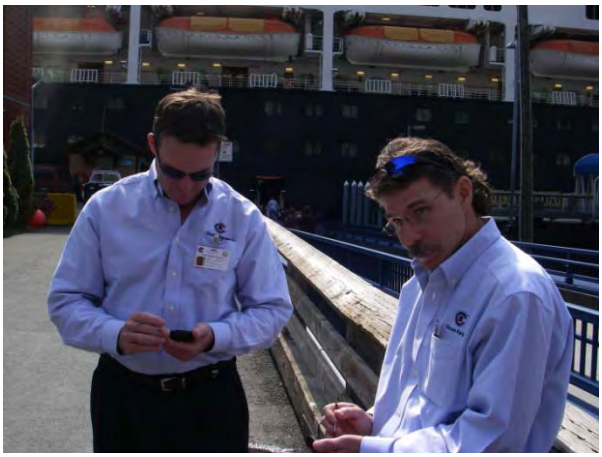
DEC Cruise Ship Program

Ocean Ranger 2009 Alaska Season Report

May 2010



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1. EXCECUTIVE SUMMARY

In August 2006, Alaskans approved Ballot Measure 2 (a.k.a. "Cruise Ship Initiative"). One of the environmental provisions of the initiative required DEC to place observers - Ocean Rangers - onboard large cruise ships to monitor compliance with state and federal environmental requirements and to insure that passengers, crew, and residents of ports are protected from improper sanitation, health, and safety practices (A.S. 46.03.476).

There are no other Ocean Ranger programs in the country. Therefore, DEC implemented a pilot Ocean Ranger Observer program in 2007 using a mix of licensed marine engineers and environmental specialists who went on 114 overnight ship rides. DEC used information gathered in 2007 to assist in developing the Ocean Ranger training and implementing a full Ocean Ranger program in 2008. In 2008, 32 Ocean Rangers were hired (including one Alaskan) and produced 2,180 Daily Reports (inspections). Ocean Rangers were on 456 full voyages of 516 large cruise ship voyages (88% of all large cruise ship voyages) with the other voyages covered by in-port inspections.

The 2009 cruise season was the second season of a fully implemented Ocean Ranger Program. DEC's Ocean Ranger contractor, Crowley, hired a total of 34 Ocean Rangers. DEC directed Crowley to implement an expanded Alaska recruiting strategy in 2009. Despite the efforts to hire Alaskans, only four of the 34 (12%) Ocean Rangers that were hired in 2009 were Alaskans. However, two Alaskans resigned and only two Alaskans (6%)[1] worked as Ocean Rangers during 2009. In addition, the two front line Ocean Ranger managers and an administration assistant were Alaskans.

In 2009, Ocean Rangers were on board 467 out of 514 large cruise ship voyages (91%). The remaining 47 voyages (9%) were scheduled for in-port inspections. Ocean Rangers submitted a total of 2,272 Daily Reports. Daily Reports contain several checklists that cover wastewater, oil handling, waste, and sanitation. The Ocean Ranger would select a different section of the checklist to complete

[1] Two Alaskans filled 32 Ocean Ranger slots (2/32 * 100 = 6%). Thirty-two Ocean Rangers were deployed.

for each day they were in Alaska waters. Any potentially non-compliant items were expedited to DEC Cruise Ship Program for review.

Ocean Rangers reported a total of 87 petroleum related items, 22 wastewater items, 36 health items, 12 other waste items, 20 safety items, 26 EPA Vessel General Permit items, 27 air quality items, and 4 boiler water blown down items. Total potential compliance items numbered 234 in 2009, an increase from 126 in 2008. Much of this increase can be attributed to more experience by Ocean Rangers, a new EPA Vessel General Permit, improved access to conduct inspections, and increased training on air quality and oil pollution. Most of the potentially non-compliant items were immediately resolved by the vessels. Other items were either addressed by the DEC Cruise Ship Program or referred to the appropriate agencies [e.g. DEC Spill Prevention and Response (SPAR), Centers for Disease Control, and US Coast Guard].

As a result of the Ocean Ranger reports, one Notice Of Violation (NOV) was issued by DEC Division of Spill Prevention and Response (SPAR) to the *Celebrity Mercury* for failure to immediately report an oily sheen discharge from a tender to DEC. Ocean Rangers also provided useful additional information to DEC and federal agencies (such as US Coast Guard) regarding evaluation of potential wastewater, oil, safety, sanitation, and air emissions (opacity) compliance items.

In 2009 Ocean rangers completed additional verification projects in order to confirm compliance with environmental requirements and to obtain additional information on the vessels environmental systems and operations. The results of these projects are summarized in Appendix 6.

The 2009 cruise season was a successful season for the Ocean Ranger Program. DEC extended the contract with Crowley Marine Services for the 2010 season.

2. BACKGROUND

In August 2006, the Alaska Public passed Ballot Measure 2[2] (a.k.a."Cruise Ship Initiative"). The initiative contained provisions pertaining to taxation, gambling,

[2] See http://www.dec.state.ak.us/water/cruise_ships/Law_and_Regs/index.htm

and sale of shore-side excursions and environmental practices of commercial passenger vessels.

The Department of Environmental Conservation's (DEC) Commercial Passenger Vessel Environmental Compliance Program ("Cruise Ship Program") is responsible for implementing the changes in the environmental statutes. As a result the Department must:

- Issue permits to large cruise ships that choose to discharge in Alaska (A.S. 46.03.462) ;
- Collect hourly vessel positional tracking data and monthly discharge logs (A.S. 46.03.465); and
- Place U.S. Coast Guard licensed engineers ("Ocean Rangers") onboard large cruise ships[3] to act as independent observers for the purpose of monitoring state and federal requirements pertaining to marine discharge and pollution requirements and to insure that passengers, crew, and residents at ports are protected from improper sanitation, health, and safety practices. (A.S. 46.03.476).

In 2007, DEC implemented a pilot Ocean Ranger Observer program, which was a precursor to the fully implemented Ocean Ranger program. DEC placed environmental observers and USCG licensed engineers on board cruise ships.

The final 2007 Ocean Ranger Report can be found at the DEC Cruise Ship Program website at the following location:

http://www.dec.state.ak.us/water/cruise_ships/pdfs/Ocean_Ranger_FinalReport_March_2008.pdf

In 2008, DEC implemented a full Ocean Ranger program. Crowley was contracted to hire, train, and deploy Ocean Rangers. Ocean Rangers rode 88% of voyages and conducted in-port inspections on the majority of the remaining voyages.

The final report on the 2008 Ocean Ranger cruise ship season can be found at:

http://www.dec.state.ak.us/water/cruise_ships/pdfs/2008_Ocean%20Ranger_Report.pdf

[3] All large cruise ships that have berths for over 250 passengers.

This report focuses on the 2009 cruise ship season, and is available on the DEC CPVEC web site as well:

http://www.dec.state.ak.us/water/cruise_ships/reports.htm

3. 2009 OCEAN RANGER CONTRACTOR

DEC requested contractor assistance with implementing the Ocean Ranger program in 2008, with an option for two additional contract renewals (2009 & 2010). The Contractor is responsible for recruiting, hiring, and training US Coast Guard licensed marine engineers and those with a degree in marine safety and environmental protection from an accredited maritime academy to serve as Ocean rangers. The Contractor also outfits the Ocean Rangers, managed their travel and logistics, and provided daily observation reports (Ocean Ranger Daily Reports)[4] to DEC for compliance review. After a formal procurement process was completed, the multi-year contract was awarded to Crowley Marine Services, Inc. (Crowley). Crowley recruited, screened, and interviewed the licensed engineers. Crowley and the America Maritime Officers Union (AMO) developed the training course and trained the Ocean Rangers at the AMO's STAR Training Center facilities in Florida.

In 2009 DEC extended the Ocean Ranger contract with Crowley through the entire upcoming 2010 cruise season. A new bidding process will be conducted to select a contractor in 2010 for the 2011 to 2014 cruise ship seasons.

4. OCEAN RANGER RECRUITMENT AND TRAINING

4.1. Alaskan Recruitment

The Contract required hiring preference to qualified Alaskans. Crowley hired two Alaskan Ocean Ranger front line managers and one administrative support assistant. A local Southeast Alaska field office in was set up in Petersburg, Alaska with a branch in Juneau. Crowley employed a total of 5 Alaskans (3 management staff and 2 Ocean Rangers) while implementing the Ocean Ranger program in 2009.

[4] For more information and a copy of a sample report, see http://www.dec.state.ak.us/water/cruise_ships/ocean_ranger_reports.html

Crowley and their partners actively recruited qualified Alaskan Ocean Ranger candidates. Following the 2008 season DEC and Crowley reviewed the 2008 recruitment effort and developed a plan to augment the recruiting by subcontracting recruitment advertising to an Alaskan company experienced with advertising and recruiting Alaskans statewide. DEC Crowley retained the Alaska based Alaska Employment Group Inc. (AEG) to develop and implement the Ocean Ranger hiring plan. AEG worked with Crowley and DEC to place ads on the radio and in major Alaskan newspapers and journals.

Job postings were placed on the Alaska Job network. In addition to these advertisements Crowley set up a dedicated web site with information and a toll free telephone contact number. Ocean Rangers job packages were distributed the Legislature and to others (such as Chamber of Commerce offices) to attract interest of Alaskan candidates. DEC paid an additional $13,710.16 for this expanded advertising effort.

In 2009, the state legislature passed SB 183, which broadened the Ocean Ranger minimum requirements. The minimum requirements in the law are expanded to include "a person who holds a degree in marine safety and environmental protection, or an equivalent course of study approved by the department, from an accredited maritime educational institution." In 2009 one Alaska candidate was hired as a result of the law that expanded Ocean Ranger minimum qualifications.

One Alaskan candidate worked as Ocean Ranger during the 2008 season. This Alaskan Ocean Ranger was contacted, but was not interested to work as Ocean Ranger in the 2009 season because of other job obligations.

Four Alaskan candidates were hired in 2009, including one that met the requirements of the new legislation. DEC and Crowley conducted dedicated training sessions and on the job training to train two of the new Ocean Rangers who were hired after the regular classroom training in Juneau. DEC paid an additional $8,701.90 to cover these Alaskan's hiring requirements (e.g. drug test, physical, and background checks), travel costs, training wages, outfitting, and Crowley training fees.

DEC will continue in 2010 to aggressively pursue Alaskan hires, the goal is to increase significantly the contingent of eligible Alaska Ocean Ranger candidates for the 2010 season.

Please see the following DEC web site for information on the minimum requirements for becoming an Ocean Ranger:
http://www.dec.state.ak.us/water/cruise_ships/ocean_ranger.htm

4.2. Training

During the week of April 13-18, 2009 an Ocean Ranger training class was conducted for Ocean Ranger candidates. This class was held in the AMO-STAR Training Center in Dania Beach, Florida. The training for new Ocean Rangers consisted of five eight hour classes and a one day site visit on a Norwegian Cruise Line vessel in Fort Lauderdale (Norwegian Dawn). Returning Ocean Rangers joined training for the last three days of the full training week. The training sessions were intensive, and often included additional training in the evening. DEC staff attended, taught portions of this training session, and met and evaluated the Ocean Ranger candidates. DEC SPAR staff provided video conference training and provided guidebooks on vessel oil pollution identification. A representative from Norwegian Cruise Lines also provided presentations. An experienced Ocean Ranger from the 2008 season assisted in the training process. The training sessions included the following subjects:

- 2008 cruise season Ocean Ranger experiences (lessons learned)
- Regulations and Laws
- Typical cruise ship operations in Alaska
- Reporting / Communication Tools (Tilt-phone)
- Safety
- Professional Code of Ocean Ranger Conduct
- Wastewater sampling techniques and sample Quality Assurance / Quality Control procedures
- Oil / Air opacity / Solid waste / Sanitation / Health topics
- Waste water technologies / Waste water systems
- On board site visit of cruise vessel and
- Home work and examination at the end of the training.

Additional one-on-one training was provided in Alaska for two Alaskan Ocean Rangers hired after training was conducted. This one to one training involved DEC staff, the Ocean Ranger manager, and included working alongside

experienced Ocean Rangers onboard vessels. This specific training was provided for the Alaskan hires in Juneau.

For the 2009 season, a total of 34 Ocean Rangers were hired, and 32 were deployed. Two of the deployed Ocean Rangers were Alaskan.

5. BUDGET

DEC retained Crowley Marine Services to recruit, hire, train and place Ocean Rangers aboard vessels. The Ocean Ranger Program is funded through the collection of Ocean Ranger fees ($4 per berth per voyage) from the cruise industry. DEC collects approximately $4 million dollars a year for the Ocean Ranger program. The cost of the Ocean Ranger contract with Crowley Marine Services was approximately $4.15 million for the 2009 calendar year. The state Fiscal year (FY) ends in June. The Calendar Year (CY) amount spans two state FY. The program did not spend more than it collected.

5.1. Berth purchases

In 2009 Crowley purchased all cabins for Ocean Rangers. The cabins had to be booked for an entire voyage – partial payment of a cabin for only the days that an Ocean Ranger was onboard or in Alaskan waters was not possible. The cost of the cabins included gratuities, fuel surcharges, and taxes. Single occupancy was usually as expensive as double occupancy. Most cruise lines did not provide a discount over publicly available fares. Norwegian Cruise Lines, Silverseas, and Seven Seas did include a discount. Most cruise lines matched the prices available to the general public through common on-line travel agents (e.g. Travelocity and Expedia). The cruise lines also provided much more lenient (money saving) name change and cancelation policies to the State than what would be available to the general public. In one case, Holland America, Crowley used an Alaskan travel agency to purchase berths at a better price. The average cost of cabins was approximately $1,400 based on an average 7 day-voyage. This compares to an average cabin cost in 2008 of approximately $1,800.

6. OCEAN RANGER MANAGEMENT

DEC and Crowley developed an Ocean Ranger deployment schedule. This schedule was developed to comply with the Ocean Ranger law and to stay within the $4.0 million dollar Fiscal Year budget appropriated by the Legislature to DEC. The deployment schedule contained two types of deployments. Ocean Rangers either boarded vessels in Seattle or Vancouver and rode the vessel for the entire round trip voyage, or they conducted in port inspections. In this way, an optimum coverage of cruise ships by Ocean Rangers was achieved within the existing budget. Out of 514 voyages, Ocean Rangers rode a total of 467 voyages (**91**%). In-port inspections were used to provide Ocean Ranger or DEC staff coverage for the 47 remaining voyages (**9**%).

Factors that were taken into consideration when deciding whether to have an Ocean Ranger conduct an in-port inspection versus a full voyage deployment included:

1) The vessel's wastewater discharge status in Alaska;

2) The vessel's compliance history;

3) Short length of the vessel's itinerary (e.g. for few days in Alaska); and/or

4) The vessels with very high daily cabin costs.

