

# Statement of Basis for Air Operating Permit—Final

## **Air Liquide Large Industries U.S. LP**

Anacortes, Washington

**August 19, 2014**



*Serving Island, Skagit & Whatcom Counties*

**PERMIT INFORMATION**  
**AIR LIQUIDE LARGE INDUSTRIES U.S. LP**  
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**SIC: 2813**  
**NAICS: 325120**  
**EPA AFS: 53-057-01878**

**NWCAA ID: 1878-V-S**

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## **1 INTRODUCTION**

Air Liquide Large Industries US L.P. (from this point on in this document referred to as Air Liquide, the facility, or permittee) owns and operates an industrial gas production facility located at 8581 South Texas Road in Anacortes, WA.

Air Liquide operates a steam methane reforming (SMR) process using pipeline natural gas as a raw material to produce hydrogen. The Northwest Clean Air Agency (NWCAA) has regulated the Air Liquide facility as a registered minor source since operation commenced at the facility in October 2003. However, the Air Liquide facility has been determined to be a support facility to the Puget Sound Refinery (PSR) and is therefore a major source required to obtain an Air Operating Permit (AOP or permit) pursuant to Title V of the 1990 Federal Clean Air Act (FCAA) and chapter 173-401 of the Washington Administrative Code (WAC).

The purpose of this Statement of Basis (SOB) is to set forth the legal and factual evidence for the conditions in Air Liquide's AOP and to provide background information for permit review by interested parties. This Statement of Basis is not a legally enforceable document in accordance with WAC 173-401-700(8).

### **1.1 Permit Changes in the first modification**

On February 3, 2014, the NWCAA received via email from John Jackson, then manager of the Air Liquide plant, a request to modify OAC 813b, and subsequently the AOP. Moreover, Mr. Jackson requested that the responsible official be changed. The NWCAA also has a legal obligation to add new and revised applicable federal regulations to the AOP. 40 CFR 63 Subpart DDDDD was revised by the EPA and re-issued on January 31, 2013. The NWCAA added this federal rule to the AOP as part of the modification.

Changes made to each AOP section are listed below.

#### **1.1.1 General Information and Attest**

The Responsible Official and Corporate Inspection Contact information was updated.

#### **1.1.2 Section 2 Standard Term and Conditions**

Section 2 of the AOP was updated with the current NWCAA standard version, which includes new and modified applicable regulations and updated reference dates.

#### **1.1.3 Section 3 Standard Terms and Conditions for NSPS and NESHAP**

Section 3 of the AOP was updated with the current NWCAA standard version consistent with the NSPS and NESHAP regulations that apply to Air Liquide. New and modified applicable regulations and updated reference dates are included.

#### **1.1.4 Section 5 Specific Requirements for Emission Units**

Section 5 of the AOP has been updated to include conditions from 40 CFR 63 Subpart DDDDD (known as the Boiler MACT). AOP 24 only had a "placeholder" condition for the Boiler MACT because at the time of issuance of AOP 24 EPA had not issued the Boiler MACT in its final form.

Also, Section 5 has been updated with the conditions from OAC 813c (revision of OAC 813b), issued on February 25, 2014.

## 1.2 Facility Description

Air Liquide operations are located on leased land that is owned by, as well as contiguous and adjacent to, the Shell Puget Sound Refinery. The Air Liquide SMR facility was built to provide hydrogen to the Shell Puget Sound Refinery (PSR) Hydrotreater No.3 project which was permitted under NWCAA OAC 787 dated January 20, 2003. The hydrogen produced at Air Liquide's hydrogen plant is purchased by the Shell Puget Sound Refinery. The purchased hydrogen is routed to a distribution header within the Shell Puget Sound Refinery. The refinery then distributes the hydrogen to its various refining processes as needed. The distribution of hydrogen produced at the Air Liquide hydrogen facility is controlled by refinery personnel and daily operating requirements of the Shell Puget Sound Refinery. Air Liquide also sends small quantities of excess steam to PSR.

Aerial photographs showing the facility are shown in Figure 1-1 and Figure 1-2.



**Figure 1-1 An aerial photograph showing the Air Liquide facilities at Anacortes, WA (photo from bing.com).**



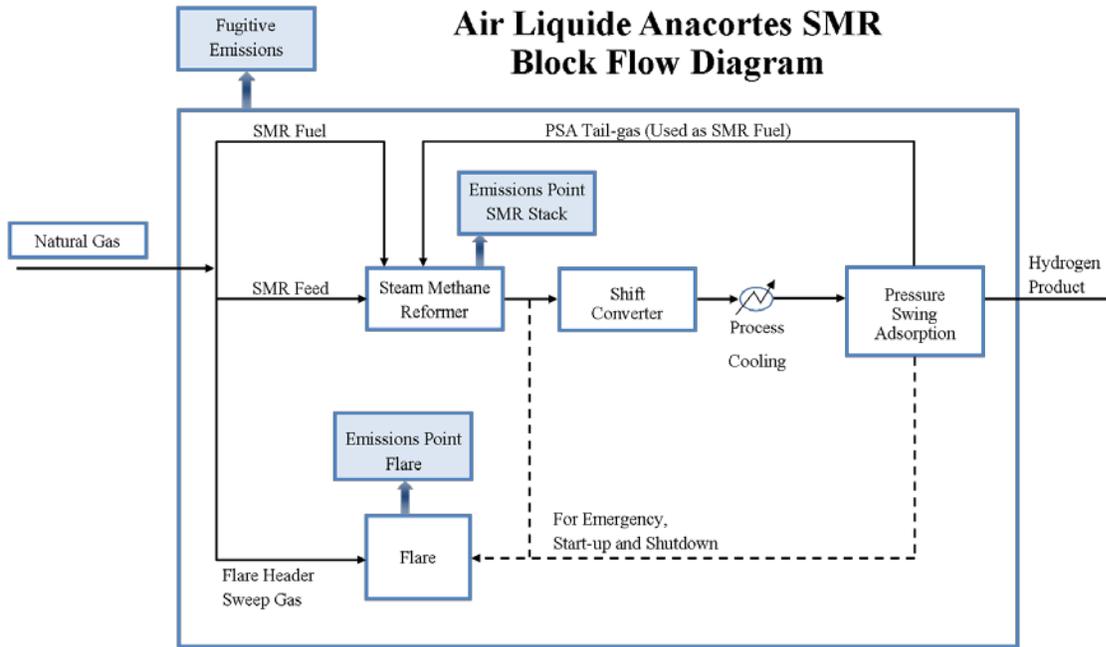
**Figure 1-2 A view of the Air Liquide facilities (surrounded by blue dots), with the PSR refinery to the north (photo from bing.com).**

### **1.3 Process Description**

Natural gas is hydrotreated and desulfurized by injecting recycled hydrogen and compressing the natural gas. It is then passed through a preheater and catalyst bed to remove any organic sulfur and methyl mercaptan, before it is mixed with steam and sent as feed to the Steam Methane Reformer. In the Reformer, methane reacts with steam to produce synthesis gas (syngas), a mixture of CO and hydrogen. A catalyst is used inside the Reformer to help facilitate this reaction. In the shift converter, high temperature and low temperature shift reactions take place, in which the CO produced, further reacts with steam in the presence of a catalyst to form hydrogen and CO<sub>2</sub>.

Following a cooling process, the product gas is passed through a Pressure Swing Adsorption (PSA) unit which produces 99.99% pure product hydrogen. The residual PSA offgas is recycled back as fuel to treat the SMR reactor. For events of emergency and startup/shutdown, the process gases are routed to a flare and destructed.

A schematic diagram of the Air Liquide process is shown in Figure 1-3.



**Figure 1-3 Air Liquide flow diagram**

### 1.4 Emission Units and Control

Primary emission sources at the facility are listed in Table 1-1. There are also insignificant emission units at the facility that are exempt according to WAC 173-401-532.

**Table 1-1 Emission Unit Identification**

Emission Unit Identification	Construction/Modification Year	Control Device	Process Description
SMR Unit	2003	Flare	Feed to the Steam Methane Reformer (SMR) consists of desulfurized recycled hydrogen and natural gas, mixed with steam. In the reformer, methane catalytically reacts with steam at high temperature to produce syngas, a mixture of carbon monoxide (CO) and hydrogen. Another catalytic reaction, called "shift conversion" reacts the CO with steam to form hydrogen and carbon dioxide (CO <sub>2</sub> ). After cooling, this gas mixture is purified by removing CO <sub>2</sub> in the Pressure Swing Adsorption (PSA) unit, producing high-purity hydrogen. The remaining CO and CO <sub>2</sub> (called PSA offgas) is recycled back as fuel (along with supplemental natural gas) to the SMR furnace.

