STATE OF WASHINGTON

DEPARTMENT OF ECOLOGY

AND

PORT OF SEATTLE

THIS AGREEMENT is made and entered into by and between the DEPARTMENT OF ECOLOGY, hereinafter referred to as "Ecology", and the Port of Seattle, hereinafter referred to as the PORT.

IT IS THE PURPOSE OF THIS AGREEMENT to provide the funding for Ecology personnel to further the intent of the *Memorandum of Understanding, Cruise Operations in Washington State* (the "Cruise MOU") which was entered into between the Department of Ecology, the Port of Seattle, and the Northwest Cruiseship Association ("NWCA"). The Port and Ecology acknowledge their intent to amend the Cruise MOU in the near future to specifically authorize these activities. The parties further acknowledge that the Port is acting solely as a pass-through contracting entity to facilitate the collection of funds from the individual NWCA members and to provide payment to Ecology on behalf of the NWCA members.

THEREFORE, IT IS MUTUALLY AGREED THAT:

STATEMENT OF WORK

Ecology shall furnish the necessary personnel, equipment, material and/or service(s) and otherwise do all things necessary for or incidental to the performance of the work set forth in Attachment "A" attached hereto and incorporated herein.

PERIOD OF PERFORMANCE

Subject to its other provisions, the period of performance of this Agreement shall commence on January 1, 2007, and be completed on December 31, 2007, unless terminated sooner as provided herein.

PAYMENT

The parties have determined that the cost of accomplishing the work herein will not exceed \$75,000.00. Payment for satisfactory performance of the work shall not exceed this amount unless the parties mutually agree to a higher amount. Compensation for service(s) shall be based on the following rates or in accordance with the following terms, or as set forth in accordance with the budget in Attachment "B" which is attached hereto and incorporated herein.

Notwithstanding anything to the contrary in this Agreement, the Port's obligation to pay for the work set forth on Attachments A and B is expressly contingent on payment to the Port by NWCA and/or its members for such work.

BILLING PROCEDURE

Ecology shall submit an invoice to the Port for work accomplished during the year by March 1, 2008. Payment to Ecology for approved and completed work will be made by warrant or account transfer by the

Port within 60 days of receipt of the invoice. Upon expiration of the Agreement, any claim for payment not already made shall be submitted within 60 days after the expiration date or the end of the fiscal year, whichever is earlier.

Payment will be mailed to Ecology at the following address:

Dept. of Ecology
Cashiering Section
PO Box 5128
Lacey, WA 98509-5128

360-407-7096 Telephone
360-649-7193
dine461@ecy.wa.gov

RECORDS MAINTENANCE

The parties to this Agreement shall each maintain books, records, documents and other evidence which sufficiently and properly reflect all direct and indirect costs expended by either party in the performance of the service(s) described herein. These records shall be subject to inspection, review or audit by personnel of both parties, other personnel duly authorized by either party, the Office of the State Auditor, and federal officials so authorized by law. All books, records, documents, and other material relevant to this Agreement will be retained for six years after expiration and the Office of the State Auditor, federal auditors, and any persons duly authorized by the parties shall have full access and the right to examine any of these materials during this period.

Records and other documents, in any medium, furnished by one party to this agreement to the other party, will remain the property of the furnishing party, unless otherwise agreed. The receiving party may be required to disclose records and documents, but will not disclose or make available this material to any third parties without first giving notice to the furnishing party and giving it a reasonable opportunity to respond. Each party will utilize reasonable security procedures and protections to assure that records and documents provided by the other party are not erroneously disclosed to third parties.

RIGHTS IN DATA

Unless otherwise provided, data which originates from this Agreement shall be "works for hire" as defined by the U.S. Copyright Act of 1976 and shall be owned by Ecology. Data shall include, but not be limited to, reports, documents, pamphlets, advertisements, books, magazines, surveys, studies, computer programs, films, tapes, and/or sound reproductions. Ownership includes the right to copyright, patent, register, and the ability to transfer these rights.

INDEPENDENT CAPACITY

The employees or agents of each party who are engaged in the performance of this Agreement shall continue to be employees or agents of that party and shall not be considered for any purpose to be employees or agents of the other party.

AGREEMENT ALTERATIONS AND AMENDMENTS

This Agreement may be amended by mutual agreement of the parties. Such amendments shall not be binding unless they are in writing and signed by personnel authorized to bind each of the parties.

TERMINATION

Either party may terminate this Agreement upon 30 days' prior written notification to the other party. If this Agreement is so terminated, the parties shall be liable only for performance rendered or costs incurred in accordance with the terms of this Agreement prior to the effective date of termination.

TERMINATION FOR CAUSE

If for any cause, either party does not fulfill in a timely and proper manner its obligations under this Agreement, or if either party violates any of these terms and conditions, the aggrieved party will give the other party written notice of such failure or violation. The responsible party will be given the opportunity to correct the violation or failure within 15 working days. If failure or violation is not corrected, this Agreement may be terminated immediately by written notice of the aggrieved party to the other.

DISPUTES

In the event that a dispute arises under this Agreement, it shall be determined by a Dispute Board in the following manner: Each party to this Agreement shall appoint one member to the Dispute Board. The members so appointed shall jointly appoint an additional member to the Dispute Board. The Dispute Board shall review the facts, agreement terms and applicable statutes and rules and make a determination of the dispute. The determination of the Dispute Board shall be final and binding on the parties hereto. As an alternative to this process, either of the parties may request intervention by the Governor, as provided by RCW 43.17.330, in which event the Governor's process will control.

GOVERNANCE

This Agreement is entered into pursuant to and under the authority granted by the laws of the state of Washington and any applicable federal laws. The provisions of this Agreement shall be construed to conform to those laws.

In the event of an inconsistency in the terms of this Agreement, or between its terms and any applicable statute or rule, the inconsistency shall be resolved by giving precedence in the following order:

- a. Applicable state and federal statutes and rules;
- b. Statement of work; and
- c. Any other provisions of the agreement, including materials incorporated by reference.

ASSIGNMENT

The work to be provided under this Agreement, and any claim arising thereunder, is not assignable or delegable by either party in whole or in part, without the express prior written consent of the other party, which consent shall not be unreasonably withheld.

WAIVER

A failure by either party to exercise its rights under this Agreement shall not preclude that party from subsequent exercise of such rights and shall not constitute a waiver of any other rights under this Agreement unless stated to be such in a writing signed by an authorized representative of the party and attached to the original Agreement.

SEVERABILITY

If any provision of this Agreement or any provision of any document incorporated by reference shall be held invalid, such invalidity shall not affect the other provisions of this Agreement which can be given effect without the invalid provision, if such remainder conforms to the requirements of applicable law and the fundamental purpose of this agreement, and to this end the provisions of this Agreement are declared to be severable.

ALL WRITINGS CONTAINED HEREIN

This Agreement contains all the terms and conditions agreed upon by the parties. No other understandings, oral or otherwise, regarding the subject matter of this Agreement shall be deemed to exist or to bind any of the parties hereto.

COUNTERPARTS

This Agreement may be executed in counterparts, each of which may have the signature of only one Party, but each of which shall be deemed to be an original, and all of which, when taken together, shall be deemed to be a single Agreement.

CONTRACT MANAGEMENT

The program manager for each of the parties shall be responsible for and shall be the contact person for all communications and billings regarding the performance of this Agreement.

The Contract/Program Manager for Ecology is:


Kevin Fitzpatrick
Department of Ecology
Northwest Regional Office
3190 160th Avenue SE
Bellevue, WA 98008-5452
(425) 649-7033
E-mail: kfit461@ecy.wa.gov

The Contract/Program Manager for Port of Seattle is:

Michael McLaughlin
General Manager, Cruise and Dock Services
Port of Seattle
P.O. Box 1209
Seattle, WA U.S.A. 98111
Phone:(206)728-3453
E-mail: mclaughlin.m@portseattle.org

IN WITNESS WHEREOF, the parties have executed this Agreement.

State of Washington
Department of Ecology

 10/2/09

David C. Peeler, Manager Date
Water Quality Program

Sunde Strout 9/24/07
for Tay Yoshitani, Chief Executive Officer Date

APPROVED AS TO FORM:

ATTORNEY GENERAL'S OFFICE

Susan Ridgley, Senior Port Counsel

Susan Ridgley

2007 Agreement

ATTACHMENT A

Department of Ecology/Port of Seattle

Cruise Ship Memorandum of Understanding Scope of Work

The Department of Ecology (Ecology), the Port of Seattle, and the NorthWest CruiseShip Association (NWCA) are signatory to the *Memorandum of Understanding, Cruise Operations in Washington State* (MOU). Originally the MOU was signed April 20, 2004 and thereafter annually amended. The member cruise lines of the NWCA agree to comply with practices, while operating in waters subject to the MOU, pertaining to the management of solid and hazardous wastes and wastewaters. Ecology is charged with protecting and conserving Washington's environmental resources in relation to the cruise industry's environmental practices in Washington. The NWCA has agreed to fund Ecology's costs to implement the MOU and to accomplish the tasks listed herein.

Task 01

Compliance Work:

Work with stakeholders on drafting necessary amendments to cruise MOU. Provide technical assistance for cruise lines and vessel staff. Field questions from the public, press, environmental groups, and cruise lines. Monitor compliance with the MOU. Work with other programs within Ecology on hazardous waste, biosolids, solid waste, spill prevention, and other MOU elements. Work with Ecology policy and fiscal staff on cruise related issues. Research issues related to vessel discharges. Evaluate, draft and update guidance on Whole Effluent Toxicity (WET) testing for cruise ships and evaluate WET testing results. Work with Department of Health Shellfish program on shellfish and virus related studies and issues. Manage and update Ecology's cruise ship website.

Task 02

Inspections:

Conduct annual inspections of cruise vessels to verify the operation of the treatment systems and to evaluate compliance with the MOU. Write up inspection reports and provide recommendations for improvement. Take samples from vessels and evaluate results.

Task 03

Wastewater Discharge Approvals:

Verify documentation submitted for approval of discharges. Evaluate documentation and treatment systems for requirements of MOU to discharge and based on the information submitted and an engineering review, provide approval for discharges as appropriate.

Task 04

Annual Reports:

Draft annual assessment of cruise ship environmental effects report. Evaluate monthly sampling data results and summarize annually.

Task 05

Project Management:

Oversee the cruise ship MOU program and assist as needed. Provides Administrative oversight for compliance with the MOU, represents senior program management in duties related to protection of water quality from cruise ship discharges including negotiations.

Task 06

Additional tasks may become part of this agreement by mutual concurrence of Ecology and the Port of Seattle, or upon extension of the agreement.

2007 Agreement

Attachment B

Department of Ecology / Port of Seattle

Cruise Vessel Wastewater Treatment Inspections
Budget, by Object

The following is a detail breakdown of the salary, benefits and other costs of the Department of Ecology staff who will be funded under this agreement.

<u>OBJECT</u>	<u>COST</u>
1. Salary:	
Environmental Specialist 5 (ES5) \$54,840 x .36 FTE =	\$ 19,743
Environmental Engineer 4 (EE4) \$77,520 x .10 FTE =	\$ 7,752
WMS Band 2 (WMS2) \$75,924 x .05 FTE =	<u>\$ 3,796</u>
Total Salary:	\$ 31,291
2. Benefits @ 28.2% of Salary:	\$ 8,824
3. Indirect Costs @ 38.95% of Salary & Benefits (1): (from 1/1/07 through 6/30/07)	\$ 7,812
Indirect Costs @ 35.78% of Salary & Benefits (1): (from 7/1/07 through 12/31/07)	\$ 7,177
4. Goods & Services @ \$4,388 per budgeted FTE:	
ES5 \$4,388 x .36 FTE =	\$ 1,580
EE4 \$4,388 x .10 FTE =	\$ 439
WMS2 \$4,388 x .05 FTE =	\$ 219
Annual data summary =	\$ 2,500
Annual report =	\$ 10,000
Lab costs =	<u>\$ 5,158</u>
Total Goods & Services:	\$ 19,896
TOTAL	<u>\$ 75,000</u>

(1) Ecology's indirect rate, as approved by the federal cognizant agency (United States Department of Interior) will apply. The approved FY07 rate for 7/1/06 through 6/30/07 was 38.95%. The current rate for 7/1/07 through 6/30/2008 is 35.78% of salaries and benefits.

Appendix x

Bivalve Shellfish Beds

Cruise ships that discharge treated sewage into Puget Sound under this MOU employ advanced systems that treat sewage to a very high degree using a combination of filtration, biological treatment, ultra-filtration, and disinfection. These systems are called Advanced Wastewater Treatment Systems (AWTS). The ultra-filtration process effectively removes nearly all bacteria from the treated sewage. However, viruses which tend to be smaller organisms may pass through the ultra-filtration membranes but are typically destroyed by the disinfection unit.

The Centers for Disease Control & Prevention reported 18 norovirus outbreaks on cruise ships in the Pacific Northwest since 2000. Cruise ships discharge into shallow waters along the shipping lanes, near some commercial shellfish beds. Today, national standards provide little guidance on setting shellfish closure zones based on viral risk and there is no reliable viral indicator standard in part due to difficulties in sampling and testing for norovirus.

Because shellfish in Puget Sound and Admiralty Inlet are valuable resources for Washington State, the Washington State Legislature commissioned the Washington State Department of Health (DOH) Office of Shellfish and Water Protection (OSWP) to study the potential risk to shellfish beds from virus contamination associated with cruise ship waste water discharges. DOH contracted with the University of Washington School of Public Health and Community Medicine to perform a risk assessment, which was completed in November 2007. The study used a quantitative microbial risk assessment method coupled with water quality modeling in Puget Sound. Some key findings of the study include:

- When advanced wastewater treatment systems (AWTS) are functioning well, there is low concern for viral illness. Adequate disinfection is the key to effective norovirus inactivation.*
- Loss of disinfection could lead to potentially unacceptable virus levels in water over shellfish beds, even with the large dilution provided by ships under sail. However, using minimum dilution factors for when ships are moving at least 6 knots along the current route, dilution is estimated at 1,500,000:1 between the ship and the shore.*
- The UW study did not gather samples of norovirus concentrations in treated sewage from cruise ships or in the salt water over shellfish beds. Norovirus remains non-culturable, so there is very limited environmental data that is “norovirus specific.” In response, UW researchers used data for norovirus “surrogates” from other studies in their analysis.*
- Consumption data from Tribes that use shellfish beds closest to the path of cruise ships was used in the risk analysis. These rates are higher than for the general population. Raw oyster consumption rates were used as a conservative assumption for these areas.*

The study included many conservative assumptions, but nonetheless concluded that well functioning AWTSs would not lead to norovirus accumulation in shellfish beds such that the median annual risk of potential illness to shellfish consumers from cruise ship discharges in Puget Sound is less than 10,000,000:1. This compares quite favorably with the calculated annual risk of norovirus illness from consumption of raw oysters in the general population, which the UW researchers calculated as about 1,000:1.

As described above, the potential risk of viral contamination of shellfish beds from cruise ship is extremely low when AWTs systems are functioning well. Additionally the geography of Puget Sound and the configuration of shipping lanes provide most shellfish beds some protection from potential contamination from passing ships. However, the signatories to the MOU understand the importance of shellfish resources to Washington State and have agreed to take the actions outlined on page ____ of the MOU to protect shellfish beds and human health while operating in Washington MOU waters.

Appendix x continued Bivalve Shellfish Beds 2008 Season

2008 Cruise Season Boundary Points

Id	Tract Name	LATITUDE	LONGITUDE
1	Apple Tree Cove	47.81274089040	122.48047265700
2	Apple Tree Cove	47.81255672180	122.47941651600
3	Apple Tree Cove	47.81197112760	122.47872458000
4	Apple Tree Cove	47.81129443870	122.47812835500
5	Apple Tree Cove	47.81056937740	122.47758747000
6	Apple Tree Cove	47.80992145700	122.47684781100
7	Apple Tree Cove	47.80931916930	122.47604614700
8	Apple Tree Cove	47.80895286530	122.47498673900
9	Apple Tree Cove	47.80852971000	122.47419683400
10	Apple Tree Cove	47.80812779070	122.47315426700
11	Apple Tree Cove	47.80748647770	122.47257436300
12	Apple Tree Cove	47.80668065230	122.47239303200
13	Apple Tree Cove	47.80586169470	122.47237830900
14	Apple Tree Cove	47.80507505630	122.47246917900
15	Apple Tree Cove	47.80443177020	122.47321819700
16	Apple Tree Cove	47.80389497510	122.47389983000
17	Apple Tree Cove	47.80348525790	122.47492954200
18	Apple Tree Cove	47.80310261180	122.47598949400
19	Apple Tree Cove	47.80237402570	122.47638256900
20	Apple Tree Cove	47.80219450150	122.47688158400

Id	Tract Name	LATITUDE	LONGITUDE
47	Tyee Shoal	47.61916098460	122.48420272400
48	Tyee Shoal	47.61865190330	122.48324910700
49	Tyee Shoal	47.61814655430	122.48229042500
50	Tyee Shoal	47.61761807860	122.48135871800
51	Tyee Shoal	47.61718007830	122.48033341700
52	Tyee Shoal	47.61670845870	122.47935532600
53	Tyee Shoal	47.61609072620	122.47855854300
54	Tyee Shoal	47.61543441750	122.47782569300
55	Tyee Shoal	47.61469777070	122.47729421200
56	Tyee Shoal	47.61394668260	122.47679893700
57	Tyee Shoal	47.61317098590	122.47657100600
58	Tyee Shoal	47.61237442300	122.47686659800
59	Tyee Shoal	47.61162109430	122.47735159900
60	Tyee Shoal	47.61083929010	122.47772883400
61	Tyee Shoal	47.61005751060	122.47810617700
62	Tyee Shoal	47.60927581650	122.47848390200
63	Tyee Shoal	47.60847990770	122.47877353100
64	Tyee Shoal	47.60766507680	122.47893589300
65	Tyee Shoal	47.60687831460	122.47927979300
66	Tyee Shoal	47.60609769090	122.47964967100
67	Tyee Shoal	47.60531536900	122.48000498600
68	Tyee Shoal	47.60457213290	122.48052049900
69	Tyee Shoal	47.60398226870	122.48118881300
70	Tyee Shoal	47.60407102430	122.48180079600

2008 Cruise Season Boundary Points

Id	Tract Name	LATITUDE	LONGITUDE
21	President Point	47.76301811440	122.46531995900
22	President Point	47.76227795780	122.46478860500
23	President Point	47.76153965240	122.46425163200
24	President Point	47.76079984240	122.46372318400
25	President Point	47.76012732540	122.46302154800
26	President Point	47.75945808780	122.46231363200
27	President Point	47.75877611500	122.46163224400
28	President Point	47.75821701680	122.46249970800
29	President Point	47.75769964180	122.46344179800
30	President Point	47.75709757920	122.46424411400
31	President Point	47.75642784290	122.46495166300
32	President Point	47.75568013190	122.46545052600
33	President Point	47.75491428200	122.46589325600
34	President Point	47.75413762450	122.46629389900
35	President Point	47.75340374390	122.46683607100
36	President Point	47.75266140050	122.46720422800
37	President Point	47.75189295980	122.46684018600
38	President Point	47.75123556490	122.46610769300
39	President Point	47.75058390610	122.46579489800
40	President Point	47.74994707310	122.46656628000
41	President Point	47.74921684450	122.46711888700
42	President Point	47.74848682750	122.46768011900
43	President Point	47.74775279740	122.46822961800
44	President Point	47.74701858040	122.46877863300
45	President Point	47.74627675290	122.46930377000
46	President Point	47.74561278720	122.46984543000

DATUM = HARN

Apple Tree Cove and President Point Geoduck Tracts / Large Vessel Traffic Lane Intersection

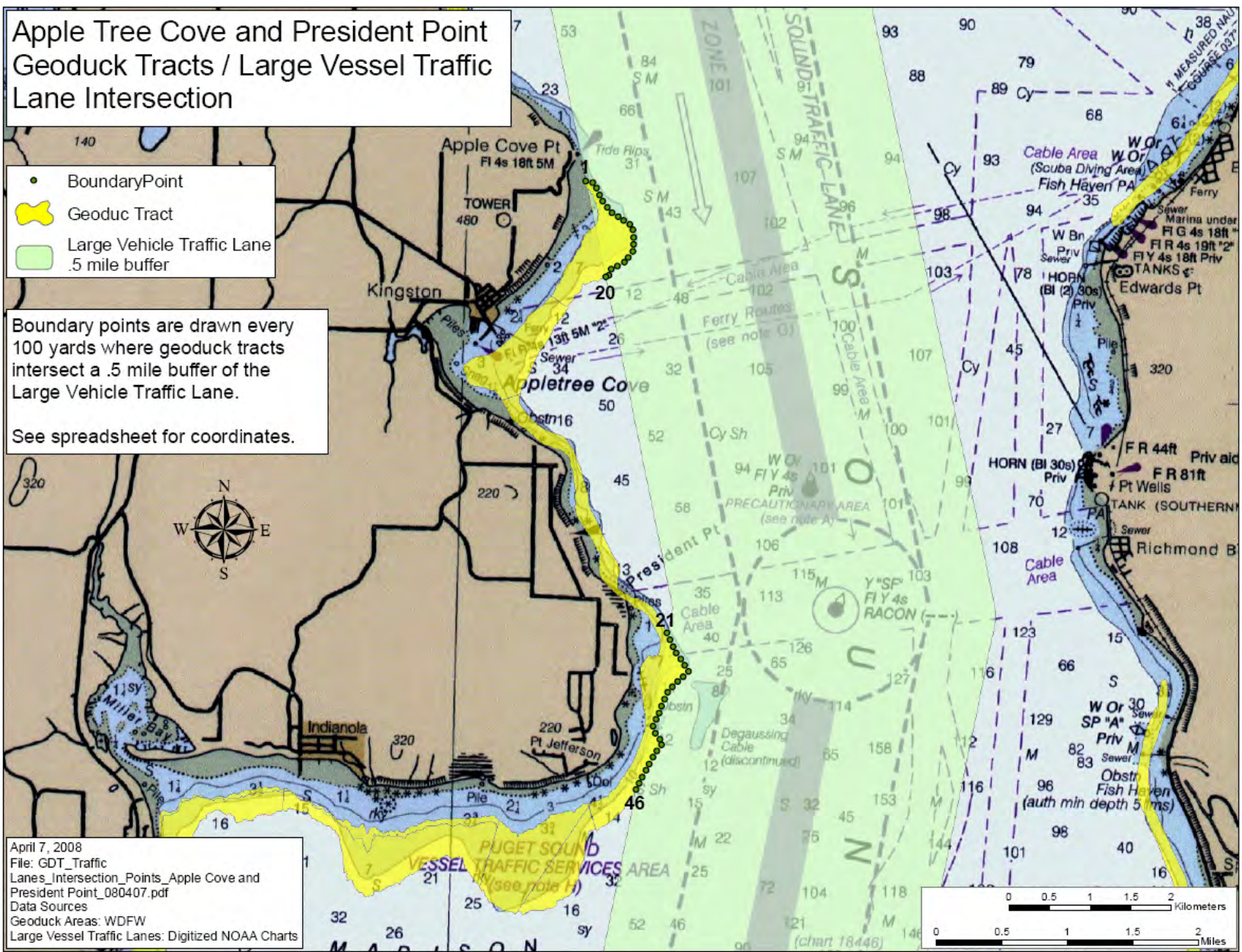
- BoundaryPoint
- Geoduck Tract
- Large Vehicle Traffic Lane
.5 mile buffer

Boundary points are drawn every 100 yards where geoduck tracts intersect a .5 mile buffer of the Large Vehicle Traffic Lane.

See spreadsheet for coordinates.



April 7, 2008
 File: GDT_Traffic
 Lanes_Intersection_Points_Apple Cove and
 President Point_080407.pdf
 Data Sources
 Geoduck Areas: WDFW
 Large Vessel Traffic Lanes: Digitized NOAA Charts

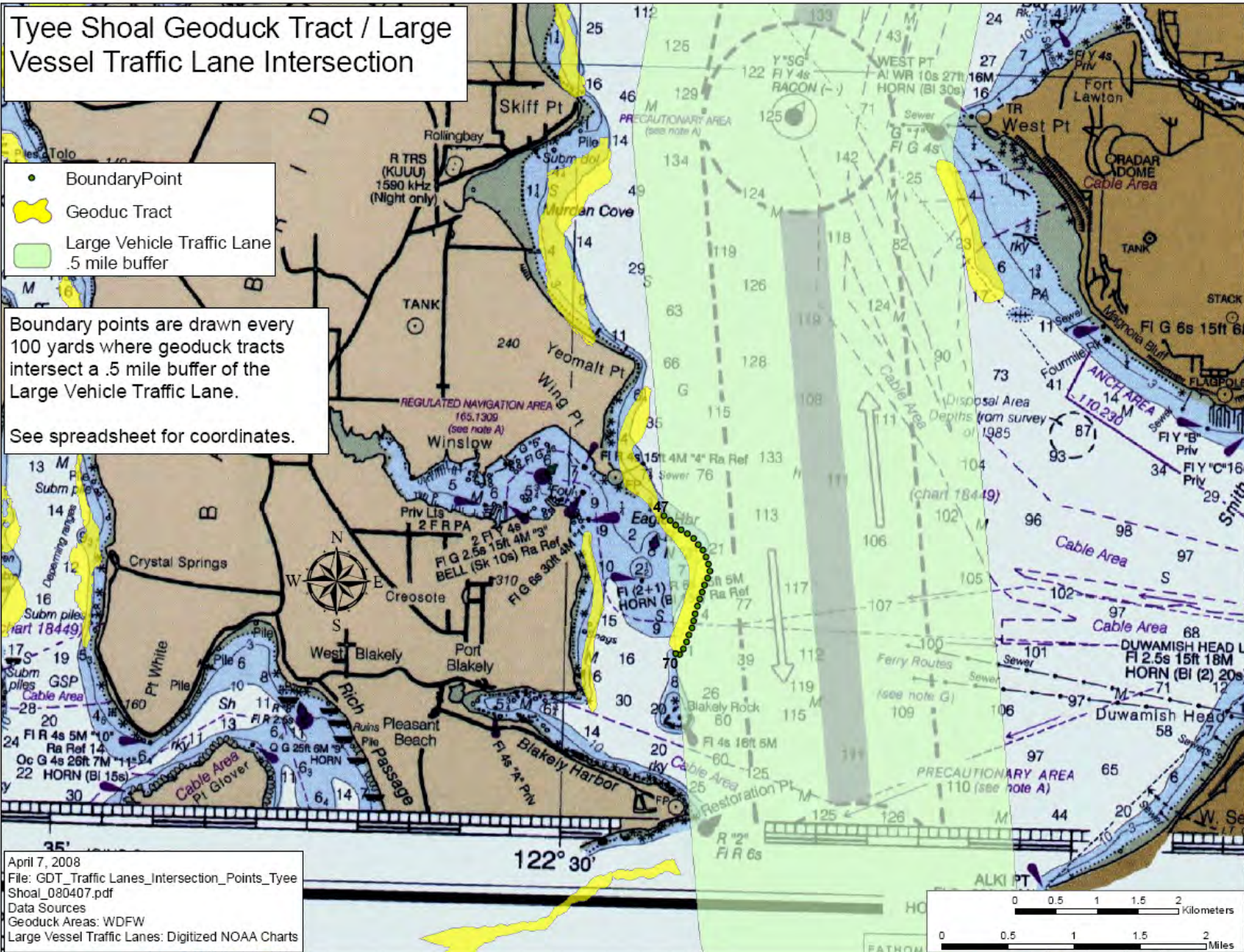


Tyee Shoal Geoduck Tract / Large Vessel Traffic Lane Intersection

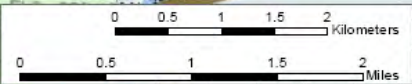
- Boundary Point
- Geoduck Tract
- Large Vehicle Traffic Lane .5 mile buffer

Boundary points are drawn every 100 yards where geoduck tracts intersect a .5 mile buffer of the Large Vehicle Traffic Lane.

See spreadsheet for coordinates.



April 7, 2008
 File: GDT_Traffic Lanes_Intersection_Points_Tyee Shoal_080407.pdf
 Data Sources
 Geoduck Areas: WDFW
 Large Vessel Traffic Lanes: Digitized NOAA Charts



Appendix xi
MEMORANDUM OF UNDERSTANDING
CRUISE OPERATIONS IN
WASHINGTON STATE
SUMMARY OF AMENDMENTS

AMENDMENT NO. 1

Signed July 8, 2005

1. Changing references to the Seattle being the only port berthed to all ports in Washington.
 - While the ships typically call only to Seattle, there is potential for port calls to other ports.
2. Adding a requirement for all vessels within the NWCA to submit an annual report of compliance with MOU.
 - This requirement is being added due to the need to know if ships complied with the MOU whether or not they go through the process of authorization to discharge. For ships that choose to hold their discharge while in Washington waters, it is important to know if they complied.
3. Adding regulation language referenced in Appendix vi to show all effluent limits required for discharge.
 - Ships that discharge must meet the higher standards as set in Alaska which is referenced in the MOU and in appendix vi.

AMENDMENT NO. 2

Signed April 28, 2006

1. Adding a requirement to prohibit the discharge of oily bilge water and a definition was also added. The purpose of this addition is to include specific prohibition language on all major sources of potential pollutants from the vessels.
2. Adding a definition for residual solids. Residual Solids has gone undefined although we have had the requirement to prohibit the discharges. This has been added to clarify exactly what types of residual solids are being managed per this MOU.
3. Adding specific language about what limits must be met for monitoring results. The purpose of this addition is to make it clear to the cruise lines and to the public what limits need to be met.
4. Changing the requirement on WET testing from once per 2 years to once per 40 port calls or turnarounds for vessels that are not homeported due to the fact that vessels come and go from this route from year to year.
5. Other minor changes for organization of the document.

Appendix xi

continued

AMENDMENT NO. 3

Signed May 25, 2007

1. Changing all references and the appendix from the International Council of Cruise Lines (ICCL) to the Cruise Line International Association (CLIA) as the association changed.
2. Adding language about the interagency agreement for cost recovery and referencing the appendix.
3. Changing where residual solids (sludge) can be discharged to disallow any residual solids discharges in the entire Olympic Coast National Marine Sanctuary.
4. Clarifying the language to allow for inspections of all vessels, whether approved for discharge or not for compliance with the MOU. The language currently only allows for inspections of vessels discharging.
5. Clarifying the language to say that all vessels approved for discharge, not just those actually discharging agree to the sampling requirements set out in the MOU. The current language has been confusing for some vessels approved for discharge, but mostly holding discharges anyways.

AMENDMENT NO. 4

1. Incorporating recommendations from the Washington State Department of Health virus report:
 - a) Not allow discharges within a half mile of shellfish beds. Include an appendix identifying the areas where bivalve shellfish beds that are recreationally harvested or commercially approved within half a mile of the shipping lanes and update annually. And include an appendix with background information on the virus related elements.
 - b) Define a “disinfection system upset” condition as a disinfection below levels of four log (99.99%) inactivation of norovirus.
 - c) Require immediate shutdown capability from an upset condition of disinfection below levels of four log (99.99%) inactivation of norovirus for all vessels that have submitted documentation to discharge.
 - d) Require immediate notification to the Department of Health for an upset condition.
2. Require whole effluent toxicity testing for only those vessels that have submitted documentation for continuous discharge.
3. Other minor changes for organization of the document.

Appendix B. Sampling Data for Compliance

Appendix B: Sample Results - Cruise Ships Approved for Discharge into MOU Waters

SHIP: NORWEGIAN PEARL											
		pH	BOD ³	TSS ⁴	Chlorine Residual ⁵	Fecal Coliform ⁶	Ammonia	Copper (dissolved)	Nickel (dissolved)	Zinc (dissolved)	Comments
		St. Units	mg/l	mg/l	mg/l	#/100 ml	mg/l	ug/l	ug/l	ug/l	
MOU/Alaska Limits ¹		6-9	30/45	30/45	10 ug/l	20 / 40					
WA State Water Quality Standards ²		7.0-8.5	NA	NA	13 / 7.5 ug/l	14 / 43					
Sample Date	Location/ Lab										
5/12/2009	Juneau/Admiralty/Microbac	6.92	6.9	7	ND	ND	9.6	15	5.4	110	
5/17/2009	Seattle/Pace Analytical	6.7	ND	5	ND	ND	NA	NA	NA	NA	
5/19/2009	Juneau/Admiralty/Microbac	6.74	4.7	6	ND	ND	41	20	6.2	71	
5/26/2009	Juneau/Admiralty/Microbac	6.93	2.8	ND	ND	ND	45	9.3	5	77	
6/2/2009	Juneau/Admiralty/Microbac	6.90	ND	4	ND	ND	45	11	5.2	110	
6/9/2009	Juneau/Admiralty/Microbac	6.90	4.8	14	ND	ND	50	12	4.9	93	
6/14/2009	Seattle/Pace Analytical	6.5	ND	10	ND	ND	NA	NA	NA	NA	
7/7/2009	Juneau/Admiralty/Microbac	6.80	ND	26	ND	112	56	26	8.5	52	
7/12/2009	Seattle/Pace Analytical	6.7	ND	2	ND	ND	NA	NA	NA	NA	
7/14/2009	Juneau/Admiralty/Microbac	6.64	NA	NA	ND	ND	NA	NA	NA	NA	
7/14/2009	Juneau/Admiralty	NA	NA	NA	NA	ND	NA	NA	NA	NA	
7/14/2009	Juneau/Admiralty	6.65	2.1	ND	ND	ND	35	14	5.2	77	
7/21/2009	Juneau/Admiralty	NA	NA	NA	NA	ND	NA	NA	NA	NA	
7/21/2009	Juneau/Admiralty	NA	NA	NA	NA	ND	NA	NA	NA	NA	
7/21/2009	Juneau/Admiralty	NA	NA	NA	NA	ND	NA	NA	NA	NA	
7/28/2009	Juneau/Admiralty/Microbac	6.28	2.6	ND	ND	ND	38	43	12	31	
7/28/2009	Juneau/Admiralty	NA	NA	NA	NA	4	NA	NA	NA	NA	
7/28/2009	Juneau/Admiralty	NA	NA	NA	NA	ND	NA	NA	NA	NA	
8/4/2009	Juneau/Admiralty/Microbac	6.60	ND	ND	ND	ND	41	18	6.1	87	
8/18/2009	Juneau/Admiralty/Microbac	6.68	5	ND	ND	ND	42	13	5.7	66	
8/30/2009	Seattle/Spectra	6.42	ND	2	ND	ND	NA	NA	NA	NA	
9/1/2009	Juneau/Admiralty/Microbac	6.59	ND	ND	ND	ND	48	22	6.2	86	
9/8/2009	Juneau/Admiralty/Microbac	6.67	ND	4	ND	ND	43	22	6.2	100	
9/13/2009	Seattle/Spectra	6.8	4.8	2.8	ND	ND	NA	NA	NA	NA	
	MINIMUM	6.28	ND	ND	ND (<0.1)	ND	9.6	9.3	4.9	31	met Seattle sampling requirement
	AVERAGE		3.0	6.3			41.1	18.8	6.4	80	
	MAXIMUM	6.93	6.9	26	ND (<0.1)	112	56.0	43.0	12.0	110	
	GEOMETRIC MEAN					2.43					

SHIP: NORWEGIAN STAR											
		pH	BOD ³	TSS ⁴	Chlorine Residual ⁵	Fecal Coliform ⁶	Ammonia	Copper (dissolved)	Nickel (dissolved)	Zinc (dissolved)	Comments
		St. Units	mg/l	mg/l	mg/l	#/100 ml	mg/l	ug/l	ug/l	ug/l	
MOU/Alaska Limits ¹		6-9	30/45	30/45	10 ug/l	20 / 40					
WA State Water Quality Standards ²		7.0-8.5	NA	NA	13 / 7.5 ug/l	14 / 43					
Sample Date	Location/ Lab										
4/29/2009	Juneau/Admiralty/Microbac	7.03	3.6	5	ND	ND	33	3.4	14	91	
5/5/2009	Juneau/Admiralty/Microbac	7.01	ND	ND	ND	ND	26	6	12	82	
5/12/2009	Juneau/Admiralty/Microbac	7.02	3.6	9	ND	ND	28	6.0	7.1	35	
5/16/2009	Seattle/Pace Analytical	6.9	ND	ND	ND	ND	NA	NA	NA	NA	
5/18/2009	Juneau/Admiralty/Microbac/Rd	6.9	2.6	ND	ND	ND	2.3	5.5	6.9	47	
6/9/2009	Juneau/Admiralty/Microbac	7.1	3	4	ND	ND	66	4.2	8.7	51	
6/13/2009	Seattle/Pace Analytical	7.1	4.2	5	ND	ND	NA	NA	NA	NA	
6/16/2009	Juneau/Admiralty/Microbac	6.76	5.9	ND	ND	ND	11	3.4	8.3	44	
7/7/2009	Juneau/Admiralty/Microbac	6.93	7	4	ND	ND	28	4.2	11	82	
7/11/2009	Seattle/Pace Analytical	7.0	6.6	2	ND	ND	NA	NA	NA	NA	
7/14/2009	Juneau/Admiralty/Microbac	6.88	12.3	ND	ND	ND	28	2.5	14	70	
7/28/2009	Juneau/Admiralty/Microbac	7.14	11	ND	ND	ND	32	7.1	13	58	
7/28/2009	Juneau/Admiralty/Microbac	NA	8.2	4	ND	ND	30	3.7	12	53	Blind Duplicate

8/4/2009	Juneau/Admiralty/Microbac	7.04	13	ND	ND	2	20	5.4	18	95	
8/11/2009	Juneau/Admiralty/Microbac	7.05	14.1	4	ND	2	21	3.8	14	86	
8/15/2009	Seattle/Spectra	7.07	ND	5.5	ND	ND	NA	NA	NA	NA	
9/1/2009	Juneau/Admiralty/Microbac	6.74	ND	ND	ND	4	21	4.1	13	73	
9/8/2009	Juneau/Admiralty/Microbac	6.78	18	ND	ND	5	25	3.5	18	90	
9/12/2009	Seattle/Spectra	6.6	17	5.2	ND	21	NA	NA	NA	NA	
*fecal coliform analysis demonstrated confluent growth, so results not quantifiable. Re-sample ordered.											
	MINIMUM	6.6	ND	ND	ND (<0.1)	ND	2.3	2.5	6.90	35	met Seattle sampling requirement
	AVERAGE		7.3	4.4			26.5	4.5	12.1	68.4	
	MAXIMUM	7.14	18	9	ND (<0.1)	21	66	7	18	95	
	GEOMETRIC MEAN					2.46					

ND = Non Detect, value in box is the detection level. Unannounced sampling includes other parameters not listed above.

BOD = Biochemical Oxygen Demand - or organics; TSS = Total Suspended Solids

mg/l = milligrams per liter; ug/l = micrograms per liter; #/100 ml = coliforms per 100 milliliters

¹MOU/Alaska limits from Title XIV, Certain Alaska Cruise Ship Operations, Section 1404(c) /40CFR 133.102

BOD and TSS: 30-day average shall not exceed 30 mg/l, 7-day average shall not exceed 45 mg/l

Fecal Coliform: geometric mean of any 30-day period shall not exceed 20 fecal coliform/100 ml and not more than 10% of the samples exceed 40 fecal coliform/100 ml

²Washington State Water Quality Standards for Surface Waters of the State of Washington Chapter 173-201A WAC

Fecal Coliform: shall not exceed a geometric mean of 14 colonies/100 ml and not more than 10% of a samples shall exceed a geometric mean of 43 colonies/100 ml

pH: 7-8.5 with a human-caused variation within less than 0.2

chlorine: 13 ug/l is the acute limit (1-hour average); 7.5 ug/l is the chronic limit (4-day average)

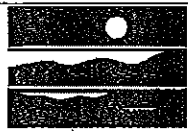
³BOD detection level = 2 mg/l

³TSS detection level = 4 mg/l

³Chlorine Residual detection level = 0.1 mg/l

³Fecal Coliform detection level = 2 #/100 ml

Appendix C. Inspection Reports



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

Northwest Regional Office
 3190 160th Ave SE
 Bellevue, WA 98008
 Phone: (425) 649-7000 Fax: (425) 649-7098

Section A: General Information

Vessel Name:	PACIFIC PRINCESS	Date:	July 9, 2009
Vessel Operator:	Princess Cruises	Entry Time:	9:29 AM
Vessel Type:	Passenger Ship	Exit Time:	11:09 AM
Location:	Terminal 91, Seattle	Notification (name & date):	D. Hutchinson on July 2, 2009
On-board contact(s):	Mike Hennessy, Environmental Officer; Pino Budisa, Senior First Engineer		
Inspector(s):	Amy Jankowiak, Department of Ecology, Water Quality Program		
# passengers/crew:	Actual: ~630 passenger/ ~340 crew		

The PACIFIC PRINCESS arrived on May 14, 2009 at the Port of Seattle to begin the 2009 cruise season for 14 day cruises through mid-September. The vessel uses a Hamworthy biological membrane reactor and ultrafiltration system for treatment of black and gray water. The system includes screening via a screen press, biological treatment via bio-reactors with inter-stage filters and a membrane system, and ultraviolet light disinfection. The vessel is not approved for discharge in MOU waters and has been holding effluent and not discharging in MOU waters since the beginning of the season.

Section B: 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"/>	Operations & Maintenance	<input checked="" type="checkbox"/>	Sludge Handling/Disposal	<input checked="" type="checkbox"/>	Oily bilge water	<input checked="" type="checkbox"/>	Other

Section C: For vessels discharging ≥ 1nm from berth and ≥ 6 knots only [2.1.3(A)]

<input type="checkbox"/>	Schematics match black/gray wastewater system	Not Applicable
<input type="checkbox"/>	Operations as described in submitted documentation	Not Applicable
<input type="checkbox"/>	Daily 24-hour continuous monitoring for turbidity or equivalent monitoring	Not Applicable
<input type="checkbox"/>	Turbidimeter or equivalent monitoring equipment functioning properly	Not Applicable
<input type="checkbox"/>	Auto shut down or operational controls to insure system shut down if high turbidity occurs	Not Applicable
	<u>Turbidity or equivalent:</u> Last calibration Trigger level for early alarm: Trigger level for shutdown: Recorded turbidity/equivalent levels above triggers:	
<input type="checkbox"/>	Daily 24-hour continuous monitoring for disinfection effectiveness	Not Applicable
<input type="checkbox"/>	Disinfection effectiveness monitoring equipment functioning properly	Not Applicable
	<u>Disinfection Effectiveness Monitoring:</u>	
<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	Not Applicable
	<u>Disinfection System:</u>	

Section D: For vessels discharging continuously [2.1.3(B)]		
<input type="checkbox"/>	Schematics match black/gray wastewater system	Not Applicable
<input type="checkbox"/>	Operations as described in submitted documentation	Not Applicable
<input type="checkbox"/>	Daily 24-hour continuous turbidity or equivalent monitoring	Not Applicable
<input type="checkbox"/>	Turbidimeter or equivalent monitoring equipment functioning properly	Not Applicable
<input type="checkbox"/>	Auto shut down or operational controls to insure system shut down if a high turbidity occurs	Not Applicable
	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	Not Applicable
<input type="checkbox"/>	Disinfection effectiveness monitoring equipment functioning properly	Not Applicable
	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	Not Applicable
<input type="checkbox"/>	Disinfection immediately prior to discharge	Not Applicable
	Disinfection System:	

Section E: General (Approved to Discharge)		
<input type="checkbox"/>	No discharges within 1/2 mile from shellfish beds/protocol (President's Point, Apple Tree Cove, Tye Shoal)	Not Applicable
<input type="checkbox"/>	Discharges immediately stopped when high turbidity occurs	Not Applicable
<input type="checkbox"/>	Discharges immediately stopped when disinfection system upset occurs	Not Applicable
<input type="checkbox"/>	Immediate notifications made to Health for disinfection system upset	Not Applicable
<input type="checkbox"/>	Sampling conducted 2/month, 1/month in Seattle (BOD, TSS, fecal coliform, pH, chlorine residual)	Not Applicable
<input type="checkbox"/>	Whole Effluent Toxicity Testing 1 per 2 years (homeported) or once/40 calls for continuous	Not Applicable

Section F: General		
<input checked="" type="checkbox"/>	Discharge records review	Discharge records were reviewed (blackwater/graywater/residual solids) and are maintained properly. No discharges in MOU waters were present from the beginning of the 2008 cruise season to present.
<input checked="" type="checkbox"/>	Residual solids managed properly/ disposal protocol per MOU	Residual solids are either incinerated or held to be discharged at greater than 12 nautical miles and outside of MOU waters and the Olympic Coast National Marine Sanctuary.
<input checked="" type="checkbox"/>	Hazardous Waste managed properly	All hazardous waste that is collected is being sent off-shore in Victoria, Canada. Records were reviewed for hazardous waste discharges.
<input checked="" type="checkbox"/>	WA Haz Waste guidelines followed (appendix vii)	All hazardous waste that is collected is being sent off-shore in Victoria, Canada. Records were reviewed for hazardous waste discharges.
<input checked="" type="checkbox"/>	Solid Waste managed properly	Solid waste is being managed properly. The various solid waste streams are collected, sorted, stored, and sent ashore or incinerated as appropriate. Records were reviewed for garbage off-loads.
<input checked="" type="checkbox"/>	Oily bilge water managed properly	Oily bilge water is treated and discharged at less than 15 ppm and outside of MOU waters.
	Other:	

Health = Washington State Department of Health

Section G: Sample Results

Parameter	Results
Biochemical Oxygen Demand 5-Day (BOD)	Not Applicable
Total Suspended Solids (TSS)	Not Applicable
Fecal Coliform	Not Applicable
Residual Chlorine	Not Applicable
pH	Not Applicable
Ammonia, Nitrogen	Not Applicable

Section H: Summary of Findings/Comments

Introduction

Amy Jankowiak, Washington State Department of Ecology (Ecology) Northwest Regional Office, Water Quality Program (NWRO-WQ) conducted the inspection of the Princess Cruises PACIFIC PRINCESS on July 9, 2009. The main contacts on board the PACIFIC PRINCESS included Mike Hennessy, Environmental Officer, and Pino Budisa, Senior First Engineer. Prior notification of the visit was given on July 2, 2008 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. A copy of the current MOU was on-board. The PACIFIC PRINCESS is not approved to discharge in MOU waters. The vessel has not been discharging and is holding effluent until outside MOU waters.

The PACIFIC PRINCESS was placed into service in 1971 (has changed names/ownership since), and is 168.8 meters long.

