



DEPARTMENT OF ENVIRONMENTAL QUALITY

KATHLEEN BABINEAUX BLANCO

GOVERNOR

MIKE D. McDANIEL, Ph.D.

SECRETARY

Certified Mail No.:

Agency Interest No. 1376
Activity No.: PER20070009

Mr. Richard A. Igercich
Refinery Manager, Chalmette Refinery
Chalmette Refining, L.L.C.
Post Office Box 1007
Chalmette, Louisiana 70044

RE: PSD-LA-199(M-6), Chalmette Refinery, Chalmette Refining, L.L.C., Chalmette, St. Bernard Parish, Louisiana

Dear Mr. Igercich:

Enclosed is your Permit PSD-LA-199(M-6). Should you have any questions concerning the permit, contact Syed Quadri at 225-219-3123.

Sincerely,

Chuck Carr Brown, Ph.D.
Assistant Secretary

Date

SGQ

c: US EPA Region VI

ENVIRONMENTAL SERVICES

: PO BOX 4313, BATON ROUGE, LA 70801-0313

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PSD-LA-199(M-6), AI NO. 1376

**AUTHORIZATION TO OPERATE AN EXISTING FACILITY
PURSUANT TO THE PREVENTION OF SIGNIFICANT DETERIORATION
REGULATIONS IN LOUISIANA ENVIRONMENTAL REGULATORY CODE,
LAC 33:III.509**

In accordance with the provisions of the Louisiana Environmental Regulatory Code, LAC 33:III.509,

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

is authorized to operate the Louisiana Refining Division, a refinery at

500 West St. Bernard Highway
Chalmette
St. Bernard Parish, Louisiana

subject to the emissions limitations, monitoring requirements and other conditions set forth hereinafter.

This permit and authorization to construct shall expire at midnight on _____, 2009, unless physical on site construction has begun by such date, or binding agreements or contractual obligations to undertake a program of construction of the source are entered into by such date.

Signed this _____ day of _____, 2007.

Chuck Carr Brown, Ph.D.
Assistant Secretary
Office of Environmental Services

BRIEFING SHEET

**CHALMETTE REFINERY
AGENCY INTEREST NO. 1376
CHALMETTE REFINING, L.L.C.
CHALMETTE, ST. BERNARD PARISH, LOUISIANA
PSD-LA-199(M-6)**

PURPOSE

To obtain a modified PSD permit for the Chalmette Refinery at Chalmette.

RECOMMENDATION

Approval of the proposed permit.

REVIEWING AGENCY

Louisiana Department of Environmental Quality, Office of Environmental Services.

PROJECT DESCRIPTION

Chalmette Refining, L.L.C. is a petroleum refinery located along the left descending bank of the Mississippi River at mile marker 89 above Head-of-Passes at Chalmette, St. Bernard Parish, Louisiana. The refinery is an integrated crude operation (high conversion) which includes crude distillation, catalytic reforming, fluid catalytic cracking (FCC), hydrocracking, Hydrogen Fluoride (HF) alkylation, delayed coking, and aromatics processing units. The refinery's product capabilities include gasoline, diesel, benzene/toluene/xylene (BTX), distillates, and elemental sulfur, as well as by products such as petroleum coke and liquefied petroleum gases (LPGs).

Chalmette Refinery proposes the following changes:

Chalmette Refining, L.L.C, Chalmette Refinery, will undertake Thermal De-NOx Project as per the requirements of U.S. EPA Consent Decree, a NSR Global Settlement (Civil Action No. 05-4662 B(i)) between U.S. EPA and Intervener State of Louisiana versus Chalmette Refining, L.L.C. filed on April 26, 2006, to reduce NOx emissions from the Fluid Catalytic Cracking Unit (FCCU). This project is independent of the previous Oxygen Enrichment Project approved in the current Part 70 Permit No. 3022-V0 dated January 30, 2007.

The facility will install new equipment and existing equipment will be modified or affected (no modification). New equipment include an aqueous ammonia (29 wt. %) storage tank; rail tank car and truck loading racks for ammonia; truck loading racks for hydrogen; equipment to load CO Promoter to the system and to handle catalyst; and associated fugitive equipment (pumps, piping, process analyzers, control valves, and instrumentation). Additional steam demand will be approximately 35,000 lb/hr, and hydrogen demand will be 35,000 scf/hr. The additional steam will be supplied by the refinery, and the hydrogen will be supplied by the refinery or purchased. The upstream and downstream operations will not be affected. There will be a substantial increase in CO

BRIEFING SHEET

**CHALMETTE REFINERY
AGENCY INTEREST NO. 1376
CHALMETTE REFINING, L.L.C.
CHALMETTE, ST. BERNARD PARISH, LOUISIANA
PSD-LA-199(M-6)**

emissions of approximately 450 tons per year (collateral increase) due to the Thermal De-NOx Project (permit to permit change).

The Thermal De-NOx Project emissions increases irrespective of the decreases in tons per year are as follows:

Pollutant	2005/2006 Average Emissions(a)	Post Thermal De-NOx Project Emissions(b)	Incremental Emissions(c)	Total Emissions Increase(d)	Net Increase
PM ₁₀	87.90	73.40	1.80	75.20	- 12.70
SO ₂	30.10	53.80	3.50	57.30	+ 27.20
NO _x	246.90	160.50	34.20	194.70	- 52.20
CO	209.40	732.80	25.10	757.90	+ 548.50
VOC	2.60	3.70	1.30	5.00	+ 2.40

$d = (b+c)$ and $\text{Change} = (d - a)$

Prevention of Significant Deterioration (PSD) review is required as the total estimated emissions increase of CO is greater than the PSD significance level of 100 tons per year; therefore, netting is required. There are no creditable contemporaneous emissions increases or decreases within the contemporaneous period since emission changes were considered in the prior PSD Permit No. PSD-LA-199(M-5) dated January 30, 2007. A PSD review is required for the criteria pollutant CO as shown in the above table.