Emission Unit Identification	Construction/Modification Year	Control Device	Process Description
Flare	2003	None	Process gases are routed to a flare for combustion during SMR unit startups, shutdowns, maintenance events, and in the event of an emergency.

### 1.5 Emissions Inventory

NWCAA has been collecting emissions inventory data from Air Liquide since the facility submitted its AOP application. Air Liquide reported actual emissions from the emission units at the facility for 2009 - 2011 as shown in Table 1-2.

**Table 1-2 Annual Emissions Inventory**

Pollutant	2009	2010	2011	2012
Criteria Pollutants	Tons			
CO	5.07	6.47	6.47	6.43
NOx	7.76	9.91	9.90	9.84
TSP	1.05	1.34	1.33	1.30
PM10	1.05	1.34	1.33	1.30
SO <sub>2</sub>	0.25	0.30	0.31	0.26
VOC	1.60	1.60	1.60	1.61
Hazardous Air Pollutants	Tons			
Formaldehyde	1.68E-02	2.15E-02		5.20E-02
Hexane	4.03E-01	5.15E-02		1.26
Toluene				2.40E-03
Benzene				1.45E-03

## 1.6 Permitting History

### 1.6.1 Northwest Clean Air Agency Orders of Approval to Construct

#### 1.6.1.1 OAC 813

Air Liquide received OAC 813 from the NWCAA on October 7, 2002. The order was issued for a new steam methane reformer (SMR) that was built as a dedicated support facility to provide hydrogen for PSR's new hydrotreating unit #3.

#### 1.6.1.2 OAC 813a

On September 13, 2004, NWCAA issued OAC 813a, revising the previous OAC. Revisions included reformatting of the permit and adding an annual NO<sub>x</sub> limit for the flare with associated recordkeeping.

#### 1.6.1.3 OAC 813b

On August 19, 2013, NWCAA issued OAC 813b, revising OAC 813a. Changes in OAC 813b were as follows:

- Revise NO<sub>x</sub> 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.

#### 1.6.1.4 OAC 813c

On February 25, 2014, NWCAA issued OAC 813c, revising OAC813b. Changes in OAC 813c were as follows:

- Include 40 CFR 63 Subpart DDDDD and 40 CFR 60 Subpart J in the preamble of the OAC.
- Remove lb/MMBtu limits for NO<sub>x</sub> and CO.
- Clarify Conditions 5 (opacity) and 8 (testing)

In the original permit issuance (OAC 813), NO<sub>x</sub> and CO levels in the exhaust were written with a lb/hr limit or a lb/MMBtu limit. For NO<sub>x</sub>, the limits are 2.8 lb/hr or 0.035 lb/MMBtu, and for CO the limits are 1.7 lb/hr or 0.022 lb/MMBtu.

According to past NWCAA practice, the facility would be in compliance if it passed either of the two limits (lb/hr or lb/MMBtu). Also, note that the lb/hr limit is based on the lb/MMBtu limit (multiply the lb/MMBtu by the 80.2 MMBtu/hr – the capacity of the SMR - to get the lb/hr).

In a facility such as this, it is straightforward to measure the lb/hr using EPA methods 1, 2, 3A, 4, and 7E (for NO<sub>x</sub>) and 1, 2, 3A, 4, and 10 (for CO). Measuring lb/MMBtu would require EPA method 19, which is more complicated since the SMR burns natural gas and PSA off-gas.

Applicable requirements, reference test methods, and monitoring for continuing OAC requirements are addressed in Sections 3 and 4 of the permit.

#### 1.6.1 Compliance Reports

The Air Liquide AOP requires periodic, semiannual, and annual reports to be submitted to the NWCAA as part of the facility's ongoing compliance demonstration.

When a permit deviation occurs, the facility is required to submit a periodic report within 30 days after the end of the month during which the deviation occurred identifying any excess emissions and provide a discussion as to the cause and what was done to correct the problem. The facility submits a semiannual summary report of emissions, process information, and continuous monitoring system performance. In addition, semiannual reports are submitted providing for the certification by the responsible corporate official of the truth, accuracy, and completeness of reports submitted during the previous six-month period. Annually, the responsible corporate official also certifies compliance with all applicable requirements in the AOP term by term and whether the facility was fully or intermittently in compliance with each term.

### **1.7 Compliance History**

Air Liquide has not received any notices of violation directly from the NWCAA.

Discussions between the NWCAA, the EPA, and Air Liquide culminated with Consent Order 3 issued by NWCAA on April 1, 2011. The Consent Order 3 required Air Liquide to apply for a Title V permit and pay AOP fees to the NWCAA.

Consent Order 3 is included in this document as Appendix A.

## **2 BASIS OF REGULATION APPLICABILITY**

### **2.1 Washington Administrative Code**

The Washington Administrative Code (WAC) primarily contains requirements that apply generally to all air pollution sources. These generally applicable requirements, such as limits on visible emissions (opacity), SO<sub>2</sub>, and fugitive particulate matter are addressed in Section 4 of the air operating permit.

### **2.2 NWCAA Regulation**

The NWCAA Regulation primarily contains requirements that are generally applicable to all air pollution sources. These generic limits are addressed broadly in Section 4 of the AOP.

The requirements in NWCAA Section 580 apply specifically to various petroleum refinery processes (storage vessels, equipment leaks, turnarounds and vacuum systems, and loading racks). Sections 580.25-580.10 are not applicable to Air Liquide because Air Liquide does not own or operate sources that belong to those categories addressed in the corresponding section.

The NWCAA NSR regulations reflect state and federal NSR regulations. The federal system to implement the Clean Air Act (in particular programs related to the NAAQS) may be administered by the federal government or it may be delegated (in part) to states, such as Washington, that seek regulation through State Implementation Plans (SIPs). Certain state and local (NWCAA) regulations are part of the Washington State Implementation Plan and are therefore enforceable by both the EPA and the NWCAA. These SIP-approved rules are included in the operating permit. There can be a lag between a change to a state/local regulation and approval into the SIP. Note that there may be both a SIP-approved version of a regulation and a non-SIP approved version (identified as “state only”) in the operating permit.

The NWCAA does not currently have authority to issue PSD permits. The NWCAA has authority to enforce local, state and most federal regulations and to fully enforce the air operating permit.

### **2.3 New Source Performance Standards (NSPS)**

#### **2.3.1 40 CFR 60 Subpart Dc (Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units)**

Air Liquide operates natural gas/PSA offgas burners associated with the SMR reactor. These burners meet the definition of process heaters in 40 CFR 60 Subpart Dc (NSPS Subpart Dc). The PSA offgas burners are used primarily for driving the reformer reaction, so they qualify as a process heater and not as a steam generating unit. Any steam generated from latent heat in the waste gas from the SMR reformer is incidental to the primary operation of the reformer. Therefore, Air

Liquide is not subject to NSPS Subpart Dc. Note that this is consistent with a similar EPA determination<sup>1</sup>.

### **2.3.2 40 CFR 60 Subpart J (Standards of Performance for petroleum refineries)**

The requirements of 40 CFR 60 Subpart J (NSPS Subpart J) apply to fluid catalytic cracking unit catalyst regenerators, fuel gas combustion devices, and Claus sulfur recovery plants of a certain size at petroleum refineries constructed after a specific date. Air Liquide is a support facility of a petroleum refinery, and has been constructed in 2004, therefore, it is potentially subject to NSPS Subpart J, specifically the SMR reactor and the flare.

*SMR Reactor:* The SMR reactor fires both natural gas and PSA gas. “Fuel gas” under NSPS Subpart J is defined as “any gas which is generated at a petroleum refinery and which is combusted”. Because the PSA gas is generated by the hydrogen processing equipment onsite, it is technically generated at a petroleum refinery so qualifies as “fuel gas”. According to the definition in NSPS Subpart J, any natural gas mixed with refinery-generated gas is also considered fuel gas. As such the SMR reactor would be subject to NSPS Subpart J requirements as a fuel gas combustion device.

*Flare:* Similarly to the SMR reactor, the flare combusts gases generated at Air Liquide, a petroleum refinery, and as such would be subject to NSPS Subpart J requirements as a fuel gas combustion device.

