



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

Northwest Regional Office  
 P.O. Box 330316  
 Shoreline, WA 98133  
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<b>Inspection Date</b> May 31, 2022	<b>Permit Number</b> NA	<b>County</b> King	<b>Receiving Waters</b> Marine Waters	<b>Ecology Inspector</b> Evan Dobrowski
<b>Entry Time</b> 9:15 am	<b>Photos Taken</b> <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<b>Samples Taken</b> <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<b>Inspection Announced</b> <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<b>Discharges to:</b> <input checked="" type="checkbox"/> Surface Water <input type="checkbox"/> Ground Water <input type="checkbox"/> Dewater <input type="checkbox"/> POTW
<b>Exit Time</b> 12:20 pm				

<b>Name and Location of Site Inspected:</b> CARNIVAL Splendor, Carnival Cruise Line Pier 91, Seattle, Washington	<b>Additional Participants/Inspectors:</b> David Adler, Ecology
<b>On-Site Representative(s): Name/Title/Phone/e-mail</b> Nelson John Victoria, Environmental Officer e: SLENVOFF@carnival.com	
<b>Responsible Official(s): Name/Title/Address/Phone/e-mail</b> Benton Lobo, Director, Environmental Operations Compliance, Environmental & Occupational Safety – Marine Operation Carnival Cruise Line 3655 NW 87 <sup>th</sup> Avenue, Miami, FL 33178  e: BLoBo2@carnival.com	<b>Other Facility Data:</b> Notification made to Richard Bryan on May 17, 2022  Flag: Panama

**Section A: Areas Evaluated**

<input checked="" type="checkbox"/> Black/Gray Wastewater System	<input checked="" type="checkbox"/> Residual Solids	<input checked="" type="checkbox"/> Records/Reports	<input checked="" type="checkbox"/> Hazardous Waste/ Solid Waste	<input type="checkbox"/> Sampling/Monitoring
<input checked="" type="checkbox"/> Discharge Locations	<input checked="" type="checkbox"/> Operation & Maintenance	<input checked="" type="checkbox"/> Sludge Handling/ Disposal	<input checked="" type="checkbox"/> Oily Bilge Water	<input checked="" type="checkbox"/> Other

**Section B: For Vessels Discharging ≥ 1nm from Berth and ≥ 6 Knots Only [2.1.3(A)]**

<input type="checkbox"/> Schematics Match Black/Gray Wastewater System	
<input type="checkbox"/> Operations as Described in Submitted Documentation	
<input type="checkbox"/> Daily 24-hour Continuous Monitoring for Turbidity or Equivalent Monitoring	
<input type="checkbox"/> Turbidimeter or Equivalent Monitoring Equipment Functioning Properly	
<input type="checkbox"/> Auto Shut Down or Operational Controls to Insure System Shut Down if High Turbidity Occurs	
Turbidity or Equivalent: Last Calibration: Trigger Level for Early Alarm: <span style="font-size: 2em; opacity: 0.5;">NOT APPLICABLE</span> Trigger Level for Shutdown: Recorded Turbidity/Equivalent Levels Above Triggers.	
<input type="checkbox"/> Daily 24-hour Continuous Monitoring for Disinfection Effectiveness	
<input type="checkbox"/> Disinfection Effectiveness Monitoring Equipment Functioning Properly	
Disinfection Effectiveness Monitoring:	
<input type="checkbox"/> Auto Shut Down or Operational Controls to Insure System Shut Down if Disinfection System Upset Occurs	
<input type="checkbox"/> Disinfection System Operated and Maintained Properly	
Disinfection System:	