Under PSD regulations, a Best Available Control Technology (BACT) analysis is required for the emissions units or equipment that is physically modified or is new and emits pollutants that increase above the significance levels. The increase in CO emissions is significant; therefore, BACT analysis is required. The CO emissions will be controlled by adopting good engineering practices and operating the FCCU in full-burn mode.

TYPE OF REVIEW

The proposed permit was reviewed in accordance with PSD regulations for CO emissions and a BACT analysis was conducted for the Thermal De-NOx Project.

BEST AVAILABLE CONTROL TECHNOLOGY

Carbon Monoxide emissions are above PSD de minimis levels and must undergo PSD review analysis. Controls for CO emissions were analyzed using a "top down" approach.

BRIEFING SHEET

**CHALMETTE REFINERY
AGENCY INTEREST NO. 1376
CHALMETTE REFINING, L.L.C.
CHALMETTE, ST. BERNARD PARISH, LOUISIANA
PSD-LA-199(M-6)**

The facility is installing a Thermal De-NOx as an add-on control device based on the requirement of the consent decree referenced above to reduce NOx emissions from the FCCU. As a result of the Thermal De-NOx Project, there will be an increase in CO emissions. The CO emissions will be controlled by observing good engineering practices and operating the FCCU in full-burn mode which was determined as BACT. The CO emissions will be limited to less than or equal to 500 ppmv at 0% oxygen on a hourly average basis and 300 ppmv at 0% oxygen on a rolling 365-day average. These limits are not applicable during periods of startup/shutdown.

AIR QUALITY IMPACT ANALYSIS

PSD regulations require an analysis of existing air quality for those pollutants emitted in significant amounts from a proposed modification at the facility.

National Ambient Air Quality Standards (NAAQS) and PSD Increment models demonstrated compliance with federal standards for CO (1-Hour and 8-Hour).

ADDITIONAL IMPACTS

The air quality analysis indicated that post project concentrations of the criteria pollutants are below the PSD ambient significance levels; therefore, there will be no significant impact on area soils, vegetation, or visibility.

PROCESSING TIME

Application Dated:	March 29, 2007
Application Updated:	-
Effective Completeness:	August 1, 2007

PUBLIC NOTICE

A notice requesting public comment on the permit was published in The Advocate, Baton Rouge, Louisiana; and in The St. Bernard Voice, Arabi, Louisiana, on ***** **, 2007. All comments received from the general public and organizations will be considered before a decision is taken on the proposed permit. Copies of the public notice were mailed out to individuals on the mailing list maintained by Office of Environmental Services on ***** **, 2007. The proposed permit was sent to EPA via e-mail on ***** **, 2007.

PRELIMINARY DETERMINATION SUMMARY

**CHALMETTE REFINERY
AGENCY INTEREST NO. 1376
CHALMETTE REFINING, L.L.C.
CHALMETTE, ST. BERNARD PARISH, LOUISIANA
PSD-LA-199(M-6), AUGUST 1, 2007**

I. APPLICANT

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

II. LOCATION

The Chalmette Refining L.L.C. (Chalmette Refinery) is located at 500 West St. Bernard Highway, Chalmette, Louisiana 70044; approximate UTM coordinates are 213.03 kilometers East and 3314.90 kilometers North, Zone 15.

III. PROJECT DESCRIPTION

Chalmette Refining, L.L.C., Chalmette Refinery, now proposes to undertake Thermal De-NOx Project as per the requirements of U.S. EPA Consent Decree, a NSR Global Settlement (Civil Action No. 05-4662 B(i)) between US EPA and State of Louisiana verses Chalmette Refining, L.L.C. filed on April 26, 2006, to reduce NOx emissions.

In order to achieve this goal, Chalmette Refinery will install new equipment and existing equipment will be modified or affected (no modification). New equipment include an aqueous ammonia (29 wt. %) storage tank; rail tank car and truck loading racks for ammonia; truck loading racks for hydrogen; equipment to load CO Promoter to the system and to handle catalyst; and associated fugitive equipment (pumps, piping, process analyzers, control valves, and instrumentation). Additional steam demand will be approximately 35,000 lb/hr, and hydrogen demand will be 35,000 scf/hr. The additional steam will be supplied by the refinery, and the hydrogen will be supplied by the refinery or purchased. The upstream and downstream operations will not be affected. There will be a substantial increase in CO emissions of approximately 450 tons per year (collateral increase) due to the Thermal De-NOx Project (permit to permit change).

PRELIMINARY DETERMINATION SUMMARY

**CHALMETTE REFINERY
AGENCY INTEREST NO. 1376
CHALMETTE REFINING, L.L.C.
CHALMETTE, ST. BERNARD PARISH, LOUISIANA
PSD-LA-199(M-6), AUGUST 1, 2007**

The Thermal De-NO_x Project emissions increases irrespective of the decreases in tons per year are as follows:

Pollutant	2005/2006 Average Emissions(a)	Post Thermal De-NO _x Project Emissions(b)	Incremental Emissions(c)	Total Emissions Increase(d)	Change
PM ₁₀	87.90	73.40	1.80	75.20	- 12.70
SO ₂	30.10	53.80	3.50	57.30	+ 27.20
NO _x	246.90	160.50	34.20	194.70	- 52.20
CO	209.40	732.80	25.10	757.90	+ 548.50
VOC	2.60	3.70	1.30	5.00	+ 2.40

d = (b+c) and Change = (d - a)

IV. SOURCE IMPACT ANALYSIS

A proposed net increase in the emission rate of a regulated pollutant above de minimis levels for proposed major modifications requires review under PSD regulations, LAC 33:III.509. PSD permit reviews of proposed new or modified major stationary sources require the following analyses:

- A. A determination of the Best Available Control Technology (BACT);
- B. Analysis of the existing air quality and a determination of whether or not preconstruction or postconstruction monitoring will be required;
- C. An analysis of the source's impact on total air quality to ensure compliance with the National Ambient Air Quality Standards (NAAQS);
- D. An analysis of the PSD increment consumption;
- E. An analysis of the source related growth impacts;
- F. An analysis of source related impacts on soils, vegetation, and visibility;
- G. A Class I Area impact analysis; and
- H. An analysis of the impact of toxic compound emissions.