For example, the *Seven Seas Mariner* and *Silver Shadow* are luxury vessels with very high priced cabins, so these vessels were primarily scheduled to receive Ocean Ranger in port visits. The *Pacific Venus* had only one port call each scheduled in Alaska. The *Balmoral* and *Crystal Serenity* had only one voyage to Alaska each with a worldwide itinerary that made logistics difficult. Therefore, these vessels were scheduled for in port visits while in Alaska. However, later in the season there was an opportunity to deploy an Ocean Ranger on both the *Silver Shadow* and the *Seven Seas Mariner*. Both companies provided cabins late in the cruise season at a discount to DEC.

The deployment schedule rotated the Ocean Ranger after an average of three to four weeks of duty time on a vessel. This rotation schedule ensured that Ocean Rangers had sufficient time to become familiar with the complex workings of the cruise ship but maintained objectivity. Please see the attached deployment schedule Appendix 1.

Crowley set up a local office in Petersburg (AK) where the front-line Ocean Ranger Manager and an administrative staff member were located. From there,

Crowley coordinated Ocean Ranger Alaskan operations. In 2009 Crowley also hired an Ocean Ranger manager in Juneau, and hired a Petersburg employee to handle administrative work. Crowley had an additional manager available in the Seattle and Vancouver (BC) Canada region.

Crowley conducted day to day communications with the Ocean Rangers via e-mail. In some occasions, DEC staff communicated with Ocean Rangers directly. Crowley and DEC established communication procedures and contacts list so that constant contact with Crowley and DEC staff members was possible.

7. **OCEAN RANGER OUTFITTING, COMMUNICATION TOOLS, AND REFERENCE DOCUMENTS**

Crowley outfitted the Ocean Rangers with personal protective gear. This included a simple uniform, coverall, hand lamp, safety gear, ear mufflers, cameras, and other items. The Ocean Ranger also received a manual (Ocean Ranger Guidebook) that included copies of regulations and useful information.

Crowley provided the Ocean Rangers with a mobile phone (tilt phone type). The Rangers used this phone to communicate, and to send their reports. The phones were maintained by Crowley and spare phones were available for emergencies in the DEC office in Juneau, and at Crowley offices. In 2009 the Ocean Ranger program augmented the cell phone with a netbook type portable computer.

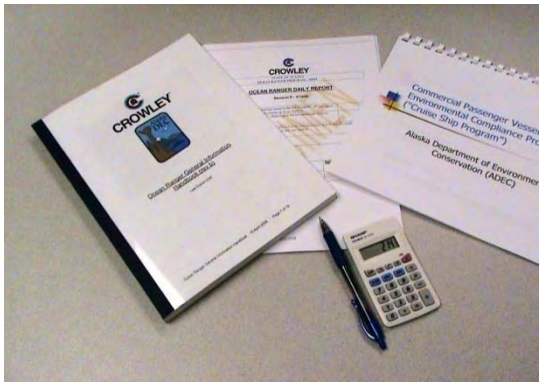
Ocean Rangers used templates that were loaded on the tilt phone to complete their required reports. Crowley established updated procedures to ensure that the Ocean Rangers provided their reports using the most up to date templates. Any change in these forms and templates required approval by DEC.

Crowley established a procedure where Ocean Rangers could submit their reports in hard copy in cases when the tilt phone was not operable.

The following communication tools and reference materials were available to the Ocean Ranger:

- Tilt–phone (communication recording tool): This portable pocket tool includes the mobile phone options and pre-programmed "Ocean Ranger Daily Report" (checklist) templates. After the check list is completed and signed, it can be sent via internet to Crowley or DEC. All the completed reports were sent to Crowley first and then immediately forwarded to DEC for final approval.

- Vessel Specific Notebook: This book contains specific data about the vessel. Ocean Ranger notes, suggestions, etc. were included in these notebooks, which remained on board during the entire season. If the Ocean Ranger was not able (e.g. due to scheduling) to share vessel information during the transfer with the next Ocean Ranger, this information could be documented in the notebook. At the end of the season, the notebooks were retrieved and filed at DEC. Overall this notebook was a very useful tool, which was augmented by the Ocean Rangers during the season for the benefit of other Ocean Rangers and DEC.



- Ocean Ranger Guidebook: Each Ocean Ranger received an Ocean Ranger Guidebook during the training. This guidebook included regulations, policies, and other information needed to perform the Ocean Ranger duties properly.

- Emergency wastewater sample kit: These kits were placed aboard large cruise ships for use by the Ocean Rangers if necessary. These kits included sampling instructions and chain of custody forms. In case of spills, emergencies, or other waste water concerns, DEC could direct the Ocean Rangers to ask the vessels crew to sample the effluent. A procedure for chain of custody of these samples and laboratory analysis was in place. In 2009, there were no events that warranted the use of these emergency kits.

- Netbook Type Portable Computer: These are compact portable computers that are equipped to connect to the cell phone to assist in data entry and editing Daily Reports. These computers also included a copy of the Ocean Ranger Guidebook and reference materials.

- Water-resistant Digital Camera: These were purchased in 2009 to provide improved photographs of items such as oil sheens. These cameras are shock and water-resistant to operate in areas where an Ocean ranger might not want to use the cell phone as a camera. These cameras were used to document wastewater equipment onboard as a data verification project.

8. OCEAN RANGER REPORT TYPES

The emphasis of the Ocean Ranger program is to verify environmental compliance. In order to document their findings, Ocean Rangers submit a variety of reports. Note that these reports are only completed for the days that the Ocean Ranger is on board and the vessel is in Alaskan waters. Below is an overview of the reports submitted by the Ocean Rangers.

Ocean Ranger Daily Report: The Ocean Ranger completes this report every day that the vessel is in Alaskan waters. A Daily Report is also completed when the Ocean Ranger performs an in port visit. These reports are signed by Ocean Ranger and forwarded to Crowley for approval. Crowley approval process includes a completeness review, formatting review, and identification (if any) of flagged items. Crowley then posts these reports to a secure online portal for DEC for review and approval. Normally there was a lag of two to three days between the time that the Ocean Ranger completed a report and the time that the reports were available on the portal for DEC approval and download. Crowley sent reports with potentially non compliant items to DEC immediately.[5]

[5] In some areas in Alaska, there is a gap in cell phone coverage. In these cases, DEC received reports with potential non-compliance items the day after the report was completed. Potential non-compliance items are sometimes also identified as flagged items.

The Daily Report consists of the following elements or questions:

- Are there any potentially non-compliant issues in this report?;
- Did you have sufficient time today to accurately complete the checklist? (question prompted by access concerns);
- General vessel information including whether or not the vessel discharged wastewater in Alaska;
- Section A: Document Review;
- Section B: Black and Gray Water Systems;
- Section C: Oil Pollution Handling;
- Section D: Hazardous and Non-Hazardous Waste; and
- Section E: Sanitation.

The Ocean Ranger is encouraged to randomly select a different section(s) to complete during each day of the voyage. After a few days into a voyage, the Ocean Ranger daily reports contain the observation of multiple areas and systems.

The Ocean Ranger report was modified slightly in 2009 to improve review time by noting compliance or access issues on the first page, and to incorporate the new EPA Vessel General Permit.

An example of the Ocean Ranger Daily Report can be found in Appendix 2.

Incident Report: An Ocean Ranger completes this report when there is a potentially non-compliant item. In some cases the Ocean Rangers did not use the Incident Report format, and instead reported the incident in the Ocean Ranger Daily Report, or identified the incident separately. Crowley immediately forwarded these reports via e-mail to DEC followed up on these reports and/or shared them with other appropriate agencies (e.g. U.S. Coast Guard (USCG), DEC Spill Prevention and Response (SPAR), or Centers for Disease Control (CDC)) as appropriate.

The Daily Report would make reference to the incident report for that specific date and incident. The Incident Report includes space for the reporting of the incident and has space in the document to include digital photos. An example of an Incident Report can be found in Appendix 3.

Departure Report: This report is submitted by the Ocean Ranger when he/she departs from the vessel. The report provides information on the vessels operations that may be helpful for the next Ocean Ranger. This report was not mandatory and a departure report was not always completed. Some Ocean Rangers left notes behind in the vessel specific note book instead.

An Example of the Departure Report that is used by the Ocean Ranger can be found in Appendix 4.

Oil Spill Report: This report was new for the 2009 season. It was created by DEC Spill Prevention and Response (SPAR) along with a reference guidebook for reporting oil spills and sheens. This report was created in response to the large number of oil related incident reports received in 2008. This report allows the Ocean Rangers to enter data in a format that is useful to SPAR. Most internal oil spills/issues are reported as incident reports or identified in the daily report but are not compliance issues unless there are safety or health issues associated with the internal spill.

An Example of the Oil Spill Report that is used by the Ocean Ranger can be found in Appendix 5.

Verification Project Report: This report was new for the 2009 season. It was created by the DEC Cruise Ship Program. The additional verification projects' goals were to confirm compliance with environmental laws for selected vessels, and to obtain additional information regarding the vessel's environmental systems.

The Ocean Rangers received questionnaires to verify these items on-board, while involving the crew. The average time spent on each verification project by an Ocean Ranger was approximately 2-4 hours. According the Ocean Rangers this project was well received by the on-board crew.

The following subjects were examined:

- Large Cruise Vessels Verification Project WW Discharge Operations 2008 Non Complaint vessels;
- Large Cruise Vessels Verification Project WW Holding Verification Project;
- Large Cruise Vessels Steam Systems Project;
- Large Cruise Vessels Spa, Pool and Biofouling Prevention Project;
- Large Cruise Vessels Fuel and Fuel Systems Project (cancelled);

- Large Cruise Vessels Source Reduction Evaluation (SRE) Review 2009 Progress Verification Project; and
- Large Cruise Vessel Digital Images of Equipment Spaces/Engine Rooms (Photo) Project.

The Ocean Rangers completed most of the verification projects. These projects increased DEC's understanding of shipboard systems and operations. The additional information from this project will also be helpful in future training classes and communications between the Ocean Rangers and DEC. A full summary of the projects can be found in Appendix 6.

9. OCEAN RANGER REPORT STATISTICS

One metric of the Ocean Ranger performance is the quantity of Ocean Ranger Reports produced. Table 1 includes a brief overview of the number of Ocean Ranger daily reports. The "2009 Ocean Ranger Daily Report Statistics" (Appendix 6) includes more details on the number of daily reports.

The deployment table in Appendix 1 lists the Ocean Ranger reporting status for each vessel / day in Alaska waters. Missing reports are shown by a circle with a line through it. DEC did not count reports as missing if the ship was in Alaska waters for less than 2.5 hours. There were a total of 9 missed daily reports in 2009. The percentage of the missed reports compared to the total number of the received voyage reports is only 0.4 % (9 of 2,272). See Table 1 and Appendix 7 for details.

Table 1

Ocean Ranger Report Statistics

Ocean Ranger Report Type	Total Number of Reports	2009	2008
Ocean Ranger Daily Reports	Completed by Ocean Ranger during a voyage	2,171	2,039
	Completed by Ocean Ranger during in port visit	101	141
	Total Number Ocean Ranger Daily Reports	**2,272**	**2,180**
Incident Reports		8[6]	100
Oil Sheen Reports		72	N/A
Departure Reports		140	131
Verification Reports		143	N/A
Missed Ocean Ranger Daily Reports	Scheduling / Itinerary issue	1	18
	Technical / Communication issue	-	19
	Illness/ Misc.	8	2
	Total Missed Ocean Ranger Daily Reports	**9**	**39**

10. ENVIRONMENTAL COMPLIANCE VERIFICATION

The DEC Cruise Ship Program used the Ocean Ranger reports to verify environmental compliance. All reports were reviewed by DEC. If a potentially non-compliant item is detected, DEC takes immediate action. This may include notification of other agencies and immediately contacting the vessel to obtain an update and correction of the issue. The Ocean Ranger is also immediately informed about the status, directly or through the Ocean Ranger manager.

The approved Ocean Ranger Daily Reports and Incident Reports included non-compliance items related to:

[6] The Incident Reports in this Table do not include some potentially non-compliant incidents that were reported separately or through the Ocean Daily Reports. In 2008, oil sheens were reported in Incident Reports.

- Oil (petroleum products);
- Air
- EPA Vessel General Permit
- Wastewater/ Pool and spa water discharges
- Health
- Other Wastes
- Safety
- Boiler Blow-down (a wastewater stream)

Appendix 7 provides a summary table of potential compliance issues.

General DEC Procedures:

When non-compliance items are brought to DEC's attention, they are also immediately brought to the vessel's attention, Ocean Ranger and the Ocean Ranger manager's attention, and to the appropriate federal and state agencies for further action.

Some potentially non-compliant issues were outside the jurisdiction of the Cruise Ship Program (like oil pollution, safety items, and health items). These items are immediately referred to the appropriate federal and state agencies. Non-compliance items and potentially non-compliant items related to oil were forwarded to DEC SPAR and US Coast Guard Sector Juneau. Safety and potentially non-compliant items regarding safety were forwarded to the US Coast Guard Sector Juneau. Health and Sanitation potentially non-compliant items were forwarded to US Center for Disease Control (CDC), and the appropriate State of Alaska health agencies.

Open Items:

Several items remain open from the 2009 season. DEC's Cruise Ship Program regards the Ocean Ranger items that have been forwarded to the appropriate agencies (USCG, SPAR, EPA, and CDC) as closed. For all other items DEC has closed the cases by working with the specific cruise line and/or having the Ocean Ranger check that it has been resolved. DEC is still waiting for cruise line follow-up on several specific potential compliance items such as opacity (smoke) events or Vessel Specific Sampling plan errors. If no follow-up is received, DEC will ask Ocean Rangers in 2010 to verify that the items were corrected.

Comparison to 2008:

There was a large increase in potential compliance items compared to 2008 (106 more items). One reason for the increase is the addition of two new categories of potential compliance issues, air pollution and the new EPA Vessel General Permit. The H1N1 virus greatly increased the number of health reported issues in 2009. The additional increase may be the result of greater experience by Ocean Rangers, since many worked during the 2008 season. Access issues were improved, giving the Ocean Rangers more time to check for potential compliance items. Training was increased in 2009 on potential air, oil, and other issues.

For some potential non-compliance items brought to the attention of a vessel's management, it sometimes took some operators a great deal of time and effort to resolve the item. In some cases it appeared that a vessel's management did *not* encourage the on-board officials or personnel to act swiftly on providing responses to the Ocean Rangers. This is one reason that DEC spent a significant amount of time and lengthy communications with a small number of operators to get items resolved.