Inspection

I arrived and boarded the ship (photo #01) at about 9:29 am and began with introductions and a plan for the day with Mike Hennessy, the Environmental Officer. Mr. Hennessy has been an Environmental Officer for about 18 months and has been on the PACIFIC PRINCESS for about three months. We then discussed various waste streams, and the discharge protocols. Pino Budisa, Senior First Engineer is the operator of the black water and gray water Hamworthy system (two years of experience in this position). Mr. Budisa joined us for a more detailed discussion of the Hamworthy system. We then toured the garbage and recycling area and then reviewed records including those for blackwater and graywater discharges and hazardous waste off-loads, as well as garbage and oil sludge. Next, we viewed the Hamworthy system and the oily bilge system. We finished the inspection on the bridge with a review of the electronic navigation and tracking system. The inspection was then finalized with a debriefing and I disembarked the vessel at about 11:09 am.

Discharge Types and Protocols:

If the vessel is in an area where a discharge is allowed, the Bridge notifies the staff in the Engine Control Room (ECR). The Watchkeepers have the authority to then discharge and have "key" access for the overboard ports (photos #11 and #12). For blackwater and graywater, the latitude and longitude coordinates are recorded in the *Sewage and Graywater Discharge Record Book* and in the deck log. 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. All discharge records that were reviewed appeared to be in compliance with the MOU and also did not occur in MOU waters.

Blackwater, which includes toilet waste (and the medical drains) and graywater which includes sink and shower water is treated with a Hamworthy advanced wastewater treatment system and is currently discharged outside of MOU waters. The vessel has the capacity to hold a discharge for about three days. Laundry water and galley water is collected separately and held for discharge outside of MOU waters.

Screenings and grit from the Hamworthy system are collected and incinerated. The solids separated out by the bioreactors is discharged outside of MOU waters, >12 nautical miles from shore, and outside of the Olympic Coast National Marine Sanctuary.

Pool and spa water is discharged outside of 12 nautical miles. Spa water no longer has to be emptied overboard every 24 hours. The water can now be shocked when in a location close to shore.

Food waste is collected in various locations, is sent through a pulper. The water is recirculated and eventually held and discharged outside of MOU waters. The solid food material from the pulpers is discharged outside of 12 nautical miles and outside MOU waters. Cooking oil (photo #04) and grease, is collected and recycled for biodiesel.

Oily bilge water is treated with an oily water separator (photo #09) and discharged at less than 15 ppm after first going through a white box (photo #10) for monitoring.

Potable water is bunkered now and then, while the rest is produced by desalination. The water is chlorinated and pH is adjusted.

The vessel does not offer traditional chemical dry cleaning, only a delicate wet-cleaning detergent. Other hazardous wastes (photo #07) include chemicals, refrigeration oils, printer cartridges, paints, oil filters, batteries, bulbs (no crusher on board), sludge oil, aerosols (punctured), and sharps. Silver is captured from the photo and x-ray waste, and is treated to less than 5 ppm. All hazardous waste is off-loaded in Victoria. Expired medications are logged and sent ashore. Controlled drugs are incinerated with witnesses. Most oily rags are incinerated along with materials such as paper, cardboard, and some plastics (photo #08).

Plastics, garbage, and other materials are collected and sorted (photo #03) on a sorting table. Most materials are then condensed (photos #02 and #05) and recycled on-shore. Glass, aluminum (photo #06), tin, and plastics are all recycled along with other materials.

An electronic navigational tracking system (photo #23) is used on the vessel. The location of every discharge beginning and ending is recorded in the system as well as noted by paper log. This system allows for looking back at where any discharge took place as was done for one such discharge during the inspection. The discharges took place outside of MOU waters.

Black water and Gray water System:

The Hamworthy system consists of two separate membrane bioreactors (MBRs). Both MBRs are typically run at the same time, although one of the MBRs can go off-line for maintenance. Black water, which includes toilet waste and the medical drains is collected by vacuum to one of two collection tanks and then combines with gray water which includes sink and shower water and has been piped to one of five collection tanks. Combined gray and black water flow moves to the screen press (photo #15). The solids are screened into bags (photo #16) and are then sent to the incinerator. The liquid moves to the 1st stage (photo #17) of the membrane bioreactor where aeration occurs. Two types of "good" bacteria are also injected. From the 1st stage, flow moves to the inter-stage filters (photo #18). The inter-stage filtered solids are returned back to the screen press. The liquid moves onto the 2nd stage (photo #19) of the MBR for further aeration. From the 2nd stage MBR, flow is sent to the membrane modules (photo #20) for ultrafiltration. Effluent from the MBR's is approximately 1% solids. Effluent from the membrane modules are sent to a permeate tank (photo #14) where turbidity is monitored. Flow then combines with the other two MBR's for ultraviolet (UV) disinfection (photo #21). Disinfected effluent either goes directly overboard or to a holding tank if not in an approved area for discharge. The held effluent will eventually go back through the entire Hamworthy system before discharge. Currently, effluent is held and discharged outside of MOU waters. There is a sample port for treated effluent after UV disinfection (photo #22).

Turbidity is measured continuously on each of the MBR permeate tanks (photo #13). The meters are alarmed to automatically shutdown at 20 NTU maximum. The UV system consists of 6 bulbs which are alarmed. If the bulbs fail or the power goes out, the discharge automatically stops. At least two sets of spare bulbs are typically available on board. The filters for the interstage filters are replaced about every ten days. The maintenance system provides details of when all maintenance is needed. Representatives from Hamworthy visit the ship about once every six months.

The staff have a small laboratory on board where they sample for such parameters as pH, total and free chlorine, total suspended solids (TSS), e-coli, fecal coliform, and ammonia. Most parameters are tested daily, with the exception of TSS and coliforms which are every other day. The on-board sampling allows for immediate results and a chance for immediate corrections to the system.

If a non-compliance with the MOU occurs, the protocol is for the Environmental Officer to notify their head office, who then directs the local authority contacting. The Environmental Officer would also file an incident report to the head office.

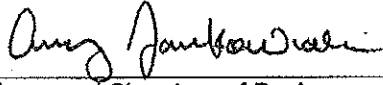
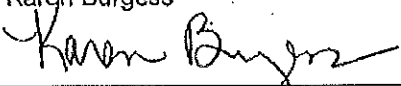
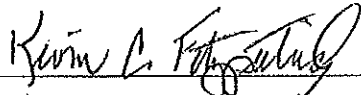
Conclusions and Recommendations

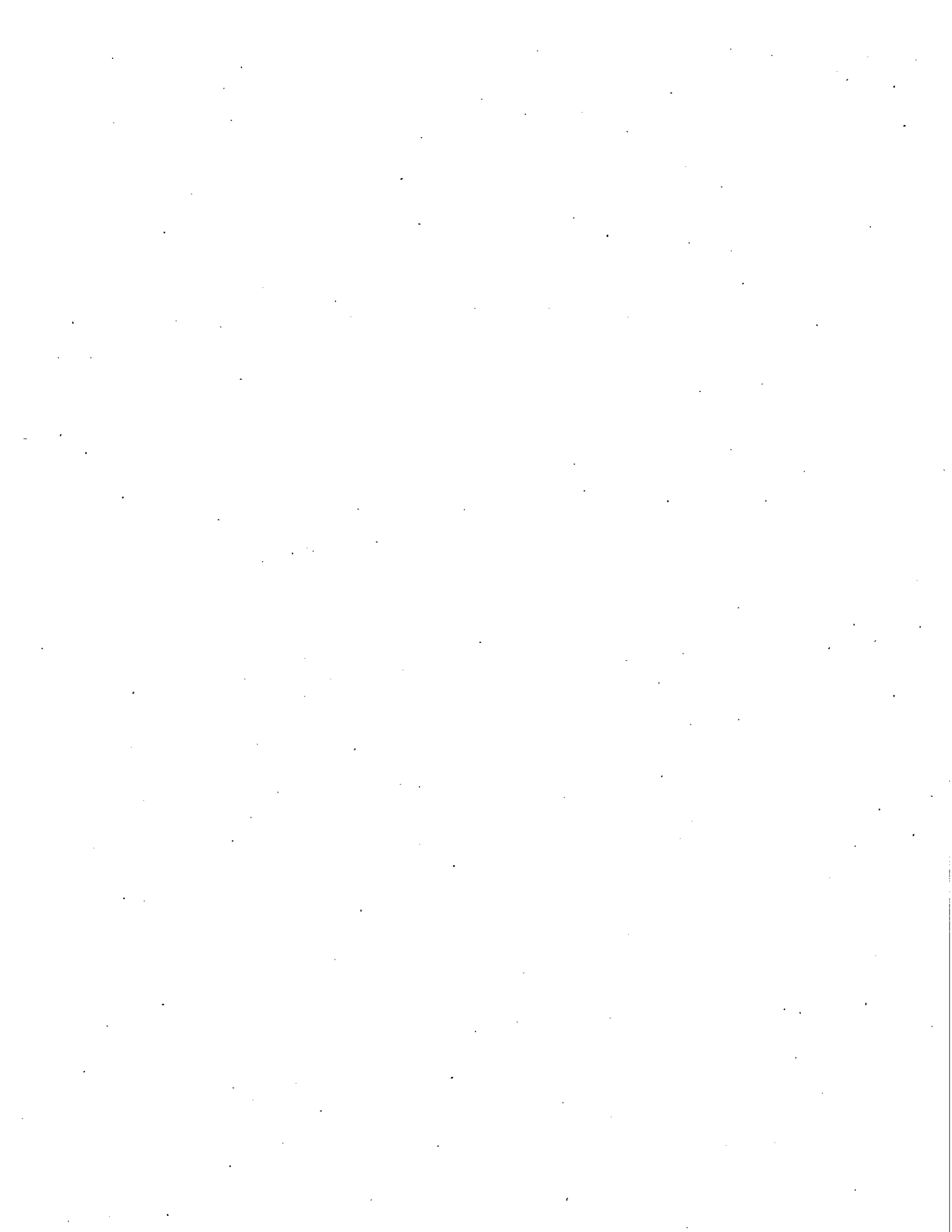
It is recommended that staff continue to work towards high functioning wastewater treatment systems. The staff on board the vessel were very knowledgeable of the systems and protocols.

The laboratory testing on-board is an excellent way to monitor and make needed adjustments to the system. Having a laboratory on-board for the testing is ideal.

Attachments:
Photographs

Copies to:
 Andrew Lorenzana, Princess Cruises
 Mike Hennessey, Environmental Officer
 Amy Jankowlak, Ecology
 Karen Burgess, Ecology
 Mark Toy, Health
 Kevin Fitzpatrick, Ecology
 Central Files: Princess Cruises – PACIFIC PRINCESS; WQ 6.1

<u>Section I: Signatures</u>		
<u>Name and Signature of Inspector</u>	<u>Agency/Office/Telephone</u>	<u>Date</u>
Amy Jankowlak 	Department of Ecology/Northwest Regional Office/Water Quality Program/Municipal Compliance Specialist/(425) 649-7195	7/13/09
Karen Burgess 	Department of Ecology/Northwest Regional Office/Water Quality Section Manager/(425) 649-7207	7/16/09
Kevin C. Fitzpatrick 	Department of Ecology/Northwest Regional Office/Water Quality Section Manager/(425) 649-7033	7/16/09



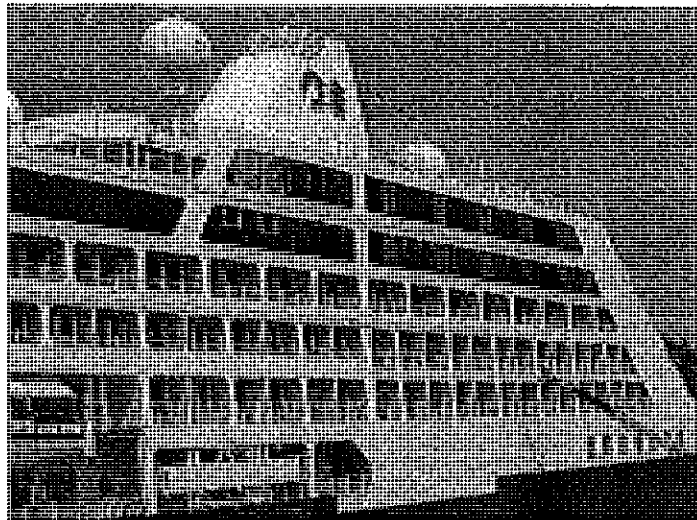


PHOTO #:01 DATE: JULY 9, 2009
TAKEN BY: AMY JANKOWIAK FILE No.:P7090028
DESCRIPTION: PACIFIC PRINCESS VESSEL, SEATTLE

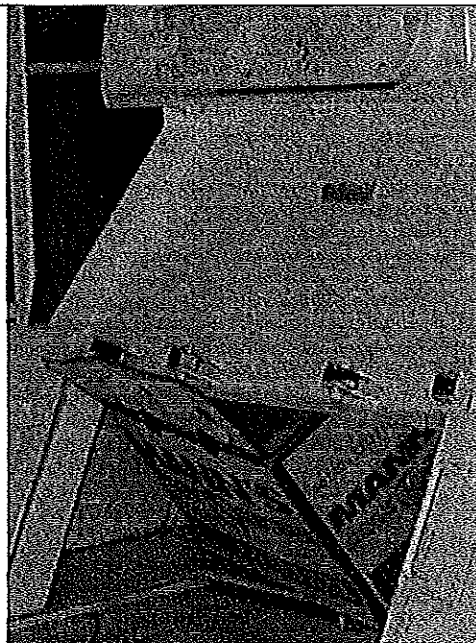


PHOTO #:02 DATE: JULY 9, 2009
TAKEN BY: AMY JANKOWIAK FILE No.: P7090005
DESCRIPTION: GARBAGE/RECYCLING ROOM - CARDBOARD
COMPACTOR



PHOTO #:03 DATE: JULY 9, 2009
TAKEN BY: AMY JANKOWIAK FILE No.: P7090006
DESCRIPTION: GARBAGE/RECYCLING ROOM - SORTING AREA



PHOTO #:04 DATE: JULY 9, 2009
TAKEN BY: AMY JANKOWIAK FILE No.: P7090007
DESCRIPTION: GARBAGE/RECYCLING ROOM - USED COOKING
OIL

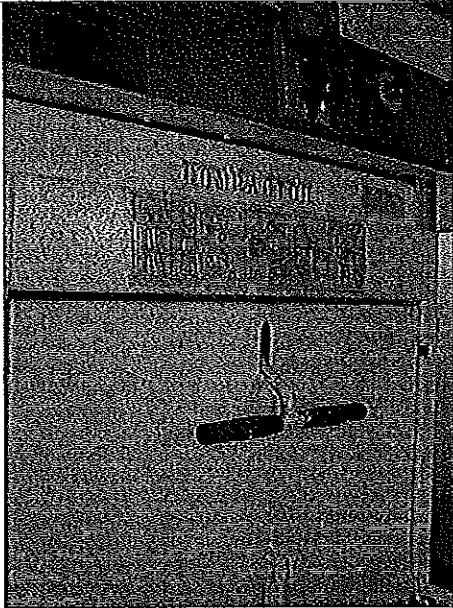


PHOTO #:05 DATE: JULY 9, 2009
TAKEN BY: AMY JANKOWIAK FILE No.:P7090008
DESCRIPTION: GARBAGE/RECYCLING ROOM – COMPACTOR

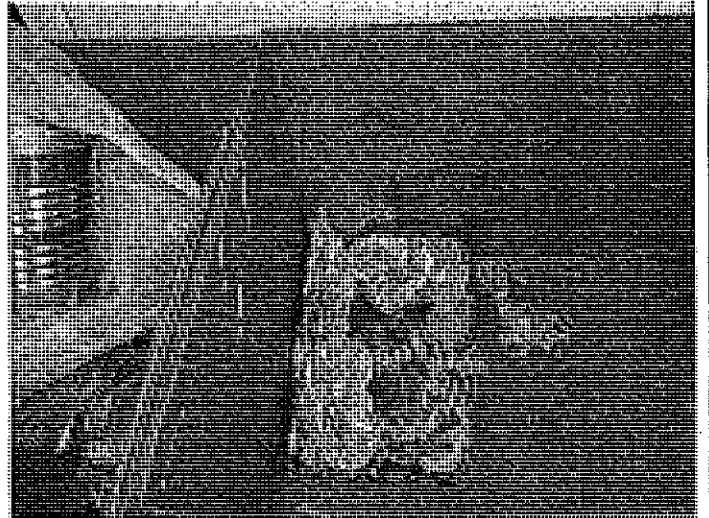


PHOTO #:06 DATE: JULY 9, 2009
TAKEN BY: AMY JANKOWIAK FILE No.: P7090009
DESCRIPTION: GARBAGE/RECYCLING ROOM –ALUMINUM/TIN

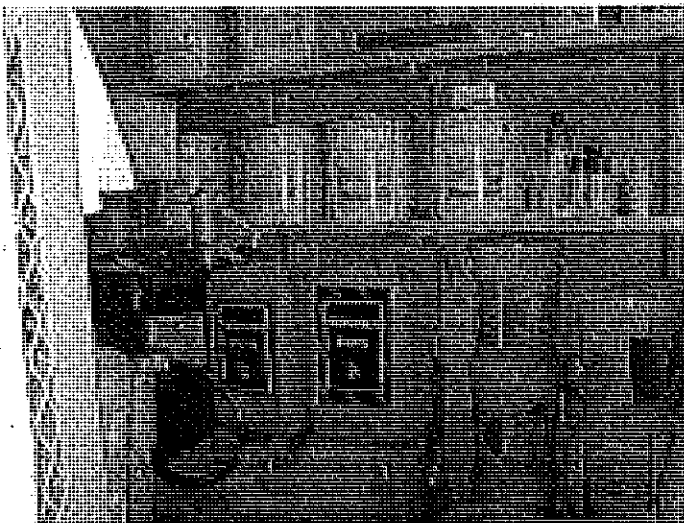


PHOTO #:07 DATE: JULY 9, 2009
TAKEN BY: AMY JANKOWIAK FILE No.: P7090010
DESCRIPTION: HAZARDOUS WASTE STORAGE

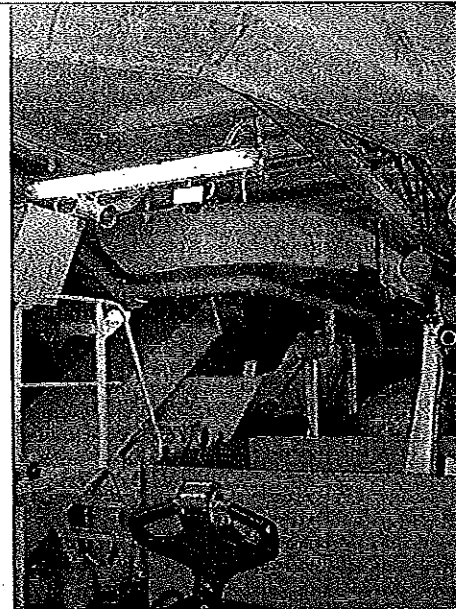


PHOTO #:08 DATE: JULY 9, 2009
TAKEN BY: AMY JANKOWIAK FILE No.: P7090011
DESCRIPTION: GARBAGE/RECYCLING ROOM –MATERIAL TO
INCINERATOR

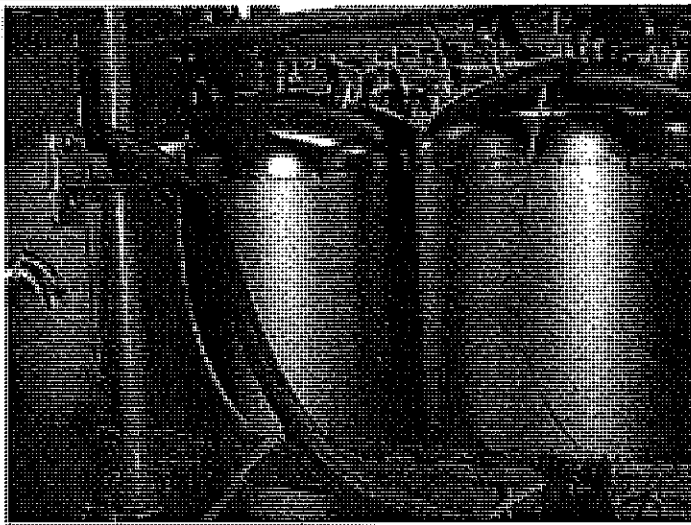


PHOTO #:09 DATE: JULY 9, 2009
TAKEN BY: AMY JANKOWIAK FILE No.:P7090013
DESCRIPTION: OIL/WATER SEPARATOR

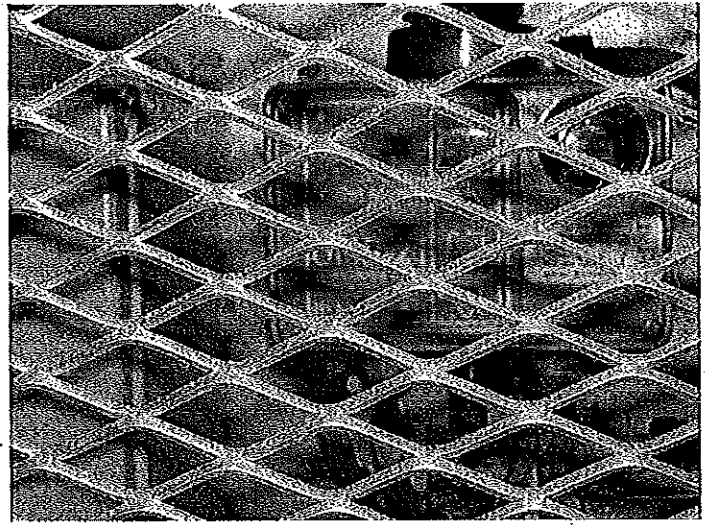


PHOTO #:10 DATE: JULY 9, 2009
TAKEN BY: AMY JANKOWIAK FILE No.: P7090012
DESCRIPTION: OIL/WATER SEPARATOR WHITE BOX

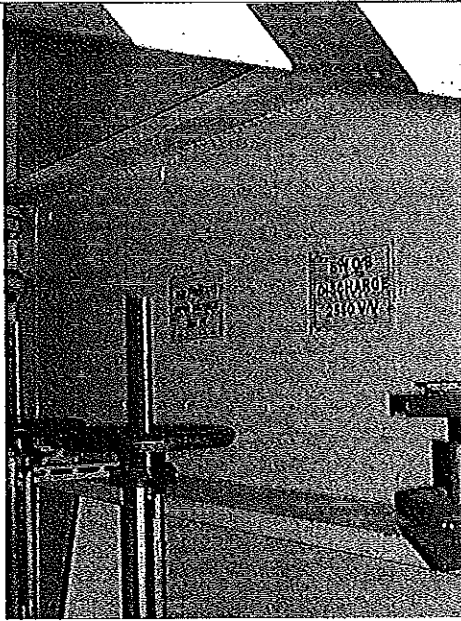


PHOTO #:11 DATE: JULY 9, 2009
TAKEN BY: AMY JANKOWIAK FILE No.: P7090014
DESCRIPTION: BLACKWATER/GRAYWATER OVERBOARD
DISCHARGE PORTS

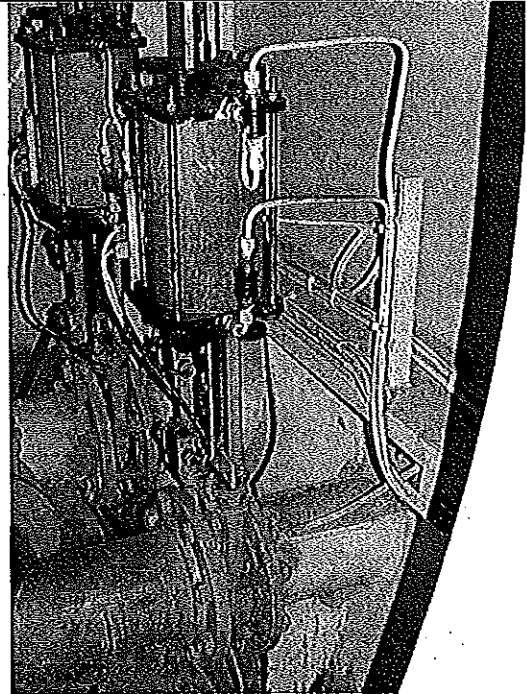


PHOTO #:12 DATE: JULY 9, 2009
TAKEN BY: AMY JANKOWIAK FILE No.: P7090015
DESCRIPTION: BLACKWATER/GRAYWATER OVERBOARD
DISCHARGE PORTS

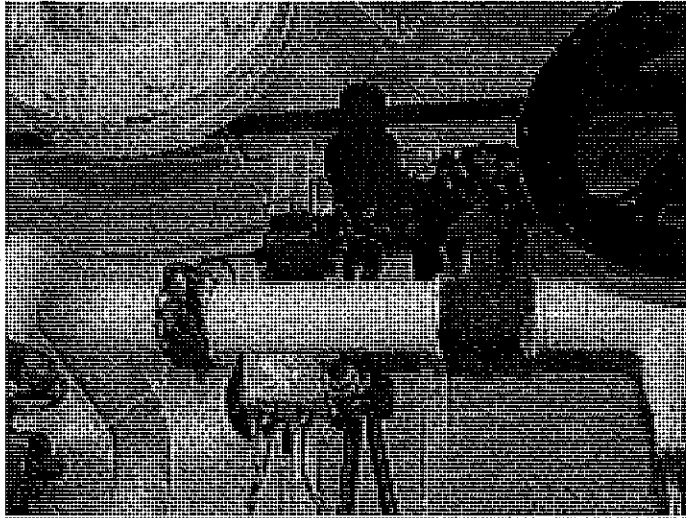


PHOTO #:13 DATE: JULY 9, 2009
TAKEN BY: AMY JANKOWIAK FILE No.:P7090016
DESCRIPTION: MBR - TURBIDIMETER

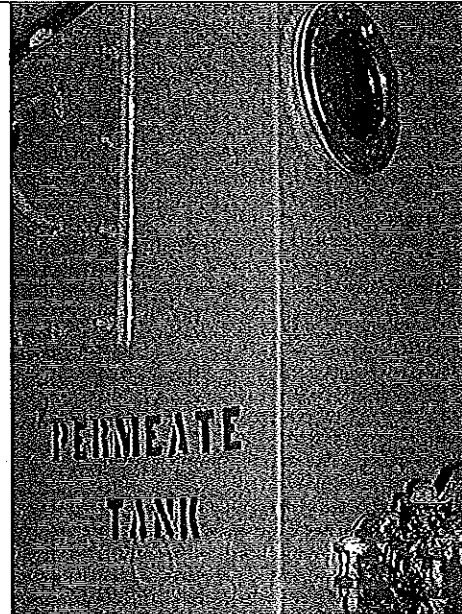


PHOTO #:14 DATE: JULY 9, 2009
TAKEN BY: AMY JANKOWIAK FILE No.: P7090017
DESCRIPTION: MBR - PERMEATE TANK

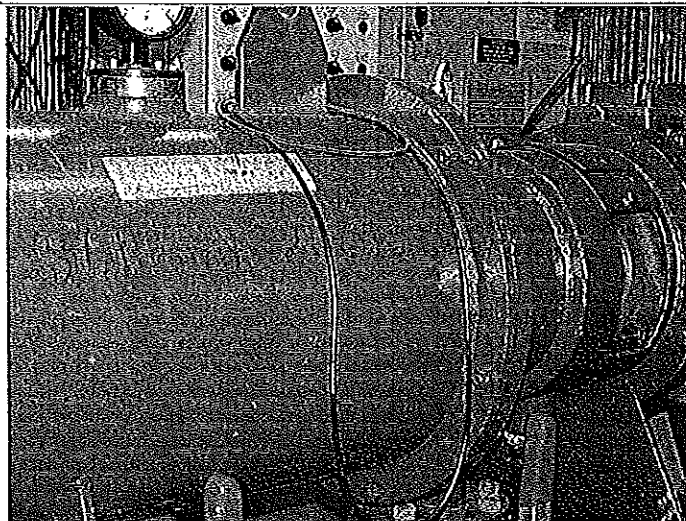


PHOTO #:15 DATE: JULY 9, 2009
TAKEN BY: AMY JANKOWIAK FILE No.: P7090018
DESCRIPTION: MBR - SCREEN PRESS



PHOTO #:16 DATE: JULY 9, 2009
TAKEN BY: AMY JANKOWIAK FILE No.: P7090019
DESCRIPTION: MBR- SCREEN PRESS SCREENINGS

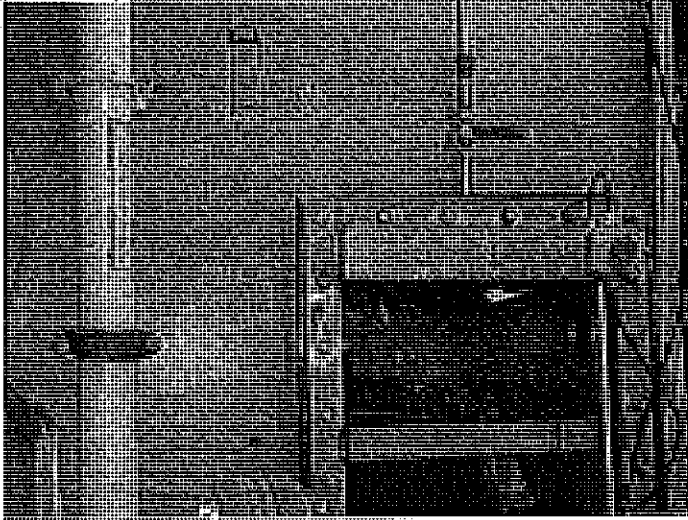


PHOTO #:17 DATE: JULY 9, 2009
TAKEN BY: AMY JANKOWIAK FILE No.: P7090020
DESCRIPTION: MBR - 1ST STAGE

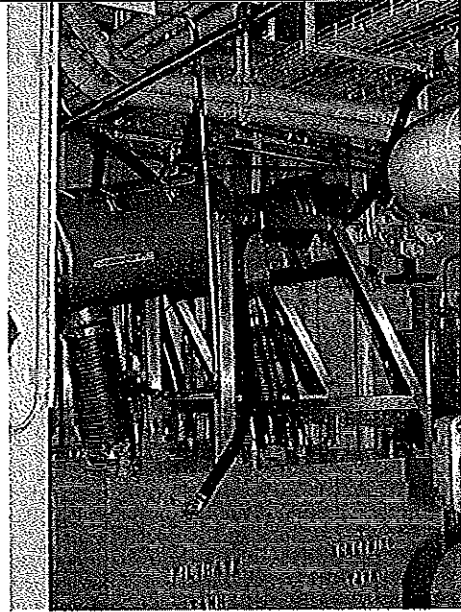


PHOTO #:18 DATE: JULY 9, 2009
TAKEN BY: AMY JANKOWIAK FILE No.: P7090021
DESCRIPTION: MBR - INTERSTAGE FILTERS

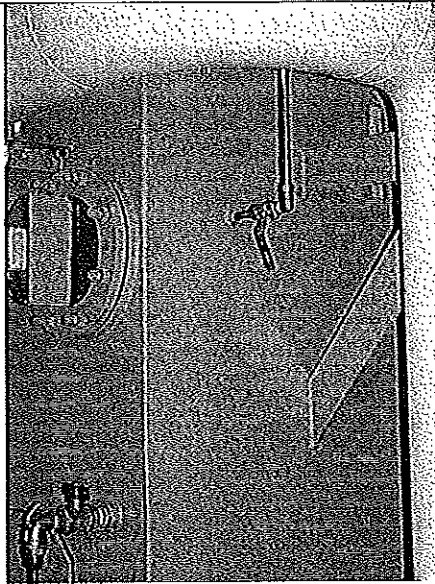


PHOTO #:19 DATE: JULY 9, 2009
TAKEN BY: AMY JANKOWIAK FILE No.: P7090022
DESCRIPTION: MBR - 2ND STAGE

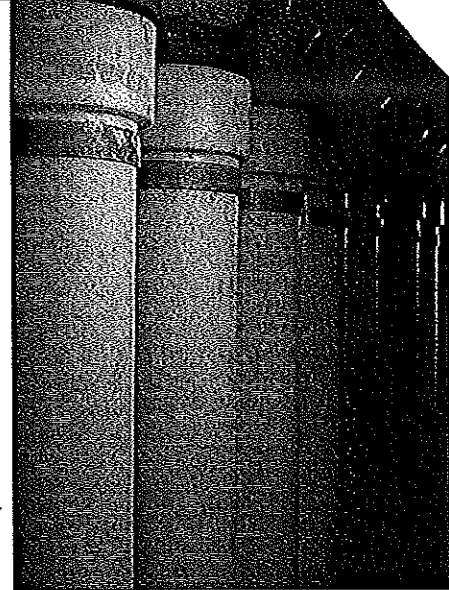


PHOTO #:20 DATE: JULY 9, 2009
TAKEN BY: AMY JANKOWIAK FILE No.: P7090023
DESCRIPTION: MBR - FILTERS

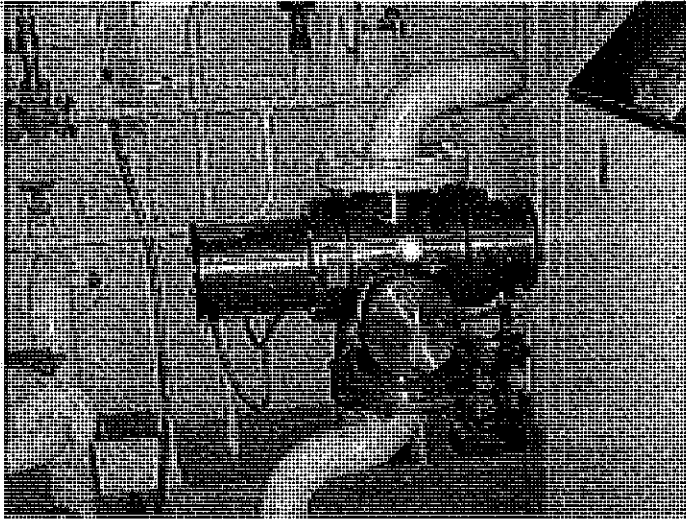


PHOTO #:21 DATE: JULY 9, 2009
TAKEN BY: AMY JANKOWIAK FILE No.:P7090025
DESCRIPTION: MBR – ULTRAVIOLET LIGHT DISINFECTION
SYSTEM

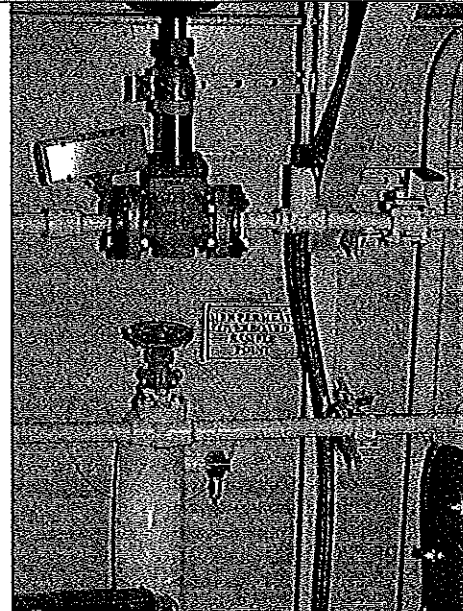


PHOTO #:22 DATE: JULY 9, 2009
TAKEN BY: AMY JANKOWIAK FILE No.: P7090026
DESCRIPTION: MBR – OVERBOARD SAMPLE PORT
SYSTEM

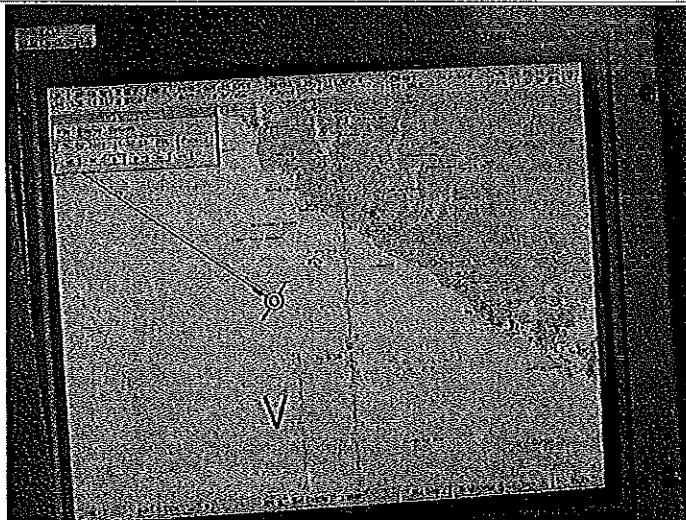


PHOTO #:23 DATE: JULY 9, 2009
TAKEN BY: AMY JANKOWIAK FILE No.: P7090027
DESCRIPTION: BRIDGE - NAVIGATION/TRACKING SYSTEM



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

Northwest Regional Office
 3190 160th Ave SE
 Bellevue, WA 98008
 Phone: (425) 649-7000 Fax: (425) 649-7098

Section A: General Information

Vessel Name:	NORWEGIAN PEARL	Date:	July 19, 2009
Vessel Operator:	Norwegian Cruise Line	Entry Time:	9:20 AM
Vessel Type:	Passenger Vessel	Exit Time:	11:28 AM
Location:	Pier 66, Seattle	Notification (name & date):	Randy Flebrandt, July 13, 2009
On-board contact(s):	Spyridon (Spiros) Zervopoulos, Environmental Officer; Roselo Septin, 3 rd Engineer/Environmental Engineer		
Inspector(s):	Amy Jankowiak, Department of Ecology, Water Quality Program		
# passengers/crew:	~3000/~1100		

The NORWEGIAN PEARL arrived on May 10, 2009 at the Port of Seattle to begin the 2009 cruise season. Black/Gray water is treated with the Scanship System, a biological reactor and ultrafiltration system. The system includes prefiltration, biological treatment via a biofilm process, chemical precipitation, clarification through flotation tanks, polishing filtration and UV disinfection. Approval for continuous discharge from Ecology was granted in 2007 and May 5, 2009.

Section B: 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"/>	Operations & Maintenance	<input checked="" type="checkbox"/>	Sludge Handling/Disposal	<input checked="" type="checkbox"/>	Oily bilge water	<input checked="" type="checkbox"/>	Other

Section C: For vessels discharging ≥ 1 nm from berth and ≥ 6 knots only [2.1.3(A)]

<input type="checkbox"/>	Schematics match black/gray wastewater system	NOT APPLICABLE
<input type="checkbox"/>	Operations as described in submitted documentation	NOT APPLICABLE
<input type="checkbox"/>	Daily 24-hour continuous monitoring for turbidity or equivalent monitoring	NOT APPLICABLE
<input type="checkbox"/>	Turbidimeter or equivalent monitoring equipment functioning properly	NOT APPLICABLE
<input type="checkbox"/>	Auto shut down or operational controls to insure system shut down if high turbidity occurs	NOT APPLICABLE
	<u>Turbidity or equivalent:</u> Last calibration Trigger level for early alarm: _____ Trigger level for shutdown: Recorded turbidity/equivalent levels above triggers:	
<input type="checkbox"/>	Daily 24-hour continuous monitoring for disinfection effectiveness	NOT APPLICABLE
<input type="checkbox"/>	Disinfection effectiveness monitoring equipment functioning properly	NOT APPLICABLE
	<u>Disinfection Effectiveness Monitoring:</u>	
<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	NOT APPLICABLE
	<u>Disinfection System:</u>	

Section D: For vessels discharging continuously [2-13(B)]

<input checked="" type="checkbox"/>	Schematics match black/gray wastewater system	Schematics appeared to be consistent with they system on board.
<input checked="" type="checkbox"/>	Operations as described in submitted documentation	Operations were as described.
<input checked="" type="checkbox"/>	Daily 24-hour continuous turbidity or equivalent monitoring	Has continuous TSS monitoring.
<input checked="" type="checkbox"/>	Turbidimeter or equivalent monitoring equipment functioning properly	Appears to be functioning properly. At the time of the inspection the TSS was 2.30 mg/l.
<input checked="" type="checkbox"/>	Auto shut down or operational controls to insure system shut down if a high turbidity occurs	A value of 28 mg/l or greater triggers to hold and 30 mg/l for automatic shut down of discharge and recirculation back to mixing tank.
	<p>Turbidity or equivalent : Last calibration: Manufacturer Calibrates, spare meter on board Trigger level for early alarm: 25 mg/l Trigger level for shutdown (recirculation): 28 mg/l switches automatically to hold and 30 mg/l to shut down. Recorded turbidity/equivalent levels above triggers: On occasion</p>	
<input checked="" type="checkbox"/>	Daily 24-hour continuous monitoring for disinfection effectiveness	Monitors for alarm intensity.
<input checked="" type="checkbox"/>	Disinfection effectiveness monitoring equipment functioning properly	Appears to be functioning properly.
	Disinfection Effectiveness Monitoring:	
<input checked="" type="checkbox"/>	Auto shut down or operational controls to insure system shut down if disinfection system upset occurs	Discharge automatically stops discharge and recirculates back to mixing tank when intensity does not meet set points (bulbs out or high turbidity).
<input checked="" type="checkbox"/>	Disinfection system operated and maintained properly	Appears to be functioning properly.
<input checked="" type="checkbox"/>	Disinfection immediately prior to discharge	Protocol: When discharging, UV occurs immediately prior to discharge.
	<p>Disinfection System: The disinfection system consists of 3 UV units, of which two are typically used with 14 bulbs each. At the time of the inspection, the two operating UV units were at 39 W/m² and 48 W/m². The UV sleeves are cleaned by dosing Metal Bright cleaner automatically.</p>	

Section E: General (Approved to Discharge)

<input checked="" type="checkbox"/>	No discharges within 1/2 mile from shellfish beds/protocol (President's Point, Apple Tree Cove, Tyee Shoal)	Protocol: Stop continuous discharge (recirculate back to mixing tank) when coming into MOU waters, begin discharge while at Port, stop discharge when leaving Port, begin discharge when outside MOU waters.
<input checked="" type="checkbox"/>	Discharges immediately stopped when high turbidity occurs	They do have their systems set up to automatically shut down and recirculate the discharge if high TSS (equivalent to turbidity) occurs.
<input checked="" type="checkbox"/>	Discharges immediately stopped when disinfection system upset occurs	They do have their systems set up to automatically shut down and recirculate the discharge if intensity is low.
<input checked="" type="checkbox"/>	Immediate notifications made to Health for disinfection system upset	There are notification numbers posted and a copy of the current MOU was on board.
<input checked="" type="checkbox"/>	Sampling conducted 2/month, 1/month in Seattle (BOD, TSS, fecal coliform, pH, chlorine residual)	Sampling is being conducted as required, as of the date of the inspection.
<input checked="" type="checkbox"/>	Whole Effluent Toxicity Testing 1 per 2 years (homeported) or once/40 calls for continuous	WET testing was conducted as required last season and is not required this season.

Section F: General

<input checked="" type="checkbox"/>	Discharge records review	Discharge records were reviewed (black water/gray water/residual solids) and are maintained properly.
<input checked="" type="checkbox"/>	Residual solids managed properly/ disposal protocol per MOU	Residual solids are collected, dried and incinerated.
<input checked="" type="checkbox"/>	Hazardous Waste managed properly	All hazardous waste that is collected is being sent off-shore in Victoria, Canada. Records were reviewed for hazardous waste discharges.
<input checked="" type="checkbox"/>	WA Haz Waste guidelines followed (appendix vii)	All hazardous waste is being off-loaded outside of Washington.
<input checked="" type="checkbox"/>	Solid Waste managed properly	Solid waste is being managed properly. The various solid waste streams are collected, sorted, stored, and sent ashore or incinerated as appropriate.

<input checked="" type="checkbox"/>	Oilily bilge water managed properly	Oilily bilge water is treated and discharged at less than 15 ppm (usually less than 5 ppm) and outside of MOU waters.
Other:		

Health = Washington State Department of Health

Section G: Sample Results		
Parameter	Results	
Biochemical Oxygen Demand 5-Day (BOD)	<10 mg/l	
Total Suspended Solids (TSS)	<1 mg/l	
Fecal Coliform	24 CFU/100 ml	
Residual Chlorine	<0.1 mg/l	
pH	6.76 units	
Ammonia, Nitrogen	20.4 mg/l	

Section H: Summary of Findings/Comments

Introduction

Amy Jankowiak, Washington State Department of Ecology (Ecology) Northwest Regional Office, Water Quality Program (NWRO-WQ) conducted the inspection of the Norwegian Cruise Line NORWEGIAN PEARL on July 19, 2009. The main contacts on board the NORWEGIAN PEARL included Spyridon (Spiros) Zervopolous, Environmental Officer; and Roselo Septin, 3rd Engineer/Environmental Engineer. Prior notification of the visit was given on July 13, 2009 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. A copy of the current MOU was on-board. The NORWEGIAN PEARL received approval to discharge continuously on May 5, 2009.

The NORWEGIAN PEARL was built in 2005, is 965 feet long with 15 guest decks, with about a 27-foot draft. There are typically about 3000 passengers and 1100 crew this season.

Inspection

I arrived and boarded the ship (photo #01) at about 9:20 am and began with introductions and a plan for the day with Spiros Zervopolous, Environmental Officer in the Engine Control Room (ECR) area and discussed various waste streams, and the discharge protocols. Discharge records were reviewed for black water and gray water discharges, garbage and recycling, and hazardous waste. We then discussed the black water and gray water system in detail. Next, we viewed the black water and gray water system and oily bilge water treatment systems. We then toured the incineration and food waste systems and then the photo silver recovery system and laundry/dry cleaning areas. Samples of the black and gray water effluent were taken before debriefing and finalizing the inspection at about 11:28 am.

Discharge Types and Protocols:

The Bridge staff notifies the ECR staff 30 minutes in advance that they will be entering an area allowable for discharges. The latitude and longitude coordinates are recorded in the *Sewage and Graywater Discharge Record Book* and in the deck log for black water, gray water and untreated wastewater as well as other types of discharges including food waste and oily bilge outside of 12 miles. 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. The protocol for discharges in MOU waters is to stop continuous discharge (recirculate back to mixing tank) when coming into MOU waters, begin discharge while at Port, stop discharge when leaving Port, and begin discharge when outside MOU waters. This procedure prevents discharges in any shellfish areas. All discharge records that were reviewed appeared to be in compliance with the MOU. Only the Environmental Officer and the Captain/Chief Officer have the keys for discharge ports which are padlocked (photo #24).

Black water, which includes toilet waste, galley waste and infirmary drains and gray water which includes sink and shower and laundry water is treated with a Scanship advanced wastewater treatment system and is discharged continuously with the exception of the area near shellfish beds.

Screenings and grit as well as the biomass (sewage sludge) from the Scanship system is collected, dried and incinerated along with food waste. The food waste is collected (photo #25) and pulped (photo #26) twice. The reject water is recycled. Only occasionally is the solid food waste and its reject water held for discharge instead of being incinerated and is discharged outside of 12 nautical miles and outside of MOU waters and the Olympic Coast National Marine Sanctuary.