A. BEST AVAILABLE CONTROL TECHNOLOGY

Under current PSD regulations, an analysis of "top down" BACT is required for the control of each regulated pollutant emitted from a new major source in excess of the specified significant emission rates. The top down approach to the BACT process involves

PRELIMINARY DETERMINATION SUMMARY

**CHALMETTE REFINERY
AGENCY INTEREST NO. 1376
CHALMETTE REFINING, L.L.C.
CHALMETTE, ST. BERNARD PARISH, LOUISIANA
PSD-LA-199(M-6), AUGUST 1, 2007**

determining the most stringent control technique available for a similar or identical source. If it can be shown that this level of control is infeasible based on technical, environmental, energy, and/or cost considerations, then it is rejected and the next most stringent level of control is determined and similarly evaluated. This process continues until a control level is arrived at which cannot be eliminated for any technical, environmental, or economic reason. A technically feasible control strategy is one that has been demonstrated to function efficiently on identical or similar processes.

CO emissions are above the PSD de minimis levels and must undergo PSD analysis. Controls for CO emissions were analyzed using a "top down" approach.

BACT Analysis for the FCCU:

Control techniques for CO include 1) Good Combustion Practices; 2) Catalytic Reduction; and 3) CO Reducing Catalyst.

Good Combustion Practices: The FCCU Regenerators operate in full-burn or partial-burn mode. The FCCU at the facility operates as a full-burn unit. A full-burn unit operates with excess oxygen up to 3% by volume on a dry basis to oxidize CO to CO₂ (complete oxidation). The minimum excess oxygen operation is a function of bed temperature, gas residence time in the bed, and the efficient design of the regenerator (mixing of oxygen). A complete reaction (oxidation) will result in CO concentration of about 100-150 ppmv without Thermal De-NOx. Good Combustion Practices is considered a feasible technology.

Catalytic Reduction: In this process the exhaust gases pass through a catalytic bed that oxidizes the residual CO to CO₂. The oxidation reaction typically requires a temperature of 700 to 1000 degrees Fahrenheit. Catalytic reduction is not feasible in the waste stream with large amounts of particulate matter, as the particulate will deposit on the catalyst (fouling) rendering it inefficient. Catalyst Reduction technology is technically infeasible.

CO Reducing Catalyst: A full-burn mode operation of FCCU will optimize CO emissions but will result in increasing NOx emissions – the lower the CO emissions, the higher the expected NOx emissions. The ExxonMobil Engineering and Research Company, which holds the patent on the Thermal De-NOx process, does not recommend using a CO Reducing Catalyst in conjunction with Thermal De-NOx system to control CO emissions. Thermal De-NOx is to reduce NOx emissions; therefore, the use of CO reducing catalyst will hinder the purpose of the Thermal De-NOx as an add-on control device for NOx emissions. CO Reducing Catalyst is detrimental in order to reduce NOx emissions per the Consent Decree; therefore, CO Reducing Catalyst is rejected.

Based on the above discussion, good combustion practices is the most technically feasible control technique for CO emissions control.

PRELIMINARY DETERMINATION SUMMARY

**CHALMETTE REFINERY
AGENCY INTEREST NO. 1376
CHALMETTE REFINING, L.L.C.
CHALMETTE, ST. BERNARD PARISH, LOUISIANA
PSD-LA-199(M-6), AUGUST 1, 2007**

Chalmette Refinery proposes Good Combustion Practices along with Full Burn-Mode operation as BACT to control CO emissions from the FCCU in conjunction with the Thermal De-NOx. The CO emissions will be limited to 500 ppmv at 0% oxygen on a hourly basis and 300 ppmv at 0% oxygen on a 365-day rolling average. During the startup/shutdown and malfunction of the FCCU the permittee shall comply with the requirements of the Consent Decree under Civil Action No. 05-4662 Section "B", Paragraph 29, between U.S. EPA and Chalmette Refining, L.L.C and the Intervener State of Louisiana.

The total overall emissions changes for the Chalmette Refinery from the FCCU and Alkylation Unit in tons per year are as follows:

Pollutant	Before	After	Change
PM ₁₀	83.41	78.67	- 4.74
SO ₂	66.84	66.84	-
NO _x	467.65	241.90	- 225.75
CO	309.09	759.69	+ 450.60
VOC	170.56	69.14	- 101.42

B. ANALYSIS OF EXISTING AIR QUALITY

PSD regulations require an analysis of existing air quality for the impacts of those pollutant emissions which increase significantly from a proposed major source. CO is the pollutant of concern in this case. Note the increase in CO (collateral increase) emissions is due to the installation of Thermal De-NOx, a control device, to reduce NOx emissions.

Dispersion modeling of CO emissions from the facility indicated that for CO (1-Hour and 8-hour) are less than the applicable NAAQS.

C. NATIONAL AMBIENT AIR QUALITY STANDARDS (NAAQS) ANALYSIS

Modeling predicted compliance with CO (1-Hour and 8-Hour) standards.

D. PSD INCREMENT ANALYSIS

PSD Increment analysis is not required.

E. SOURCE RELATED GROWTH IMPACTS

Source related growth impacts analysis is not required.