	discharges or releases of solid wastes were found to be inconsistent with MOU requirements.
<input checked="" type="checkbox"/> Photo/X-Ray Waste Managed Properly (fluids, cartridges,...) and landed ashore	Photo and x-ray waste protocols are consistent with MOU requirements.
<input checked="" type="checkbox"/> Dry-Cleaning Wastes and Byproducts (fluids, sludge, filter materials...) Managed Properly (PERC – haz waste – landed ashore)	No dry cleaning is done on board and therefore dry cleaning waste products are managed per MOU requirements.
<input checked="" type="checkbox"/> Unused/Outdated Pharmaceuticals Managed Properly (safely disposed of)	Unused or outdated pharmaceuticals are disposed of either by incineration via red medical bag wastes and witnessed by lead nurse or are brought ashore as hazardous waste when necessary. Expired IV fluids, saline solutions, and injectables are discarded down medical center drains.
<input checked="" type="checkbox"/> Fluorescent and Mercury Vapor Lamp Bulbs Managed Properly (prevent release of mercury)	Fluorescent and mercury vapor lamp bulbs protocols for management are consistent with MOU requirements.
<input checked="" type="checkbox"/> Waste Reduction/Reuse/Recycling Opportunities Maximized (glass, cardboard, aluminum & steel cans)	Waste reduction/reuse/recycling opportunities appear to be maximized per MOU requirements.
<input checked="" type="checkbox"/> Batteries Managed Properly (recycled, reclaimed, disposed of properly)	Batteries management protocols are consistent with MOU requirements.
<input checked="" type="checkbox"/> Incinerator Ash Managed Properly and minimized volume (haz waste segregation and annual testing)	Incinerator ash management is consistent with MOU requirements.
<input checked="" type="checkbox"/> Oily Bilge Water Managed Properly (<15 ppm, no visible sheen and underway)	Oily bilge water protocols are consistent with MOU requirements.
<input checked="" type="checkbox"/> Ballast Water Managed Properly (per Wash regs –reporting, treated or if open sea exchange >200 nm from outside EEZ, 50nm if not EEZ)	Ballast water is managed with graywater and blackwater holding and no exchanges are necessary.
<input checked="" type="checkbox"/> OCNMS rules and regs followed	The discharge protocols are consistent with MOU requirements and are to not occur in OCNMS waters.

**Additional General Questions**

<input checked="" type="checkbox"/> How is deck runoff and hull cleaning handled (scuppers...) (non-toxic/phosphate free cleaners, biodegradable)	Deck runoff and hull cleaning protocols are consistent with MOU requirements.
<input checked="" type="checkbox"/> How is maintenance performed on the outside of the vessel (paint chipping, painting, etc)	Outside vessel maintenance protocols are consistent with MOU requirements.
<input checked="" type="checkbox"/> Sculleries and Galleys – type of detergents and degreasers used (phosphate free and non-toxic)?	Restaurants and galleys use detergents and degreasers that are non-toxic and phosphate free.
<input checked="" type="checkbox"/> How are food waste discharges handled (prevention of erroneous materials)?	Food waste discharge protocols are consistent with MOU requirements and records reviewed show no discharges in MOU related waters.
<input checked="" type="checkbox"/> Medical sinks/floor drains, chem. stor areas wastes go where (plugged, blackwater, bilge)?	Medical sinks/floor drains are reported as connected to blackwater.
<input checked="" type="checkbox"/> Where is pool and spa water discharged? Dechlorinated/debrominated and underway?	Pool and spa water protocols are consistent with MOU requirements.
<input checked="" type="checkbox"/> What type of fuel is used and percent sulfur content?	Ship uses HFO with 2% sulfur content with EGCS to achieve 1% sulfur content. Inside OCNMS ship uses MGO with <0.1% sulfur content.

