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

STATEMENT OF BASIS

Chalmette Refining, L.L.C.
Hydrocracker Unit, Pretreater No. 3, Reformer No. 3 and Light Ends Plant
Oil Movements and Loading
Flares No. 1 and 2
Aromatics
Sulfur Recovery Unit, Hydrodesulfurization Unit, Amine Treating Unit, Sour Water Stripper, Waste Gas System, Benzene Recovery Unit and Liquid Petroleum Gas Recovery
Chalmette, St. Bernard Parish, Louisiana
Agency Interest Number: 1376
Activity Number: PER19960009, 19960010, 19960011, 19960012, 19960014
Proposed Permits 3015-V0, 3004-V0, 3016-V0, 3017-V0, 3023-V0

I. *APPLICANT:*

Company:
Chalmette Refining, L.L.C.
Post Office Box 1007
Chalmette, Louisiana 70044

Facility:
Chalmette Refining, L.L.C – Chalmette Refinery
Hydrocracker Unit, Pretreater No. 3, Reformer No. 3 and Light Ends Plant
Oil Movements and Loading
Flares No. 1 and 2
Aromatics
Sulfur Recovery Units
500 W. St. Bernard Highway, Chalmette, St. Bernard Parish, Louisiana
Approximate UTM coordinates are 792.12 kilometers East and 3341.95 kilometers North, Zone 15

Responsible Official:
Mr. J.A. Stroink, Refinery Manager

II. *FACILITY AND CURRENT PERMIT STATUS*

Chalmette Refinery, L.L.C. (CRLLC) operates an oil refinery in Chalmette, Louisiana, in St. Bernard Parish. St. Bernard Parish is currently designated as attainment for all regulated air pollutants. The Units and Plants are a major source subject to the Part 70 operating permit program because it is part of a stationary source that has the potential to emit over the major source emissions levels for criteria pollutants. In addition, this stationary source has the potential to emit 25 or more tons per year of aggregate TAPs.

The Chalmette Refinery is bordered by the Mississippi River to the south, Calciner Industries, Inc. and old Kaiser Aluminum Company to the west, St. Bernard Highway with light commercial and residential areas to the north and Palmisano Street with light commercial and residential areas to the east. Chalmette Refinery is a joint venture between ExxonMobil Corporation and Petroleos de Venezuela (PDV), the Venezuelan

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national oil company. The refinery is an integrated crude operation (high conversion) which includes crude distillation, catalytic reforming, fluid catalytic cracking (FCC), hydrocracking, HF alkylation, delayed coking, and aromatics processing units. The refinery's product capabilities include gasoline, diesel, benzene/toluene/xylene (BTX) production, distillates, and sulfur recovery as well as by-products such as petroleum coke.

The process units that exist at the Chalmette Refinery site include Aromatics; Utilities; Waste Water Treatment Plant; No. 1 Crude/Coker; No. 2 Crude/Coker; Cat Feed Hydrotreater / No. 1 Pretreater / No. 1 Reformer/Gasoline Hydrotreater Unit; Sulfur Recovery Unit / HDS / AMU / SWS / WGS / BRU / LPG; No. 1 Flare & No. 2 Flare; Hydrocracker Unit / PT3 / RF3 / LEP; Fluidized Catalytic Cracking Unit/Alkylation; and Oil Movements and Loading.

The Hydrocracker Unit consists of Stage Reactors, Distillation and Makeup Compressors. The Pretreater No. 3 consists of a Reactor Section and a Stripper Section. The Reformer No. 3 consists of a Reactor Section and a Distillation Section. The Light Ends Plant consists of a Vapor Section and a Liquid Section. These units remove impurities and produce salable products.

Permitted emissions from the Hydrocracker Unit, Pretreater No. 3, Reformer No. 3 and Light Ends Plant in tons per year are as follows:

Pollutant	Emissions
PM_{10}	24.12
SO_2	61.40
NO_X	506.08
CO	122.62
VOC	309.00

The Oil Movements consists of The East Tank Farm (ETF) which in turn consists of gasoline section, diesel section, and kero section; The West Tank Farm (WTF) which is divided into gas oils storage (sweet, sour and low sulfur diesel), naphtha storage, and other storage; Light Ends Storage (LES) & Loading which include the following sections, Propane Section, Propane-Propylene Section, Butane Section, Gasoline Section, and Olefins Section; Bulk Plant Wharf; Railcar & Truck Loading; Marine Vapor Recovery Flare; Crude Terminal; Treating Area; Sour Water Storage; Slop Oil Storage; and

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Laboratory Area. This unit stores, receives and loads out products as and when required.