Summary List of Compliance Items Noted:

	2009	2008
Oil	87	74
Safety	20	7
Health	36	13
Wastewater	22	19
Other Waste	12	8
Air pollution	27	N/A
EPA Vessel General Permit	26	N/A
Boiler Blow-down	4	5
Totals	**234**	**126**

10.1. Oil Pollution 2009 Items:

The most numerous category of potentially non-compliant items that were reported in 2009 related to oil pollution. A total of 87 items were reported in 2009. However, not all the reported cases were directly related to cruise ships.

The Ocean Ranger Daily Report section C includes items regarding oil handling on board. Many items were also included in Ocean ranger Oil Spill reports, a new form for 2009. This form was directly sent to DEC SPAR in addition to the Cruise Ship program. DEC divided the reported oil pollution related items into 6 separate groups:

1) Oil from Vessel:
   Ocean Rangers reported a total of 7 oil from vessel items. These are the oil pollution cases where the petroleum products came from the vessel itself and either leaked or spilled into the water. Vessels are required by law to report pollution events of this nature immediately to DEC SPAR and the USCG. Notifying DEC SPAR and the USCG via the Ocean Rangers does not satisfy the legal reporting requirements of the cruise line. The seven cases of petroleum leaking from vessels were caused by faulty propulsion equipment, leaking seals, or ruptured hydraulic lines and "sweating fittings".

2) Port Oil Sheen:
   There were a total of 43 non-traceable pollution incidents, or "mystery" sheens reported by Ocean Rangers. These are oil pollution incidents that the Ocean Ranger noticed but could not find the source, or did not have enough evidence to verify that it came directly from a cruise ship. In one case the Ocean Ranger photographed oil sheens that appeared to be from a thruster on the Celebrity Mercury, but Ocean Rangers were not able to determine a direct oil leak. It appears that after this was photographed, the particular thruster was not used for the remainder of the 2009 cruise season in Alaska. Vessels are not required by Alaska law to report pollution incidents not believed to originate from them, although in some cases they do. Many of these sheens could have remained unreported without the Ocean Rangers. DEC SPAR, Cruise Program, and USCG staff worked closely with the Ocean Rangers to ascertain the source of marine mystery sheens when possible. During the 2009 season, all marine mystery sheens reported to the DEC Cruise Ship Program were immediately forwarded to DEC SPAR and USCG Sector Juneau for further follow up.

3) Internal Oil leak:
   A total of 4 cases were reported where oil (including fuel) was leaking internally on the ship, but no direct evidence was received of oil leaking into the water. Some vessels had oil in bilges (which was corrected immediately), oil lost from tanks or machinery and never recovered, leaking fuel pipe to combustion equipment, and internal fuel spills. These items may not be compliance items, although they may potentially develop into a safety (fire) or health hazard (fumes) item. Some minor internal oil leaks (such as leaks near high temperature objects) were reported as safety items and are not included in this section. Propulsion

equipment also had internal leaks. Some vessels changed oil on regular basis because water was "seeping" into the propulsion lubrication system. All Ocean Ranger reported cases were immediately reported to DEC SPAR and USCG Sector Juneau by DEC Cruise Ship Program.

4) Scrubber Oil Leak: Scrubber oil sheens occurred in 2008. No cruise ships operated air scrubbers in 2009.

5) Related Cruise Industry Source Oil:
Ocean Ranger reported a total of 9 oil pollution reports related to cruise ship operations, but which was not directly spilled by the vessel itself. The largest number of these, 7, was sheens potentially created by tender operations. Tenders are small vessels either based onshore or carried by the vessel. Shore based tender issues were reported as "other source oil" and are listed in the next subsection. Tenders require fueling from the cruise ship, and have their own machinery onboard that could potentially leak oil. The most frequent item noticed in this category was oil sheens from the stern of tenders.

DEC SPAR issued a Notice of Violation to the *Celebrity Mercury* for failure to notify the State of Alaska regarding sheens from a tender in Sitka. This was based on information provided by an Ocean Ranger.

DEC SPAR investigated the issue of sheens from tendering operations in Sitka.

In one case a passenger was upset about paint fumes and threw a can of paint overboard. This paint was oil-based.

The reported cases were immediately reported to DEC SPAR and USCG Sector Juneau by the DEC Cruise Ship Program.

6) Other Source Oil:
Ocean Rangers reported 16 oil sheens potentially caused by privately owned vessels, shore based tender operations not directly operated by the cruise ship, or terrestrial shore based sources such as dock equipment and buses.

The reported cases were immediately reported to DEC SPAR and USCG Sector Juneau by DEC Cruise Ship Program.

7) Miscellaneous Oil:
Ocean Ranger received questions from vessel crews about oil related matters, including records and operation of oil water separators. DEC's Cruise Ship Program responded to questions from the Ocean Rangers

and forwarded these questions to DEC SPAR and USCG. A total of 5 items were identified for follow up.

A complete count of the specific compliance items for 2009 can be found in Appendix 7.

10.2. Wastewater 2009 Items:

The Ocean Ranger Daily Report includes 22 items regarding wastewater. Ocean Rangers reported that tank identification systems on some of the vessels were not in-line with the approved Vessel Specific Sampling Plans (VSSP). Vessels submitted requests for revision, and DEC issued updated 2009 VSSP documents. The effluent quality does not appear to have been compromised by the incomplete tank identification; however tank identification discrepancies may have potentially contributed to the 2008 accidental discharges.

DEC received reports late in the season of additional incomplete tank identifications. DEC decided to not to re-issue these VSSP documents, for the remainder of the 2009 season. DEC had similar problems in 2008. DEC staff created a verification project regarding VSSPs. Information about that project can be found in the Ocean Ranger Data Verification section of this report.

One Ocean Ranger report included information on a failure of a wastewater treatment system. The vessel had already self-reported to DEC and stopped discharging.

The reported wastewater items including the VSSP related items were immediately reported to USCG Sector Juneau by DEC.

Pool and Spa Water Discharges:

The Ocean Rangers and vessels self-reported 5 accidental discharges of pool and spa water in Alaskan waters. Ocean Rangers also identified issues with pool and spa piping. Pool and spa sanitation issues were reported as health issues. Pool and spa water discharge information was often reported by the cruise line directly to DEC and EPA. Concerns about the release of pool water and spa water into Alaskan waters include possible exceedance of Alaska water quality standards (such as pH and chlorine) and the potential of pathogens released into surrounding waters without proper disinfection. The Ocean Ranger reported discharges will be shared to verify that EPA received self-reports of all discharge events in Alaskan waters.

10.3. Health 2009 Items:

The Ocean Ranger Daily Report Section E includes items regarding health and sanitation. Ocean Rangers reported potential flu and norovirus events in 2009. The Ocean Rangers verified that the vessels took appropriate actions and that the CDC was notified. In one case a vessel reported a chickenpox case to the CDC and the Ocean Ranger. A total of 36 potential health items were reported.

Beside flu or flu-like symptoms and norovirus, other issues included handling of potable water hoses, food preparation glove wearing, potable water chlorination issues, frozen chicken dropped on an outer deck that were washed and cooked before use, and pool clean-up of potentially pathogenic materials (vomit).

A large increase in the number of health items identified by Ocean Rangers in 2009 is directly related to the emergence of the N1H1 virus ("swine flu"). Several cruise lines notified DEC directly and Ocean Rangers noted the presence of potential flu cases on several vessels. These cases were reported to the Centers for Disease Control (CDC) and the Alaska Department of Health.

DEC learned after the 2009 cruise season ended that one company informed at least one of its Environmental Officers not to report the number of illness cases to the Ocean Rangers but to have them obtain information from the CDC. The Alaska Department of Health and Social Services latter confirmed cases of H1N1 on this vessel. This may skew the reported illness results, as some cruise lines were very open to the Ocean Rangers on this topic and others were not. At least one significant outbreak of disease listed by the CDC's Vessel Sanitation Program was not reported to the Ocean Ranger onboard.

10.4. Other Waste 2009 Items:

The Ocean Ranger Daily Report Section D includes items regarding Hazardous and Non-Hazardous Waste. A total of 12 potential items were reported. Several involved items were dropped or lost into the water. These ranged from a few drops of paint to a Man Overboard training dummy lost in Skagway harbor. Two items were reported thrown overboard by passengers. In one case beer bottles were thrown overboard by passengers in Glacier Bay. Vessel crew immediately responded in this incident.

Ocean Rangers also reported refrigerant leaks. In one case about 13 kg of refrigerant a day was lost. The Ocean Ranger closely followed the amounts lost and repairs undertaken to fix this issue.

The reported waste items were immediately reported to USCG Sector Juneau by the DEC Cruise Ship Program.

10.5. Safety 2009 Items:

The Ocean Ranger Daily Reports include items to check regarding safety on board. A total of 20 potential safety items were reported in 2009. All reported safety items were solved. The safety items included: an onboard loss of communications, steering problems, internal fuel leaks or drips, open access hatches with no warnings, problems with water tight doors during the voyage, a small incinerator room fire (which was immediately brought under control by vessel crew and extinguished), and damaged electrical cords. All of these cases were communicated between the Ocean Ranger and the vessel. The Ocean Rangers found and reported that the vessels generally immediately corrected

the (potential) items. However, one vessel was not responsive to correct an issue with electric wiring protruding through a panel in an elevator.

One Ocean Ranger reported inappropriate conduct between a ship crewmember and a minor passenger. The vessel operator and crew took immediate actions.

Another Ocean Ranger assisted an ill passenger in getting medical care after that passenger collapsed on an outer deck.

The reported items were immediately forwarded to USCG Sector Juneau, and if applicable, to other appropriate agencies by DEC Cruise Ship Program.

10.6. EPA Vessel General Permit (VGP) 2009 Items:

EPA issued a NPDES vessel general permit on December 18, 2008[7]. This permit addressed several potential waste streams not included in the 2008 Alaska Cruise Ship General Permit (e.g. boiler water, deck wash, ballast water, anchor wash down, and pool water or spa discharges). The Ocean Ranger Daily Report was modified in 2009 to address the new EPA permit. Most of the EPA permit waste streams were already included in the 2008 Ocean Ranger Daily Report.

Primary issues seen by Ocean Rangers during 2009 regarding the EPA VGP included painting and deck maintenance without proper environmental safeguards, anchor wash-down items, and hull wash-down with potentially hazardous chemicals. A complete list and copies of the associated Ocean ranger reports will be provided to EPA by DEC.

10.7. Boiler Blow-Down 2009:

The Ocean Ranger Daily Report includes items regarding boiler blow-down wastewater. Most vessels have oil fired boilers in combination with steam boilers/heat recovery systems. Chemically treated boiler water is used in these systems. Ocean Rangers reported in 2008 that two vessels appear to not have had direct capacity to store the boiler blow-down waste stream. This could result in boiler water being discharged at the dock. DEC worked with Ocean Rangers to verify and to better understand these particular vessel waste streams. The DEC cruise ship general permit does not include conditions that explicitly mention boiler water discharges. Based on cursory research of the potential water quality of boiler water, this waste stream may have extremely high levels of metals, suspended small solids (e.g. mud), pH issues, and may not meet Alaska Water Quality standards.

EPA issued a NPDES vessel general permit on December 18, 2008 that includes conditions that discourage boiler water discharges in port, when possible.

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[7] EPA Vessel General Permit webpage is :http://cfpub.epa.gov/npdes/home.cfm?program_id=350

10.8. Air Emissions 2009:

The Ocean Ranger Daily Reports included items regarding visible emissions from cruise ships. The Ocean Rangers are not certified EPA Reference Method 9 opacity readers. They cannot perform valid opacity readings. However the 2009 training added discussion of this important subject in detail. Training included information on how DEC and others take opacity readings, and what opacity related items to report to DEC. DEC has EPA Method 9 certified readers and hires a contractor to take a majority of the opacity readings every season.

Ocean Rangers contributed significantly to the 2009 opacity background data DEC obtained. Ocean Rangers verified opacity information (such as graphs) onboard, alerted DEC to concerns, and in several cases suggested crews contact DEC and their corporate offices after an opacity exceedance onboard was detected. Ocean Rangers identified multiple potential future issues with incinerator and boiler use. It appears that cruise ships are burning more oil sludge and also increasing the amount of materials being incinerated.

In 2009 DEC staff attempted to have Ocean Rangers complete a simple survey of fuels and equipment used. Some cruise ship owners and operators complained about this project, and this project was stopped by DEC. At this time DEC cannot confirm operational practices, equipment used, equipment status, or fuels used on most cruise ships. Some operators have voluntarily provided this information directly to DEC.

DEC is concerned with the increased burning of oil sludge and incinerated materials reported by Ocean Rangers in 2009. This may led to increased maintenance, potential safety issues, and unknown environmental effects. The Ocean Rangers also noticed an increase of vessels that combust sludge and used oil in their oil fired boiler systems.

In late July and continuing through the rest of the 2009 cruise season, Ocean Rangers documented numerous air issues on the *Celebrity Mercury*. Some of these items were also self-reported by the vessel to DEC. Reports included information on potential opacity exceedance while underway or anchored, fuel treatment problems, fuel switching issues, and equipment maintenance.

DEC opacity statistics over the last seven years show a significant increase in the number of opacity violations and issues self-reported by cruise lines. The increase corresponds to the start of the Ocean Ranger program. This increase is

particularly evident when looking at self-reports of issues occurring underway or at night when DEC opacity readings would be impossible to perform.

10.9. Ocean Ranger Access Issues 2009:

In the beginning of June 2008, DEC and Crowley received reports from several Ocean Rangers about problems with access on the cruise ships that they were responsible for monitoring. Ocean Rangers in some cases could not complete their observations and reporting or were denied access to non-passenger areas. A complete report of 2008 access issues can be found at: http://www.dec.state.ak.us/water/cruise_ships/docs/Access_Survey_Report.pdf

Full access to most areas on a vessel is critical to the success of the Ocean Ranger program. DEC worked with Alaska Department of Law, Crowley, and the individual cruise lines in 2008 and 2009.

The Ocean Ranger report was modified in 2008 with a question on the front page asking if an Ocean Ranger had sufficient time and access to finish a section of the report. For the 2009 season DEC and Crowley carefully watched Ocean Ranger reports for access issues and asked Ocean Rangers if they had any access problems. Surprisingly in 2009 DEC noticed that a few vessels that were familiar with the Ocean Ranger program expectations failed to provide, albeit for very short duration, access to the Ocean Rangers.

There were several access items in 2009, most dealt with inadequate time or access in the engineering spaces. All access issues were resolved, some before DEC or Crowley was able to get involved. In a few cases DEC had to contact individual lines about a particular vessel, or directly visit the vessel in Juneau.

11. CONCLUSION

The 2009 cruise season was a success for the Ocean Ranger Program. DEC obtained valuable new information on the environmental operations of large cruise ships. Ocean Ranger reporting and verification show that the cruise vessels generally have sound environmental systems and operational practices in place to minimize environmental impacts. However, there are serious areas of concern. In particular, there were numerous oil pollution and air pollution items reported. There is an ongoing concern that some operators are not effectively communicating with the Ocean Rangers regarding potential issues.