PRELIMINARY DETERMINATION SUMMARY

**CHALMETTE REFINERY
AGENCY INTEREST NO. 1376
CHALMETTE REFINING, L.L.C.
CHALMETTE, ST. BERNARD PARISH, LOUISIANA
PSD-LA-199(M-6), AUGUST 1, 2007**

F. SOILS, VEGETATION, AND VISIBILITY IMPACTS

Carbon monoxide, the pollutant of consideration for the PSD analysis, is colorless; therefore, there will be no significant impact on visibility. The impact on soils and vegetation based on the EPA screening guidelines (EPA 450/2-81-078) is negligible.

G. CLASS I AREA IMPACTS

Breton National Wildlife Area, the nearest Class I area, is approximately 90 kilometers from the Chalmette Refinery site. However, even though the CO emissions limit is increasing on an annual basis, PSD increments for CO have not been defined. Therefore, a CO increment analysis is not necessary. It can be safely inferred that there will not be any impact on the Class I area.

H. TOXIC IMPACT

This permit modification will not affect toxic emissions from the facility.

V. CONCLUSION

The Department of Environmental Quality - Office of Environmental Services has made a preliminary determination to approve the PSD permit modification for the Chalmette Refining, L.L.C., Chalmette Refinery, in Chalmette, St. Bernard Parish, Louisiana, subject to the attached specific and general conditions. In the event of a discrepancy in the provisions found in the application and those in this Preliminary Determination Summary, the Preliminary Determination Summary shall prevail.

SPECIFIC CONDITIONS

**CHALMETTE REFINERY
AGENCY INTEREST NO. 1376
CHALMETTE REFINING, L.L.C.
CHALMETTE, ST. BERNARD PARISH, LOUISIANA
PSD-LA-199(M-6)**

This permit is issued under the following conditions:

The permittee is authorized to operate in conformity with the specifications submitted to the Louisiana Department of Environmental Quality (LDEQ) as analyzed in LDEQ's document entitled "Preliminary Determination Summary," dated August 1, 2007, and subject to the following emission limitations and other specific conditions. Specifications submitted are contained in the application and Emission Inventory Questionnaire (EIQ) dated March 29, 2007, as well as additional information submitted as of August 13, 2007.

1. Permittee shall determine the NO_x and CO emissions factors for the combustion sources, which do not have continuous emission monitoring system (CEMs) by utilizing the following equations. NO_x equation will adjust the vendor emission factor while the CO equation will determine the effect of fuel and air mixing at high temperature.

Equation for Determining NO_x Emission Factor:

$$\text{InServiceNO}_x\text{EF} = (\text{VendorEF}) * (\text{F}_{\text{O}_2}) * (\text{F}_{\text{CAT}}) * (\text{F}_{\text{BWT}}) * (\text{F}_{\text{FUEL}}) * (\text{F}_{\text{HUMIDITY}}) * (\text{F}_{\text{CONDITION}}) * (\text{F}_{\text{LOAD}})$$

Where:

InServiceNO_xEF: Emission Factor used to calculate actual NO_x emissions (lb/MM BTU)
Vendor EF: The base emissions factor obtained from vendor data
F_{xx}: The function based on parameter 'xx' (i.e., oxygen content, combustion air temperature, bridge wall temperature, fuel type, humidity, heater condition and load) that adjusts the vendor-based NO_x emission factor.

Equation for Determining CO Emission Factor:

$$\text{InServiceCO(ppmv)} = \{A / (\% \text{Oxygen} + 0.1)^2\} + B, \text{ which is converted to lb/hr}$$

Where:

A: Expected CO level at 1% excess oxygen
B: Expected CO level at 10% excess oxygen

2. To demonstrate compliance with the limitations of this permit, permittee shall conduct emissions monitoring and perform compliance/emissions tests as listed in Table VI using methods specified by the cited regulations and 40 CFR 60, Appendix

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AGENCY INTEREST NO. 1376
CHALMETTE REFINING, L.L.C.
CHALMETTE, ST. BERNARD PARISH, LOUISIANA
PSD-LA-199(M-6)**

- A, Method 7E - Determination of Nitrogen Oxides Emissions from Stationary Sources for NO_x emissions and Method 10 - Determination of Carbon Monoxide Emissions from Stationary Sources for NO_x and CO emissions. The tests shall be conducted according to the schedule listed in Louisiana Air Emission Permit General Condition VIII. Alternative compliance tests may be performed with the approval of the Office of Environmental Assessment, Air Quality Assessment Division.
3. Where CEMs are used to show compliance with NO_x and CO emissions limits, the permittee shall maintain and operate the CEMs in accordance with the quality assurance and quality control measures as per NSPS, 40 CFR 60, Appendix F. In lieu of NSPS, 40 CFR 60, Appendix B, Performance Specification 2 and 4, and Appendix F, 5.1.1, 5.1.3, and 5.1.4, the permittee shall conduct either a Relative Accuracy Audit (RAA) or Relative Accuracy Test Audit (RATA) once every twelve calendar quarters, provided that a Cylinder Gas Audit (CGA) is conducted each calendar quarter (Consent Decree). These records shall be kept on site and available for inspection by the Office of Environmental Compliance, Surveillance Division.

**CHALMETTE REFINERY
 AGENCY INTEREST NO. 1376
 CHALMETTE REFINING, L.L.C.
 CHALMETTE, ST. BERNARD PARISH, LOUISIANA
 PSD-LA-199(M-6), AUGSUT 1, 2007**

TABLE I: BACT COST SUMMARY

Control Alternatives for Process Heaters and Boilers	Availability/Feasibility	Negative Impacts (a)	Control Efficiency %	Emissions Reduction (TPY)	Annualized Cost (\$)	Cost Effectiveness (\$/Ton)	Notes
NA*							

* Thermal De-NOx is an add on control device to reduce NOx emissions; CO emissions are a collateral increase.