Permitted emissions from the Oil Movements & Loading in tons per year are as follows:

Pollutant	Emissions
PM_{10}	2.53
SO_2	0.02
NO_X	8.50
CO	46.26
VOC	1429.12

Flares No. 1 and 2 consists of No. 1 Flare system which in turn consists of the main flare collection headers, the flare gas recovery compressors (electric motor driven), the flare knockout drums, and the staged flare burners (candelabra style) and the No. 2 Flare system consists of the main flare collection headers, the flare knockout drums and the single flare burner (pencil style). The Flare Gas Management Project – This project which was approved under an "Authorization to Construct Approval to Operate" dated July 28, 2004, is under construction and will start operation in 2006. The overall emission decrease due to this project is approximately 1,250 tons per year of sulfur dioxide and approximately 150 tons of other criteria pollutants.

Permitted emissions from the No. 1 and 2 Flares in tons per year are as follows:

Pollutant	Emissions
PM_{10}	11.98
SO_2	52.73
NO_X	40.32
CO	219.38
VOC	107.38

The Aromatics area consists of Sulfolane Unit, Orthoxylene Unit, Toluene Disproportionate Unit, Paraxylene Unit, Paraxyle 3rd Stage, and Isomerization Unit.

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These units extracts, separates, purifies, isomerizes, and discharges saleable products at the refinery.

Total permitted emissions from the Aromatics based on the current operating conditions which reflect the updated emission factors in tons per year are as follows:

Pollutant	Emissions
PM_{10}	22.55
SO_2	59.54
NO_X	418.14
CO	130.53
VOC	403.31

Sulfur Recovery Unit (SRU) consists of Acid Gas Wash Column, a Reactor Section, a Tail Gas Cleanup Section (TGCU), and Thermal Oxidizer (two trains common vent). The primary functions of these sections are to process hydrogen sulfide rich gas streams received from the Sour Water Stripper (SWS) and the **Amine Treating Unit** (AMU). **Hydrodesulfurization** (HDS) Unit – This unit consists of a Reaction Section and a Stripper Section. **Sour Water Stripper** (SWS) unit consists of a Degasser Section and a Stripper Section. **Waste Gas System** (WGS) – This unit consists of a High Pressure Train and a Low Pressure Train. **Benzene Recovery Unit** (BRU) unit consists of a Benzene Stripper and a BRU Skid. The primary function of this unit is to remove gas and liquid hydrocarbons, including benzene, from the process water from a number of units in the refinery. The **Liquefied Petroleum Gas Recovery** unit consists of a Compressor and a Separator.

Ultra Low Sulfur Diesel (ULSD) Project: The proposed project consists of the addition of a new larger HDS Reactor and a new Recycle Gas Scrubber as well as associated fugitive components for hydrogen makeup/recycle compressors, piping for accessories and tanks.

Sulfur Pit Gas Recovery (SPGR) Project: The purpose of the SPGR Project is to recover vapors from the SRU sulfur pits. The vapors from the sulfur pits will be recycled to the SRU for processing. There will be a reduction in sulfur dioxide emissions from the Thermal Oxidizer to ensure compliance with the requirements of NSPS, Subpart J –

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Standards of Performance for Petroleum Refineries. The project includes an addition of a new blower or an eductor along with associated fugitive components, instrumentation and controls. This project is independent of the ULSD Project.

The ULSD and SPGR project actual emissions increase is estimated in tons per year as follows:

Pollutant	Emissions	PSD Significance Levels	Netting Analysis Required
PM_{10}	0.63	15.00	No
SO_2	1.71	40.00	No
NO_X	13.43	40.00	No
CO	3.42	100.00	No
VOC	10.58	40.00	No

Total permitted emissions from the SRU, HDS, AMU, SWS, WGS, BRU and LPG based on the current operating conditions which reflect the updated emission factors and the modifications in tons per year are as follows:

Pollutant	Emissions
PM_{10}	6.48
SO_2	66.43
NO_X	235.23
CO	385.82
VOC	258.70

The total overall emissions changes from the Chalmette Refinery based on the Part 70 permits (as permitted) compared with the current permitted emissions in tons per year are as follows:

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Pollutant	Before	After	Change
PM_{10}	364.00	241.10	-122.90
SO_2	677.50(CAP)	509.50	-168.00
NO_X	3476.90(CAP)	3205.60	-271.30
CO*	1596.20(CAP)	2053.60	+457.40
VOC	4158.50	4127.40	-31.10

*
There is an overall reduction in the criteria pollutant from the facility except for the CO emissions which are greater than the current permitted limits because of the updated federal emission factors (AP-42) for CO.

Timely applications for initial Part 70 Title V permits were submitted by the company, therefore, the facility continues to operate pursuant to 40 CFR 70.7 provided in the Part 70 Title V Program.