Ocean Rangers provided useful information to DEC and federal agencies on wastewater issues, oil sheens and concerns, and independently obtained opacity (air emissions) readings. As a result of Ocean Ranger reporting, a Notice of Violation (NOV) was issued by DEC SPAR in 2009. There appears to be more frequent opacity (smoke) self reporting when Ocean Rangers are on board. Ocean Rangers provided DEC with valuable information about the treatment of wastewater and solid wastes onboard large cruise ships, and verified information that cruise ships are required to submit to the Cruise Ship Program. Ocean Rangers also assisted vessel crews with understanding State of Alaska requirements.

12. USEFUL WEBSITES

Alaska Department of Environmental Conservation (DEC) Cruise Ship Home Page

http://www.dec.state.ak.us/water/cruise_ships/index.htm

Alaska Department of Environmental Conservation (DEC) Ocean Ranger Page

http://www.dec.state.ak.us/water/cruise_ships/ocean_ranger_info.html

US Centers for Disease Control: Vessel Sanitation Program, Cruise Ship Reports

http://wwwn.cdc.gov/vsp/InspectionQueryTool/Forms/InspectionSearch.aspx

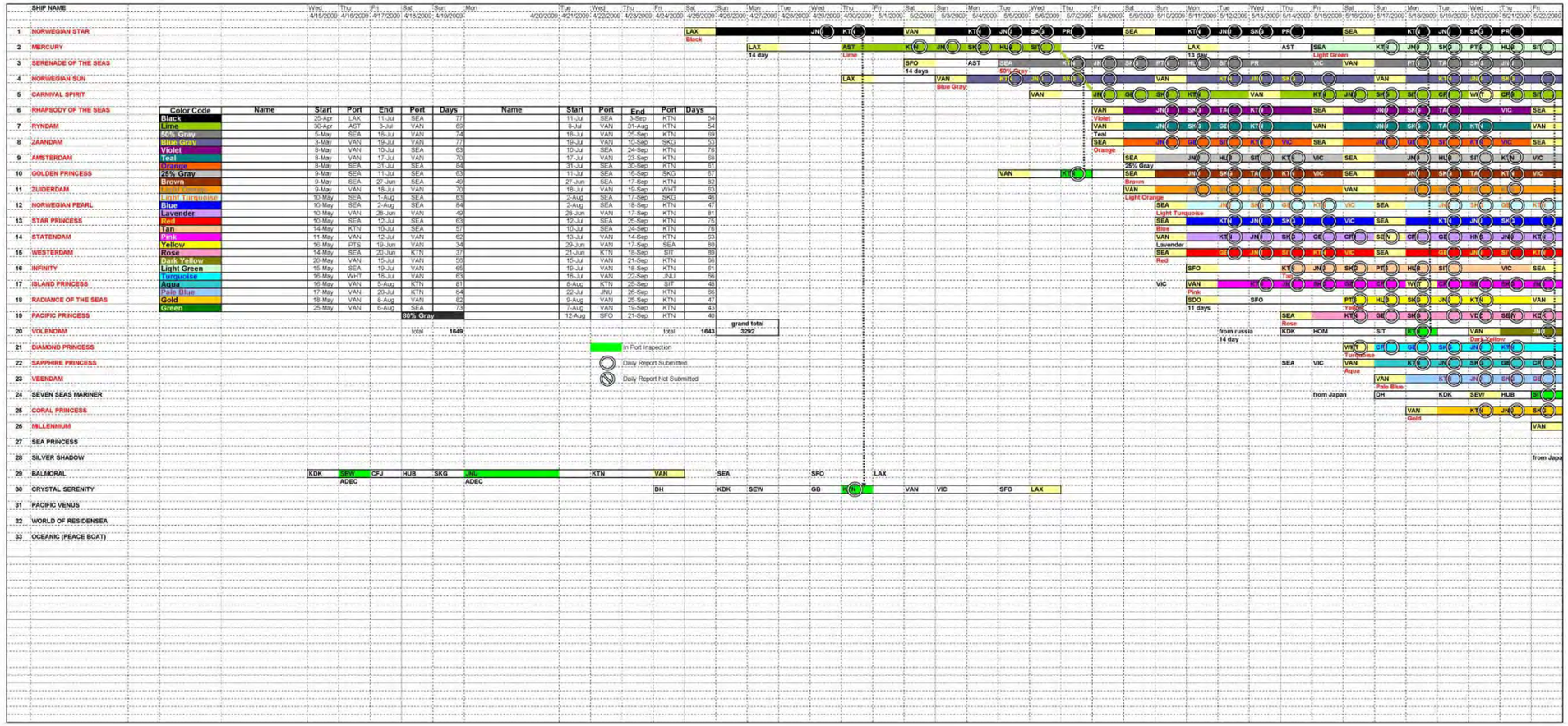
Environmental Protection Agency (EPA): Vessel Discharge Final Permit

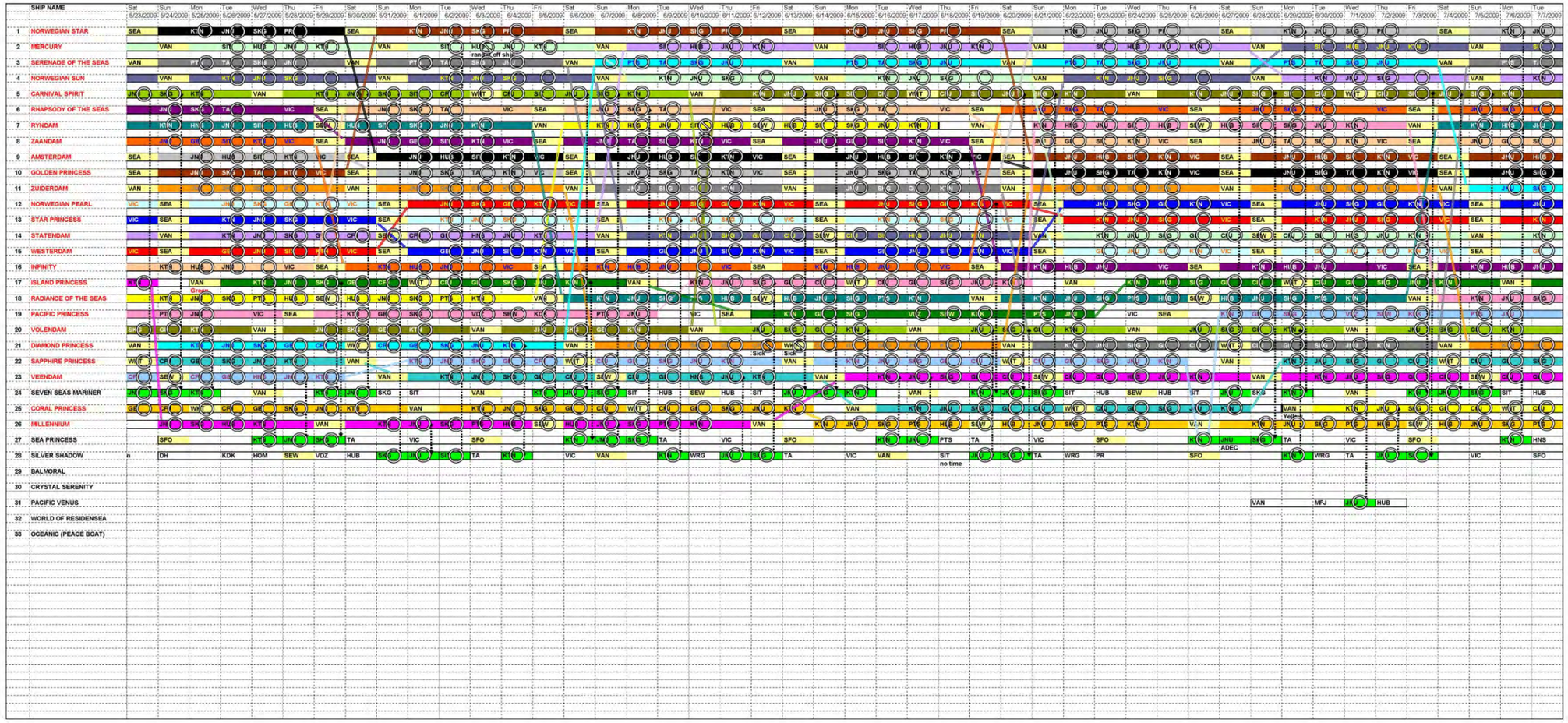
http://cfpub.epa.gov/npdes/home.cfm?program_id=350

United States Coast Guard

http://www.uscg.mil/

Appendix 1: 2009 Final Deployment Schedule

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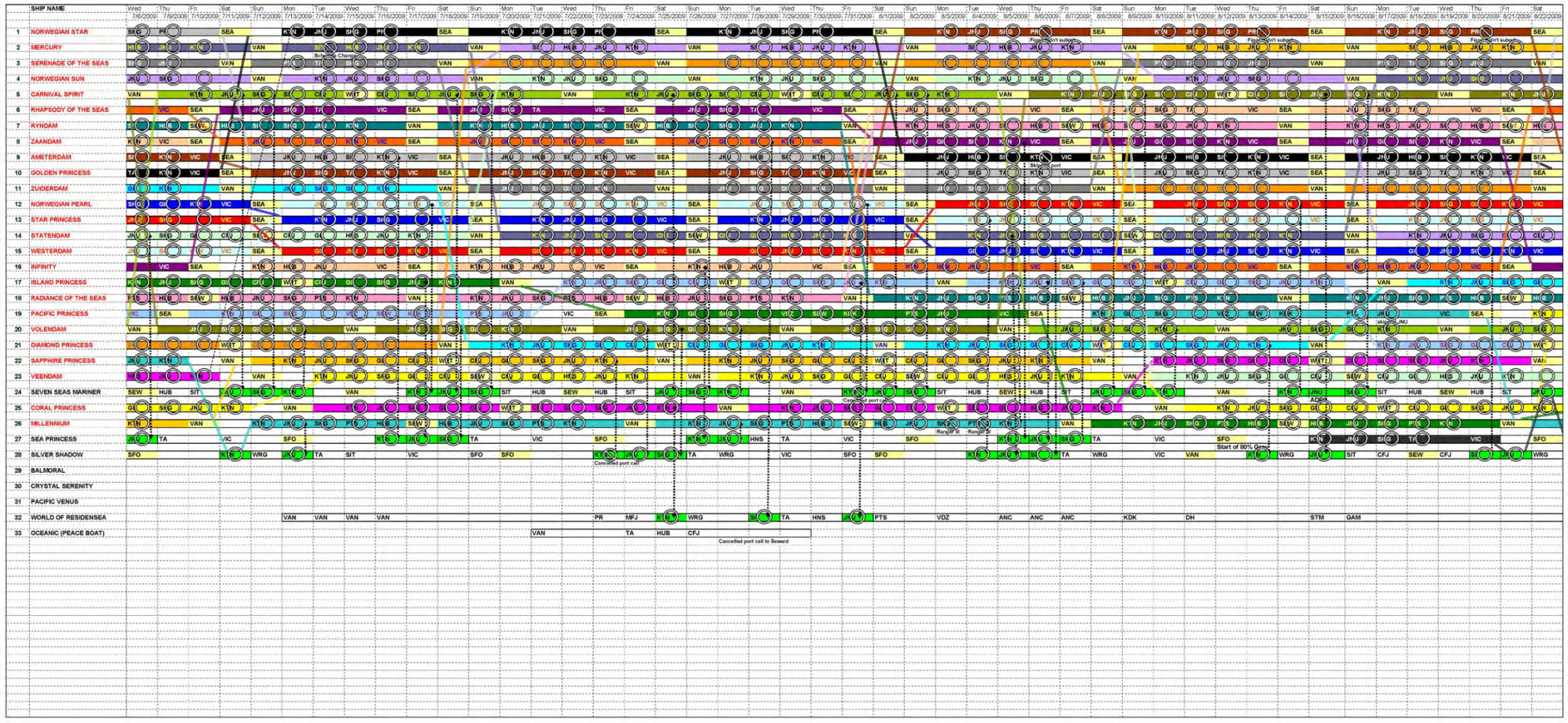
1 NORWEGIAN STAR
2 MERCURY
3 SERENADE OF THE SEAS
4 NORWEGIAN SUN
5 CARNIVAL SPIRIT
6 RHAPSODY OF THE SEAS
7 RYNDAM
8 ZAANDAM
9 AMSTERDAM
10 GOLDEN PRINCESS
11 ZUIDERDAM
12 NORWEGIAN PEARL
13 STAR PRINCESS
14 STATENDAM
15 WESTERDAM
16 INFINITY
17 ISLAND PRINCESS
18 RADIANCE OF THE SEAS
19 PACIFIC PRINCESS
20 VOLENDAM
21 DIAMOND PRINCESS
22 SAPPHIRE PRINCESS
23 VEENDAM
24 SEVEN SEAS MARINER
25 CORAL PRINCESS
26 MILLENNIUM
27 SEA PRINCESS
28 SILVER SHADOW
29 BALMORAL
30 CRYSTAL SERENITY
31 PACIFIC VENUS
32 WORLD OF RESIDENSEA
33 OCEANIC (PEACE BOAT)


