Louisiana Department of Environmental Quality (LDEQ)
Office of Environmental Services

STATEMENT OF BASIS

Shell Chemical LP – EOEG-3 Unit
Geismar, Ascension Parish, Louisiana
Agency Interest Number: 1136
Activity Number: PER20030002
Draft Permit 2185-V2

I. *APPLICANT:*

Company:
Shell Chemical LP
Post Office Box 500
Geismar, Louisiana 70734

Facility:
EOEG-3 Unit
7594 Highway 75, Geismar, Ascension Parish, Louisiana
Approximate coordinates are Latitude 30 deg., 11 min., 65 sec.; Longitude 90 deg., 59 min., 15.4 sec.

Responsible Official:
Mr. S.A. Rathweg, Site Manager

II. *FACILITY AND CURRENT PERMIT STATUS*

Shell Chemical LP operates a chemical plant, Chalmette Refinery, L.L.C. (CRLLC) operates a chemical manufacturing complex consisting of the Olefins Units, Alcohol Units, Cogen Unit, Logistic Unit, Utilities Unit, M-Unit, PDO-1 Unit, EOEG-2 Unit and EOEG-3 Unit. Ascension Parish is currently designated as a nonattainment for all NOx and VOC. The EOEG-3 Unit is part of a major source subject to the Part 70 operating permit program because the emissions from all the units and equipment is part of a greater than the major source emissions levels for criteria pollutants. In addition, these stationary sources emit more than 25 tons per year of aggregate TAPs.

This Part 70 operating permit is for the EOEG-3 Unit which operates under Permit Number 2851-V1 dated January 31, 2003.

Initial/Modification Part 70 permits that were issued by the department include:

Permit #	Units or Sources	Date Issued
2185-V1	EOEG-3 Unit	1/31/2003
3001-V0	M-Unit	5/21/2002
2727-V0	Logistics	6/26/2001
2729-V0	Cogen Unit	6/26/2001
2136-V2	Utilities	6/26/2001
2669-V1	Olefins	6/26/2001

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Permit #	Units or Sources	Date Issued
2489-V0	PDO Unit	11/13/1997
2151-V2	Alcohols Unit	2/26/2002

Renewal/Modification Title V Part 70 permits that are under review by the department include:

Permit #	Units or Sources	Date Issued
3001-V0	M-Unit	5/21/2002
2727-V0	Logistics	6/26/2001
2729-V0	Cogen Unit	6/26/2001
2136-V2	Utilities	6/26/2001

III. *PROPOSED PERMIT / PROJECT INFORMATION*

Proposed Permit

An application and Emission Inventory Questionnaire (EIQ), were submitted by Shell Chemical LP on December 22, 2005 requesting a Part 70 operating permit modification and renewal. Additional information was provided on May 31, and June 2, 2006.

Project description

The facility is proposing to incorporate recent approved permit actions and other changes based on current operating conditions:

1. Incorporate two Small Source Exemptions dated March 13, 2003 for Oxygen Analyzer Project, and September 11, 2004 for Glycol Rerun to Glycol Bleed Flasher Project;
2. Update fugitive emissions from process equipment fugitive components based on previously approved permitting actions;
3. Update VOC speciated emissions based on the recent LDEQ guidance;
4. Incorporate allyl chloride emissions for several sources which were advertently omitted in the last permit application; and
5. Update General Condition XVII Activities and Insignificant Activities.

In addition, the facility is proposing to modify the permit to include the High-purity Ethylene Oxide One (HPEO-1) Project. The equipment within the EOEG-1 Unit is nearing the end of its life and will have to be shutdown in 2006. As part of the HPEO-1 Project the facility will utilize the existing EO-1 purification column and associated equipment but the other redundant equipment will be dismantled.

