

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
OFFICE OF ENFORCEMENT AND COMPLIANCE ASSURANCE  
Mail Code 2243-A  
1200 Pennsylvania Ave., NW  
Washington, DC 20460

IN THE MATTER OF: )  
 )  
CARNIVAL CORPORATION )  
 ) ADMINISTRATIVE ORDER  
Respondent ) ON CONSENT  
 )  
 ) Docket Number: CWA-HQ-2017-0001  
 )

**ADMINISTRATIVE ORDER ON CONSENT**

I. Background

- A. Section 301(a) of the Clean Water Act (“CWA”), 33 USC. § 1311(a), prohibits the “discharge of any pollutant by any person” except as authorized by a National Pollutant Discharge Elimination System (“NPDES”) permit issued pursuant to CWA Section 402, 33 U.S.C. § 1342.
- B. Section 502(12) of the CWA, 33 U.S.C. § 1362(12), defines the term “discharge of a pollutant” to include “any addition of any pollutant to navigable waters from any point source.”
- C. Section 502(7) of the CWA, 33 U.S.C. § 1362(7), defines “navigable waters” as “waters of the United States, including the territorial seas.” The “territorial seas” is defined in Section 502(8), 33 U.S.C. § 1362(8), as “the belt of the seas measured from the line of ordinary low water along that portion of the coast which is in direct contact with the open sea and the line marking the seaward limit of inland waters, and extending seaward a distance of three miles.”
- D. EPA issued an NPDES general permit for discharges incidental to normal operation of a vessel (the “Vessel General Permit” or “VGP”) in 2008 and reissued the VGP in 2013. The 2013 VGP is effective until December 18, 2018 and applies to certain discharges into waters of the United States from commercial vessels greater than 79 feet in length, including the discharge of effluent from Exhaust Gas Control Systems (“EGCS”) on cruise ships.
- E. Section 2.2.26 of the VGP requires owners/operators of vessels with exhaust gas scrubber systems that result in washwater discharges to meet certain numeric effluent limits in the permit. Such EGCSs are addressed in this Administrative Order on Consent (“AOC”). The VGP states that the limits are consistent with International Maritime Organization (“IMO”) washwater guidelines for EGCSs, with the exception of pH. The IMO washwater guidelines establish a pH limitation of no less than 6.5 (not 6.0 as required in the 2013 VGP), but allow for meeting this pH limitation four meters from the discharge point as demonstrated during commissioning of the EGCSs after installation.

- F. Section 2.2.26.1 of the VGP states, “The discharge of washwater from the exhaust gas scrubber treatment system must have a pH of no less than 6.0 measured at the ship’s overboard discharge, with the exception that during maneuvering and transit, the maximum difference between inlet and outlet of 2.0 pH units is allowed. The difference is to be measured at the ship’s inlet and overboard discharge.”
- G. Section 2.2.26.2.1 of the VGP establishes continuous monitoring requirements to continuously record pH.
- H. Section 309(a) of the CWA, 33 U.S.C. § 1319(a), provides that, whenever EPA finds that any person is in violation of any condition or limitation which implements, *inter alia*, Sections 301 and 402 of the CWA, 33 U.S.C. §§ 1311 and 1342, EPA may issue an order requiring such person to comply with such condition or limitation, and shall specify a time for compliance that the EPA determines to be reasonable.
- I. Carnival Corporation (“Carnival”) is a corporation headquartered in Miami, Florida, and is a “person” within the meaning of Section 502(5) of the CWA, 33 U.S.C. § 1362(5).
- J. During 2017 and 2018, Carnival and its subsidiaries have, or will, own or operate cruise ships in waters of the United States near the State of Alaska (Alaskan waters), with one or more EGCSs. These cruise ships are: *Carnival Legend, Coral Princess, Emerald Princess, Golden Princess, Grand Princess, Island Princess, Oosterdam, Ruby Princess, Star Princess, Amsterdam, Eurodam, Nieuw Amsterdam, Noordam, Volendam, Westerdam, and Zaandam* (“Covered Cruise Ships”).
- K. The Covered Cruise Ships are “point sources” as defined in Section 501(14) of the CWA, 33 U.S.C. § 1362(14). They are also each greater than 79 feet in length and subject to the VGP.
- L. Carnival submitted timely Notices of Intent (“NOI”) to be covered under the VGP for each of the Covered Cruise Ships between November 7, 2013 and December 11, 2013.
- M. In 2013, in accordance with MARPOL Annex VI’s fuel sulfur requirements for the North American Emission Control Area (“ECA”), Carnival decided to pursue the development of EGCSs and proposed a trial program to EPA and the U.S. Coast Guard (“USCG”).
- N. On August 8, 2013, EPA and the USCG sent a letter to Carnival in response to its proposal for a trial program in which 32 of Carnival’s cruise ships would be exempt from Annex VI’s fuel sulfur requirements while in the ECA. The letter stated that EPA and USCG supported the development of EGCS technology as a method for complying with the fuel sulfur limits.
- O. Beginning in 2014 and continuing through 2017, Carnival installed EGCSs on the 32 cruise ships covered under the trial program described above, and EGCSs on 33 additional cruise ships from five cruise brands in the Carnival group that operate primarily outside the United States covered under a MARPOL Annex VI equivalency, all using the Ecospray Technologies system. Carnival represents that it cost more than \$246 million to install EGCSs on the 32 ships under the United States trial program and at least another \$253 million to install EGCSs on the additional 33 ships. Carnival further represents that the EGCSs on ships covered under the trial program meet or exceed the 2015 North American ECA fuel sulfur requirements, as well as International Maritime Organization (“IMO”) requirements regarding washwater discharges. These EGCSs

also have demonstrated the ability to meet or exceed the discharge requirements of the VGP for all parameters, with occasional exceptions related to pH. As the EGCSs began operating in the marine environment, Carnival discovered technical issues resulting in occasional periodic exceedances of the pH limits in the VGP.

- P. During 2016, 14 of Carnival's cruise ships had discharges to Alaskan waters from the EGCSs that did not meet the VGP's pH limit of 6.0, ranging from five exceedance events to 434 exceedance events, demonstrated through continuous monitoring data collected every three minutes. The vast majority of the exceedances appear to be less than 0.5 below the pH limit, or within 0.51 and 2 below the pH limit. These exceedances violated Sections 301 and 402 of the CWA, 33 U.S.C. §§ 1311 and 1342, by failing to comply with Section 2.2.26 of the VGP, although these events represent a small percentage of noncompliance.
  - Q. Carnival promptly informed EPA of its concern regarding these occasional exceedances and began taking actions to evaluate how to address them.
  - R. In addition, in an effort to obtain consistent pH readings of 6.0 or above, Carnival represents that it has made additional improvements to the EGCSs, as well as adjustments to ship operations. These adjustments include: (a) using premium lower sulfur (2.0%) fuel in Alaskan waters that is lower than allowed (3.5%) when using an EGCS, obtained through fuel contracts at key fuel bunkering ports; (b) making refinements to system automation software and to EGCS and engine operating practices; (c) retrofitting de-gassing units on each system to avoid pH impact from entrained exhaust gases; (d) conducting operational trials of new system buffering water mixer designs and chemical dosing; and (e) fitting most ships operating in U.S. waters with additional buffering seawater capacity, including larger pump motors, drives, and piping, to increase volumes by 30-50% per ship, and represents that this cost an additional \$6,200,000.
  - S. Despite Carnival's attention to these issues with the EGCSs, during the 2016 sailing season, Carnival realized that there were still a few occasions during which the pH readings showed discharges below the pH limit. The pH is measured on all ships on a continuous basis with samples taken every three minutes, seven days a week, 24 hours a day. This occurs even when the ships' engines and EGCSs are not operating and there is no overboard discharge. Samples are also taken and recorded during calibration checks of the equipment. At those times, the analytical result reflects the pH of the calibration solution and not the overboard discharge.
  - T. To address these pH challenges, Carnival began discussions with EPA to develop compliance measures to demonstrate whether the 6.0 pH limit in the VGP is technologically and economically achievable and implement actions to achieve compliance with the VGP's pH limit. Carnival has also agreed to conduct a sampling protocol to record the pH of ambient waters throughout Southeastern Alaska from the Covered Cruise Ships, and to also measure the pH of discharges from the EGCSs in ports to verify the distance required to revert to ambient water pH levels. These compliance measures are set forth in this AOC.
- II. Jurisdiction
- A. Pursuant to Section 309(a) of the Act, EPA has worked with Carnival to develop, and hereby issues, this AOC to evaluate the compliance capabilities of the EGCSs, alternatives to achieve compliance and a timetable to do so. By its signature on this AOC, Carnival hereby agrees and consents to the Order.