SHIP NAME
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3 SERENADE OF THE SEAS
4 NORWEGIAN SUN
5 CARNIVAL SPIRIT
6 RHAPSODY OF THE SEAS
7 RYNDAM
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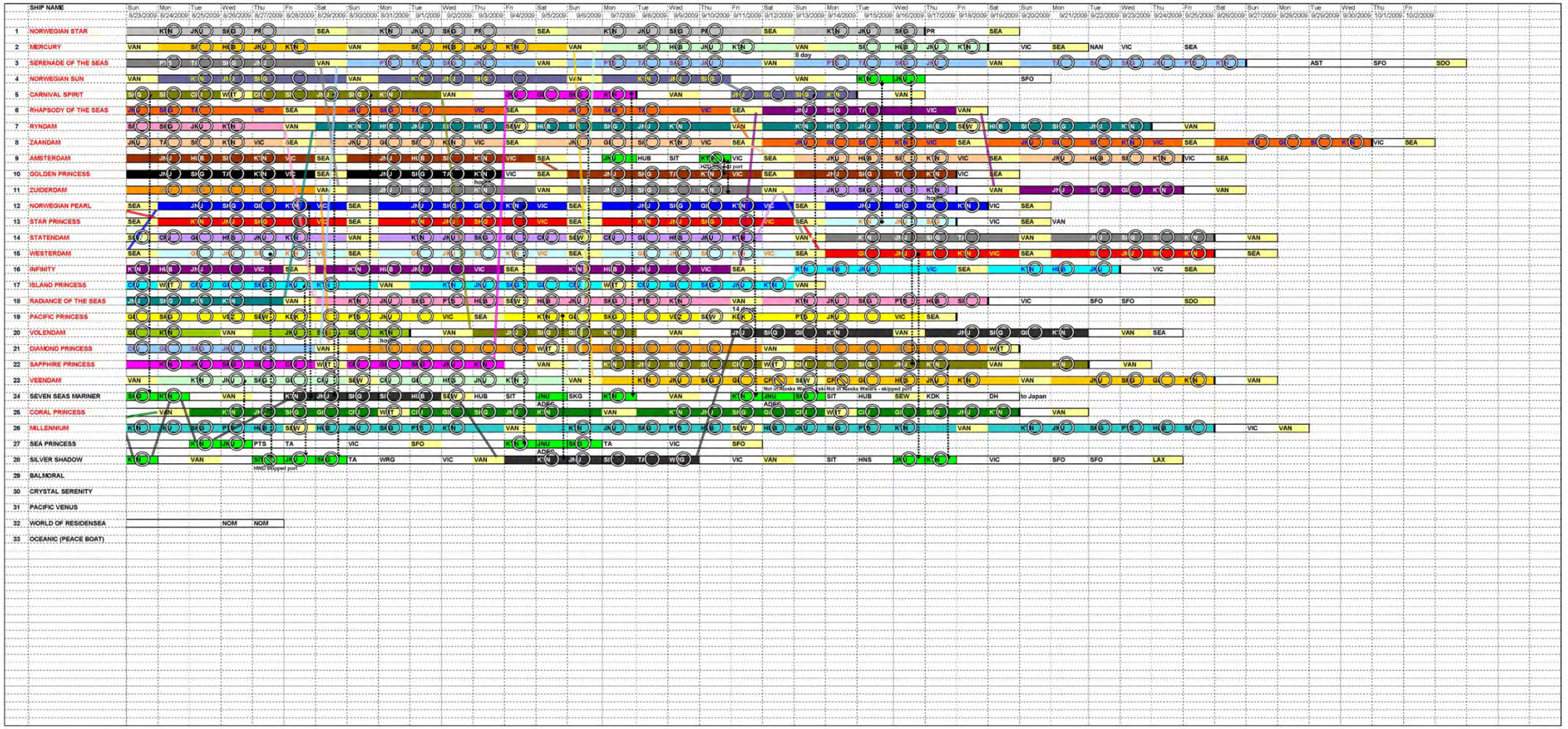
22 SAPPHIRE PRINCESS
23 VEENDAM
24 SEVEN SEAS MARINER
25 CORAL PRINCESS
26 MILLENNIUM
27 SEA PRINCESS
28 SILVER SHADOW
29 BALMORAL
30 CRYSTAL SERENITY
31 PACIFIC VENUS
32 WORLD OF RESIDENSEA
33 OCEANIC (PEACE BOAT)
Cancelled port call to Seward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33 OCEANIC (PEACE BOAT)

Appendix 2: Daily Report Example

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CROWLEY

STATE OF ALASKA
OCEAN RANGER PROGRAM - ADEC

2009 OCEAN RANGER DAILY REPORT

Revision D – 5/17/09

Ship Name	**XXXXXXXX**	**Ocean Ranger**	**XXX XXXXX**
Ship Code Name	**XXX - XXXXXXX**	**Report Date**	**6/2/2009**
Discharging? Y/N	**No**	**Inspection Type**	**VO - Voyage Inspection**

1) Are there any potential non-compliant issues in the below report? (If yes, report will be expedited to allow immediate follow-up from ADEC):	**No**
2) Did you have sufficient time today - observing in the non-passenger areas to accurately complete a section of the checklist?	**Yes**

If NO for question 2 - list the time you were allowed in the non passenger spaces and the explanations from the cruise lines why your request for additional time was denied.

OTHER SECTIONS COMPLETED:

Section A: **No**	Section B: **Yes**	Section C: **No**
Section D: **No**	Section E: **No**	Oil Spill Notification Form **No**

Ocean Ranger Signature:

XXXXXX

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APPROVALS:

Crowley - Approved By:	XXXXXXX	Crowley Approval Date	6/5/2009
ADEC - Approved By:	XXXXXXX	ADEC - Approval Date	6/18/2009

SHIP INFORMATION:

Cruise Line	X - XXXXXXXX	Ranger Report No.	XXX060209VO
Ship Code Name	XXX - XXXXXXX	Date	6/2/2009
Advanced Water System?	No	Type:	Hamworthy
Date of Boarding	5/30/2009		

OCEAN RANGER INFORMATION:

Name:	XXXX XXXXXX

PRE-INSPECTION:

1) Did ship discharge waste water in Alaska waters today? (If yes - fill out form as discharge ship)	No	5) Reviewed Non-hazardous Solid Waste Offloading and Disposal Plan	
2) Reviewed any outstanding non-compliant or open items from previous ocean ranger (pick up vessel specific notebook from environmental engineer)		6) Reviewed Hazardous Waste and Substance Offloading Plan	
3) Confirmed that there is no recent history of norovirus outbreaks - check on http://www.cdc.gov/nceh/vsp/surv/GIlist.htm -		7) Reviewed Discharge Permit	
4) Reviewed ship Vessel Specific Sampling Plan (VSSP)			

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MEET WITH SHIP'S STAFF

	Met With Staff Member?	Name
Environmental Officer	Yes	XXXX XXXXX
Captain		
Chief Engineer		
Staff Captain		
Staff Chief Engineer		
1st Engineer		
Environmental Engineer		
Others		

Notes:

SECURITY

Vessel Security Plan Briefing / Awareness briefing (house rules, briefing for contractors)		Any current security threats?	No
		Select current MARSEC level	MARSEC Level I

Notes:

SHIP TOUR

1. Garbage handling and recycling	Compliant	12. On board wastewater sampling, if any	
2. Hazardous waste and tank storage / container strategy	Compliant	13. General condition of sample valves	
3. Sewage and graywater treatment and discharge, including tank storage (ship) systems note: request that AWWTS operator accompany observer during observation / tracing of the system. (dischargers only) For non dischargers, review the tank storage plan and valve locking and discharge regime.	Compliant	14. Spot check records related to these programs including discharge logs and SMS	Compliant
4. Observe overboard	Compliant	15. Check records for	Compliant

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valve operation and crossover piping regime (if applicable)		refrigerant usage.	
5. Waste incineration and sludge handling (including biosolids)	**Compliant**	16. No direct gas turbine washdown within 3 NM / collected in separate system. Record date/volumes/discharges/ in notes. (Does NOT apply to turbochargers)	
6. Sanitation in food preparation areas	**Compliant**	17. Was boiler wash water discharged in port?	**No**
7. Oily water separator (OWS)	**Compliant**	18. Was boiler wash water discharged underway in Alaska waters?	**No**
8. Stack emissions minimization and monitoring	**Compliant**	19. Was boiler blowdown water discharged in port?	**No**
9. Ballast discharge, if any.	**Compliant**	20. Was boiler blowdown water discharged underway in Alaska waters?	**No**
10. Overboard piping, valves, and overboard valve monitoring systems	**Compliant**	21. Are seawater piping Biofouling preventive systems used? If yes describe type in notes: Note the chemicals used and what efforts are made to minimize usage. (VGP EPA item 2.2.20)	
11. Boiler blow down and chemical treated cooling water handling if applicable.	**Compliant**	22. Does ship have any suspected cases of swine flu?	**No**

Notes: **#7 OWS is only run outside of Alaskan waters.**
#12,13 Nondischarge ship no sampling done.
#16 No gas turbines onboard.
#17-20 Boilers are blown down outside of Alaskan waters.
#21 No biofouling systems used onboard.

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DAILY CHECKS AT SEA

Vessel Location: **Hubbard Glacier**

1. Accompany the environmental officer on daily rounds	**Yes**	6. Accompany any engineer on his/her maintenance round to witness service and maintenance of MSD systems	**No**
2. Observing the daily wastewater lab analysis (if applicable)	**Not Applicable**	7. For ships that are not authorized to discharge wastewater in Alaska, overboard wastewater discharge valves verified closed and sealed in Alaska waters.	**Yes**
3. Cross checking automated overboard discharge alarm records against log entries made in the Oil Discharge Record Book and the State of Alaska Blackwater and Graywater Discharge Record book.	**Yes**	8. Observe tank levels of head tanks for "Oil to Sea Interface" areas (stern tubes, bow and stern thruster seals, fin stabilizer seals, etc.) Look for any significant level changes. *OR* observed for traces of oil in water during maneuvering.	**Yes**
4. Check to ensure that wastewater outflow quality monitors, if installed, are functioning properly. (Effluent monitors, usually turbidity monitors, at pre-set detection readings, will stop over board discharge and redirect the effluent to a tank or back through the wastewater treatment system.)		9. Check ship daily logs and reports for any discharges, maintenance, repairs, or addition of oil to "oil to sea interface" head tanks. • Discharge report: ballast water, solid waste, black water, gray water, other • Machinery reports AWP, MSD, OWS, Incinerator, Commutator, Compactor, other	**Yes**
5. Observe any non-routine or non-automatic discharges (oily water separator discharge, ballast , or any discharges through valves that are usually locked)	**No**	10. Air Emissions meet 18AAC50 - Opacity monitoring system (recorders and alarms working)	**Yes**

Notes for Daily at Sea Checks:
#2 no sampling done onboard.
#4 this is a nondischarge ship.

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NON DISCHARGE SHIPS - *vessels not discharging in Alaska waters - whether they have been issued an Alaska General Permit or not.*

At Sea Checks

1. Number of Passengers and Crew currently onboard	2122	2. Was there a wastewater discharge at sea today? If no – skip to 13	Yes
3. Date discharge started – (outside Alaska waters)	6/2/2009	4. Time discharge started (2400)	0446
5. Date discharge ended – (outside Alaska waters)	6/2/2009	6. Time discharge ended (2400)	0945
7. Latitude and Longitude at start of discharge – (from log)		58°10.0 N 137°12.0W	
8. Latitude and Longitude at end of discharge – (from log)		59°02.9 N 139°04.9 W	
9. Overboard Discharge Valves Used		"A" "C" "F"	
10. Type of discharge: (treated black, gray, or mixed waste water or untreated) - outside Alaska waters		"A" TS "C" GW "F" TS & GW mixed	
11. Volume and average discharge rate for each overboard discharge valve		"A" 51.36 m3 171 L/m TS "C" 90.8 m3 304 L/m GW "F" &"C" 503 m3 1682 L/m TS & GW	
12. Individual in charge of discharge operations – if more than one discharge event today, enter data in the "notes for non discharge ships" section		XXXXX & XXXXXX	

In Port Checks

Was there a wastewater discharge today?	No

Both at Sea and In Port

13. Total volume (M3) of waste water in holding tanks	195 m3
14. Time when tank volumes were taken	1800

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15. Percent of holding capacity (current volume compared to total holding capacity from VSSP)	**15%**
16. Is there sufficient waste water holding capacity until the next scheduled discharge (outside Alaska waters)?	**Yes**

Notes for Non Discharge Ships

#3 Second discharge
Start 1915: 59°08.2 N 139°24.4 W
Stop 2400: 58°03.8 N 137°47.6 W
Valve "A" TS 22 m3 77 L/m
Valve "C" GW 129 m3 77 L/m
XXXX, XXXX, responsible persons.

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LOG OF OCEAN RANGER EVENTS OF THE DAY

Was ship in Alaska waters for 24 hours? **No**

Times that ship exited or entered Alaska waters on this day.
Exit Alaskan waters 0400. **Entered Alaskan waters 1158** **Exit Alaskan waters at 1730**
Daily Log of Events
Left Alaskan waters at 0400. Met with the Environmental Officer and went to the engine control room to check the discharge record book, oil record book and the engine room log book. Checked the holding tank levels. Then went to the engine room to check the MSD system and the Gray water system. This is a non discharge ship. The gray water system is discharged outside of Alaskan waters. They have a Type II MSD system and it is also discharged outside of Alaskan waters. There holding capacity is enough for two days without discharging. Entered Alaskan waters at 1158. Checked that overboard valves were closed and locked. Checked garbage sorting area and waste storage areas. Left Alaskan waters at 1730.

BLACK AND GRAY WATER SYSTEMS – SECTION B

Gray Water System

1. Checked that Ships Discharge Log book - up to date and complete	**Yes**
2. Checked that prohibited sources [hazardous materials, bilges, photo shop & print shop (if hazardous wastes are commingled) or medical waste (e.g. syringes, blood soaked gauze, human tissue, etc.)] do not enter graywater system.	**Yes**
3. Checked for evidence of other drained fluids into scuppers or other entry points (photo lab, hospital, specialty spaces)	**Yes**
4. Checked drains from spaces containing machinery (from fan rooms, hotel equipment, elevator pits, effluent/condensate, etc.) are oil free before entering waste water systems(s) or is sent to the bilges/ oil water separation system	**Yes**
5. Checked connections to the Black Water System (if permitted in MSD Operation Manual, if so, is MSD capacity sufficient?)	**Yes**
6. Checked that reverse osmosis /distillers/water makers – the brine or reject water shall not contain hazardous waste (VGP EPA item)	**Yes**
7. Checked connections to Ballast Water System	**Yes**
8. Number of Gray Water Tanks (from VSSP)	**8**
9. Total tank capacity M3 (from VSSP)	**1421**
10. Volume Produced M3/day (from VSSP)	**558**

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11. Maximum number of days in port without discharging (from VSSP)	**2**
12. Checked current capacity sufficient for persons on board and time in port?	**Yes**
13. Checked vessel's gray water handling procedures (SMS)	**Yes**
14. Checked that Quality Assurance / Quality Control Plan is available	**Yes**
15. Is Gray water processed and discharged?	**No**
16. Gray water disposal procedures. Shore and at Sea (company policy)	**Gray water is stored and discharged outside of Alaskan waters.**
17. Checked vessel's sampling procedures (if any)	**No**
18. Types of test performed, equipment, and useable testing supplies readily available	
19. Check how often do they take samples? Review samples record book	**No**
20. Checked state, federal and local regulations for gray water discharge	**Yes**
21. Responsible crew interviewed	**Yes**
22. Checked disposal Records	**No**
Checked Shore (receipts available)	**No**
Checked at sea (logs maintained)	**Yes**
Checked sampling/Testing (logs maintained)	**No**

Notes on gray water

 # 17,18,19 This is a nondischarge ship. No sampling done.
#22 ship, discharges outside of Alaskan waters.

Black Water System

23. Checked sources of black water	**Yes**
Toilets, Urinals, scuppers	**Yes**
Checked drainage from medical premises (U.S. restriction)	**Yes**
Checked that black water system installed, maintained and operated in accordance with approved plans and manufacturers specifications.	**Yes**
Checked Tank Capacity and Volume produced	**Yes**
Checked Current volume in tanks	**Yes**
Checked that Modifications are documented	**Yes**
24. Operations and Treatment	**Yes**
Checked Chemical/Biological treatment & protective equipment	**Yes**
Checked Chemical Treatment level	**Yes**
Checked for sufficient chemicals, additives, approved cleaning materials onboard (enzymes, "Gamazyme" chlorine)	**Yes**
Checked that compressors operating, inlet filters maintained	**Yes**
Checked that vacuum system operable, if applicable	**Yes**
Checked that flow indicators clear - indicating flow	**Yes**
Checked when the last system cleaning occurred	**Yes**

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Checked the macerator operating maintenance	**Yes**
Checked on methods to dilute discharge	**Yes**
Checked operating instructions / SMS procedures	**Yes**
25. U.S. Marine Sanitation Device Requirements	**Yes**
MSD Type	**Type II**
Checked Nameplate (should be designed to resist efforts of removal or efforts to alter the information)	**Yes**
Checked Certificate of Type Test. For Foreign Flag Vessels in U. S. Waters 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.	**Yes**
Checked Proper operation (macerators, treatment chemicals) and structural integrity, no leaks	**Yes**
Checked Placard is present	**Yes**
26. Maintenance	**Yes**
Check maintenance Records / Logs	**Yes**
Checked one line diagram of operation	**Yes**
Checked if there are any modifications to system	**Yes**
Checked that routine testing done and logged	**No**
Check any work in progress	**Yes**
Check test results within required limits	**No**
27. Sampling / Testing	**No**
Check Lab analysis of fecal coliform / total suspended solids in effluent	**No**
Check results of residual chlorine content in effluent testing	**No**
Checked calibration records for dosing pump / proportioner	**No**
28. Discharges	**No**
Vessel has an advanced System - continuous discharge?	**No**
Discharge Locations	
Checked sampling of effluent during discharge operations	**No**

Notes/Findings on Blackwater **#26, 27 This is a nondischarge ship.**
No testing is done.
#28 This is a nondischarge ship.