Note, however, that fuel gas combustion devices are only subject to sulfur oxides requirements. And, according to 40 CFR 60.105(a)(4)(iv)(C), fuel gas combustion devices that combust fuel gas that is inherently low in sulfur do not require a continuous SO<sub>2</sub> monitor. Hydrogen plants are explicitly listed as process units that are intolerant to sulfur contamination and, thus, are considered inherently low in sulfur. Therefore, the SMR reactor and the flare will require NSPS Subpart J emissions standards, recordkeeping, and reporting but will not be subject to continuous monitoring requirements.

### **2.3.3 40 CFR 60 Subpart Ja (Standards of Performance for Petroleum Refineries for Which Construction, Reconstruction, or Modification Commenced After May 14, 2007)**

40 CFR 60 Subpart Ja (NSPS Subpart Ja) applies to fluid catalytic cracking unit catalyst regenerators, fuel gas combustion devices, and Claus sulfur recovery plants of a certain size that are constructed, reconstructed, or modified after May 14, 2007. Air Liquide’s last permit modification was in September 2004. As such, NSPS Subpart Ja does not apply.

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<sup>1</sup> <http://cfpub.epa.gov/adi/pdf/adi-nsps-9900003.pdf>, accessed on 9.18.2012

#### **2.3.4 40 CFR 60 Subpart GGG (Standards of Performance for Equipment Leaks of VOC in Petroleum Refineries for which Construction, Reconstruction, or Modification Commenced After January 4, 1983, and on or Before November 7, 2006)**

40 CFR 60 Subpart GGG (NSPS Subpart GGG) applies to equipment leaks of VOC at petroleum refineries that commenced construction after January 4, 1983 and before November 7, 2006. Subject fugitive components are those “in VOC service” (i.e., contain or contact material that is at least 10% VOC by weight). From the fugitive emissions calculations in the NOC application for OAC 813a, none of the streams are greater than 10% VOC. As such, the equipment leaks at Air Liquide are not subject to the requirements of NSPS Subpart GGG.

#### **2.3.5 40 CFR 60 Subpart GGGa (Standards of Performance for Equipment Leaks of VOC in Petroleum Refineries for Which Construction, Reconstruction, or Modification Commenced After November 7, 2006)**

40 CFR 60 Subpart GGGa (NSPS Subpart GGGa) applies to equipment leaks of VOC at petroleum refineries that commenced construction after November 7, 2006. Air Liquide’s last permit modification was in September 2004. As such, NSPS Subpart GGGa does not apply.

#### **2.3.6 40 CFR 60 Subpart QQQ (Standards of Performance for VOC Emissions From Petroleum Refinery Wastewater Systems)**

40 CFR 60 Subpart QQQ (NSPS Subpart QQQ) applies to individual drain systems along with other portions of the oily wastewater collection system at petroleum refineries. Oily wastewater means “wastewater generated during the refinery process which contains oil, emulsified oil, or other hydrocarbons. Oily wastewater originates from a variety of refinery processes including cooling water, condensed stripping steam, tank draw-off, and contact process water”. Air Liquide routes its wastewater to PSR for treatment as oily process water in the refinery Effluent Plant. It is unlikely that any water at Air Liquide would contact any organics or oil during normal operations since the only organics that Air Liquide handles is natural gas as a raw material. As such, the drains at Air Liquide would not be considered process drains and is not subject to NSPS Subpart QQQ.

### **2.4 40 CFR 61 National Emission Standards for Hazardous Air Pollutants (NESHAP)**

National Emission Standards for Hazardous Air Pollutants (NESHAP) under 40 CFR 61 apply to specific operations that handle certain hazardous air pollutants (HAP). Generally, several NESHAP rules potentially apply to petroleum refineries based on the materials they handle; however, only one, 40 CFR 61 Subpart FF, applies specifically to petroleum refineries. 40 CFR 61 Subpart FF (National Emission Standard for Benzene Waste Operations) applies to petroleum refineries that treat, store, or dispose of benzene-containing waste.

Air Liquide does not handle any process material that contains benzene, and as such, Air Liquide is not subject to 40 CFR 61 Subpart FF.

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

NESHAP under 40 CFR 63 applies facility-wide to specific industries that are major sources of HAP. Generally, the construction date of equipment does not play into specific applicability; it just determines whether the equipment is considered “existing” or “new” equipment, which dictates the standards to which it is subject. Petroleum refineries, as major sources of HAP, are subject to certain NESHAP (Subparts CC and UUU) under 40 CFR 63. In addition, 40 CFR 63 Subpart DDDDDD (also known as the boiler MACT) potentially applies to Air Liquide.

### **2.5.1 40 CFR 63 Subpart CC (National Emission Standards for Hazardous Air Pollutants for Petroleum Refineries)**

40 CFR 63 Subpart CC, also known as the Refinery MACT, applies to “petroleum refining process units” that are located at a major source and that contain or contact any of the HAPs listed in Table 1 of the rule. “Petroleum refining process unit” means a process unit used in an establishment primarily engaged in petroleum refining that produces transportation fuels (such as gasoline, diesel fuels, and jet fuels), heating fuels (such as kerosene, fuel gas distillate, and fuel oils), or lubricants; separates petroleum; or separates, cracks, reacts, or reforms intermediate petroleum streams.

Miscellaneous Process Vents (MPV): Under the definition of miscellaneous process vents, a list of vents is included that are excluded from being considered MPV. One item on the list is: “Hydrogen production plant vents through which carbon dioxide is removed from process streams or through which steam condensate produced or treated within the hydrogen plant is degassed or deaerated.” According to the equipment list at Air Liquide, the facility is not equipped with a deaerator vent; it is recycled into the system. As such, Air Liquide does not have any miscellaneous process vents for the purposes of Refinery MACT and is not subject to Refinery MACT requirements.

Wastewater Streams: Wastewater is defined in the Refinery MACT as “water or wastewater that, during production or processing, comes into direct contact with or results from the production or use of any raw material, intermediate product, finished product, byproduct, or waste product and is discharged into any individual drain system. Examples are feed tank drawdown; water formed during a chemical reaction or used as a reactant; water used to wash impurities from organic products or reactants; water used to cool or quench organic vapor streams through direct contact; and condensed steam from jet ejector systems pulling vacuum on vessels containing organics.” As discussed above under NSPS Subpart QQQ, Air Liquide routes its wastewater to PSR for treatment in the PSR Effluent Plant. However, it is unlikely that any water at Air Liquide would contact any organics during normal operation. The only organics that Air Liquide may potentially handle is natural gas as a raw material. As such, Air Liquide’s wastewater system is not subject to Refinery MACT requirements.

Equipment Leaks: Equipment leaks is defined in the Refinery MACT as emissions of organic hazardous air pollutants from a pump, compressor, pressure relief device, sampling connection system, open-ended valve or line, valve, or instrumentation

system “in organic hazardous air pollutant service” as defined in the rule. “In organic hazardous air pollutant service” means that a piece of equipment either contains or contacts a fluid (liquid or gas) that is at least 5 percent by weight of total organic HAPs. The original NOC application from Air Liquide (OAC 815) estimated both VOC and HAP emissions from fugitives. None of the streams within Air Liquide are likely to contain at least 5% HAP. As such, Air Liquide’s equipment leaks are not subject to Refinery MACT requirements.

Storage vessels: Air Liquide does not have any storage vessels that are subject to Refinery MACT requirements.

### **2.5.2 40 CFR 63 Subpart UUU (National Emission Standards for Hazardous Air Pollutants for Petroleum Refineries: Catalytic Cracking Units, Catalytic Reforming Units, and Sulfur Recovery Units)**

Air Liquide does not operate any catalytic cracking units, catalytic reforming units, or sulfur recovery units. As such, Air Liquide is not subject to 40 CFR 63 Subpart UUU.

### **2.5.3 40 CFR 63 Subpart DDDDD (National Emission Standards for Hazardous Air Pollutants for Industrial, Commercial, and Institutional Boilers and Process Heaters)**

Air Liquid is subject to 40 CFR 63 Subpart DDDDDD, also known as the boiler MACT. According to §63.7485, one is subject to 40 CFR 63 Subpart DDDDDD if one owns or operates an industrial, commercial, or institutional boiler or process heater as defined in §63.7575 that is located at, or is part of, a major source of HAP as defined in §63.2 or §63.761. Air Liquide is part of a major source of HAP. The basis for this determination follows.

According to §63.2, major source means any stationary source or group of stationary sources located within a contiguous area and under common control that emits or has the potential to emit considering controls, in the aggregate, 10 tons per year or more of any hazardous air pollutant or 25 tons per year or more of any combination of hazardous air pollutants.

Emissions from Air Liquide itself are less than 10 tons per year of any hazardous air pollutant and less than 25 tons per year from any combination of hazardous air pollutants. The Puget Sound Refinery (PSR) is a major source of HAP.

