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Original Issuance: October 7, 2002  
 Revision a: September 13, 2004  
 Revision b: August 19, 2013  
 Revision c: February 25, 2014  
 Revision d: September 22, 2016

**Northwest Clean Air Agency (NWCAA) hereby issues  
 Order of Approval to Construct (OAC) 813d**

**Project Summary:** Construct and operate a steam methane reformer (SMR) located within the boundaries of the Shell Puget Sound Refinery to supply up to 7.7 million standard cubic feet of hydrogen gas per day to the refinery’s hydrogen system. Products of combustion will be emitted from the SMR reactor and from the flare. Maximum heat input to the SMR reactor in the form of natural gas and pressure swing adsorption (PSA) off-gas is 90.0 MMBtu/hour (higher heating value).

**Approved Emission Unit:**

- One (1) SMR reactor with a heat input capacity of 90.0 MMBtu/hour (higher heating value)
- One (1) elevated, non-assisted flare

Owner/Operator	Facility Name and Location
Air Liquide Large Industries US L.P. 9811 Katy Freeway Houston, Texas 77024 Contact: Shanee Coachman Plant Manager	Air Liquide Anacortes SMR 8581 South Texas Road Anacortes, WA 98221

**Permit History**

- As of the date of issuance, this Order supersedes NWCAA OAC 831c issued February 25, 2014.

Note that in addition to other applicable rules and regulations, one or more of the approved emission units are subject to applicable portions of the following federal regulations:

**New Source Performance Standards (NSPS)**

- 40 CFR 60 Subpart A - General Provisions
- 40 CFR 60 Subpart J - Standards of Performance for Petroleum Refineries

**National Emission Standards for Hazardous Air Pollutants (NESHAP)**

- 40 CFR 63 Subpart A - General Provisions
- 40 CFR 63 Subpart DDDDD - National Emission Standards for Hazardous Air Pollutants for Major Sources: Industrial, Commercial, and Institutional Boilers and Process Heaters

**Issuance of this Order is authorized by Northwest Clean Air Agency Regulation Section 300. The Owner/Operator must comply with the following restrictions and conditions<sup>1</sup>:**

- (1) The flare pilot system shall use only pipeline grade natural gas and the sweep for the flare shall be nitrogen.
- (2) The SMR shall not exceed a firing rate of 90.0 MMBtu/hour (higher heating value) and shall combust only pipeline grade natural gas and PSA off-gas.
- (3) The following parameters shall be recorded and records kept for a period of no less than three years.
  - (A) The quantity of natural gas and PSA off-gas combusted in the SMR,
  - (B) The valve position data used to calculate flow(s) to the flare during flaring events, and
  - (C) An explanation as to the cause of each flaring event.
- (4) The flare shall be operated with a pilot flame which shall be continuously monitored using a thermocouple or other equivalent device.
- (5) Visible emissions from the SMR stack or flare shall not exceed five percent (5%) opacity for more than six minutes in any one hour as determined by EPA Method 9.
- (6) Nitrogen oxide emissions from the SMR stack shall not exceed 2.8 pound/hour based on a 1-hour average.
- (7) Carbon monoxide emissions from the SMR stack shall not exceed 1.7 pounds/hour based on a 1-hour average.
- (8) Compliance with conditions 6 and 7 shall be determined by an annual performance test. Unless approved in writing in advance by the NWCAA, all testing shall be conducted as follows:
  - (A) Testing and submittal of test plans and reports shall be conducted in accordance with NWCAA Section 367 and NWCAA Appendix A. Record and report the average firing rate (MMBtu/hr) during testing.
  - (B) NOx: 40 CFR 60 Appendix A Methods 1, 2, 3A, 4, and 7E
  - (C) CO: 40 CFR 60 Appendix A Methods 1, 2, 3A, 4, and 10Conduct the first test no later than 180 days from first firing of fuel through the John Zinc burners. Thereafter, demonstrate compliance by conducting annual testing no later than 12 months after the most recent test.
- (9) Maintain the 30-day rolling average firing rate (MMBtu/hour) of the SMR such that it does

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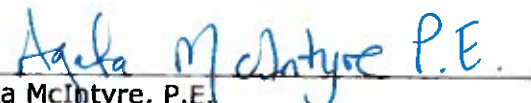
<sup>1</sup> Nothing in this permit is intended to, or shall, alter or waive any applicable law [including but not limited to defenses, entitlements, challenges or clarifications related to the Credible Evidence Rule, 62 FR 8315 (Feb. 27, 1997)] concerning the use of data for any purpose under the Act, generated by the reference method specified herein or otherwise.

Pursuant to Section 300.10 of the NWCAA Regulation and ch 43.21B RCW, this Order may be appealed to the Pollution Control Hearings Board (PCHB). To appeal to the PCHB, a written notice of appeal must be filed with the PCHB and a copy served upon the NWCAA within 30 days of the date the applicant receives this Order. Additional information regarding appeal procedures can be found at: <http://www.eluho.wa.gov/> under PCHB.

not exceed 110 percent of the average firing rate recorded during the latest performance test. You may conduct a performance test in accordance to the provisions of Condition 8 of this Order at any time for the purpose of achieving a higher maximum allowable firing rate.

- (10) NOx emissions from the flaring of process gasses shall not exceed 0.50 ( $5.0 \times 10^{-1}$ ) tons per calendar year (not including emissions from the flare pilot). This emission limit shall include periods of plant startup, shutdown, malfunction and during periods of load discrepancies. An emission factor of 0.0641 lb/MMBtu lower heating value (TNRCC Document RG-109, October 2000 draft) shall be used to calculate emissions. This calculation may be revised if a more accurate emission factor becomes available. Any change in the emission factor shall be mutually agreed upon by Air Liquide and the NWCAA and incorporated into this OAC with a corresponding change in the mass emission limit. The plant shall keep monthly records on the calculated NOx emissions from the flare. These monthly records shall include the pounds of NOx emitted during the month and the calendar year total to date.
- (11) Provide written notice to the NWCAA of the date of initial firing of the John Zink burners. Postmark the notice no later than 15 days after initial firing of the John Zink burners and include a reference to OAC 813d.

  
Christos Christoforou, P.E.  
Engineer

  
Agata McIntyre, P.E.  
Engineering Manager

Revision a: Reformat. Clarify conditions 1, 3, 4 and 5. Add condition 3b. Change condition 10 by removing the requirement to notify NWCAA of initial startup as it was received on October 14, 2003 and at the request of Air Liquide add an annual NOx limit for the flare with associated recordkeeping.

Revision b: Revise NOx and CO limits in Conditions 6 and 7 from a three hour rolling average to a 1 hour average (same numerical limit). Revise Condition 8 from an initial stack test to an annual stack test. Remove Condition 9 as part of the OAC cleanup.

Revision c: Include 40 CFR 63 Subpart DDDDD and 40 CFR 60 Subpart J in the preamble of the OAC. Remove lb/MMBtu limits for NOx and CO. Clarify Conditions 5 (opacity) and 8 (testing).

Revision d: Replacement of burners with new John Zink burners. Correct the maximum capacity of the SMR furnace. Modify testing conditions to allow testing at any firing rate. Require notification of initial firing of the John Zink burners.