Cooking oil is collected and recycled as biodiesel.

Oily bilge water is treated with two Marinfloc systems for separating oil (photos #20 and #22). The oily bilge is treated to less than 15 ppm, although the results are typically less than 5 ppm. From the oily water separator, the oil content is again measured in the locked "white box" (photo #21). The treated oily bilge water is then discharged outside of MOU waters and greater than 12 nautical miles.

Potable water that is regularly bunkered. Water is also produced by desalination using a reverse osmosis system and evaporators. The salt that is collected through the production process is sent back to the salt water. A descaler chemical is used on the evaporators and is adjusted for pH before discharge at sea.

Spa water is discharged nightly, although not in MOU waters and not in certain Alaskan waters. Both the spa and pool water use chlorine.

Laundry uses a number of different chemicals (photos #30 and #31) by the SWISHER™ company and all laundry wastewater is sent to graywater for Scanship treatment. Dry cleaning (photo #28) uses PERC (photo #29) which is off-loaded as hazardous waste in Canada. Silver is captured from the photo waste (photo #27), treated to less than 5 ppm and is off-loaded as regulated waste. X-ray/developer waste is off-loaded untreated (can not combine with photo waste) as hazardous waste. Other hazardous wastes include some batteries, paints, mercury filters, some aerosols (punctured), and medical sharps. Fluorescent bulbs are crushed with a system that removes mercury. The filters are changed out about once every three months with each barrel (changed out more frequently than required for safety of staff). The bulbs are then off-loaded as regulated waste. Medical, red bag waste is typically incinerated. Narcotics are incinerated with witnesses and expired medications are off-loaded. All hazardous wastes are off-loaded in Canada. Other materials incinerated (photo #23) include paper, some cardboard, and oily rags.

Plastics, garbage, and other materials are collected and sorted on a sorting table. Most materials are then condensed and recycled on-shore. Some recycling is off-loaded in Seattle. Crushed glass, aluminum, tin, scrap metal, plastics, cardboard, wood pallets and some paper are all recycled along with other materials. Some other materials such as blankets are donated.

Records were reviewed for black water and gray water discharges, as well as for garbage/incineration/sea discharges and hazardous waste. All records appeared to be in compliance with the MOU.

Black water and Gray water System (Scanship System):

Black water, which includes toilet waste, galley waste and infirmary drains moves by vacuum to a collection tank (photo #19). From the collection tanks, it goes to the drum screens (photos #02 and #03). There are two drum screens which provide pre-screening. Solids from the drum screens go to the sludge tank. Liquid flow from the drum screens then enters the mixing tank where it combines with the gray water. Gray water consists of sink, shower, and laundry water. From the mixing tank, the liquid moves to the biostep (photo #08) for biological treatment (biofilm on rotating plastic pieces – 2 tanks in series, air added). A defoamer can be used to control foam.

After the biostep, liquid moves to a buffer tank (photo #10) where coagulant and a decoagulant are added. Liquid then moves to the flocculation tanks (photo #11). Coagulant is injected and then polymer (photo #15) is injected in the second cylinder of the flocculation tank. Clarification then occurs via flotation tanks (photos #12 and #13). 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 sludge tank. Liquid flow then moves to the polishing filters (photo #14) for ultrafiltration (2 rotating mesh drums).

Flow then moves to ultraviolet (UV) light disinfection (photo #16). There are three UV units, of which two are typically used in series with 14 bulbs each. The UV unit not being used goes through a cleaning cycle with Metal Bright cleaner and is then rotated in for use. There is typically about one set (14 bulbs) of spare bulbs on board. The UV system is alarmed for bulb failure and intensity. At the time of the inspection, the two operating UV units were at 39 W/m² and 48 W/m². The UV sleeves are cleaned by dosing Metal Bright cleaner automatically. Flow from the UV units is either discharged directly overboard via the discharge port, or is re-circulated to the mixing tank.

Solids from the sludge tank are often combined with food waste decanted (photo #04), dewatered and then the material is dried with a dryer (photos #05 and #06) and incinerated. The reject water is sent to the mixing tank of the Scanship system.

The cruise line uses a system called AMOS for work orders and maintenance. Manufacturer recommendations for maintenance of each piece of equipment is included in the AMOS system which triggers staff when maintenance is required. Scanship also monitors maintenance on the system. Any needed calibrations, cleaning, and other needed maintenance

would be included in AMOS. Total suspended solids (TSS) (equivalent to turbidity) is monitored (photos #17 and #18) continuously at UV disinfection. If TSS exceeds 25 mg/l, the system alarms and staff responds to investigate. At 28 mg/l, the system alarms and switches automatically to hold that discharge. At 30 mg/l, the effluent from the system is shut down and is re-circulated to the mixing tank. PH is also monitored for adjustments. The levels for effluent pH are supposed to be between 6.5 and 8.5. The pH levels also trigger the chemical additions of coagulant and polymer. There are several monitors (photo #07) throughout the system that are used to access controls as well as in the ECR.

Earlier this season, there was a high result for fecal coliform in Juneau. Follow-up included stopping discharges except while out at sea, re-testing, and working with the manufacturer and staff to trouble-shoot any possible problems. Due to higher passenger/crew volumes on board, staff added an additional blower (photo #09) to the biostep process. They again re-tested. All re-tests for fecal coliform were within allowable ranges. Discharges have resumed.

Samples were taken for Biochemical Oxygen Demand (BOD 5-Day), Total Suspended Solids (TSS), pH, chlorine residual, fecal coliform and ammonia from the combined effluent of the Scanship system after UV disinfection. The sample port was disinfected by heat prior to pulling samples (photo #32). The samples were put on ice immediately and were transported to AmTest laboratory in Kirkland, Washington that morning. Chain of Custody and sampling procedures were followed. All results are in Section F. The results are typical of the results submitted to Ecology thus far for 2009.

Conclusions and Recommendations

The staff on board the vessel were very knowledgeable of the systems and protocols.

It is recommended that staff continue to work towards a high functioning wastewater treatment system.

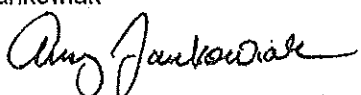
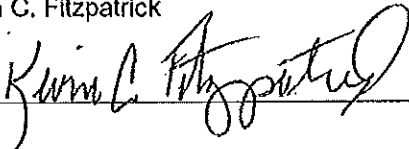
Attachments:

- Photographs
- Laboratory Report

Copies to:

- Randy Fiebrandt, NCL
- Spyridon (Spiros) Zervopolous, NCL
- Amy Jankowiak, Ecology
- Karen Burgess, Ecology
- Mark Toy, Health
- Kevin Fitzpatrick, Ecology
- Central Files: Norwegian Cruise Line – NORWEGIAN PEARL; WQ 6.1

Section I: Signatures

<u>Name and Signature of Inspector</u>	<u>Agency/Office/Telephone</u>	<u>Date</u>
Amy Jankowiak 	Department of Ecology/Northwest Regional Office/Water Quality Program/Municipal Compliance Specialist/(425) 649-7195	8/13/09
Kevin C. Fitzpatrick 	Department of Ecology/Northwest Regional Office/Water Quality Section Manager/(425) 649-7033	8/13/09



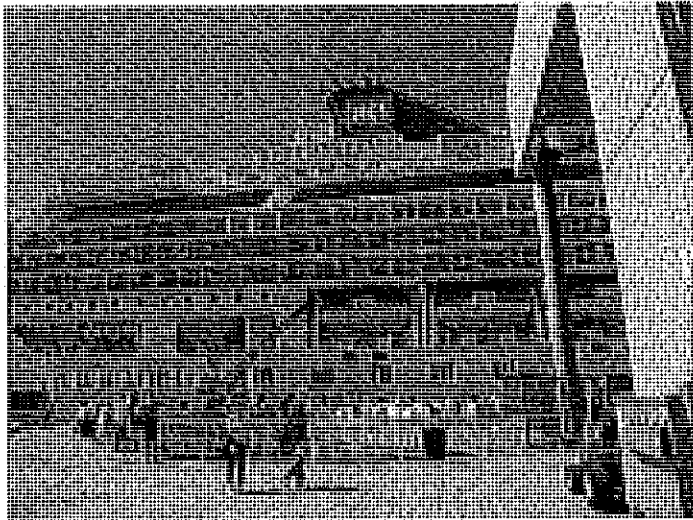


PHOTO #:01 DATE: JULY 19, 2009
TAKEN BY: AMY JANKOWIAK FILE No.: P7190059
DESCRIPTION: NORWEGIAN PEARL VESSEL, SEATTLE

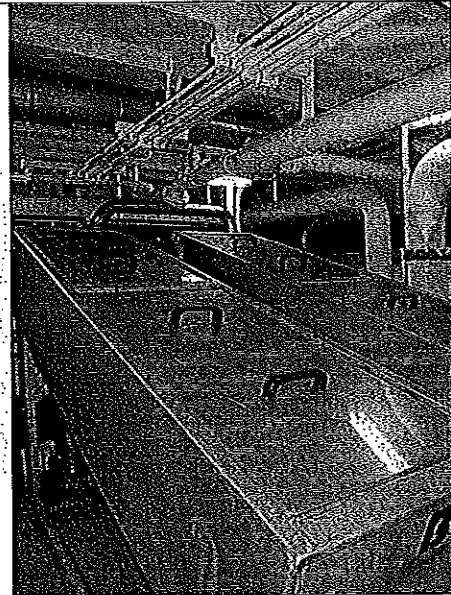


PHOTO #:02 DATE: JULY 19, 2009
TAKEN BY: AMY JANKOWIAK FILE No.: P7190017
DESCRIPTION: DRUM SCREENS

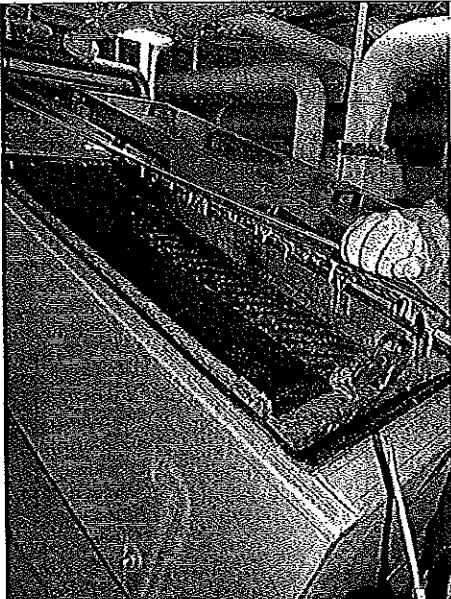


PHOTO #:03 DATE: JULY 19, 2009
TAKEN BY: AMY JANKOWIAK FILE No.: P7190018
DESCRIPTION: INSIDE OF DRUM SCREEN



PHOTO #:04 DATE: JULY 19, 2009
TAKEN BY: AMY JANKOWIAK FILE No.: P7190020
DESCRIPTION: DECANTERS

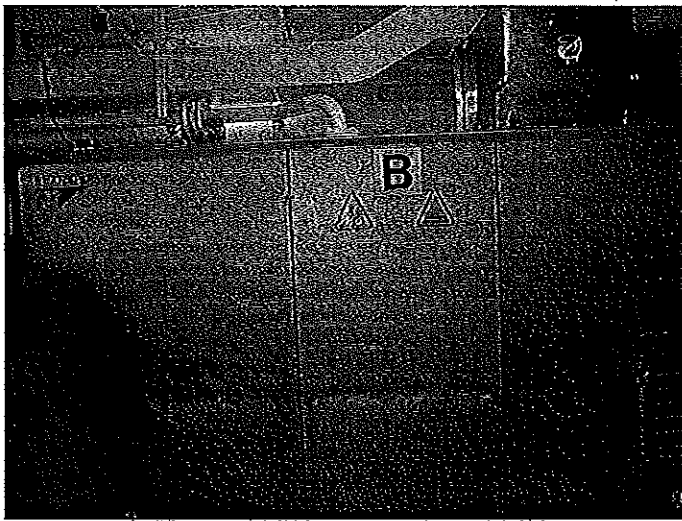


PHOTO #:05 DATE: JULY 19, 2009
TAKEN BY: AMY JANKOWIAK FILE No.: P7190022
DESCRIPTION: DRYER (1 OF 2)

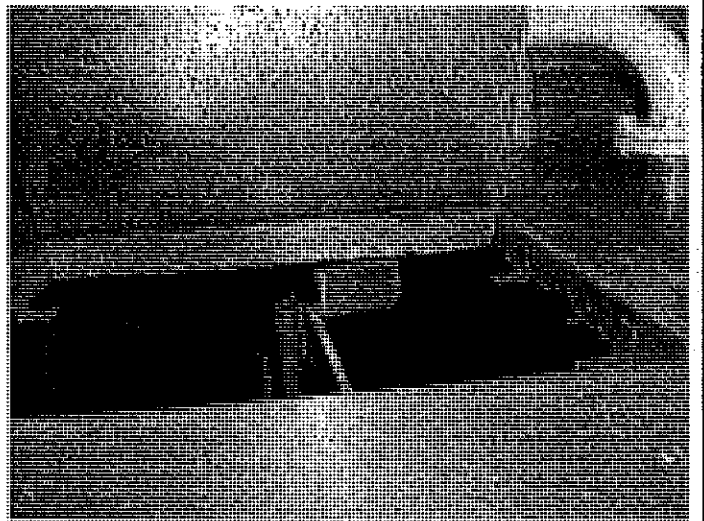


PHOTO #:06 DATE: JULY 19, 2009
TAKEN BY: AMY JANKOWIAK FILE No.: P7190021
DESCRIPTION: INSIDE OF DRYER

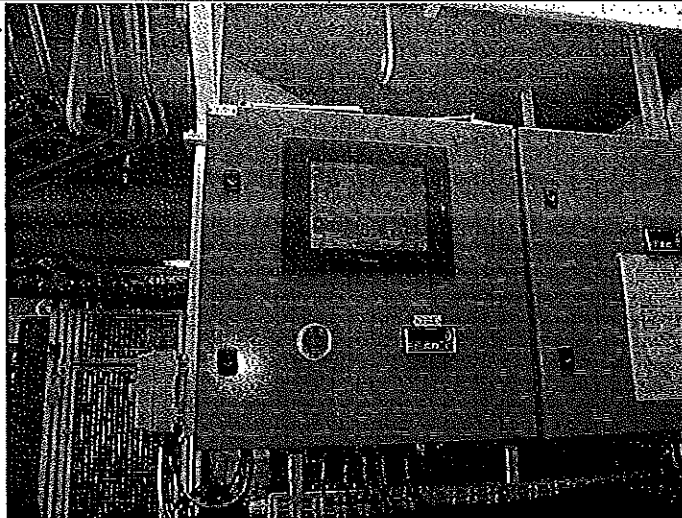


PHOTO #:07 DATE: JULY 19, 2009
TAKEN BY: AMY JANKOWIAK FILE No.: P7190019
DESCRIPTION: ONE OF SEVERAL MONITORS ACCESSING
SCANSHIP SYSTEMS



PHOTO #:08 DATE: JULY 19, 2009
TAKEN BY: AMY JANKOWIAK FILE No.: P7190024
DESCRIPTION: BIOSTEP 1 (CLOSE SIDE) AND BIOSTEP 2 (FAR
SIDE)

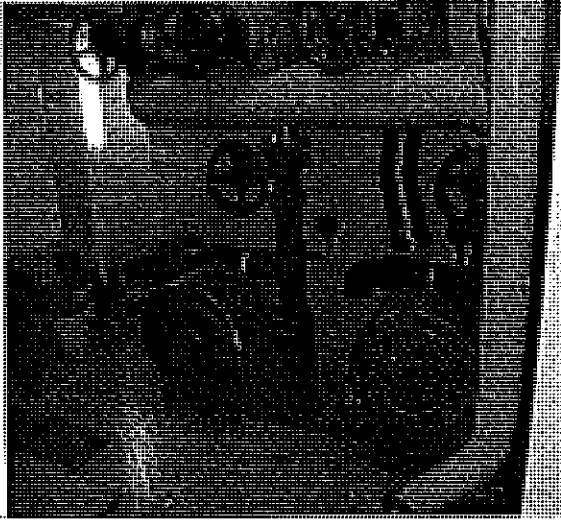


PHOTO #:09 DATE: JULY 19, 2009
TAKEN BY: AMY JANKOWIAK FILE No.:P7190025
DESCRIPTION: BIOSTEP BLOWERS (2 OF 4)

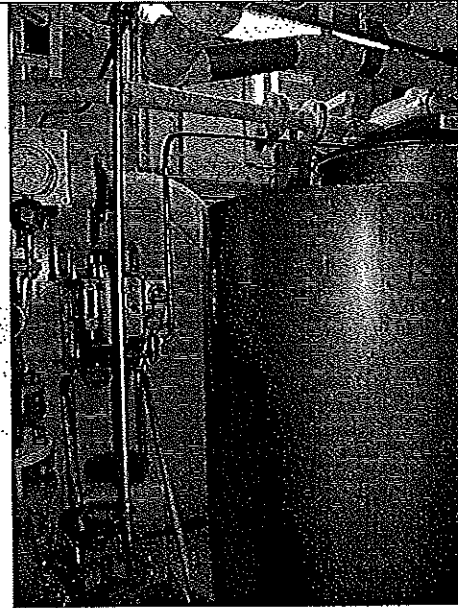


PHOTO #:10 DATE: JULY 19, 2009
TAKEN BY: AMY JANKOWIAK FILE No.: P7190026
DESCRIPTION: BUFFER TANK/ COAGULANT ADDITION



PHOTO #:11 DATE: JULY 19, 2009
TAKEN BY: AMY JANKOWIAK FILE No.: P7190027
DESCRIPTION: COAGULANT/POLYMER ADDED AND PH MONITOR

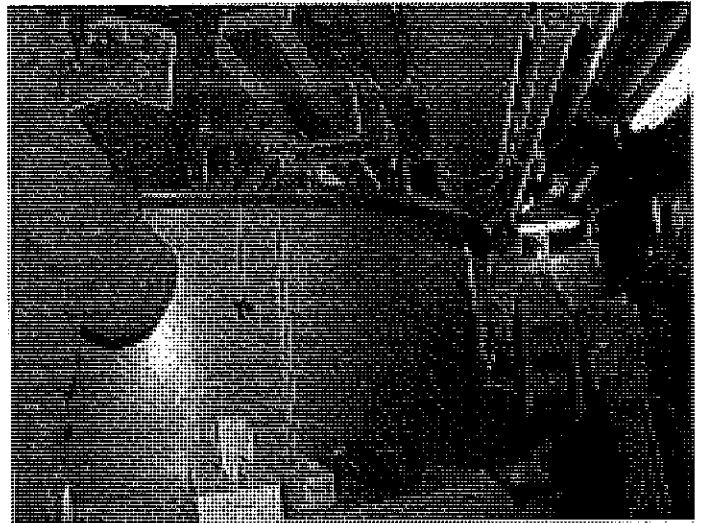


PHOTO #:12 DATE: JULY 19, 2009
TAKEN BY: AMY JANKOWIAK FILE No.: P7190028
DESCRIPTION: FLOTATION TANK (1 OF 2)

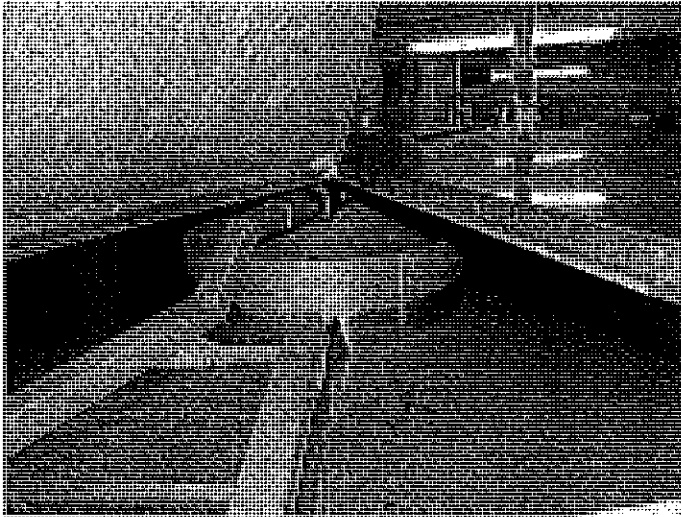


PHOTO #:13 DATE: JULY 19, 2009
TAKEN BY: AMY JANKOWIAK FILE No.: P7190029
DESCRIPTION: INSIDE OF FLOTATION TANK

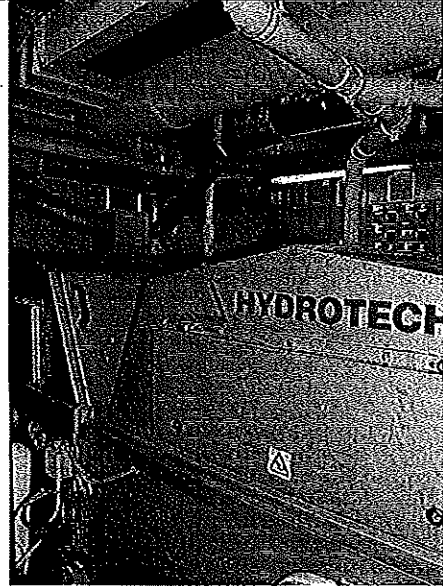


PHOTO #:14 DATE: JULY 19, 2009
TAKEN BY: AMY JANKOWIAK FILE No.: P7190030
DESCRIPTION: POLISHING FILTERS

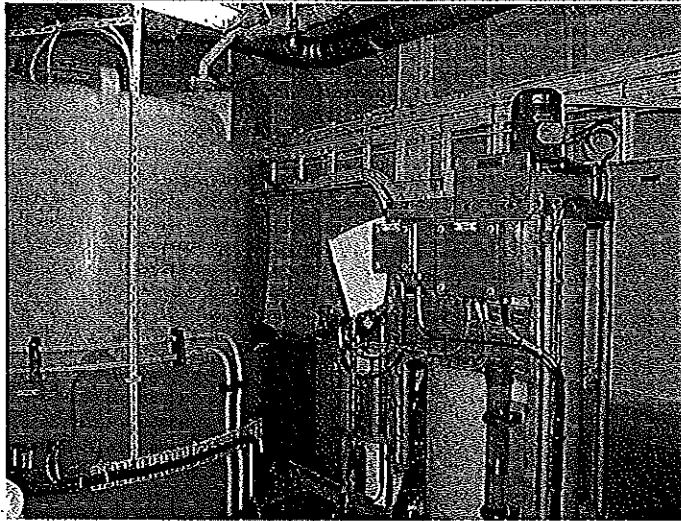


PHOTO #:15 DATE: JULY 19, 2009
TAKEN BY: AMY JANKOWIAK FILE No.: P7190031
DESCRIPTION: COAGULANT AND POLYMER TANKS

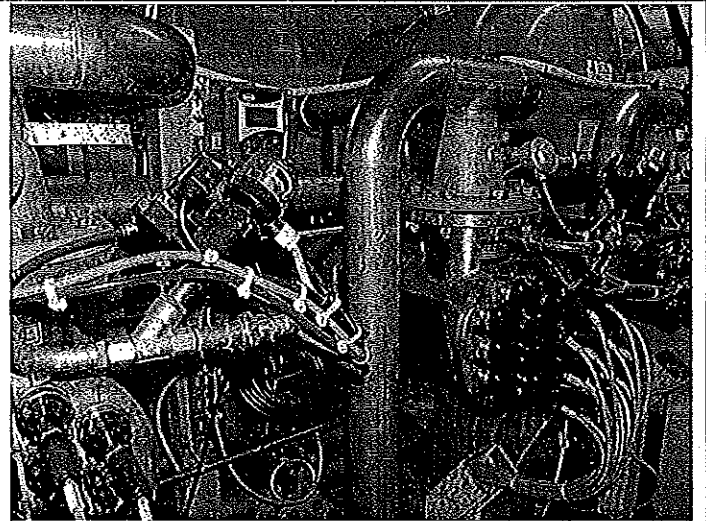


PHOTO #:16 DATE: JULY 19, 2009
TAKEN BY: AMY JANKOWIAK FILE No.: P7190034
DESCRIPTION: ULTRAVIOLET DISINFECTION (3 UNITS)

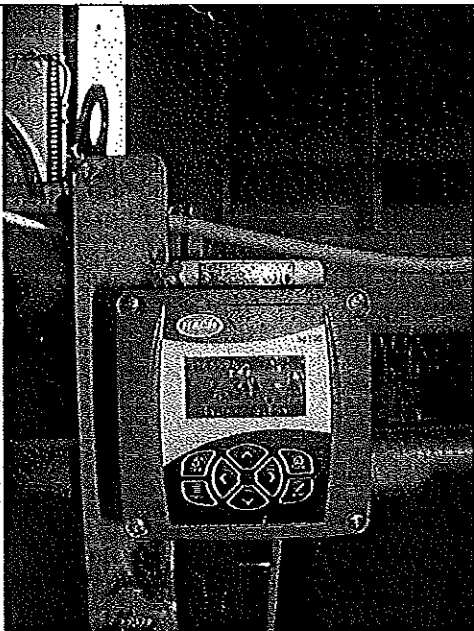


PHOTO #:17 DATE: JULY 19, 2009
TAKEN BY: AMY JANKOWIAK FILE No.:P7190035
DESCRIPTION: TSS METER READ OUT (2.30 MG/L)

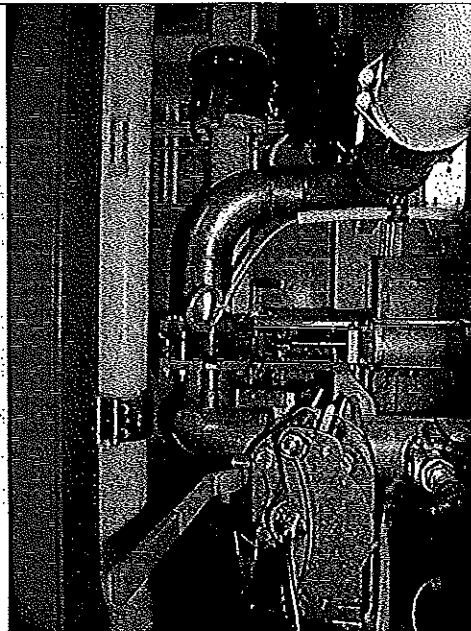


PHOTO #:18 DATE: JULY 19, 2009
TAKEN BY: AMY JANKOWIAK FILE No.: P7190037
DESCRIPTION: TSS METER AND 2 PIPES (ONE TO CONTINUOUS DISCHARGE, ONE TO RECIRCULATE TO MIXING TANK)

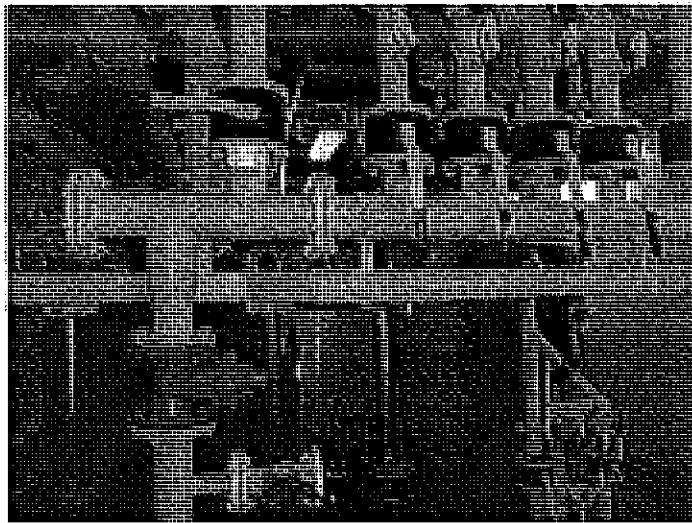


PHOTO #:19 DATE: JULY 19, 2009
TAKEN BY: AMY JANKOWIAK FILE No.: P7190038
DESCRIPTION: GRAVITY LINES TO BLACKWATER TANK

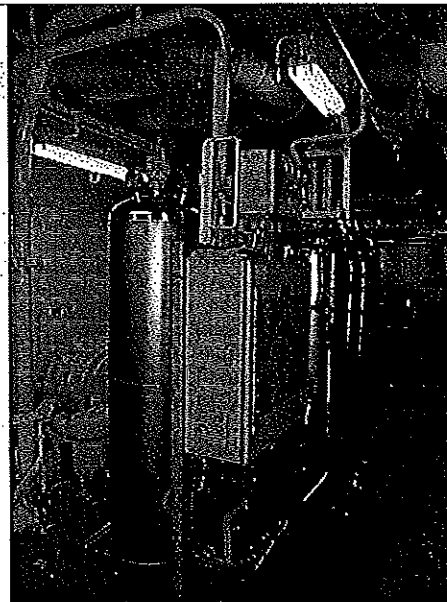


PHOTO #:20 DATE: JULY 19, 2009
TAKEN BY: AMY JANKOWIAK FILE No.: P7190039
DESCRIPTION: BILGE - OILY WATER SEPARATOR (OWS) SYSTEM (1 OF 2)

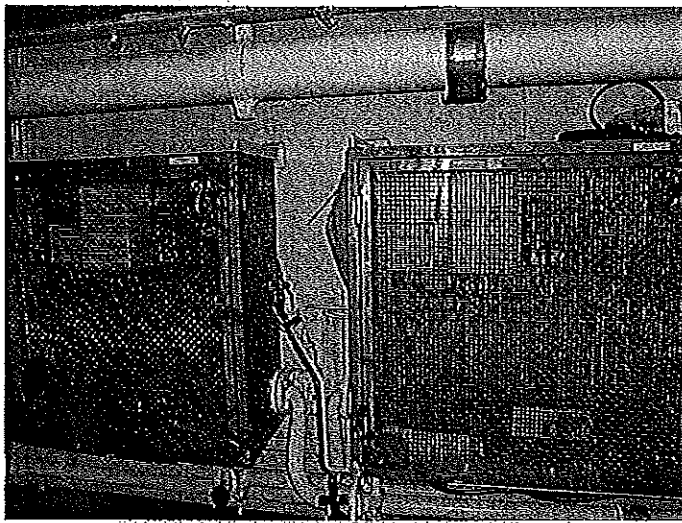


PHOTO #:21 DATE: JULY 19, 2009
TAKEN BY: AMY JANKOWIAK FILE No.:P7190040
DESCRIPTION: OWS WHITE BOXES

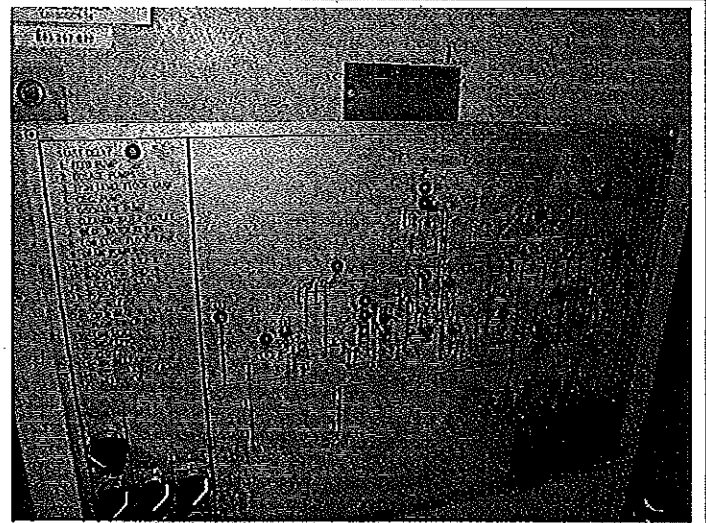


PHOTO #:22 DATE: JULY 19, 2009
TAKEN BY: AMY JANKOWIAK FILE No.: P7190042
DESCRIPTION: OWS DISPLAY

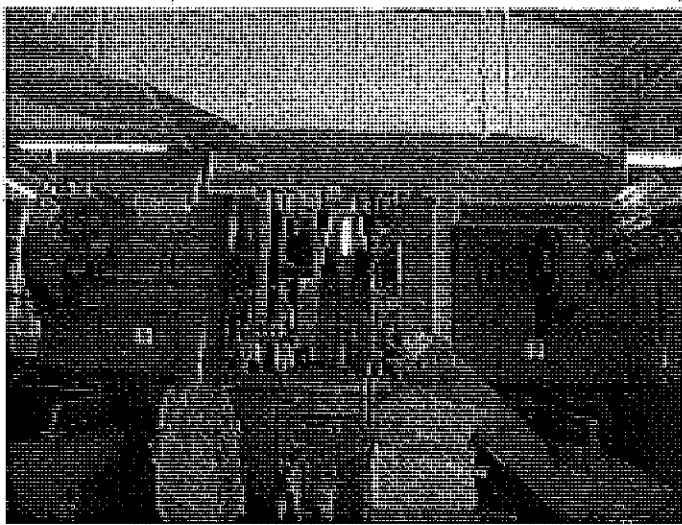


PHOTO #:23 DATE: JULY 19, 2009
TAKEN BY: AMY JANKOWIAK FILE No.: P7190044
DESCRIPTION: INCINERATORS



PHOTO #:24 DATE: JULY 19, 2009
TAKEN BY: AMY JANKOWIAK FILE No.: P71900
DESCRIPTION: BLACK/GRAY WATER DISCHARGE PORT
(PADLOCKED)

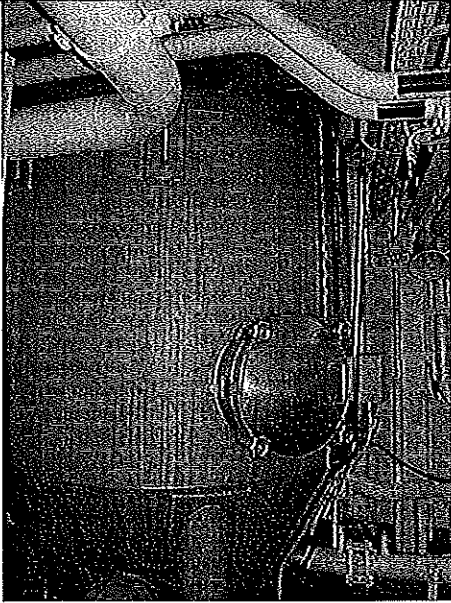


PHOTO #:25 DATE: JULY 19, 2009
TAKEN BY: AMY JANKOWIAK FILE No.: P7190047
DESCRIPTION: FOOD WASTE TANK

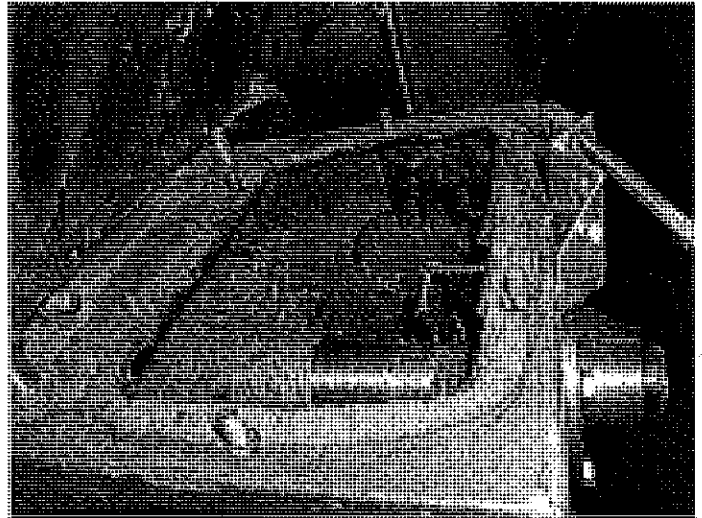


PHOTO #:26 DATE: JULY 19, 2009
TAKEN BY: AMY JANKOWIAK FILE No.: P7190048
DESCRIPTION: INSIDE OF FOOD WASTE PULPER



PHOTO #:27 DATE: JULY 19, 2009
TAKEN BY: AMY JANKOWIAK FILE No.: P7190050
DESCRIPTION: PHOTO SILVER RECOVERY SYSTEM

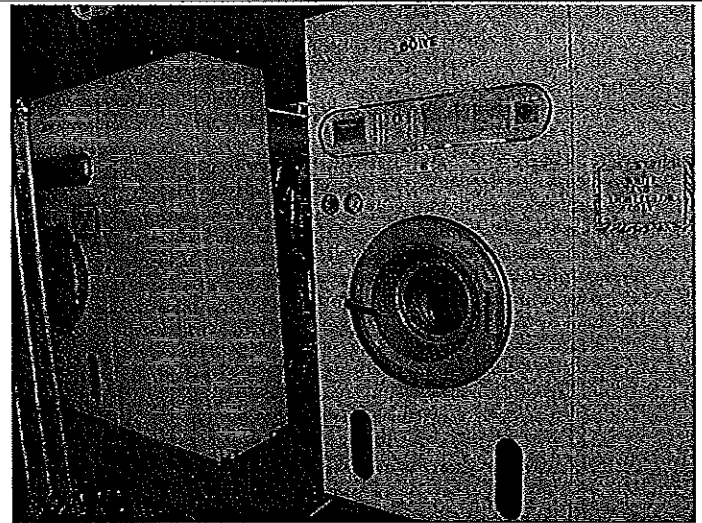


PHOTO #:28 DATE: JULY 19, 2009
TAKEN BY: AMY JANKOWIAK FILE No.: P7190051
DESCRIPTION: DRY CLEANING SYSTEMS (PERC BASED)



PHOTO #:29 DATE: JULY 19, 2009
TAKEN BY: AMY JANKOWIAK FILE No.:P7190053
DESCRIPTION: DRY CLEANING PERC WASTE COLLECTION

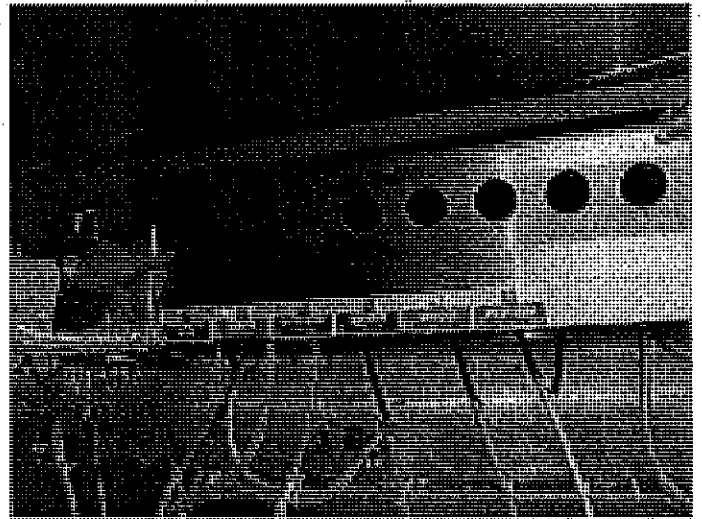


PHOTO #:30 DATE: JULY 19, 2009
TAKEN BY: AMY JANKOWIAK FILE No.: P7190057
DESCRIPTION: LAUNDRY CHEMICALS



PHOTO #:31 DATE: JULY 19, 2009
TAKEN BY: AMY JANKOWIAK FILE No.: P7190058
DESCRIPTION: LAUNDRY CHEMICALS

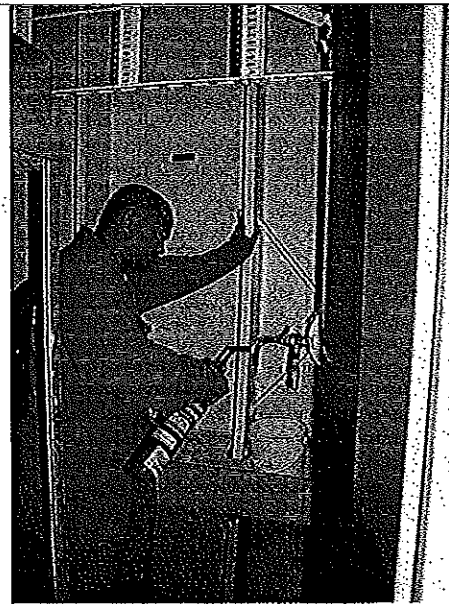


PHOTO #:32 DATE: JULY 19, 2009
TAKEN BY: AMY JANKOWIAK FILE No.: P7190058
DESCRIPTION: BLACK/GRAY WATER SAMPLING PORT
DISINFECTION FOR SAMPLING

Am Test Inc.
13600 NE 126TH PL
Suite C
Kirkland, WA 98034
(425) 885-1664
www.amtestlab.com



Professional
Analytical
Services

ANALYSIS REPORT

Department of Ecology
3190 160th Ave SE
Bellevue, WA 98008
Attention: Amy Jankowiak
Project Name: Norwegian Pearl
All results reported on an as received basis.

Date Received: 07/20/09
Date Reported: 8/11/09

AMTEST Identification Number 09-A011402
Client Identification Norpearl-Eff
Sampling Date 07/19/09, 11:02

Microbiological

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Fecal Coliforms	24.	CFU/100 ml		1.	SM 9222D	KF	07/19/09

Conventionals

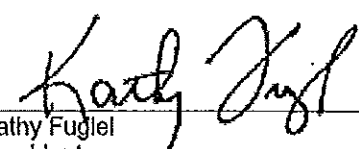
PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
pH	6.76	untl			EPA 150.1	KF	07/19/09
Chlorine Residual	< 0.1	mg/l		0.10	EPA 330.5	KF	07/19/09
Total Suspended Solids	< 1	mg/l		1.0	SM 2540D	SL	07/27/09

Demand

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
BOD	< 10	mg/l		10.	SM 5210B	KF	07/19/09

Nutrients

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Ammonia Nitrogen	20.4	mg/l		0.005	EPA 350.1	TS	08/07/09


Kathy Fuglel
President





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

Northwest Regional Office
 3190 160th Ave SE
 Bellevue, WA 98008
 Phone: (425) 649-7000 Fax: (425) 649-7098

Section A: General Information

Vessel Name:	WESTERDAM	Date:	July 26, 2009
Vessel Operator:	Holland America Line	Entry Time:	9:35 AM
Vessel Type:	Passenger Ship	Exit Time:	12:10 PM
Location:	Terminal 91, Seattle	Notification (name & date):	Jon Turvey, July 21, 2009
On-board contact(s):	Kieron Connelly, Environmental Officer; Scotty Andrews, 4 th Engineer		
Inspector(s):	Amy Jankowiak, Department of Ecology, Water Quality Program; Mark Henderson, Department of Ecology, Water Quality Program		
# passengers/crew:	Actual ~2300/~798		

The WESTERDAM arrived on May 10th, 2009 at the Port of Seattle to begin the 2009 cruise season. The Rochem graywater system was not functioning at the time of the inspection. The graywater is held and then discharged outside of MOU waters. The vessel uses a Rochem membrane bioreactor with ultrafiltration for the treatment of blackwater. All discharges are being held and then discharged outside of MOU waters.

Section B: Areas Evaluated

<input checked="" type="checkbox"/>	Black/Gray wastewater system	<input checked="" type="checkbox"/>	Residual solids	<input checked="" type="checkbox"/>	Records/Reports	<input checked="" type="checkbox"/>	Hazardous Waste/Solid Waste	<input type="checkbox"/>	Sampling/Monitoring
<input checked="" type="checkbox"/>	Discharge locations	<input checked="" type="checkbox"/>	Operations & Maintenance	<input checked="" type="checkbox"/>	Sludge Handling/Disposal	<input checked="" type="checkbox"/>	Oily bilge water	<input checked="" type="checkbox"/>	Other

Section C: For vessels discharging ≥ 1 nm from berth and ≥ 6 knots only [2.1.3(A)]

<input type="checkbox"/>	Schematics match black/gray wastewater system	Not Applicable
<input type="checkbox"/>	Operations as described in submitted documentation	Not Applicable
<input type="checkbox"/>	Daily 24-hour continuous monitoring for turbidity or equivalent monitoring	Not Applicable
<input type="checkbox"/>	Turbidimeter or equivalent monitoring equipment functioning properly	Not Applicable
<input type="checkbox"/>	Auto shut down or operational controls to insure system shut down if high turbidity occurs	Not Applicable
	<u>Turbidity or equivalent:</u> Last calibration: _____ Trigger level for early alarm: _____ Trigger level for shutdown: _____ Recorded turbidity/equivalent levels above triggers: _____	
<input type="checkbox"/>	Daily 24-hour continuous monitoring for disinfection effectiveness	Not Applicable
<input type="checkbox"/>	Disinfection effectiveness monitoring equipment functioning properly	Not Applicable
	<u>Disinfection Effectiveness Monitoring:</u>	
<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	Not Applicable
	Disinfection System:	

Section D: For vessels discharging continuously [2.1.3(B)]		
<input type="checkbox"/>	Schematics match black/gray wastewater system	Not Applicable
<input type="checkbox"/>	Operations as described in submitted documentation	Not Applicable
<input type="checkbox"/>	Daily 24-hour continuous turbidity or equivalent monitoring	Not Applicable
<input type="checkbox"/>	Turbidimeter or equivalent monitoring equipment functioning properly	Not Applicable
<input type="checkbox"/>	Auto shut down or operational controls to insure system shut down if a high turbidity occurs	Not Applicable
<u>Turbidity or equivalent:</u> Last calibration _____ Trigger level for early alarm: _____ Trigger level for shutdown: _____ Recorded turbidity/equivalent levels above triggers: _____		
<input type="checkbox"/>	Daily 24-hour continuous monitoring for disinfection effectiveness	Not Applicable
<input type="checkbox"/>	Disinfection effectiveness monitoring equipment functioning properly	Not Applicable
<u>Disinfection Effectiveness Monitoring:</u>		
<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	Not Applicable
<input type="checkbox"/>	Disinfection immediately prior to discharge	Not Applicable
Disinfection System:		

Section E: General (Approved to Discharge)		
<input type="checkbox"/>	No discharges within 1/2 mile from shellfish beds/protocol (President's Point, Apple Tree Cove, Tyee Shoal)	Not Applicable
<input type="checkbox"/>	Discharges immediately stopped when high turbidity occurs	Not Applicable
<input type="checkbox"/>	Discharges immediately stopped when disinfection system upset occurs	Not Applicable
<input type="checkbox"/>	Immediate notifications made to Health for disinfection system upset	Not Applicable
<input type="checkbox"/>	Sampling conducted 2/month, 1/month in Seattle (BOD, TSS, fecal coliform, pH, chlorine residual)	Not Applicable
<input type="checkbox"/>	Whole Effluent Toxicity Testing 1 per 2 years (homeported) or once/40 calls for continuous	Not Applicable

Section F: General		
<input checked="" type="checkbox"/>	Black Water/Gray Water Discharge records review	Discharge records were reviewed (blackwater/graywater/residual solids) and are maintained properly. No discharges in MOU waters were present from the beginning of the 2009 cruise season to present.
<input checked="" type="checkbox"/>	Residual solids managed properly/ disposal protocol per MOU.	Residual solids are either incinerated or held to be discharged at greater than 12 nautical miles and outside of MOU waters and the Olympic Coast National Marine Sanctuary.
<input checked="" type="checkbox"/>	Hazardous Waste managed properly	All hazardous waste that is collected is being sent off-shore in Victoria, Canada. Records were reviewed for hazardous waste off-loads.
<input checked="" type="checkbox"/>	WA Haz Waste guidelines followed (appendix vii)	All hazardous waste that is collected is being sent off-shore in Victoria, Canada. Records were reviewed for hazardous waste off-loads.
<input checked="" type="checkbox"/>	Solid Waste managed properly	Solid waste is being managed properly. The various solid waste streams are collected, sorted, stored, and sent ashore or incinerated as appropriate.
<input checked="" type="checkbox"/>	Oily bilge water managed properly	Oily bilge water is treated and discharged at less than 15 ppm and outside of MOU waters.
Other:		

Section G: Sample Results		
Parameter	Results	
Biochemical Oxygen Demand 5-Day (BOD)	Not Applicable	
Total Suspended Solids (TSS)	Not Applicable	
Fecal Coliform	Not Applicable	
Residual Chlorine	Not Applicable	
pH	Not Applicable	
Ammonia, Nitrogen	Not Applicable	

Section H: Summary of Findings/Comments

Introduction

Amy Jankowiak, Washington State Department of Ecology (Ecology) Northwest Regional Office, Water Quality Program, and Mark Henderson, Ecology Bellingham Field Office conducted the inspection of the Holland America Line WESTERDAM on July 26, 2009. The main contacts on board the WESTERDAM included Kieron Connelly, Environmental Officer, Scotty Andrews, 4th Engineer and AWWPS Operator, and Jon Turvey, Senior Manager, Auditing, Training and ISO 14001 Coordination HAL. Prior notification of the visit was given on July 26, 2009 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 WESTERDAM is currently not approved for and is not discharging black or graywater into MOU waters.