Appendix 3: Incident Report Example

INCIDENT REPORT

Ship Code	**Example**	Ocean Ranger Name	**Example**
Date of Report	**0/00/00**		
Brief Description of Incident Exceeded opacity limits			
Incident Starting Location	**Example**	Incident Ending Location	**Under investigation.**
Incident Start Date	**0/00/00**	Incident Ending Date	**0/00/00**
Incident Start Time	**Noted at 0750.**	Incident Ending time	**NAV at this time**
Rating of Primary Liaison		**Environmental Officer.**	
Name of Primary Liaison		**EXAMPLE**	
E-mail of Primary Liaison		**EXAMPLE**	

Detailed Report of Incident

The watch engineer was burning sludge in the number one boiler. He believed we were more than 3 miles out and so ignored the alarms which are set to go off when opacity exceeds 20% and again when exceeding 40%. The opacity records show an 80% reading for around four hours. The relieving watch engineer corrected the problem. The burning temperature was set too low.

Comments / Recommendations on Preventing or minimizing Future Incidents:

At the time the watch engineer believed he was doing the right thing. Standing policy should be to consult with the bridge to get a position. The EO gave that advice to the engineer.

Appendix 4: Departure Report Example

DEPARTURE REPORT - submitted when an Ocean Ranger departs a vessel.

Ship Code	*EXAMPLE*	Boarding Date	**0/00/00**
Ocean Ranger Name	*Example*	Boarding Time	**1900**
Boarding Location	*Vancouver, Canada*	Departure Date	**0/00/00**
Departure Location	*Ketchikan, Alaska*	Departure Time	**1300**
Rating of primary liaison		**Environmental Officer**	
Name of primary liaison		**EXAMPLE**	
E-mail of primary liaison		**Example**	

Narrative of events while onboard this ship

No problems while on ship. Incident report filed regarding sheen on water Ketchikan, not from ship. Good access usually went to engine control room on own. Engine personnel very cooperative.

List Practices observed that were innovative or commendatory

Good wastewater system. Ship tests daily and gets regular feedback from manufacturer. Also has good electronic and visual alarms. Ship takes oil to sea interface readings each watch and prints out opacity readings each watch. Ship has new plastic shredder and newer glass crusher. Ship uses handheld room key reader to lessen possible germ transmission from handling. Ship has suggestion program for improvements with cash rewards for crew.

Narrative of the cooperation provided from cruise ship personnel

Cooperation good.

Appendix 5: Oil Spill Notification Report

Ocean Ranger Program

ALASKA DEPARTMENT OF ENVIRONMENTAL CONSERVATION

OIL & HAZARDOUS SUBSTANCES SPILL NOTIFICATION

PERSON REPORTING:	VESSEL STATIONED ABOARD:	PHONE NUMBER OR EMAIL:
XXXXXXXX	**XXXX XXXXX**	**XXXXX@XXX.com**
DATE & TIME OF SPILL:	DATE & TIME DISCOVERED:	PRODUCT SPILLED:
071109 1000	**same as above**	**looked like diesel**
DESCRIPTION OF LOCATION: **Juneau, AK - off the bow. It wasn't a large sheen and the EO and I agreed that it looked like it came from the fueling dock.**		LATITUDE: / LONGITUDE:
QUANTITY SPILLED: **1Gallons**	AREA AFFECTED: **100Square Feet**	COLOR AND APPEARANCE: **Silver/Gray rainbow**
POTENTIAL RESPONSIBLE PARTY (PRP): **I can't say with certainty that it came from the fueling dock, but that is our guess.**		IS PRP VESSEL AWARE OF INCIDENT? **Yes** WILL VESSEL BE SELF-REPORTING INCIDENT TO ADEC-SPAR? **Yes**
SOURCE OF SPILL: > 400 GT VESSEL**? No** **Possibly the fueling dock in Juneau**		CAUSE OF SPILL: **see above**
CLEANUP ACTIONS: **un-recoverable**		
COMMENTS: **The EO and I were made aware of the sheen by the deck officer on the bridge. By the time we got out on the dock the sheen was nearly gone. It wasn't a big sheen. It was about 10'x10'. I'd estimate that it was less than a gallon of diesel. Also, it may have come from the fueling dock**		

which is located about 200' from the bow of the Spirit. I notifed SPAR hotline and the ship also reported the sheen to various agencies including SPAR.		
DEC USE ONLY		
ADEC SPILL #	ADEC FILE #	ADEC LC
SPILL NAME, IF ANY;	CASE MANAGER:	DATE/TIME REPORTED:
DEC RESPONSE	CASELOAD CODE	CLEANUP CLOSURE ACTION
Status of case: ☐ ***Open*** ☐ ***Closed***	***Date Case Closed>***	
COMMENTS:		
REPORT PREPARED BY:	DATE:	

Appendix 6: Ocean Ranger Verification Project

Background:

During the 2009 cruise season, the Ocean Rangers received additional assignments besides their daily reporting duties. These additional verification projects were assigned to confirm compliance with environmental laws and to obtain additional information regarding the vessel's systems in relation to the environment. The Ocean Rangers received questionnaires to verify the items. The average time spent on each verification project by Ocean Ranger was approximately 2-4 hours.

According the Ocean Rangers this project was generally well received by on-board crews, who in some cases assisted the Ocean Rangers in completing the projects.
In most cases, the cooperation from the on-board officers was also good. The findings of the verification projects were discussed with the crew and officers. In general the Verification Project was successful. DEC obtained significant recent up-to-date "vessel system intelligence" that was not previously made available to DEC.

This specific vessel system understanding will be useful for future training of the Ocean Rangers and communication with the Ocean Rangers on board.

The following verification projects were conducted in 2009 by the Ocean Rangers:

- Large Cruise Vessels Verification Project WW Discharge Operations Non Complaint 2008 vessels;
- Large Cruise Vessels Verification Project WW Holding Verification Project;
- Large Cruise Vessels Steam Systems Project;
- Large Cruise Vessels Spa, Pool and Bio fouling prevention Project;
- Large Cruise Vessels Fuel and Fuel Systems Project (cancelled);
- Large Cruise Vessels Source Reduction Review 2009 Progress Verification Project; and
- Large Cruise Vessel Digital Image of Equipment (Photo) Project.

Large Cruise Vessels 2009 Verification Project WW Discharge Operations Non Complaint 2008 vessels:

In 2008 a total of 6 (six) accidental waste water discharge incidents were reported to DEC. The year 2008 was the first year that large discharging cruise vessels were required to obtain an Alaska Cruise Ship General Permit to discharge. The General Permit sets out discharge conditions and required effluent quality. The General Permit also designated the Port of Skagway as a no discharge zone. Vessels that visit the Port of Skagway have to store (hold) their waste water on board for the duration of the Port visit.

The Holland America *Veendam*, *Norwegian Pearl*, and *Norwegian Star* all applied and obtained General Permits in 2008, and discharged treated wastewater in Alaska. The Royal

Caribbean *Rhapsody of the Seas* opted to not discharge in Alaska and did not obtain a General Permit.
In 2008 the following vessels reported accidental waste water discharges;

- Holland America Line *Veendam* (three events);
- Royal Caribbean International *Rhapsody of the Seas*;
- Norwegian Cruise Line *Norwegian Pearl*; and
- Norwegian Cruise Line *Norwegian Star*.

These four vessels self-reported the accidental discharges to DEC in 2008. The vessels also included in their responses actions that would minimize the potential risk of future accidental discharges. These self reports and related items were reviewed and investigated by DEC staff. In 2008 and 2009 the Ocean Rangers verified if all of the stated actions by the vessels were implemented to avoid re-occurrence.

DEC issued a Notice of Violation (NOV) for the *Rhapsody of the Seas* discharge on February 23rd, 2010. At this time the other cases are pending.

All vessels had environmental systems in place to monitor waste water discharges and safety systems in place to avoid accidental or uncontrolled discharges.

The *Veendam* (Holland America Line) was equipped with "valve interlocking system" after the discharge incidents in 2008 to avoid accidental discharges by opening of the valve. This system also appears to include an email reporting system that is capable of automatically sending email notification(s) to Holland America Environmental Operations on shore. All the vessels appear to have fine tuned their instructions and environmental systems to avoid a reoccurrence of such discharges.

DEC CPVEC did find one area of concern:

- Ocean Rangers observed that two vessels did not have clear identification of wastewater storage tanks, or had tanks with "double names". Not having clearly identified tank naming conventions may have contributed to some of the 2008 discharge incidents. Some vessels (*Veendam* and *Rhapsody of the Seas*) appeared to not have consistent tankage identification, which may confuse the operators that are in charge of the discharge operations. On one vessel the 2009 approved Vessel Specific Sampling Plan (VSSP) did not include all the waste water tanks that were used on-board.

Large Cruise Vessels 2009 Verification Project Wastewater (WW) Holding Verification Project:

This project included verification of the on-board information of the actual vessel wastewater holding capacity for both wastewater dischargers and non-dischargers. Twenty eight large cruise ships were surveyed. This project included a specific checklist. A summary of the Ocean Ranger findings is summarized in Table 2 on the next page.

Cruise ships with a relatively short duration in Alaska: the *Crystal Serenity,* the *Balmoral*, *World Residensea,* and the *Pacific Venus* were not included in this project. Vessels that were

mainly subject to the in-port inspections received a limited verification of the wastewater holding capacity (e.g. *Seven Seas Mariner*).

The Ocean Ranger reporting included the following findings:

- All vessels had tank plans and detailed information available regarding tank location, tank identification, tank volumes and wastewater storage strategies.
- Most vessels have automated tank sounding equipment to determine tank volumes and tank status.
- Some vessels with approved 2009 VSSP documents did not use the tank naming conventions as identified in the approved VSSP plans, as a result the VSSP tank identification was not in line with the on–board used conventions. This may be one of the root causes of several accidental discharges in 2008.
- Ocean Rangers reported actual wastewater storage capacity appears to be larger than VSSP reported capacity.

The DEC Cruise Ship Program required several VSSP revisions during the 2009 season based on this Ocean Ranger project results. Such revisions should not be categorized as normal practice.

The potential "Voyage Days WW Holding Capacity" is calculated by the Ocean Ranger reported wastewater holding capacity (volume) divided by total blackwater and gray water generation per day. In most cases, Ocean Rangers found that vessels had more actual wastewater holding capacity (tanks) than was included in their Vessel Specific Sampling Plan (VSSP) documented with DEC. The "Voyage Days WW Holding Capacity" is an attempt to identify the duration in days of the ability to store (hold) wastewater while in Alaska waters, before discharging this water to shore facilities[8] or outside Alaska waters.

Most vessels appear to be able to hold their wastewater for a longer time than was previously identified. The calculated "Voyage WW Holding Days" is in the 2.1 to 6.91 days range.

DEC expects that vessel operators will provide more detailed, complete wastewater holding tank information in their 2010 VSSP applications. For the 2010 cruise season, the approved VSSPs will be verified again by the Ocean Ranger.

[8] Princess Cruises has a wastewater offloading facility in the Port of Juneau. At this time it appears that Princess vessels are the only large vessels in 2009 that offloaded wastewater in port to municipal treatment systems.

TABLE 2
Summary Wastewater (WW) Holding Tank Verification Project

Large Cruise Vessels involved in this project	28
Total Large Cruise Vessels with 2009 approved VSSP	22
Total Large Cruise Vessels with 2009 approved VSSP Tank Volume Underreporting [WW holding capacities]	15
Total Large Cruise Vessels with no 2009 VSSP [9]	6
Total Large Cruise Vessels with tank identification discrepancies / system descriptions discrepancies	4
Total revisions made on approved 2009 VSSPs. All revisions were based on Ocean Ranger findings	7
Average WW holding capacity based on OR findings[10]	2,900 m3/ 775,450 gallons
Average WW holding capacity in days [Voyage days WW Holding Capacity]	3.83[11]

Large Cruise Vessels 2009 Verification Steam Systems Project:

The Steam Systems project included a total of 25 large vessels; a summary of the Ocean Ranger findings for this project is found in Table 3.
This verification project consisted of two separate subjects related to the steam system operations:

- Boiler water handling; and
- Boiler wash water blow-down / soot blowing;

All of these large vessels have steam systems on board to provide steam for heating, potable water production, and power generation. Steam vessels with steam turbine driven propulsion are not currently operated in Alaska. However, steam systems are extremely important in generating steam (heat) for accommodation heating, pool heating, fuel heating, water production (evaporators), and hot water production. The steam is generated in boilers; these are Oil Fired Boilers (OFB), in combination with boilers using the waste heat from the diesel engines or gas turbine exhaust for steam production. These waste heat recovery boilers are installed in the exhaust systems of the diesel engines or gas turbines; they are identified as Exhaust Gas Boilers (EGB).