CHALMETTE REFINERY
AGENCY INTEREST NO. 1376
CHALMETTE REFINING, L.L.C.
CHALMETTE, ST. BERNARD PARISH, LOUISIANA
PSD-LA-199(M-6), AUGUST 1, 2007

TABLE II: AIR QUALITY ANALYSIS SUMMARY ($\mu\text{g}/\text{m}^3$)

Pollutant	Averaging Period	Preliminary Screening Conc.	Significant Monitoring Conc.	Current Monitored Conc.	Level of Significant Impact	Maximum Modeled Conc.	Modeled + Background Conc.	NAAQS	Modeled PSD Increment Consumption	Allowable Class II PSD Increment
CO*	1-Hour	37.33	NR	NR	2000	NR	-	40000	NR	NR
	8-Hour	26.03	575	NR	500	NR	-	10000	NR	NR
NR = Not Required NAAQS = National Ambient Air Quality Standards										

* Based on significance modeling

CHALMETTE REFINERY
AGENCY INTEREST NO. 1376
CHALMETTE REFINING, L.L.C.
CHALMETTE, ST. BERNARD PARISH, LOUISIANA
PSD-LA-199(M-6), AUGSUT 1, 2007

TABLE III: COMPARISON BETWEEN OLD AND UPDATED EMISSION FACTORS		
EMISSION POINT/DESCRIPTION	CURRENT US EPA AP-42 FACTOR NOx/CO (lb/MM BTU)	PERMITTED PART 70 PERMITS AND PSD-LA-199(M-6) FACTOR NOx/CO (Avg. lb/MM BTU)
1, No. 1 Crude Heater (F-5)	0.2745/0.0824	0.1845/0.10
2, No. 1 Crude Heater (F-6)	0.2745/0.0824	0.1845/0.10
4, No. 1 Crude Vacuum Heater (F-1)	0.098/0.0824	0.1039/0.04
26, No. 1 Coker Heater (F-2800)	0.098/0.0824	0.117/0.04
37, No. 2 Crude Heater (F-7401)	0.049/0.0824	0.035/0.04
43, No. Crude Vacuum Heater (F-7601)	0.098/0.0824	0.0944/0.04
60, No. 2 Coker Heater (F-8101)	0.049/0.0824	0.05/0.04
65, No. Crude Gas Oil Heater (F-7410)	0.049/0.0824	0.05/0.04
39, HDS Heater (F-3300)	0.098/0.0824	0.1325/0.04
40, HDS Stripper Reboiler (F-3301)	0.098/0.0824	0.1068/0.04
46, SRU Train 1/2 Thermal Oxidizer	0.068/0.37	0.6063/2.2149
50, Waste Gas Compressor No. 1	2.27/3.51	1.0/0.5
51, Waste Gas Compressor No. 2	2.27/3.51	1.0/0.5
52, Waste Gas Compressor No. 3	1.94/0.353	1.0/0.75

**CHALMETTE REFINERY
 AGENCY INTEREST NO. 1376
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 CHALMETTE, ST. BERNARD PARISH, LOUISIANA
 PSD-LA-199(M-6), AUGSUT 1, 2007**

TABLE III: COMPARISON BETWEEN OLD AND UPDATED EMISSION FACTORS		
EMISSION POINT/DESCRIPTION	CURRENT US EPA AP-42 FACTOR NOx/CO (lb/MM BTU)	PERMITTED PART 70 PERMITS AND PSD-LA-199(M-6) FACTOR NOx/CO (Avg. lb/MM BTU)
53, Waste Gas Compressor No. 4	2.27/3.51	2.2/3.5
27, Boiler No. 402	0.1667/0.0235	0.1541/0.15
35, Boiler No. 7	0.2745/0.0824	0.419/0.15
7, Ortho Rerun Reboiler (F-1500)	0.098/0.0824	0.108/0.04
9, No. 3 Ortho Reboiler (F-1600)	0.098/0.0824	0.1068/0.04
11, No. 1 Hot Oil Heater (F-1201)	0.2745/0.0824	0.1689/0.04
14, No. 2 Hot Oil Heater (F-1105)	0.2745/0.0824	0.1597/0.04
16, Prefractionator Reboiler (F1106)	0.098/0.0824	0.1008/0.04
56, ISOM Recycle Compressor 1/2	0.098/3.51	0.5/0.6
17A/B, Isom Heater (F-600)	0.098/0.0824	0.1524/0.04
85A, TDU Detol Reboiler (F-4201)	0.049/0.0824	0.055/0.04
85B, TDU Heater (F-4202)	0.049/0.0824	0.0594/0.04
85C, TDU Preheater (F-4203)	0.049/0.0824	0.0464/0.04
8A/B, No. 2 Ortho Reboiler (F-3001)	0.2745/0.0824	0.1799/0.04
41, No. 1 Reformer Heaters (F-7501-7)	0.1863/0.0824	0.2529/0.04

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 AGENCY INTEREST NO. 1376
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 PSD-LA-199(M-6), AUGSUT 1, 2007**

TABLE III: COMPARISON BETWEEN OLD AND UPDATED EMISSION FACTORS		
EMISSION POINT/DESCRIPTION	CURRENT US EPA AP-42 FACTOR NOx/CO (lb/MM BTU)	PERMITTED PART 70 PERMITS AND PSD-LA-199(M-6) FACTOR NOx/CO (Avg. lb/MM BTU)
44, CFHT Reactor Heater (F-7701)	0.098/0.0824	0.1951/0.04
61, CFHT Fract. Reboiler (F-7702)	0.098/0.0824	0.2263/0.04
45, FCC Heater (F-7801)	0.098/0.0824	0.1838/0.04
47, FCC Regenerator Flue Gas Scrubber	NA	
48, FCC Regen. Aux. Burner (F-7802)	0.098/0.0824	2.2222/1.2996
49, Alky Iso stripper Reboiler (F-7901)	0.098/0.0824	0.0864/0.04
28, No. 1 Flare (Candelabra)	0.068/0.37	0.083/0.452
29, No. 2 Flare (Pencil)	0.068/0.37	0.0833/0.453
20, No. Hot Oil Heater (F-2506)	0.2745/0.0824	0.1386/0.04
21, No. 3 Pretreater Heater (F-2504)	0.098/0.0824	0.1548/0.04
22, No. 3 Pretreater Reboiler (F-2505)	0.098/0.0824	0.1352/0.04
24, Hydrocracker Splitter Reboiler (F-2304)	0.098/0.0824	0.1068/0.04
38, No. 3 Reformer Rx 3 Preheater (F-2503)	0.098/0.0824	0.1709/0.04