The HOLLAND WESTERDAM was dedicated in 2004, and is 936 feet long with a width of 105.8 feet. The actual passenger volume is about 2300 and the crew capacity is about 800. The vessel is powered with on-shore power during port calls in Seattle.

Inspection

We arrived and boarded the ship at about 9:35 am and began with introductions and a plan for the day with Kieron Connelly, the Environmental Officer and Jon Turvey with Holland America Line. We then discussed various waste streams, and the discharge protocols. Discharge records were reviewed for blackwater and graywater discharges, hazardous waste off-loads, and garbage. We then went to the Bridge to view and discuss the Valve Monitoring System and schedule for discharges. We viewed and discussed the black water treatment system and the oily bilge water oily water separators. Next, we took a look at the graywater system and toured the garbage and recycling sorting area as well as food waste. The inspection was then finalized and we disembarked the vessel at about 12:10 pm.

Discharge Types and Protocols:

All discharges to water occur at greater than 12 nautical miles and outside of MOU waters. No discharges occur in the Olympic Coast National Marine Sanctuary. Only upon verification of location between the Bridge and the Engine Control Room (ECR), will a discharge occur at greater than 12 nautical miles and outside of MOU waters. If a discharge is allowed, the Bridge authorizes any discharge. For wastewater discharges, the latitude and longitude coordinates are recorded in the *Sewage and Graywater Discharge Record Book* and in the deck log. There is an overboard valve monitoring system (photo #01) on the bridge. The system has four lights:

- >12 nm
- > 4, <12 nm
- <4 nm
- Special Areas

The "special areas light" means no discharges. Currently, MOU waters are considered "special areas". The computer system "Overboard Valve Monitoring" system details where certain discharges can and cannot take place and includes alarms. The Environmental Officer reviews the event alarm settings periodically. When any overboard valve is open, the location (lat and long) is automatically recorded. The date, time and location of both the start and the stop of the discharges are recorded, along with port location, effluent type, volumes, and speed. Discharges are tentatively scheduled ahead of time by matrix, but locations are always verified prior to discharges. Discharge ports have a micro-switch which is connected to the valve monitoring system. This system does not allow for discharges unless the valve monitoring system allows for a discharge. All discharge records that were reviewed appeared to be in compliance with the MOU.

Blackwater, which includes toilet waste, Galley waste, infirmary drains, crew waste, and a small amount of graywater, is treated with a Rochem membrane bioreactor and ultrafiltration system and is then discharged outside of MOU waters. The

majority of the graywater typically goes to the graywater system, Rochem low pressure reverse osmosis system, but is currently not operational and therefore graywater is collected, held and discharged outside of MOU waters. The vessel has about five days of capacity on board. Laundry water goes to the graywater tanks. Pool and spa water also goes to the Rochem system.

Screenings and grit from the blackwater system are collected and incinerated. The solids separated out from the blackwater system at the SWECO filter and from the bioreactors, known by the cruise lines as "biomass", is collected into a tank and discharged outside of MOU waters, >12 nautical miles from shore, and outside of the Olympic Coast National Marine Sanctuary.

Food waste is collected in various locations including the galley and the garbage sorting area. The food is shredded and discharged. The liquid from the food waste is extracted and recycled, and then cleaned out about once every 6 months and discharged outside of MOU waters, >12 nautical miles from shore, and outside of the Olympic Coast National Marine Sanctuary. Food waste is hand checked for plastics and other materials approximately four times per day by the foreman and is sorted prior to shredding (maceration). Grease is collected separately and either off-loaded to shore, or filtered and re-used on board.

Oily bilge water is sent to the 50 ppm oily water separator (FACET) (photos #09 and #11), then to the intermediate tank and then to the 15 ppm oily water separator (SERAP) (photo #10). If the effluent does not meet 15ppm, it is automatically sent back for further treatment. The effluent that meets 15 ppm is either discharged at greater than 12 nautical miles and outside of MOU waters or is sent to a clean tank and later discharged. All effluent first goes through the "white box" for monitoring prior to discharge.

Potable water is bunkered now and then, while the rest is produced by desalination. Steam from the boilers heat up the sea water with low pressure evaporation. The condensate is then chlorinated and adjusted for pH prior to distribution. Salt collected from the evaporators is sent back to the sea. Scaling is treated with acid and is then neutralized prior to discharge at sea.

Dry cleaning currently uses Perchloroethylene (PERC) which is collected and off-loaded as hazardous waste in Victoria (dry and liquid).

Silver is captured from the photo waste, collected and off-loaded as non-hazardous waste in Victoria. All hazardous wastes to shore are off-loaded in Victoria. X-ray's are done digitally, and therefore there is no x-ray waste.

Medical waste that is not hazardous is collected in white bags and incinerated. Red bags are used for material containing bodily fluids, and along with sharps are collected and sent to shore with hazardous waste.

Batteries, oily rags, electronics, and oil sludge are also off-loaded with hazardous waste in Victoria. Records were reviewed for hazardous waste off-loads and showed that all off-loads this season have been to Victoria.

Plastics, garbage, and other materials are collected and sorted into various color-coded cans and sorted on a sorting table. The materials are then condensed and recycled on-shore. The non-hazardous garbage, paper, some plastics, and food-contaminated cardboard are incinerated. The incinerator is not used while in Port. Cardboard is collected and off-loaded for recycling. Crushed glass (photo #13), aluminum, metals, mixed paper, and plastics (photo #14) are all recycled along with other materials. The amount of materials collected and recycled is maximized in order to minimize the amount of materials incinerated or land filled. Various materials are also donated in a ship to shelter program. Fluorescent light bulbs are collected, crushed in a system that collects the mercury vapors. The material is then off-loaded with hazardous waste.

Solid waste is being managed properly. The various solid waste streams are collected, sorted, stored, and sent ashore or incinerated as appropriate. Garbage records were reviewed and were in good order.

Holland America Line is ISO 14001 Certified. The WESTERDAM is equipped for shore power in Seattle and was connected during the inspection.

Graywater System:

The graywater system, Rochem low pressure reverse osmosis (LP-RO) (photo #12), was not operational during the inspection. Graywater is being collected, strained and then held and discharged outside of MOU waters. The graywater system, when operational, collects graywater to collection tanks. The graywater is then sent to a buffer tank and then to the SWECO prefiltration system. Graywater then moves to the LP-RO for treatment. Effluent from the LP-RO moves to permeate tanks prior to disinfection treatment via ultraviolet disinfection. Effluent is then held or discharged outside of MOU waters.

Blackwater System:

Scotty Andrews, 4th Engineer and AWWPS operator, joined us to describe the blackwater system, Rochem UF; ultrafiltration, and tour the system. Mr. Andrews was trained by Rochem staff on the vessel, had computer-based training and a short handover period with the previous operator. Toilet waste, Galley waste, infirmary drains, and crew waste goes by vacuum to collection tanks and then to a buffer tank. Screenings collected by a filter are sent to incineration.

From the buffer tank, flow is sent to prefiltration through the SWECO system (photo #02). Screenings are filtered out and sent to incineration. The SWECO system vibrates out the solids to the solids tank (photos #03 and #04) where it combines with solids from the bioreactors and is sent to another solids tank for holding and discharge outside of MOU waters. Filtrate from the SWECO is collected and sent to a tank, and then sent to the bioreactors (photo #05). PH is adjusted and conductivity monitored prior to going to the bioreactors.

There are three bioreactor lines. Lines 1 and 2 have four MBR units each, and Line 3 has two MBR units for a total of ten. The biological activity takes place in the bioreactors. Solids in the bioreactors are returned back to the beginning of the bioreactors to enhance activity. A minimal amount of solids are periodically wasted to the solids tanks. Total Suspended Solids (TSS) are monitored continuously at the bioreactors.

From the bioreactors, flow goes through the membranes for ultrafiltration (UF) (photo #06). The membranes are cleaned by flushing with air and reverse direction flow. Turbidity is also monitored continuously after the permeate. Effluent or permeate from the UF's are sent to the permeate tanks. All three lines then combine at one ultraviolet light disinfection system (photo #07). The UV system consists of 8 lights and a control board (photo #08) has a lighted alarm if any of the bulbs are out. Neither intensity nor wattage is monitored with this system. From the UV, the flow can either go straight overboard, be combined with the graywater system effluent, or can go to storage tanks. The blackwater system is currently not discharging in MOU waters.

A high alarm is set for turbidity, and a high-high alarm is set which automatically shuts down any discharge.

A maintenance program, AMOS, triggers maintenance required such as oiling and greasing motors. Spare blowers, motors, membranes, screens, and UV bulbs are kept on board the vessel.

Sampling is not required per the MOU when not approved and not discharging. No samples were taken by Ecology.

Conclusions and Recommendations

The staff on board the vessel were very knowledgeable of the systems and protocols. The discharge protocols and notification procedures were very clear.

The efforts made towards waste minimization and energy conservation are impressive.

It is recommended that staff continue to work towards high functioning wastewater treatment systems.

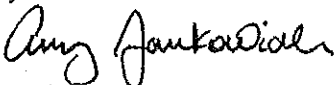
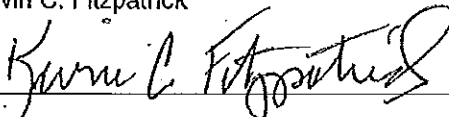
Attachments:

Photographs

Copies to:

John Turvey, HAL
William Morani, Jr., HAL
Bob Diaz, HAL
Tina Stoltz, HAL
Kieron Connelly, Environmental Officer
Amy Jankowlak, Ecology
Mark Henderson, Ecology
Mark Toy, Health
Kevin Fitzpatrick, Ecology
Central Files: Holland America Line – HOLLAND WESTERDAM; WQ 6.1

Section I: Signatures

<u>Name and Signature of Inspector</u> Amy Jankowlak 	<u>Agency/Office/Telephone</u> Department of Ecology/Northwest Regional Office/Water Quality Program/Municipal Compliance Specialist/(425) 649-7195	<u>Date</u> 8/13/09
<u>Name and Signature of Reviewer</u> Kevin C. Fitzpatrick 	<u>Agency/Office/Telephone</u> Department of Ecology/Northwest Regional Office/Water Quality Section Manager/(425) 649-7033	<u>Date</u> 8/13/09

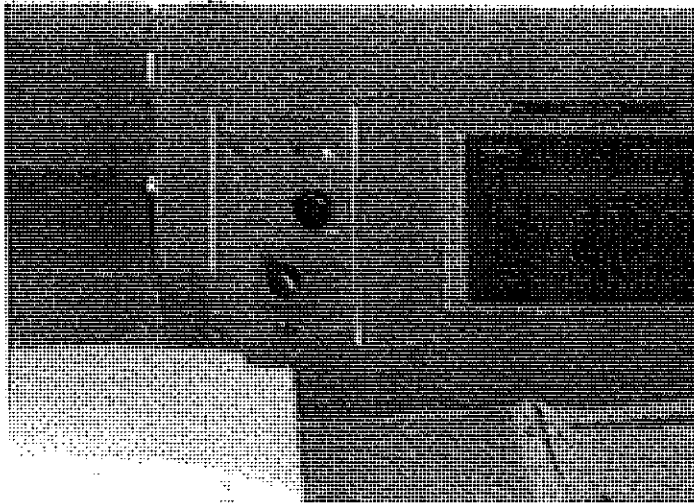


PHOTO #:01 DATE: JULY 26, 2009
TAKEN BY: MARK HENDERSON FILE No.: IMG_1104
DESCRIPTION: VALVE MONITORING SYSTEM

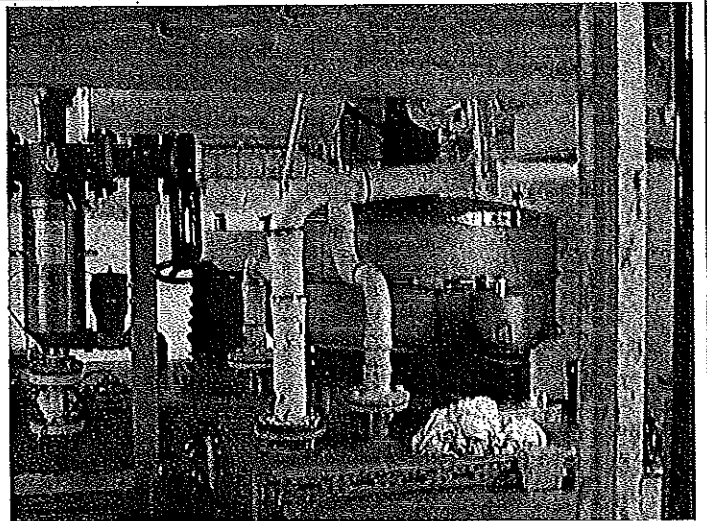


PHOTO #:02 DATE: JULY 26, 2009
TAKEN BY: MARK HENDERSON FILE No.: IMG_1116
DESCRIPTION: PRE-FILTRATION - SWECO SYSTEM

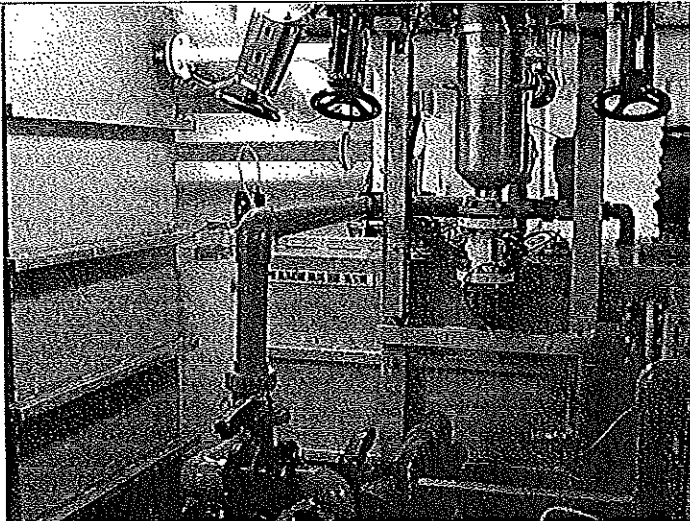


PHOTO #:03 DATE: JULY 26, 2009
TAKEN BY: MARK HENDERSON FILE No.: IMG_1117
DESCRIPTION: PRE-FILTRATION SOLIDS TANK

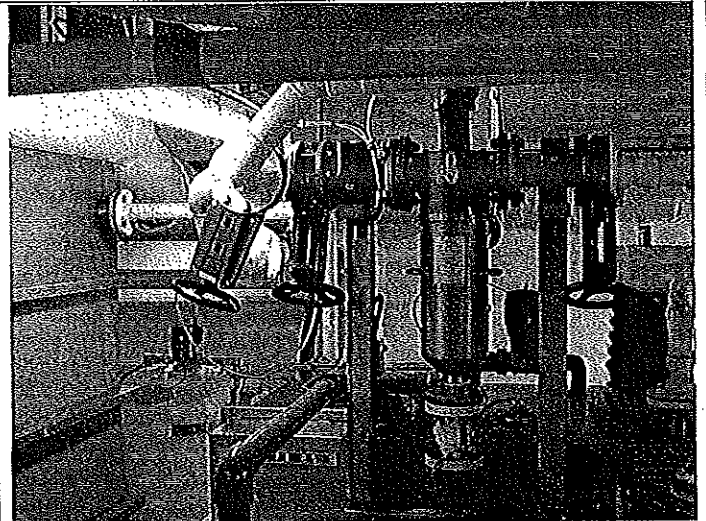


PHOTO #:04 DATE: JULY 26, 2009
TAKEN BY: MARK HENDERSON FILE No.: IMG_1120
DESCRIPTION: CAUSTIC SODA STORAGE (BEHIND SOLIDS TANK)

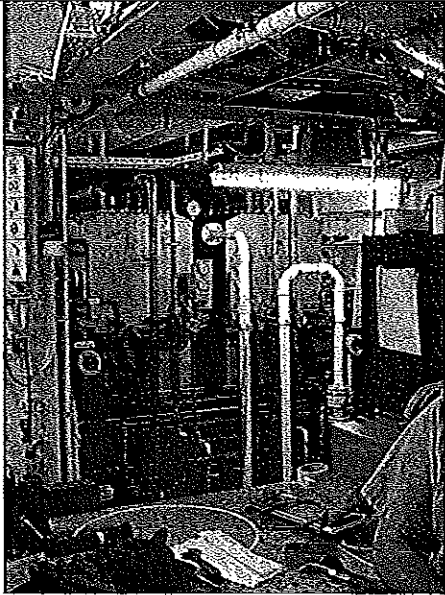


PHOTO #:05 DATE: JULY 26, 2009
TAKEN BY: MARK HENDERSON FILE No.:IMG_1118
DESCRIPTION: MEMBRANE BIOREACTORS

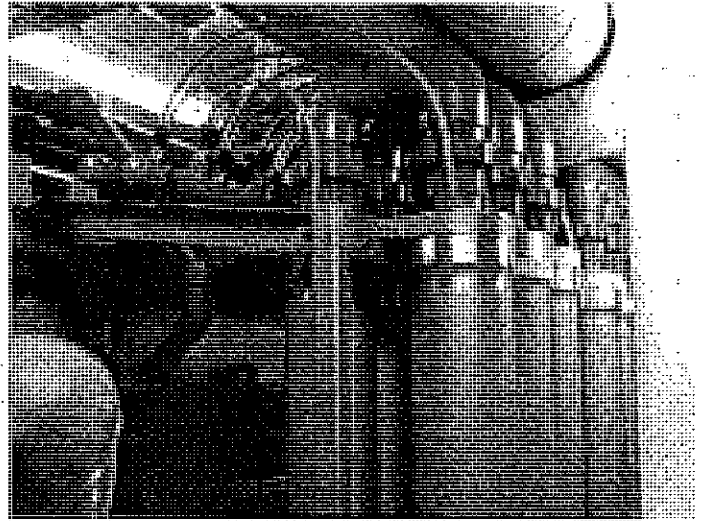


PHOTO #:06 DATE: JULY 26, 2009
TAKEN BY: MARK HENDERSON FILE No.: IMG_1111
DESCRIPTION: MEMBRANE FILTERS

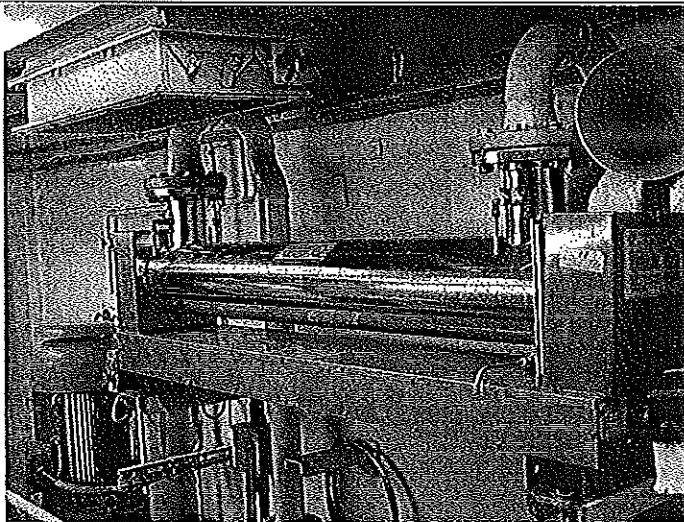


PHOTO #:07 DATE: JULY 26, 2009
TAKEN BY: MARK HENDERSON FILE No.: IMG_1114
DESCRIPTION: ULTRAVIOLET (UV) DISINFECTION SYSTEM



PHOTO #:08 DATE: JULY 26, 2009
TAKEN BY: MARK HENDERSON FILE No.: IMG_1115
DESCRIPTION: UV DISINFECTION SYSTEM CONTROL BOX

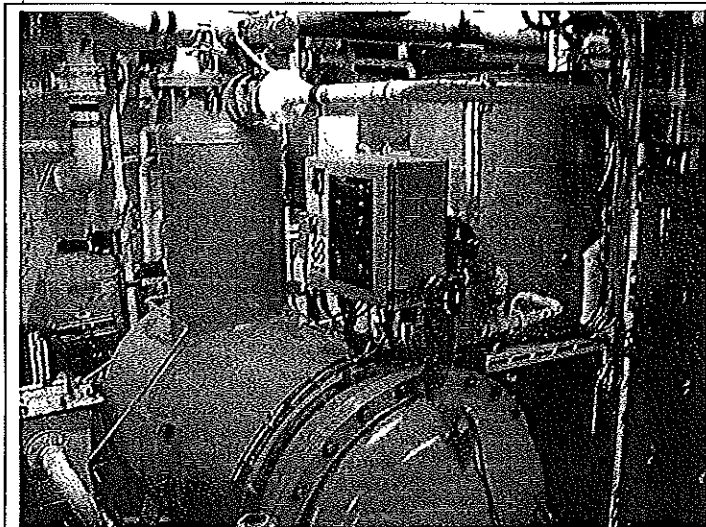


PHOTO #:09 DATE: JULY 26, 2009
TAKEN BY: MARK HENDERSON FILE NO.:IMG_1121
DESCRIPTION: OILY BILGE OILY WATER SEPARATOR – FACET
SYSTEM

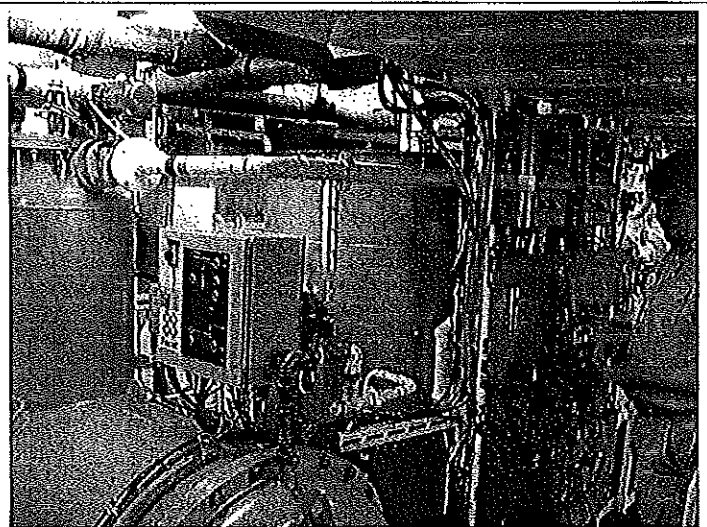


PHOTO #:10 DATE: JULY 26, 2009
TAKEN BY: MARK HENDERSON FILE NO.: IMG_1122
DESCRIPTION: OILY BILGE OILY WATER SEPARATOR – SERAP
SYSTEM



PHOTO #:11 DATE: JULY 26, 2009
TAKEN BY: MARK HENDERSON FILE NO.: IMG_1123
DESCRIPTION: OWS FACET SPARE FILTER

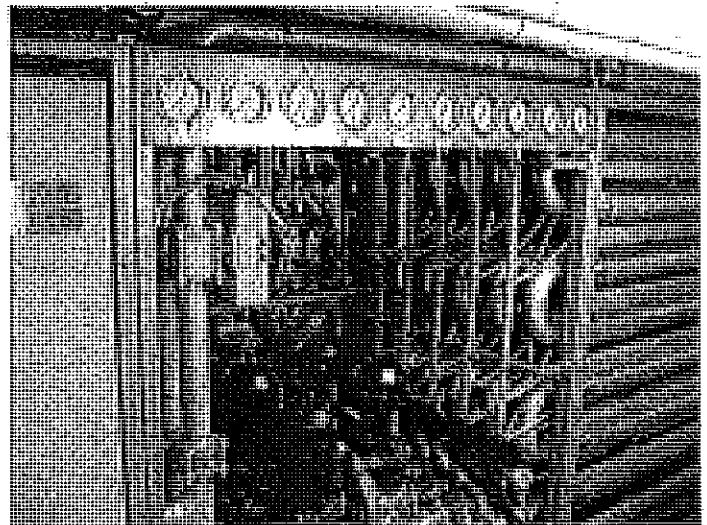


PHOTO #:12 DATE: JULY 26, 2009
TAKEN BY: MARK HENDERSON FILE NO.: IMG_1125
DESCRIPTION: GRAY WATER REVERSE OSMOSIS SYSTEM



PHOTO #:13 DATE: JULY 26, 2009
TAKEN BY: MARK HENDERSON FILE No.:IMG_1128
DESCRIPTION: GLASS SHREDDER

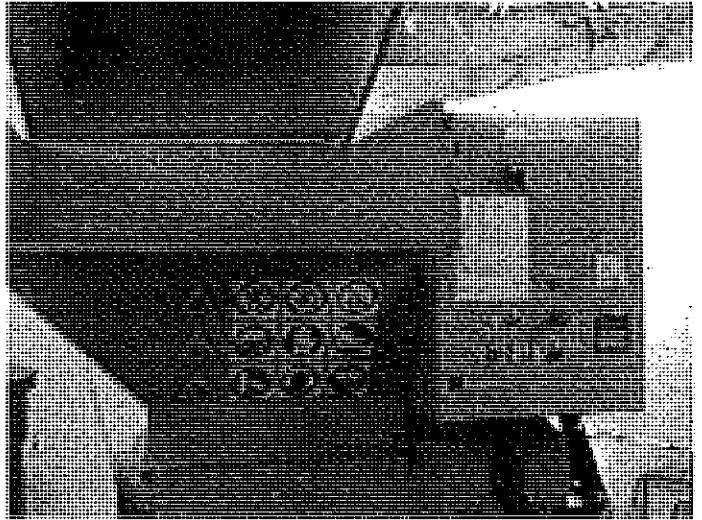
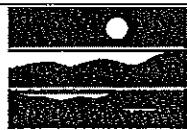


PHOTO #:14. DATE: JULY 26, 2009
TAKEN BY: MARK HENDERSON FILE No.: IMG_1129
DESCRIPTION: PLASTIC SHREDDER



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

Northwest Regional Office
 3190 160th Ave SE
 Bellevue, WA 98008
 Phone: (425) 649-7000 Fax: (425) 649-7098

Section A: General Information

Vessel Name:	NORWEGIAN STAR	Date:	August 8, 2009
Vessel Operator:	Norwegian Cruise Line	Entry Time:	9:40 AM
Vessel Type:	Passenger Vessel	Exit Time:	11:40 AM
Location:	Pier 66, Seattle	Notification (name & date):	Randy Fiebrandt; August 3, 2009
On-board contact(s):	Davor Baletin, Environmental Officer		
Inspector(s):	Amy Jankowiak, Department of Ecology, Water Quality Program		
# passengers/crew:	~2700/~1100		

The NORWEGIAN STAR arrived on May 9, 2009 at the Port of Seattle to begin the 2009 cruise season. Black/Gray water is treated with the Scanship System, a biological reactor and ultrafiltration system. The system includes prefiltration, biological treatment via a biofilm process, chemical precipitation, clarification through flotation tanks, polishing filtration and UV disinfection. Approval for continuous discharge from Ecology was granted in 2004 through 2008 and May 5, 2009.

Section B: 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"/>	Operations & Maintenance	<input checked="" type="checkbox"/>	Sludge Handling/Disposal	<input checked="" type="checkbox"/>	Oily bilge water	<input checked="" type="checkbox"/>	Other

Section C: For vessels discharging \geq 1nm from berth and \geq 6 knots only [2.1.3(A)]

<input type="checkbox"/>	Schematics match black/gray wastewater system	Not Applicable
<input type="checkbox"/>	Operations as described in submitted documentation	Not Applicable
<input type="checkbox"/>	Daily 24-hour continuous monitoring for turbidity or equivalent monitoring	Not Applicable
<input type="checkbox"/>	Turbidimeter or equivalent monitoring equipment functioning properly	Not Applicable
<input type="checkbox"/>	Auto shut down or operational controls to insure system shut down if high turbidity occurs	Not Applicable
	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	Not Applicable
<input type="checkbox"/>	Disinfection effectiveness monitoring equipment functioning properly	Not Applicable
	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	Not Applicable
	Disinfection System:	

Section D: For vessels discharging continuously [2.1.3(B)]		
<input checked="" type="checkbox"/>	Schematics match black/gray wastewater system	Schematics appeared to be consistent with they system on board.
<input checked="" type="checkbox"/>	Operations as described in submitted documentation	Operations were as described.
<input checked="" type="checkbox"/>	Daily 24-hour continuous turbidity or equivalent monitoring	Has continuous TSS monitoring.
<input checked="" type="checkbox"/>	Turbidimeter or equivalent monitoring equipment functioning properly	Appears to be functioning properly.
<input checked="" type="checkbox"/>	Auto shut down or operational controls to insure system shut down if a high turbidity occurs	A value of 28 mg/l or greater triggers automatic shut down of that MBR.
	Turbidity or equivalent : Last callbratton: in AMOS Trigger level for early alarm: 20 mg/l Trigger level for shutdown: 28 mg/l Recorded turbidity/equivalent levels above triggers:	
<input checked="" type="checkbox"/>	Daily 24-hour continuous monitoring for disinfection effectiveness	Has disinfection effectiveness monitoring.
<input checked="" type="checkbox"/>	Disinfection effectiveness monitoring equipment functioning properly	Appears to be functioning properly.
	Disinfection Effectiveness Monitoring: The bulbs are alarmed for bulb failure and intensity at 10 watts per meter squared (W/m ²).	
<input checked="" type="checkbox"/>	Auto shut down or operational controls to insure system shut down if disinfection system upset occurs	Low intensity will shut down the effluent.
<input checked="" type="checkbox"/>	Disinfection system operated and maintained properly	The UV system appeared to be operational and maintained well.
<input checked="" type="checkbox"/>	Disinfection immediately prior to discharge	Protocol: When discharging, UV occurs immediately prior to discharge.
	Disinfection System:	

Section E: General (Approved to Discharge)		
<input checked="" type="checkbox"/>	No discharges within ½ mile from shellfish beds/protocol (President's Point, Apple Tree Cove, Tyece Shoal)	There is a clear protocol in place to stop discharges for about one hour while in the shellfish beds area. During that hour, the effluent is sent to holding tanks and recirculated through the system. This protocol keeps discharges completely out of the area of ½ mile from shellfish beds.
<input checked="" type="checkbox"/>	Discharges immediately stopped when high turbidity occurs	They do have their systems set up to automatically shut down the discharge if high TSS (equivalent to turbidity) occurs.
<input checked="" type="checkbox"/>	Discharges immediately stopped when disinfection system upset occurs	They do have their systems set up to automatically shut down the discharge if the UV intensity is less than 10 w/m ² (recirculates).
<input checked="" type="checkbox"/>	Immediate notifications made to Health for disinfection system upset	A copy of the current MOU was on board. A notification list including Ecology and DOH numbers is also posted.
<input checked="" type="checkbox"/>	Sampling conducted 2/month, 1/month in Seattle (BOD, TSS, fecal coliform, pH, chlorine residual)	Sampling is being conducted as required, as of the date of the inspection.
<input checked="" type="checkbox"/>	Whole Effluent Toxicity Testing 1 per 2 years (homeported) or once/40 calls for continuous	Wet testing was completed last season and is not required this season.

Section F: General		
<input checked="" type="checkbox"/>	Wastewater Discharge records review	Discharge records were reviewed (blackwater/graywater/residual solids) and are maintained properly. Untreated sewage/gray water (USG), held discharges, and biomass were all outside of MOU waters.
<input checked="" type="checkbox"/>	Residual solids managed properly/ disposal protocol per MOU	Residual solids are held to be discharged at greater than 12 nautical miles and outside of MOU waters and the Olympic Coast National Marine Sanctuary.
<input checked="" type="checkbox"/>	Hazardous Waste managed properly	All hazardous waste that is collected is being sent off-shore in Canada. Records were reviewed for hazardous waste discharges.
<input checked="" type="checkbox"/>	WA Haz Waste guidelines followed (appendix vii)	All hazardous waste that is collected is being sent off-shore in Canada. Records were reviewed for hazardous waste discharges.
<input checked="" type="checkbox"/>	Solid Waste managed properly	Solid waste is being managed properly. The various solid waste streams are collected, sorted, stored, and sent ashore or incinerated as appropriate. Records showed only food waste being discharged and

		only outside of MOU waters.
<input checked="" type="checkbox"/>	Oily bilge water managed properly	Oily bilge water is treated and discharged at less than 15 ppm and outside of MOU waters.
Other:		

Health = Washington State Department of Health

Section G: Sample Results

Parameter	Results
Biochemical Oxygen Demand 5-Day (BOD)	<10 mg/l
Total Suspended Solids (TSS)	6.0 mg/l
Fecal Coliform	2 CFU/100 ml
Residual Chlorine	0.75 mg/l
pH	7.32
Ammonia, Nitrogen	39.3 mg/l

Section H: Summary of Findings/Comments

Introduction

Amy Jankowiak, Washington State Department of Ecology (Ecology) Northwest Regional Office, Water Quality Program conducted the inspection of the Norwegian Cruise Line NORWEGIAN STAR on August 8, 2009. The main contact on board the NORWEGIAN STAR included Davor Baletin, Environmental Officer. Prior notification of the visit was given on August 3, 2009 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. A copy of the current MOU was on-board. The NORWEGIAN STAR received approval to discharge continuously on May 5, 2009.

The NORWEGIAN STAR was built in 2001, is 965 feet long with 15 guest decks, with about a 28-foot draft. It is my understanding that the ship's wastewater system, Scanship, was installed in 2004.

Inspection

We arrived and boarded the ship at about 9:40 pm and began with introductions and a plan for the day with Davor Baletin, Environmental Officer in the Engine Control Room (ECR) area and discussed various waste streams, and the discharge protocols. Discharge records were reviewed for blackwater and graywater discharges, solid waste, and hazardous waste off-loads. We then discussed the blackwater and graywater system in detail. Next, we viewed the Hamworthy system and the oily water separator system. We then viewed the garbage and recycling area, the food waste pulper, and the garbage storage area. We then took samples of the Scanship effluent, finalized the inspection and disembarked the vessel at about 11:40 am.

Discharge Types and Protocols:

If a discharge is allowed, the Bridge authorizes any discharge. The bridge contacts the Environmental Officer as the vessel enters area of allowed discharges. The Environmental Officer has the key to unlock the discharge ports, as well as the Chief Engineer. For wastewater discharges, the latitude and longitude coordinates are recorded in the *Sewage and Graywater Discharge Record Book* and in the deck log. 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. There is an interlock for the discharge ports that records the activity of the locks electronically and is kept for about one year. All discharge records that were reviewed appeared to be in compliance with the MOU.

Blackwater, which includes toilet waste and infirmity drains and graywater which includes sink and shower and laundry water is treated with a Scanship advanced wastewater treatment system and is discharged continuously with the exception of the area near shellfish beds. There is a clear protocol in place to stop discharges for about one hour while in the shellfish beds area. During that hour, the effluent is sent to holding tanks and recirculated through the system. This protocol keeps discharges completely out of the area of 1/2 mile from shellfish beds. Beginning in the 2009 season, no discharges of any kind are occurring in the entire Olympic Coast National Marine Sanctuary.

Screenings and grit from drum screen and well as biomass (sewage sludge) from the Scanship system is held and then discharged outside of MOU waters, >12 nautical miles from shore, and outside of the Olympic Coast National Marine

Sanctuary.

Pool water is discharged outside of 12 nautical miles. Spa water is neutralized and discharged.

Food waste is collected in various locations, is sent through a pulper to less than 25 mm. The water is recirculated and eventually sent to galley gray water (about every three weeks). Pulped solid waste is also discharged outside of MOU waters. Bones from the galley are crushed and incinerated. Grease, or cooking oil is collected (photo #07) sent to the oil sludge tank for off-loading.

Oily bilge water is sent to a dirty bilge tank and then onto the Marinfloc for separating oil. Liquid from the Marinfloc goes to the Clean bilge tank and onto the oily water separator. From the oily water separator, the oil content is again measured in the locked "white box". If the parts per million (ppm) exceed 15, then the discharge valve closes and sends the waste either to the clean bilge tank where it then again goes through the oily water separator or it can be sent all the way back to the dirty bilge tank. Typical concentrations are about 2-3 ppm. Effluent from the clean bilge tank is discharged outside of MOU waters. Residue and oily sludge is off-loaded in Prince Rupert.

Dry cleaning uses PERC which is off-loaded as hazardous waste in Prince Rupert. Silver is captured from the photo waste, treated to less than 5 ppm and is off-loaded as non-hazardous waste. Some of the X-ray waste is hazardous and off-loaded as such, while some is non-hazardous and off-loaded as such. Other hazardous wastes include batteries, paints, oil filters, aerosols (punctured), and sharps. Fluorescent bulbs are crushed with a system that removes mercury by filter which is sent off as hazardous waste. Medical, red bag waste is typically incinerated about 2-3 times per week. All hazardous waste is off-loaded in Prince Rupert about once or twice a month. Narcotics and expired medications are logged and incinerated. Other materials incinerated include paper, food-contaminated cardboard, oily rags and low-density plastics.

Plastics, garbage, and other materials are collected and sorted on a sorting table. Crew do their own sorting of their own wastes. Most materials are then condensed and recycled on-shore. Glass, aluminum, tin, scrap metal and plastics, and some cardboard are all recycled along with other materials. Some of the recycled materials are off-loaded in Seattle.

Black water and Gray water System:

Blackwater, which includes toilet waste and infirmary drains goes to one of 4 collection tanks and graywater which includes sink and shower, galley and laundry water combines in tanks before combining and entering the drum screens. There are two drum screens which provide pre-screening and are cleaned about once every 2 days. Solids from the drum screens go to the sludge tank. Liquid flow from the drum screens then enters the biostep tanks for biological treatment (biofilm on rotating plastic pieces - 2 tanks in series, air added). The plastic pieces in the biostep were recently replaced for better function. After biostep, flocculants and polymers are added. Clarification then occurs via flotation tanks. Solids from the flotation tanks are sent to the sludge tank along with the screenings to be held for later discharge. Liquid flow then moves to the polishing filters for ultrafiltration (2 rotating mesh drums), and then to ultraviolet (UV) disinfection. There are three UV units, of which two are typically used with 14 bulbs each. There are typically about 20 spare bulbs on board. The bulbs are alarmed for bulb failure and intensity at 10 watts per meter squared (W/m^2). At the time of the inspection, the two operating UV units were at $35 W/m^2$ and $56 W/m^2$. The Environmental Officer was only aware of one time when the UV system alarmed and that was due to a washing issue and the end of July. The UV sleeves are cleaned by dosing Metal Bright cleaner automatically. Flow from the UV units is either discharged directly overboard via the discharge port or is held and recirculated.

The vessel is currently under-going a year-long process of replacing the metal plumbing throughout with plastic to minimize metal concentrations in the effluent.

The cruise line uses a system called AMOS for work orders and maintenance. Manufacturer recommendations for maintenance of each piece of equipment is included in the AMOS system which triggers staff when maintenance is required. Scanship also monitors maintenance on the system. Any needed calibrations, cleaning, and other needed maintenance would be included in AMOS. Total suspended solids (TSS) (equivalent to turbidity) is monitored continuously at UV disinfection. If TSS exceed 20 mg/l, the system alarms and staff responds to investigate. At 28 mg/l, the system alarms and switches automatically to hold and re-circulate that discharge. At 30 mg/l, the effluent from the system is shut down. PH is also monitored for adjustments.

Samples were taken for Biochemical Oxygen Demand (BOD 5-Day), Total Suspended Solids (TSS), pH, chlorine residual, fecal coliform and ammonia from the combined effluent of the Scanship system after UV disinfection. The sample port was disinfected by heat prior to pulling samples. The samples were put on ice immediately and were transported to AmTest laboratory in Redmond, Washington that morning. Chain of Custody and sampling procedures were followed. All results are in Section F. The results are typical of the results submitted to Ecology thus far for 2009 with the exception of chlorine residual. The chlorine residual was higher with Ecology's testing than they have been for the other results submitted to date.

Conclusions and Recommendations

The protocols for discharging away from the shellfish beds was very clear.

It is recommended that staff continue to work towards a high functioning wastewater treatment system.