Air Liquide is part of a major source of HAP (i.e., PSR) because the two are contiguous and under common control. According to EPA, “joint ownership, voting interest, contracts, liability, managerial hierarchy, and dependency are screening tools to use for common control decisions” (see EPA document Control Number M980015 from the EPA Applicability Index<sup>2</sup>). Since Air Liquide provides its entire product (hydrogen) to PSR, under contract, then Air Liquide and PSR may be deemed to be under common control.

In addition, according to NWCAA Compliance Order 3, dated April 1, 2011, Air Liquide was determined to be a support facility to PSR.

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<sup>2</sup> <http://cfpub.epa.gov/adi/pdf/adi-mact-m980015.pdf>, accessed on 07/10/2012.

Therefore, Air Liquide is subject to 40 CFR 63 Subpart DDDDD.

On January 18, 2012 the EPA announced that EPA will use its enforcement discretion and send new and existing Industrial, Commercial and Institutional Boilers at major sources a “no action assurance letter” that states that they are not required to submit administrative notifications to permitting agencies indicating that they are subject to the Boiler MACT as issued on March 21, 2011.

Because the 2011 Rule is adopted under Section 104 of the NWCAA Regulation, the rule is an “applicable requirement” for the purposes of the Air Operating Permit program, but it is a “state only” requirement because it has not been delegated to NWCAA by EPA.

Given the state of flux of this rule, it was decided to include the rule in AOP 24 with a “placeholder” until such time as the final rule is promulgated final.

The Boiler MACT was promulgated on January 31, 2013. AOP 24M1 (see AOP 24M1 conditions 5.1-5.3) contains the conditions from the Boiler MACT that apply to Air Liquide. Air Liquide has to perform an initial energy assessment and tune-up of their SMR. Since the SMR does not have oxygen trim, Air Liquide must follow up with tune-ups of the SMR annually. The NWCAA is currently not delegated for this rule, but has requested delegation from EPA in a Jan. 16, 2014 letter. The NWCAA is awaiting EPA’s decision.

## **2.6 Compliance Assurance Monitoring (CAM)**

The requirements of Compliance Assurance Monitoring are contained in 40 CFR 64. They apply to a pollutant-specific emissions unit at a major source that is required to obtain a part 70 or 71 permit provided the unit satisfies all criteria as delineated in 40 CFR 64.2(a)(1)-(3). In particular, 40 CFR 64.2(a)(2) stipulates that the emission unit uses a control device to achieve compliance. Air Liquide does not use any control devices, as these are defined in 40 CFR 64.1, to achieve compliance. Therefore, Air Liquide is not subject to the CAM rule.

## **2.7 Chemical Accident Prevention Provisions**

The goal of 40 CFR 68 and the risk management program it requires is to prevent accidental releases of substances that can cause serious harm to the public and the environment from short-term exposures and to mitigate the severity of releases that do occur. If a tank, drum, container, pipe, or other process at a facility contains any of the extremely hazardous toxic and flammable substances listed in Table 1 to 40 CFR 68.130 in an amount above the “threshold quantity” specified for that substance, the facility operator is required to develop and implement a risk management program.

Air Liquide uses methane in their SMR unit, but the quantities used are significantly less than the 10,000 lb threshold quantity listed in Table 1 to 40 CFR 98. Air Liquide does not have any other substances in the threshold quantities listed in Table 1 to 40 CFR 68.130 and therefore it is not subject to the requirements of 40 CFR 98.

## **2.8 New Source Review (NSR)**

### **2.8.1 Basic Information**

New Source Review requires stationary sources of air pollution to acquire permits before they begin construction. NSR is also referred to as construction permitting or preconstruction permitting.

There are three types of NSR permits. A source may have to acquire one or more of these permits:

- Prevention of Significant Deterioration (PSD) permits, which are required for new major sources or a major source making a major modification in an attainment<sup>3</sup> area;
- Nonattainment NSR permits, which are required for new major sources or major sources making a major modification in a nonattainment area; and
- Minor source permits, which are required for sources that emit pollutants below the major source threshold but above the minor source threshold. It is generally the case that a major new or modified source will also require minor NSR permitting that covers a different subset of pollutants.

### **2.8.2 What are Permits?**

Permits are legal documents that the source must follow. Permits specify what emission limits must not be exceeded and how the source is to demonstrate compliance with the set limits. Permits may contain conditions to ensure that the source is built according to the permit application upon which the permitting agency relies for air impact analysis. For example, the permit may specify a stack height that was used by the permitting agency to determine compliance with air pollutant limits. Some limits in the permit may be specified at the request of the source to keep them from being subject to other requirements. For example, the source may take limits in a minor NSR permit to keep the source out of PSD. To assure that sources follow permit requirements, permits also contain monitoring, recordkeeping, and reporting (MR&R) requirements.

### **2.8.3 Who Issues the Permits?**

In Washington State most NSR permits are issued by the Washington State Department of Ecology (“Ecology”) or local air pollution control agencies. The EPA issues the permit in some cases. Ecology and local air pollution control agencies have their own permit programs that are approved by EPA in the State Implementation Plan (SIP). In general, in the NWCAA jurisdiction, which encompasses Island, Skagit, and Whatcom Counties, Ecology issues major NSR permits (PSD permits) and NWCAA issues minor NSR permits (Orders of Approval to Construct, or OACs).

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<sup>3</sup> An attainment area means a geographic area designated by EPA at 40 CFR 81 as having attained the National Ambient Air Quality Standard for a given criteria pollutant (Reference: WAC 173-400-030 (9)).

#### **2.8.4 Prevention of Significant Deterioration**

Before a major source can be constructed or modified in an area that meets all the health-based ambient air requirements (i.e. in an attainment area), the owner or operator must demonstrate that the project will not cause or contribute to violations of any ambient air quality standard or air quality increment. Also, the owner or operator must demonstrate that the project will not cause significant deterioration in nearby Class I Areas (parks and wilderness areas).

Air Liquide is not subject to the PSD program.

#### **2.8.5 Minor NSR**

New or modified sources of air pollution are required to obtain a permit from the NWCAA before beginning construction. Permits are referred to as Orders of Approval to Construct (OACs) and contain a wide range of local, state, and federal requirements to minimize air pollution impacts on the environment. The type of activity, the size of the operation, and the kinds of pollutants emitted determine permit conditions.

### **2.9 Greenhouse Gases (GHG) Regulations**

#### **2.9.1 40 CFR 98, Federal Mandatory Greenhouse Gas Emission Inventory Regulation**

The requirements for the mandatory greenhouse gas reporting are contained in 40 CFR 98. This regulation is implemented in its entirety by the EPA. This regulation is excluded from appearing in a Title V air operating permit because it does not contain applicable requirements under the Title V program (WAC 173-401-200(4)).

The following discussion is included here for completeness. In order for a facility to be subject to 40 CFR 98, it must meet the requirements of 1, 2, or 3 below:

1. A facility that contains any source category that is listed in Table A–3 of 40 CFR 98 Subpart A.
2. A facility that contains any source category that is listed in Table A–4 of 40 CFR 98 Subpart A that emits 25,000 metric tons CO<sub>2</sub>e or more per year in combined emissions from stationary fuel combustion units.
3. A facility that has stationary fuel combustion units with an aggregate maximum rated heat input of 30 MMBtu/hr or greater, and the facility emits 25,000 metric tons CO<sub>2</sub>e or more per year in combined emissions from all stationary fuel combustion sources.

Subpart P of 40 CFR 98 establishes reporting requirements for hydrogen production. This source category consists of process units that produce hydrogen by reforming, gasification, oxidation, reaction, or other transformation of feedstock, and that sell the hydrogen as a product. Hydrogen production units that are located at a petroleum refinery are included in this source category if they are not owned by or under the direct control of the refinery owner. Hydrogen production units that are owned by a petroleum refinery must report under subpart Y (Petroleum Refineries).

According to information submitted by Air Liquide, in 2011 their throughput was 1,131,065,770 scf of natural gas and their GHG emissions were 63,139 metric tons of CO<sub>2</sub>e. Therefore, the facility is subject to the reporting requirements of 40 CFR 98.

### **2.9.2 WAC 173-441, Washington State Reporting of Emissions of GHG**

Chapter 173-441 WAC, "Reporting of Emissions of Greenhouse Gases", is a mandatory greenhouse gas (GHG) reporting rule for:

- Suppliers that supply applicable fuels sold in Washington State of which the complete combustion or oxidation would result in at least 10,000 metric tons of carbon dioxide annually; or
- Any listed facility that emits at least 10,000 metric tons of CO<sub>2</sub>-equivalents (CO<sub>2</sub>e) of greenhouse gases annually in the state.