CHALMETTE REFINERY
AGENCY INTEREST NO. 1376
CHALMETTE REFINING, L.L.C.
CHALMETTE, ST. BERNARD PARISH, LOUISIANA
PSD-LA-199(M-6), AUGSUT 1, 2007

TABLE III: COMPARISON BETWEEN OLD AND UPDATED EMISSION FACTORS		
EMISSION POINT/DESCRIPTION	CURRENT US EPA AP-42 FACTOR NOx/CO (lb/MM BTU)	PERMITTED PART 70 PERMITS AND PSD-LA-199(M-6) FACTOR NOx/CO (Avg. lb/MM BTU)
19A, No. 3 Reformer Rx 1 Preheater (F-2501)	0.2745/0.0824	0.1956/0.04
19B, No. 3 Reformer Rx 2 Preheater (F-2502)	0.2745/0.0824	0.1851/0.04
23C, Hydrocracker 1 st /2 nd Stage Rx Preheater (F-2301/2302)	0.098/0.0824	0.1273/0.04
23D, Hydrocracker 1 st /2 nd Stage Rx Preheater (F-2307/2308)	0.098/0.0824	0.1273/0.04
25A/B, Hydrocracker Stabilizer Reboiler (F-2303)	0.098/0.0824	0.1529/0.04

CHALMETTE REFINERY
AGENCY INTEREST NO. 1376
CHALMETTE REFINING, L.L.C.
CHALMETTE, ST. BERNARD PARISH, LOUISIANA
PSD-LA-199(M-6), AUGSUT 1, 2007

TABLE IV: SUMMARY OF PROPOSED BACT

Source Description	Pollutant	Most Feasible BACT Selected
FCCU	CO	Good Combustion Practices along with Full-Burn Mode 300 ppmv at 0% oxygen on a 365-day rolling average 500 ppmv at 0% oxygen on a one hour average

CHALMETTE REFINERY
AGENCY INTEREST NO. 1376
CHALMETTE REFINING, L.L.C.
CHALMETTE, ST. BERNARD PARISH, LOUISIANA
PSD-LA-199(M-6), AUGUST 1, 2007

TABLE V: MAXIMUM ALLOWABLE EMISSION RATES

EQT	ID/EIQ	Capacity MM BTU/hr	Maximum Permitted Emission Rates														
			PM/PM ₁₀		SO ₂		NO _x		CO		VOC		H ₂ S		H ₂ SO ₄		
			Lbs/hr	tons/yr	Lbs/hr	tons/yr	Lbs/hr	tons/yr	Lbs/hr	tons/yr	Lbs/hr	tons/yr	Lbs/hr	tons/yr	Lbs/hr	tons/yr	
EQT065	1	175					34.99	126.90	35.00	68.80							
EQT067	2	175					34.99	126.90	35.00	68.80							
EQT068	4	90					12.90	25.90	7.42	10.00							
EQT069	26	77					11.96	26.80	6.35	9.10							
EQT028	37	210					10.50	29.13	17.30	33.29							
EQT029	43	110					12.62	34.72	9.06	14.72							
EQT030	60	210					15.75	43.80	17.30	35.04							
EQT031	65	185					13.88	37.23	15.24	29.78							
EQT191	39	83					15.47	29.59	6.84	8.94							
EQT192	40	64					10.93	14.97	5.27	5.61							
EQT193	46	60					53.02	55.77	205.02	203.73							
EQT194	50	4					8.00	13.14	4.00	6.57							
EQT195	51	4					8.00	13.14	4.00	6.57							
EQT196	52	8					16.00	21.90	12.00	16.43							
EQT197	53	10					30.00	86.72	50.00	137.97							
EQT019	27	380					90.80	CAP	114.00	CAP							
EQT020	35	160					93.26	CAP	48.00	CAP							
EQT204	7	51					8.71	12.30	4.20	4.56							
EQT206	9	132					22.55	21.98	10.88	8.23							
EQT207	11	160					29.82	103.57	13.18	24.53							

**CHALMETTE REFINERY
 AGENCY INTEREST NO. 1376
 CHALMETTE REFINING, L.L.C.
 CHALMETTE, ST. BERNARD PARISH, LOUISIANA
 PSD-LA-199(M-6), AUGUST 1, 2007**

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EQT	ID/EIQ	Capacity MM BTU/hr	Maximum Permitted Emission Rates														
			PM/PM ₁₀		SO ₂		NO _x		CO		VOC		H ₂ S		H ₂ SO ₄		
			Lbs/hr	tons/yr	Lbs/hr	tons/yr	Lbs/hr	tons/yr	Lbs/hr	tons/yr	Lbs/hr	tons/yr	Lbs/hr	tons/yr	Lbs/hr	tons/yr	
EQT208	14	173					32.24	97.94	14.26	24.53							
EQT209	16	47					7.30	11.04	3.87	4.38							
EQT211	56	5					5.00	9.64	5.00	11.56							
EQT210	17A/B	70					13.05	35.39	5.77	9.29							
EQT212	85A	86					5.80	15.67	7.09	11.39							
EQT213	85B	44					2.97	9.62	3.63	6.48							
EQT214	85C	41					2.76	4.88	3.38	4.21							
EQT205	8A/B	182					43.49	96.11	15.00	21.37							
EQT057	41	417					130.62	343.45	34.36	54.31							
EQT059	44	70					17.62	41.86	5.77	8.58							
EQT060	61	52					13.09	44.60	4.29	7.88							
EQT183	45	70					15.14	45.08	5.77	9.81							
EQT184	47	625,000 lb/hr					246.70	160.50	300.25	732.80							
EQT185	48	55					9.37	2.24	11.00	1.31							
EQT186	49	134					15.37	34.08	11.04	15.77							
EQT254	28	180					3.49	3.82	18.99	20.79							
EQT255	29	180					33.33	36.50	181.36	198.59							
EQT243	20	190					35.41	75.90	15.66	21.90							
EQT244	21	31					5.78	16.30	2.55	4.20							
EQT245	22	41					7.64	15.40	3.38	4.56							