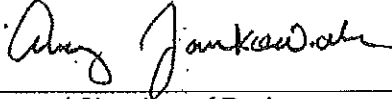
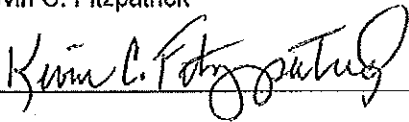
Attachments:

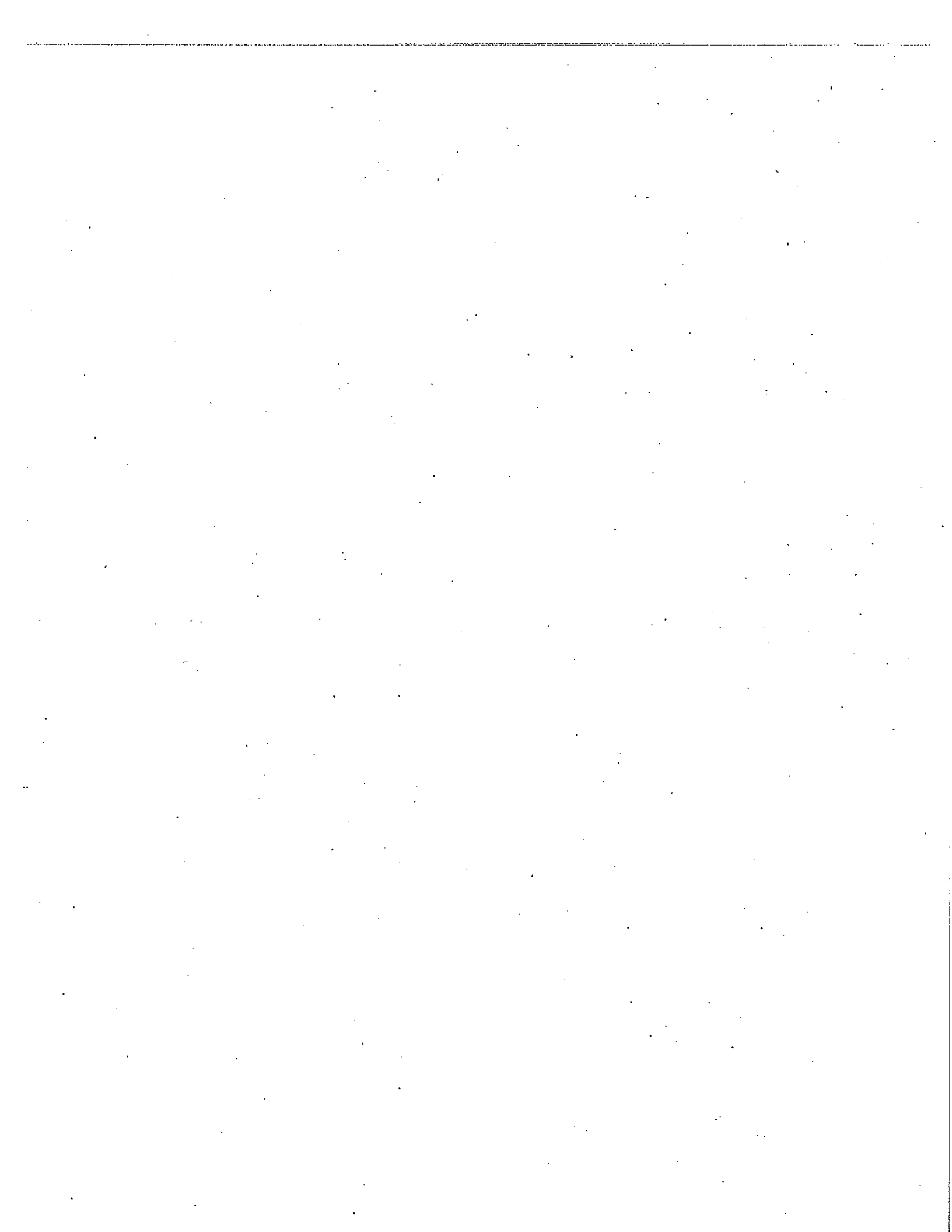
Photographs
Laboratory Report

Copies to:

Randy Fiebrandt, NCL
Davor Baletin, NCL
Amy Jankowiak, Ecology
Karen Burgess, Ecology
Mark Toy, Health
Kevin Fitzpatrick, Ecology
Central Files: Norwegian Cruise Line – NORWEGIAN STAR; WQ 6.1

Section I: Signatures

<u>Name and Signature of Inspector</u>	<u>Agency/Office/Telephone</u>	<u>Date</u>
Amy Jankowiak 	Department of Ecology/Northwest Regional Office/Water Quality Program/Municipal Compliance Specialist/(425) 649-7195	9/3/09
Kevin C. Fitzpatrick 	Department of Ecology/Northwest Regional Office/Water Quality Section Manager/(425) 649-7033	9/3/09



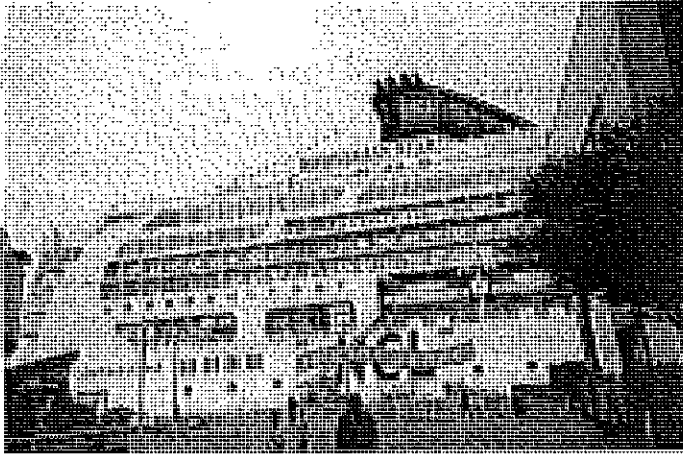


PHOTO #:01 DATE: AUGUST 08, 2009
TAKEN BY: AMY JANKOWIAK FILE No.: P8080001
DESCRIPTION: NORWEGIAN STAR VESSEL, PIER 66, SEATTLE

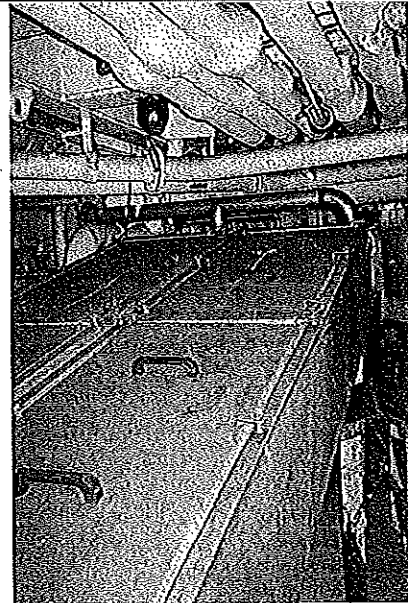


PHOTO #:02 DATE: JULY 19, 2009
TAKEN BY: AMY JANKOWIAK FILE No.: P8080002
DESCRIPTION: SCANSHIP- DRUM SCREENS

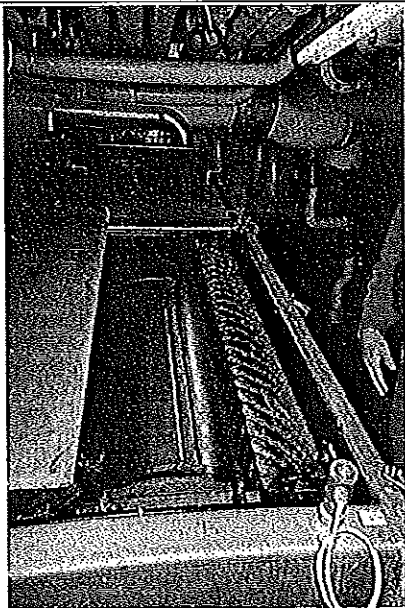


PHOTO #:03 DATE: AUGUST 8, 2009
TAKEN BY: AMY JANKOWIAK FILE No.: P8080003
DESCRIPTION: SCANSHIP - INSIDE OF DRUM SCREEN

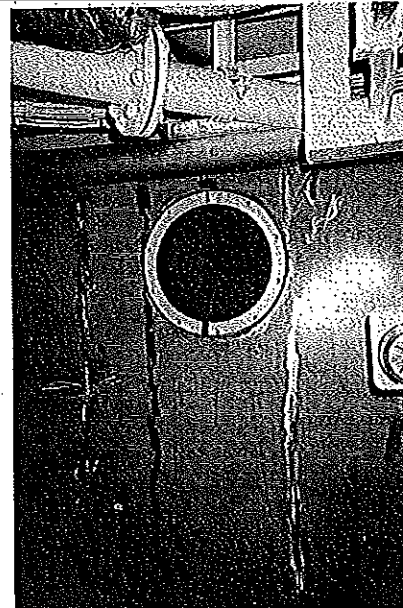


PHOTO #:04 DATE: AUGUST 8, 2009
TAKEN BY: AMY JANKOWIAK FILE No.: P8080004
DESCRIPTION: SCANSHIP - BIOSTEP

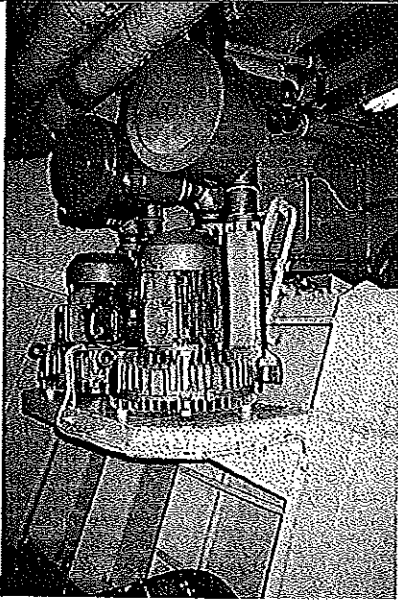


PHOTO #:05 DATE: AUGUST 08, 2009
TAKEN BY: AMY JANKOWIAK FILE No.: P8080005
DESCRIPTION: SCANSHIP - BLOWERS

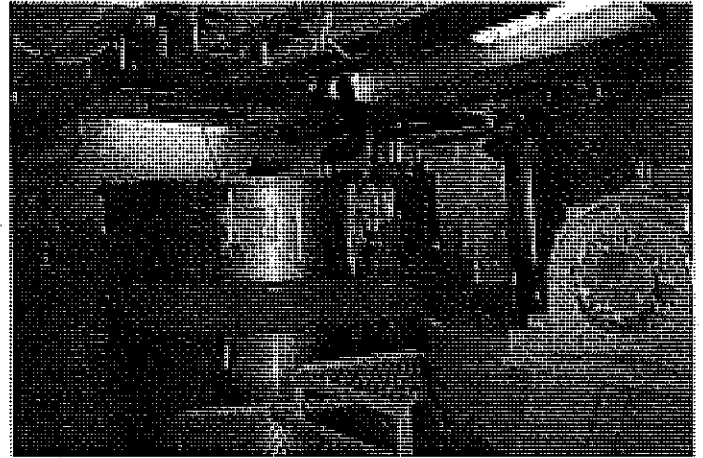


PHOTO #:06 DATE: JULY 19, 2009
TAKEN BY: AMY JANKOWIAK FILE No.: P8080008
DESCRIPTION: SCANSHIP FLOTATION TANKS

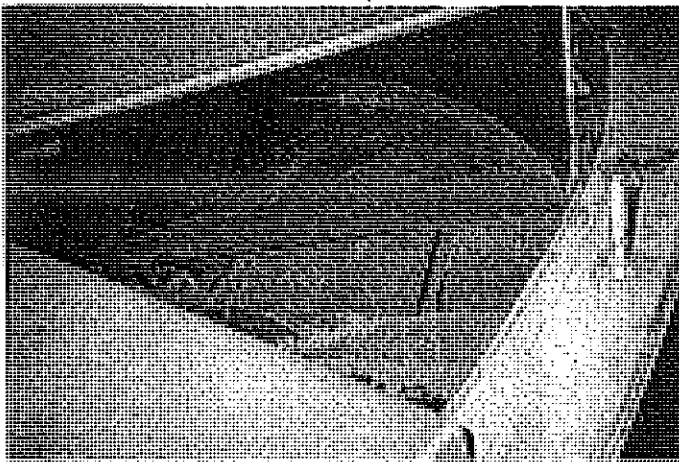


PHOTO #:07 DATE: AUGUST 8, 2009
TAKEN BY: AMY JANKOWIAK FILE No.: P8080009
DESCRIPTION: SCANSHIP - INSIDE OF FLOTATION TANK

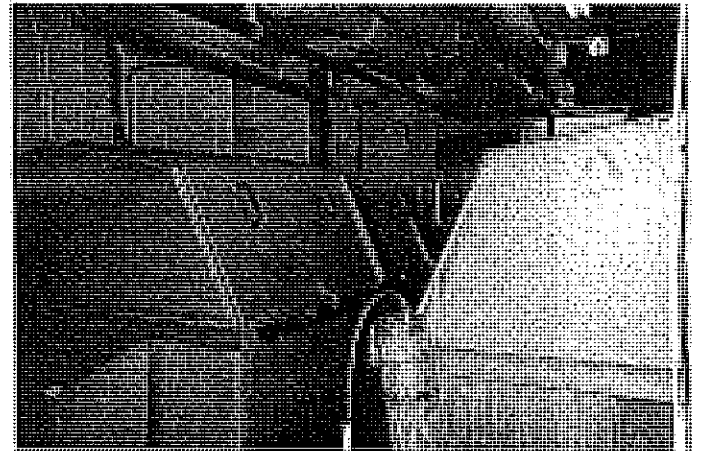


PHOTO #:08 DATE: AUGUST 8, 2009
TAKEN BY: AMY JANKOWIAK FILE No.: P8080010
DESCRIPTION: SCANSHIP - POLISHING FILTERS

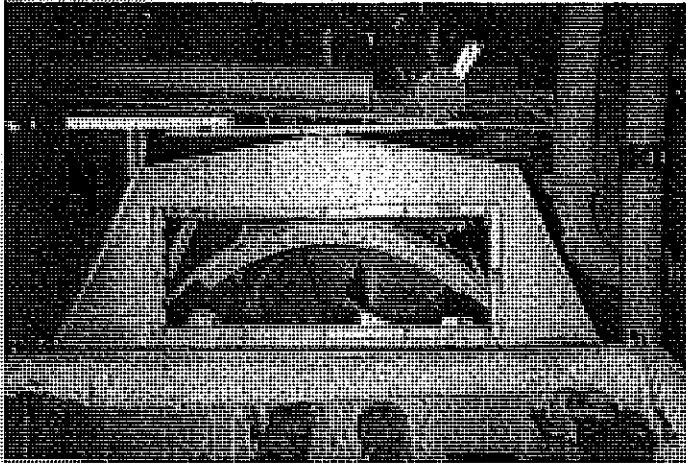


PHOTO #:09 DATE: AUGUST 08, 2009
TAKEN BY: AMY JANKOWIAK FILE No.:P8080012
DESCRIPTION: SCANSHIP - INSIDE OF POLISHING FILTER

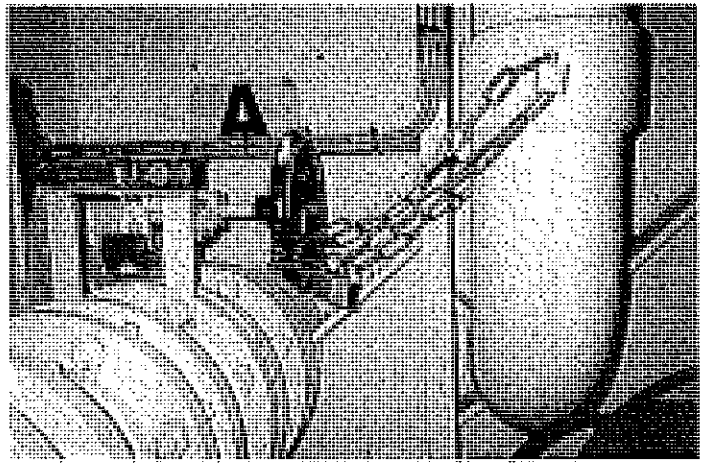


PHOTO #:10 DATE: JULY 19, 2009
TAKEN BY: AMY JANKOWIAK FILE No.: P8080011
DESCRIPTION: DISCHARGE PORT - PADLOCKED

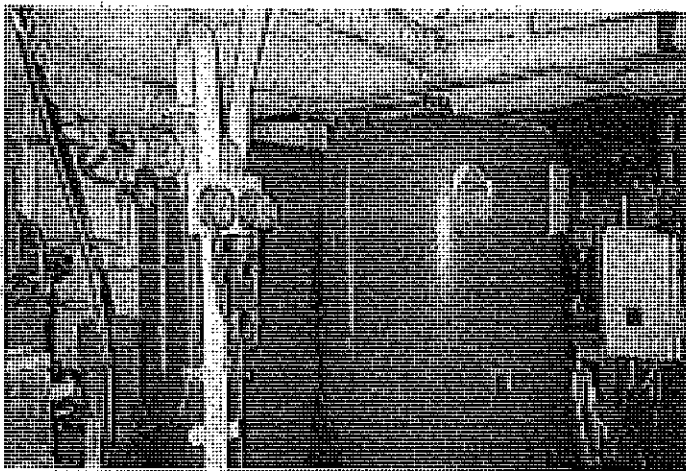


PHOTO #:11 DATE: AUGUST 8, 2009
TAKEN BY: AMY JANKOWIAK FILE No.: P8080006
DESCRIPTION: OILY WATER SEPARATOR SYSTEM

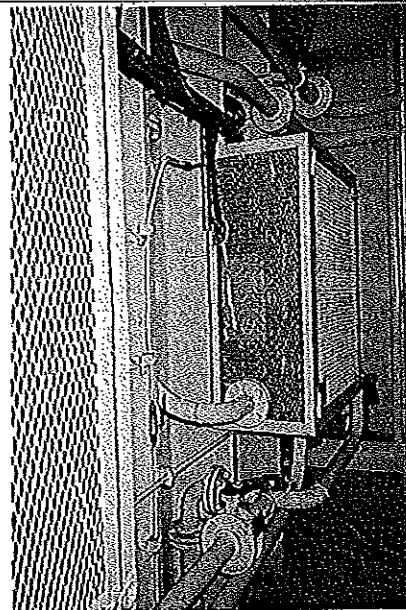


PHOTO #:12 DATE: AUGUST 8, 2009
TAKEN BY: AMY JANKOWIAK FILE No.: P8080007
DESCRIPTION: OILY WATER SEPARATOR WHITE BOXES



PHOTO #:13 DATE: AUGUST 08, 2009
TAKEN BY: AMY JANKOWIAK FILE No.:P8080013
DESCRIPTION: GLASS CRUSHER

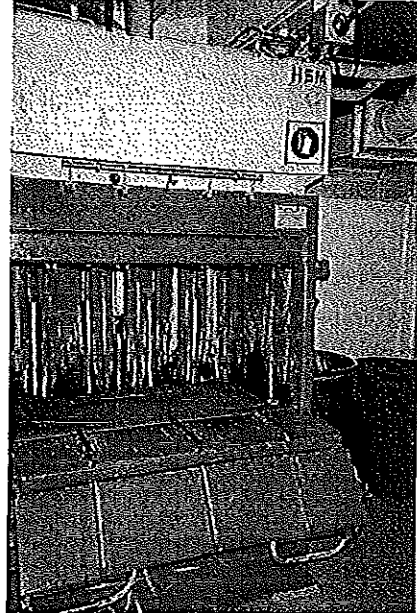


PHOTO #:14 DATE: JULY 19, 2009
TAKEN BY: AMY JANKOWIAK FILE No.: P8080014
DESCRIPTION: CARDBOARD CRUSHER

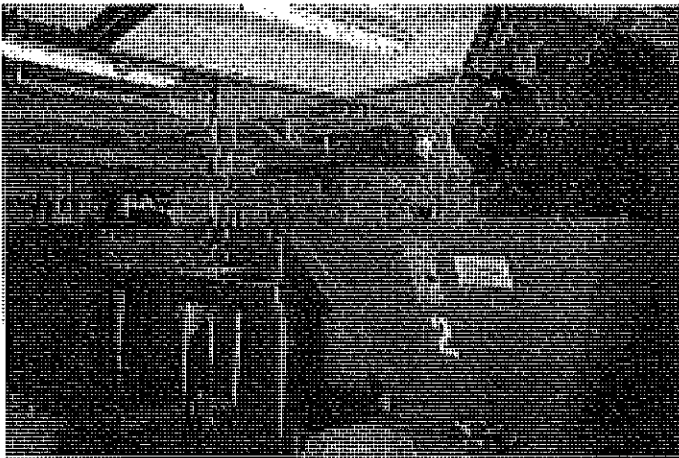


PHOTO #:15 DATE: AUGUST 8, 2009
TAKEN BY: AMY JANKOWIAK FILE No.: P8080015
DESCRIPTION: GARBAGE/RECYCLING SORTING AREA/TOP OF
INCINERATOR

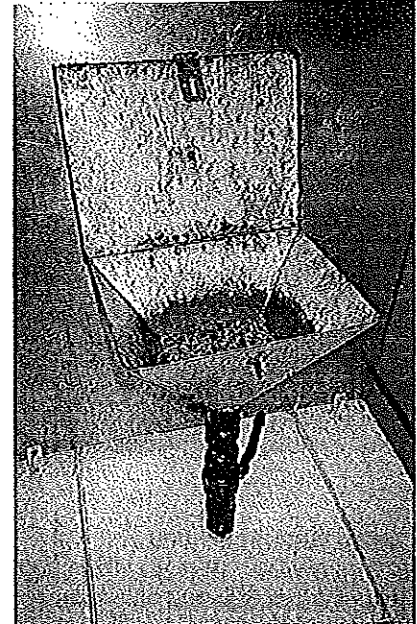


PHOTO #:16 DATE: AUGUST 8, 2009
TAKEN BY: AMY JANKOWIAK FILE No.: P8080017
DESCRIPTION: COOKING OIL/GREASE

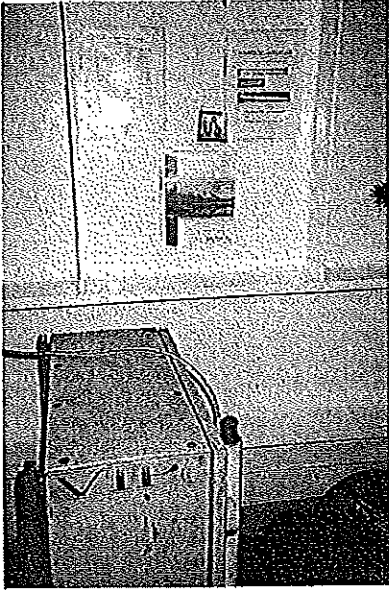


PHOTO #:17 DATE: AUGUST 08, 2009
TAKEN BY: AMY JANKOWIAK FILE No.:P8080016
DESCRIPTION: FLUORESCENT BULB CRUSHER (TOP)



PHOTO #:18 DATE: JULY 19, 2009
TAKEN BY: AMY JANKOWIAK FILE No.: P8080018
DESCRIPTION: FLUORESCENT BULB CRUSHER (BOTTOM) -
MERCURY REMOVAL SYSTEM

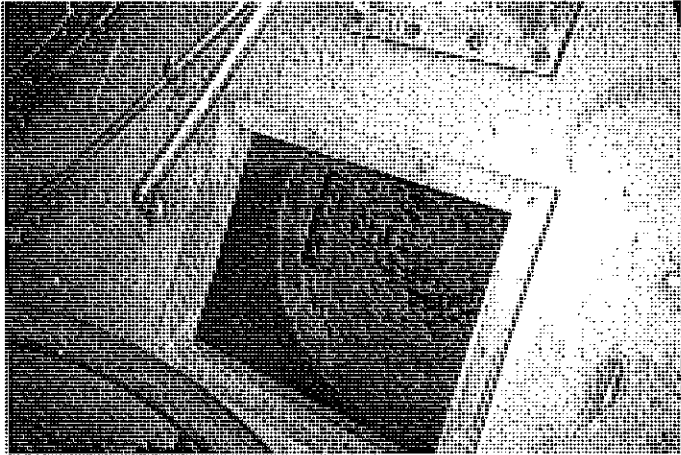


PHOTO #:19 DATE: AUGUST 8, 2009
TAKEN BY: AMY JANKOWIAK FILE No.: P8080019
DESCRIPTION: FOOD WASTE



PHOTO #:20 DATE: AUGUST 8, 2009
TAKEN BY: AMY JANKOWIAK FILE No.: P8080020
DESCRIPTION: COLD STORAGE - GARBAGE AND RECYCLABLES

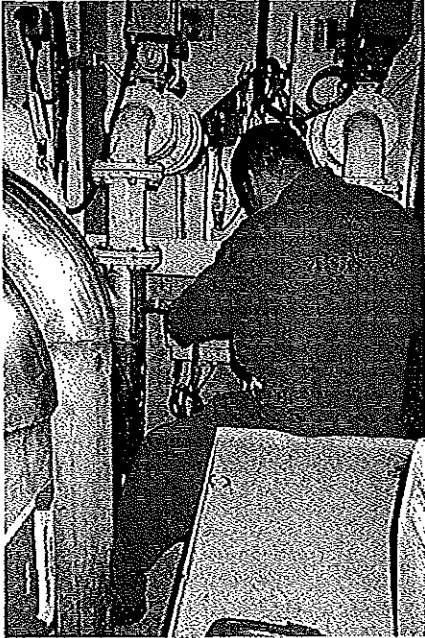


PHOTO #:21 DATE: AUGUST 08, 2009
TAKEN BY: AMY JANKOWIAK FILE NO.:P8080021
DESCRIPTION: SCANSHIP SAMPLING

AMTEST

LABORATORIES

Professional
Analytical
Services

Am Test Inc.
13600 NE 128TH PL
Suite C
Kirkland, WA 98034
(425) 885-1664

Aug 28 2009
Department of Ecology
3190 160th Ave SE
Bellevue, WA 98008
Attention: Amy Jankowiak

Dear Amy Jankowiak:

Enclosed please find the analytical data for your Norwegian Star project.

The following is a cross correlation of client and laboratory identifications for your convenience.

CLIENT ID	MATRIX	AMTEST ID	TEST
Norstar-Eff	Water	09-A012937	Micro, CONV, DEM, NUT

Your sample was received on Saturday, August 8, 2009. At the time of receipt, the sample was logged in and properly maintained prior to the subsequent analysis.

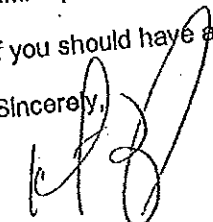
The analytical procedures used at AmTest are well documented and are typically derived from the protocols of the EPA, USDA, FDA or the Army Corps of Engineers.

Following the analytical data you will find the Quality Control (QC) results.

Please note that the detection limits that are listed in the body of the report refer to the Method Detection Limits (MDL's), as opposed to Practical Quantitation Limits (PQL's).

If you should have any questions pertaining to the data package, please feel free to contact me.

Sincerely,



Kathy Fuglel
President

BACT = Bacteriological
CONV. = Conventional
TC = Total Coliforms

MET = Metals
ORG = Organics

NUT = Nutrients
DEM = Demand

MIN = Minerals
APC = Aerobic Plate Count



Am Test Inc.
 13600 NE 126TH PL
 Suite C
 Kirkland, WA 98034
 (425) 885-1664
 www.amtestlab.com



Professional
 Analytical
 Services

ANALYSIS REPORT

Department of Ecology
 3190 160th Ave SE
 Bellevue, WA 98008
 Attention: Amy Jankowiak
 Project Name: Norwegian Star
 All results reported on an as received basis.

Date Received: 08/08/09
 Date Reported: 8/28/09

AMTEST Identification Number 09-A012937
 Client Identification Norstar-Eff
 Sampling Date 08/08/09, 11:24

Microbiological

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Fecal Coliforms	2.	CFU/100 ml	1.		SM 9222D	KF	08/08/09 12:30

Conventionals

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
pH	7.32	unit	*		EPA 150.1	SS	08/08/09
Chlorine Residual	0.75	mg/l		0.10	EPA 330.5	KF	08/08/09
Total Suspended Solids	6.0	mg/l		1.0	SM 2540D	SL	08/10/09

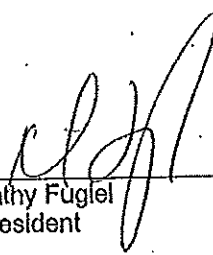
Demand

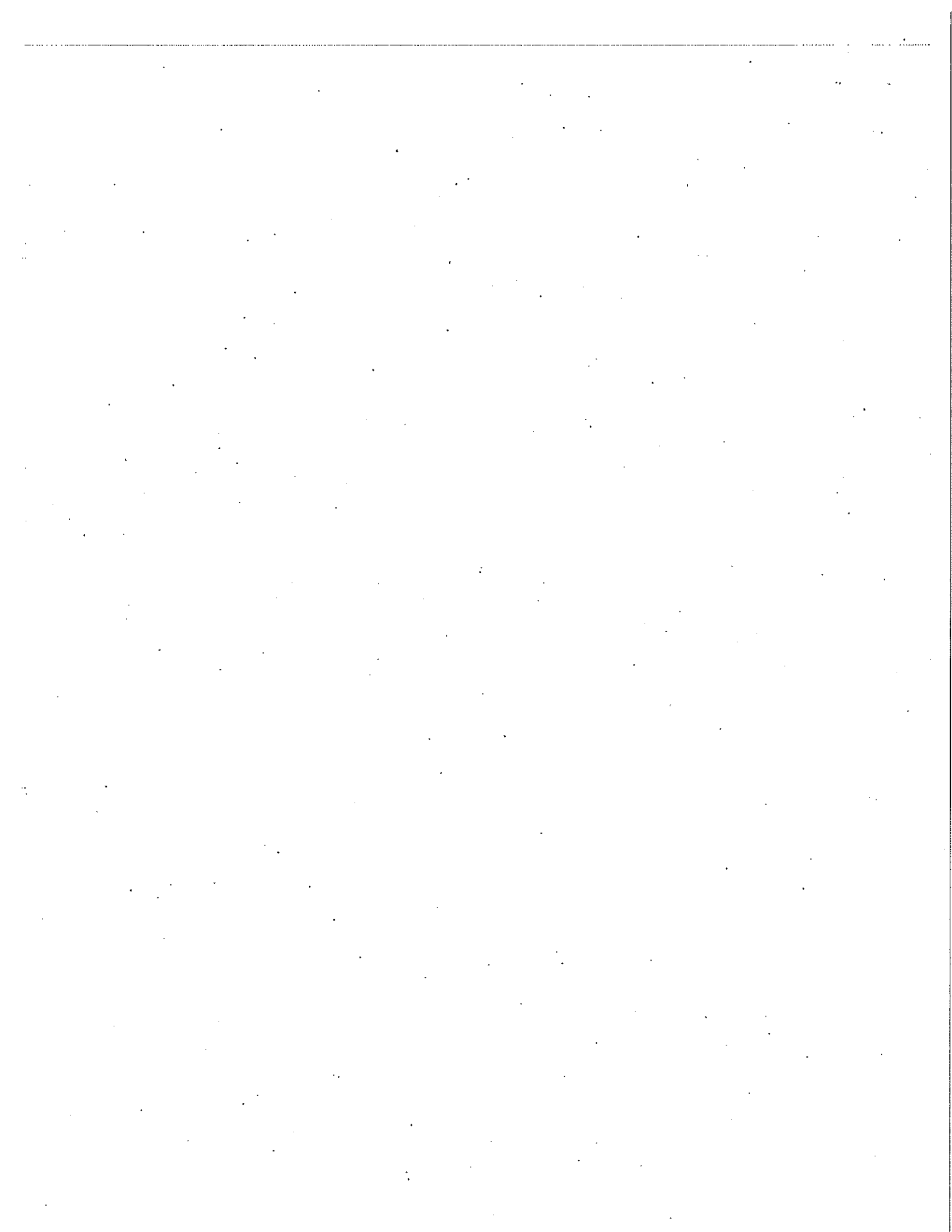
PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
BOD	< 10	mg/l		10.	SM 5210B	KF	08/08/09

Nutrients

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Ammonia Nitrogen	39.3	mg/l		0.005	EPA 350.1	TS	08/12/09

* = The method specifies the test is to be performed in the field; therefore the result is an estimate.


 Kathy Fugiel
 President



AMTEST

LABORATORIES

QC Summary for sample number: 09-A012937

DUPLICATES

SAMPLE #	ANALYTE	UNITS	SAMPLE VALUE	DUPLICATE VALUE	RPD
09-A012937	BOD	mg/l	< 10	< 10	
09-A012937	Chlorine Residual	mg/l	0.75	0.75	0.00
09-A011978	Ammonia Nitrogen	mg/l	0.041	0.039	5.0
09-A012737	Total Suspended Solids	mg/l	4.0	6.0	40.
09-A012746	Total Suspended Solids	mg/l	160	150	6.5
09-A012914	Total Suspended Solids	mg/l	270	270	0.00

MATRIX SPIKES

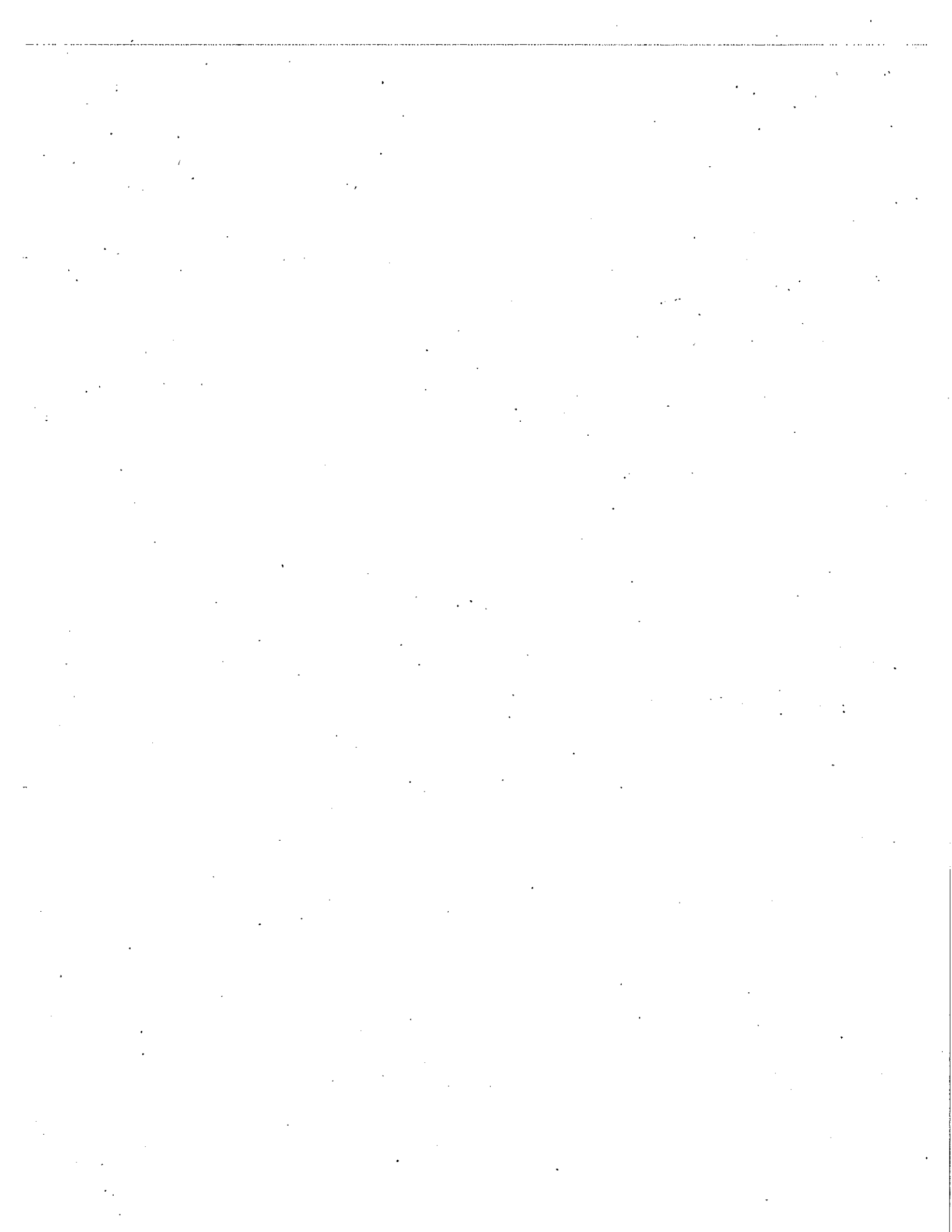
SAMPLE #	ANALYTE	UNITS	SAMPLE VALUE	SMPL+ SPK	SPK AMT	RECOVERY
09-A012937	Ammonia Nitrogen	mg/l	39.3	59.6	20.0	101.50 %

STANDARD REFERENCE MATERIALS

ANALYTE	UNITS	TRUE VALUE	MEASURED VALUE	RECOVERY
pH	unit	7.00	7.02	100. %
BOD	mg/l	200	180	90.0 %
Chlorine Residual	mg/l	1.00	0.89	89.0 %
Ammonia Nitrogen	mg/l	0.250	0.231	92.4 %
Total Suspended Solids	mg/l	100	94.	94.0 %
Total Suspended Solids	mg/l	87.	87.	100. %
Total Suspended Solids	mg/l	110	99.	90.0 %

BLANKS

ANALYTE	UNITS	RESULT
BOD	mg/l	< 10
Chlorine Residual	mg/l	< 0.1
Ammonia Nitrogen	mg/l	< 0.005
Total Suspended Solids	mg/l	1.0
Total Suspended Solids	mg/l	< 1
Total Suspended Solids	mg/l	< 1





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

Northwest Regional Office

3190 160th Ave SE
 Bellevue, WA 98008

Phone: (425) 649-7000
 Fax: (425) 649-7098

Inspection Date 9/4/2009	Permit Number NA	County King	Receiving Waters Marine Waters	Ecology Inspector Amy Jankowiak, Compliance Specialist
Entry Time 9:42 am Exit Time 12:05 pm	Photos Taken <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Samples Taken <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Inspection Announced <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Discharges to: <input checked="" type="checkbox"/> Surface Water <input type="checkbox"/> Ground Water <input type="checkbox"/> Dewater <input type="checkbox"/> POTW
Name and Location of Site Inspected: RHAPSODY OF THE SEAS, Royal Caribbean Passenger Vessel Pier 91, Seattle				Additional Participants/Inspectors: Marietta Sharp, Ecology; Mark Toy, Department of Health; Randall Jones, NAVALIS Environmental Systems
On-Site Representative(s): Name/Title/Phone/e-mail Andy England, Environmental Officer RH_EnvironmentalOfficer@rccl.com				
Responsible Official(s): Name/Title/Address/Phone/e-mail Rich Pruitt, Director Environmental Programs Royal Caribbean International 1080 Caribbean Way, Miami, FL 33132 Office: 305-982-2179; Cell: 305-495-2845; RPruitt@rccl.com				Other Facility Data: Notification made to Rich Pruitt, September 1, 2009.

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 ≥ 1 nm 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:	

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	
<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, Tyeo Shoal)	
<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. All discharges occurred outside of MOU waters (beginning of cruise season to date).
<input checked="" type="checkbox"/>	Residual Solids Managed Properly/Disposal Protocol per MOU	Residual solids are either held to be discharged at greater than 13 nautical miles and outside of MOU waters and the Olympic Coast National Marine Sanctuary, incinerated, or drummed and landed ashore.
<input checked="" type="checkbox"/>	Hazardous Waste Managed Properly	Hazardous waste is typically off-loaded in Seattle with Clean Harbors or is occasionally off-loaded in Victoria. Hazardous waste records were reviewed and appear to be consistent with MOU requirements.
<input checked="" type="checkbox"/>	WA Hazardous Waste Guidelines Followed (Appendix vii)	Hazardous waste is typically off-loaded in Seattle with Clean Harbors or is occasionally off-loaded in Victoria. Hazardous waste records were reviewed and appear to be consistent with MOU requirements.
<input checked="" type="checkbox"/>	Solid Waste Managed Properly	Solid waste is being managed properly. The various solid waste streams are collected, sorted, stored, and sent ashore or incinerated as appropriate. Records showed only food waste being discharged and only outside of MOU waters.

<input checked="" type="checkbox"/> Oily Bilge Water Managed Properly	Oily bilge water is treated and discharged at less than 5 ppm and outside of MOU waters.
---	--

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	

Section G: Summary of Findings/Comments

Introduction

Amy Jankowiak, Washington State Department of Ecology (Ecology) Northwest Regional Office, Water Quality Program, Marietta Sharp, Ecology, Solid Waste Program (biosolids), and Mark Toy, Washington State Department of Health – Shellfish Program, conducted the inspection of the Royal Caribbean RHAPSODY OF THE SEAS on September 4, 2009. The main contacts on board the RHAPSODY OF THE SEAS included Andy England, Environmental Officer; and Randall Jones, NAVALIS Environmental Systems®, LLC. Prior notification of the visit was given on September 1, 2009 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 RHAPSODY OF THE SEAS arrived on May 15th, 2009 at the Port of Seattle to begin the 2009 cruise season which consists of 18 calls to Seattle. They currently have both a traditional marine sanitation device for blackwater that includes screening, aeration and chlorination and have just recently installed a new advanced wastewater treatment system for both black and gray water. The new AWTS is still undergoing start-up with the manufacturers, but is operating. The new AWTS is a NAVALIS Environmental Systems® treatment system (photo #01) includes equalization, aeration, solids separation, ultrafiltration, advanced oxidation and ultraviolet light disinfection. Approval for continuous discharge from Ecology has not been requested nor issued. The vessel has been holding effluent and not discharging in MOU waters since the beginning of the season.

The RHAPSODY OF THE SEAS' maiden voyage was in 1997, and is 915 feet long with a width of 105.6 feet.

Inspection

We arrived and boarded the ship at about 9:42 am and began with introductions and a plan for the day with Andy England, the Environmental Officer. Mr. England is new to the vessel, but has been the fleet environmental trainer for a number of years. We first discussed the various waste streams and discharge protocols. We then reviewed discharge records for hazardous waste, garbage and black water and graywater. A copy of the current MOU was available. We then headed to the control room for a discussion of the two wastewater treatment systems. We then viewed the black water and gray water systems. We then toured the garbage and recycling area. The inspection was then finalized and we disembarked the vessel at about 12:05 pm.

Discharge Types and Protocols:

All discharges occur outside of 13 nautical miles (they add a one mile buffer beyond their normal policy) with the exception of non-contact cooling water. If a discharge is to occur (although not occurring in MOU waters), the Bridge contacts the engine control room and confirms location. The control room also logs the information. A pre-determined voyage plan is used as guidance, but locations are always verified prior to discharge. The discharge ports have padlocks on them and the keys are kept in the control room under the Watchkeeper's eye. For black water and gray water, the latitude and longitude coordinates are recorded in the *Sewage and Graywater Discharge Record Book* and in the deck log. 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. All wastewater discharge records that were reviewed appeared to be in compliance with the MOU and did not occur in MOU waters.

The vessel currently has both a traditional marine sanitation device for blackwater that includes screening, aeration and chlorination and have just recently installed a new advanced wastewater treatment system for both black and gray water. The new AWTS is still undergoing start-up with the manufacturers, but is operating. Blackwater includes toilet waste and infirmity drains. Gray water includes sink and shower water, laundry water, spa water and galley water. Black water first goes through a three-level shaker screen, while gray water goes through a two-level shaker screen. The black water and gray water is then combined and is treated with the AWTS that includes equalization, aeration, solids separation, ultrafiltration, advanced oxidation and ultraviolet light disinfection. The coarse screenings are collected and incinerated or drummed (photo #16) and sent ashore and the bioresidue collected is sent first through the Solids Reduction System of the NAVALIS system and it is then sent to the traditional marine sanitation device for further treatment before discharge or drumming and sending ashore. Both black water and gray water and bioresidue (also known as sewage sludge or biomass) is currently discharged outside of MOU waters, and outside of 13 nautical miles (nm) from shore.

Oily bilge water is treated with a Marinfloc® system and discharged at less than 5 ppm at greater than 13 nm. A white box is used for additional monitoring assurance. The white box is programmed to prevent discharge at less than 5 ppm. When the white box is opened, the effluent is routed back to the dirty bilge tank. The white box is padlocked and requires two keys. The Engineer on Watch has one key and the Chief Engineer has the other. Sink water from the engine area goes to the oily bilge water system.

Pool water can be held for about 72 hours and is discharged overboard outside of MOU waters. If the pool needs to be emptied while in MOU waters, the pool is closed and covered until they are out at sea. If there sanitation incidents on deck, the area is sanitized and steam units are used. Spa water is discharged to the gray water tanks every 24 hours.

Food waste is collected in various locations and is sent to the pulping system. The Environmental Officer oversees the pulpers and makes sure that it is regularly screened for plastics. Pulped food waste is discharged outside of 13 nm. Used water from the pulpers is sent to the black water collection tanks. Some food wastes such as pineapple rinds, banana peels, coffee, cake and breads which clog up the pulpers is sent to the incinerators. The vessel has a Fats, Oils and Grease (FOG) program to prevent the materials from being discharged. Grease traps are in every galley location as well as restaurant prep areas. Grease is landed ashore in Juneau for biodiesel recycling (approximately 1 ton for every 2 cruises).

Potable water is either bunkered or produced by desalinization when out at sea. An evaporator or a Reverse Osmosis system is used for desal and the brine is discharged outside of 13 nautical miles.

Laundry uses phosphate free Ecolab® products. Dry cleaning uses Perchloroethylene (PERC) which is drummed and off-loaded as hazardous waste. Other hazardous waste materials include photo waste filters (photo liquid waste from the silver recovery system is sent off as non-hazardous waste), spent chemicals, paints and paint thinners, aerosol condensate (photo #17) and filters from the fluorescent bulb mercury removal system (photo #22). Hazardous waste (photo #15) is typically off-loaded in Seattle with Clean Harbors or is occasionally off-loaded in Victoria. Hazardous waste records were reviewed and appear to be consistent with MOU requirements.

Oily rags, medical waste (except sharps), food-contaminated cardboard, some plastics, some paper and wastewater system screenings are all incinerated (photo #21). The vessel is currently using fuel with less than 1.5% sulfur content. Incinerators are not used within 4 nautical miles of Port.

Plastics, cardboard (photo #19), glass (photo #20), sand-filters from the pools/spas, aluminum, tin (photo #18), scrap metals, and batteries are all recycled. Recycling currently takes place in Canada. Dry garage is offloaded as non-hazardous waste. Some materials are also donated when feasible. Ashes and flowers from at-sea funerals are discharged at greater than 13 nautical miles. Garbage records looked to be in good order.

HAMANN® Black water System traditional marine sanitation device:

Blackwater or bioresidue is collected by vacuum. The liquid is coarsely screened and then screened by a drum screen. All solids collected are either incinerated or drummed and off-loaded. The screened liquid is sent to one of two treatment tanks where it is mixed with seawater. The type I marine sanitation device (MSD) consists of aeration, baffles, a minimizing pump and then chlorination by sodium hypochlorite. The liquid is then held for discharge. Any solids collected from the MSD is also collected into the drums for shore side off-loading.

NAVALIS® Black and Gray water Advanced Wastewater Treatment System:

The new AWTS is still undergoing start-up with the manufacturers, but is operating. Blackwater is collected by vacuum and is sent through a three-level shaker screen (photo #08). Plastics and screenings are collected and incinerated or landed ashore. Bioresidue is sent to the Sludge Reduction Tank (photos #02, #03, #04 and #05) for further treatment. Liquid is sent to the Aerated Equalization Tank (AET). Graywater is collected and sent through a two-level shaker tank.

Solids are sent to the solids tank and liquid is sent to the AET. From the AET, flocculation mixing occurs and goes to the Hydraulic Separator (photo #07) which is similar to a dissolved air flotation tank. From there, liquid goes through pre-filters and then to ultrafiltration with tubular ceramic ultrafilters (photo #09). The ultrafilters are inside-out filters where liquid enters through the center and then is filtered outwards through the ceramic. The filters are washed automatically (photo #10), daily. From the ultrafilters, liquid goes to an Advanced Oxidation Batch Reactor. The reject water is sent back to the AET. The filtration filters down to three hundredths of a micron. From the reactor, flow is disinfected with ultraviolet (UV) light (photos #11 and #13) and is then treated with ozone (~230 grams/hr). Effluent is then sent to holding tanks and goes to another UV system immediately prior to discharge (photo #12). Chemicals including polymer and hydrogen peroxide (~10-20 ppm) are used in the system.

The solids are sent first through a Solids Reduction System which includes mineralization, decanting and ozone. The residue is sent to the residue storage tank (photo #06) and is then sent to the HAMANN® unit for further treatment prior to discharge or off-loading. Royal Caribbean is currently evaluating the best option for how to treat and dispose of bioresidue.

Sampling is done on the vessel for process control with an on-board sampling laboratory (photos #23 and #24)

Conclusions and Recommendations

Staff was very knowledgeable of the protocols and systems for treatment and discharges.

The installation of an advanced purification system is applauded for the overall environmental benefits that it will provide. And keeping the traditional MSD on board for additional bioresidue treatment is also an advantage.