- B. The authority to issue this AOC has been delegated from the Administrator of EPA through the Assistant Administrator for Enforcement and Compliance Assurance and the Director of the Office of Civil Enforcement to the Director of the Water Enforcement Division.
  - C. Any change in the legal status of Carnival, and/or Carnival's ownership of the Covered Cruise Ships, including, but not limited to any transfer of assets of real or personal property, shall not alter Carnival's responsibilities under this AOC.
- III. Applicability
- A. Carnival shall implement this AOC for each of the Covered Cruise Ships, only when the ship is in Alaskan state waters and within three nautical miles of the Alaskan coastline.
- IV. 2017 Alaska Cruise Ship Sailing Season
- A. Continuous Monitoring for pH
    - 1. Between June 1, 2017 and October 30, 2017 ("2017 Sailing Season"), Carnival shall monitor and record the pH level on a continuous basis for each of the Covered Cruise Ships at the following three locations:
      - a. seawater at the entry point into the ship (after the sea chest), but before anything else is added to the seawater;
      - b. EGCS washwater, at the point of exit from the EGCS, prior to buffering or any other treatment; and
      - c. combined/treated EGCS washwater, after buffering and any other treatment, at the end of the discharge pipe.
    - 2. Carnival shall perform the continuous monitoring for pH pursuant to this section using a continuous pH meter to measure and record the value of the pH at each location at least once every three minutes, consistent with procedural requirements identified in Part 2.2.26.2.1 of the 2013 VGP. All pH continuous monitoring equipment must be calibrated pursuant to manufacturer recommendations to provide accurate readings for the expected range of conditions (*e.g.*, temperature).

B. Continuous Monitoring for Washwater Flowrates

1. At the same time as each pH test required by Section IV.A., Carnival shall continuously test and record the seawater and washwater flowrates to characterize the flow through the EGCS and the flow of the effluent discharged, including buffering flowrates, at the following locations:
  - a. flowrate of seawater that enters each EGCS tower (reported in both m<sup>3</sup>/h and t/MWh); and
  - b. flowrate of seawater used for buffering.
2. The continuous monitoring for washwater flowrates performed pursuant to this section shall be conducted using permanently installed continuous flowrate meters to read and record the value of the seawater and washwater flowrates indicated above, which are automatically taken every three minutes. All flow monitoring devices must be calibrated pursuant to manufacturer recommendations.

C. Other Data Collected During Continuous Monitoring for pH and Flowrates

1. At the same time each pH reading and flowrate measurement is recorded, Carnival shall also collect and record the date/time of the reading or measurement, the location of the ship, the speed of the ship (starting in 2018), the position of the sampling point relative to the discharge point and receiving surface water, the fuel sulfur content (2% sulfur by mass) and the engine load (in kilowatts [kW] and percentage). Note that fuel sulfur content and engine load do not need to be recorded at three-minute intervals, but must be available for correlation with the pH and flowrate readings.

D. Ambient Monitoring

1. Carnival shall monitor the impact of EGCS discharges upon ambient water in Alaskan ports as follows:
  - a. During the 2017 Sailing Season, Carnival shall perform Ambient Monitoring Tests (“AMT”) pursuant to this section on as many Covered Cruise Ships as possible. At a minimum, Carnival shall test at least five different Covered Cruise Ships, including one in Ketchikan and one in Skagway. Of these ships, Carnival will make best efforts to conduct tests on two different ships in port in Juneau, two in port in Ketchikan, and two in port in Skagway.
  - b. Carnival shall conduct each AMT while the ship is in port, on port load, and not moving (*i.e.*, at rest).
  - c. Carnival shall conduct each AMT in accordance with the requirements of Appendix A.

2. Carnival shall have a third party monitor observe each AMT to verify compliance with this section and the validity of the test. Carnival shall inform EPA of the third party monitor that will be used. The third party monitor may also participate in taking samples and recording results. Unless otherwise agreed to by the parties, Carnival shall provide notice to EPA and the Alaska Department of Environmental Conservation (“ADEC”), in accordance with Section VII, at least 7 days prior to each AMT and allow EPA and ADEC representatives to observe.

E. Records:

1. Carnival shall record all pH and flowrate data on board each Covered Cruise Ship and transmit the data into dedicated electronic project files onshore within the United States and shall document pH and flowrate data using test logs as shown in Appendix B.
2. Carnival shall document each AMT using test logs as shown in Appendix A and shall maintain all records and test logs electronically.
3. All data collected pursuant to this section shall be made available to EPA and ADEC upon request.

F. 2017 Interim Effluent Limit:

1. For each Covered Cruise Ship, to the extent possible, Carnival shall comply with the EGCS discharge requirements in the VGP for pH. In any event, the pH of the EGCS effluent shall not fall below 5.7 pH at end of pipe, except that, for 10% of the time during each calendar day, the pH may be as low as 5.5 pH.

G. 2017 EGCS pH and Flowrate Report:

1. No later than October 31, 2017, Carnival shall submit, electronically, to EPA for comment a report that evaluates the pH and flowrate data compiled during the 2017 Sailing Season through September 30, 2017, as described in Section IV.A. (Continuous Monitoring for pH), Section IV.B. (Continuous Monitoring for Washwater Flowrates), and Section IV.C. (Other Data Collected During Continuous Monitoring for pH and Flowrates). The 2017 EGCS pH and Flowrate Report shall include a table compiling all pH and flowrate continuous monitoring readings recorded during the 2017 Sailing Season, as set forth in Sections IV.A., IV.B., and IV.C. The table shall be in a format agreed upon by Carnival and EPA.
  - a. For each pH and flowrate reading, the table shall include the name of the Covered Cruise Ship, the engine/EGCS, fuel sulfur content (2% sulfur by mass), time, date, speed (starting in 2018), and location on the vessel of each sample, vessel’s GPS location, and engine load (in kW and as a percentage).
  - b. Carnival shall present all pH and flowrate data in a manner that: 1) correlates the pH and flow readings to show pH and flowrate data taken for the same effluent at the same time/date; and 2) compares the pH and flowrate readings with VGP pH discharge limits and with the 2017 Interim Effluent Limit, including the allowance for a 2.0 difference between inlet and outlet, and identifies the discharge pH readings that do not meet the VGP’s 6.0 pH limit and the 2017 Interim Effluent Limit.