WAC 173-441 was adopted by Ecology on December 1, 2010 and became effective on January 1, 2011. This regulation applies to the facility because the facility emits at least 10,000 metric tons of CO<sub>2</sub>e of greenhouse gases per year. Similar to the federal reporting rule (40 CFR 98, see discussion in Section 2.9.1), WAC 173-441 requires annual GHG inventories with reports due no later than March 31 of the following year for facilities that are also subject to 40 CFR 98. Under WAC 173-441, annual emissions shall be reported to Ecology beginning in calendar year 2012. This regulation is implemented in its entirety by Ecology and is considered an applicable requirement under the Title V program; as such, it is included in Section 2 of the AOP for the facility.

### **3 GENERAL PERMIT ASSUMPTIONS**

#### **3.1 Permit Content**

The permit contains (1) standard terms; (2) generally applicable conditions for the type of facility permitted; and (3) specifically applicable conditions originating from PSD permits, approvals to construct and any orders referencing the facility. Applicable requirements that were satisfied by a single past action on the part of the source are not included in the permit but are discussed in the Statement of Basis. An example would include performance testing to demonstrate compliance with applicable emission limitations as a requirement of initial startup. Regulations that require action by a regulatory agency, but not of the regulated source, are not included as applicable permit conditions.

#### **3.2 One Time Requirements**

There are no one time requirements associated with Air Liquide as of the date of permit issuance.

#### **3.3 Federal Enforceability**

Federally enforceable requirements are terms and conditions required under the Federal Clean Air Act or under any of its applicable requirements such as part 63 of Title 40 (the NESHAP program). Local and state regulations may become federally enforceable by formal approval and incorporation into the State Implementation Plan (SIP) or through other delegation mechanisms. Federally enforceable requirements are enforceable by the EPA and by citizens of the United States by citizen lawsuits. All applicable requirements in the AOP, including Standard Terms and Conditions, Generally Applicable Requirements, and Specifically Applicable Requirements are federally enforceable unless identified in the AOP as enforceable only by the state and labeled as "state only".

Chapter 173-401 WAC is not federally enforceable although the requirements of this regulation are based on federal requirements for the air operating permit program. Upon issuance of the AOP, the terms based on Chapter 173-401 WAC will become federally enforceable for Air Liquide.

Most rules and requirements are followed by a date in parentheses. Two different versions (identified by the date) of the same regulatory citation may apply to the source if federal approval/delegation lags behind changes made to the Washington Administrative Code (WAC) or the NWCAA Regulation. The date associated with a WAC regulation denotes the "State Effective Date" of the regulation. For SIP-approved WAC regulations (identified by the absence of the "state only" designation), the date represents the "State Effective Date" of the regulation version that was SIP-approved. For NWCAA regulations, the date represents the most recent NWCAA Board of Directors adoption date, which is identified as the "Passed" or "Amended" date in the NWCAA Regulation. For SIP-approved portions of the NWCAA Regulation (also identified by the absence of the "state only" designation), the parenthetical date represents the "Passed" or "Amended" date of the Regulation version that was SIP-approved. The date associated with an OAC

permit represents the latest revision date of that OAC. For a federal rule, the date is the rule's most recent promulgation date.

### **3.4 Future Requirements**

There are no pending applicable requirements that apply to Air Liquide, with the exception of 40 CFR 63 Subpart DDDDD as discussed in Section 2.5.3. Some requirements that are not applicable until triggered by an action, such as the requirement to file an application prior to constructing a new source, are addressed within Section 3 of the AOP. There is presently no pending application to construct a new emission source at Air Liquide. Air Liquide officials have certified in their permit application that the facility will meet any future applicable requirements on a timely basis.

### **3.5 Compliance Options**

Air Liquide did not request emissions trading provisions or specify more than one operating scenario in the operating permit application, so the permit does not address these options. This operating permit does not condense overlapping applicable requirements (streamlining) nor does it provide any alternative emission limitations.

## **4 PERMIT ELEMENTS AND BASIS FOR TERMS AND CONDITIONS**

### **4.1 Permit Elements**

The Air Liquide AOP is divided into the following sections:

Permit Information Page

Attest

Table of Contents

Section 1- Emissions Unit Identification

Section 2 - Standard Terms and Conditions

Section 3 – Standard Terms and Conditions for NESHAP

Section 4 - Generally Applicable Requirements

Section 5 – Specifically Applicable Requirements

Section 6 - Inapplicable Requirements

### **4.2 Permit Information**

The Permit Information page identifies the source and provides general information relevant to the permit such as the facility address, the responsible corporate official, the permit issuance date and the permit expiration date, and the agency personnel responsible for permit preparation, review, and issuance.

### **4.3 Attest**

The Attest page provides authorization for the source to operate under the terms and conditions contained in the permit.

### **4.4 Section 1 Emission Unit Identification**

The Emission Unit Identification section lists emission units, rated capacities, installation date, and air pollution control methods at the Air Liquide facility.

### **4.5 Section 2 Standard Terms and Conditions**

The Standard Terms and Conditions section of the AOP (Section 2) specifies administrative requirements or prohibitions with no ongoing compliance monitoring requirements. The legal authority for the Standard Terms and Conditions is provided in the citations in Section 2 of the AOP. The description of the regulation in each of these conditions (with the exception of those labeled “Directly enforceable under WAC 173-401-615(1)(b) & (c), 10/17/02”) is sometimes a paraphrase of the actual regulatory requirement. Where there is a difference between the actual requirement and the paraphrased description, the cited regulatory requirement takes precedence. In an effort to make the section more readable, the terms and conditions have been grouped by function. In some cases,

similar requirements at the state and local authority level have been grouped together.

Several permit conditions in Section 2 of the AOP are labeled “Directly enforceable under WAC 173-401-615(1)(b) & (c), 10/17/02”. These conditions are a clarification of the regulatory requirements, as the NWCAA interprets those requirements. “Directly enforceable” conditions are legal requirements with which the permittee must comply and are directly enforceable through the permit per NWCAA’s gap-filling authority.

A number of requirements that would not be applicable until triggered have also been included in Section 2 of the AOP. An example of one such requirement is the requirement for a source to submit an application for new source review.

#### **4.6 Section 3 Standard Terms and Conditions for NSPS and NESHAP**

Air Liquide is subject to the standards of performance for petroleum refineries (Subpart J to Part 60 of 40 CFR) and also to the boiler MACT (Subpart DDDDD to Part 63 of 40 CFR). Section 3 of the AOP includes the standard terms and conditions that are contained in Subpart A (General Provisions) of 40 CFR 60 and Subpart A of 40 CFR 63. Such standard terms and conditions are administrative, notification, and/or other requirements that typically have no ongoing compliance monitoring requirements.

#### **4.7 Section 4 Generally Applicable Requirements**

The Generally Applicable Requirements section of the permit identifies requirements that apply broadly to Air Liquide. With some exceptions, each of these requirements applies non-specifically to sources. For example, NWCAA Regulation Section 455.1 broadly prohibits particulate emissions that exceed 0.1 gr/dscf from any emissions unit. However, some requirements apply to only certain types of emissions units. For example, NWCAA Regulation Section 455.11 applies only to combustion equipment and WAC 173-400-060 applies only to general process units. Despite these differences in applicability, these requirements have been listed together in the Generally Applicable Requirements section of the permit.

The Generally Applicable Requirements are organized in Table 4-1 in the permit. The first column of Table 4-1 provides permit term numbers used to identify listed elements. The requirements specified in the second column are applicable plant-wide to all emission units at the source, including insignificant emission units. The third column describes the applicable requirements for informational purposes only, and is not enforceable. The fourth column identifies monitoring the permittee must perform to ensure compliance with the applicable requirement as required by WAC 173-401-605(1) and 615(1) and (2). The fourth column is enforceable except that insignificant emission units are exempt from all monitoring, recordkeeping and reporting requirements.

Chapter 173-401 WAC requires the permit to include both a reference test method and a monitoring method. The Monitoring Recordkeeping and Reporting (MR&R) requirements in the fourth column indicate official methods that the NWCAA, the

EPA, or the WDOE may use to determine compliance with applicable requirements. Where the applicable requirement fails to specifically state a test method, a method is added to the permit, as required by WAC 173-401-615(1)(a). The facility has no immediate obligation to perform these tests. If the NWCAA determines via the stated reference test method or other methods that the facility is not complying with the associated applicable requirement, then a violation of the applicable requirement has occurred.