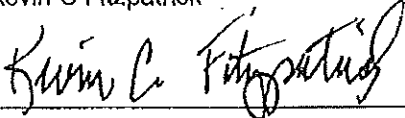
Attachments: Photographs

Copies to:

- Rich Pruitt, RCCL
- Andy England, RCCL
- Mark Toy, Department of Health
- Karen Burgess, Ecology
- Kevin Fitzpatrick, Ecology
- Amy Jankowiak, Ecology
- Marietta Sharp, Ecology

Central Files: Royal Caribbean – RHAPSODY OF THE SEAS; 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	10/22/09
Kevin C Fitzpatrick 	Department of Ecology Northwest Regional Office Water Quality Section Manager 425-649-7033	10/23/09



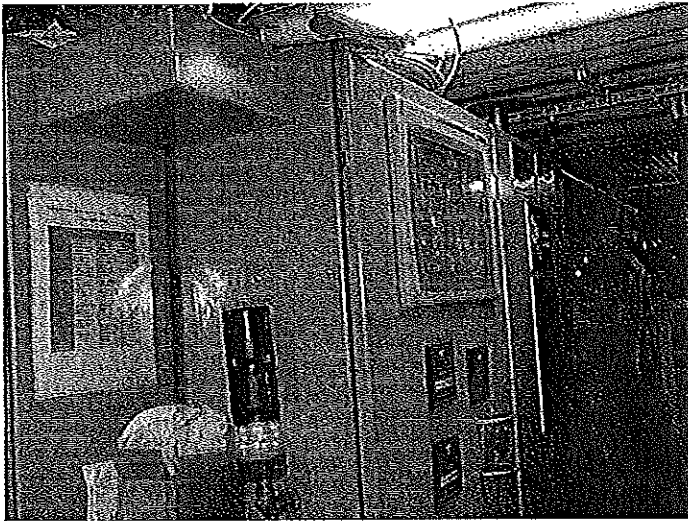


PHOTO #:01 DATE: SEPTEMBER 4, 2009
TAKEN BY: AMY JANKOWIAK FILE No.:P9040001
DESCRIPTION: NAVALIS® SYSTEM CONTROLS

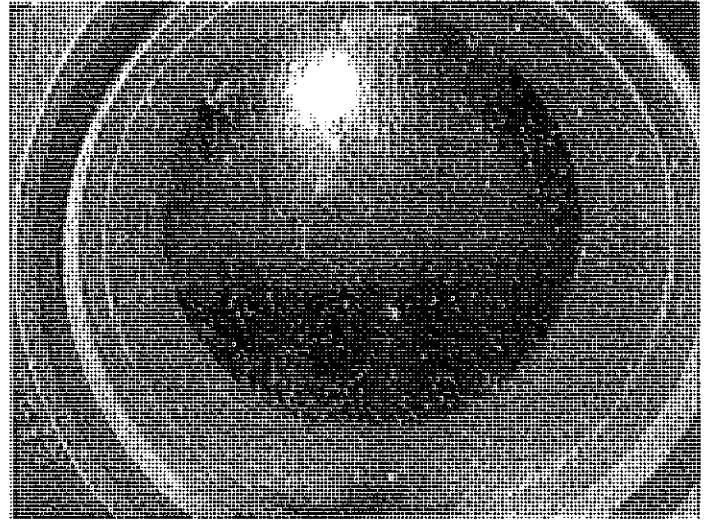


PHOTO #:02 DATE: SEPTEMBER 4, 2009
TAKEN BY: AMY JANKOWIAK FILE No.: P9040002
DESCRIPTION: SLUDGE REDUCTION TANK (SRT)

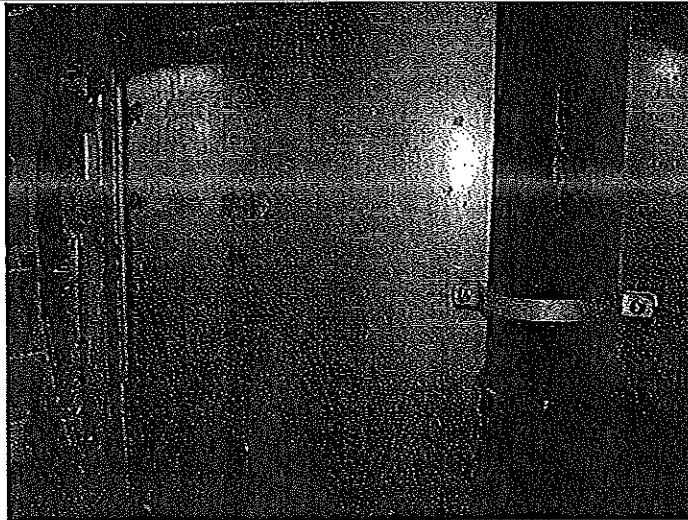


PHOTO #:03 DATE: SEPTEMBER 4, 2009
TAKEN BY: AMY JANKOWIAK FILE No.: P9040003
DESCRIPTION: SRT



PHOTO #:04 DATE: SEPTEMBER 4, 2009
TAKEN BY: AMY JANKOWIAK FILE No.: P9040004
DESCRIPTION: SRT



PHOTO #:05 DATE: SEPTEMBER 4, 2009
TAKEN BY: AMY JANKOWIAK FILE No.:P9040005
DESCRIPTION: SRT

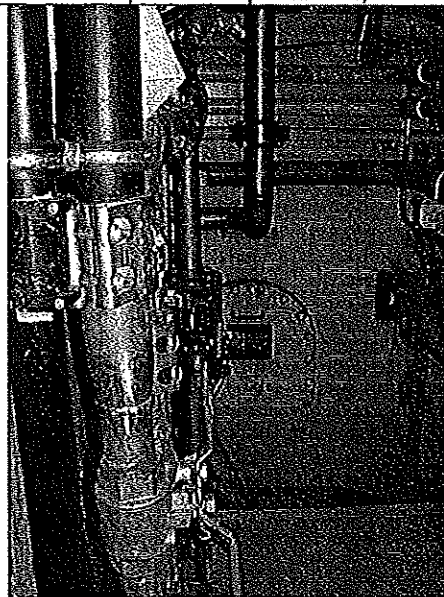


PHOTO #:06 DATE: SEPTEMBER 4, 2009
TAKEN BY: AMY JANKOWIAK FILE No.: P9040006
DESCRIPTION: RESIDUE HOLDING TANK

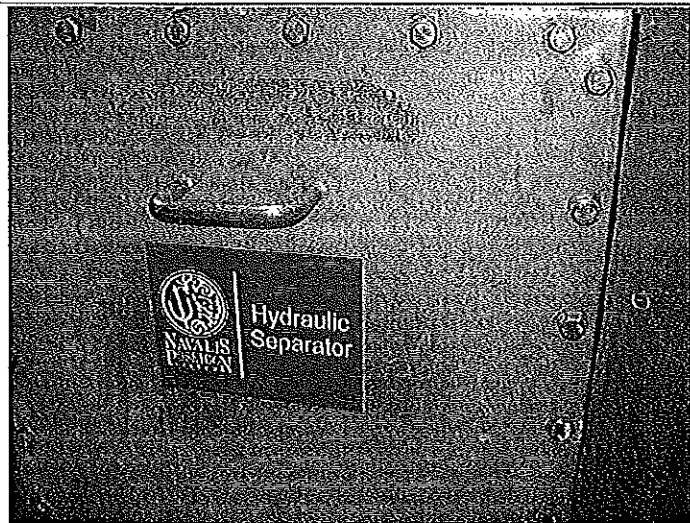


PHOTO #:07 DATE: SEPTEMBER 4, 2009
TAKEN BY: AMY JANKOWIAK FILE No.: P9040007
DESCRIPTION: HYDRAULIC SEPARATOR

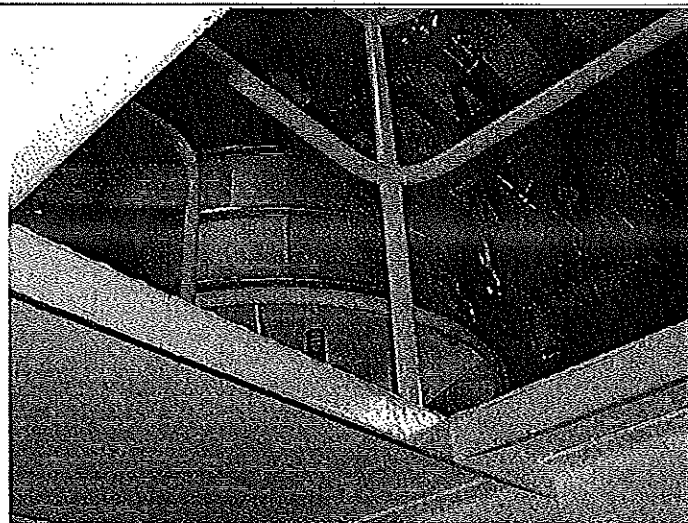


PHOTO #:08 DATE: SEPTEMBER 4, 2009
TAKEN BY: AMY JANKOWIAK FILE No.: P9040008
DESCRIPTION: SHAKER SCREENS

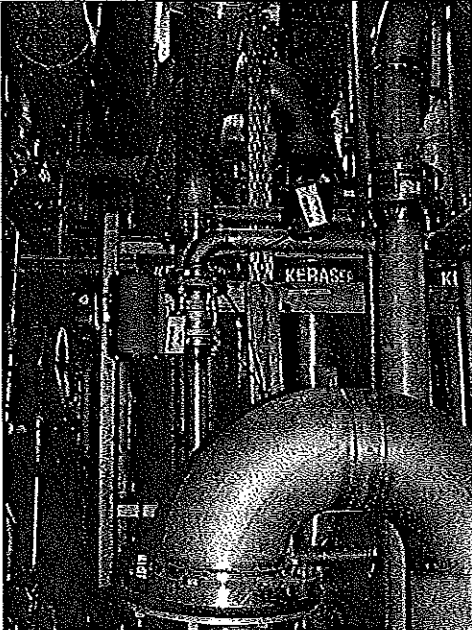


PHOTO #:09 DATE: SEPTEMBER 4, 2009
TAKEN BY: AMY JANKOWIAK FILE No.:P9040009
DESCRIPTION: ULTRAFILTERS

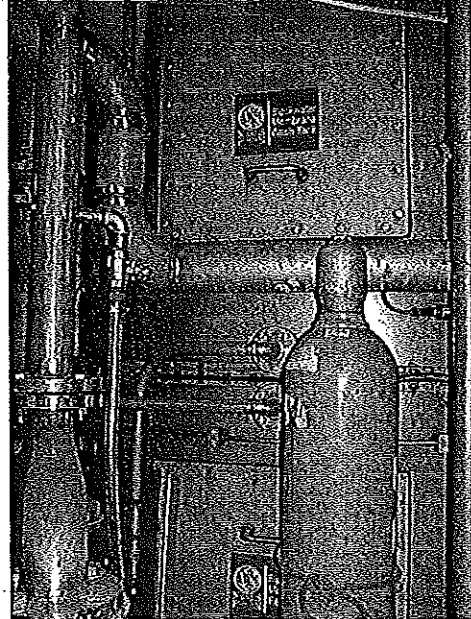


PHOTO #:10 DATE: SEPTEMBER 4, 2009
TAKEN BY: AMY JANKOWIAK FILE No.: P9040010
DESCRIPTION: MEMBRANE WASH TANK AND FEED TANK

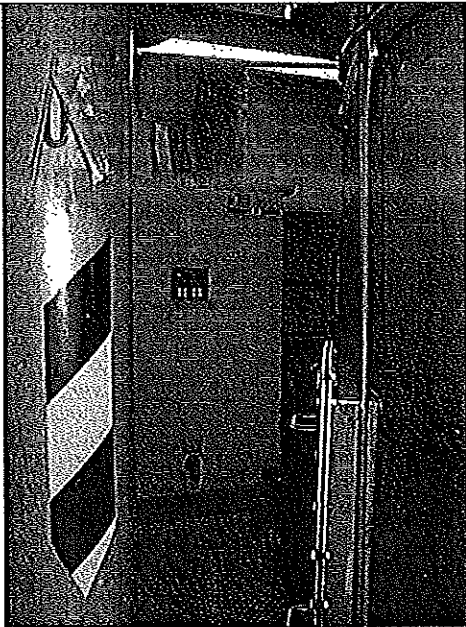


PHOTO #:11 DATE: SEPTEMBER 4, 2009
TAKEN BY: AMY JANKOWIAK FILE No.: P9040011
DESCRIPTION: ULTRAVIOLET (UV) DISINFECTION SYSTEM



PHOTO #:12 DATE: SEPTEMBER 4, 2009
TAKEN BY: AMY JANKOWIAK FILE No.:P9040013
DESCRIPTION: DISCHARGE PORT WITH PADLOCK

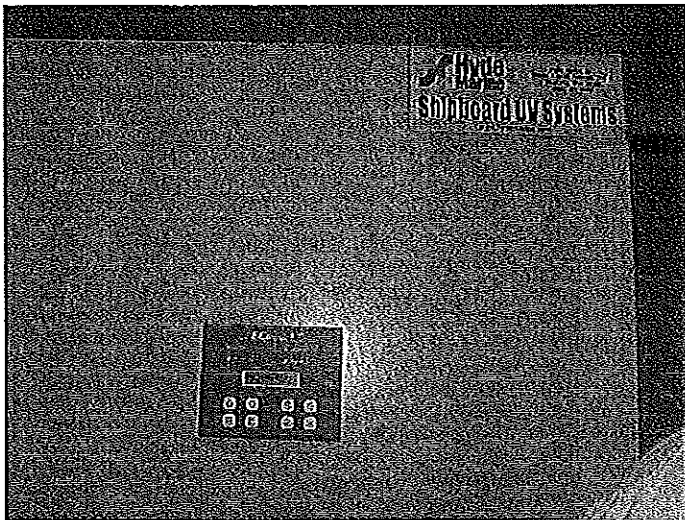


PHOTO #:13 DATE: SEPTEMBER 4, 2009
TAKEN BY: AMY JANKOWIAK FILE No.: P9040014
DESCRIPTION: UV DISINFECTION SYSTEM

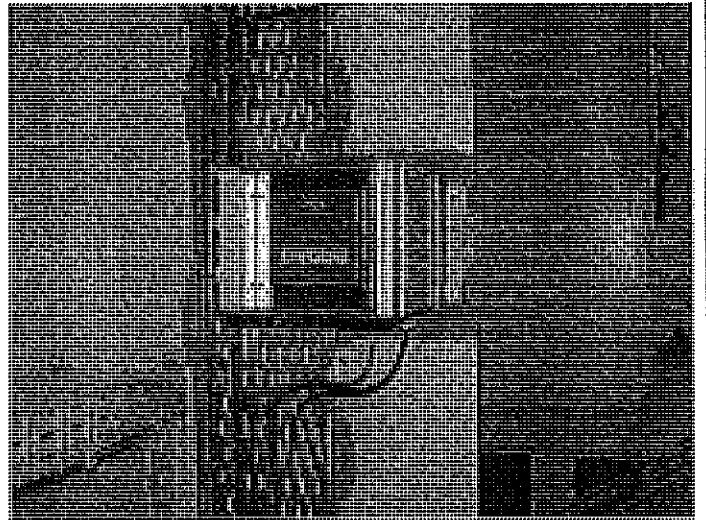


PHOTO #:14 DATE: SEPTEMBER 4, 2009
TAKEN BY: AMY JANKOWIAK FILE No.: P9040015
DESCRIPTION: TURBIDIMETER

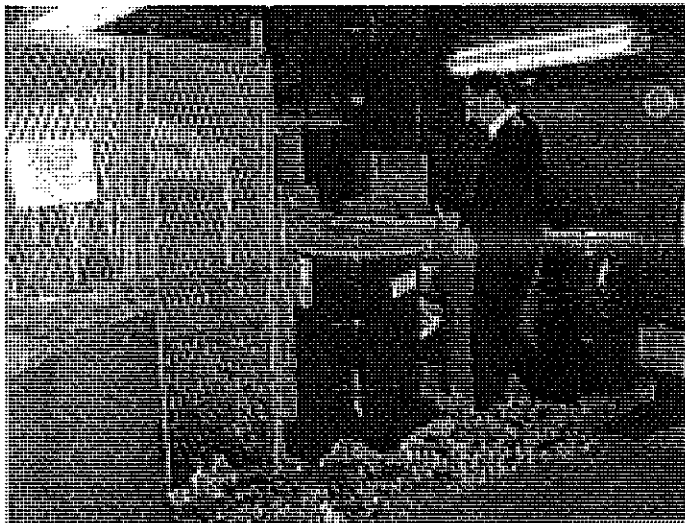


PHOTO #:15 DATE: SEPTEMBER 4, 2009
TAKEN BY: AMY JANKOWIAK FILE No.: P9040018
DESCRIPTION: GARBAGE/RECYCLING/MATERIALS COLD STORAGE

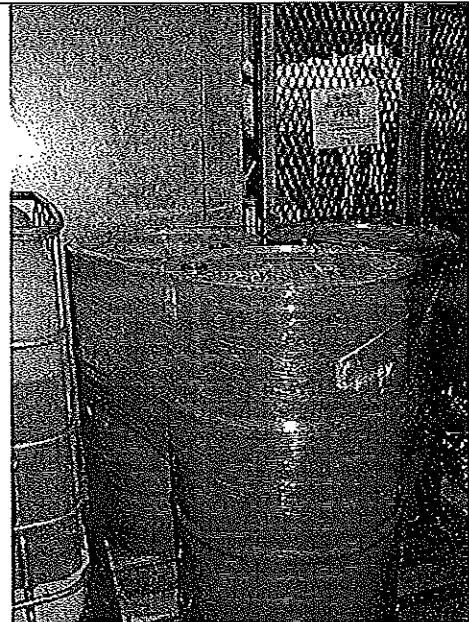


PHOTO #:16 DATE: SEPTEMBER 4, 2009
TAKEN BY: AMY JANKOWIAK FILE No.: P9040017
DESCRIPTION: BIORESIDUE (SEWAGE SLUDGE) DRUMS

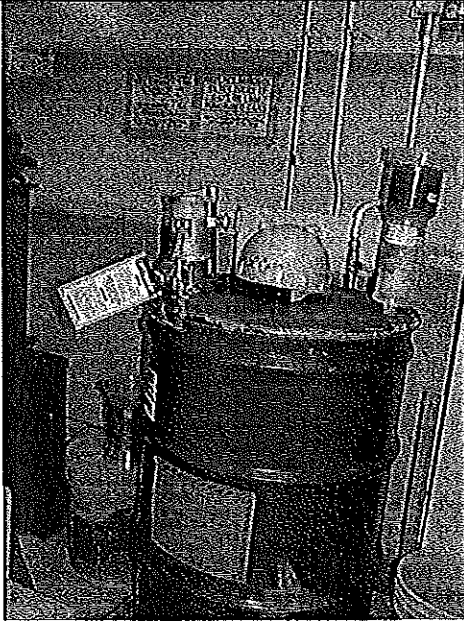


PHOTO #:17 DATE: SEPTEMBER 4, 2009
TAKEN BY: AMY JANKOWIAK FILE No.: P9040019
DESCRIPTION: AEROSOL PUNCTURE UNIT

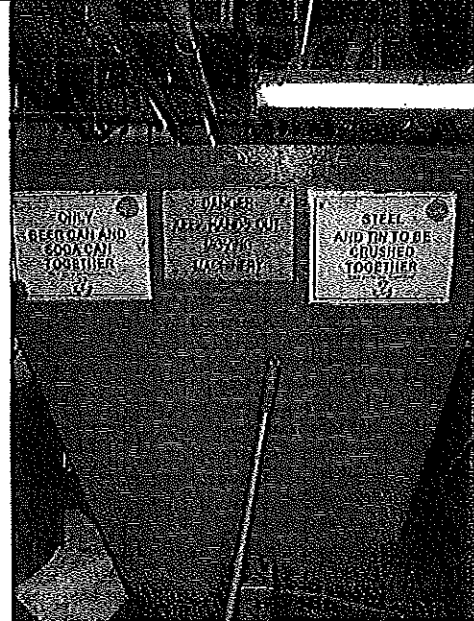


PHOTO #:18 DATE: SEPTEMBER 4, 2009
TAKEN BY: AMY JANKOWIAK FILE No.: P9040020
DESCRIPTION: STEEL/TIN CRUSHER



PHOTO #:19 DATE: SEPTEMBER 4, 2009
TAKEN BY: AMY JANKOWIAK FILE No.: P9040021
DESCRIPTION: CARDBOARD/PLASTICS COMPACTOR



PHOTO #:20 DATE: SEPTEMBER 4, 2009
TAKEN BY: AMY JANKOWIAK FILE No.: P9040022
DESCRIPTION: GLASS CRUSHERS

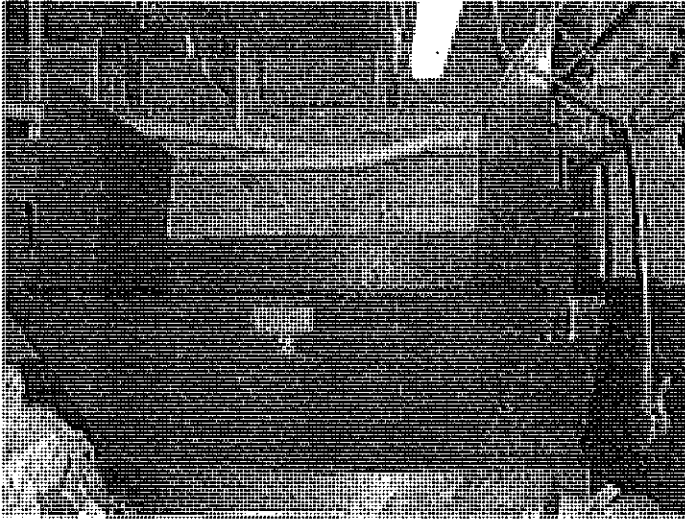


PHOTO #:21 DATE: SEPTEMBER 4, 2009
TAKEN BY: AMY JANKOWIAK FILE No.: P9040023
DESCRIPTION: INCINERATOR LOADING

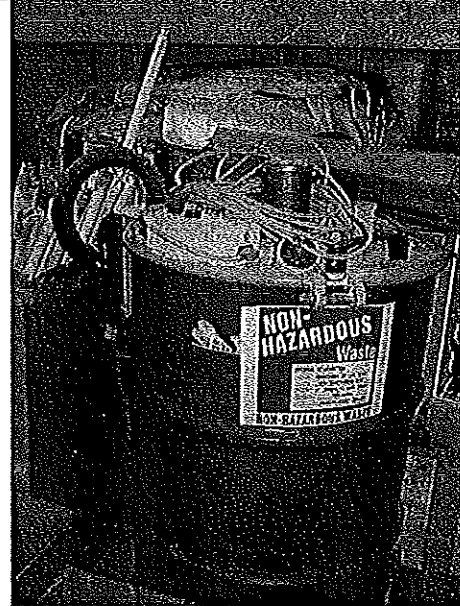


PHOTO #:22 DATE: SEPTEMBER 4, 2009
TAKEN BY: AMY JANKOWIAK FILE No.: P9040025
DESCRIPTION: FLUORESCENT BULB MERCURY REMOVAL
SYSTEM

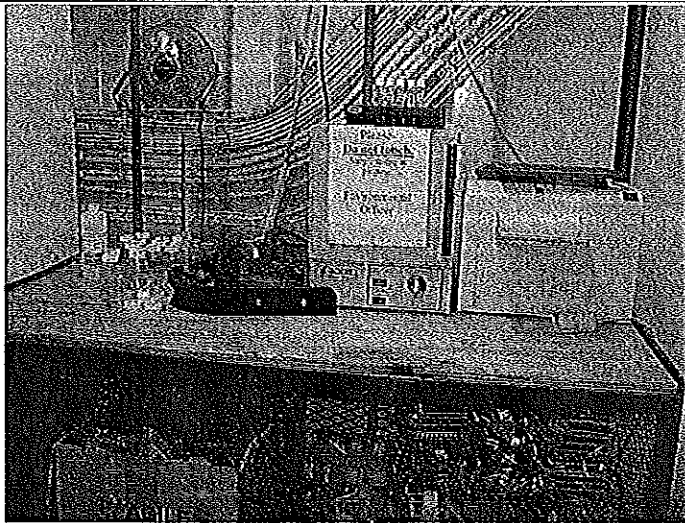


PHOTO #:23 DATE: SEPTEMBER 4, 2009
TAKEN BY: AMY JANKOWIAK FILE No.: P9040026
DESCRIPTION: SAMPLING LABORATORY



PHOTO #:24 DATE: SEPTEMBER 4, 2009
TAKEN BY: AMY JANKOWIAK FILE No.: P9040027
DESCRIPTION: SAMPLING LABORATORY



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

Northwest Regional Office
 3190 160th Ave SE
 Bellevue, WA 98008
 Phone: (425) 649-7000
 Fax: (425) 649-7098

Inspection Date 09/18/2009	Permit Number N/A	County King	Receiving Waters Marine Waters	Ecology Inspector Amy Jankowiak, Compliance Specialist
Entry Time: 9:45 AM Exit Time: 11:50 AM	Photos Taken <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Samples Taken <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Inspection Announced <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Discharges to: <input checked="" type="checkbox"/> Surface Water <input type="checkbox"/> Ground Water <input type="checkbox"/> Dewater <input type="checkbox"/> POTW
Name and Location of Site Inspected: ZAANDAM, Holland America Line Passenger Vessel Pier 91, Seattle				Additional Participants/Inspectors: Mark Henderson, Ecology
On-Site Representative(s): <i>Name/Title/Phone/e-mail</i> Bart Vaartjes, Chief Officer Jon Turvey, Senior Manager, Auditing, Training and ISO 14001 Coordination 206-298-3849 JTurvey@HollandAmerica.com				
Responsible Official(s): <i>Name/Title/Address/Phone/e-mail</i> William J. Morani Jr., Vice President – Environmental Management Systems Holland America Line 300 Elliott Ave. West, Seattle WA 98119 206-281-3535				
				Other Facility Data: Notification made to HAL on September 15, 2009

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:	

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	
<u>Turbidity or Equivalent:</u> Last Calibration: _____ Trigger Level for Early Alarm: _____ Trigger Level for Shutdown: _____ Recorded Turbidity/Equivalent Levels Above Triggers: _____		
<input type="checkbox"/>	Daily 24-hour Continuous Monitoring for Disinfection Effectiveness	
<input type="checkbox"/>	Disinfection Effectiveness Monitoring Equipment Functioning Properly	
<u>Disinfection Effectiveness Monitoring:</u> 		
<input type="checkbox"/>	Auto Shut Down or Operational Controls to Insure System Shut Down if Disinfection System Upset Occurs	
<input type="checkbox"/>	Disinfection System Operated and Maintained Properly	
<u>Disinfection System:</u> 		
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, Tyeo Shoal)	
<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 in MOU waters were present from the beginning of the 2009 cruise season to present.
<input checked="" type="checkbox"/>	Residual Solids Managed Properly/Disposal Protocol per MOU	Residual solids are either incinerated or held to be discharged at greater than 12 nautical miles and outside of MOU waters and the Olympic Coast National Marine Sanctuary.
<input checked="" type="checkbox"/>	Hazardous Waste Managed Properly	All hazardous waste that is collected is being sent off-shore in Victoria, Canada. Records were reviewed for hazardous waste off-loads.
<input checked="" type="checkbox"/>	WA Hazardous Waste Guidelines Followed (Appendix vii)	All hazardous waste that is collected is being sent off-shore in Victoria, Canada. Records were reviewed for hazardous waste off-loads.
<input checked="" type="checkbox"/>	Solid Waste Managed Properly	Solid waste is being managed properly. The various solid waste streams are collected, sorted, stored, and sent ashore or incinerated as appropriate.
<input checked="" type="checkbox"/>	Oily Bilge Water Managed Properly	Oily bilge water is treated and discharged at less than 15 ppm and outside of MOU waters.

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	

Section G: Summary of Findings/Comments

Amy Jankowiak, Washington State Department of Ecology (Ecology) - Northwest Regional Office - Water Quality Program, and Mark Henderson, Ecology - Bellingham Field Office - Water Quality Program, conducted the inspection of the Holland America Line ZAANDAM on September 18, 2009. The main contacts on board the ZAANDAM included Bert Vaartjes, Chief Officer, Martin Rohn, Chief Engineer, and Jon Turvey, Environmental Officer. Prior notification of the visit was given on September 15, 2009 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 ZAANDAM arrived on May 8, 2009 at the Port of Seattle to begin the 2009 season which consists of 22 calls to Seattle. The vessel currently has a ZENON advanced wastewater treatment system (AWTS) that treats both blackwater and graywater. Approval for discharge in MOU waters has not been requested nor issued for the 2009 season. The vessel was previously approved in 2005 and 2006 for discharges greater than 1nm and 6 knots. The vessel only made one call in both 2007 and 2008. The vessel has been holding effluent and not discharging in MOU waters since the beginning of the season.

The ZAANDAM was dedicated in May 2000, is 781 feet long and has a passenger capacity of about 1432 with a crew capacity of about 615.

Inspection:

We arrived and boarded the ship at about 9:45 am and began with Introductions and a plan for the day with Bart Vaartjes, Chief Officer and Martin Rohn, Chief Engineer. The Environmental Officer had to take leave of the ship due to a death in the family. We then discussed discharge protocols and various waste streams. Discharge records were reviewed for blackwater, graywater and residual solids, garbage and hazardous waste. We then discussed the ZENON AWTS system in more detail and toured the system. We also toured the oily bilge water treatment system and the dry cleaning system. The inspection was then finalized and we disembarked the vessel at about 11:50 am.

Discharge Types and Protocols:

All discharges to water occur at greater than 12 nautical miles and outside of MOU waters. No discharges occur in the Olympic Coast National Marine Sanctuary. Only upon verification of location between the Bridge and the Engine Control Room (ECR), will a discharge occur. If a discharge is allowed, the Bridge authorizes any discharge. There is a communication from between the bridge and the ECR staff at the beginning of each shift for status and ECR staff work off of an approximate schedule. The bridge notifies ECR staff an hour before they are in an area allowed for discharge and again 15 minutes before. The bridge does the same when entering an area to turn off a discharge. For wastewater discharges, the latitude and longitude coordinates (photo #02) are recorded in the *Sewage and Graywater Discharge Record Book* and in the deck log. The Environmental Officer compares the logs. There is an overboard valve monitoring system (photo #01) on the bridge. The system has four lights:

- >12 nm
- > 4, <12 nm
- <4 nm
- Special Areas

The "special areas light" means no discharges. Currently, MOU waters are considered "special areas". The computer system "Overboard Valve Monitoring" system details where certain discharges can and cannot take place and includes

alarms. The Environmental Officer reviews the event alarm settings periodically. When any overboard valve is open, the location (lat and long) is automatically recorded. The date, time and location of both the start and the stop of the discharges are recorded, along with port location, effluent type, volumes, and speed. Discharges are tentatively scheduled ahead of time by matrix, but locations are always verified prior to discharges. Discharge ports have a micro-switch which is connected to the valve monitoring system. This system does not allow for discharges unless the valve monitoring system allows for a discharge. All discharge records that were reviewed appeared to be in compliance with the MOU.

A copy of the current MOU was available and notification procedures were well known and available.

Blackwater includes toilet waste, medical drains. Gray water includes sink and shower water, day spa water and galley water. Laundry water is collected separately. Black water, gray water and laundry water is combined and treated with a ZENON AWTS and is then discharged outside of MOU waters.

Pool water is changed out about once every two months outside of MOU waters. If there is an accident in the pool while in MOU waters, the pool is closed down until out at sea. Spa water is sent to gray water collection and to the ZENON system.

The outside of the vessel is cleaned with technical water, which is potable water without the addition of chlorine or nutrients. No detergents are used.

Screenings are collected and off-loaded in Victoria about once every four weeks. Biomass from the bioreactors is collected and discharged outside of MOU waters, >12 nautical miles from shore, and outside of the Olympic Coast National Marine Sanctuary.

Food waste is collected in various locations including the galley and the garbage sorting area. The food is macerated with a SOMAT system. The liquid from the food waste is extracted and recycled, and then cleaned out periodically and discharged to the ZENON system for treatment. The macerated food waste is discharged outside of MOU waters. Grease is collected separately by grease trap and is incinerated. Cooking oil is recycled for biodiesel.

Oily bilge water is sent to the 50 ppm oily water separator (FACET) (photo #15), then to the 15 ppm oily water separator (SERAP) (photo #16). If the effluent does not meet 15ppm, it is automatically sent back for further treatment. The effluent that meets 15 ppm is either discharged at greater than 12 nautical miles and outside of MOU waters or is sent to a clean tank and later discharged. All effluent first goes through the "white box" (photo #14) for monitoring prior to discharge.

Dry cleaning (photos #17, #18, and #19) currently does not use Perchloroethylene (PERC). A banana-oil type system is used for "wet-dry" cleaning. Chemicals are still used, MSDS's were available and reviewed, but no chlorofluorocarbons.

Silver is captured from the photo waste by silver recovery, collected and off-loaded as dangerous waste in Victoria. All hazardous wastes to shore are off-loaded in Victoria. X-ray's are done digitally, and therefore there is no x-ray waste. Other hazardous wastes include batteries, paints, and mercury filters. Fluorescent bulbs are crushed in a mercury vapor removal system. Hazardous waste records were reviewed and showed that all off-loads have been occurring in Victoria.

Oily rags, food-contaminated cardboard, some plastics, grease, white-bag medical waste and some expired medications and narcotics are incinerated. Red-bag medical waste and sharps are off-loaded as biohazardous waste. Some expired medications can be returned to the vendor.

Cardboard, paper, glass, tin, aluminum and scrap metals, and plastics are recycled. Some materials are donated.

Garbage records were reviewed and only showed food waste as being discharged and all food waste discharges occurred outside of MOU waters.

Holland America Line is ISO 14001 Certified.

ZENON System:

Black (photo #03) and gray water is combined, along with laundry water and is then screened (photo #04) to remove solids. The two screens require manual cleaning and hosing down. From the screens, liquid is sent to the raw water tank (photo #07) before being sent (photo #06) to the bioreactors (photo #05). Residual solids from the screenings are landed ashore in Victoria about once every four weeks. Aeration promotes the biological treatment in the two-stage bioreactor. Solids from the bioreactor are sent (photo #09) to a solids tank for later discharge outside of MOU waters.

Effluent from the bioreactor goes through the membrane ultra filters. The filters are cleaned by backpulsing every ten

minutes, and a daily chemical cleaning. A recovery acid clean about once every 1-2 months. Effluent from the filters goes to the ultraviolet (UV) light disinfection unit (photos #10 and #11). Some of the flow from the membranes goes back to the bioreactor and caustic soda is added here for pH control. An on-line turbidity meter (photo #08) continuously reads the turbidity prior to UV. The turbidity meter has an alarm set at 50 NTU and again at 5 NTU. Turbidity read 0.513 at the time of the inspection. The UV system consists of one unit with eight lamps. There are alarms for the lamps only, no intensity alarms. From the UV system, flow either goes straight overboard (photos #12 and #13) if in an area approved for discharge, or is sent to holding tanks for later discharge.

There are two ZENON trains for treatment (2 screens, 2 bioreactors, 2 membrane filters, 2 permeate tanks, 1 UV unit). One train can be taken down for maintenance while the other is still in use. ZENON monitors the treatment system and test results with information daily and visits the vessel about once every 6 months. Maintenance is done per the AMOS system.

Sampling is not required per the MOU when not approved and not discharging. No samples were taken by Ecology.

Conclusions and Recommendations

The staff on board the vessel were very knowledgeable of the systems and protocols. The discharge protocols and notification procedures were very clear.

The efforts made towards waste minimization and energy conservation are impressive.

It is recommended that staff continue to work towards high-functioning wastewater treatment systems.

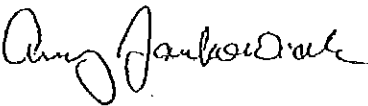
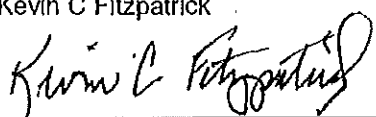
Attachments:

Photographs

Copies to:

- John Turvey, HAL
- William Morani, Jr., HAL
- Bob Diaz, HAL
- Tina Stoltz, HAL
- Bart Vaartjes, Chief Officer
- Martin Rohn, Chief Engineer
- Amy Jankowiak, Ecology
- Mark Henderson, Ecology
- Mark Toy, Health
- Kevin Fitzpatrick, Ecology
- Karen Burgess
- Central Files: Holland America Line -- HOLLAND ZAANDAM; 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	10/22/09
Kevin C Fitzpatrick 	Department of Ecology Northwest Regional Office Water Quality Section Manager 425-649-7033	10/23/09

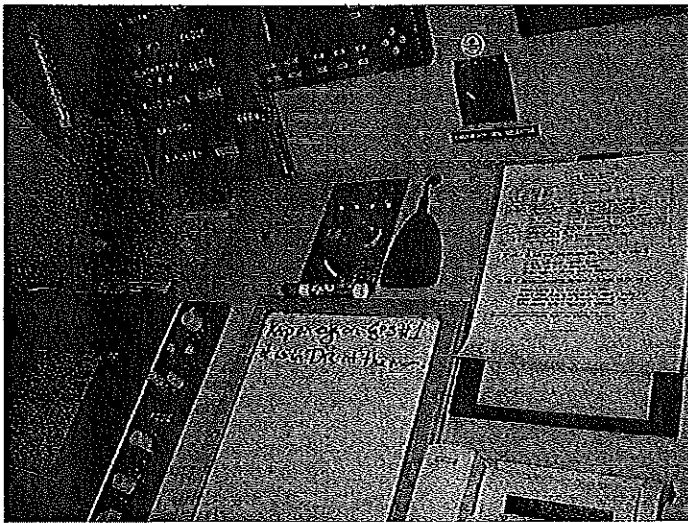


PHOTO #:01 DATE: SEPTEMBER 18, 2009
TAKEN BY: MARK HENDERSON FILE No.: IMG_001
DESCRIPTION: OVERBOARD VALVE MONITORING SYSTEM
(SPECIAL AREAS LIT)



PHOTO #:02 DATE: SEPTEMBER 18, 2009
TAKEN BY: MARK HENDERSON FILE No.: IMG_002
DESCRIPTION: NAVIGATION CHARTS (SHOWED WHERE DISCHARGES
STOP PRIOR TO MOU WATERS/OCNMS)

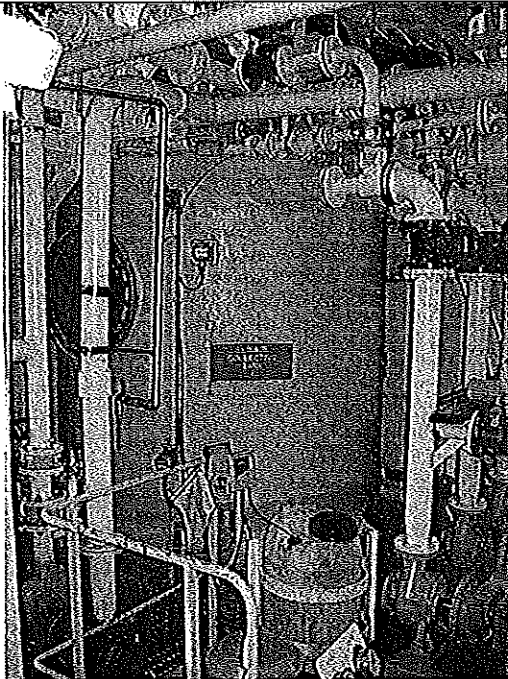


PHOTO #:03 DATE: SEPTEMBER 18, 2009
TAKEN BY: MARK HENDERSON FILE No.: IMG_004
DESCRIPTION: AWTS - BLACK WATER COLLECTION TANK

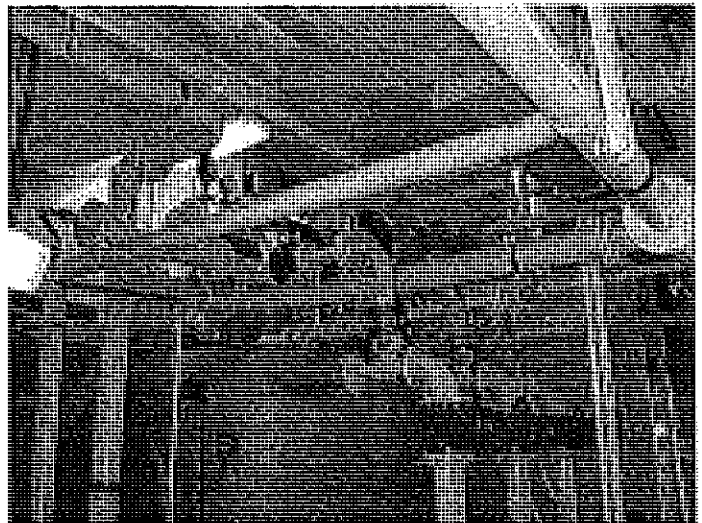


PHOTO #:04 DATE: SEPTEMBER 18, 2009
TAKEN BY: MARK HENDERSON FILE No.: IMG_006
DESCRIPTION: AWTS - SCREENS (TWO STEEL AT TOP OF
PHOTO)

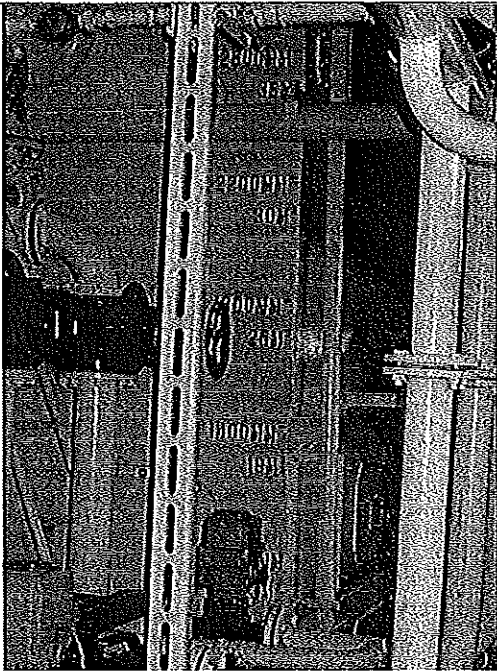


PHOTO #:05 DATE: SEPTEMBER 18, 2009
TAKEN BY: MARK HENDERSON FILE No.: IMG_007
DESCRIPTION: AWTS – BIOREACTOR (WHITE TANK)

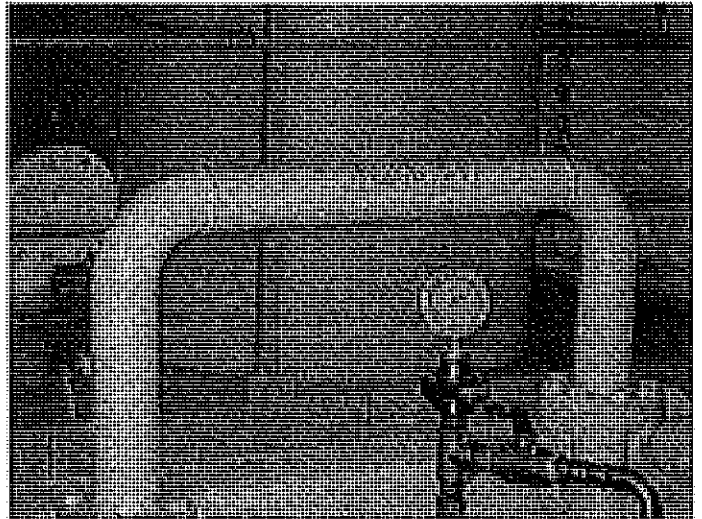


PHOTO #:06 DATE: SEPTEMBER 18, 2009
TAKEN BY: MARK HENDERSON FILE No.: IMG_008
DESCRIPTION: AWTS – PIPES TO BIOREACTOR

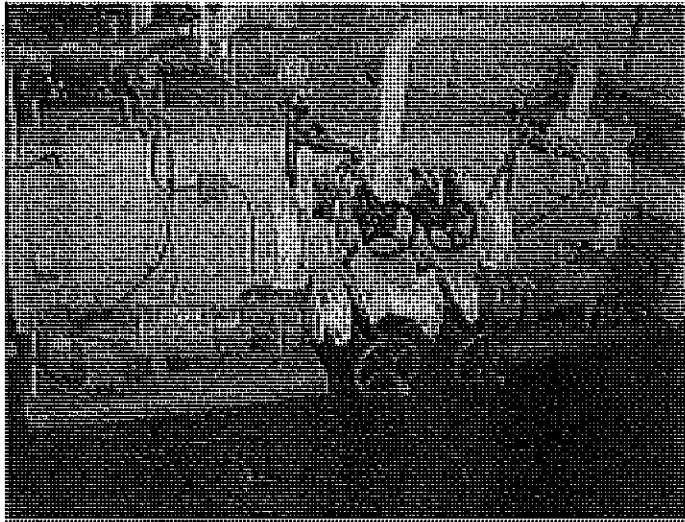


PHOTO #:07 DATE: SEPTEMBER 18, 2009
TAKEN BY: MARK HENDERSON FILE No.: IMG_009
DESCRIPTION: AWTS – PUMPS AND RAW WATER TANK (WHITE TANK BEHIND PUMPS)



PHOTO #:08 DATE: SEPTEMBER 18, 2009
TAKEN BY: MARK HENDERSON FILE No.: IMG_013
DESCRIPTION: AWTS – TURBIDIMETER

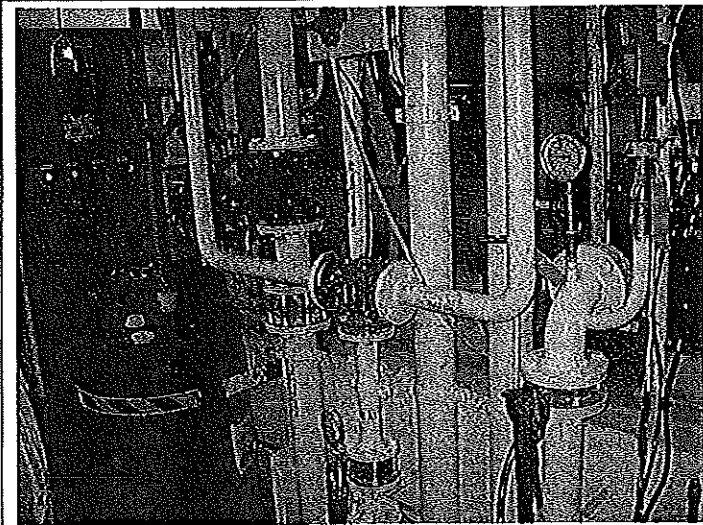


PHOTO #:09 DATE: SEPTEMBER 18, 2009
TAKEN BY: MARK HENDERSON FILE No.: IMG_014
DESCRIPTION: AWTS – PIPING TO SOLIDS TANK/TECHNICAL
WATER AND CHEMICAL FEED

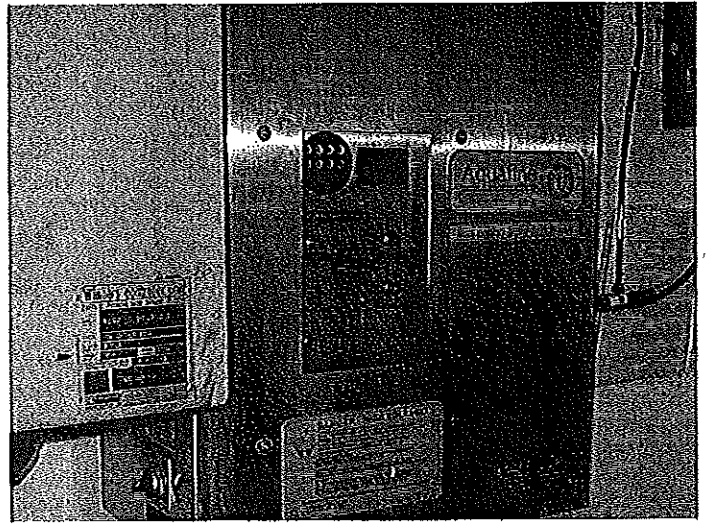


PHOTO #:10 DATE: SEPTEMBER 18, 2009
TAKEN BY: MARK HENDERSON FILE No.: IMG_015
DESCRIPTION: AWTS – ULTRAVIOLET LIGHT DISINFECTION
CONTROL PANEL