2. The 2017 EGCS pH and Flowrate Report shall also identify and analyze the root causes of any VGP pH exceedances identified in Section G.1 above, providing: 1) Carnival's conclusions regarding the factors that result in VGP or 2017 Interim Effluent pH exceedances; 2) the length of time the different factors would be expected to occur in any given day/week/month/season; 3) Carnival's actions to address each cause of VGP pH exceedance; and, 4) Carnival's recommendations on how any of these factors might be addressed in the future. In addition to any other factors identified by Carnival, this analysis shall discuss:
  - a. Characteristics of voyages in Alaskan waters that make them unique with respect to control of sulfur emissions and pH in effluent discharges, including temporal and geographic implications and whether these challenges exist for the entire duration or only at specific points during the voyage (*e.g.*, when located within the U.S. ECA; within waters of the U.S. subject to the VGP; or near a particular city, water body or freshwater influx).
  - b. Characteristics of normal vessel engine operation (*e.g.*, engine power, engine load, startup/shutdown, fuel changeover), situations that may warrant deviations from those normal operations, and how these operations affect EGCS operation and EGCS washwater discharges. This shall:
    - i. Include information on the procedures/timing/concerns with fuel changeover (from low sulfur (0.1%) to high sulfur fuel and vice versa) during a voyage, whether for technical or operational reasons.
    - ii. Explain situations when pH fluctuations are caused by vessel operations other than the unique concerns presented by buffering in Alaskan waters (*e.g.*, change in engine power, switching engines, multiple engines in use, startup/shutdown, *etc.*), as well as when and how these pH fluctuations from vessel operations may contribute to exceedances of the VGP or 2017 Interim Effluent pH limits for EGCS discharges and the actions taken by Carnival to prevent VGP and 2017 Interim Effluent pH exceedances resulting from these fluctuations.
    - iii. Explain the relationship of the quantity of buffering to the pH of the washwater discharge.
  - c. Challenges with use of continuous pH monitors to demonstrate compliance with the VGP's EGCS pH limits (*e.g.*, equipment calibration, false readings, operator/maintenance error, equipment malfunction, *etc.*) and how those challenges relate to demonstrating compliance with pH limitations. This shall:
    - i. Include a discussion of how Carnival will identify and document pH readings in its data that do not accurately reflect the pH of the effluent being tested (*e.g.*, calibrations, false readings, malfunctions, *etc.*).
3. The 2017 EGCS pH and Flowrate Report shall include a section on Other Considerations. This section shall include:

- a. Exhaust Gas Composition – Provide a discussion of the difference in characteristics of exhaust emissions between using high sulfur fuel (with and without scrubbing) and low sulfur (0.1%) fuel.
- b. Fuel Composition – In addition to sulfur content, provide Bunker Delivery Notes and any other information in Carnival’s possession sufficient to show the composition of the different fuels that Carnival uses, including the full range of metals, PAHs, and other pollutants.
- c. No later than November 15, 2017, Carnival shall submit to EPA for comment and to ADEC for information a supplement to the 2017 EGCS pH and Flowrate Report that includes any pH and flowrate data for the 2017 Sailing Season that was not already provided (in the format described above) and any additional information Carnival chooses to add to the report.
- d. Within 30 days of receiving any comments from EPA, Carnival shall amend the 2017 EGCS pH and Flowrate Report to address EPA’s comments, shall provide Carnival’s response to EPA’s comments, and shall submit the finalized report to EPA and ADEC.

H. 2017 Report on Ambient Monitoring:

1. No later than 30 days after completion of the final 2017 Ambient Monitoring required under Section IV.D., Carnival shall submit electronically to EPA and ADEC a report on the AMT. The Ambient Monitoring Report shall:
  - a. Summarize the results of the Ambient Monitoring performed and discuss the relationship of these results with IMO Annex VI and VGP pH discharge limits, including the allowance for a 2.0 difference between inlet and outlet.
  - b. Include a table compiling the results of the 2017 AMT Monitoring to include the name of each vessel, the time and date of sampling, engine identification, fuel sulfur content, power and load, seawater and buffering pumping rates/loads, pH values within the EGCS (*i.e.*, intake, post scrubber, and at the discharge point), temperature of ambient water and effluent (starting in 2018), each monitored location at an identified distance from the discharge point, and in the ambient waters at a sufficiently remote location determined to not be influenced by the EGCS washwater discharge, and any other data Carnival identifies as appropriate to characterize the nature of this discharge as it may affect compliance with IMO Annex VI and VGP pH discharge limits. The table shall be in the format presented in Appendix A.
  - c. Carnival shall provide any field notes taken during any AMT, upon request from EPA or ADEC.
  - d. The third party monitor for each AMT shall certify the accuracy and validity of the data from the AMT that it observed. The AMT’s certification shall include the statement in Section IV.D.2. The third party monitor’s certification is in addition to the certification of a corporate representative required in that section.



I. Report Evaluating Alternatives:

1. No later than October 31, 2017, Carnival shall prepare and submit to EPA, a report that evaluates alternatives to achieve compliance with the VGP pH limit for EGCS washwater (“Alternatives Report”). The Alternatives Report shall identify and describe the alternatives considered/evaluated to achieve compliance with the VGP requirements for EGCS. At a minimum, the alternatives included in the Alternatives Report shall include:
  - a. Use of 0.1% sulfur fuel throughout the voyage within waters subject to the VGP. This shall discuss considerations of using low sulfur (0.1%) fuel in limited circumstances (*e.g.*, in port or in National Parks) and higher sulfur fuel (with scrubbers) in other less sensitive areas. This shall also discuss the same analyses using multi-grade fuels, or a combination of low sulfur and multi-grade fuels. The analyses shall include descriptions of procedural, technical and financial implications for Alaskan voyages (*e.g.*, difference in quality of fuels, Btu values, bunkering, *etc.*).
  - b. Reducing engine loads (*e.g.*, below 70%) to reduce exhaust volumes per engine.
  - c. Use of waste stream effluent from other ship operations that will be discharged, such as coolant wastewater, treated graywater, treated blackwater, treated ballast water, *etc.*
  - d. Use of a closed loop system.
  - e. Disposal at port (either onshore or to a treatment vessel).
  - f. Increase of buffer water flowrate. This shall demonstrate the relationship of an increase in buffer water necessary to meet VGP and IMO pH limits and relative cost comparison for doing so.
  - g. Use of neutralizing chemicals on the intake seawater and/or effluent that is discharged.
  - h. Other options identified by EPA or Carnival.
2. For each alternative, Carnival shall also include the following in the Alternatives Report:
  - a. Technical feasibility: Identify whether each alternative, used alone or in combination, would achieve compliance with the VGP discharge limit for pH for EGCS. If compliance cannot be achieved by implementation of the alternative, alone or in combination, explain the associated technical limitations and operational challenges.
  - b. Cost: For each alternative, used alone or in combination, that would achieve compliance with the VGP discharge limit for pH, the Alternatives Report shall identify the approximate capital cost and operating costs per vessel to implement the option. If Carnival considers the cost to be not economically achievable, unreasonable, or otherwise not appropriate, provide an explanation of why, and a detailed discussion of the implications of this cost on its operations.

J. Review of Reports on Environmental Impacts:

1. No later than December 1, 2017, Carnival shall submit to EPA a summary of existing reports that evaluate the impact of low pH discharges from EGCS to marine environments and aquatic species and whether those reports relate to Carnival's EGCS discharges in Alaskan waters. The Review of Reports on Environmental Impacts shall:
  - a. Identify and summarize any existing environmental assessments/studies on the use of EGCSs in Alaskan waters or elsewhere and the effect these have on the marine environment, including describing any differences between using low and high sulfur fuels. The summary shall describe the objectives, data collection and analysis, and conclusions of the report.
  - b. Explain how, if at all, the information in the environmental assessments/studies identified pursuant to this section relates to, provide insight, or can be analogized to the impact from the use of EGCS on Carnival's Covered Cruise Ships in Alaskan waters.
  - c. Analyze whether existing environmental assessments/studies provide any insight or information regarding any differences in environmental impacts between current Carnival practices for the discharge of EGCS washwater and any technologically feasible options identified in the Alternatives Report.

V. 2018 Alaska Cruise Ship Sailing Season

A. Interim Effluent Limit:

1. Between April 1, 2018 and October 30, 2018 ("2018 Sailing Season"), for each Covered Cruise Ship, to the extent possible, Carnival shall comply with the EGCS discharge requirements in the 2013 VGP for pH. When not possible to comply with the 2013 VGP, then Carnival shall comply, to the extent possible, with any EGCS discharge requirements for pH announced in a proposal for a VGP that will replace the 2013 VGP. In any event, Carnival shall comply, at a minimum, with the limits for the 2017 Sailing Season set forth above in Section IV.A.