The Part 70 operating permits are for Hydrocracker Unit, Pretreater No. 3, Reformer No. 3 and Light Ends Plant; Oil Movements and Loading; Flares No. 1 and 2; Aromatics; Sulfur Recovery Unit, Hydrodesulfurization Unit, Amine Treating Unit, Sour Water Stripper, Waste Gas System, Benzene Recovery Unit and Liquid Petroleum Gas Recovery which operate under Permit Numbers 2500-00005-02, 2073, 2226 (M-3), 2622, 2717, 2736, 2745, 2746, and 2766.

Several state permits remain in effect for this facility until replaced by a Part 70 Permit, these include:

Permit #	Units or Sources	Date Issued
2500-00005-02	Multiple Units	11/18/1988
2226(M-3)	Multiple Units	11/27/1996
2822	WWTP (New Project)	01/29/2003

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

Permit #	Units or Sources	Date Issued
2801-V0	GHU	09/15/2002
2500-00005-V0	Utilities Plant	11/07/2005

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

Permit #	Units or Sources	Date Issued
2822-V0	Wastewater Treatment Plant	Under Review
3004-V0	Oil Movements & Loading	Under Review
3015-V0	HCU	Under Review
3011-V0	Cat Feed Hydrotreater	Under Review
3022-V0	FCCU	Under Review
3016-V0	Flare No. 1 & 2	Under Review
3019-V0	Aromatics	Under Review
3023-V0	SRU	Under Review
3018-V0	Crude/Coker No. 1	Under Review
2933-V0	Crude/Coker No. 2	Under Review

III. *PROPOSED PERMIT / PROJECT INFORMATION*

Proposed Permits

Initial applications and Emission Inventory Questionnaires (EIQ), were submitted by Chalmette Refining, L.L.C on October 14, 1996 for all the above units and these applications and EIQs were later updated and revised. Additional information was also received for the above referenced applications and EIQs.

Project description

The facility proposes to modify the Hydrodesulfurization Unit to incorporate the Ultra Low Sulfur Diesel Project as stated above to comply with the Title II (Emission Standards for Moving Sources) of the Clean Air Act which was recently promulgated as a final rule titled "Control of Air Pollution from New Motor Vehicles: Heavy Duty Engine and Vehicle Standards and Highway Diesel Fuel Sulfur Control Requirements" (Heavy-Duty Engine and Highway Diesel Fuel Rule) on January 18, 2001.

The SPGR Project is to recover vapors from the SRU sulfur pits. There will be a reduction in sulfur dioxide emissions from the Thermal Oxidizer and also it will ensure compliance with the requirements of NSPS, Subpart J – Standards of Performance for Petroleum Refineries. This project is independent of the ULSD Project.

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IV. *REGULATORY ANALYSIS*

The applicability of the appropriate regulations is straightforward and is provided in the Facility Specific Requirements Section of the proposed permits. 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 proposed permits.

National Emission Standards for Hazardous Air Pollutants: NESHAP From Benzene Waste Operations (BWON)

Chemical manufacturing plants, coke by-product plant and petroleum refineries are potentially subject to the provisions of BWON. Oil water separators, individual drain systems, stream stripping units, and other equipment that meet the definition of a waste management unit are subject to BWON. A waste management unit is defined as a piece of equipment used in the handling, storage, treatment, or disposal of waste. A waste is any material resulting from industrial operations that is discarded or accumulated, stored, or treated prior to discarded, recycled, or discharged. BWON specifically lists the following waste streams to which this regulation do not apply: 1) Waste in the form of gases or vapors that is emitted from process fluids; 2) Waste that is contained in a segregated storm water sewer system; and 3) Any gaseous stream from a waste management unit, treatment process, or wastewater treatment system routed to a fuel gas system.

The facility generates a total annual benzene (TAB) quantity of 10 megagrams per year or greater. The facility elects to take the 6 megagrams per year option as per the requirements of 40 CFR 61.342(e) where the total uncontrolled benzene quantity for the wastes shall not be greater than 6 megagrams per year.

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

A chemical manufacturing process unit (CMPU) that manufactures 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. Some of the Chemical Manufacturing Process Units (CMPUs), located elsewhere

in the refinery, may generate maintenance wastewater and Group 2 process wastewater and route it to the WWTP. Therefore, the WWTP is subject to Subpart F Maintenance Wastewater requirements and Subpart G Group 2 Process Wastewater requirements.

National Emission Standards for Hazardous Air Pollutants: NESHAP From Petroleum Refineries

Petroleum refining process unit that contains or contacts one or more of the HAPs listed in Table 1 of Subpart CC is potentially subject to RMACT.