The steam systems use treated water as a heat transfer medium in their systems. This water is commonly called “boiler water” and is conditioned water with chemicals to control steam system corrosion and to prevent fouling of internal pipes and parts. The boiler water is closely monitored and sampled on board, and conditioned with chemicals or refreshed with

[9] The non dischargers do not have VSSP’s. Also in some cases the BW GW generation was not provided or verifiable.

[10] Includes vessels with unclear tank identifications that could potentially have underestimated holding tank capacities.

new feed water to maintain the boiler water quality within specifications. Some of the boiler water is periodically removed and discharged from the steam system (boiler). This discharge can originate from the bottom of the boiler (sludge / mud control etc.) or from the top of the boiler (water level / scum removal etc.). This is called top or bottom blown down. This discharged boiler water (boiler blow down water) potentially contains high concentrations of metals, high pH (alkalinity), among a potential high toxicity level of pollutants. At this time DEC does not have sample results from this waste stream, therefore a typical values of the boiler "blow down" water stream are not included in the report. However, boiler water treatment literature is available which describes the components of the boiler water.

Cruise ships with a relatively short duration in Alaska: the *Crystal Serenity*, the *Balmoral*, *World Residensea*, and the *Pacific Venus* were not included in this project. Vessels that were subject to the "In Port Inspections" regimes did not receive a verification of the steam systems (e.g. Seven Seas Mariner, Sea Princess, and Silver Shadow). On the Seven Seas Mariner Ocean Rangers provided verbal feedback regarding the steam system.

Some vessels apparently determine the boiler blow down discharge volumes by using the boiler water consumption (feed water / make up water) needed to maintain the boiler water levels after the boiler blow down.

Another operation that was verified was the boiler wash and soot blowing operations. The OFBs and the EGBs will get dirty over time on the combustion side of the boilers. As a result the heat transfer will not be optimal and back pressures may increase. Therefore the boilers are periodically water washed on the exhaust side (combustion gas side). These wash operations are done periodically. Another method to clean the boilers on the exhaust gas side is "soot blowing". Compressed air, steam, or air vibrations are added to the gas side (exhaust flow) of the OFB / EGB boilers to loosen and blow out the soot. Vessels with relatively clean combusting fuels (gas turbines) appear to require less soot blowing than vessels operating on standard heavy fuels.

The Ocean Ranger Reporting included the following findings:

- The daily boiler blow down volumes range from 270 to 4,010 gallons. A daily average of 1,980 gallons [7.4 m^3] boiler blow down water is estimated for Large Cruise Vessels that did provide this specific information.
- Not all vessels provided blown down volumes, and some vessels appeared to have a relatively high boiler water consumption rate.
- All verified vessels appear to have procedures and company policies in place regarding boiler blow down water discharges.
- Some vessels appear to not record the location, time, duration, date and volume of the boiler blow down discharges. Some vessels only partially record these operations.
- There can be even be differences on some vessels of the same class, operated by the same company regarding boiler water discharge practices, amounts, and operations.
- Some vessels process their boiler waters from the bilge tanks / or directly from the boiler water holding tanks in the Oil Water Separation (OWS) system. After processing in the OWS is completed the boiler water is discharged. Note that the OWS system is designed to process / remove petroleum components from processed water, it is not

confirmed that metals and other potential contaminants from this water stream are removed by the OWS.

- Not all vessels were prepared to provide information regarding the "generated" volumes of boiler blow down water.
- Boiler wash down does not appear to be done by most vessels in Alaska. However, some vessels mention that it is potentially possible. In general vessels have systems are in place to collect the boiler wash water and to dispose of the soot / solids.
- All vessels do soot blowing on regular basis (often at night and while not at ports) and some of the vessels have continuous soot blowing systems.
- Soot blowing operations are recorded in almost all vessels or are verifiable for vessels that monitor their opacity levels (i.e. have COMS systems installed).

Vessels that discharge wastewater in Alaska water need an Alaska DEC issued General Permit. The 2008 and 2010 General Permits do not contain conditions or requirements regarding boiler blow down or boiler wash water dischargers. However, the discharges of boiler water and boiler wash down water may not meet Alaska Water Quality Standards without further treatment.

TABLE 3
Summary Steam System Verification Project

Large Cruise Vessels Steam System Verification Project 2009	
Boiler Water Handling [Boiler Blow Down]:	
Vessels with boiler water treatment systems [chemical]	25
Vessels *NOT* identifying boiler blow down volumes	9
Vessels with daily boiler blow down water volume estimates	16
Vessels daily average boiler blow down volume estimates[1]	1,980 gallons
Boiler Wash / Soot Blowing:	
Vessels with soot blowing operations in AK[2]	25
Vessels with boiler wash operations potentially in AK	9

Note: 1) Average based on vessel's estimated discharge volumes / volume ranges.
2) Not all vessels provided clear information, some information included 'when necessary'. Some have automated systems.

Large Cruise Vessels Verification Spa, Pool, Bio-Fouling Cooling Water Systems Project:

This verification project consisted of two separate subjects related to water discharges and cooling water system operations:

- Spa and Pool water handling; and
- Bio-Fouling Control Systems / Cooling water handling.

All of the large vessels operated in the 2009 season had spas, Jacuzzis, and pools. The vessels also had bio-fouling control systems, and had primary (sea water) and secondary (freshwater) circuit cooling water conditioning systems.

The cruise ships with a relatively short duration in Alaska: the *Crystal Serenity,* the *Balmoral*, *World Residensea*, and the *Pacific Venus* were not included in this project. Vessels that were subject to the in-port inspection regimes did not receive a verification of the spa, pool, bio-fouling cooling water systems (e.g. *Seven Seas Mariner*, *Sea Princess*, and *Silver Shadow*). The *Volendam* verification Project was not completed, due electronic file issues, and time constraints.

Pools can be filled with saltwater or with freshwater. All pools contain disinfection products, and pool water quality is closely monitored. In most cases it was not identified which pools contained freshwater (FW) or saltwater (SW). When no information was available, the pools are categorized as freshwater. The reporting did not in all cases include information on how often the pools were refreshed; therefore it was not possible to determine the total potential volume of daily "produced" pool water that is discharged. The estimated pool volume discharges in Table 4 are based on estimated (weekly) volumes of discharged pool water, which may underestimate volumes, because the pool systems, particularly the spas and Jacuzzis are refreshed on a daily basis, increasing the generated discharge volumes. On the other hand, the spa and Jacuzzi water volumes are much less compared to swimming pool volumes. Most cruise ships do not stay in Alaskan waters for a full seven day voyage, so 3 to 4 day time slots between the discharges may be more plausible. Some vessels have cabins with private spas or Jacuzzis. It was not possible to identify the volume or quantity of these units.

All vessels use pool disinfectants. Sanitation policies are in place to actively maintain, monitor, and report pool water quality. Based on the estimates that the entire pool volumes are only discharged once a week, the vessels discharged into marine waters at an absolute minimum volume of between 35,000 and 89,500 gallons of used pool water per week. It should be noted that the voyage/week time slot of 7 days is arbitrary, because most large cruise vessels do not have voyages of 7 days duration in Alaska waters, and may discharge the pool systems more often.

The summary Table 4 provides a concise overview of the findings. Most vessels discharged their pool waters outside of Alaska waters (e.g. > 3 nautical miles) and "neutralize" the chlorine component (disinfectants) of the pool water before the overboard discharges commence. For the vessels that do store these waters in a holding tank, the discharges of the specific storage tanks are recorded in the discharge logs. The volumes of pool discharges into the tanks are not always recorded in the logs, but could in most cases be back tracked from the specific pool maintenance records. Gray water (GW) tanks discharged outside Alaska water do not always contain GW water only, and may be co-mingled with pool water. The discharged pool water is de-chlorinated on most vessels prior the discharge. Depending on the pool load the pools water level may vary. To avoid overflow of the pool balance or buffer tanks are installed to contain the pool water. Not all project data included the buffer water and pipe volumes, so the pool water volumes and related discharge volumes exclude the buffer tank and other pool system piping volumes.

TABLE 4
Summary Spa Pool Bio fouling Cooling water Verification Project
-Pool handling-

Large Cruise Vessels Spa Pool Biofouling Cooling water Verification Project 2009	**24**
Pool Water Handling:	
Vessels with pool water sanitation / disinfection regimes [chemical]	24
Vessels discharge average volume based on once week pool water refresh / change (minimum) [1]	61,106 gallons [2] [228.5 m^3]
Vessels with dedicated holding capacity for pool water (using GW tankage)	16
Vessels with NO Holding capacity for pool water [direct overboard] [3]	8
Vessels that comingle pool water with AWTS influent[4]	3
Bio fouling Sea Cooling Water (primary system):	
Vessels with No bio-fouling control systems	5
Vessels with copper anodes system (1 system)	12
Vessels with chemical injection systems (1 system)	2
Vessels with sodium hypochlorite technology systems (1 system)	4
Vessels with combination systems copper anodes / chemicals[5]	1
Fresh Cooling Water Treatment (secondary system):	
Vessels with fresh cooling water system conditioner	24
Vessels with chemically treated fresh cooling water	21
Vessels with Elysator (magnesium anodes) technology[6]	3
Vessels with automated treatment chemical dosing monitoring	2
Vessels with life boats tenders emergency engines anti freeze engine coolant sources[7]	17

1) Based on vessel volumes of all pools assuming once weekly discharge / volume ranges.
2) Note: does not include associated piping heating systems and buffer tanks / balance tanks. Assumption made of a once weekly refresh / discharge which is conservative.
3) Not all vessels provided clear information; included one vessel that "split" some discharges from pools directly overboard.
4) Some vessels did not identify if the pool water stored in GW tanks was also influent flow for AWTS; these vessels are not included.
5) Some vessels had one than more bio fouling control system e.g. combination system.
6) One vessel appears to use also chemical treatment besides Elysator technology
7) Two vessels were identified on which anti-freeze was not used, but did have procedures in place for possible use.

Biofouling Control System/ Cooling water handling

All vessels that were included in this project used seawater for cooling purposes for items such as the vessel's propulsion, power, and air-conditioning processes. Low temperature overboard water (seawater) is taken in through the vessel's intake (sea chest) by seawater pumps, and the seawater flow is pumped through heat exchangers (e.g. plate / shell and tube coolers) and discharged overboard (primary cooling water process). In this process the seawater will rise in temperature from the heat exchange of the secondary (fresh water) cooling circuit in the heat exchanger. Overboard water may potentially contain debris that may plug up seawater intakes, pumps and heat exchangers. To avoid this vessels have screens and filters (bucket strainers) in their seawater intakes to prevent debris from

entering the primary cooling water system. These strainers are cleaned on regular basis and the debris is off loaded onto shore facilities, or incinerated on board. One vessel grinded this debris and discharged the grindings outside of Alaskan waters. Most of these operations are recorded in the vessel engine room logs / vessel's AMOS records systems.

In the seawater intakes and related piping (sea chest) and cross-over, there is a risk for marine growth. This marine growth can also foul (e.g. coat the seawater contact surfaces of piping, fittings etc.), and clog the primary seawater cooling circuit and other parts of the heat exchange process. To avoid this, all ships have active or passive systems in place to reduce or eliminate marine growth in the seawater intake systems.

The following systems are identified on the vessels in the 2009 verification project:

- No biofouling control system: Here identified as a "passive system", regular cleaning, and special coatings of inner side of the seawater intake system;
- Biofouling control system based on copper anodes (sacrificial) located in seawater intake: An impressed current (electric) is applied to copper anodes installed in the seawater intake system. These anodes are sacrificial (dissolves or corrodes), and will eliminate marine growth. The anodes release ions during the electrolysis to the seawater to discourage settling larva and other microorganisms from "sticking" in the intake areas where they will grow and start breeding. These anodes are replaced periodically.
- Biofouling control system based on generation Sodium Hypochlorite technology: This technology is installed to reduce prevent marine growth in seawater intake systems. The technology is based on the generation of sodium hypochlorite by using seawater in electrolytic cells where part of the salt is converted to sodium hypochlorite. The seawater will then contain trace amounts of sodium hypochlorite in quantities adequate to prevent growth of marine organisms. (Chloropac®[12] technology).
- Biofouling control system based on injection of chemicals in the seawater intake: This technology injects chemicals into the seawater intake to eliminate marine growth. One vessel that had this system installed elected not to operate the system in Alaska waters in 2009. This system is used in combination with other bio fouling control systems.
- Biofouling control combination of Biofouling control systems / technologies: More than one anti-biofouling technology applied. The project identified one vessel that had a combination of sacrificial copper anodes in combination with chemical injection. In this report this system is categorized as "combined system".

Table 4 provides a concise summary of findings regarding the anti-biofouling systems used on the project vessels.

As identified earlier, these vessels do have secondary cooling water circuits. These circuits use conditioned cooling water (freshwater) that transfer the heat load in the heat exchangers

[12] Chloropac® is a registered product by Siemens Water Technologies.

to the primary water circuit (saltwater) on board. Contrary to the saltwater (primary) cooling system the fresh water cooling is system is a closed system. These fresh water circuits are chemically treated to avoid corrosion on piping equipment and other parts. This circuit contains conditioned fresh water. All these secondary cooling water circuits are closed, and leakage is kept to a minimum. In case of maintenance or repairs some vessels have cooling water drain tanks, so the cooling water from a particular system can be kept and re-used. Cooling water that is "off spec" and cannot be reused is transferred to tanks and processed through the oil-water separator system (OWS) system before discharge overboard. Some vessels do not have dedicated cooling water drain tanks, and drain (if necessary) cooling water into the bilges. The OWS system is used to process this water before discharge. Note that the OWS system removes oil and grease (petroleum products) from this stream, but may not be designed for removing any chemical components before discharge. All vessels condition cooling water and have systems in place to measure and to dosage cooling water inhibitors / conditioners. Records of conditioning are kept, and most vessels that use chemicals have dedicated log books that include the recording of the cooling water use / chemical dosages. Relatively smaller cooling water circuits and cooling water circuits on life boats, tenders, and emergency equipment use anti-freeze. A few vessels did not have anti-freeze in the small cooling water systems at all. All vessels had procedures in place to reuse anti-freeze or dispose of anti-freeze coolant to shore facilities. Some vessels use chemicals to de-scale and clean heat exchangers of the plate type. Chemical solutions are used to clean evaporator heat exchangers. However, some vessels rely on mechanical cleaning and back flushing of the heat exchangers and do not appear to use cleaning chemicals.