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The HPEO-1 Project will include the following:

1. Re-tray existing EO-1 Purification Column, C-EO302, to increase the reflux rate;
2. Install new piping and fugitive components associated with delivering aqueous EO feed from EO-3 Light Ends Column to the existing EO-1 Purification Column;
3. Install new piping and fugitive components associated with delivering materials from existing EO-1 Purification Column to EG-3 and produced HPEO from the EO-1 Purification Column to storage and loading;
4. Replace EO-1 Purification Column Overhead Subcooler, E-EO308C, with a larger subcooler to achieve the required temperature drop;
5. Replace existing vent absorber, EO-1 300 Vent, with a new vent absorber having a 99 percent removal efficiency along with associated piping and fugitive components;
6. Modify Brine Chilling System with electrical motors to accommodate the increased demand at the Overhead Subcooler;
7. Modify the EOEG-3; install a new EG Reactor feed pump, install a new Purge Cooler, and a new static mixture;
8. Install a new EG Bleeds Cooler and associated pipeline and fugitive components to the EOEG-3 Tank Farm;
9. Modify existing equipment and operating conditions to optimize EO and EG production with the new equipment;
10. The upstream and downstream units affected, without modifications except for fugitive components, by this project are Utilities for increased steam supply and wastewater; Logistics Unit for increased throughput, storage, and loading capacity, M-Unit and PDO-1 Unit for increased HPEO supply.

The increase in emissions due to the HPEO-1 Project do not exceed the Prevention of Significant Deterioration (PSD) significance threshold, therefore, this project does not require netting or PSD review. Similarly, the increase in emissions due to this project do not exceed the Nonattainment New Source Review (NNSR) significance threshold, therefore, NNSR is not required.

Permitted emissions from EOEG-3 Unit in tons per year are as follows:

Pollutant	Emission**
PM_{10}	0.02
SO_2	0.02
NO_X	0.29
CO	0.06
VOC	45.57

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IV. *REGULATORY ANALYSIS*

The applicability of the appropriate regulations is straightforward and provided in the Facility Specific Requirements Section of the draft permit. Similarly, the Monitoring, Reporting and Recordkeeping necessary to demonstrate compliance with the applicable terms conditions and standards are provided in the Facility Specific Requirements Section of the draft permit.

New Source Performance Standards, NSPS of 40 CFR 60

40 CFR 60, Subpart VV: This regulation applies to pumps, Compressors, pressure relief devices, sampling connection systems, open-ended valves or lines, and flanges or other connectors that operate in VOC service I SOCMI process units for which construction, modification, or reconstruction commenced after January 5, 1981. The streams to which the fugitive components are now being added do not contain organic hazardous air pollutants; therefore, this regulation does not apply. These components will be added to the existing leak detection and repair (LDAR) program under the HON equipment leak requirements.

40 CFR 60, Subpart NNN: This regulation applies to distillation operations at a SOCMI facility. The modification to the existing HPEO column will increase the maximum hourly emissions and also inflict a capital expenditure. The facility shall comply with the requirements of 40 CFR 60, Subpart NNN by maintaining a Total Resource Effectiveness (TRE) Index value greater than 8.0.

40 CFR 60, Subpart RRR: This regulation applies to reactor process as at a SOCMI facility. The facility is not modifying any reactors due to this project; therefore the requirements of 40 CFR 60, Subpart RRR will not be triggered.

National Emission Standards for Hazardous Air Pollutants: NESHAP From Synthetic Organic Chemical Manufacturing Industry

40 CFR 63, Subpart F, G & H: A chemical manufacturing process unit (CMPU) that manufactured one or more SOCMI chemicals listed in Table 1 of 40 CFR 63, Subpart F and that uses as a reactant or manufactures as a product, or co-product, one or more of the organic hazardous air pollutants listed in Table 2 of 40 CFR 63, Subpart F is potentially subject to the SOCMI HON.

The equipment leak provisions of the HON apply to all equipment that operates in organic hazardous air pollutant service. Fugitive components that are being added are subject to this regulation. The facility shall include all the affected fugitive components into the existing LDAR program or shall maintain a TRE greater than 8.0

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Prevention of Significant Deterioration Applicability

The increase in emissions due to the HPEO-1 Project do not exceed the Prevention of Significant Deterioration (PSD) significance threshold, therefore, this project does not require netting or PSD review. The facility is located in a nonattainment area for NOx and VOC. The increase in emissions due to this project do not exceed the Nonattainment New Source Review (NNSR) significance threshold, therefore, NNSR is not required.

Air Modeling Analysis

No modeling was conducted as a part of this minor modification.

Comprehensive Toxic Air Pollutant Control Program-Chapter 51

Toxic air pollutant emissions from fugitives must be controlled to a degree that constitutes MACT. The facility complies with all applicable provisions of the Louisiana Air Toxics Program. The current emissions changes due to the project will be controlled by complying with the requirements of the HON, 40 CFR 63, Subpart G.

