

WASHINGTON STATE DEPARTMENT OF ECOLOGY

WATER QUALITY PROGRAM

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- Ecology Website: <http://www.ecy.wa.gov/ecyhome.html>
- Cruise Ship Website:
http://www.ecy.wa.gov/programs/wq/wastewater/cruise_mou/index.html

COMPLIANCE 2010

- Discharge Approvals
- Inspections
- Sampling Data
- Annual Compliance letters

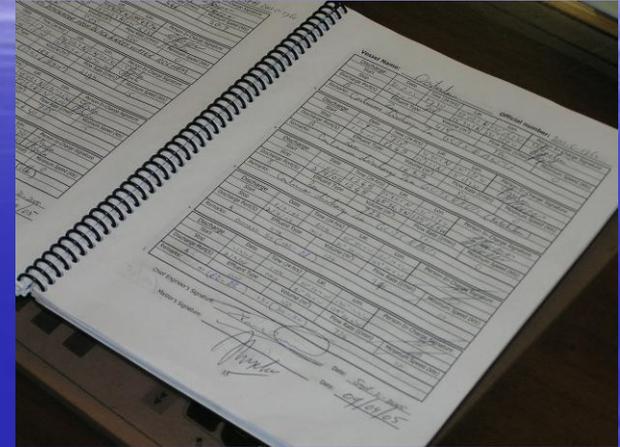
2010 Approvals

- *100% port calls from large cruise ships under the MOU, 2 vessels approved; 223 port calls*
- **>1 nm and > 6 knots**
 - NORWEGIAN PEARL (19)
 - NORWEGIAN STAR (20)
- **Continuously**
 - NONE
- **No request/approval**
 - CARNIVAL SPIRIT (18)
 - CELEBRITY CRUISES INFINITY (19)
 - CELEBRITY CRUISES MERCURY (1)
 - CELEBRITY CRUISES MILLENIUM (2)
 - HAL AMSTERDAM (14)
 - HAL OOSTERDAM (21)
 - HAL ROTTERDAM (19)
 - HAL VOLENDAM (1)
 - HAL ZAANDAM (21)
 - GOLDEN PRINCESS (20)
 - ROYAL PRINCESS (10)
 - SAPPHIRE PRINCESS (20)
 - ROYAL CARIBBEAN RHAPSODY OF THE SEAS (18)

(#) = PORT CALLS

COMPLIANCE EVALUATION

- Monthly Sampling Data
 - Sampling done per MOU, submitted, meets requirements
- WET Testing
 - None required for 2010
- Inspections
 - Allowed for all vessels under MOU at least once/season to verify compliance with MOU
- Compliance/Non-Compliance Notifications
- Annual Compliance Reports



Inspections

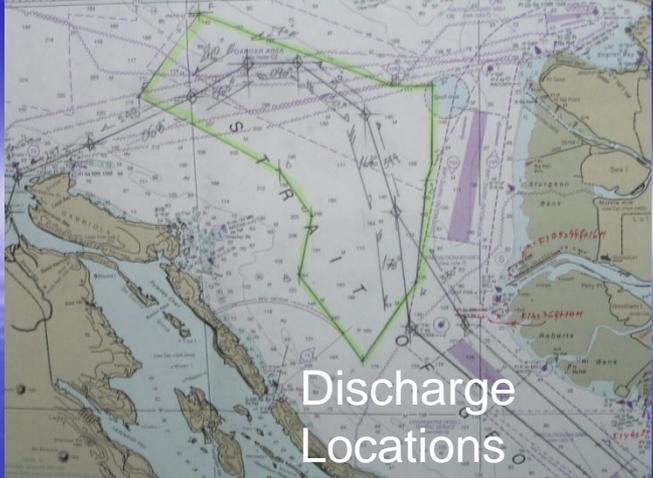
- Typical Inspection includes
 - Introductions/overview of plan for the day (prior notification given)
 - Control room
 - Run-through of how system works
 - Variety of questions on staffing, training, protocols...
 - Review of records
 - Tour of treatment system(s)
 - Observations of other waste streams on the ship
 - Sampling
 - Conclude
- Approximately 2-3 hours in length
- Similar to inspections for on-land plants



AWTS sampling



UV disinfection



Discharge Locations



Caution:
Deck slippery when wet
Do not:
Climb or sit on the railings
Throw anything overboard