Other:

**Section F: Sampling Results**

Parameter	Results
Biochemical Oxygen Demand 5-Day (BOD <sub>5</sub> )	<b>NOT APPLICABLE</b>
Total Suspended Solids (TSS)	
Fecal Coliform	
Residual Chlorine	
pH	
Ammonia, Nitrogen	

**Section G: Summary of Findings/Comments**

## Introduction

Evan Dobrowski, Washington State Department of Ecology (Ecology) Northwest Regional Office, Water Quality Program (NWRO-WQ) conducted the inspection of the Carnival Cruise Line CARNIVAL SPLENDOR on May 31, 2022, along with David Adler, NWRO-WQ. The main contact on board the CARNIVAL SPLENDOR was Nelson John Victoria, Environmental Officer (EO) for the vessel. Prior notification of the visit was given on May 17, 2022 for security protocol. The purpose of the inspection was to evaluate compliance with the *Memorandum of Understanding Cruise Operations in Washington State* (MOU), as amended. The CARNIVAL SPLENDOR is not approved to discharge wastewater in MOU waters.

The CARNIVAL SPLENDOR was put into service in July of 2008 and is 950 feet long with 13 decks. Passenger capacity is currently about 3000, with about 1100 crew.

The CARNIVAL SPLENDOR is scheduled for 19 calls in Seattle between May 2, 2022 and September 6, 2022. The vessel visits Victoria on its way into Seattle.

## Inspection

We arrived and boarded the ship (photo #01) at 9:15 am and began with introductions and a plan for the day with Nelson John Victoria, EO. We headed to the bridge and discussed the vessel itinerary and locations where discharges and fuel transitions occur. We reviewed electronic logs for various waste streams, saw the fuel transfer operations occurring, and went over the plan for the day with CARNIVAL SPLENDOR Captain Francesco La Fauci along with several other CARNIVAL Splendor staff. After this we headed to the Engine Control Room (ECR) and discussed various waste streams and discharge protocols as well as fuel transfer protocols. We then toured the blackwater marine sanitation devices, the oily bilge treatment, and the Exhaust Gas Cleaning Systems with the Staff Chief Engineer, Marco Todeschini. We then



Photo #01 5/31/22 Image: IMG\_E1345  
By: Dobrowski  
Description: CARNIVAL SPLENDOR vessel

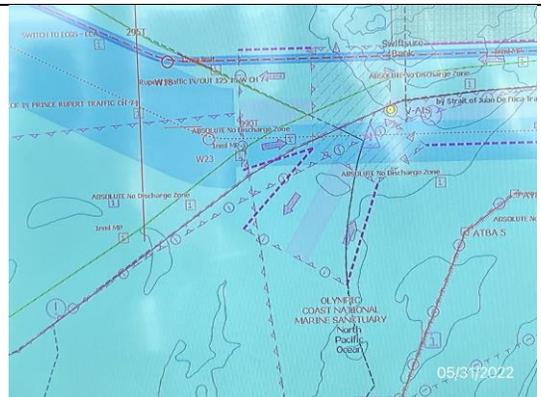


Photo #02 5/31/22  
Image: IMG\_E1349  
By: Dobrowski  
Description: Fuel switchover and stop discharge location on navigational charts.

headed to the incinerator room and then to the garbage. We finished with a review of documentation in the Environmental Officers office reviewing discharge and offload protocols. The inspection was then finalized with a brief debriefing and we disembarked the vessel at 12:20 pm.

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

The discharge protocols start with voyage plans for each itinerary prior to that route. A matrix is developed for each route upon a detailed review of locations for allowed discharges. The matrix for the Seattle/Alaska route details no discharges in MOU related waters, for

- bilge water;
- blackwater;
- graywater;
- food waste;
- ballast water; and

- pool and spa water.

The matrix also shows that Puget Sound is a designated No Discharge Zone for sewage with a link to our website. The matrix is overlaid onto the navigational screen (Photo #02) to show the location where fuel switch overs and discharges stop just before the OCNMS.