The following cooling water conditioners in fresh cooling water circuits are used on board of the 2009 vessels:

- Cooling water system treatment by using chemicals: Specialty chemicals are added to the cooling water circuit. Regular testing of cooling water quality is performed and chemicals (cooling water treatment) are added.
- Cooling water system treatment by using anodic / cathodic principle (Elysator technology); cooling water systems are prevented from corrosion by letting magnesium anodes be sacrificed instead of the system itself. Oxygen in the water will be absorbed. This system does not use toxic chemicals. Some ships protect their cooling water systems with this technology.
- Cooling water system treatment by "automated treatment" using chemicals: Automated chemical dosing system that also can read the treatment status of the cooling water circuit. A control module automatically monitors the treatment status / dosage status.
- Cooling water system treatment combination technologies.
- Cooling water system treatment with engine coolant / anti-freeze: This option appears mostly applied on relatively small engines / cooling water systems that are potentially subject to freezing temperatures. Life boats, tenders, and other emergency diesel cooling systems on some vessel have engine coolant / anti-freeze.

Spa, Pool, and Biofouling Conclusion:

All vessels had system plans and detailed information available regarding spa, pool, biofouling, and cooling water treatment systems. Most of the systems verified in this project were complex. The Ocean Rangers did get access to the requested information. The pool project included numerous pools and relatively large volumes of water. However, when it came to establishing the estimates of treated cooling water consumption and added chemicals not all vessels could or would provide specific estimates of volumes. Therefore we could not include a complete overview of the use and discharges of spent treated cooling water.

- For the vessels that did not have holding capacity or did not have drain piping of the pools to the storage tanks, it was not clear how the vessels could hold the water from certain pool system (also spa / Jacuzzi) sources longer than one day without refreshing the volumes.
- The estimated discharge volumes discharged once a week are rough indicators and are likely significantly higher.
- Some vessels appear to de-chlorinate the pool water prior to discharge.
- Some vessels appear to have re-arranged their drain piping system prior the 2009 season to enable them to drain the pools, spas, and Jacuzzis directly to dedicated graywater (GW) holding tanks.
- Some vessels discharge their pool water to holding tanks (influent) of the Advanced Wastewater Treatment System (AWTS). This pool water gets “processed” by the AWTS system and discharged. This may explain the occasional samples with chlorine above the federal limit of the effluent. Also note that pool water with relatively high chlorine content may affect the AWTS system effluent quality performance, potentially damaging reverse osmosis systems (e.g. Rochem).
- The discharge from pools to GW / storage tanks is in most cases not recorded. The discharge of the tank is recorded. However, it appears that the tank contents are often not specified. Some vessels have pool records in which these transfers are recorded (internal transfer records).
- All vessels have biofouling control systems. These systems are in operation 24 / 7. One vessel disabled during the 2009 Alaska season their biofouling system during the 2009 Alaska season. This vessel’s system was based on the injection of chemicals into the sea chest.
- The type of biofouling control system that is most used in 2009 is the copper anode system. This system is installed in the seawater intake, and adds copper ions to the intake water. This may affect the copper levels of the produced potable water, which uses this intake water. Therefore this item warrants future verification.
- The freshwater cooling water system consists of treated water. Most vessels are able to reuse treated and conditioned cooling water after maintenance or repairs, and do have cooling water drain tanks. Vessels that do not have that option drain the cooling water into the bilge system and then discharge the cooling water through the OWS process.

- Anti-freeze is used on a limited scale and procedures are in place to dispose of the spent anti-freeze. However, some vessels mix the anti-freeze with the bilge water, for processing through the OWS prior to discharge.
- For treated fresh water and anti-freeze volumes: the vessels could not provide detailed estimates of the volumes treated / produced.

Large Cruise Vessels Fuel and Fuel System verification Project

This project's goal was to obtain a better understanding of the vessel fuel use / fuel treatment and vessel operations of combustion equipment in general. This information could have helped DEC with a better understanding of potential contributors to opacity (smoke). Unfortunately this project was cancelled by DEC. No data or partly complete vessel reports are available. It is recommended to include this verification project in future cruise seasons.

Large Cruise Vessels Source Reduction Review Progress verification Project

Vessels that operated under the 2008 State of Alaska Vessel General Permit (GP) that were granted interim limits were subject to conditions that required the operators of the vessels to submit Source Reduction Evaluation Plans (SRE). The SRE plans included actions taken by the vessels to minimize reduce ammonia and metal concentrations in the effluent. In 2008 and 2009 vessel operators were required to submit SRE plans and updates detailing work and planning on effluent pollutant reductions.

In the 2009 season DEC received feedback from the Ocean Rangers that on most vessels authorized under the DEC General Permit, the crew was not informed regarding SRE actions and obligations. On August 12, 2009 during an DEC/Northwest Cruise Association (NWCA) telephone conference, DEC brought to NWCA members attention that an SRE progress verification project by the Ocean Rangers would be conducted. Unfortunately, it took some time to start this verification project, as a result not all the vessels could be evaluated as some vessels had already departed Alaska for the season. For the vessels that were included in the project, the SRE progress verification project identified:

- Crew (including Environmental Officers and Engineers) knowledge regarding the SRE projects was not always present. It is apparent that SRE plans were originated by the vessel management, and were not always fully communicated with the vessels.
- Most vessels did use "new" biochemicals as part of their wastewater treatment process to reduce metal / ammonia loads, according to the SREs.
- The Norwegian Star did actively work on AWTS system hardware modifications to reduce ammonia concentrations in effluent with their AWTS supplier Scanship;
- The Golden Princess was working on improving the nitrification process in the AWTS system to reduce ammonia levels, and did some work on it. AWTS supplier Hamworthy did some tests on board.
- Operators of vessels promised in their SRE plans to reduce their bunkered water in selected ports with suspected high metal amounts present in water systems.

However, some vessels appeared to start this process late in the 2009 cruise season, in some cases after the DEC NWCA teleconference mentioned above.

- On one Holland America (HAL) vessel it was found that the "Ozonator" equipment was not installed or operable, although the SRE included this for 2009 season. HAL provided a detailed explanation.
- Vessels crews could not always accurately identify the amount of potable water produced by the evaporator, nor could they always accurately identify water consumption. Accurate bunkered water / produced water ratios could not be established.
- One vessel (HAL Ryndam) had evaporator repairs to replace worn out evaporator parts. Evaporators create potable (drinking) water and are a potential source of copper and other metals.
- Most vessels use "Vaptreat" in the evaporator systems cleaning operations. At this point is it not known if this chemical de-scaler/cleaner affects the metal concentrations of copper, nickel, zinc in the AWTS effluent stream.
- Silver Shadow. This vessel voluntarily shared (no questionnaire was needed) their SRE efforts early in the cruise season during In Port visits. The technical water stream appeared to leach copper from the piping. This vessel replaced and re-routed the technical water flows from the wastewater system into designated tanks with good results. The Silver Shadow was continuously working on improving the effluent results to meet Alaska Water Quality Standards.

Although some cruise ship operators and vessels made SRE progress in the 2009 season, it appears that on many vessels not much progress was made. Some work was done, but a structural operational change from the start of the 2009 season, especially in potable water sourcing / control did not appear to be implemented. Implementation and on-board efforts are crucial to the success in reducing ammonia and metal levels. On some fleets it appears that SRE document preparation activities are conducted in the company's headquarters, with little direct involvement of the on-board crew of the efforts (if any) taken. We also acknowledge that some operators / vessels appeared in the 2009 season to be actively pursuing the SRE goals and promises, and worked to reduce the ammonia and metal loads in the effluent.

Large Cruise Vessels Digital Image of equipment and wastewater systems (Photo) Project.

DEC issued digital cameras to the Ocean Rangers to document vessel systems and vessel equipment. This project will help DEC to understand shipboard operations better. The Ocean Rangers took pictures of engine room equipment directly related to environmental operations. The pictures and Ocean Ranger provided descriptions may also used for future training purposes of the Ocean Rangers. Some vessel had questions regarding this project and initially did not allow any picture taking on-board. Company permission was later obtained to take pictures. This project did not interfere with vessel operations or safety.

Appendix 7 Ocean Ranger Daily Report Statistics

Alaska Department of Environmental Conservation

2009 Ocean Ranger Daily Report List

	Vessel Operator	Vessel Name	First In AK	Last in AK	First OR Report	Last OR Report	Vessel Voyages [2]	Total Ocean Ranger Daily Reports	Reports Missed or Missing[1]	Voyage Reports	In-Ports
1	Carnival Cruise Lines	***Carnival Spirit***	5/8/09	9/14/09	5/8/09	9/14/09	16	100	0	100	0
2	Celebrity Cruises	***Infinity***	5/14/09	9/22/09	5/14/09	9/22/09	19	73	0	73	0
3	Celebrity Cruises	***Mercury***	5/2/09	9/18/09	5/2/09	9/18/09	19	78	2	78	0
4	Celebrity Cruises	***Millennium***	5/24/09	9/25/09	5/24/09	9/25/09	18	96	2	96	0
5	Crystal	***Serenity***	4/24/09	4/30/09	4/30/09	4/30/09	1	1	0	0	1
6	Fred Olsen	***Balmoral*** [3]	4/15/09	4/22/09	N/A	N/A	1	0	0	0	0
7	Holland America	***Amsterdam***	5/11/09	9/24/09	5/11/09	9/24/09	20	77	2	75	2
8	Holland America	***Ryndam***	5/10/09	9/23/09	5/10/09	9/23/09	20	106	1	106	0
9	Holland America	***Statendam***	5/12/09	9/25/09	5/12/09	9/25/09	20	107	0	107	0
10	Holland America	***Veendam***	5/20/09	9/25/09	5/22/09	9/25/09	19	102	1	102	0
11	Holland America	***Volendam***	5/14/09	9/21/09	5/18/09	9/21/09	19	73	0	72	1
12	Holland America	***Westerdam***	5/13/09	9/25/09	5/13/09	9/25/09	20	80	0	80	0
13	Holland America	***Zaandam***	5/10/09	9/30/09	5/10/09	9/30/09	21	84	0	84	0
14	Holland America	***Zuiderdam***	5/11/09	9/24/09	5/11/09	9/24/09	20	79	1	79	0
15	Japan Cruise Line	***Pacific Venus***	7/1/09	7/1/09	7/1/09	7/1/09	1	1	0	0	1
16	Norwegian Cruise Lines	***Norwegian Pearl***	5/12/09	9/18/09	5/12/09	9/18/09	19	77	0	77	0
17	Norwegian Cruise Lines	***Norwegian Star***	4/29/09	9/16/09	4/29/09	9/16/09	21	79	0	79	0
18	Norwegian Cruise Lines	***Norwegian Sun***	5/5/09	9/16/09	5/5/09	9/16/09	20	76	0	74	2
19	Princess Cruise Line	***Coral Princess***	5/20/09	9/19/09	5/20/09	9/19/09	18	99	0	99	0
20	Princess Cruise Line	***Diamond Princess***	5/16/09	9/19/09	5/16/09	9/19/09	18	98	2	98	0
21	Princess Cruise Line	***Golden Princess***	5/7/09	9/17/09	5/7/09	9/17/09	20	77	0	76	1
22	Princess Cruise Line	***Island Princess***	5/13/09	9/12/09	5/16/09	9/12/09	18	97	1	97	0
23	Princess Cruise Line	***Pacific Princess***	5/16/09	9/14/09	5/16/09	9/14/09	9	84	0	84	0
24	Princess Cruise Line	***Sapphire Princess***	5/19/09	9/21/09	5/19/09	9/21/09	19	99	0	99	0
25	Princess Cruise Line	***Sea Princess***	5/27/09	9/7/09	5/28/09	9/6/09	11	28	0	0	28
26	Princess Cruise Line	***Star Princess***	5/12/09	9/17/09	5/12/09	9/17/09	19	75	0	75	0
27	Regent	***Seven Seas Mariner***	5/17/09	9/19/09	5/23/09	9/13/09	17	48	0	9	39
28	Royal Caribbean Cruises Ltd.	***Radiance of the Seas***	5/16/09	9/18/09	5/16/09	9/18/09	18	99	0	99	0
29	Royal Caribbean Cruises Ltd.	***Serenade of the Seas***	5/7/09	9/26/09	5/7/09	9/26/09	20	85	0	85	0
30	Royal Caribbean Cruises Ltd.	***Rhapsody of the Seas***	5/10/09	9/15/09	5/10/09	9/15/09	19	58	0	58	0
31	Silver Seas	***Silver Shadow***	5/24/09	9/17/09	5/31/09	9/17/09	12	33	2	10	23
32	Residensea	***World***	7/24/09	8/27/09	7/25/09	7/31/09	2	3	0	0	3
					Totals		**514**	**2,272**	**14**	**2,171**	**101**

Notes:

[1] Reports missing due to illness, canceled port calls, or schedule changes. This number differs from Section 9, canceled port visits were not included there.

[2] Voyages ranged from 4 to 14 days

3 Two inspection by DEC staff

Reports only made while vessel is in Alaskan waters

In Port Visits with at most one voyage by Ocean Rangers

Appendix 8 Daily Report Items Identified

2009 Ocean Ranger Reports Compliance Items *

Number of Compliance Items		Oil from Vessel [1]	Port Oil sheen [2]	Internal Oil leak [3]	Scrubber Oil leak [4]	Other Cruise Ship Source Oil [5]	Other Sources [6]	Misc Oil [6]	Comments / Status
Oil	87	7	43	7	0	9	16	5	All reported Oil items 1, 2, 3, 4 and 5 reported to ADEC SPAR and USCG. Item 6 questions and remarks followed up on and solved.
Safety	20								All reported safety items reported to USCG.
Health	36								All reported Flu/Noro virus self reported to CDC (shared verified). All other items immediately resolved / corrected.
Wastewater [I]	22								All reported unpermitted waste water discharges under investigation (pending). VSSP "deviations" corrected. All other items corrected / identified
Other Waste [II]	12								All reported items identified and resolved.
Air	27								2009 air issues cruise program complaince ongoing
EPA VGP	26								All reported items identified and will be submitted
Boiler Blowdown [III]	4								All reported discharges identified / verified.

Total:	**234**

* Includes the items identified in the Daily Ocean Reports submitted by the Ocean Rangers 2009 Season

Oil Notes:

1 Potential leak from propulsion system, thrusters, stabilizers, rudders etc.
2 Oil sheen noticed in Port
3 Oil in vessel bilges, equipment leaks etc. internal not outside vessel (water body)
4 Oil in scrubber effluent
5 Vessel tender boat / passenger sources
6 Dockside sources/ privately owned tenders
7 Questions Ocean Rangers /OWS /records etc.

Wastewater Notes:

I Include the items which are included in the Ocean Ranger Reports. Involves VSSP documents, water related items.

Other Waste Notes:

II Miscellaneous items "solid waste" / refrigerants items, garbage storage items etc.

Boiler Blowdown Notes:

III Items related to oil fired and heat recovery boiler systems wash water / water blown down / boiler system water flows.