CHALMETTE REFINERY
AGENCY INTEREST NO. 1376
CHALMETTE REFINING, L.L.C.
CHALMETTE, ST. BERNARD PARISH, LOUISIANA
PSD-LA-199(M-6), AUGUST 1, 2007

TABLE V: MAXIMUM ALLOWABLE EMISSION RATES

EQT	ID/EIQ	Capacity MM BTU/hr	Maximum Permitted Emission Rates															
			PM/PM ₁₀		SO ₂		NO _x		CO		VOC		H ₂ S		H ₂ SO ₄			
			Lbs/hr	tons/yr	Lbs/hr	tons/yr	Lbs/hr	tons/yr	Lbs/hr	tons/yr	Lbs/hr	tons/yr	Lbs/hr	tons/yr	Lbs/hr	tons/yr	Lbs/hr	tons/yr
EQT248	24	51					8.71	11.70	4.20	4.38								
EQT250	38	84					17.10	49.40	6.92	11.56								
EQT241	19A	173					35.22	140.50	14.26	28.73								
EQT242	19B	173					35.22	123.20	14.26	26.63								
EQT246	23C	46					8.57	13.39	3.79	4.20								
EQT247	23D	46					8.57	13.39	3.79	4.20								
EQT249	25A/B	92					17.15	46.90	7.58	12.26								

CHALMETTE REFINERY
AGENCY INTEREST NO. 1376
CHALMETTE REFINING, L.L.C.
CHALMETTE, ST. BERNARD PARISH, LOUISIANA
PSD-LA-199(M-6), AUGUST 1, 2007

TABLE VI: COMPLIANCE TEST REQUIREMENTS

Emission Point	Control Devices / Work Practices	Test Method	Criteria Being Tested	Notes
EQT019, 020, 028, 029, 030, 031, 057, 059, 060, 065, 067, 183, 186, 193, 197, 205, 207, 208, 210, 241, 242, 243, 249, and 250 See note below		40 CFR 60, Appendix A, Method 1-4 40 CFR 60, Appendix A, Method 7E 40 CFR 60, Appendix A, Method 10 40 CFR 60, Appendix F	Stack parameters Nitrogen oxide CO	CEM for NO _x and O ₂ (where applicable) CEM for CO and O ₂ (where applicable)
EQT184	CEM	40 CFR 60, Appendix A, Method 1-4 40 CFR 60, Appendix A, Method 7E 40 CFR 60, Appendix A, Method 10 40 CFR 60, Appendix F	Stack parameters Nitrogen oxide CO	CEM for NO _x and O ₂ CEM for CO and O ₂

Note: If the combustion devices are identical, test 50% of them. If the 50% result is a fraction, round it off to the next numerical digit. If the facility is testing the combustion devices under the Part 70 permit requirements then the equipment will not have to be retested pursuant to the requirements of this permit.

LOUISIANA AIR EMISSION PERMIT GENERAL CONDITIONS

- I. This permit is issued on the basis of the emissions reported in the application for approval of emissions and in no way guarantees that the design scheme presented will be capable of controlling the emissions to the type and quantities stated. Failure to install, properly operate and/or maintain all proposed control measures and/or equipment as specified in the application and supplemental information shall be considered a violation of the permit and LAC 33:III.501. If the emissions are determined to be greater than those allowed by the permit (e.g. during the shakedown period for new or modified equipment) or if proposed control measures and/or equipment are not installed or do not perform according to design efficiency, an application to modify the permit must be submitted. All terms and conditions of this permit shall remain in effect unless and until revised by the permitting authority.

- II. The permittee is subject to all applicable provisions of the Louisiana Air Quality Regulations. Violation of the terms and conditions of the permit constitutes a violation of these regulations.

- III. The Emission Rates for Criteria Pollutants, Emission Rates for TAP/HAP & Other Pollutants, and Specific Requirements sections or, where included, Emission Inventory Questionnaire sheets establish the emission limitations and are a part of the permit. Any operating limitations are noted in the Specific Requirements or, where included, Tables 2 and 3 of the permit. The synopsis is based on the application and Emission Inventory Questionnaire dated March 29, 2007; as well as additional information as of August 13, 2007.

- IV. This permit shall become invalid, for the sources not constructed, if:
 - A. Construction is not commenced, or binding agreements or contractual obligations to undertake a program of construction of the project are not entered into, within two (2) years (18 months for PSD permits) after issuance of this permit, or;
 - B. If construction is discontinued for a period of two (2) years (18 months for PSD permits) or more.

The administrative authority may extend this time period upon a satisfactory showing that an extension is justified.

This provision does not apply to the time period between construction of the approved phases of a phased construction project. However, each phase must commence construction within two (2) years (18 months for PSD permits) of its projected and approved commencement date.

- V. The permittee shall submit semiannual reports of progress outlining the status of construction, noting any design changes, modifications or alterations in the construction schedule which have or may have an effect on the emission rates or ambient air quality levels. These reports shall continue to be submitted until such time as construction is certified as being complete. Furthermore, for any significant change in the design, prior approval shall be obtained from the Office of Environmental Services, Air Permits Division.