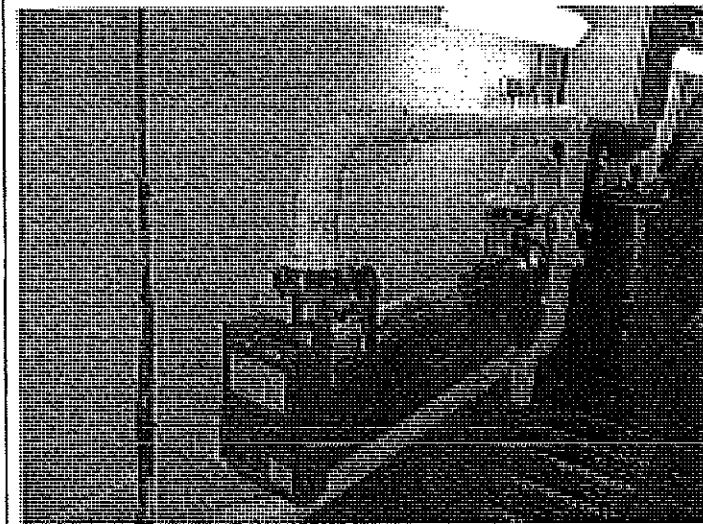


PHOTO #:11 DATE: SEPTEMBER 18, 2009
TAKEN BY: MARK HENDERSON FILE No.: IMG_017
DESCRIPTION: AWTS – ULTRAVIOLET LIGHT DISINFECTION UNIT

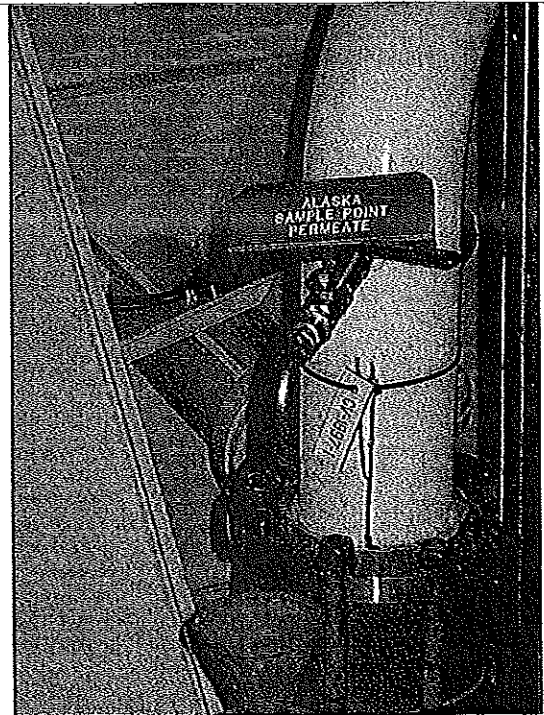


PHOTO #:12 DATE: SEPTEMBER 18, 2009
TAKEN BY: MARK HENDERSON FILE No.: IMG_022
DESCRIPTION: AWTS – FINAL EFFLUENT SAMPLE POINT

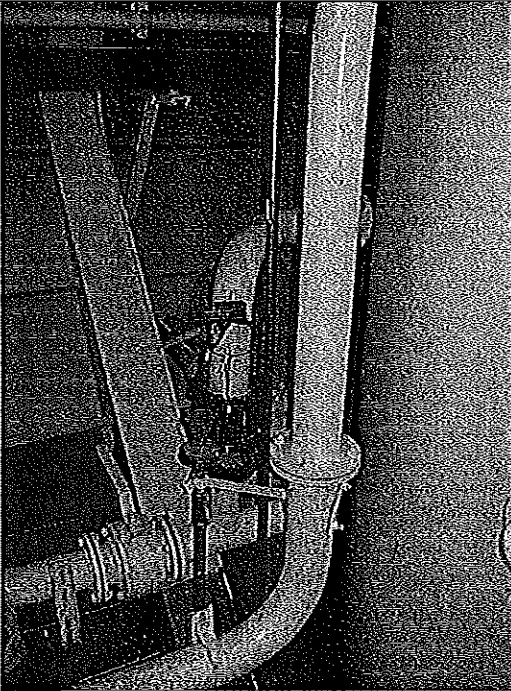


PHOTO #:13 DATE: SEPTEMBER 18, 2009
TAKEN BY: MARK HENDERSON FILE No.: IMG_023
DESCRIPTION: AWTS - DISCHARGE PORT

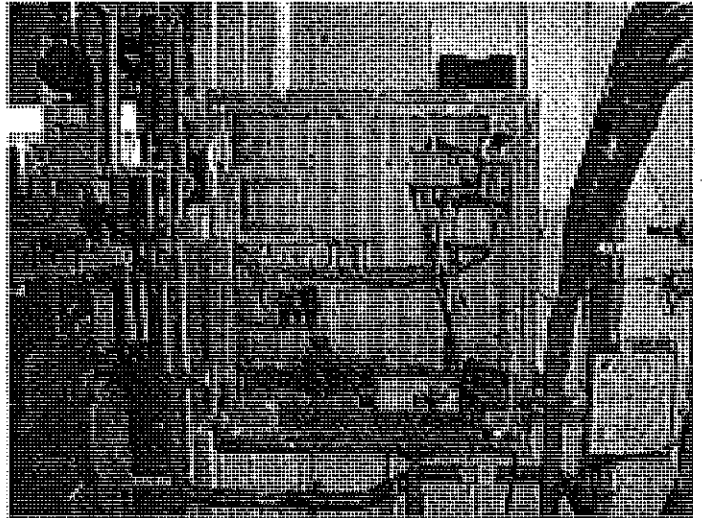


PHOTO #:14 DATE: SEPTEMBER 18, 2009
TAKEN BY: MARK HENDERSON FILE No.: IMG_018
DESCRIPTION: OILY WATER SEPARATOR (OWS) - WHITE BOX



PHOTO #:15 DATE: SEPTEMBER 18, 2009
TAKEN BY: MARK HENDERSON FILE No.: IMG_019
DESCRIPTION: OWS - FACET SYSTEM

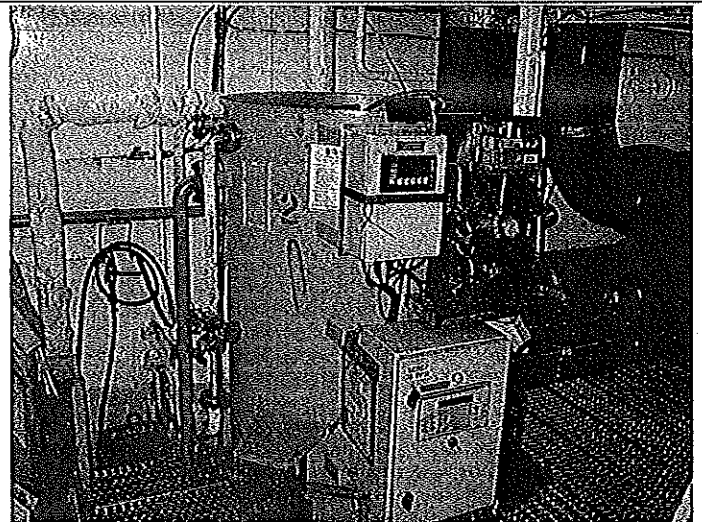


PHOTO #:16 DATE: SEPTEMBER 18, 2009
TAKEN BY: MARK HENDERSON FILE No.: IMG_020
DESCRIPTION: OWS - SERAP SYSTEM

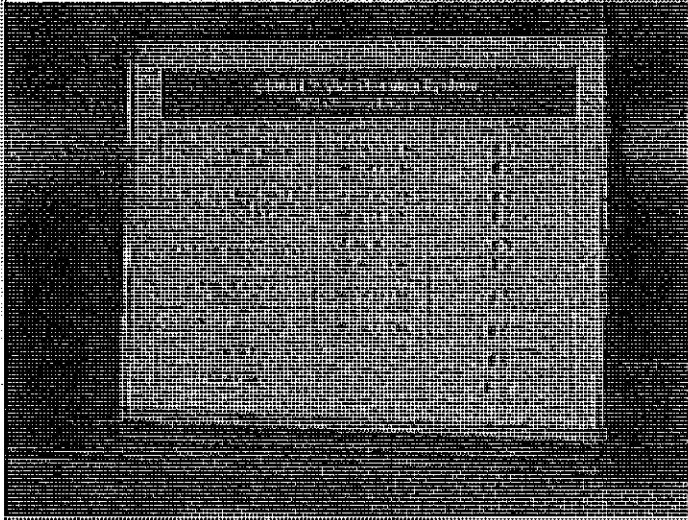


PHOTO #:17 DATE: SEPTEMBER 18, 2009
TAKEN BY: MARK HENDERSON FILE No.: IMG_025
DESCRIPTION: DRY CLEANING (WET - DRY CLEANING SYSTEM
(PERC-FREE)

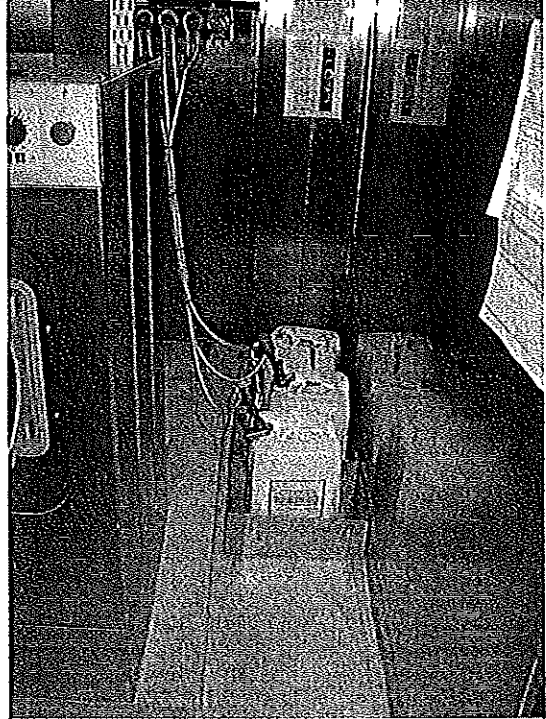


PHOTO #:18 DATE: SEPTEMBER 18, 2009
TAKEN BY: MARK HENDERSON FILE No.: IMG_026
DESCRIPTION: DRY CLEANING (WET - DRY CLEANING SYSTEM
(PERC-FREE)



PHOTO #:19 DATE: SEPTEMBER 18, 2009
TAKEN BY: MARK HENDERSON FILE No.: IMG_027CROPPED
DESCRIPTION: DRY CLEANING (WET - DRY CLEANING SYSTEM
(PERC-FREE)



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

Northwest Regional Office
 3190 180th Ave SE
 Bellevue, WA 98008
 Phone: (425) 649-7000
 Fax: (425) 649-7098

Inspection Date 10/5/2009	Permit Number NA	County King	Receiving Waters Marine Waters	Ecology Inspector Amy Jankowiak, Compliance Specialist
Entry Time 9:29 am Exit Time 12:31 pm	Photos Taken <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Samples Taken <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Inspection Announced <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Discharges to: <input checked="" type="checkbox"/> Surface Water <input type="checkbox"/> Ground Water <input type="checkbox"/> Dewater <input type="checkbox"/> POTW
Name and Location of Site Inspected: MERCURY, Celebrity Cruises Passenger Vessel Pier 91, Seattle				Additional Participants/Inspectors:
On-Site Representative(s): Name/Title/Phone/e-mail Nikolas Asproudas, Environmental Officer MR_EnvironmentalOfficer@celebrity.com				
Responsible Official(s): Name/Title/Address/Phone/e-mail Rich Pruitt, Director Environmental Programs Royal Caribbean International 1080 Caribbean Way, Miami, FL 33132 Office: 305-982-2179; Cell: 305-495-2845; RPruitt@rccl.com				Other Facility Data: Notification made to Rich Pruitt, September 29, 2009

Section A: Areas Evaluated

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

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

<input type="checkbox"/> Schematics Match Black/Gray Wastewater System	
<input type="checkbox"/> Operations as Described in Submitted Documentation	
<input type="checkbox"/> Daily 24-hour Continuous Monitoring for Turbidity or Equivalent Monitoring	
<input type="checkbox"/> Turbidimeter or Equivalent Monitoring Equipment Functioning Properly	
<input type="checkbox"/> Auto Shut Down or Operational Controls to Insure System Shut Down if High Turbidity Occurs	
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:	

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	
<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, Tyee Shoal)	
<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. All discharges occurred outside of MOU waters (beginning of cruise season to date).
<input checked="" type="checkbox"/>	Residual Solids Managed Properly/Disposal Protocol per MOU	Residual solids are incinerated and not discharged in MOU waters or the Olympic Coast National Marine Sanctuary.
<input checked="" type="checkbox"/>	Hazardous Waste Managed Properly	All hazardous waste records showed that all off-loads occurred outside of Washington State (typically go to Vancouver, B.C.).
<input checked="" type="checkbox"/>	WA Hazardous Waste Guidelines Followed (Appendix vii)	All hazardous waste records showed that all off-loads occurred outside of Washington State (typically go to Vancouver, B.C.).
<input checked="" type="checkbox"/>	Solid Waste Managed Properly	Solid waste is being managed properly. The various solid waste streams are collected, sorted, stored, and sent ashore or incinerated as appropriate. Records showed only food waste being discharged and only outside of MOU waters.
<input checked="" type="checkbox"/>	Oily Bilge Water Managed Properly	Oily bilge water is treated and discharged at less than 15 ppm and outside of MOU waters.
Other:		

Section F: Sampling Results

Parameter	Results
Biochemical Oxygen Demand 5-Day (BOD ₅)	Not Applicable
Total Suspended Solids (TSS)	Not Applicable
Fecal Coliform	Not Applicable
Residual Chlorine	Not Applicable
pH	Not Applicable
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, conducted the inspection of the Celebrity Cruises MERCURY on October 5, 2009. The main contact on board the MERCURY included Nikolas Asproudas, Environmental Officer. Prior notification of the visit was given on September 29, 2009 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 MERCURY made one call in Seattle on May 15, 2009 and then returned September 21st for the first of 7 more calls for shorter 3-4 day cruises between Washington and Canada. The vessel has been holding effluent and not discharging wastewater in MOU waters since the beginning of the season.

Biopure is a traditional marine sanitation device including aeration, settling, and chlorination for blackwater only. This system is run at all times. Approval for discharge from Ecology has not been requested or issued. The vessel has been holding effluent and not discharging in MOU waters since the beginning of the season.

Inspection

I arrived and boarded the ship at about 9:29 am and began with introductions and a plan for the day with Nikolas Asproudas, the Environmental Officer. We first discussed the various waste streams and discharge protocols. We then reviewed discharge records for hazardous waste, garbage and black water and graywater. A copy of the current MOU was available. We then headed to the Bridge to review navigation charts and notification postings. We then headed to the medical facility to overview the various waste streams and then viewed some of the solid waste sorting areas. We then viewed the oily water separator system and the marine sanitation devices. The inspection was then finalized and I disembarked the vessel at about 12:31 pm.

Discharge Types and Protocols:

The MERCURY has not requested, and is not approved to discharge in waters subject to the MOU. All blackwater is treated with a marine sanitation device (MSD), Biopure, and is discharged outside of MOU waters. Currently, untreated graywater is sent to a holding tank and discharged outside of MOU waters along with the MSD treated blackwater. This season, the vessel is running three or four day cruises between Seattle and Canada, and is discharging all blackwater and graywater in pre-designated areas in Canadian waters near Victoria (photos #03 and #04), in Canada at the north end of the Strait of Georgia (photo #05), or off of Washington's coast west of the entrance to the Strait of Juan de Fuca (outside of 12 nautical miles and outside of the Olympic Coast National Marine Sanctuary – photo #06). About every 6 days, the vessel goes out to open sea for certain discharges such as food waste and oily bilge water. No discharges of any kind are occurring in the Olympic Coast National Marine Sanctuary. All wastewater discharges are logged in the *Sewage and Graywater Discharge Record Book* based on the coordinates from the bridge.

The discharge requirements for Washington State are posted on the Bridge (photo #01), along with the wastewater discharge exemption from RCCL for Canadian waters (photo #02) and the MOU waters-map and notification numbers for the MOU non-compliance (photo #07).

The Environmental Officer and vessel staff conducted extensive pre-planning accounting for the vessels itinerary, route, and holding tank capacity in order to assure that all discharges would take place in accordance with regulations and the MOU.

Discharge locations for a number of discharge records reviewed were verified as being outside of MOU waters with the use of Google™ Earth during the inspection. The record books appear to be managed properly. It is noted that staff does an excellent job of showing corrections in a proper manner. Mistakes are crossed off with a single line and dated and initialed. Changes are also explained.

Discharge ports are padlocked with the 2nd Engineer on watch having control of the keys. The time that the ports are opened and closed is recorded. The Bridge notifies the Engine Control Room when discharges can start and stop. The Environmental Officer also verifies the bridge information.

Sewage residuals (sludge or biomass) are strained and incinerated. Biomass is collected from the MSDs about once a month. Food waste (photo #11) is pulped and then either incinerated with some cardboard materials or discharged at greater than 12 nautical miles from shore. The galley water goes to the graywater holding tanks. Some of the food waste (photo #15) such as bones, meat, and fruit with heavy skins cannot be pulped and is therefore mixed with some cardboard material and incinerated. Cooking oil (photo #20) is re-used on the vessel after warming and filtering. The filtered solids are incinerated.

Laundry water is sent to the graywater holding tanks along with shower and sink water from accommodations and throughout the vessel. Laundry uses Ecolab® products (photo #10). Ecolab® is also used for housekeeping. The graywater is not treated, but held for discharge outside of MOU waters. Spa/Jacuzzi water is neutralized and then discharged outside of MOU waters. Pool water is also held and discharged outside of MOU waters.

Oily bilge water is treated with the Turbulo and Marinfloc systems (photos #22 and #23). A white box (photo #21) was recently installed on the vessel for added protection of discharges less than 15 ppm. The system is cleaned about every two months.

The drains from the medical facility go to the blackwater system (photo #26). Sharps are collected in sharps containers, are then boxed and landed ashore as biohazard waste. Red bag waste (photo #09) from the medical facility is incinerated. Expired medications and narcotics are logged, and with witnesses incinerated outside of 12 nautical miles.

Other materials incinerated (photo #17) include light plastics, food-contaminated cardboard and oily rags.

Dry cleaning currently uses Perchloroethylene (PERC) which is collected and off-loaded as hazardous waste. Photo waste is treated to less than 5 ppm through silver recovery along with x-ray waste. Fluorescent light bulbs are crushed with the bulb eater with mercury vapor removal. Materials such as paint, batteries, electronics, fluorescent bulb waste (photo #16), pyrotechnics, photo/x-ray waste (photo #08) and oily sludge are landed ashore in Canada as hazardous waste. All hazardous waste records showed that all off-loads occurred outside of Washington State (typically go to Vancouver, B.C.). Some materials are donated such as housekeeping items, mattresses, rugs, and furniture.

Materials such as aluminum, cardboard, paper, glass (photos #12 and #14), plastics, scrap metal, wood pallets and broken china are recycled (photo #13). The vessel has improved its recycling percentages in the last couple of years. The recycled material is usually landed ashore (photo #19) in Vancouver, B.C. or Victoria, Canada. The MERCURY was awarded "City of San Diego Recycler of the Year", Port of San Francisco Environmental Gold Award and Celebrity Cruises Environmental Ship of the Year for 2008.

Blackwater and Graywater Systems:

The marine sanitation device (MSD), Biopure (photos #24 and #25), operates by first collecting blackwater into a storage collection tank. The wastewater then flows into the Biopure system (four separate identical units) by suction. The system includes aeration, pH adjustment, some settling by addition of polymer, and chlorination for disinfection all in one tank partially divided. Solids cleaned out of the tank are strained and incinerated periodically. Effluent from the Biopure system (photo #27) is sent to a holding tank prior to discharge. Staff take on-board samples about weekly for process control.

The advanced wastewater treatment system (AWTS) Rochem, is currently not in regular operation. The system was on only briefly earlier in the season after a unit was replaced. The Rochem system does not have the capacity to handle the wastewater on the vessel. The vessel is not certified or approved this year for discharge in Alaska.

At this time, the MERCURY vessel is not scheduled to return to MOU waters next season. In an e-mail from Per Holand, the Environmental Manager for Royal Caribbean Cruises Ltd., provided during the inspection, it is stated that if the installation of the new advanced wastewater treatment system, NAVALIS on the Rhapsody is successful, there will be more installations of the same type for the rest of the fleet. This may happen sometime next year.

Samples were not taken, as the vessel does not discharge in MOU waters.

Conclusions and Recommendations

Mr. Asproudas, the Environmental Officer was very knowledgeable of the wastewater system and the other environmental systems and protocols.

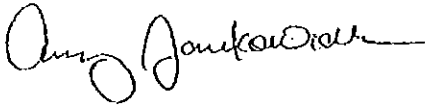
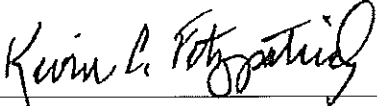
Attachments: Photographs

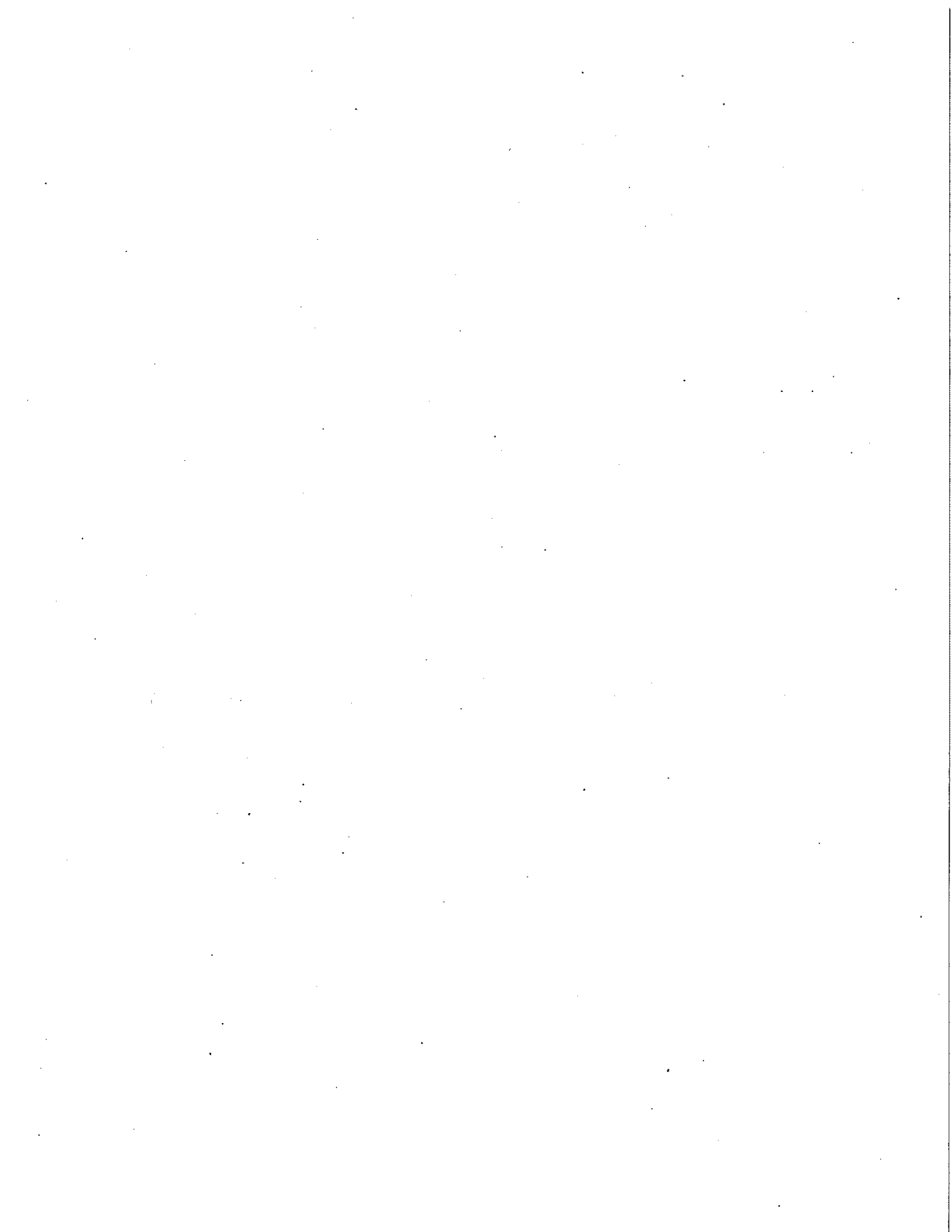
Copies to:

- Nikolas Asproudas, RCCL
- Rich Pruitt, RCCL
- Mark Toy, Department of Health
- Karen Burgess, Ecology
- Kevin Fitzpatrick, Ecology
- Amy Jankowiak, Ecology

Central Files: Celebrity Cruises – MERCURY; WQ 6.1

Section H: Signatures

<u>Name and Signature of Inspector:</u>	<u>Agency/Office/Telephone:</u>	<u>Date</u>
Amy Jankowiak 	Department of Ecology Northwest Regional Office Water Quality Program Municipal Compliance Specialist 425-649-7195	10/22/09
<u>Name and Signature of Reviewer:</u> Kevin C Fitzpatrick 	<u>Agency/Office/Telephone:</u> Department of Ecology Northwest Regional Office Water Quality Section Manager 425-649-7033	<u>Date</u> 10/23/09



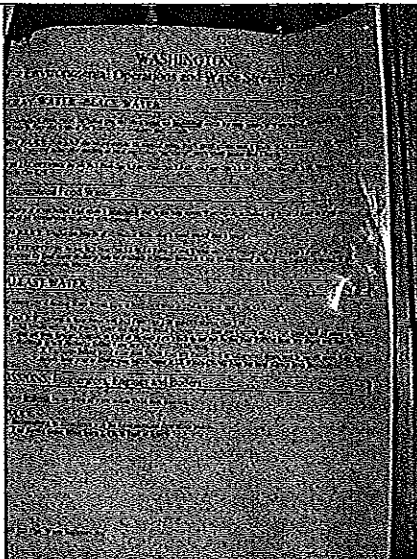


PHOTO #:01 DATE: OCTOBER 5, 2009
TAKEN BY: AMY JANKOWIAK FILE No.: PA05001
DESCRIPTION: BRIDGE – POSTING OF WASHINGTON STATE
DISCHARGE REQUIREMENTS

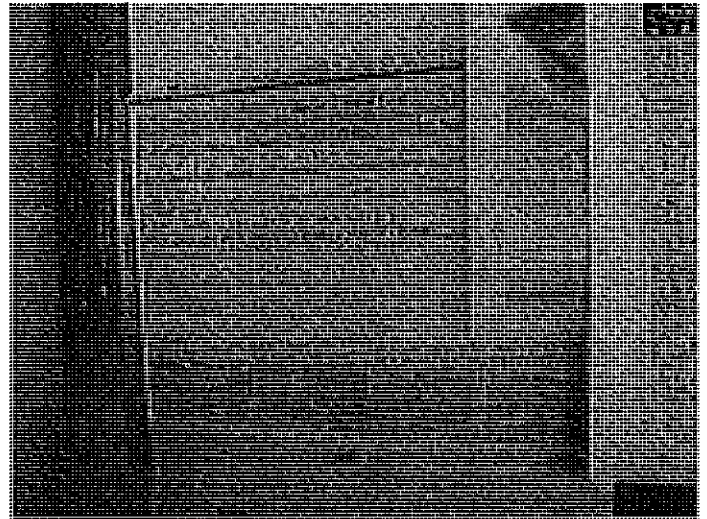


PHOTO #:02 DATE: OCTOBER 5, 2009
TAKEN BY: AMY JANKOWIAK FILE No.: PA05002
DESCRIPTION: BRIDGE – POSTING OF CANADIAN WATERS
DISCHARGE EXEMPTION BY RCCL

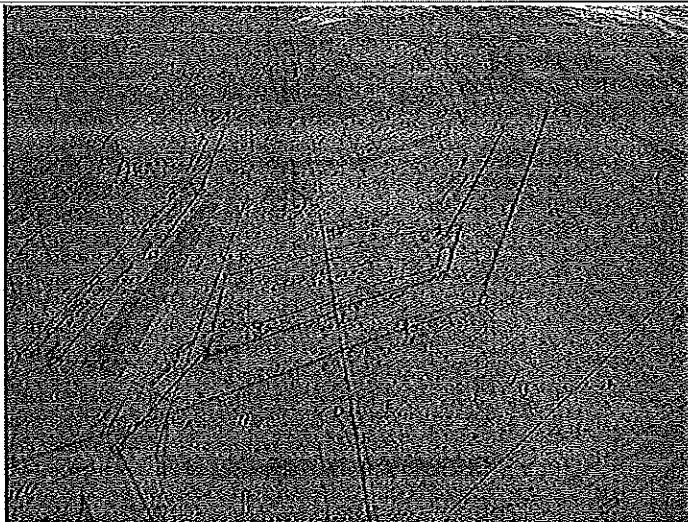


PHOTO #:03 DATE: OCTOBER 5, 2009
TAKEN BY: AMY JANKOWIAK FILE No.: PA05004
DESCRIPTION: BRIDGE – NAVIGATION CHART OF DISCHARGE
AREA NEAR VICTORIA

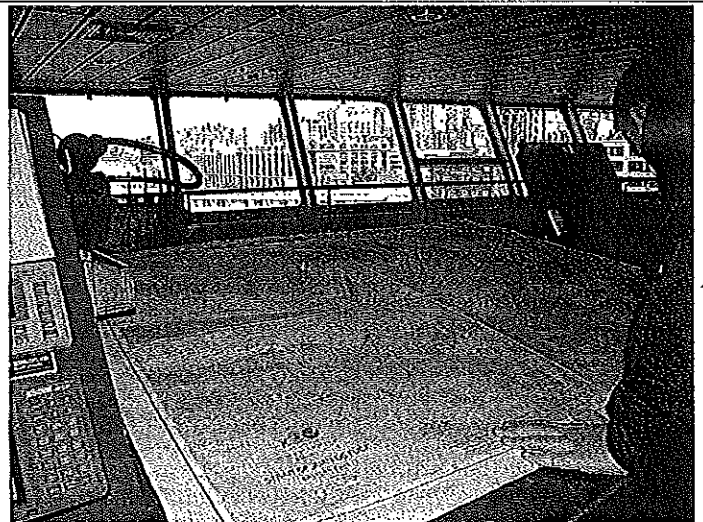


PHOTO #:04 DATE: OCTOBER 5, 2009
TAKEN BY: AMY JANKOWIAK FILE No.: PA05005
DESCRIPTION: BRIDGE – NAVIGATION CHART OF DISCHARGE
AREA NEAR VICTORIA



PHOTO #:05 DATE: OCTOBER 5, 2009
TAKEN BY: AMY JANKOWIAK FILE No.: PA05006
DESCRIPTION: BRIDGE – NAVIGATION CHART OF DISCHARGE
AREA NORTH OF STRAIT OF GEORGIA



PHOTO #:06 DATE: OCTOBER 5, 2009
TAKEN BY: AMY JANKOWIAK FILE No.: PA06008
DESCRIPTION: BRIDGE – NAVIGATION CHART OF DISCHARGE
AREA WEST OF STRAIT OF JUAN DE FUCA



PHOTO #:07 DATE: OCTOBER 5, 2009
TAKEN BY: AMY JANKOWIAK FILE No.: PA05009
DESCRIPTION: BRIDGE – POSTINGS OF MOU WATERS AND NON-
COMPLIANCE NOTIFICATION NUMBERS



PHOTO #:08 DATE: OCTOBER 5, 2009
TAKEN BY: AMY JANKOWIAK FILE No.: PA05010
DESCRIPTION: MEDICAL – X-RAY CHEMICALS AND WASTE



PHOTO #:09 DATE: OCTOBER 5, 2009
TAKEN BY: AMY JANKOWIAK FILE No.: PA05011
DESCRIPTION: MEDICAL - RED BAGS



PHOTO #:10 DATE: OCTOBER 5, 2009
TAKEN BY: AMY JANKOWIAK FILE No.: PA05012
DESCRIPTION: LAUNDRY CHEMICALS (FOREGROUND AND
BACKGROUND)



PHOTO #:11 DATE: OCTOBER 5, 2009
TAKEN BY: AMY JANKOWIAK FILE No.: PA05014
DESCRIPTION: FOOD WASTE



PHOTO #:12 DATE: OCTOBER 5, 2009
TAKEN BY: AMY JANKOWIAK FILE No.: PA05015
DESCRIPTION: RECYCLING - SORTING



PHOTO #:13 DATE: OCTOBER 5, 2009
TAKEN BY: AMY JANKOWIAK FILE No.: PA05016
DESCRIPTION: SOLID WASTE SORTING AND INCINERATION



PHOTO #:14 DATE: OCTOBER 5, 2009
TAKEN BY: AMY JANKOWIAK FILE No.: PA05018
DESCRIPTION: GLASS CRUSHER

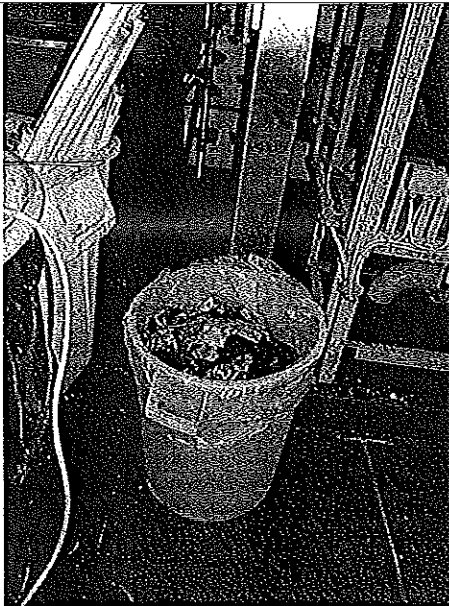


PHOTO #:15 DATE: OCTOBER 5, 2009
TAKEN BY: AMY JANKOWIAK FILE No.: PA05019
DESCRIPTION: FOOD WASTE FOR INCINERATION



PHOTO #:16 DATE: OCTOBER 5, 2009
TAKEN BY: AMY JANKOWIAK FILE No.: PA05020
DESCRIPTION: FLUORESCENT BULB - MERCURY REMOVAL SYSTEM

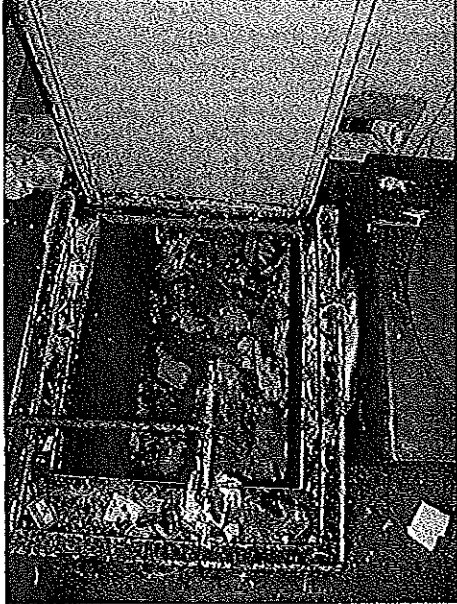


PHOTO #:17 DATE: OCTOBER 5, 2009
TAKEN BY: AMY JANKOWIAK FILE No.: PA05021
DESCRIPTION: INCINERATOR ACCESS

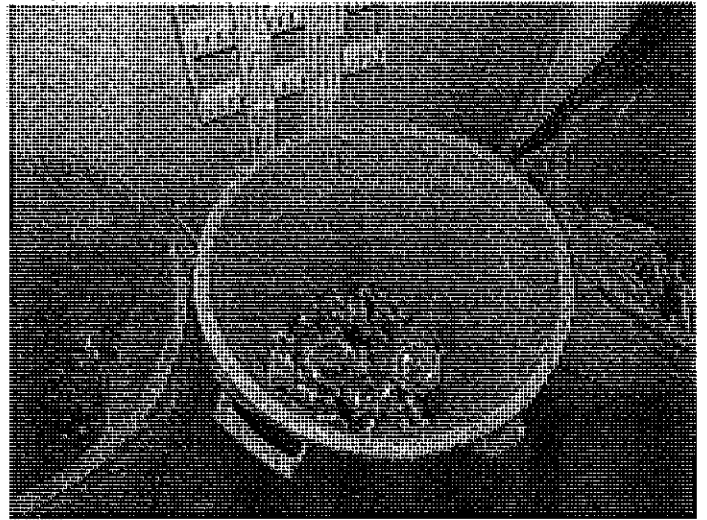


PHOTO #:18 DATE: OCTOBER 5, 2009
TAKEN BY: AMY JANKOWIAK FILE No.: PA05022
DESCRIPTION: LIGHT BULB SORTING

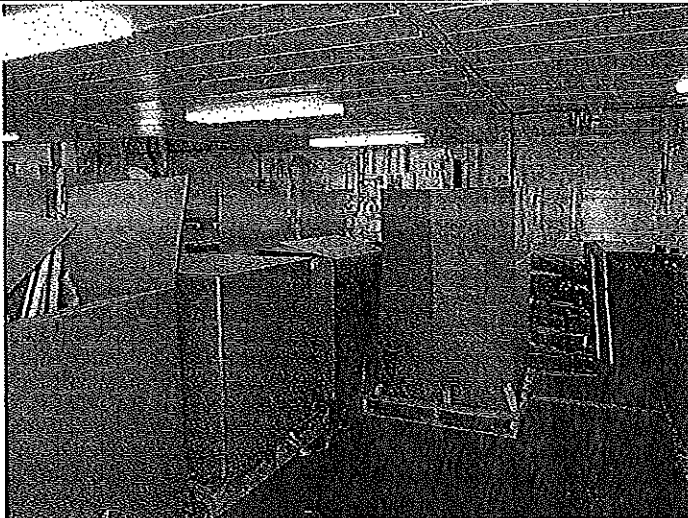


PHOTO #:19 DATE: OCTOBER 5, 2009
TAKEN BY: AMY JANKOWIAK FILE No.: PA05023
DESCRIPTION: SOLID WASTE MATERIALS FOR OFF-LOADING

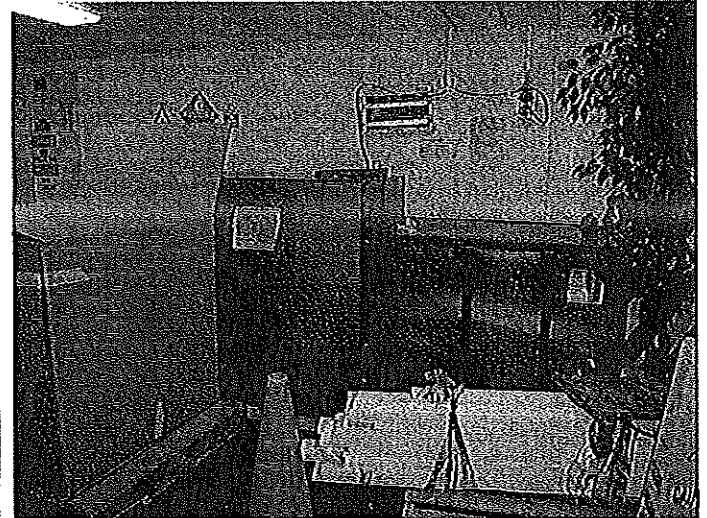


PHOTO #:20 DATE: OCTOBER 5, 2009
TAKEN BY: AMY JANKOWIAK FILE No.: PA05024
DESCRIPTION: COOKING OIL (SILVER CONTAINERS)

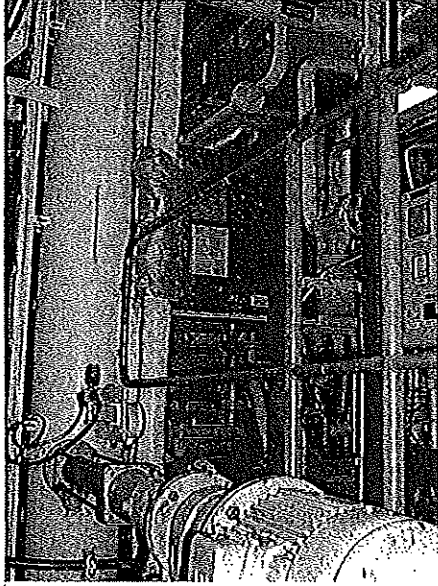


PHOTO #:21 DATE: OCTOBER 5, 2009
TAKEN BY: AMY JANKOWIAK FILE No.:PA05025
DESCRIPTION: WHITE BOX FOR OILY WATER SEPARATOR

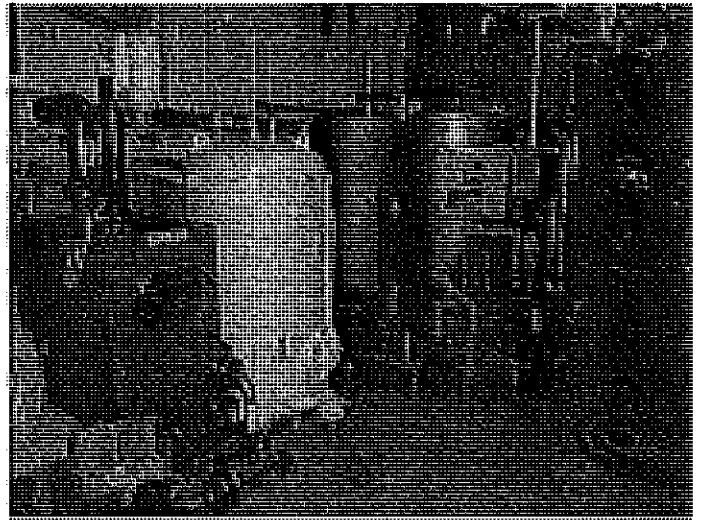


PHOTO #:22 DATE: OCTOBER 5, 2009
TAKEN BY: AMY JANKOWIAK FILE No.: PA05026
DESCRIPTION: OILY WATER SEPARATOR

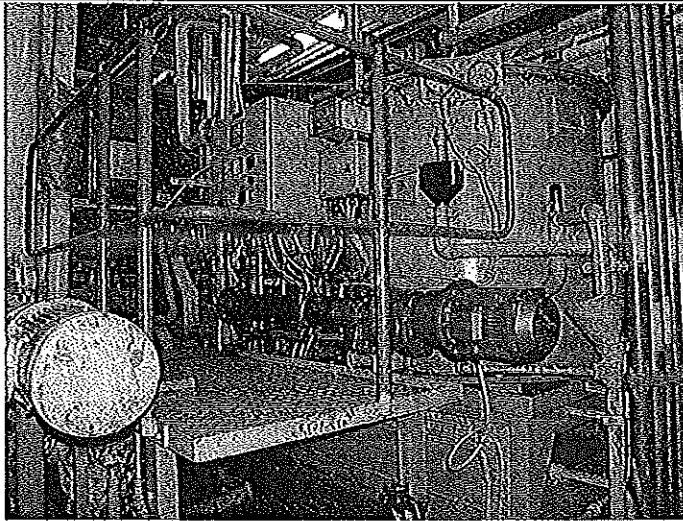


PHOTO #:23 DATE: OCTOBER 5, 2009
TAKEN BY: AMY JANKOWIAK FILE No.: PA05027
DESCRIPTION: OILY WATER SEPARATOR

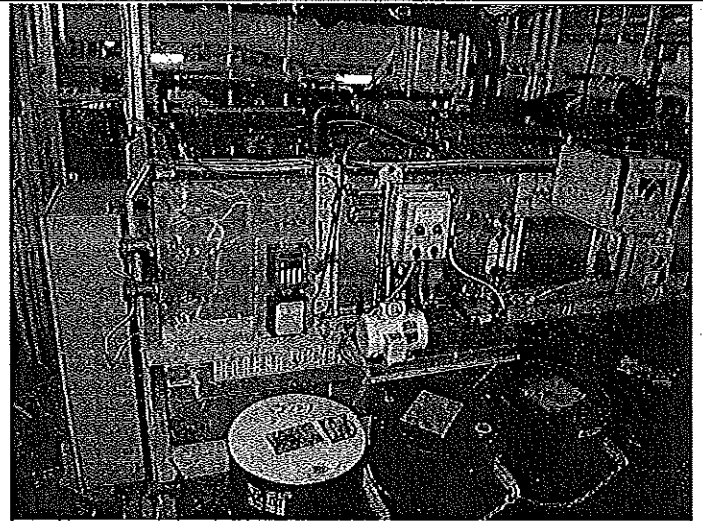


PHOTO #:24 DATE: OCTOBER 5, 2009
TAKEN BY: AMY JANKOWIAK FILE No.: PA05028
DESCRIPTION: TRADITIONAL MARINE SANITATION DEVICE (1 OF 4)

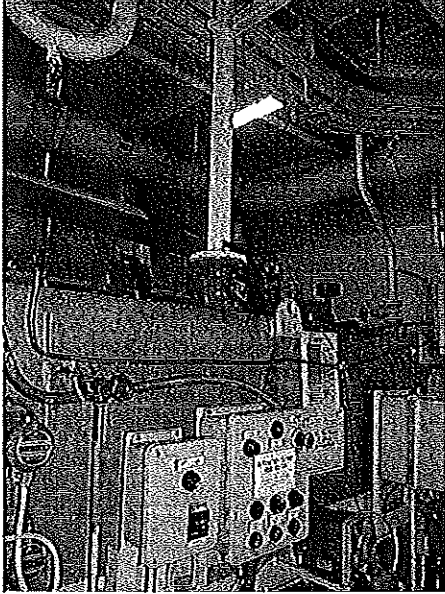


PHOTO #:25 DATE: OCTOBER 5, 2009
TAKEN BY: AMY JANKOWIAK FILE No.: PA05029
DESCRIPTION: MARINE SANITATION DEVICE (2 OF 4)

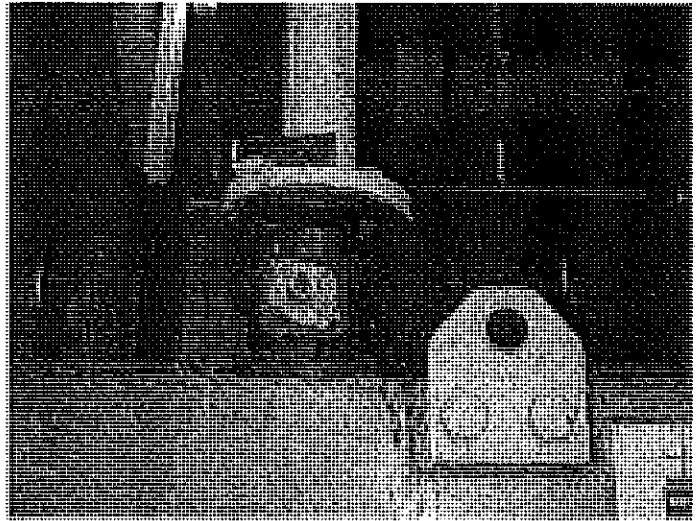


PHOTO #:26 DATE: OCTOBER 5, 2009
TAKEN BY: AMY JANKOWIAK FILE No.: PA05030
DESCRIPTION: MARINE SANITATION DEVICE – MATERIAL FROM
MEDICAL DRAINS TO MSD

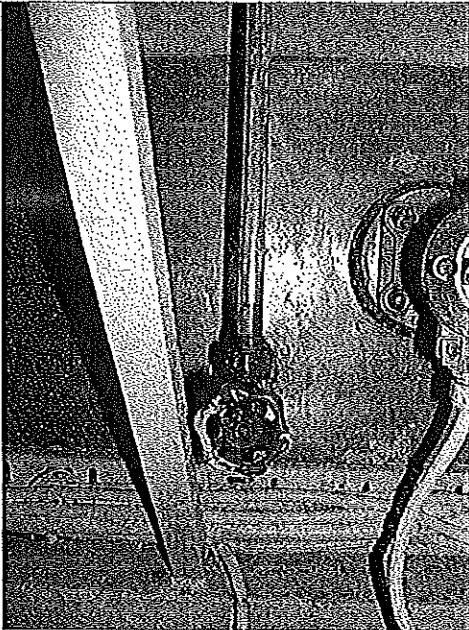
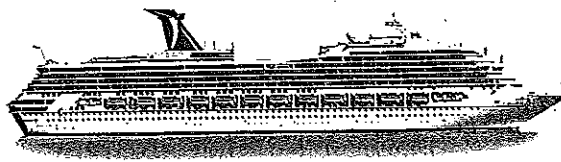


PHOTO #:27 DATE: OCTOBER 5, 2009
TAKEN BY: AMY JANKOWIAK FILE No.: PA05031
DESCRIPTION: MARINE SANITATION DEVICE EFFLUENT (BOTTOM
OF TUBE)

Appendix D. Letters of Compliance from Member Lines



Carnival

RECEIVED

AUG 07 2009

August 4, 2009

Regional Director
Washington State Department of Ecology
Northwest Regional Office
3190 160th Ave. SE
Bellevue, WA 98008-5452

RE: Washington Cruise MOU Compliance Report 2009 Cruise Season

Dear Director:

Section 9 of the Memorandum of Understanding for Cruise Operations in Washington State signed April 20, 2004 and amended May 19, 2008, requires an annual submittal detailing the compliance with the MOU for each vessel within the NWCA that calls to a port in Washington for the previous cruise season. Please accept this letter on behalf on Carnival Cruise Lines (CCL) for the 2009 cruise season.