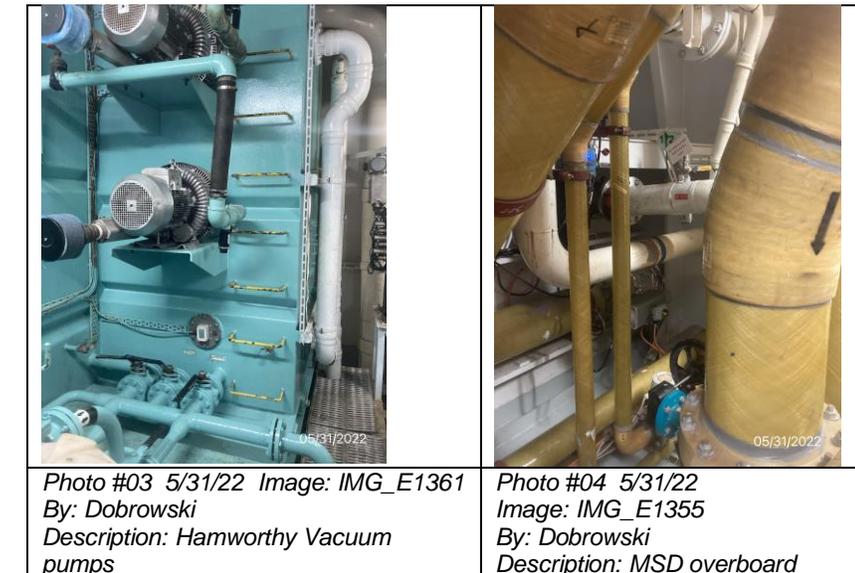
The protocol for discharges is a closed-loop process. There is communication between the ECR Officer on Watch and the Bridge staff for approval from the Bridge that the vessel is in an area authorized for discharge. The overboard valves have a push pin which has to be pushed in to open the valve and pushed out to close the valve. This is followed by activating the overboard valve on the Damatic Control System in the ECR. Both these processes together are required to open or close overboard valves. All discharges are electronically logged in the NAPA system. Any change to the logs shows who made the change by staff passcode. Any changes are reviewed by the Bridge. The GPS system is connected to the log for accurate logging of the discharge location. The discharges all to occur outside of MOU related waters (Washington State waters, the Strait of Juan de Fuca up to the border with Canada and the OCNMS). For black water and gray water, the latitude and longitude coordinates are recorded in the NAPA system along with all other logs. The date, time and location of both the start and the stop of the discharges are recorded, along with port location, effluent type, speed, tank name and volume, valve name, and status of valve. The maker of the entry and reviewer/signer is also included, along with any notes. The vessel protocol is to not discharge blackwater or graywater in Canadian waters on this route. Navigation on the bridge shows clearly marked electronic maps indicating discharges to stop 13 miles outside the OCNMS (12 miles from shore and a one mile buffer).

**Discharge Types:**

Blackwater includes toilet waste and medical drains and is sent by vacuum/jet to one of six separate Hamworthy marine sanitation devices (photo #03). Description paraphrased from the schematic on the MSD system: Black water enters from the inlet into the aeration tank where the bacteria present in this section decomposes the blackwater in the presence of oxygen which is supplied by the aeration nozzles. A continuous supply of oxygen is necessary. The blackwater then enters into the settling section where settling takes place and flocs of activated sludge settles down along with other settleable matter. Sludge is returned back to the aeration section. The settled blackwater then enters into the disinfection section where chlorine is added (photo #03). Flow then goes to dedicated holding tanks if not in an area of discharge (photo #04). Blackwater is not discharged in MOU related waters and all blackwater is treated. Settleable solids are monitored periodically and chlorine availability checked. Once per year, each MSD is taken off-line for a full maintenance cleaning. Solids are removed at this time, drummed and sent ashore in Seattle on this route.

Graywater, which includes accommodation and crew sink and shower water, galley water, laundry and possibly spa water is held untreated and discharged outside of MOU related waters.

