South Coast Air Quality Management District

Statement of Basis
Initial Title V Permit
(Issued for Public Notice – 11/20/07)
(Revised for Final Permit – 4/29/08)

Facility Name:	Air Liquide El Segundo Hydrogen Plant (Air Liquide Large Industries U.S., LP)
Facility ID:	148236
SIC Code:	2813
Equipment Location:	324 W. El Segundo Blvd. El Segundo, California 90245
Application #:	461206
Application Submittal Date:	10/17/06
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1. Introduction and Scope of Permit

Title V is a national operating permit program for air pollution sources. Facilities subject to Title V must obtain a Title V permit and comply with specific Title V procedures to modify the permit. This permit replaces the facility's other existing permits. Title V does not necessarily include any new requirements for reducing emissions. It does, however, include new permitting, noticing, recordkeeping, and reporting requirements.

The AQMD implements Title V through Regulation XXX – Title V Permits, adopted by the AQMD Governing Board in order to comply with EPA's requirement that local air permitting authorities develop a Title V program. Regulation XXX was developed with the participation of the public and affected facilities through a series of public workshops, working group meetings, public hearings and other meetings. AQMD also has published a Technical Guidance Document for Title V (January 1998, Version 2.0).

The Title V major source threshold for a particular pollutant depends on the attainment status of the pollutant in the South Coast Air Basin. The Basin is in attainment with federal standards for NO_2, SO_2, CO, and lead. The status for CO has been redesignated from nonattainment to attainment in June 2007 (72 FR 26718). The status for PM-10 is serious nonattainment. The status for ozone is currently extreme nonattainment.

An initial Title V permit is proposed to be issued to cover the hydrogen production operations of Air Liquide Large Industries U.S., LP, located at 324 W. El Segundo Blvd. in El Segundo. This facility is located within the boundaries of the Chevron El Segundo Refinery. It is currently permitted as part of the Chevron Refinery. Air Liquide, who owns and operates the hydrogen plant, submitted applications for change of operator for the plant permits in June 2006. The hydrogen plant facility is subject to Title V requirements because it is a major source for NOx and VOC.

2. Facility Description

This is an existing plant that is in the business of hydrogen production. This plant includes one heater with a selective catalytic reduction (SCR) control device, one ground flare, and other equipment directly involved in the core hydrogen production operation.

The facility operations can be basically characterized by the following processes: feed compression and preheating; feed desulfurization by hydrogenation; hydrogen production by steam-hydrocarbon reforming process; CO conversion by medium temperature shift reaction; and hydrogen purification by pressure-swing adsorption (PSA). In addition to steam, feedstocks to the hydrogen plant can include natural gas, pentane, refinery fuel gas, and ammonia. The fuel to the heater (reformer) is composed primarily of PSA offgas. The balance of the fuel is either refinery fuel gas or natural gas.

The hydrogen product is sold and delivered to the Chevron Refinery, which will be governed under a separate Title V permit. A portion of the steam produced at the plant is also sent to the Chevron Refinery. The Chevron refinery provides the hydrogen plant with ammonia, pentane, refinery fuel gas, and certain utilities including treated water for steam production.

3. Construction and Permitting History

Permits to construct for initial construction of the hydrogen plant were issued to Chevron in September of 2003. The hydrogen plant permits are currently contained in the Chevron El Segundo Refinery RECLAIM Facility Permit. The refinery has not been issued an initial Title V permit. Air Liquide, who owns and operates the plant, began operation of the plant in December of 2004. Air Liquide submitted applications for change of operator for the permits for the hydrogen plant in June 2006.

4. Summary of Emissions

The following table contains the estimated maximum potential criteria pollutant emissions for the facility.

Maximum Potential Criteria Pollutant Emissions

Pollutant	Emissions (tons/year)
NOx	26.0
CO	23.4
VOC	30.5
PM	22.2
SOx	6.1

The following table contains the estimated maximum potential toxic air contaminant (TAC) emissions for the hydrogen plant.