#### **4.8 Specifically Applicable Requirements**

This section lists applicable requirements that apply uniquely to a process unit or to a specific category of process unit. Typically, these requirements originate from an Order of Approval to Construct issued by NWCAA. Gap filling, which is described more fully in Section 4.9, was necessary in some cases to fulfill the requirements of Chapter 173-401-615 WAC.

#### **4.9 Gap Filling**

Some regulations or statutes do not specify compliance determination or monitoring methods. Chapter 173-401-615 WAC requires the AOP to feature monitoring, recordkeeping and reporting adequate to demonstrate compliance with applicable requirements. In these cases, a site-specific compliance monitoring method was developed based on the characteristics of the permitted facility, the nature of the underlying requirement, the requirements of Chapter 173-401-615 WAC, and EPA guidance. The process of developing and implementing these requirements is called “gap filling”. The following describes the derivation of site specific compliance monitoring in the Air Liquide AOP.

As an example of gap-filling, consider permit term 4.1 that references WAC 173-401-615(3) (10/17/02). The WAC rule states that submittal of reports must be at least once every six months. In order to make the requirement less ambiguous permit term 4.1 was gap-filled to require reports to cover regular intervals and be submitted over specified date windows.

As another example of gap-filling, consider permit terms 4.3-4.12. These permit terms have to do with general nuisance, odor, and fugitive dust emissions, referencing applicable sections of WAC 173-400 and the NWCAA Regulation. For example, WAC 173-400-040(4), which describes fugitive dust emissions, states that the source “shall take reasonable precautions to prevent the release of air contaminants from the operation.” Therefore, in order to streamline MR&R requirements, where they exist, and introduce MR&R requirements, where they were absent altogether, gap-filling was employed. In this case, a written air contaminant complaint response plan must be developed and maintained at the site, and a procedure for dealing with complaints is outlined.

#### **4.10 Section 6 Inapplicable Requirements**

Washington Administrative Code 173-401-640(2) allows a determination regarding the applicability of requirements with which the source must comply. Section 6 of the permit lists requirements deemed inapplicable based on the applicability of the

cited regulation. It is stated in the AOP that the permit shield applies to the specific, listed inapplicable requirements.

## 5 INSIGNIFICANT EMISSION UNITS AND INAPPLICABLE REQUIREMENTS

### 5.1 Insignificant Emission Units

Washington Administrative Code 173-401-640 allows a determination regarding the applicability of requirements with which the source must comply. Section 6 of the permit lists requirements deemed inapplicable based on the applicability of the cited regulation.

Categorically exempt insignificant emissions units listed in WAC 173-401-532 are present at the Air Liquide facilities. These categorically exempt emissions units normally have extremely low emissions and are considered insignificant by regulation and not of sufficient importance to list in the permit. Other emission units or activities generate only fugitive emissions for which there are no specifically applicable requirements. These activities are categorized as insignificant by Chapter 173-401-530(1)(d) WAC. Categorically insignificant and fugitive emission units and activities are listed in the following table.

**Table 5-1 Insignificant Activities/Emission Units**

Unit/Activity	WAC Citation Category
Internal combustion engines for propelling or powering a vehicle	WAC 173-401-532(10)
Ventilating units used for human comfort that do not exhaust air pollutants into the ambient air from any manufacturing, industrial, or commercial process	WAC 173-401-530(46)
Food preparation for human consumption including cafeterias, kitchen facilities, and barbecues located at a source for providing food service on the premises	WAC 173-401-532(41)
Bathroom and toilet vents	WAC 173-401-532(48)
Cleaning and sweeping of streets and paved surfaces	WAC 173-401-532(35)
Fuel and exhaust emissions from vehicles in parking lots	WAC 173-401-532(54)
Steam vents and safety relief valves not emitting process chemicals	WAC 173-401-532(87)
Air compressors, pneumatically operated systems, and related hand tools	WAC 173-401-532(88)
Sewer manholes, junction boxes, sumps, and lift stations associated with wastewater treatment systems at publicly owned treatment works	WAC 173-401-532(120)

## **5.2 Inapplicable Requirements**

Chapter 173-401-640 WAC requires the permitting authority to issue a determination regarding the applicability of requirements with which the source must comply. Table 6 in the permit lists requirements deemed inapplicable to the emission units identified in Table 1-1 in the AOP and provides the basis for each determination.

## **6 RESPONSE TO COMMENTS ON THE DRAFT AOP SUBMITTED DURING THE PUBLIC COMMENT PERIOD**

The Air Liquide Large industries US LP (Air Liquide) Air Operating Permit was published as Draft on December 25, 2012. The Northwest Clean Air Agency (NWCAA) received comments during the draft period from Air Liquide in a letter dated January 21, 2013. The Air Liquide letter included six separate comments, two of which refer specifically to the Statement of Basis.

The Air Liquide comments are reproduced below separately, each followed by the NWCAA response.

### **6.1 Air Liquide Comment 1**

The correct SIC code is 2813.

The correct NAICS code is 325120.

#### **6.1.1 NWCAA response to Comment 1**

The SIC and NAICS codes have been corrected.

### **6.2 Air Liquide Comment 2 (pertaining to the Statement of Basis)**

Air Liquide believes that the following description more accurately describes the process used by Shell Puget Sound Refinery following the purchase of hydrogen from the Air Liquide's hydrogen plant.

"Air Liquide operations are located on leased land that is owned by, as well as contiguous and adjacent to, the Shell Puget Sound Refinery. The Air Liquide SMR facility was built to provide hydrogen to the Shell Puget Sound Refinery (PSR) Hydrotreater No.3 project which was permitted under NWCAA OAC 787 dated January 20, 2003. The hydrogen produced at Air Liquide's hydrogen plant is purchased by the Shell Puget Sound Refinery. The purchased hydrogen is routed to a distribution header within the Shell Puget Sound Refinery. The refinery then distributes the hydrogen to its various refining processes as needed. The distribution of hydrogen produced at the Air Liquide hydrogen facility is controlled by refinery personnel and daily operating requirements of the Shell Puget Sound Refinery. Air Liquide also sends small quantities of excess steam to PSR."

#### **6.2.1 NWCAA response to Comment 2**

Section 1.1 of the Statement of Basis has been amended to reflect Air Liquide's Comment 2.

### **6.3 Air Liquide Comment 3 (pertaining to the Statement of Basis)**

Air Liquide believes that the following description accurately describes the chemical reaction inside the Steam Methane Reformer (SMR):

"Natural gas is hydrotreated and desulfurized by injecting recycled hydrogen and compressing the natural gas. It is then passed through a preheater and catalyst bed to remove any organic sulfur and methyl mercaptan, before it is mixed with steam and sent as feed to the Steam Methane Reformer. In the Reformer, methane reacts with steam to produce synthesis gas (syngas), a mixture of CO and hydrogen. A catalyst is used inside the Reformer to help facilitate this reaction. In the shift converter, high temperature and low temperature shift reactions take place, in which the CO produced, further reacts with steam in the presence of a catalyst to form hydrogen and CO<sub>2</sub>."

### **6.3.1 NWCAA response to Comment 3**

Section 1.2 of the Statement of Basis has been amended to reflect Air Liquide's Comment 3.

## **6.4 Air Liquide Comment 4**

Section 3 of this permit is heavily induced with references to a Continuous Monitoring System (CEM). During initial meetings between the Northwest Clean Air Agency and Air Liquide, it was specifically stated that a CEMs unit would not be required as part of this permit. When reviewing the permit, the number of references to a CEMs unit is confusing and has a tendency to overwhelm the reader with terms and conditions that are not applicable to the hydrogen facility. Air Liquide is requesting that all references to any CEMs unit, including monitoring, recordkeeping and reporting be removed from this permit.

Due to the fact that there will not be a CEMs unit at the facility, Air Liquide is requesting that all references to emission limits during start-up and shut-down be removed from the permit. It is well know [sic] in the industry that any boiler/reformer/furnace will not operate at optimum firing conditions during a start-up or shut-down. Emission limits placed upon the facility during this time period cannot be verified and the potential for a citation for noncompliance due to the fact Air Liquide cannot verify the immediate emissions of the facility is a possibility in the future.

Additionally, any entity outside of the air agency and Air Liquide could review the permit in the future and request the public records pertaining to Air Liquide's compliance status. Air Liquide seeks to avoid any misinterpretation of the permit.