B. Compliance Requirements:

1. No later than January 30, 2018, Carnival shall submit a report to EPA, for each Covered Cruise Ship, to include:
  - a. a statement as to whether or not Carnival will be able to comply with the EGCS discharge requirements for pH in the 2013 VGP during the 2018 Sailing Season;
  - b. a statement as to whether or not Carnival will be able to comply with any EGCS discharge requirements for pH in any proposal for a VGP that will replace the 2013 VGP during the 2018 Sailing Season; and
  - c. a detailed description of the actions that Carnival will take during the 2018 Sailing Season on each Covered Cruise Ship to test options and make operational and other changes to comply with VGP requirements for EGCS pH no later than the 2019 Sailing Season.
2. Within 30 days after receipt of any comments on Carnival's proposal for actions to be taken during the 2018 Sailing Season pursuant to this section, Carnival shall amend its proposed actions and schedule to address EPA's comments.
3. During the 2018 Sailing Season, Carnival shall implement the actions that Carnival proposed taking pursuant to this section, as amended to address EPA's comments.
4. Monitoring and Reporting:
  - a. Upon request from EPA, Carnival shall implement the requirements of Sections IV.A. and IV.B. for pH and Flowrate monitoring during the 2018 Sailing Season.
  - b. Upon request from EPA, Carnival shall submit the reports described in Section IV.G., for the 2018 Sailing Season, within the same calendar date deadlines identified in that section, except for 2018 instead of 2017.
  - c. During the 2018 Sailing Season Carnival shall perform AMTs in accordance with Section IV.D. on as many Covered Cruise Ships as possible, representing a range of engine sizes to the extent possible. At a minimum, Carnival shall test at least one ship type, per port, in the following ports: Juneau, Ketchikan, and Skagway. In addition, at least one ship type must be tested at all three port locations.
  - d. Carnival shall submit the reports described in Section IV.H. for AMT within the same deadlines identified in that section, except for 2018 instead of 2017.

VI. 2019 Alaska Cruise Ship Sailing Season

- A. Beginning January 1, 2019, for any Covered Cruise Ship operating in Alaskan waters, Carnival shall remain in compliance with the VGP effluent limit and other requirements for EGCS discharges that are in effect at that time.

VII. Reports and Submissions

- A. All reports, notifications, documentation, and submittals required by this AOC shall be signed by a duly authorized representative of Carnival as specified by 40 C.F.R. §§ 122.22(b)(2) and (d) and shall include the following statement:

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

- B. All reports, notifications, documentation, and submittals required by this AOC shall be sent electronically to the following email addresses:

Cheryl Rose  
Senior Attorney  
U.S. EPA  
Water Enforcement Division  
Office of Enforcement and Compliance Assurance  
rose.cheryl@epa.gov

Jack Faulk  
Vessels Team  
U.S. EPA  
Office of Water  
Water Permits Division  
faulk.jack@epa.gov

Andrew Sayers-Fay  
Program Manager for Compliance/Enforcement and Cruise Ship Programs  
Alaska Department of Environmental Conservation  
Division of Water  
andrew.sayers-fay@alaska.gov

- C. EPA may, at any time, change the people identified to receive information pursuant to this AOC and the email addresses or other format to provide such information, by providing written notice to Carnival pursuant to this section.

- D. All notices, comments, and other information provided to Carnival shall be sent electronically to the following email addresses:

Michael Kaczmarek  
Carnival Corporation  
mkaczmarek@carnival.com

Arnaldo Perez, Esq.  
General Counsel  
Carnival Corporation  
aperez@carnival.com

#### VIII. Admissions and Waivers

- A. For the purpose of this AOC, Carnival:
1. admits the jurisdictional allegations of this AOC;
  2. neither admits nor denies specific factual allegations contained in this AOC;
  3. consents to all conditions specified in this AOC;
  4. waives any right to contest the allegations set forth in this AOC;
  5. waives any and all claims for relief and otherwise available rights or remedies to judicial or administrative review which Carnival may have with respect to any issue of fact or law set forth in this AOC, including, but not limited to, any right of judicial review of the AOC under the Administrative Procedure Act, 5 U.S.C. §§ 701-706; and
  6. waives its right to appeal this AOC.

#### IX. Reservation of Rights

- A. This AOC is not a permit or modification of any existing permit issued pursuant to any federal, state, or local laws or regulations, and shall in no way relieve or affect Carnival's obligations under any applicable federal, state or local laws, regulations, or permits.
- B. This AOC shall apply to and be binding on Carnival, and its officers, directors, employees, agents, successors and assigns. Action or inaction of any persons, firms, contractors, employees, agents, or corporations acting under, through, or for Carnival shall not excuse any failure of Carnival to fully perform its obligations under this AOC. Changes in ownership, real property interest, or transfer of personal assets shall not alter Carnival's obligations under this AOC.

#### X. Attorney's Fees and Costs

- A. Unless otherwise specified, each party shall bear its own attorney's fees and costs.

#### XI. Effective Date and Termination

- A. The effective date of this AOC shall be the date upon which an executed copy is received by Carnival's counsel.
- B. If the EPA determines, after review of the reports and information provided, that all requirements of this AOC have been satisfied, EPA will provide notice to Carnival that the

AOC shall be deemed terminated. If EPA determines that any provision of this AOC has not been satisfied, EPA will notify Carnival, provide a list of the deficiencies, and may require Carnival to correct such deficiencies. If so required, Carnival shall correct such deficiencies and shall submit documentation to demonstrate compliance in accordance with the EPA notice within 30 days of receipt of such notice.

## XII. General Provisions

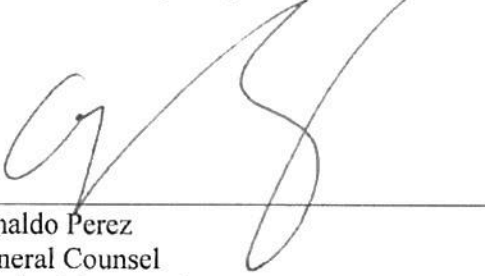
- A. This AOC does not constitute a waiver or a modification of the terms and conditions of the VGP, which remains in full force and effect.
- B. Failure to comply with the requirements herein shall constitute a violation of this AOC and the CWA, and may subject Carnival to penalties as provided in Section 309(d) of the CWA, 33 U.S.C. § 1319(d).
- C. This AOC shall not relieve Carnival of its obligation to comply with all applicable provisions of federal, state, or local law, nor shall it be construed to be a ruling on, or determination of, any issue related to any other federal, state, or local permit. Compliance with this AOC shall not be a defense to any actions subsequently commenced pursuant to federal laws and regulations administered by the EPA.
- D. Nothing in this AOC shall be construed as prohibiting, altering, or in any way limiting the ability of the United States to seek any other remedies or sanctions available by virtue of the Carnival's violation of this AOC or of the statutes and regulations upon which this AOC is based, or for the Carnival's violation of any other federal or state statute, regulation, or permit.
- E. Nothing in this AOC is intended to nor shall be construed to operate in any way to resolve any criminal liability of Carnival, or other liability resulting from violations that were not alleged in this AOC. The United States does not waive any right to bring an enforcement action against Carnival for violation of any federal or state statute, regulation, or permit, to initiate an action for imminent and substantial endangerment, or to pursue criminal enforcement.

## XIII. Signatures

- F. The undersigned representative of Carnival certifies that he or she is authorized to enter into the terms and conditions of this AOC and to bind Carnival to this document.
- G. The above provisions are STIPULATED AND AGREED upon by Carnival and EPA.