Maximum Estimated Toxic Air Contaminants Emissions (TAC)

Toxic Air Contaminant	Emissions (lbs/yr)
Acetaldehyde	5.5
Acrolein	4.8
Ammonia	16,900.
Benzene	10.5
Ethyl Benzene	14.4
Formaldehyde	23.4
Hexane	7.8
Naphthalene	1.8
PAHs (excl. Naphthalene)	0.6
Toluene	46.4
Xylene	34.6

Additional details regarding the above maximum potential to emit (PTE) emission estimates can be found in the Engineering Evaluations associated with the non-Title V permits the AQMD has issued for the permitted equipment within this facility.

Health Risk from Toxic Air Contaminants
The facility is not currently subject to review by the Air Toxics Information and Assessment Act (AB2588).

5. Title V Permit Format

The Title V permit comprises eleven sections and two appendices. Each section is devoted to a particular function as summarized below:

Section A **Facility Information**
This section contains operator name, facility location and mailing address. It also lists the name of the responsible official and contact person for the facility.

Lastly, this section indicates whether Regulation XXX and RECLAIM apply to the facility.

Section B **RECLAIM Annual Emission Allocation**

This section applies to RECLAIM facilities only and lists NOx and SOx allocations for the facility. This facility is subject to both the NOx and SOx requirements of RECLAIM.

Section C **Facility Plot Plan**

This section is reserved for the development of the facility plot plan in the future.

Section D **Facility Description and Equipment Specific Conditions**

This section describes equipment at the refinery that has been issued permits to operate. It also includes facility-wide operating conditions, emission limitations, the rules for which the emission limits and permit conditions are derived, and the periodic monitoring requirements as appropriate. The description of the process and equipment is structured in the following manner:

Process

A process is the largest grouping of equipment under the Title V permit, which includes all equipment involved in the making of final product from raw feed. A process can end at an intermediate product if the succeeding process is significantly different.

System

A system is the combination of equipment into a unit which is a logical subsystem of a process. A system can be used to identify individual process lines, or it can separate a long process line into separate functions. The main use of this grouping will be to separate a large process into manageable groups.

Equipment

This column describes equipment contained within a system or a process. It contains information necessary to identify equipment and ensure compliance with rules and regulations such as dimensions of a tank, heat input of a heater, horsepower of an engine. This section also lists the equipment application number (A/N). The application number is an identification number issued by the AQMD to the application submitted to the AQMD by the applicant for a Permit to Construct or Permit to Operate a piece of equipment. A facility is required to submit a permit application when it plans to install a new piece of equipment, alter an existing piece of equipment, or modify a permit condition. An application number in the Title V permit changes each time the AQMD approves a new application.

Device Identification (I.D.) Number

Each piece of equipment is assigned a unique I.D. number. When a piece of equipment is modified it retains its existing I.D. number. However, when it is

removed from service, the I.D. number is retired and will not be used to identify another piece of equipment at this facility.

Connected to
This column is used to identify air pollution control equipment that is connected to a specific piece of equipment at the refinery.

RECLAIM Source Type/Monitoring Unit
This column is used to identify equipment classification pursuant to the RECLAIM program. The classification of major source, large source and process units are defined in Rule 2012. The equipment classification is assigned only to NOx emission sources subject to RECLAIM. Each classification of equipment is subject to a specific monitoring requirement under RECLAIM.

Emissions and Requirements
This column lists emission limits applicable to each piece of equipment. It also lists the rules for which the limits were derived. If AQMD adopted a rule that has not yet been approved into the State Implementation Plan (SIP), emission limits established by both the SIP-approved and non SIP-approved versions of the rule are included in the permit.

Conditions
This column lists specific permit conditions applicable to the facility, process, system or equipment. A facility level condition applies to the whole facility and is designated by the letter F. The process conditions apply to the entire process and are designated by the letter P. The system conditions apply to the entire system and are designated by the letter S. The equipment (device) level conditions are designated by other letters depending on the category of conditions such as monitoring, recordkeeping, etc. Each permit condition references the law or rule for which the requirements in the condition were derived. If AQMD adopted a rule that has not yet been approved into the SIP, emission limits established by both the SIP-approved and non SIP-approved versions of the rule are included in the permit. One category of the device level condition is the periodic monitoring condition.