### **6.4.1 NWCAA response to Comment 4**

Section 3.2 of the Air Liquide AOP contains conditions found in Subpart A of 40 CFR 63. NWCAA agrees with Air Liquide that, since there are no continuous emissions monitors at the facility, then conditions from Section 3.2 of the AOP that do not apply to the facility will be removed.

## **6.5 Air Liquide Comment 5**

Permit Term 4.15 SO<sub>2</sub> - SO<sub>2</sub> emissions limited to 1.5 lb/million Btu heat input per hour.

Air Liquide request that Permit Term 4.15 be removed from the permit. It is well documented that the presence of sulfur in the steam methane reformer process for producing hydrogen is detrimental to the hydrogen facility. The hydrogen industry, Air Liquide included, have taken detailed precautions to eliminate the presence of any sulfur in the process. Air Liquide's hydrogen facility in Anacortes purchases natural gas from a vendor that must process their product to federal and state standards. Since Air Liquide does not have control over the sulfur content of the natural gas commercially purchased and no means to directly monitor sulfur emissions, it is reasonable to remove this Permit Term. Air Liquide will make available to the Northwest Clean Air Agency invoices/manifest of natural gas purchases from the supplier upon request.

#### **6.5.1 NWCAA response to Comment 5**

NWCAA agrees with Air Liquide in that the nature of the operations at Air Liquide is such that it almost ensures that the facility will be in compliance with permit term 4.15. However, the origin of permit term 4.15 is the NWCAA Regulation Section 460. It is an applicable requirement to Air Liquide, and therefore cannot be removed from the AOP. If Air Liquide merely keeps records of natural gas usage, as is the monitoring, recording and recordkeeping requirement for this permit term, then Air Liquide will be deemed to be in compliance with this permit term.

#### **6.6 Air Liquide Comment 6**

1 - Permit Term 5.7 NO<sub>x</sub>, Citation OAC 813a Conditions 6 and 8 - Nitrogen oxide emissions from the SMR stack shall not exceed 0.035 lb/MMBtu heat input (higher heating value) or 2.8 lb/hr based on a 3-hour rolling average.

Air Liquide request that this Permit Term be removed from the permit. Air Liquide will be performing an annual stack test to determine compliance with permit emission limits. In previous discussions with the Northwest Clean Air Agency, it was stated that no CEMs would be mandated by the agency and Air Liquide will not be installing a CEMs unit at the facility. The facility cannot verify a 3-hour rolling average under any circumstances. If any inspector, either from a state or federal agency were to request immediate validation of compliance with Permit Term 5.7, the hydrogen facility would not be able to comply. Any request for immediate validation of the 3-hour rolling average would place the facility into a precarious position, with the potential of possibly being cited with a violation for failure to comply.

Additionally, any entity outside of the air agency and Air Liquide could review the permit in the future and request the public records pertaining to Air Liquide's compliance status. Air Liquide seeks to avoid any misinterpretation of the permit and suggests that this Permit Term be removed from the permit.

2- Permit Term 5.8 CO, Citation 813a Condition 7 and 8 - Carbon Monoxide emissions from the SMR stack shall not exceed 0.022 lb/MMBtu heat input (higher heating value) or 1.7 lb/hr based on a 3-hour rolling average.

Air Liquide request that this Permit Term be removed from the permit. Air Liquide will be performing an annual stack test to determine compliance with permit

emission limits. In previous discussions with the Northwest Clean Air Agency, it was stated that no CEMs would be mandated by the agency and Air Liquide will not be installing a CEMs unit at the facility.

The facility cannot verify a 3-hour rolling average under any circumstances. If any inspector, either from a state or federal agency were to request immediate validation of compliance with Permit Term 5.8, the hydrogen facility would not be able to comply. Any request for immediate validation of the 3-hour rolling average would place the facility into a precarious position, with the potential of possibly being cited with a violation for failure to comply. Additionally, any entity outside of the air agency and Air Liquide could review the permit in the future and request the public records pertaining to Air Liquide's compliance status. Air Liquide seeks to avoid any misinterpretation of the permit and suggests that this Permit Term be removed from the permit.

#### **6.6.1 NWCAA response to Comment 6**

The origin of permit terms 5.7 and 5.8 is Order of Approval to Construct (OAC) 813a, issued to Air Liquide on 8.13.2004. As such, they are valid conditions that apply to the source, and therefore cannot be excluded from the AOP. NWCAA feels that the annual source testing (as required in the Monitoring/Recordkeeping/Reporting section for terms 5.7 and 5.8 of the AOP) is sufficient to monitor compliance with these permit terms.

If Air Liquide would like to pursue replacing the 3-hour rolling average from the AOP with a 1-hour limit, they would first need to apply for a modification to OAC 813a. Once the 3-hour rolling average is replaced in OAC 813a, Air Liquide may then request a modification to the AOP.

## 7 PUBLIC DOCKET AND DEFINITIONS

### 7.1 Public Docket

Copies of this permit as well as the permit application and any technical support documents are available online at [www.nwcleanair.org](http://www.nwcleanair.org) and at the following location:

Northwest Clean Air Agency  
1600 South Second Street  
Mount Vernon, WA 98273-5202

### 7.2 Definitions and Acronyms

"Acid Rain Program" means the program aimed at the reduction of SO<sub>2</sub> and NO<sub>x</sub> emissions, thereby reducing the deposition of acid rain.

An "area source" means any stationary source of hazardous air pollutants that is not a major source.

"Attainment area" means a geographic area designated by EPA as having attained the National Ambient Air Quality Standard for a given criteria pollutant.

"BACT" (Best Available Control Technology) is an emissions limitation which is based on the maximum degree of control that can be achieved. It is a case-by-case decision that considers energy, environmental, and economic impact. BACT can be add-on control equipment or modification of the production processes or methods.

An "emission unit" is any part or activity of a stationary source that emits or has the potential to emit any regulated air pollutant.

"Fugitive dust" means a particulate emission made airborne by forces of wind, man's activity, or both. Unpaved roads, construction sites, and tilled land are examples of areas that originate fugitive dust.

"Fugitive emissions" means emissions that could not reasonably pass through a stack, chimney, vent, or other functionally equivalent opening.

"General permit" means a permit which covers multiple similar sources or emissions units in lieu of individual permits being issued to each source.

"GHG (Greenhouse gases)" are gases that trap infrared heat in the atmosphere. According to EPA definition, GHG means carbon dioxide (CO<sub>2</sub>), methane (CH<sub>4</sub>), nitrous oxide (N<sub>2</sub>O), sulfur hexafluoride (SF<sub>6</sub>), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and other fluorinated greenhouse gases as defined in 40 CFR 98.

"HAP (Hazardous Air Pollutants)" are substances that are named as hazardous by the Clean Air Act. These substances, such as benzene, formaldehyde, or chromium-6, present tangible, serious hazards to humans.

"MACT (Maximum Achievable Control Technology)" is control technology requirement for major sources of HAP.

A “major source” means any stationary source that emits or has the potential to emit considering controls, in the aggregate, 10 tons per year or more of any hazardous air pollutant or 25 tons per year or more of any combination of hazardous air pollutants, or 100 tons per year of any other regulated pollutant.

“NAAQS (National Ambient Air Quality Standards)” are ambient concentration standards set by EPA for pollutants considered harmful to public health and the environment. Currently there are NAAQS for six so-called “criteria pollutants”: carbon monoxide (CO), lead (Pb), nitrogen dioxide (NO<sub>2</sub>), ground-level ozone (O<sub>3</sub>), particulate matter (PM<sub>10</sub> and PM<sub>2.5</sub>) and sulfur dioxide (SO<sub>2</sub>).

An “NOV (Notice of Violation)” is issued by an environmental regulatory agency to initiate enforcement action.

The “New Source Review (NSR)” is a pre-construction permitting program. It ensures that air quality is not significantly degraded from the addition of new or modified facilities, but also ensures that any large new or modified industrial sources will be as clean as possible. NSR permits are legal documents that the facility owners/operators must abide by. The permit specifies what construction is allowed, what emission limits must be met, and often how the emissions source must be operated.

“Opacity” means the degree to which an object seen through a plume is obscured, stated as a percentage. 100% opacity means nothing is seen through the plume, and 0% opacity means everything is visible (no plume at all).

“PTE (Potential to emit)” means the maximum capacity of a source to emit a pollutant under its physical and operational design. It usually means the emissions from a round-the-clock operation (24 hrs/day x 365 days = 8760 hours in a year). Any physical or operational limitation on the capacity of the source to emit a pollutant is treated as part of its design only if the limitation or the effect it would have on emissions is enforceable.

