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

STATEMENT OF BASIS

Calumet Shreveport Refinery
Calumet Shreveport Lubricants & Waxes LLC
Shreveport, Caddo Parish, Louisiana
Agency Interest Number: 1214
Activity Number: PER20070011
Proposed Permit Number: 3065-V0

I. APPLICANT

Company:
Calumet Shreveport Lubricants & Waxes LLC - Shreveport Refinery
PO Box 3099
Shreveport, Louisiana 71033-3099

Facility:
Calumet Shreveport LLC
3333 Midway St
Shreveport, Caddo Parish, Louisiana

Approximate UTM coordinates are 425.20 kilometers East and 3592.40 kilometers North, Zone 15
SIC Code: 2911

II. FACILITY AND CURRENT PERMIT STATUS

Calumet Shreveport Lubricants & Waxes LLC - Shreveport Refinery is a designated Part 70 source. One Part 70 permit has been issued to the operating units for the Refinery. One Title V and one PSD permit associated with this Phase IV project is currently under review:

Permit No.	Unit or Source	Date Issued
0500-00005-V0	Entire Facility	12/16/2005
3065-V0	Phase IV Project	Under review
PSD-LA-732	Phase IV Project	Under review

III. PROPOSED PROJECT/PERMIT INFORMATION

Application
A permit application was submitted on November 16, 2007 requesting a Part 70 operating permit for the Calumet Shreveport Refinery. Additional information dated January 24 and February 19, 2008 was also submitted. The revised application was also received dated on June 24, 2008.

Calumet Shreveport Refinery
Calumet Shreveport Lubricants & Waxes LLC
Shreveport, Caddo Parish, Louisiana
Agency Interest Number: 1214

Project

Calumet Shreveport Lubricants and Waxes, LLC - the Shreveport Refinery has a permitted crude oil refining capacity of 65,000 barrels per day. Calumet produces lubricating oils, waxes, lube stocks, asphalt, diesel, and gasoline. Calumet refines crude oil by use of distillation, hydrofinishing dewaxing/desulfurization, hydrogenation, solvent extraction, hydrotreating, propane deasphalting and MEK dewaxing. Calumet also operates necessary equipment for required utilities such as cooling towers and boilers. Feed stocks and finished products are stored in pressurized tanks, floating roof tanks, cone roof tanks, and gas blanketed tanks. Pipelines, tank trucks and rail cars are used to deliver finished product to customers.

To improve the quality of existing refined products and to produce certain new products to meet market demands and new specifications, Calumet is proposing to upgrade the refinery with the Phase IV Project. The Phase IV project is not an expansion project; the refinery permitted production capacity of 65,000 barrels per day will not increase. The Phase IV Project is primarily a quality-driven project which is necessary to meet market and customer demands.

The target objectives and associated actions for the Phase IV Project are as follows:

1. The Phase IV Project will improve lube oil hydrotreating capabilities by adding a lube oil hydrofinisher to improve lube oil color, to increase lube oil stabilization, and to meet next generation specifications for heavy duty diesel engine oils.
2. A new Hydrogen Plant is being added to provide hydrogen for the Lube Oil Hydrofinish Unit.
3. A Propane Deasphalting Unit is being added to make more paving grade asphalt and to increase production of bright stock
4. A new Naphtha Unifiner is being added to provide improved treatment of naphtha streams.

The Phase IV Project upgrades and facility improvement include the addition of the following equipment:

- Addition of new Lube Oil Hydrofinisher Unit (7,000 BOPD), including one new 15 MM BTU/hr process heater;
- Addition of new Propane Deasphalting Unit (PDA, 6,600 BOPD), including one 20 MM BTU/hr process heater;
- Addition of new Naphtha Unifiner Unit (8,000 BOPD) including two new process heaters (8.4 and 13.7 MM BTU/hr);
- Addition of a new Hydrogen Plant including two 40 MM BTU/hr reformers; the reformers will be equipped with ultra-low NOx burners (ULNB),

Calumet Shreveport Refinery
Calumet Shreveport Lubricants & Waxes LLC
Shreveport, Caddo Parish, Louisiana
Agency Interest Number: 1214

- Addition of a new 40 MM BTU/hr reformer for the existing hydrogen plant; the reformer will be equipped with a ULNB burner;
- Fugitive emissions from components associated with the project;
- Fugitive emissions from drains associated with the project;
- Two 25,000 bbl lube oil storage tanks;
- Two 50,000 bbl lube oil storage tanks;
- Two 10,000 bbl asphalt storage tanks;
- Four 5,000 bbl asphalt storage tanks;
- One 10,000 bbl lube oil storage tank;
- One 5,000 bbl lube oil storage tank; and
- Addition of eight asphalt tank heaters (1.6 MM BTU/hr each).

Calumet has analyzed the proposed project for Prevention of Significant Deterioration (PSD) applicability and has determined that the PSD significance level is exceeded for Volatile Organic Compounds (VOCs) and nitrogen dioxide (NO_2); therefore a PSD review is required for these pollutants.