Section E **Administrative Conditions**
This section contains general administrative permit conditions that apply to all facilities. The conditions listed in this section apply to all permitted equipment at the facility unless superseded by other conditions listed elsewhere in the facility permit.

Section F **RECLAIM Monitoring & Source Testing Requirements**
This section contains Monitoring and source testing permit conditions imposed by Regulation XX. It summarizes the monitoring and testing requirements for Major, Large and Process units at RECLAIM facilities.

Section G **RECLAIM Recordkeeping & Reporting Requirements**
This section contains recordkeeping and reporting requirements specified in Regulation XX. It summarizes the recordkeeping and reporting requirements for RECLAIM sources.

Section H **Permit to Construct and Temporary Permit to Operate**
The permit format in this section is the same as described for Section D above. However, equipment listed in this section has not been issued permits to operate, but were issued a permit to construct and/or a temporary permit to operate.

Section I **Compliance Plans & Schedules**
This section lists active compliance plans specified in the SIP-approved rules.

Section J **Air Toxics**
This section lists permit conditions pertaining to NESHAP/MACT requirements.

Section K **Title V Administration**
This section lists the Title V administrative conditions. They are the same for all Title V facilities, except for the list of applicable rules table at the end of the section. The table at the end of the section lists all applicable rules referenced in Sections D and H (emission limit and conditions) and any rules that are referenced to the facility. This table also indicates which rules are federally enforceable and which are only enforceable by AQMD.

Appendix A **NOx and SOx Emitting Equipment Exempt from Written Permit Pursuant to Rule 219**
This section lists classes of NOx and SOx emitting Rule 219 exempt equipment present at the facility that are subject to RECLAIM.

Appendix B **Rule Emission Limits**
Specific emission limits that cannot be listed in the Emissions and Requirements column of Sections D and H and which were added as emission limit type nine are included in this appendix.

6. Regulatory Applicability Determinations

Applicable legal requirements for which this facility is required to comply have been determined and are identified in the Title V permit. Applicability determinations (i.e., determinations made by the District with respect to what legal requirements apply to a specific piece of equipment, process, or operation) can be found in the Engineering Evaluations associated with the non-Title V permits issued for this facility in the past. These evaluation reports are located at the AQMD office. The methodology utilized in the TV permit for specification of the applicable regulatory

requirements including emission limits is discussed below. Non-applicability determinations for federal regulations are discussed later in this section.

Specification of Applicable Regulations

In Sections D and H of the TV permit, regulatory applicability is specified with either a system level S13.x condition or a device level H23.x condition. A system level S13.x condition is normally utilized when the limit is applicable to an entire process unit or to multiple emission sources dispersed throughout a permit unit and an H23.x condition is normally utilized when the emission limit is applicable to a singular device in a permit unit. For example, system level condition S13.1 specifies that the hydrogen plant is subject to the applicable requirements of District Rule 1189. Device level condition H23.5 specifies that both the Steam Methane Reformer (SMR) heater and the SMR ground flare are subject to the applicable requirements of 40CFR60 Subpart J - *Standards of Performance for Petroleum Refineries*.

Applicable regulatory emission limits are specified in one of the following locations in Sections D and H the TV permit:

- "Emissions and Requirements" column of the equipment description,
- system level condition S2.x ,
- device level condition A63.x, or
- device level condition B61.x.

The "Emission and Requirements" column may contain either stack gas concentration or mass emission limits. Conditions S2.x and A63.x are primarily utilized to specify mass emission limits. Condition B61.x is utilized for indirect emission limits such as fuel sulfur content limits.

Following through with the examples above, the Rule 1189 emission limit of "less than 0.5 lbs/mmscf of hydrogen produced" is specified in system level condition S2.2 and the NSPS Subpart J fuel gas H_2S limit of 160 ppmv is specified at condition B61.2.

Non-applicability Determinations for Federal Regulations

This section contains a summary of non-applicability determinations for potentially applicable federal regulations.