“PSD (Prevention of Significant Deterioration)” is an EPA program in which state and/or federal permits are required in order to restrict emissions from new or modified sources in places where air quality already meets or is better than NAAQS.

“(RACT) Reasonably available control technology” means the lowest emission limit that a particular source or source category is capable of meeting by the application of control technology. This technology must be reasonably available considering technological and economic feasibility. RACT is determined on a case-by-case basis, taking into account the impact of the source upon air quality, the availability of additional controls, the emission reduction to be achieved by additional controls, the impact of additional controls on air quality, and the capital and operating costs of the additional controls. RACT requirements for any source or source category are adopted only after notice and opportunity for comment are afforded.

“Synthetic Minor permits” impose federally enforceable limits to restrict a facility's potential emissions to below major source thresholds. This option makes it possible for those facilities that can comply with the Synthetic Minor permit's federally enforceable limits to operate without the need for a Title V permit.

The following is a list of Acronyms used in the Air Operating Permit and/or Statement of Basis:

AIRS	Aerometric Information Retrieval System
AMP	Alternative Monitoring Plan
AOP	Air Operating Permit
ASIL	Acceptable Source Impact Level
ASTM	American Society for Testing and Materials
BACT	Best available control technology
BFO	Ecology Bellingham Field Office
BTU	British Thermal Unit
CAAA	Clean Air Act Amendments
CAM	Compliance Assurance Monitoring
CD	Consent Decree
CEM	Continuous Emissions Monitor
CEMS	Continuous Emissions Monitoring System
CFR	Code of Federal Regulations
CH <sub>4</sub>	Methane
CO <sub>2</sub>	Carbon dioxide
CO	Carbon monoxide
COMS	Continuous Opacity Monitoring System
dscf	dry standard cubic feet
EPA	The United States Environmental Protection Agency
FCAA	Federal Clean Air Act
FCCU	Fluid catalytic cracking unit
FGS	Flue gas scrubber
gr	grain, a unit of mass (there are 7,000 grains in a lb)
GHG	Greenhouse Gases
H <sub>2</sub> S	Hydrogen Sulfide
HAP	Hazardous Air Pollutant
HC	Hydrocarbons
HRSG	Heat Recovery Steam Generator
ISO	International Organization for Standardization
LDAR	Leak Detection and Repair
MACT	Maximum Achievable Control Technology

MMBtu	Million British thermal units
MR&R	Monitoring, recordkeeping, and reporting requirements
NAAQS	National Ambient Air Quality Standards
NH <sub>3</sub>	Ammonia
NOC	Notice of Construction
NO <sub>x</sub>	Oxides of Nitrogen
NSPS	New Source Performance Standard
NSR	New Source Review
NWCAA	Northwest Clean Air Agency
O <sub>2</sub>	Oxygen
O <sub>3</sub>	Ozone
OAC	Order of Approval to Construct
PM	Particulate Matter
PM <sub>10</sub>	Particulate Matter less than 10 micrometers in diameter
PM <sub>2.5</sub>	Particulate Matter less than 2.5 micrometers in diameter
ppb	parts per billion
ppmvd	parts of pollutant per million parts of dry stack gas on a volumetric basis
PSD	Prevention of Significant Deterioration
psia	pounds per square inch absolute
PTE	Potential to emit
QA/QC	quality assurance/quality control
RACT	Reasonably Available Control Technology
RATA	Relative Accuracy Test Audit
RCW	Revised Code of Washington
SCR	Selective Catalytic Reduction
scf	standard cubic foot (cubic foot of gas at ISO STP)
SIP	State Implementation Plan
SO <sub>2</sub>	sulfur dioxide
SRU	Sulfur recovery unit
STP	Standard Temperature and Pressure
TAP	Toxic Air Pollutant
TSP	Total Suspended Particulates
ULSD	Ultra low sulfur diesel (less than 15 ppm sulfur content)

VOC Volatile Organic Compounds  
WAC Washington Administration Code  
WDOE Washington State Department of Ecology



D. Air Liquide was initially issued NWCAA Order of Approval to Construct 813 on October 7, 2002 to construct and operate the SMR which order was subsequently revised effective September 13, 2004.

E. NWCAA has regulated the Air Liquide SMR as a registered minor source since SMR operation commenced at the facility in October 2003.

F. Air Liquide operations are located on leased land that is owned by, as well as contiguous and adjacent to, the Shell Puget Sound Refinery ("PSR"), which is classified as a petroleum refinery (SIC 2911) and is a major source as defined under the Clean Air Act.

G. The Air Liquide SMR facility was built to provide needed hydrogen to the Shell Puget Sound Refinery Hydrotreater No. 3 project which was permitted in NWCAA Order of Approval to Construct 787 dated January 20, 2003. The Air Liquide emissions were considered in the total air emissions from the project for determination of Prevention of Significant Deterioration review under 40 CFR Part 52.21 and state regulations.

H. The entirety of Air Liquide's hydrogen product is currently purchased and used by the Hydrotreater No. 3 at PSR for the production of refined petroleum products.

I. The Air Liquide facility-wide potential to emit has been estimate by the NWCAA to be 13 tons per year (tpy) CO, 13 tpy NO<sub>x</sub>, 2 tpy VOC, 7 tpy SO<sub>2</sub>, and 2 tpy PM<sub>10</sub>.

### III.

#### Regulatory Basis

A. WAC 173-401-200 Definitions (19) "Major source" means any stationary source (or any group of stationary sources) that are located on one or more contiguous or adjacent properties, and are under common control of the same person (or persons under common control) belonging to a single major industrial grouping... For the purposes of defining "major source," a stationary source or group of stationary sources shall be considered part of a single industrial grouping if all of the pollutant emitting activities at such source or group of sources on contiguous or adjacent properties belong to the same major group (i.e., all have the same two-digit code) as described in the Standard Industrial Classification Manual, 1987.

B. The Standard Industrial Classification (SIC) Manual states that the SIC code is a system for classifying establishments by type of economic activity. Each establishment is classified according to its primary economic activity.

C. 45 FR 52695, August 7, 1980, a background document to 40 CFR Part 52.21 Prevention of Significant Deterioration regulation, states that each source is to be classified according to its primary activity, which is determined by its principal product... Thus, one source classification encompasses both primary and support facilities, even when the latter

includes units with a different two-digit SIC code. Support facilities are typically those which convey, store or otherwise assist in the production of the principal product. (emphasis added).

**IV.**

**Determinations**

Based upon the foregoing Findings of Fact and Regulatory Basis, NWCAA makes the following Determinations:

A. In accordance with the SIC Manual, the background documents to the PSD rule, and WAC 173-401, the Air Liquide operation is integral to, and part of, the greater PSR economic activity by providing a raw material that is used in the PSR Hydrotreater 3 as a part of its processing potential and is therefore included under SIC 2911.

B. The Air Liquide facility is a support facility to PSR and is therefore subject to the permitting requirements of WAC 173-173-401.

**V.**

**Terms of Order: Actions to Be Taken.**

Based on the foregoing Facts, Regulatory Basis, and Determinations, it is hereby ordered that Air Liquide take the following actions:

A. Submit a Title V permit application to NWCAA for its facility in accordance with WAC 173-401 within sixty days of the effective date of this Order.

B. Submit payment of Title V program fees in accordance with NWCAA Regulation 322 within 90 days of receipt of invoice.

**VI.**

**Terms and Definitions in Order**

Unless otherwise specified, the definitions set forth in NWCAA Regulation 200, WAC 173-400 & 401 and RCW 70.94 shall control the meanings of the terms used in this Agreed Order.

**VII.**

**Satisfaction of Order**

The provisions of this Order shall be deemed satisfied upon Air Liquide's submittal of the Title V permit application and payment of Title V permit program fees as set forth herein.

VIII.

**Enforcement**

Pursuant to RCW 70.94.221, this Order may be enforced by the NWCAA.

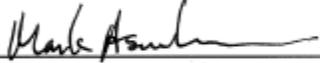
IX.

**Order Not Subject to Appeal**

The terms of this Order having been agreed to by both parties, it is further stipulated that the same shall be final and shall not be subject to appeal pursuant to RCW 43.21B.230 and NWCAA Regulation 122.

Effective date of this Order: April 1, 2011

ORDERED BY:  
NORTHWEST CLEAN AIR AGENCY

By: 

Mark Asmundson,  
Director

AGREED BY:  
AIR LIQUIDE LARGE INDUSTRIES US L.P.

By: 

Dan Heintz  
Director, Environmental Affairs