Calumet has conducted a Significant Impact Analysis (SIA) by modeling net emission increases of NO_2 resultant from the proposed project. The SIA results indicate that the project's impact is insignificant (i.e. the project increases will not cause or significantly contribute to an exceedance for the National Ambient Air Quality standard (NAAQS) or PSD Increment standards).

Proposed Permit

Permit 3065-V0 will be the initial Part 70 operating permit for the Phase IV Project. PSD-LA-732 will be the PSD permit for the Phase IV project.

Permitted Air Emissions

Estimated emissions in tons per year are as follows:

Pollutant	Permitted
PM_{10}	6.30
SO_2	22.38
NO_x	46.39
CO	69.89
VOC*	44.84

Calumet Shreveport Refinery
Calumet Shreveport Lubricants & Waxes LLC
Shreveport, Caddo Parish, Louisiana
Agency Interest Number: 1214

*LAC 33:III Chapter 51 Toxic Air Pollutants (TAPs):

Pollutant	Permitted
1,3-Butadiene	< 0.01
2,2,4-Trimethylpentane	< 0.01
Barium (and compounds)	< 0.01
Benzene	< 0.01
Cadmium (and compounds)	< 0.01
Chromium VI (and compounds)	< 0.01
Ethyl benzene	0.06
Formaldehyde	0.06
Hydrogen sulfide	0.02
Methyl ethyl ketone	0.80
Naphthalene	0.04
Nickel (and compounds)	0.01
Toluene	0.81
Xylene (mixed isomers)	0.04
Zinc (and compounds)	0.02
n-Hexane	1.50
Total	3.36

IV REGULATORY ANALYSIS

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

Applicability and Exemptions of Selected Subject Items

See section X and XI of the Title V permit.

Prevention of Significant Deterioration/Nonattainment Review

Estimated actual emission increases due to the project in tons per year are as follows:

Pollutant	Contemp. Increase	Project Increase	Net Change	PSD de minimis	PSD Review Required
PM_{10}	-	+ 6.30	+ 6.30	15	No
SO_2	-	+ 22.38	+ 22.38	40	No
NO_x	+30.60	+46.39	+76.99	40	Yes
CO	-	+69.89	+69.89	100	No
VOC	+24.99	+44.84	+69.83	40	Yes

Calumet Shreveport Refinery
Calumet Shreveport Lubricants & Waxes LLC
Shreveport, Caddo Parish, Louisiana
Agency Interest Number: 1214

Calumet is located in an attainment area. The increase in VOC and NO_x emissions is greater than 40 tons per year and requires a netting analysis. The contemporaneous netting period is from August 1, 2003 to August 1, 2008. After netting, the net change for VOC is 69.83 tons per year and NO_x is 76.99 tons per year, which exceeds attainment area major modification significant net increase limit (40 TPY). Therefore, PSD review is required with Best Available Control Technology (BACT) analysis.

A PSD review is required for the modification of an existing major source, which results in a significant increase in emissions of a regulated pollutant. PSD review is not required for PM_{10}, SO_2, and CO in this case. PSD is required for VOC and NO_x emissions, which will be permitted under PSD-LA -732.

This permit was reviewed for compliance with 40 CFR 70, the Louisiana Air Quality Regulations, PSD, New Source Performance Standards (NSPS), and National Emission Standards for Hazardous Air Pollutants (NESHAP).

This facility is a major source of toxic air pollutants (TAPs) pursuant to LAC 33:III.Chapter 51.

The increases in CO and SO_2 emissions are greater then 50% of PSD thresholds, therefore periodic monitoring is required as per LAC 33:III.507.H.1.a, which was promulgated on December 20, 2007.

BEST AVAILABLE CONTROL TECHNOLOGY

NO_X and VOC emissions are above PSD significance levels and must undergo PSD analyses. The selection of control technology was based on the BACT analysis using a "top down" approach and included consideration of control of toxic materials. BACT is to be applied to new emission units and for existing units that will be affected by the Phase IV Project.

Calumet proposes that proper burner design and operations for heaters and an LDAR program complying with current 'streamlined monitoring program' be considered BACT for VOC. Calumet will utilize ultra-low NOx burners (ULNB) and proper combustion control as BACT (for NOx from process heaters over 20 MM BTU/hr) to control NOx emissions to a degree equivalent to the Lowest Achievable Emission Rates (LAER) to fulfill BACT requirements of the PSD program.

Streamlined Louisiana Refinery MACT Equipment Leak Monitoring Program

Calumet Shreveport Refinery
Calumet Shreveport Lubricants & Waxes LLC
Shreveport, Caddo Parish, Louisiana
Agency Interest Number: 1214

It is required that the Calumet Shreveport Refinery comply with a streamlined equipment leak monitoring program. Compliance with the streamlined program shall serve to comply with each of the fugitive emission monitoring programs being streamlined.