There are fugitive components within the facility in organic HAP service. Therefore, the units are subject to the equipment leak provisions of this rule and CRLLC demonstrates compliance by complying with the provisions of 40 CFR 63.648(c), the modified HON option.

A process wastewater stream in a refining process unit that contains one or more of the HAPs listed in Table 1 of Subpart CC are potentially subject to RMACT. Wastewater components within the process units are associated with petroleum refining process units. Therefore, the wastewater provisions of the RMACT are applicable. Group 2 streams are not subject to any control, monitoring, recordkeeping, or reporting requirements under RMACT. Group 1 wastewater streams must demonstrate compliance with RMACT by complying with NESHAP Part 61 Subpart FF, BWON.

The units contain tanks that receive maintenance wastewater and wastewater streams that are subject to the wastewater provisions of RMACT. When determining whether a tank must comply with the storage vessel provisions or the wastewater provisions of the RMACT, the function of the tank (whether the tank stores a waste or a product for use or reuse) is used as the basis of the determination. As defined in RMACT Subpart CC, a wastewater tank is not a storage vessel. Notably, Group 2 wastewater tanks are not subject to any control, monitoring, recordkeeping, or reporting requirements under RMACT.

National Emission Standards for Hazardous Air Pollutants: NESHAP From Petroleum Refineries

The petroleum refining process unit that contains or contacts one or more of the HAPs listed in Table 1 of Subpart CC is potentially subject to RMACT. Leaks from equipment in organic HAP service that are located in a petroleum refining process unit are subject to RMACT. Equipment in organic HAP service in the WWTP Area is subject to the

RMACT. CRLLC demonstrates compliance with this rule by complying with the provisions of 40 CFR 63.648. A process wastewater stream in a petroleum refining process unit that contains one or more of the HAPs listed in Table 1 of Subpart CC are potentially subject to RMACT. The WWTP receives process wastewater streams and, therefore, the wastewater provisions of the RMACT are applicable to the WWTP Area.

Notably, the benzene concentration of the wastewater streams generated in the WWTP Areas is less than 10 ppmw. Therefore, the wastewater stream can be classified as a Group 2 stream. There are no controls, monitoring, recordkeeping, or reporting requirements for Group 2 wastewater streams. However, the Vacuum Trucks within the WWTP may load and transport process wastewater streams from refinery units that can be classified as Group 1 streams. Per 40 CFR 63.647(a), Group 1 wastewater streams must demonstrate compliance with RMACT by complying with NESHAP Part 61 Subpart FF, BWON.

The WWTP area contains tanks that receive maintenance wastewater and wastewater streams that are subject to the wastewater provisions of RMACT. When determining whether a tank must comply with the storage vessel provisions or the wastewater provisions of the RMACT, the function of the tank (whether the tank stores a waste or a product for use or reuse) is used as the basis of the determination. As defined in RMACT Subpart CC, a wastewater tank is not a storage vessel. Notable, the WWTP area contains Group 2 wastewater tanks. Group 2 wastewater tanks are not subject to any requirements under RMACT.

The equipment leak provisions of Subpart CC apply to all equipment that operates in organic HAP service. Equipment includes all pumps, compressors, pressure relief devices, sampling connections, open-ended valves or lines, valves, flanges and other connectors, product accumulator vessels, and control devices, or systems required by Subpart CC. However, there are no fugitive components within the WWTP Area in organic HAP service. Therefore, the WWTP Area is not subject to the equipment leak provisions of this rule.

Prevention of Significant Deterioration Applicability

These applications are a comprehensive updates to the initial Part 70 Air Permit Applications and does propose minor modification to the units referenced above except for the ULSD Project and the SPGR Project. These are two separate projects and the increases in emissions from these projects are less than the PSD threshold; therefore

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NSR/PSD review is not required.

Air Modeling Analysis

No modeling was conducted as a part of this comprehensive update to the initial Part 70 Air Permit Applications. However, screen modeling indicated that the overall emissions from the facility will not impact National Ambient Air Quality Standards.

Comprehensive Toxic Air Pollutant Control Program-Chapter 51

Toxic air pollutant emissions from fugitives must be controlled to a degree that constitutes MACT. The units comply with all applicable provisions of the Louisiana Air Toxics Program.

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 storage tanks and to the units as a whole. Chalmette Refining demonstrates compliance with the LA MACT requirements by complying with the most stringent applicable federal or state air toxics regulations.

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 proposed Part 70 permits.

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 proposed Part 70 permits.

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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 permits.

VII. *APPLICABILITY AND EXEMPTIONS OF SELECTED SUBJECT ITEMS*

See Proposed Permits.

VIII. *STREAMLINED REQUIREMENTS*

These proposed permits do not include any streamlined requirements.

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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)

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.

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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.