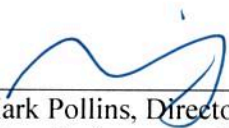
For Carnival Corporation:

Dated: 8/28/17

  
\_\_\_\_\_  
Arnaldo Perez  
General Counsel  
Carnival Corporation  
aperez@carnival.com

For the U.S. Environmental Protection Agency, Office of Enforcement and Compliance Assurance:

Dated: 8-28-2017



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Mark Pollins, Director  
Water Enforcement Division  
Office of Civil Enforcement  
pollins.mark@epa.gov

Attachments:

- Appendix A: AMT Sampling Protocol and Test Logs
- Appendix B: pH and Flowrate Test Logs

**APPENDIX A**  
**To the Administrative Order on Consent**  
**2017 Sailing Season and 2018 Sailing Season**  
**AMT Sampling Protocol and Test Logs**

**A. Preparations:**

1. Boat Team: Boat coxswain, Carnival team (2), Third Party Observer. Periodically also an Alaska Department of Environmental Conservation (ADEC) or US Environmental Protection Agency (EPA) Observer.
2. Shipboard Team: Engine Control Room (ECR) watch, Water Analysis Rack Observer, On Deck Spotter.
3. Equipment required:
  - a. Ship's rescue boat or other boat as test platform, with graduated markings on the port side rail.
  - b. One measurement pole with easily seen graduated markings every 0.5 meter, for the pH sensor.
  - c. pH meter, calibrated with 4.0 and 7.0 pH.
  - d. pH logs (example attached).
  - e. Ship's handheld VHF/UHF radio.
4. Communications Plan: Ship's handheld radio in boat, in ECR, in Engine Room.
5. Briefing Plan: Pre-measurements meeting with boat team and shipboard team to be held before starting.
6. Immediately before starting each ship's testing, record:
  - a. Total number of cruise ships in port at the time of the testing.
  - b. Location of the ship being tested, including number of ships in adjacent or nearby piers.
  - c. Name and class of ship being tested.
  - d. Identifiers for all EGCSs and engine units that are in service during the test, including name or serial number, location on vessel, number of units running at the time of the test, *etc.*
  - e. Sulfur content (%) level of fuel being used, taking into account the possibility of mixing between different fuels.
  - f. Engine load (%) and engine power (KW).
  - g. Details of pH Meter (make, model and calibration procedures, including records of the most recent calibration of this equipment).
  - h. Seawater and buffering pumps (% of capacity and flow rate in t/MWh and m<sup>3</sup>/hr).
  - i. pH of EGCS wash water at point of exit from EGCS, prior to buffering (m<sup>3</sup>/h).
  - j. Combined/treated exhaust gas scrubber wash water, after buffering and any other treatment, at the end of the discharge pipe (m<sup>3</sup>/h).
  - k. Receiving (ambient) water temperature (from Rack 1).
  - l. Environmental conditions at the time of the testing event which may influence discharge, *e.g.* water state - currents / tidal state / surface condition / clarity and atmosphere – wind, sun, *etc.*

**B. pH Measurements to be taken in accordance with following procedure.**

1. Identify frame number, a visual reference point, and depth of washwater discharge pipe from waterline and other detailed information on the location of the discharge (*e.g.*, distance from the bow waterline, visually identifiable markers, *etc.*).
2. Calculate depth of center of discharge pipe below waterline and determine center line angle of trajectory; if not horizontal then the centerline depth at 4 meters should be established.



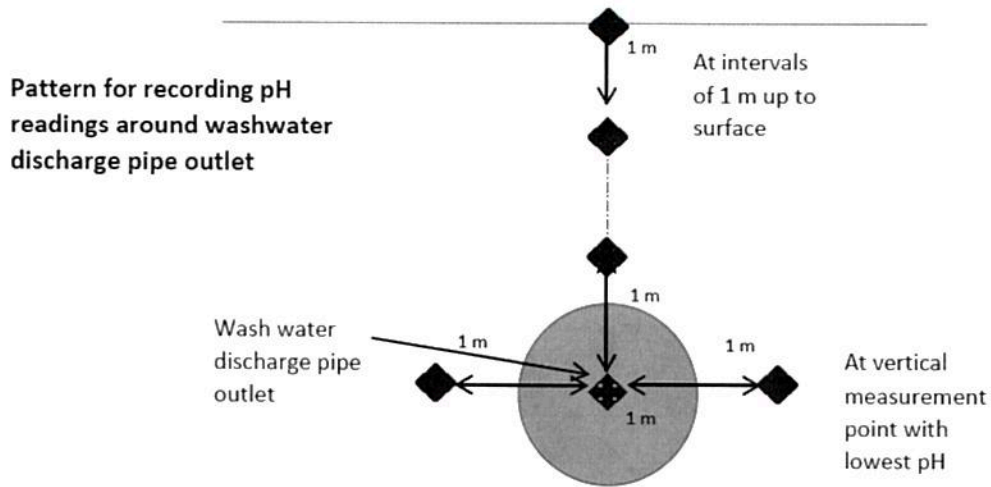
3. Launch rescue boat or other boat as test platform.
4. Mark longitudinal position of discharge centerline with tape or chalk on ship's side above waterline.
5. Record pH and temperature at 2-3 locations sufficiently remote from wash water discharge to get a clean reading of the ambient water (*i.e.*, well away from the pH measurement pattern shown below) and also record pH overboard discharge sensor. Provide a justification for the selection of this ambient water monitoring location.
6. Ensure that EGCS engine is running at maximum available in-port load – ideally between 60-70%. Identify/describe relationship of discharge between running at maximum available in-port load and other operational loads experienced in Alaskan waters.
7. Ensure that the EGCS is running with the seawater flow rate to achieve a measured SO<sub>2</sub>/CO<sub>2</sub> ratio of 3.0-3.5. Ensure all operating parameters are normal.
8. Adjust buffering pump flow rate for measurement periods with pH overboard at 6.0, 5.7, 5.5, 5.0, 4.0 and with buffering pump stopped (EGCS washwater pH with no buffering). Note the time at each of these points; the buffering water flow rate will be automatically recorded.
9. Position the boat parallel to the discharge plume flow, with boat bow to the ship's side and the boat railing aligned with the discharge opening (see schematic below). Ensure motor will not be running in direction which could disturb/influence plume path.
10. Record start time of testing sequence.
11. Take and record pH readings 4 meters out from ship's side, one meter forward and one meter aft of the outlet, and in one meter increments to the surface according to the pattern below (vertical samples first).
12. For each reading compare pH to simultaneous pH measurement at overboard discharge.
13. Record time of each reading to correlate with records in the EGCS compliance computer to compare pH readings at 4 meters from ship's side with simultaneous pH measurement recordings at overboard discharge, at seawater entry point into the ship, and of the EGCS washwater prior to buffering.
14. Repeat the procedure above at distances 3 meters, 2 meters, and 1 meter from ship's side.
15. Log the test results using the sample log record identified below.
16. Record any unusual visual surface water effects in field notes, such as foam, film or coloration and any explanation of the likely cause of such effects.
17. Water temperature will be recorded automatically during the test on ships that have a temperature sensor at the inlet.

### **C. Recording and Reporting Results**

1. Ensure logs are filled in with correct times, units and corresponding pH readings at discharge point.
2. Make copies of the Compliance Computer log for the test period.
3. Provide one copy of Test Logs and Compliance Computer log and other information required by the Administrative Order on Consent to the Official Observer, as they will assist in compiling required reports.