Dirty bilge water collected and is sent to one of two oily bilge tanks. Liquid moves to one of centrifugal oily water separators (OWS). The system includes two stages of filtration and recirculates at >5 parts per million (ppm) oil content with the oily content meter (photo # 05 1366). Oily sludge is collected from the system and sent ashore by truck. Maintenance on the OWS's includes regular cleaning of the filters and other regular checks and maintenance. Prior to discharge, the liquid is sent through a white box which only allows discharges <15 ppm. The discharge protocol for this route is outside the MOU



related waters. The white box (photo #06 1358). The Chief Engineer and the EO have the two separate keys and both need to be present to open the white box. There is a record each time the white box door is opened and a video camera on OWS equipment. The chief Engineer and the EO have the ability to review camera recordings. All portable pumps are logged and only used for certain equipment. The EO confirmed that he is not aware of any rerouting of oily bilge. Carnival Corporation vessels (including Holland America Line) have been conducting trainings related to various wastestreams including oily bilge. The OWS was off and recirculating during the inspection and not discharging. If

graywater tanks overflow or come in contact with oily bilge, the content is considered as oily bilge and treated through the OWS and the Captain and Chief Engineer are notified.

The CARNIVAL SPLENDOR uses graywater in various tanks for ballast and therefore does not do ballast water exchanges. Stability has not been an issue.

The CARNIVAL SPLENDOR has 4 fresh water Jacuzzis, 1 fresh water Thalasso pool, 1 fresh water spray park, 1 fresh water water park, and 2 saltwater pools. The pools are discharged >12nm and outside of MOU related waters and the Jacuzzi water can be sent to the graywater collection tanks for discharge outside of MOU related waters.

Food waste is segregated into soft and hard foods. Soft foods are fed into food waste biodigesters. The effluent from the food waste biodigesters is deposited into the grey water tanks

and is discharged outside of MOU related waters. Hard foods are either incinerated or landed ashore as USDA waste in Seattle. Used cooking oil (photo #09) is sent ashore for recycling. The EO and Food Operations staff inspect the biodigesters typically daily. There is no food chute on board.



Photo #05 5/31/22 Image: IMG\_E1366 By: Dobrowski Description: OWS oil content meter

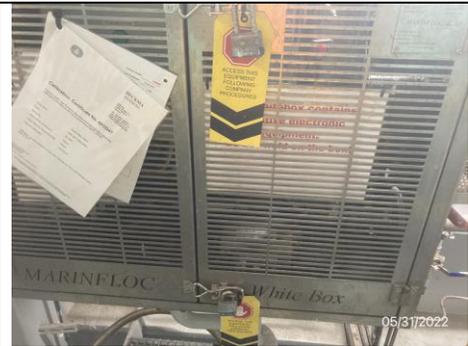


Photo #06 5/31/22 Image: IMG\_E1358 By: Dobrowski Description: OWS White Box

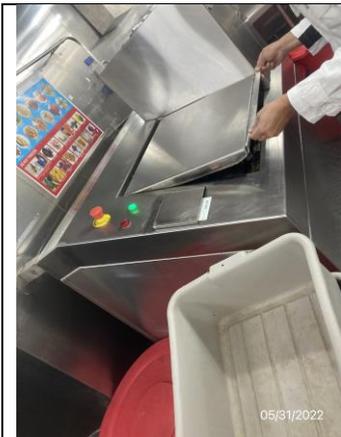


Photo #07 5/31/22 Image: IMG\_E1387 By: Dobrowski Description: Food Processor



Photo #08 5/31/22 Image: IMG\_E1388 By: Dobrowski Description: Food Processor



Photo #09 5/31/22 Image: IMG\_E1392 By: Dobrowski Description: Used cooking oil

Deck runoff goes directly overboard. The VGP requirements are followed for prevention of any materials off the deck. Only non-toxic, phosphate free cleaners are used. Outside vessel maintenance such as paint chipping and painting is sometimes done at the Port of Seattle. Work does not occur if too windy and is done with permission of the Port.

Laundry water is sent to the graywater collection tanks and discharged outside MOU related waters. Dry cleaning is not done on the vessel. Therefore, no chemical such as perchloroethylene (Perc) are used on the vessel.