Waste Minimization



Records Review



Discharge Ports



2010 Inspections

- **Inspections Conducted**
 - 8 inspections conducted
- **Inspection findings**
 - Discharge protocols thorough with verification
 - Recommendations made –
 - Continue to work towards high functioning wastewater treatment systems
 - 4 of 8 inspected operating traditional MSDs (2 AWTS's not functioning properly, not discharging)
 - Waste Minimization efforts impressive
 - Take care with implementing BMPs for ship painting and maintenance while at Port
- **Copies of discharge documents requested/reviewed**
 - Requested, Some submitted, In process of reviewing

| DATE OF INSPECTION | VESSEL |
|--------------------|---------------------------|
| June 18, 2010 | RCCL RHAPSODY OF THE SEAS |
| July 6, 2010 | CARNIVAL SPIRIT |
| July 31, 2010 | HAL ROTTERDAM |
| August 16, 2010 | ROYAL PRINCESS |
| August 29, 2010 | NORWEGIAN PEARL |
| September 12, 2010 | SAPPHIRE PRINCESS |
| September 20, 2010 | CELEBRITY MILLENNIUM |
| September 24, 2010 | HAL AMSTERDAM |

2010 Sampling

- Sampling data received and evaluated. Summary of data and data will be included in the 2010 annual report
 - pH all within 6.0-9.0, but some lower than WA WQ standard of 7.0
 - BOD max of 17 mg/l, TSS max of 12 mg/l
 - Chlorine all ND
 - Fecal mostly ND, although two higher fecals: 96 and 50 #/100 ml (sampling events were in Alaskan waters)
 - Ammonia ranged from 0.52 mg/l to 35 mg/l (avg = 18) – lower than previous seasons
 - Dissolved Copper range = Non Detect to 22 ug/l (lower than previous)
 - Dissolved Nickel range = Non Detect to 16 ug/l (lower than previous)
 - Dissolved Zinc range = 23 ug/l to 220 ug/l

2010 Sampling cont.

- Whole Effluent Toxicity Testing
- Purpose –to evaluate whether there are potential toxicity issues from vessel discharges
- Required for vessels approved for discharge continuously -once every 2 years for homeported vessels (20 calls) or 1/40 port calls or turnarounds.
- Previous Results –toxicity from ammonia and possibly from surfactants and detergents
- No vessels required to conduct WET testing in 2010

2010 Compliance Notifications

- Compliance notifications
 - No reported incidents for 2010 season to date
 - Compliance letters
 - Receiving

Sewage and Graywater Discharge Record Book

Vessel Name: *MS Norwegian Sun* Official Number: *2000245* Voyage Designation: *SEATTLE, ALBUQUERQUE*

| DISCHARGE DATE | TIME (24-HR) | LAT | LONG | DISCHARGE POINT ID | EFFLUENT TYPE | VOLUME (MG) | FLOW RATE (L/MIN) | NUMBER SPEED (KTS) | PERSON-IN-CHARGE |
|---|--------------|------|------------|--------------------|---------------|-------------|-------------------|--------------------|------------------|
| START | 09-06-09 | 0217 | N54° 11.7' | W120° 25.9' | B | TSG | 678 | 485 | 15 |
| STOP | 09-06-09 | 0138 | N46° 44.8' | W125° 11.6' | | | | | |
| REMARKS: Continuous Discharge of Advanced Treated Water through Overboard Valve B. Also Black Water Treatment Plant. Overboard Valve B Closed @ 0900Z 09-06-09 water entering Stormwater Containment Basin. | | | | | | | | | |
| START | 09-06-09 | 0118 | N50° 44.7' | W130° 28.1' | A | TSG | 194 | 131.0 | 10 |
| STOP | 09-06-09 | 0305 | N50° 26.4' | W130° 49.8' | | | | | |
| REMARKS: Overboard Valve A Closed @ 0120Z 09-06-09. Overboard Valve A Closed @ 0302Z 09-06-09. | | | | | | | | | |
| START | 09-06-09 | 0118 | N50° 44.7' | W130° 28.1' | C, F | USG | 251 | 164.9 | 10 |
| STOP | 09-06-09 | 0439 | N52° 36.7' | W130° 50.4' | | | | | |
| REMARKS: Overboard Valve C, F Closed @ 0125Z 09-06-09. Overboard Valve C Closed @ 0300Z 09-06-09. Overboard Valve F Closed @ 0435Z 09-06-09. | | | | | | | | | |

Master's Signature: _____ Date: *09/06/09* Chief Engineer: *Gully Jimmie* Date: *09/06/09*

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2009 Assessment of Cruise Ship Environmental Effects in Washington

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

An aerial photograph of a vast, winding river system, likely a delta or a large reservoir, with the text "THE END" overlaid in red. The water is a light blue-grey color, and the surrounding land is a mix of green and brown, indicating a mix of vegetation and possibly agricultural or developed areas. The text is centered in the middle of the image.

THE END