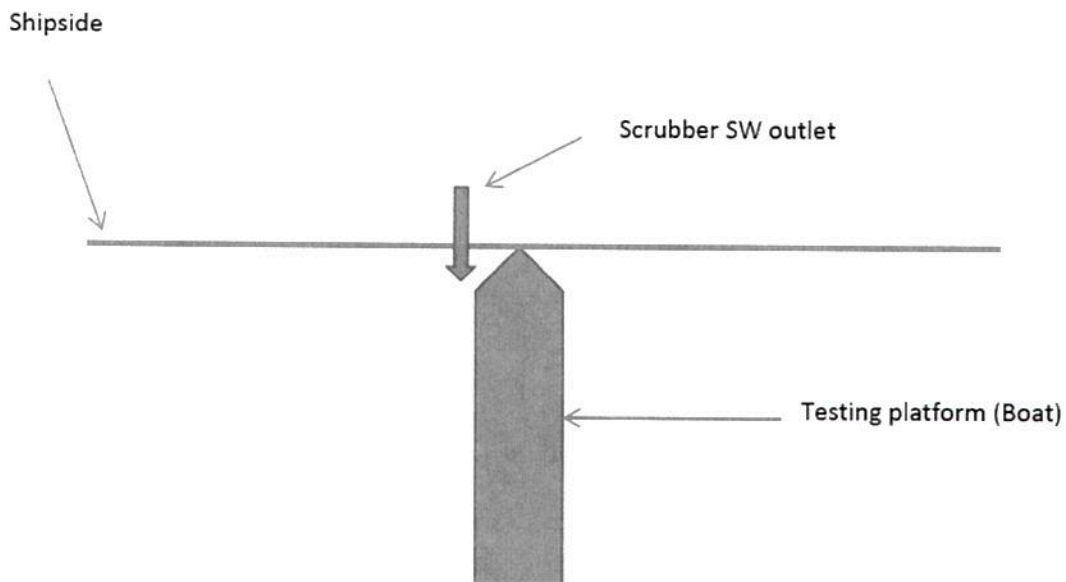
**D. Boat pH sampling Pattern**

Typical sampling pattern for a discharge point 4 meters below the waterline is shown below.



**E. Measurement Boat Positioning**

The boat will be positioned with bow into the ship's side, boat's portside rail aligned with the discharge plume. The boat position will be maintained steady against the ship's side and oriented with the target mark. The washwater plume is normally clearly visible from the boat and the orientation of the marking pattern may be readily discernible.





**APPENDIX B**  
**To the Administrative Order on Consent**  
**pH and Flowrate Data Test Logs**

pH Monitoring File for ambient seawater pH at inlet for EGCS<sup>1</sup>

Ship:

DG1 power:

Fuel sulfur: 2.0% sulfur by mass

Depth of inlet seachest:

Distance from end of static mixer to ovbd discharge:

Date & Time UTC	T/C or EGB Cleaning (0=OFF, 1=ON)	Latitude Degrees	Latitude Minutes	Latitude North/South (78=N, 83=S)	Longitude Degrees	Longitude Minutes	Longitude East/West (69=E, 87=W)	DG1 Load [%]	DG1 Load [kW]	DG1 SW Flow to DeSOx [m <sup>3</sup> /h]	DG1SW Flot to DeSOx [tons/MWhr]	Buffering Flow rate [m <sup>3</sup> /h]	DG1 pH at Inlet	DG1 pH at DeSOx Outlet	DG1 pH at Overboard Discharge	DGpH Differential [pH]	DG1 Turbidity at Sea Suction [FNU]	DG1 Temperature at Sea Suction [FNU]
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<sup>1</sup> Add column for "Ship Speed" starting in 2018.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
OFFICE OF ENFORCEMENT AND COMPLIANCE ASSURANCE  
Mail Code 2243-A  
1200 Pennsylvania Ave., NW  
Washington, DC 20460

IN THE MATTER OF: )  
 )  
CARNIVAL CORPORATION )  
 )  
Respondent ) ADMINISTRATIVE ORDER  
 ) ON CONSENT  
 )  
 ) Docket Number: CWA-HQ-2019-0001  
 )

**ADMINISTRATIVE ORDER ON CONSENT**

**I. BACKGROUND**

- A. Section 301(a) of the Clean Water Act (“CWA”), 33 USC. § 1311(a7), prohibits the “discharge of any pollutant by any person” except as authorized by a National Pollutant Discharge Elimination System (“NPDES”) permit issued pursuant to CWA Section 402, 33 U.S.C. § 1342.
- B. Section 502(12) of the CWA, 33 U.S.C. § 1362(12), defines the term “discharge of a pollutant” to include “any addition of any pollutant to navigable waters from any point source.”
- C. Section 502(7) of the CWA, 33 U.S.C. § 1362(7), defines “navigable waters” as “waters of the United States, including the territorial seas.” The term “territorial seas” is defined in Section 502(8), 33 U.S.C. § 1362(8), as “the belt of the seas measured from the line of ordinary low water along that portion of the coast which is in direct contact with the open sea and the line marking the seaward limit of inland waters, and extending seaward a distance of three miles.”
- D. The U.S. Environmental Protection Agency (“EPA”) issued an NPDES general permit for discharges incidental to normal operation of a vessel (the “Vessel General Permit” or “VGP”) in 2008 and reissued the VGP in 2013. The 2013 VGP, by its terms, was effective until December 18, 2018 and applied to certain discharges into waters of the United States from commercial vessels greater than 79 feet in length, including the discharge of effluent from Exhaust Gas Cleaning Systems (“EGCS”) on cruise ships. 78 Fed. Reg. 21938 (April 12, 2013).
- E. Irrespective of any provision of Section 402, 33 U.S.C. § 1342, Section 312(p)(3) of the Vessel Incidental Discharge Act of 2018 provides that “all provisions of the Vessel General Permit shall remain in force and effect, and shall not be modified,” until the U.S. Coast Guard promulgates regulations that are final, effective, and enforceable for implementation, compliance, and enforcement of new EPA standards of performance for marine pollution control devices for each type of discharge incidental to the normal operations of a vessel, 33 U.S.C. § 1322(p)(3).

- F. Section 312(p)(8)(A) makes it “unlawful for any person to violate a provision of the Vessel General Permit.” 33 U.S.C. § 1322(p)(8)(A)(i).
- G. Section 2.2.26 of the VGP requires owners or operators of vessels with EGCS that result in washwater discharges to meet certain numeric effluent limits. The VGP states that the limits are consistent with International Maritime Organization (“IMO”) washwater guidelines for EGCS, with the exception of pH. The IMO washwater guidelines establish a pH limitation of no less than 6.5 (not 6.0 as required in the 2013 VGP), but allow for meeting this pH limitation four meters from the discharge point as demonstrated during commissioning of the EGCS unit after installation.
- H. Section 2.2.26.1 of the VGP states, “The discharge of washwater from the exhaust gas scrubber treatment system must have a pH of no less than 6.0 measured at the ship’s overboard discharge, with the exception that during maneuvering and transit, the maximum difference between inlet and outlet of 2.0 pH units is allowed. The difference is to be measured at the ship’s inlet and overboard discharge.”
- I. Section 2.2.26.2.1 of the VGP establishes monitoring requirements to continuously record pH.
- J. Section 309(a) of the CWA, 33 U.S.C. § 1319(a), provides that, whenever EPA finds that any person is in violation of any condition or limitation which implements, *inter alia*, Sections 301, 312, and 402 of the CWA, 33 U.S.C. §§ 1311, 1322, and 1342, EPA may issue an order requiring such person to comply with such condition or limitation, and shall specify a time for compliance that the EPA determines to be reasonable.
- K. Carnival Corporation (“Carnival”) is a corporation headquartered in Miami, Florida, and is a “person” within the meaning of Section 502(5) of the CWA, 33 U.S.C. § 1362(5).
- L. During the 2019 and 2020 sailing seasons, Carnival and its subsidiaries will own or operate cruise ships in waters of the United States near the State of Alaska (Alaska waters) with one or more EGCSs. The cruise ships for 2019 are: *Carnival Legend, Queen Elizabeth, Coral Princess, Golden Princess, Grand Princess, Island Princess, Royal Princess, Ruby Princess, Star Princess, Sun Princess, Amsterdam, Eurodam, Maasdam, Nieuw Amsterdam, Noordam, Oosterdam, Volendam, Westerdam, and Seabourn Sojourn*. The cruise ships for 2020 are: *Carnival Miracle, Carnival Spirit, Queen Elizabeth, Coral Princess, Emerald Princess, Golden Princess, Grand Princess, Pacific Princess, Royal Princess, Ruby Princess, Star Princess, Sun Princess, Eurodam, Koningsdam, Maasdam, Noordam, Oosterdam, Volendam, Westerdam, and Seabourn Sojourn*. These ships, collectively, are the “Covered Cruise Ships”. The list of Covered Cruise Ships for subsequent years will be provided 60 days in advance of those sailing seasons.
- M. The Covered Cruise Ships are “point sources” as defined in Section 501(14) of the CWA, 33 U.S.C. § 1362(14). They are also each greater than 79 feet in length and subject to the VGP.
- N. Each of the Covered Cruise Ships, with the exception of the *Carnival Spirit*, which is not scheduled to operate in Alaska until 2020, is covered under a current Notices of Intent (“NOI”).
- O. In 2013, in accordance with MARPOL Annex VI’s fuel sulfur requirements for the North American Emission Control Area (“ECA”), Carnival decided to conduct a trial program, which EPA and the

U.S. Coast Guard (“USCG”) supported, including the development of EGCS technology as a method for complying with the fuel sulfur limits.