Photo waste is offloaded in Victoria. X-rays are done digitally without any waste. Fluorescent bulbs are not crushed on board, and held for offloading ashore as hazardous waste. Hazardous waste materials are stored separately in various dedicated locations throughout the vessel and include items such as paints, thinners, oily rags and debris, incinerator ash, chemicals, aerosols photo waste, and some batteries. Bio-medical waste is incinerated with sharps being offloaded as biomedical waste ashore. Hazardous waste is mostly offloaded in Victoria on this route.

Unused or outdated pharmaceuticals and narcotics are either destroyed onboard through incineration or are landed ashore via red medical bag waste. When medical waste is incinerated the Lead Nurse is required to transport the medical waste and witness incineration. Expired IV fluids, saline solution, and injectables are discarded down medical drains.

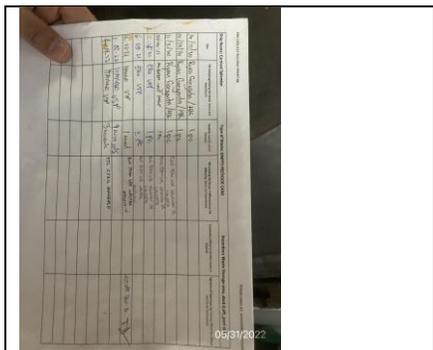


Photo #10 5/31/22  
 Image: IMG\_E1389 By: Dobrowski  
 Description: Garbage/Hazardous Waste Record Example Log

Garbage such as domestic and operational waste is offloaded in Seattle. Some USDA wastes, some food waste, biomedical bagged waste, some plastics, food contaminated cardboard, and some paper is incinerated with one incinerator. Ash is tested annually and offloaded as hazardous waste. The garbage record book was reviewed (photo # 10) and showed consistency with requirements.

Glass, heavier plastics, most cardboard, aluminum, tin and steel cans, batteries, used cooking oil and other items are recycled in Seattle.

A wet scrubber for exhaust is installed on the CARNIVAL SPLENDOR, there are total of 5 washwater discharges. In use on this trip are 3 – 5 and do not have filtration installed. 1 – 2 have filtration and are not being used during this trip due to sensor failures. While in MOU waters the vessel is switching over to MGO fuel < 0.1% sulfur. The vessel is not equipped for shore power. The wet scrubbers 1 - 2 uses filters (photo #11, photo #12, and photo #13) and discharges are diluted and monitored before discharge.



Photo #11 5/31/22 Image: IMG\_E1378 By: Dobrowski  
 Description: Wet Scrubber filter



Photo #12 5/31/22 Image: IMG\_E1375 By: Dobrowski  
 Description: EGCS schematics



Photo #13 6/19/18 Image: IMG\_E1377 By: Dobrowski  
 Description: Wet Scrubber Filters

The vessel has a clear process for notifications for any non-compliance incident.

Conclusions and Recommendations

The protocols for discharges are clear. Records were orderly and appeared consistent with the MOU. I recommend that Carnival Cruise Line consider maintaining an organized Hazardous Waste storage room that does not get utilized as storage or miscellaneous items on the CARNIVAL SPLENDOR

Copies to:

- Nelson John Victoria, Environmental Officer, CARNIVAL SPLENDOR
- Mark Toy, Health
- Donna Spalding, CLIA
- Alex Adams, Port of Seattle
- Amy Jankowiak, Ecology
- David Adler, Ecology

**Section H: Signatures**

<p><u>Name and Signature of Inspector:</u> Evan Dobrowski, Compliance Specialist  <i>Evan Dobrowski</i></p>	<p><u>Agency/Office/Telephone:</u> Department of Ecology Northwest Regional Office Water Quality Program 206-594-0175</p>	<p><u>Date</u>  June 27, 2022</p>
<p><u>Name and Signature of Reviewer:</u> David Adler, Compliance Specialist  <i>David Adler</i></p>	<p><u>Agency/Office/Telephone:</u> Department of Ecology Northwest Regional Office 206-594-0174</p>	<p><u>Date</u>  June 27, 2022</p>