Permittee shall comply with a streamlined equipment leak monitoring program. Compliance with the streamlined program in accordance with this specific condition shall serve to comply with each of the fugitive emission monitoring programs being streamlined, as indicated in the following table. Non-compliance with the streamlined program in accordance with this specific condition may subject the permittee to enforcement action for one or more of the applicable fugitive emissions programs.

i) Permittee shall apply the streamlined program to the combined universe of components subject to any of the programs being streamlined. Any component type which does not require periodic monitoring under the overall most stringent program (LAC 33:III.Chapter 51) shall be monitored as required by the most stringent requirements of any other program being streamlined and will not be exempted. The streamline program will include any exemptions based on size of component available in any of the programs being streamlined.

ii) Permittee shall use leak definitions and monitoring frequency based on the overall most stringent program. Percent leaker performance shall be calculated using the provisions of the overall most stringent program. Annual monitoring shall be defined as once every four quarters. Some allowance may be made in the first year of the streamlined program in order to allow for transition from existing monitoring schedules.

iii) Permittee shall comply with recordkeeping and reporting requirements of the overall most stringent program. Semiannual reports shall be submitted on January 31 and July 31, to cover the periods July 1 through December 31 and January 1 through June 30, respectively. The semiannual reports shall include any monitoring performed within the reporting periods.

iv) The facility shall comply with the requirements of the Louisiana MACT Determination for Refinery Equipment Leaks (LDREL) dated July 26, 1994, except as noted below:

A. A connector is in VOTAP service if a piece of equipment that either contains or contacts a volatile fluid (liquid or gas) that is at least 5% of the sum of all Class I and II organic toxic air pollutants.

B. Connectors that are determined to be leaking by visual, audible, olfactory, or any other detection method shall be monitored, repaired, recorded, and reported according to the provisions in the Louisiana Refinery Equipment Leaks Determination and any applicable equipment leak programs.

C. Connectors associated with valves shall be monitored according to the valve requirements of the applicable program. However, each associated connector shall be monitored as part of the valve and not as separate component. A connector that is associated with a valve and is determined to be leaking shall result in the valve being recorded as a leaking valve and included in the calculation of percent valves leaking.

D. Permittee shall submit to the Office of Environmental Assessment, Environmental Technology Division reports containing information concerning valves. Calumet Lubricants shall include on these reports the number of connectors associated with the valves that were monitored and the number of connectors found leaking, but shall not report a percent connectors leaking.

Unit or Plant Site	Program Being Streamlined	Stream Applicability	Overall Most Stringent Program
Calumet Shreveport Refinery	Louisiana MACT Determination for Refineries	≥ 5% VOTAP	Louisiana MACT Determination for Refineries
	40 CFR 63 Subpart CC-Refinery MACT Modified HON Option	≥ 5% VOHAP	
	40 CFR 61 Subparts J and V (LAC 33:III.5133 and 5171)-NESHAP for Equipment Leaks of Benzene	≥ 10% VHAP (Benzene)	
	40 CFR 60 Subparts VV and GGG (LAC 33:III.3730-3749 and 4780-4783)-NSPS for Equipment Leaks of VOC in SOCMI or Refineries	≥ 10% VOC	
	LAC 33:III.2121-Louisiana Fugitive Emission Control for Specified Parishes	≥ 10% VOC	
	LAC 33:III.5109 – Louisiana MACT Determination for Non-HON Sources	≥ 5% VOTAP	

MACT Requirements

The Shreveport Refinery is a major source of toxic air pollutants. The facility is in compliance with the Refinery MACT I standards. Air Toxics Compliance Plan was approved on July 5, 1995.

Air Quality Analysis

Prevention of Significant Deterioration regulations require an analysis of existing air quality for NOx and VOC pollutants emitted in significant amounts from the proposed Calumet Shreveport Refinery Phase IV Project

Environmental Protection Agency Regulatory Model (AERMOD) modeling indicates maximum ground level concentrations of NO_X are below the ambient significance levels and preconstruction monitoring exemption levels. Therefore, no preconstruction monitoring, increment analysis, or refined modeling is required for these 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 the Section VIII – General Condition XVII Activities of the proposed permit.

Insignificant Activities

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

V. PERMIT SHIELD

No permit shield is requested in these permits.

VI. PERIODIC MONITORING

See 'Specific Requirements' section of the permit.

VII. 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.

Hydrogen Sulfide (H_2S) – A colorless inflammable gas having the characteristic odor of rotten eggs, and found in many mineral springs. It is produced by the reaction of acids on metallic sulfides, and is an important chemical reagent.

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 consist 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)

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: $\geq$ 10 tons per year of any toxic air pollutant; $\geq$ 25 tons of total toxic air pollutants; and $\geq$ 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.

Sulfur Dioxide (SO_2) – An oxide of sulfur.

Sulfuric Acid (H_2SO_4) – A highly corrosive, dense oily liquid. It is a regulated toxic air pollutant under LAC 33:III.Chapter 51.

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.