New Source Performance Standards (NSPS)

This plant is not subject to the NSPSs listed below for the stated reasons:

- 40 CFR 60 Subpart D - Standards of Performance for Fossil-Fuel-Fired Steam Generators for Which Construction is Commenced after August 17, 1971.; 40 CFR 60 Subpart Da - Standards of Performance for Electric Utility Steam Generating Units for Which Construction is Commenced After September 18, 1978; and 40 CFR 60 Subpart Dc - Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units. This plant does not contain or operate any steam generators.
- 40 CFR 60 Subpart K – Standards of Performance for Storage Vessels for Petroleum Liquids for Which Construction, Reconstruction, or Modification Commenced After June 11, 1973 and Prior to May 19, 1978; 40 CFR 60 Subpart Ka – Standards of Performance for Storage Vessels for Petroleum Liquids for Which Construction, Reconstruction, or Modification Commenced After May 18, 1978 and Prior to July 23, 1984; and 40 CFR 60 Subpart Kb –

Standards of Performance for Volatile Organic Storage Vessels (Including Petroleum Liquids Storage Vessels) for Which Construction, Reconstruction, or Modification Commenced After July 23, 1984. This plant does not contain or operate any organic liquid storage tanks.

- 40 CFR 60 Subpart GG - Standards of Performance for Stationary Gas Turbines. This plant does not contain or operate any stationary gas turbines.
- 40 CFR 60 Subpart VV - Standards of Performance for Equipment Leaks of VOC in the Synthetic Organic Chemicals Manufacturing Industry. This plant is not directly subject to this regulation since it does not produce any of the chemicals listed in §60.489. Note that the equipment that is Subject to NSPS Subpart GGG are subject to the requirements of this regulation through reference from NSPS Subpart GGG.
- 40 CFR 60 Subpart XX - Standards of Performance for Bulk Gasoline Terminals. This plant does not contain or operate a bulk gasoline terminal.
- 40 CFR 60 Subpart GGG – Standards of Performance for Equipment Leaks of VOC in Petroleum Refineries. The only components in this plant that are in "VOC service" are those that handle refinery fuel gas. Other equipment in the plant, including compressors, is not subject to this regulation since the equipment is not in "VOC service".
- 40 CFR 60 Subpart III- Standards of Performance for Volatile Organic Compound (VOC) Emissions from the Synthetic Organic Chemical Manufacturing Industry (SOCMI) Air Oxidation Unit Processes. This plant does not produce any of the chemicals specified at §60.617.
- 40 CFR 60 Subpart NNN - Standards of Performance for Volatile Organic Compound (VOC) Emissions from the Synthetic Organic Chemical Manufacturing Industry (SOCMI) Distillation Operations. This plant does not produce any of the chemicals specified at §60.667.
- 40 CFR 60 Subpart QQQ – Standards of Performance for VOC Emissions from Petroleum Refinery Wastewater Systems. This plant does not contain any affected sources. Drains and wastewater systems utilized by this plant are contained in and permitted to the Chevron refinery.
- 40 CFR 60 Subpart RRR - Standards of Performance for Volatile Organic Compound Emissions from Synthetic Organic Chemical. This plant does not produce any of the chemicals specified at §60.707.
- 40 CFR 60 Subpart IIII - Standards of Performance for Stationary Compression Ignition Internal Combustion Engines – This plant does not contain or operate any stationary ICEs.
- 40CFR60 Subpart KKKK - Standards of Performance for Stationary Combustion Turbines. This plant does not contain or operate any stationary combustion turbines.

National Emission Standards for Hazardous Air Pollutants (NESHAPs)

This facility is not a major source of HAP emissions but could be potentially subject to some refinery related NESHAPs since is located within and is an integral support facility for a refinery that is a major HAP source. This plant is not subject to the refinery related NESHAPs listed below for the stated reasons:

- 40 CFR 61 Subpart FF - National Emission Standard for Benzene Waste Operation. This plant does not contain or operate facilities that treat, store, or dispose of benzene containing hazardous waste.