- P. Beginning in 2014 and continuing through 2017, Carnival installed EGCSs on the 32 cruise ships covered under the trial program described above, and on 33 additional cruise ships from five cruise brands, all using the Ecospray Technologies system, at a cost of approximately \$500 million. These EGCS have demonstrated the ability to meet or exceed the discharge requirements of the VGP for all parameters, with occasional exceptions related to pH. As the EGCSs began operating in the marine environment, Carnival discovered technical issues resulting in occasional periodic exceedances of the pH limits in the VGP.
- Q. During 2016, all but one of the Covered Cruise Ships had discharges to Alaskan waters from the EGCS that did not meet the VGP’s pH limit of 6.0, ranging from five exceedance events to 434 exceedance events, demonstrated through continuous monitoring data collected every three minutes. The vast majority of the exceedances appeared to be less than 0.5 below the pH limit, or within 0.51 and 2 below the pH limit. These exceedances violated Sections 301 and 402 of the CWA, 33 U.S.C. §§ 1311 and 1342, by failing to comply with Section 2.2.26 of the VGP.
- R. Carnival promptly informed EPA in October 2015 of its concern regarding these occasional exceedances and began, and continues, to take actions to evaluate how to address them.
- S. In addition, in an effort to obtain consistent pH readings of 6.0 or above, Carnival represents that it made additional improvements to the EGCSs, as well as adjustments to ship operations, beginning in 2016 and continuing through the present. These adjustments include: (a) using premium lower sulfur (2.0%) fuel in Alaskan waters that is lower than allowed (3.5%) when using an EGCS, obtained through fuel contracts at key fuel bunkering ports; (b) making refinements to system automation software and to EGCS and engine operating practices; (c) retrofitting de-gassing units on each system to avoid pH impact from entrained exhaust gases; (d) conducting operational trials of new system buffering water mixer designs and chemical dosing; and (e) fitting most ships operating in U.S. waters with additional buffering seawater capacity, including larger pump motors, drives, and piping, to increase volumes by 30-50% per ship, and represents that this cost an additional \$6,200,000. These improvements are continually being made.
- T. Despite Carnival’s attention to these issues with the EGCSs, during the 2016-2018 sailing seasons, Carnival realized that there were still occasions during which the pH readings showed discharges below the pH limit. The pH is measured on all ships on a continuous basis with samples taken every three minutes, seven days a week, 24 hours a day. This occurs even when the ships’ engines and EGCSs are not operating and there is no overboard discharge. Samples are also taken and recorded during calibration checks of the equipment. At those times, the analytical result reflects the pH of the calibration solution and not the overboard discharge.
- U. To address these pH challenges, Carnival began discussions with EPA to develop compliance measures to demonstrate whether the 6.0 pH limit in the VGP is technologically and economically achievable and implement actions to achieve compliance with the VGP’s pH limit. Carnival also agreed to conduct a sampling protocol to record the pH of ambient waters throughout Southeastern Alaska from the Covered Cruise Ships, and to measure pH of discharges from the EGCSs in ports to verify the distance required to revert to ambient water pH levels. These compliance measures were set forth in the August 2017 Administrative Order on Consent (“2017 AOC”) (EPA Docket No.: CWA-HQ-2017-0001), which is attached for reference as Attachment 1. Carnival has complied with

the terms of the 2017 AOC.

- V. The data gathered under the 2017 AOC was intended to help inform EPA while it was considering new pH standards for the 2018 VGP, which was scheduled to go into effect in December 2018. However, development of the 2018 VGP was abandoned as a result of the enactment of VIDA. Since new standards under VIDA are unlikely to be implemented until December 2022, at the earliest, this new Administrative Order on Consent (“2019 AOC”) is necessary as Carnival continues to address certain pH challenges.

## **II. JURISDICTION**

- A. Pursuant to Section 309(a) of the Act, EPA has worked with Carnival to develop, and hereby issue, this 2019 AOC to evaluate the compliance capabilities of the EGCSs, alternatives to achieve compliance and a timetable to do so. By its signature on this 2019 AOC, Carnival hereby agrees and consents to the Order.
- B. The authority to issue this 2019 AOC has been delegated from the Administrator of EPA through the Assistant Administrator for Enforcement and Compliance Assurance and the Director of the Office of Civil Enforcement to the Director of the Water Enforcement Division.
- C. Any change in the legal status of Carnival, and/or Carnival’s ownership of the Covered Cruise Ships, including, but not limited to any transfer of assets of real or personal property, shall not alter Carnival’s responsibilities under this 2019 AOC.

## **III. APPLICABILITY**

- A. Carnival shall implement this 2019 AOC for each Covered Cruise Ships when the ships are in Alaskan state waters and within three nautical miles of the Alaskan coastline.

## **IV. ALASKA CRUISE SHIP SAILING SEASONS BEGINNING IN 2019**

### **A. Interim Effluent Limits**

1. Until national performance standards for EGCS washwater discharges are developed pursuant to CWA 312(p)(5), 33 U.S.C. § 1322(p)(5), and are final, effective, and enforceable, Carnival shall comply with the following interim effluent limit: For each Covered Cruise Ship, to the extent possible, Carnival shall comply with the EGCS discharge requirements for pH in the 2013 VGP. In any event, the pH of the EGCS effluent shall not fall below 5.7 pH at the end of the pipe, except that for 10% of the time during each calendar day, the pH may be as low as 5.5 pH.

### **B. Compliance Requirements**

1. No later than January 30 of each year, beginning in 2020, Carnival shall submit a report to EPA, for each Covered Cruise Ship, to include a statement as to whether Carnival will be able to comply with the following EGCS discharge requirements for pH during the upcoming sailing season:



- a. The 2013 VGP; or
  - b. The interim effluent limits established in IV.A.1 of the 2019 AOC.
2. Carnival shall monitor pH and flow continuously consistent with Sections IV.A-C of the 2017 AOC and, within 60 days of a request from EPA, Carnival shall submit the monitoring data consistent with the format specified in Section IV.G of the 2017 AOC.

### C. Annual Reporting

1. Report Evaluating Alternatives:
  - a. In 2019 and 2020, no later than August 15 of each year, Carnival shall prepare and submit to EPA an updated and expanded version of the alternatives report previously submitted in accordance with Section IV.I. of the 2017 AOC. This new version of the report shall include:
    - i. Updated technical feasibility and cost estimates for deployment of the alternatives described in Section IV.I.1 of the 2017 AOC; and
    - ii. For any new or emerging alternative identified by EPA or Carnival, a description of the alternative, the technical feasibility, and a cost estimate.
  2. No later than October 31, 2019, Carnival shall provide a characterization of voyages of the Covered Cruise Ships that operated in Alaska during the 2019 sailing season (through September 30). This report shall include:
    - a. Characterization of each vessel's Alaska cruise itinerary, voyage duration, and amount of time spent in: (1) U.S. VGP waters in Alaska, (2) Alaskan ECA waters outside the VGP, (3) U.S. VGP waters outside Alaska, (4) in U.S. ports in Alaska, and (5) U.S. ports outside Alaska, (6) in any area within U.S. waters identified in Appendix G of the 2013 VGP and not otherwise included in item (4).
    - b. Characterization of time during the voyage where engines were powered by (1) low sulfur fuel oil or (2) high sulfur fuel oil combined with EGCSs and an explanation of the decision-making criteria for selection of the fuel source used, including how the different locations identified in IV.C.2.a of the 2019 AOC are considered in this process.
3. Review of Reports on Environmental Impacts:
  - a. No later than August 31, 2021, Carnival shall submit an updated version of the research review submitted in compliance with Section IV.J. of the 2017 AOC.