The following ships operated in Washington waters during 2009: Carnival Splendor, May 7 in Seattle.

Carnival Splendor's operations in Washington State addressed the following key provision of the MOU as follows:

- In compliance with section 2.1.1 and 2.1.2, Carnival Splendor held all treated and untreated gray and black water while in Washington waters and did not discharge solid waste or oily bilge water. The Carnival Splendor has type II MSDs and oil water separators. Company policy prohibits discharge of solid waste at sea and only allows discharge of gray water, treated black water, and treated oily bilge water outside of 12 nautical miles. CCL will make these records available to Ecology upon request.
- In compliance with section 2.1.4, Carnival Splendor held all residual solids from the MSDs for disposal ashore in the ship's homeport of Long Beach, CA. CCL will make these records available to Ecology upon request.
- CCL certifies that Carnival Splendor's hazardous wastes were managed in accordance with section 2.2.1 through 2.2.4. CCL will make these records available to Ecology upon request. Hazardous wastes were disposed of ashore in the ship's homeport of Long Beach, CA in accordance with the Department of Toxic Substances Control's regulations.



Carnival

- CCL certifies that Carnival Splendor was in compliance with section 6. Additionally, no ballast water was discharged in Washington waters. CCL will make these records available to Ecology upon request.
- CCL did not have any incidences of non-compliance to report.

I hereby certify that the above information is true and can be verified through documentation. If you have any questions or concerns, please call me at 305-406-5806.

Sincerely,

Michelle Matejka

Michelle Matejka
Environmental Supervisor
Carnival Cruise Lines
3655 NW 87th Ave.
Miami, FL 33178
mmatejka@carnival.com

cc: Raimondo Astorini

November 30, 2009

RECEIVED

DEC 01 2009

DEPT OF ECOLOGY

Mr. Ray Hellwig
Washington State Department of Ecology
Northwest Regional Office
3190 160th Avenue SE
Bellevue, WA 98008-5452

Dear Mr. Hellwig:

Re: Washington Cruise MOU Compliance Report: 2009 Cruise Season

Section 9 of the Memorandum of Understanding for Cruise Operations in Washington State (April 20, 2004 as amended May 19, 2008), requires an annual submittal detailing the compliance with the MOU for the each vessel within the NWCA that calls to a port in Washington for the previous cruise season. Please accept this letter on behalf of Celebrity Cruises, Inc. for the 2009 cruise season.

The following ships in operated Washington waters during 2009:

- *Celebrity Mercury*; Seattle: May 15; September 21, 25, 28; October 2, 5, 9, 15
- *Celebrity Infinity*; Seattle: May 22,29; June 5,12,19,26; July 3,10,17,24,31;
August 7,14,21,28; September 4,11,18,25.
- *Celebrity Millennium*; Seattle: October 1.

Celebrity Cruises Inc.'s operations in Washington State addressed the following key provisions of the MOU as follows:

Section 2.1 - Wastewater Management. Celebrity Cruises Inc. managed its wastewater in compliance with this section as follows:

In compliance with Section 2.1.1 and 2.1.2, *Celebrity Mercury*, *Celebrity Infinity*, and *Celebrity Millennium* held all treated and untreated gray and black water while in Washington waters. The ships all have Type II Certified Marine Sanitation Devices and/or Type II Certified Advanced Wastewater Purification Systems (respectively Rochem, Zenon, and Hydroxyl), but due to sufficient holding capacities chose to hold as noted above. These ships also did not discharge solid waste or oily bilge water while in Washington waters. The ships all have Marinfloc Oily Water Separation Systems. Based on a thorough review of ships' logs and records we certify that our ship(s) complied with these provisions of the MOU. Celebrity Cruises Inc. will make these records available to Ecology upon request.

Section 2.1.4 - Discharge of Residual Solids. Based on a review of ships' logs and records, Celebrity Cruises Inc. certifies that we complied with the prohibition on discharging residual solids coming from any type of treatment system within 12 nautical miles from shore and within the Olympic Coast National Marine Sanctuary. Celebrity Cruises Inc. will make these records available to Ecology upon request.

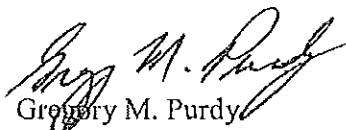
Section 2.2.1 through 2.2.4 - Hazardous Waste Management. Based on a review of ships' logs and records, Celebrity Cruises Inc. certifies that Hazardous Wastes were managed in accordance with these sections of the MOU. All hazardous waste is landed shoreside to an approved hazardous waste vendor for processing and disposal in accordance with RCRA. Celebrity Cruises Inc. will make these records available to Ecology upon request.

Section 6. - Marine Mammal Protection Act, Invasive Species Act, and the Washington Ballast Water Management Act. Based on a review of ships' logs and records, Celebrity Cruises Inc. certifies that the provisions of the above laws were implemented as required by these laws. Celebrity Cruises Inc. will make these records available to Ecology upon request. Further to Marine Mammal protection, the ships are provided with training materials and are under Washington State or U.S. Federal pilotage during their entire stay in MOU waters. Compliance with the Ballast Water laws is achieved through the administration of Celebrity Cruises Inc. Ballast Water Management Policy, which is in compliance with the IMO Ballast Water Convention and 33CFR 151.2000 et al.

Section 9. - Immediate self-reporting to Ecology of any incidences of non-compliance with any provisions of the MOU. Celebrity Cruises, Inc. experienced no violations of the provisions of the MOU during the 2009 season.

I hereby certify that the above information is true and can be verified through documentation. If you have any questions or concerns, please call me at 305-982-4874.

Sincerely,



Gregory M. Purdy
Vice President, Marine Operations
Celebrity Cruises, Inc.

/sbn

PHONE: 206 281 3535
FAX: 206 281 7110

300 Elliott Avenue West
Seattle, Washington 98119

November 13, 2009

RECEIVED

NOV 13 2009

DEPT OF ECOLOGY

Regional Director
Washington State Department of Ecology
Northwest Regional Office
3190 160th Avenue SE
Bellevue, WA 98008-5452

Re: Washington Cruise MOU Compliance Report: 2009 Cruise Season

Dear Director:

Section 9 of the Memorandum of Understanding for Cruise Operations in Washington State (signed May 19, 2008), requires an annual submittal detailing the compliance with the MOU for each vessel within the Northwest Cruise Ship Association that calls to a port in Washington for the previous cruise season. Please accept this letter on behalf of Holland America Line (HAL) for the 2009 cruise season.

The following ships operated in Washington waters subject to the MOU during 2009:

- Amsterdam: Seattle, one call April 24, 2009; one call April 27, 2009; weekly calls May 9 to September 26, 2009
- Statendam: Seattle, one call May 6, 2009; Port Angeles, one call May 7, 2009
- Volendam: Seattle, one call September 24, 2009
- Westerdam: Seattle, weekly calls May 10 to September 27, 2009
- Zaandam: Seattle, weekly calls May 8 to October 2, 2009

HAL's operations in Washington State addressed the following key provisions of the MOU as follows:

Section 2.1 Wastewater Management. The HAL vessels listed above managed their wastewater in compliance with this section as follows: In compliance with Section 2.1.1 and 2.1.2, HAL held all treated and untreated gray and black water while in Washington waters and did not discharge solid waste or oily bilge water while in Washington waters.

Amsterdam has a Hamworthy Type II MSD. Statendam, Volendam, and Zaandam have Zenon Advanced Wastewater Treatment Systems (AWTS). Westerdam has a Rochem AWTS. Based on a thorough review of ship's logs and records we certify that our ship(s) complied with these provisions of the MOU. HAL will make these records available to Ecology upon request.

Section 2.1.3 (C)(1-3) Shellfish and "upset" conditions. As noted above, and based on a review of HAL ship's logs and records, HAL certifies that we complied with the prohibition on discharging within 0.5 nautical miles of bivalve shellfish beds that are recreationally harvested or commercially approved to harvest as identified annually by the Department of Ecology. For the above listed ships there were no upset conditions that resulted in a discharge in MOU waters.

Section 2.1.3 (C)(4-10) Other discharge approval requirements. HAL did not submit documentation as described in sections 2.1.3 A. or B. of the MOU.

Section 2.1.4 Discharge of Residual Solids. Based on a review of HAL ship's logs and records, HAL certifies that we complied with the prohibition on discharging residual solids coming from any type of treatment system within 12 nautical miles from shore and within the Olympic Coast National Marine Sanctuary. HAL will make these records available to Ecology upon request.

Section 2.2.1 through 2.2.4 Hazardous Waste Management. Based on a review of HAL ship's logs and records, HAL certifies that Hazardous Wastes were managed in accordance with these sections of the MOU. HAL will make these records available to Ecology upon request. Hazardous waste was not offloaded from HAL vessels in Washington State in 2009.

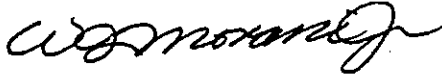
Section 6. Marine Mammal Protection Act, Invasive Species Act, and the Washington Ballast Water Management Act. Based on a review of HAL ship's logs and records, HAL certifies that the provisions of the above laws were implemented as required by these laws. HAL will make these records available to Ecology upon request. All HAL Masters and Navigation Officers are required to complete HAL's computer based Whale Avoidance Training. HAL has developed an internal procedure designed to ensure compliance with all ballast waster regulations, this procedure is MR-704, the Ballast Water Management Manual.

Section 9. Immediate self-reporting to Ecology of any incidences of non-compliance with any provisions of the MOU. HAL operations in Washington State resulted in no known incidences of non-compliance with the MOU.

Washington State Dept. of Ecology
November 13, 2009
Page Three

I hereby certify that the above information is true and can be verified through documentation. If you have any questions or concerns, please call me at (206) 301-5343.

Sincerely,



William J. Morani, Jr.
Vice President
Environmental Management Systems

WJM/jg



NORWEGIAN CRUISE LINE®
FREESTYLE CRUISING®

December 8, 2009

Regional Director
Washington State Department of Ecology
Northwest Regional Office
3190 160th Avenue SE
Bellevue, WA 98008-5452

RECEIVED
DEC 10 2009
DEPT OF ECOLOGY

Dear Director:

Re: Washington Cruise MOU Compliance Report: 2009 Cruise Season

Section 9 of the Memorandum of Understanding for Cruise Operations in Washington State (signed May 25, 2007), requires an annual submittal detailing the compliance with the MOU for the each vessel within the NWCA that calls to a port in Washington for the previous cruise season. Please accept this letter on behalf of NCL (Bahamas) Ltd for the 2009 cruise season.

The following ships operated in Washington waters during 2009:

- NORWEGIAN STAR – Sailed from Seattle on 5/09, 5/16, 5/23, 5/30, 6/06, 6/13, 6/20, 6/27, 7/04, 7/11, 7/18, 7/25, 8/01, 8/08, 8/15, 8/22, 8/29, 9/05, 9/12, and 9/19.
- NORWEGIAN PEARL – Sailed from Seattle on 5/10, 5/17, 5/24, 5/31, 6/07, 6/14, 6/21, 6/28, 7/05, 7/12, 7/19, 7/26, 8/02, 8/09, 8/16, 8/23, 8/30, 9/06, 9/13 and 9/20.

NCL's operations in Washington State addressed the following key provisions of the MOU as follows:

Section 2.1 Wastewater Management. NCL managed its wastewater in compliance with this section as follows:

- In compliance with Section 2.1.3, NCL submitted information supporting its request to discharge treated wastewater while at berth to Ecology for the following ships - NORWEGIAN STAR and NORWEGIAN PEARL. Both of these ships are equipped with the Scanship Advanced Wastewater Treatment System (AWTS) and were sampled three times a month for the entire season (twice in Alaska, once in Washington). All sample results were submitted to Department of Ecology and were well within the standards detailed in the MOU. Approval to discharge while at berth was received from Ecology on 5 May 2009 for both ships.

- In compliance with Section 2.1.3 (“a” through “g”), NCL complied with each of the requirements to discharge including sampling requirements and meeting effluent limitations.

Section 2.1.3 (C)(1-3) Shellfish and “upset” conditions. Based on a review of NCL ship’s logs and records, NCL certifies that we complied with the prohibition on discharging within 0.5 nautical miles of bivalve shellfish beds that are recreationally harvested or commercially approved to harvest as identified annually by the Department of Ecology and that any “upset” conditions were stopped and immediately reported to the Washington State Department of Health.

Section 2.1.3 (C)(4-10) Other discharge approval requirements. Based on a review of NCL ship’s logs and records and other knowledge, NCL certifies that the requirements in this section were met.

Section 2.1.4 Discharge of Residual Solids. Based on a review of NCL ships’ logs and records, NCL certifies that we complied with the prohibition on discharging residual solids coming from any type of treatment system within waters subject to this MOU, within 12 nautical miles from shore and within the entire boundaries of the Olympic Coast National Marine Sanctuary. NCL will make these records available to Ecology upon request.


Section 2.2.1 through 2.2.4 Hazardous Waste Management. Based on a review of NCL ship’s logs and records, NCL certifies that Hazardous Wastes were managed in accordance with these sections of the MOU. NCL will make these records available to Ecology upon request. All hazardous waste was collected and held aboard and discharged ashore in Canada (Victoria or Prince Rupert) in accordance with Canadian and Company policies.

Section 6. Marine Mammal Protection Act, Invasive Species Act, and the Washington Ballast Water Management Act. Based on a review of NCL ship’s logs and records, NCL certifies that the provisions of the above laws were implemented as required by these laws. NCL will make these records available to Ecology upon request. Prior to initial entry to Washington the NORWEGIAN STAR and NORWEGIAN PEARL each conducted an open ocean exchange of ballast and held all ballast water aboard during the season. Appropriate Ballast Water Reports were filed with U.S. Coast Guard and the Marine Exchange throughout the season.

Section 9. Immediate self-reporting to Ecology of any incidences of non-compliance with any provisions of the MOU. To my knowledge, there were no incidents of non-compliance.

I hereby certify that the above information is true and can be verified through documentation. If you have any questions or concerns, please call me at 305-436-4956.

Sincerely,

A handwritten signature in black ink, appearing to read "Randall R. Fiebrandt", written in a cursive style.

Randall R. Fiebrandt
Director, Environmental Operations
(T) 305-436-4956 (F) 305-436-4159



PRINCESS CRUISES

January 29, 2010

Amy Jankowiak
Water Quality Program
Washington State Department of Ecology, Northwest Regional Office
3190 160th Avenue SE
Bellevue, WA 98008-5452

RECEIVED

FEB 01 2010

Re: Washington Cruise MOU Compliance Report: 2009 Cruise Season

Dear Amy,

Please accept this letter on behalf of Princess Cruises for the 2009 cruise season.

The following ships operated in Washington waters during 2009:

- Golden Princess
- Pacific Princess
- Star Princess
- Sapphire Princess (only 1 call)

Please see enclosure (1) for the list of each date and port of call.

Princess Cruises' operations in Washington State addressed the following key provisions of the MOU as follows:

- Based on a review of Princess Cruises' ship's logs and records, Princess Cruises certifies that we did not discharge while operating in Washington State Waters.
- Based on a review of Princess Cruises' ship's logs and records, we certify that Hazardous Wastes were managed in accordance with the appropriate sections of the MOU. Princess Cruises will make these records available to Ecology upon request. Hazardous waste offloaded in Seattle was managed by Waste Management. Most of our waste during the season was off-loaded in Victoria, Canada.

Princess Cruises' ship management system provides instructions to its ships on marine mammal avoidance and its instructions on ballast operations are included in the ships ballast water management plan.

No incidences of non-compliance occurred during the 2009 season.

I hereby certify that the above information is true and can be verified through documentation. If you have any questions or concerns, please call me at 661-753-2745.

Sincerely,



George Wright
Senior Vice President
Marine Operations

Enclosures (1) – Listing of 2009 Princess Cruises: Washington State Port of Call Dates

Vessel Name	Arrival Date/ Time	Departure Date/ Time	Voyage #	Itinerary
Seattle - SEA, Usa 2009				
Golden Princess	Sat 09-May-2009 07:00	Sat 09-May-2009 16:00	NP0912	10012.001
Star Princess	Sun 10-May-2009 07:00	Sun 10-May-2009 16:00	TP0913	10227.001
Sapphire Princess	Thu 14-May-2009 09:00	Thu 14-May-2009 22:00	SA0920	10110.001
Pacific Princess	Thu 14-May-2009 07:00	Thu 14-May-2009 16:00	PA0911	10355.002
Golden Princess	Sat 16-May-2009 07:00	Sat 16-May-2009 16:00	NP0913	10012.001
Star Princess	Sun 17-May-2009 07:00	Sun 17-May-2009 16:00	TP0914	10227.001
Golden Princess	Sat 23-May-2009 07:00	Sat 23-May-2009 16:00	NP0914	10012.001
Star Princess	Sun 24-May-2009 07:00	Sun 24-May-2009 16:00	TP0915	10227.001
Pacific Princess	Thu 28-May-2009 07:30	Thu 28-May-2009 16:00	PA0912	10355.001
Golden Princess	Sat 30-May-2009 07:00	Sat 30-May-2009 16:00	NP0915	10012.001
Star Princess	Sun 31-May-2009 07:00	Sun 31-May-2009 16:00	TP0916	10227.001
Golden Princess	Sat 06-Jun-2009 07:00	Sat 06-Jun-2009 16:00	NP0916	10012.001
Star Princess	Sun 07-Jun-2009 07:00	Sun 07-Jun-2009 16:00	TP0917	10227.001
Pacific Princess	Thu 11-Jun-2009 07:30	Thu 11-Jun-2009 16:00	PA0913	10355.001
Golden Princess	Sat 13-Jun-2009 07:00	Sat 13-Jun-2009 16:00	NP0917	10012.001
Star Princess	Sun 14-Jun-2009 07:00	Sun 14-Jun-2009 16:00	TP0918	10227.001
Golden Princess	Sat 20-Jun-2009 07:00	Sat 20-Jun-2009 16:00	NP0918	10012.001
Star Princess	Sun 21-Jun-2009 07:00	Sun 21-Jun-2009 16:00	TP0919	10227.001
Pacific Princess	Thu 25-Jun-2009 07:30	Thu 25-Jun-2009 16:00	PA0914	10355.001
Golden Princess	Sat 27-Jun-2009 07:00	Sat 27-Jun-2009 16:00	NP0919	10012.001
Star Princess	Sun 28-Jun-2009 07:00	Sun 28-Jun-2009 16:00	TP0920	10227.001
Golden Princess	Sat 04-Jul-2009 07:00	Sat 04-Jul-2009 16:00	NP0920	10012.001
Star Princess	Sun 05-Jul-2009 07:00	Sun 05-Jul-2009 16:00	TP0921	10227.001
Pacific Princess	Thu 09-Jul-2009 07:30	Thu 09-Jul-2009 16:00	PA0915	10355.001
Golden Princess	Sat 11-Jul-2009 07:00	Sat 11-Jul-2009 16:00	NP0921	10012.001
Star Princess	Sun 12-Jul-2009 07:00	Sun 12-Jul-2009 16:00	TP0922	10227.001
Golden Princess	Sat 18-Jul-2009 07:00	Sat 18-Jul-2009 16:00	NP0922	10012.001
Star Princess	Sun 19-Jul-2009 07:00	Sun 19-Jul-2009 16:00	TP0923	10227.001
Pacific Princess	Thu 23-Jul-2009 07:30	Thu 23-Jul-2009 16:00	PA0916	10355.001
Golden Princess	Sat 25-Jul-2009 07:00	Sat 25-Jul-2009 16:00	NP0923	10012.001
Star Princess	Sun 26-Jul-2009 07:00	Sun 26-Jul-2009 16:00	TP0924	10227.001
Golden Princess	Sat 01-Aug-2009 07:00	Sat 01-Aug-2009 16:00	NP0924	10012.001
Star Princess	Sun 02-Aug-2009 07:00	Sun 02-Aug-2009 16:00	TP0925	10227.001
Pacific Princess	Thu 06-Aug-2009 07:30	Thu 06-Aug-2009 16:00	PA0917	10355.001
Golden Princess	Sat 08-Aug-2009 07:00	Sat 08-Aug-2009 16:00	NP0925	10012.001
Star Princess	Sun 09-Aug-2009 07:00	Sun 09-Aug-2009 16:00	TP0926	10227.001
Golden Princess	Sat 15-Aug-2009 07:00	Sat 15-Aug-2009 16:00	NP0926	10012.001
Star Princess	Sun 16-Aug-2009 07:00	Sun 16-Aug-2009 16:00	TP0927	10227.001
Pacific Princess	Thu 20-Aug-2009 07:30	Thu 20-Aug-2009 16:00	PA0918	10355.001
Golden Princess	Sat 22-Aug-2009 07:00	Sat 22-Aug-2009 16:00	NP0927	10012.001
Star Princess	Sun 23-Aug-2009 07:00	Sun 23-Aug-2009 16:00	TP0928	10227.001
Golden Princess	Sat 29-Aug-2009 07:00	Sat 29-Aug-2009 16:00	NP0928	10012.001
Star Princess	Sun 30-Aug-2009 07:00	Sun 30-Aug-2009 16:00	TP0929	10227.001
Pacific Princess	Thu 03-Sep-2009 07:30	Thu 03-Sep-2009 16:00	PA0919	10355.001
Golden Princess	Sat 05-Sep-2009 07:00	Sat 05-Sep-2009 16:00	NP0929	10012.001
Star Princess	Sun 06-Sep-2009 07:00	Sun 06-Sep-2009 16:00	TP0930	10227.001
Golden Princess	Sat 12-Sep-2009 07:00	Sat 12-Sep-2009 16:00	NP0930	10012.001
Star Princess	Sun 13-Sep-2009 07:00	Sun 13-Sep-2009 16:00	TP0931	10227.001
Pacific Princess	Thu 17-Sep-2009 07:30	Thu 17-Sep-2009 16:00	PA0920	10362.002
Golden Princess	Sat 19-Sep-2009 07:00	Sat 19-Sep-2009 16:00	NP0931	10211.002
Star Princess	Sun 20-Sep-2009 07:00	Sun 20-Sep-2009 16:00	TP0932	10402.001



November 30, 2009

Mr. Ray Hellwig
Washington State Department of Ecology
Northwest Regional Office
3190 160th Avenue SE
Bellevue, WA 98008-5452

RI
DEC 07 2009
DEPT OF ECOLOGY

Dear Director:

Re: Washington Cruise MOU Compliance Report: 2009 Cruise Season

Section 9 of the Memorandum of Understanding for Cruise Operations in Washington State (April 20, 2004 as amended May 19, 2008), requires an annual submittal detailing the compliance with the MOU for the each vessel within the NWCA that calls to a port in Washington for the previous cruise season. Please accept this letter on behalf of Royal Caribbean International for the 2009 cruise season.

The following ships operated in Washington waters during 2009:

- *Rhapsody of the Seas*; Seattle: May: 15, 22, 29; June: 5, 12, 19, 26; July: 3, 10, 17, 24, 31; August: 7, 14, 21, 28; September: 4, 11.
- *Serenade of the Seas*; Seattle: May 5, and September 28.
- *Mariner of the Seas*; Seattle: May 7,14,21,28 and June 4,11,18.

Royal Caribbean International's operations in Washington State addressed the following key provisions of the MOU as follows:

Section 2.1 Wastewater Management. Royal Caribbean International managed its wastewater in compliance with this section as follows:

In compliance with Section 2.1.1 and 2.1.2, *Rhapsody of the Seas*, *Serenade of the Seas*, and *Mariner of the Seas* held all treated and untreated gray and black water while in Washington waters. The ships all have Type II Certified Marine Sanitation Devices and/or Type II Certified Advanced Wastewater Purification Systems (respectively Navalis & Hamman, Scanship, and Hamman), but due to sufficient holding capacity chose to hold as noted above. These ships also did not discharge solid waste or oily bilge water while in Washington waters. The ships all have Marinfloc Oily Water Separation

Systems. Based on a thorough review of ships' logs and records we certify that our ship(s) complied with these provisions of the MOU. Royal Caribbean International will make these records available to Ecology upon request.

Section 2.1.4 Discharge of Residual Solids. Based on a review of ships' logs and records, Royal Caribbean International certifies that we complied with the prohibition on discharging residual solids coming from any type of treatment system within 12 nautical miles from shore and within the Olympic Coast National Marine Sanctuary. Royal Caribbean International will make these records available to Ecology upon request.

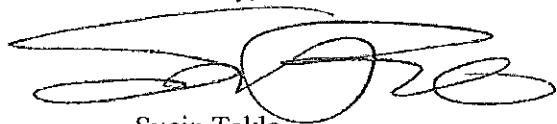
Section 2.2.1 through 2.2.4 Hazardous Waste Management. Based on a review of ships' logs and records Royal Caribbean International certifies that Hazardous Wastes were managed in accordance with these sections of the MOU. All hazardous waste is landed shoreside to an approved hazardous waste vendor for processing and disposal in accordance with RCRA. Royal Caribbean International will make these records available to Ecology upon request.

Section 6. Marine Mammal Protection Act, Invasive Species Act, and the Washington Ballast Water Management Act. Based on a review of ships' logs and records, Royal Caribbean International certifies that the provisions of the above laws were implemented as required by these laws. Royal Caribbean International will make these records available to Ecology upon request. Further to Marine Mammal protection, the ships are provided with training materials and are under Washington State or U.S. Federal pilotage during their entire stay in MOU waters. Compliance with the Ballast Water laws is achieved through the administration of Royal Caribbean International's Ballast Water Management Policy, which is in compliance with the IMO Ballast Water Convention and 33CFR 151.2000 et al.

Section 9. Immediate self-reporting to Ecology of any incidences of non-compliance with any provisions of the MOU. Royal Caribbean International experienced no violations of the provisions of the MOU during the 2009 season.

I hereby certify that the above information is true and can be verified through documentation. If you have any questions or concerns, please call me at 305-982-2469.

Sincerely,



Svein Taklo
Associate Vice President, Marine Operations
Royal Caribbean International

Appendix E. Annual Cruise Meeting Notes

WASHINGTON ANNUAL CRUISE MEMORANDUM OF UNDERSTANDING & CRUISE SHIP UPDATE MEETING

Date/Time: January 20, 2010; 1:00 pm to 3:00 pm

Groups: Port of Seattle, WA Department of Ecology, Cruise Line Representatives, interested parties

Location: Port of Seattle, Pier 69

Attendees:

Carol Bernthal, NOAA/Olympic Coast National Marine Sanctuary
Lynda Carey, Surfrider Foundation member
Douglas Coburn, Quay Cruise Agencies, USA
Paul D'Annunzio, Royal Caribbean
Kirby Day, Princess Cruises
Mike DeSota, Port of Seattle
Albert Faure, Alaska Department of Environmental Conservation (phone)
Fred Felleman, Friends of the Earth
Randall Fiebrandt, Norwegian Cruise Line
Kevin Fitzpatrick, Department of Ecology
Marie Fritz, Port of Seattle
David Fyfe, Northwest Indian Fisheries Commission
John Hansen, NorthWest CruiseShip Association
Chris Hewitson, Holland America Line
Amy Jankowiak, Department of Ecology
Stephanie Jones Stebbins, Port of Seattle
Marcie Kever, Friends of the Earth
Jody Kennedy, Surfrider Foundation
Lincoln Loehr, NorthWest CruiseShip Association
Michael McLaughlin, Port of Seattle
Andy Nelson, Royal Caribbean
Leif Rasmuson, Skokomish Nation
Shannon Serrano, Surfrider Foundation
Mariatta Sharp, Department of Ecology
Donna Spaulding, NorthWest CruiseShip Association
Bob Stone, Royal Caribbean
Mark Toy, Washington State Department of Health
Heather Trim, People for Puget Sound
Jon Turvey, Holland America Line
Ellen Watson, Port of Seattle
Edward White, Alaska Department of Environmental Conservation (phone)
Mike Young, Cruise Terminals of America

Agenda

1:00 PM – 1:10 PM

Welcome, Introductions
MOU Introduction presentation

(Amy Jankowiak, All)

1:10 PM – 1:30 PM	Compliance with the 2009 season Findings from 2009 season inspections/records review	(Amy Jankowiak, cruise line reps)
1:30 PM – 1:50 PM	Updates AK Requirements EPA Vessel Discharge Permit MOU Funding WET Testing	(Amy Jankowiak, cruise line reps) (Amy Jankowiak, cruise line reps) (Amy Jankowiak, Port of Seattle) (Amy Jankowiak)
1:50 PM – 2:20 PM	MOU Amendments Proposals Discussion	(All)
2:20 PM – 2:30 PM	Looking Ahead What lines/vessels will be coming in 2010	(Parties of the MOU)
2:30 PM – 3:00 PM	Comments/Discussion from interested parties	(Amy Jankowiak, All)

Welcome, Introductions

Welcome and introductions

Compliance with the 2009 Season, Amy Jankowiak, Department of Ecology

Began by going through PowerPoint slides on Compliance for the 2009 season. (link to PowerPoint included on Ecology website)

2009 Approvals

- 99% port calls from large cruise ships under the MOU, 2 vessels approved; 218 port calls
- >1 nm and > 6 knots
 - NONE
- Continuously
 - NORWEGIAN PEARL
 - NORWEGIAN STAR

Compliance Evaluation consists of:

- Discharge Approval Process
- Inspections
- Sampling Data
- Annual Reports/Records Review

Typical Inspection includes

- Introductions/overview of plan for the day (prior notification given)
- Control room
 - Run-through of how system works
 - Variety of questions on staffing, training, protocols...
 - Review of records
- Tour of treatment system(s)
- Observations of other waste streams on the ship
- Sampling
- Conclude
- Approximately 2-3 hours in length
- Similar to inspections for on-land plants

2009 Inspections

- Inspections Conducted
 - 7 inspections conducted (mix of homeported vessels and less frequent callers)
- Inspection findings
 - Operating well; more sampling on board for process control
 - Discharge protocols thorough with verification
 - Recommendations made –
 - Continue to work towards high functioning wastewater treatment systems
 - Waste Minimization efforts impressive
- Copies of discharge documents requested
NWCA vessels not inspected, and for the time period since inspection – submittals requested

DATE OF INSPECTION	VESSEL
7/9/09	PACIFIC PRINCESS
7/19/09	NORWEGIAN PEARL
7/26/09	HAL AMSTERDAM
8/8/09	NORWEGIAN STAR
9/4/09	RCCL RHAPSODY OF THE SEAS
9/18/09	HAS ZAANDAM
10/5/09	CELEBRITY MERCURY

2009 Sampling

- Sampling data received and evaluated. Summary of data and data will be included in the 2009 annual report
 - pH all within 6.5-8.5, but some lower than WA WQ standard of 6.5
 - BOD max of 18 mg/l, TSS max of 26 mg/l
 - Chlorine all ND
 - Fecal mostly ND, highest was 112 #/100 ml (exceeded WA WQ standard)
 - Discharge stopped upon discovery of fecal result, prior to entering WA waters
 - Ammonia ranged from 2.3 mg/l to 66 mg/l
 - Dissolved Copper range = 2.5 ug/l to 43 ug/l
 - Dissolved Nickel range = 4.9 ug/l to 18 ug/l
 - Dissolved Zinc range = 31 ug/l to 110 ug/l

It was pointed out that the requirements for ammonia, copper, nickel and zinc monitoring come from the Alaska requirements. It was pointed out that we should specify that the sampling results above are for vessels approved to discharge (results from both Alaska testing and Seattle testing). Corrections made to PowerPoint.

- WET testing
 - Purpose is to evaluate whether there are potential toxicity issues from vessel discharges.
 - Required for vessels approved for discharge continuously – once every two years for homeported vessels (20 calls) or 1/40 port calls or turnarounds.
 - Previous Results – toxicity from ammonia and possibly from surfactants and detergents.
 - No vessels required to conduct WET testing in 2009

There was a discussion about how the WET testing results compare to the water quality standards and land-based permits. It was also pointed out that the Princess Cruises vessel that failed to monitor for WET testing in 2008 could have done so in 2009 (GOLDEN PRINCESS). There was also a discussion about whether or not to continue with WET testing at all. We are seeing the same results repeatedly and maybe there are particular parameters or other tests that could be more useful.

A question was put forth about the length of holding capacity for the vessels wastewater. The cruise line reps responded about 24-30 hours, but will stress the system. Also need to consider ballast, fuel, potable water when considering holding times and varies by vessel.

It was asked whether or not the cruise ship data goes to the Environmental Information Management (EIM) database system. Ecology was unsure if any of the data is inputted into EIM. [EIM is a database containing data collected by Ecology and local affiliates. The cruise ship sample data is done by private laboratories in Seattle or Alaska. Ecology will look into the possibility of how to include cruise ship data into the database.]

It was also suggested that personal care products and pharmaceuticals be looked at in cruise ship discharges. EPA has done studies with five local treatment plants which includes analytical procedures. The cruise line reps discussed how or if they are looking at the personal care products on board and discussed how they limit pharmaceuticals (except shedded from body).

2009 Compliance Notifications

- Compliance notifications
 - No reported incidents for 2009 season to date
 - Compliance letters
 - All in, except Princess cruises, no exceptions reported
(Princess has since submitted its letter with no exceptions reported)

2008 Assessment of Cruise Ship Environmental Effects in Washington

- Recommendations
 - Ecology recommends MOU continue to be used as a complement to environmental regulations until state specific regulations for cruise ship waste management in Washington are put in place
 - Ecology continue to inspect ships that discharge, including closely looking at wastewater management and other waste streams
Ecology continues to inspect the vessels
 - Parties of MOU continue to work on WET testing evaluation
 - Cruise lines to conduct a thorough review of records on an on-going basis and at end of season to evaluate compliance and inspection recommendations to be implemented.

Updates

AK Requirements, Amy Jankowiak, Department of Ecology, AK representatives

It was discussed that the MOU since inception has attempted to be as consistent as possible with Alaska requirements as the vessels go back and forth. Alaska has a newer general permit which has a modification is in the works. The parties of the MOU would prefer to see how the general permit is working before implementing any requirements into the MOU.

Alaska representatives on the phone stated that they don't have any updates except that the draft general permit modification will be coming out very soon.

EPA Vessel General permit, Amy Jankowiak, Department of Ecology, cruise line reps

Ecology provided an update on the VGP including Ecology's decision to not certify nor to decertify the permit and that EPA has interpreted this as a waive. Therefore the VGP applies to vessels in Washington state waters without any certification conditions.

MOU Funding, Amy Jankowiak, Department of Ecology, and Marie Fritz, Port of Seattle

It was discussed that funding for the MOU is covered for the 2010 year, however, the Port of Seattle requests to change how the funding from the cruise lines is sent to Ecology. It is recommended that a separate working group gather to figure out how to implement funding for 2011. The cruise line reps complimented the efficiency of Ecology and keeping costs down and Friends of the Earth questioned whether or not Ecology has enough time and money to do the work they need to do.

Whole Effluent Toxicity Testing, Amy Jankowiak, Department of Ecology, cruise line reps

As there was already a discussion on WET testing during the Compliance timeslot, no further discussion on WET testing was necessary.

MOU Amendments

There was a request made for a 30-day public comment period on Ecology's website to review all proposed amendments. *[All proposed MOU amendments will be posted on Ecology's website for a 30-day public comment period].* Two proposed amendments were submitted prior to the meeting.

The first proposal was presented by Carol Bernthal with NOAA/Olympic Coast National Marine Sanctuary. Carol provided a summary of what was being requested and why. In summary, OCNMS requests the MOU be modified to eliminate discharge in the OCNMS of any wastewater (treated or untreated) from cruise ships in sanctuary waters and that the MOU apply terms of the agreement to all NWCA member vessels, regardless of their destination or ports of call.

Responses to proposal:

The NorthWest CruiseShip Association (NWCA) does not want these amendments included in the MOU. NWCA states that the sanctuary is out of the MOU's jurisdiction. NWCA supports what they are trying to achieve and NWCA vessels are already not discharging in sanctuary waters, but there is already a review process in place for the OCNMS and regulations should be the path to take.

The Department of Ecology supports the amendment. This should be an easy fix as the vessels are already not discharging in the sanctuary. The MOU already goes beyond the state's jurisdiction by requiring vessels not to discharge residual solids (sewage sludge/biomass) in the entire sanctuary. That is the advantage of a voluntary agreement vs. regulation. The amendment would increase protections for water quality in a highly sensitive area.

The Port of Seattle does not support the amendment. The Port does support some other means of preventing the discharges outside of the MOU process, either by regulation or by a letter or separate agreement.

The Northwest Indian Fisheries Commission wasn't sure whether or not any NWCA vessels transited the Sanctuary. They do. The vessels voluntarily do not discharge in the sanctuary. Cruise lines go through about 30% of the sanctuary. A question was put forth about whether or not the sanctuary is proposing to expand. The sanctuary representative said no, not at this time.

The Surfrider Foundation representatives stated that it would be reassuring to have the requirement to not discharge in the sanctuary in writing.

The second proposal was presented by Fred Felleman with Friends of the Earth. Fred provided a summary of what was being proposed and why. In summary, Friends of the Earth requests that the MOU be amended to ban all discharges while the vessels are at the dock.

Responses to proposal:

The NWCA does not support the proposed amendment. NWCA members have made a large investment in technology and achieve high quality effluent. The MOU provides scrutiny on discharges. NWCA does not see a problem with discharges at Port and don't see any evidence of environmental harm.

The Port of Seattle cannot support the amendment. There is an incentive for advanced wastewater treatment systems with the way the MOU is now.

The Department of Ecology feels that with improvements made with advanced wastewater treatment systems and with the additional requirements put into the MOU for port discharges including engineering and thoughtful review that in-port discharges present little, if any, environmental threat. In view of continuous monitoring, alarms systems, UV prior to discharge, there are sufficient safeguards for in port discharges in place and such discharges should not be a problem. Ecology stands by the additional requirements as protecting the beneficial uses of Elliott Bay. The MOU advances the incentive for advanced wastewater treatment systems. Continuous discharging is optimal for operational reasons.

People for Puget Sound questioned if only one cruise line is doing it (discharging at Port) and other lines are able to hold it, why shouldn't all of them hold and not discharge in Puget Sound. It was also noted that advanced wastewater treatment systems are used for Alaska discharges and other locations.

A third proposed amendment was put forth during the meeting. The third proposal was presented by Heather Trim with People for Puget Sound. In summary the proposal is to ban incineration of sludge in Puget Sound (Puget Sound Partnership definition of Puget Sound) and at dock.

People for Puget Sound also proposes working on including air protections into the MOU.

Responses to proposal:

As this is the first heard of the proposal to ban incineration of sludge in the Puget Sound, no responses were given.

It was discussed that the Port of Seattle has a clean-air strategy for the whole Puget Sound (tri-port, Tacoma, Seattle, Vancouver B.C.) with standards set by the Ports. There are also international standards for incineration.

All proposed MOU amendments will be posted on Ecology's website for a 30-day public comment period.

Looking Ahead

Carnival is a new line coming to Seattle in 2010 and is already a NWCA member and will be covered under the MOU. The cruise schedule for Seattle will be on NWCA website next week.

Comment/Open Discussion, All

No other comments.

CRUISE SHIP MOU CONFERENCE CALL ON 3 PROPOSED AMENDMENTS
APRIL 1, 2010.

Participants:

Amy Jankowiak, Ecology
John Hansen, NWCA
Donna Spaulding, NWCA
Jon Turvey, HAL
Bill Morani, HAL
Dan Grausz, HAL
Stephanie Jones-Stebbins, Port of Seattle
Ellen Watson, Port of Seattle
Mike McLaughlin, Port of Seattle

Agenda Items:

1. Discuss the Amendment Procedure
 2. Discuss the three proposed amendments and the public comments
-
1. Discussion of amendment process including how to bring amendments forward and how to provide for public input.

The parties agree to continue to work on this.

Discussion of misinformation on how the MOU works. Parties agree to work on a fact sheet for the websites.

2. Discussion of the public comments. An e-mail (see attached) was provided about a week prior to this meeting summarizing the comments received and providing a spreadsheet with the comments.

Each proposed amendment was discussed and positions on the amendments are as follows:

1st amendment. OCNMS ban on discharges.

Ecology: DOE still supports. Should hold accountable. Protective of water quality.

Port: since not discharging, suggest working with OCNMS as stated at annually meeting instead.

Cruise: Outlined reasons already. Warrants working with Sanctuary directly. No feedback yet from Sanctuary on suggested direction at annual meeting. Offered counter-proposal on incentive based green flag program and a letter. Need to figure out how to memorialize this.

Port: Supports going in that direction and not as part of MOU. Would be a positive development if action with OCNMS.

Cruise: will call OCNMS.

Conclusion: Not supported by all three parties, not adopted.

2nd amendment. Ban discharge at port.

Ecology: Now supports this amendment for three reasons. Since we allowed the provision in 2004, some things have changed. The cruise lines told us that they needed to discharge continuously so that their systems could run continuously. However, the ships can run the systems continuously and hold their discharge (recirculate). We have more data now on what cruise ships are discharging, including results with high ammonia. We now have a focus on protecting Puget Sound. New facts compel Ecology to support this amendment.

Port: Did not support at annual meeting. This is the one that the commissioners are most interested in. Not sure where the Port will end up on this one. Wants to look at environmental impacts.

Cruise: can send data.

Ecology: cautions that the data can be interpreted in many ways. Ecology can also offer up data and technical assistance.

Cruise: Nothing to add on this one.

Conclusion: Not supported by all three parties, not adopted.

3rd amendment. Ban of incineration in MOU waters.

Ecology: needs more information on this one. What is required legally. What strategies are going on. What are the cruise ships doing and what are they capable of.

Port: Has done some research. PSCAA says that incineration is not allowed without a permit. No cruise ship has a permit. Looking into other air agency requirements. Looks like it is adequately covered by air agencies.

Cruise: If covered by other agencies/regs, should not be part of MOU.

Ecology: asked what the cruise lines policies are, what they are currently doing.

Cruise: Can not answer that right now.

Port: If this is happening, that is a problem and a compliance issue.

Conclusion: Not supported by all three parties, not adopted.

None of the three amendments will go through, as there is currently no consensus from all three parties.

Jankowiak, Amy (ECY)

From: Jankowiak, Amy (ECY)
Sent: Friday, March 26, 2010 2:21 PM
To: John Hansen; 'JonesStebbins.S@portseattle.org'
Cc: 'Donna Spalding'; Fitzpatrick, Kevin (ECY); Summerhays, Jeannie (ECY); 'watson.e@portseattle.org'
Subject: Cruise Ship MOU public comments
Attachments: MOU public comments.xlsx

Our conference call is Thursday April 1st from 10-12ish PST. Call in numbers are:
360-407-3780
PIN# 875231#

We have received 612 public comments (and a few more are rolling in). To summarize, the majority of the comments are in support of all three amendments (610 in support, 2 opposing). 553 of the comments were from a web form (one of two different forms). 59 of the comments are custom. The standard web form comments are as below:

340 comments similar to:

"As a resident of the Puget Sound area, I strongly support all three of the proposed amendments to the Cruise Ship MOU between WA Dept. of Ecology, Port of Seattle and the NW CruiseShip Association.

In order to stem the tide of cruise ship air and water pollution in Puget Sound, the Strait, and the Olympic Coast National Marine Sanctuary, I urge you, the Dept. of Ecology and Port of Seattle to support the following three amendments to cruise ship rules:

- 1) Ban the discharge of treated wastewater while cruise ships are docked in Elliott Bay;
- 2) Ban the discharge of treated wastewater in the Olympic Coast National Marine Sanctuary; and
- 3) Ban the incineration by cruise ships while they are in the MOU area (Puget Sound and Strait).

These three amendments are important for the health of the Sound, Straits and Sanctuary."

213 comments similar to:

"I support all three of the proposed amendments to the Cruise Memorandum of Understanding to stop cruise ship dumping at the dock in Elliot Bay, ban sewage dumping in the Olympic Coast National Marine Sanctuary, and halt incineration of cruise ship solid waste in Puget Sound.

Harmful pollutants, including fecal matter, bacteria, and hazardous waste, in sewage dumped from increasing numbers of cruise ships damage the aquatic life of the Sound and the Sanctuary and can contaminate the shellfish consumed by people in this region.

The air pollution from cruise ship incineration contains dangerous pollutants like as dioxins, heavy metals, and particulate matter, which can significantly impact my health and those of my fellow residents in the Puget Sound region.

Please adopt all three amendments proposed for the Cruise MOU to provide the strongest protection possible for the waters of, the health of residents near, and visitors to Puget Sound and the Olympic Coast National Marine Sanctuary."

The rest of the comments were custom and should be reviewed. The attached spreadsheet includes all of the comments. If you filter on "custom", it will bring up the 59 custom comments. Please forward these comments on to all MOU parties/staff that should see this.

We will be discussing the public response and the proposed amendments on the April 1st phone call.

Sincerely,

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