- 40 CFR 63 Subpart R - National Emission Standards for Gasoline Distribution Facilities (Bulk Gasoline Terminals and Pipeline Breakout Stations). This plant does not contain or operate a gasoline distribution terminal.
- 40 CFR 63 Subpart CC - National Emission Standards for Hazardous Air Pollutants from Petroleum Refineries (refinery MACT). This plant does not contain or operate storage tanks, wastewater streams and treatment operations, gasoline loading racks, marine vessel loading operations, or equipment . This plant does not contain fugitive equipment that is in "organic HAP service". This plant does not have any "process vents". The vents in this plant are exempt because they are either "pressure relief discharges" (63.641) or "hydrogen plant vents through which carbon dioxide is removed from process streams or through which steam condensate produced or aerated within the hydrogen plant is degassed or dearated" (63.641).
- 40 CFR 63 Subpart UUU - National Emission Standard for Hazardous Air Pollutants for Petroleum Refineries: Catalytic Cracking Units, Catalytic Reforming Units, and Sulfur Recovery Units. This plant does not contain a CCU, CRU, or SRU.
- 40 CFR 63 Subpart EEEE - National Emission Standard for Hazardous Air Pollutants: Organic Liquids Distribution (Non-Gasoline). This plant does not contain or operate any organic liquid loading racks.
- 40 CFR 63 Subpart YYYY - National Emission Standard for Hazardous Air Pollutants for Stationary Combustion Turbines. This plant does not contain or operate any stationary combustion turbines.
- 40 CFR 63 Subpart ZZZZ - National Emission Standard for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines. This plant does not contain or operate any stationary ICEs.
- 40 CFR 63 Subpart GGGGG - National Emission Standard for Hazardous Air Pollutants for Site Remediation. This plant does not currently have any site remediation activities.

7. Monitoring and Operational Requirements

Applicable monitoring and operational requirements for which the facility is required to comply are identified in the Title V permit (for example, Sections D, F, and J and Appendix B). Discussion of applicable monitoring and operational requirements can be found in the Engineering Evaluations. Compliance Assurance Monitoring (CAM) requirements of 40 CFR Part 64 do not apply for this initial Title V permit. However, the SMR Heater/SMR will be subject to CAM upon renewal of the Title V permit. Monitoring required by this regulation will be added to the Title V permit at that time. .

8. TV Permit Features

Permit Shield

A permit shield is an optional part of a Title V permit that gives the facility an explicit protection from requirements that do not apply to the facility. A permit shield is a provision in a permit that states that compliance with the conditions of the permit shall be deemed compliance with all identified regulatory requirements. To incorporate a permit shield into the Title V permit involves submission of applications for change of conditions for each equipment affected by the permit shield. Permit shields are addressed in Rule 3004 (c). This facility has not applied for a permit shield for any of its equipment.

Alternate Operating Scenarios

An alternative operating scenario (AOS) is a set of provisions and conditions in a permit that allows the operator to switch back and forth between alternative modes of operation without submitting an application for a permit revision before each switch. However, each AOS must be evaluated for compliance with AQMD rules and regulations and applicable State and Federal requirements. AOS is addressed in Rule 3005 (j). This facility has not applied for an AOS for any of its equipment.

Streamlining Requirements

Some emission units may be subject to multiple requirements which are closely related or redundant. The conditions may be streamlined to simplify the permit conditions and compliance. Emission limits, work practice standards, and monitoring, recordkeeping, and reporting requirements may be streamlined. Compliance with a streamlined condition will be deemed compliance with the underlying requirements whether or not the emission unit is actually in compliance with the specific underlying requirement. This facility has not applied for any streamlined condition.

9. Compliance History

As noted, the hydrogen plant has been in constant operation since late 2004. The plant has been subject to both self-reporting requirements and AQMD inspections. There have been no citizens complaints filed or Notice to Comply issued for equipment in the hydrogen plant over the last three year period. One (1) Notice of Violation was issued to the Chevron Refinery in May 2006 for failure to provide notice to the AQMD of a flaring event of more that 500,000 scf at the Air Liquide Ground Flare. The facility is currently in compliance. Further information regarding the facility's compliance status is available on the internet under the AQMD's "Facility INformation Detail" database (FIND, at http://www.aqmd.gov/webappl/fim/prog/search.aspx).

10. Compliance Certification

By virtue of the Title V permit application and issuance of this permit, the reporting frequency for compliance certification for the facility shall be annual.