#### 4. pH and Flow Monitoring Data Summaries:

- a. In 2019 and 2020, no later than October 31 of each year, Carnival shall provide a report of EGCS discharges for the vessels that operated in Alaska during that year's sailing season (through September 30) with the following information:
  - i. A summary of EGCS discharges for each vessel when operating in Alaskan waters in a manner that compares pH effluent data with the range of effluent limitations identified in IV.B.1 of the 2019 AOC.
  - ii. A summary of Carnival's conclusions regarding the factors that result in exceedance of pH effluent limitations and Carnival's recommendations on how any of these factors might be addressed in the future.
  - iii. For each vessel, a comparison summary of the buffer water and seawater supply flow rates when (1) transiting in Alaskan waters, (2) when transiting or maneuvering in U.S. ports, harbors, and estuaries, and (3) when docked in U.S waters.

#### D. Operational Challenges Report

1. No later than October 31 of each year, beginning in 2019, provide a summary of challenges encountered with the use of EGCS equipment and associated procedures during that year's sailing season on any vessel operating in Alaska. Identify actions taken or planned to address these challenges. Exclude any challenges reported pursuant to IV.C.4.a.ii of the 2019 AOC.

### V. REPORTS AND SUBMISSIONS

- A. All reports, notifications, documentation, and submittals required by this 2019 AOC shall be signed by a duly authorized corporate official of Carnival and shall include the following statement:

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

- B. All reports, notifications, documentation, and submittals required by this 2019 AOC shall be submitted electronically to the following recipients:

Dane Wilson  
Attorney-Advisor  
U.S. EPA  
Water Enforcement Division

Office of Enforcement and Compliance Assurance  
[Wilson.dane@epa.gov](mailto:Wilson.dane@epa.gov)

Jack Faulk  
Vessels Team  
U.S. EPA  
Office of Water  
Water Permits Division  
[Faulk.Jack@epa.gov](mailto:Faulk.Jack@epa.gov)

Amber LeBlanc  
Administrative Operations Manager  
Alaska Department of Environmental Conservation  
Division of Water  
[Amber.Leb Blanc@Alaska.gov](mailto:Amber.Leb Blanc@Alaska.gov)

- C. EPA may, at any time, change the people identified to receive information pursuant to this 2019 AOC and the email addresses or other format to provide such information, by providing written notice to Carnival pursuant to this section.
- D. All notices, comments, and other information provided to Carnival shall be submitted electronically to the following recipients:

Michael Kaczmarek  
Carnival Corporation  
[MKaczmarek@carnival.com](mailto:MKaczmarek@carnival.com)

Jeanne M. Grasso, Esq.  
Blank Rome LLP  
[grasso@blankrome.com](mailto:grasso@blankrome.com)

Arnaldo Perez, Esq.  
General Counsel  
Carnival Corporation  
[APerez@carnival.com](mailto:APerez@carnival.com)

## VI. ADMISSIONS AND WAIVERS

- A. For purposes of an action by EPA to enforce this 2019 AOC, Carnival:
1. Admits the jurisdictional allegations of this 2019 AOC;
  2. Neither admits nor denies specific factual allegations contained in this 2019 AOC;
  3. Consents to all conditions specified in this 2019 AOC;
  4. Waives any right to contest the allegations set forth in this 2019 AOC;

5. Waives any claims for relief and otherwise available rights or remedies to judicial or administrative review which Carnival may have with respect to any issue of fact or law set forth in this 2019 AOC, including, but not limited to, any right of judicial review of the 2019 AOC under the Administrative Procedure Act, 5 U.S.C. § § 701-706; and
6. Waives the right to appeal this 2019 AOC.

## **VII. RESERVATION OF RIGHTS**

- A. This 2019 AOC is not a permit or modification of any existing permit issued pursuant to any federal, state, or local laws or regulations, and shall in no way relieve or affect Carnival's obligations under any applicable federal, state, or local laws, regulations or permits.
- B. This 2019 AOC shall apply to and be binding on Carnival, and its officers, directors, employees, agents, successors and assigns. Action or inaction of any persons, firms, contractors, employees, agents or corporations acting under, through, or for Carnival shall not excuse any failure of Carnival to fully perform its obligations under this 2019 AOC. Changes in ownership, real property interest, or transfer of personal assets shall not alter Carnival's obligations under this 2019 AOC.

## **VIII. ATTORNEY FEES AND COSTS**

- A. Unless otherwise specified, each party shall bear its own attorney fees and costs.

## **IX. EFFECTIVE DATE AND TERMINATION**

- A. The Effective Date of this 2019 AOC is the date on which an executed copy is received by Carnival's counsel.
- B. If EPA determines, after review of the reports and information provided, that all requirements of this 2019 AOC have been satisfied, EPA will provide notice to Carnival that the 2019 AOC shall be deemed terminated. If EPA determines that any provision of this 2019 AOC has not been satisfied, EPA will notify Carnival, provide a list of the deficiencies, and may require Carnival to correct such deficiencies. If so required, Carnival shall correct such deficiencies and shall submit documentation to demonstrate compliance in accordance with the EPA notice within 30 days of receipt of such notice.

## **X. GENERAL PROVISIONS**

- A. This 2019 AOC does not constitute a waiver or a modification of the terms and conditions of the VGP, which remains in full force and effect until the U.S. Coast Guard promulgates regulations that are final, effective, and enforceable for implementation, compliance, and enforcement of new EPA standards of performance for marine pollution control devices for each type of discharge incidental to the normal operations of a vessel, 33 U.S.C. § 1322(p)(3).
- B. Failure to comply with the requirements herein shall constitute a violation of this 2019 AOC and the CWA, and may subject Carnival to penalties as provided in Section 309(d) of the CWA, 33 U.S.C § 1319(d).


- C. This 2019 AOC shall not relieve Carnival of its obligation to comply with all applicable provisions of federal, state, or local law, nor shall it be construed to be a ruling on, or determination of, any issue related to any other federal, state, or local permit. Compliance with this 2019 AOC shall not be a defense to any actions subsequently commenced pursuant to federal laws and regulations administered by the EPA.
- D. Nothing in this 2019 AOC shall be construed as prohibition, altering, or in any way limiting the ability of the United States to seek any other remedies or sanctions available by virtue of Carnival's violation of this 2019 AOC or of the statutes and regulations upon which this 2019 AOC is based, or for Carnival's violation of any other federal or state statute, regulation, or permit.
- E. Nothing in this 2019 AOC is intended to nor shall be construed to operate in any way to resolve any criminal liability of Carnival, or other liability resulting from violations that were not alleged in this 2019 AOC. The United States does not waive any right to bring an enforcement action against Carnival for violation of any federal or state statute, regulation, or permit, to initiate an action for imminent and substantial endangerment, or to pursue criminal enforcement.

## XI. SIGNATURES

- A. The undersigned representative of Carnival certifies that he or she is authorized to enter into the terms and conditions of this 2019 AOC and to bind Carnival to this document.
- B. The above provisions are STIPULATED AND AGREED upon by Carnival and EPA.

For Carnival Corporation:

Dated: 5/7/2019

  
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Arnaldo Perez  
General Counsel  
Carnival Corporation  
aperez@carnival.com

For Complainant, the U.S. Environmental Protection Agency, Office of Enforcement and Compliance Assurance:

Dated: 5/7/19



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Mark Pollins, Director  
Water Enforcement Division  
Office of Enforcement and Compliance Assurance  
Pollins.mark@epa.gov