Maximum Achievable Control Technology (MACT) requirements

The Louisiana Air Toxics Program (LA MACT) requires a major source emitting any Class I or II pollutant at a rate that exceeds the minimum emission rate for that pollutant to demonstrate compliance with the Maximum Achievable Control Technology (MACT) standards. Additionally, the Louisiana Air Toxics Program requires a major source emitting any Class I, II, or III toxic air pollutant greater than the minimum emission rate for that pollutant to determine its status of compliance with the applicable ambient air standard (AAS) defined for the pollutant.

The requirements of the LA MACT apply to the EOEG-3 Tank Farm Fugitive Components and the EOEG-3 Fugitive Emissions. The facility shall comply with the requirements of 40 CFR 63, Subpart H for the components that contain hazardous air pollutants.

General Condition XVII Activities

The facility will comply with the applicable General Condition XVII Activities emissions as required by the operating permit rule. However, General Condition XVII Activities are not subject to testing, monitoring, reporting or recordkeeping requirements. For a list of approved General Condition XVII Activities, refer to Section VIII of the draft Part 70 permit.

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Insignificant Activities
All Insignificant Activities are authorized under LAC 33:III.501.B.5. For a list of approved Insignificant Activities, refer to Section IX of the draft Part 70 permit.

V. *PERMIT SHIELDS*
A permit shield was not requested.

VI. *PERIODIC MONITORING*
The Monitoring, Reporting and Recordkeeping necessary to demonstrate compliance with the applicable terms, conditions and standards are provided in the Facility Specific Requirements Section of the proposed permit.

VII. *APPLICABILITY AND EXEMPTIONS OF SELECTED SUBJECT ITEMS*
See Permit.

VIII. *STREAMLINED REQUIREMENTS*
This permit does not include any streamlined requirements.

IX. *GLOSSARY*

Carbon Monoxide (CO) – A colorless, odorless gas which is an oxide of carbon.

Maximum Achievable Control Technology (MACT) - The maximum degree of reduction in emissions of each air pollutant subject to LAC 33:III.Chapter 51 (including a prohibition on such emissions, where achievable) that the administrative authority, upon review of submitted MACT compliance plans and other relevant information and taking into consideration the cost of achieving such emission reduction, as well as any non-air-quality health and environmental impacts and energy requirements, determines is achievable through application of measures, processes, methods, systems, or techniques.

New Source Review (NSR) - A preconstruction review and permitting program applicable to new or modified major stationary sources of air pollutants regulated under the Clean Air Act (CAA). NSR is required by Parts C ("Prevention of Significant Deterioration of Air Quality") and D ("Nonattainment New Source Review").

Nitrogen Oxides (NO_x) - Compounds whose molecules consists of nitrogen and oxygen.

Organic Compound - Any compound of carbon and another element. Examples: Methane (CH_4), Ethane (C_2H_6), Carbon Disulfide (CS_2)

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Part 70 Operating Permit- Also referred to as a Title V permit, required for major sources as defined in 40 CFR 70 and LAC 33:III.507. Major sources include, but are not limited to, sources which have the potential to emit: ≥10 tons per year of any toxic air pollutant; ≥25 tons of total toxic air pollutants; and ≥100 tons per year of regulated pollutants (unless regulated solely under 112(r) of the Clean Air Act) (25 tons per year for sources in non-attainment parishes).

PM_{10}- Particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers as measured by the method in Title 40, Code of Federal Regulations, Part 50, Appendix J.

Potential to Emit (PTE) - The maximum capacity of a stationary source to emit any air pollutant under its physical and operational design.

Prevention of Significant Deterioration (PSD) – A New Source Review permitting program for major sources in geographic areas that meet the National Ambient Air Quality Standards (NAAQS) at 40 CFR Part 50. PSD requirements are designed to ensure that the air quality in attainment areas will not degrade.

RMACT – Refinery Maximum Achievable Control Technology

Sulfur Dioxide (SO_2) – An oxide of sulfur.

Title V permit – See Part 70 Operating Permit.

Volatile Organic Compound (VOC) - Any organic compound which participates in atmospheric photochemical reactions; that is, any organic compound other than those which the administrator of the U.S. Environmental Protection Agency designates as having negligible photochemical reactivity.