- VI. The permittee shall notify the Department of Environmental Quality, Office of Environmental Services, Air Permits Division within ten (10) calendar days from the date that construction is certified as complete and the estimated date of start-up of operation. The appropriate Regional

LOUISIANA AIR EMISSION PERMIT GENERAL CONDITIONS

Office shall also be so notified within the same time frame.

- VII. Any emissions testing performed for purposes of demonstrating compliance with the limitations set forth in paragraph III shall be conducted in accordance with the methods described in the Specific Conditions and, where included, Tables 1, 2, 3, 4, and 5 of this permit. Any deviation from or modification of the methods used for testing shall have prior approval from the Office of Environmental Assessment, Air Quality Assessment Division.
- VIII. The emission testing described in paragraph VII above, or established in the specific conditions of this permit, shall be conducted within sixty (60) days after achieving normal production rate or after the end of the shakedown period, but in no event later than 180 days after initial start-up (or restart-up after modification). The Office of Environmental Assessment, Air Quality Assessment Division shall be notified at least (30) days prior to testing and shall be given the opportunity to conduct a pretest meeting and observe the emission testing. The test results shall be submitted to the Air Quality Assessment Division within sixty (60) days after the complete testing. As required by LAC 33:III.913, the permittee shall provide necessary sampling ports in stacks or ducts and such other safe and proper sampling and testing facilities for proper determination of the emission limits.
- IX. The permittee shall, within 180 days after start-up and shakedown of each project or unit, report to the Office of Environmental Compliance, Enforcement Division any significant difference in operating emission rates as compared to those limitations specified in paragraph III. This report shall also include, but not be limited to, malfunctions and upsets. A permit modification shall be submitted, if necessary, as required in Condition I.
- X. The permittee shall retain records of all information resulting from monitoring activities and information indicating operating parameters as specified in the specific conditions of this permit for a minimum of at least five (5) years.
- XI. If for any reason the permittee does not comply with, or will not be able to comply with, the emission limitations specified in this permit, the permittee shall provide the Office of Environmental Compliance, Enforcement Division with a written report as specified below.
- A. A written report shall be submitted within 7 days of any emission in excess of permit requirements by an amount greater than the Reportable Quantity established for that pollutant in LAC 33.I.Chapter 39.
 - B. A written report shall be submitted within 7 days of the initial occurrence of any emission in excess of permit requirements, regardless of the amount, where such emission occurs over a period of seven days or longer.
 - C. A written report shall be submitted quarterly to address all emission limitation exceedances not included in paragraphs A or B above. The schedule for submittal of quarterly reports shall be no later than the dates specified below for any emission limitation exceedances occurring during the corresponding specified calendar quarter:
 1. Report by June 30 to cover January through March
 2. Report by September 30 to cover April through June
 3. Report by December 31 to cover July through September

**LOUISIANA AIR EMISSION PERMIT
GENERAL CONDITIONS**

4. Report by March 31 to cover October through December
- D. Each report submitted in accordance with this condition shall contain the following information:
1. Description of noncomplying emission(s);
 2. Cause of noncompliance;
 3. Anticipated time the noncompliance is expected to continue, or if corrected, the duration of the period of noncompliance;
 4. Steps taken by the permittee to reduce and eliminate the noncomplying emissions; and
 5. Steps taken by the permittee to prevent recurrences of the noncomplying emissions.
- E. Any written report submitted in advance of the timeframes specified above, in accordance with an applicable regulation, may serve to meet the reporting requirements of this condition provided all information specified above is included. For Part 70 sources, reports submitted in accordance with Part 70 General Condition R shall serve to meet the requirements of this condition provided all specified information is included. Reporting under this condition does not relieve the permittee from the reporting requirements of any applicable regulation, including LAC 33.I.Chapter 39, LAC 33.III.Chapter 9, and LAC 33.III.5107.
- XII. Permittee shall allow the authorized officers and employees of the Department of Environmental Quality, at all reasonable times and upon presentation of identification, to:
- A. Enter upon the permittee's premises where regulated facilities are located, regulated activities are conducted or where records required under this permit are kept;
 - B. Have access to and copy any records that are required to be kept under the terms and conditions of this permit, the Louisiana Air Quality Regulations, or the Act;
 - C. Inspect any facilities, equipment (including monitoring methods and an operation and maintenance inspection), or operations regulated under this permit; and
 - D. Sample or monitor, for the purpose of assuring compliance with this permit or as otherwise authorized by the Act or regulations adopted thereunder, any substances or parameters at any location.
- XIII. If samples are taken under Section XII.D. above, the officer or employee obtaining such samples shall give the owner, operator or agent in charge a receipt describing the sample obtained. If requested prior to leaving the premises, a portion of each sample equal in volume or weight to the portion retained shall be given to the owner, operator or agent in charge. If an analysis is made of such samples, a copy of the analysis shall be furnished promptly to the owner, operator or agency in charge.
- XIV. The permittee shall allow authorized officers and employees of the Department of Environmental Quality, upon presentation of identification, to enter upon the permittee's premises to investigate potential or alleged violations of the Act or the rules and regulations

**LOUISIANA AIR EMISSION PERMIT
GENERAL CONDITIONS**

adopted thereunder. In such investigations, the permittee shall be notified at the time entrance is requested of the nature of the suspected violation. Inspections under this subsection shall be limited to the aspects of alleged violations. However, this shall not in any way preclude prosecution of all violations found.

- XV. The permittee shall comply with the reporting requirements specified under LAC 33:III.919 as well as notification requirements specified under LAC 33:III.927.
- XVI. In the event of any change in ownership of the source described in this permit, the permittee and the succeeding owner shall notify the Office of Environmental Services, Air Permits Division, within ninety (90) days after the event, to amend this permit.
- XVII. Very small emissions to the air resulting from routine operations, that are predictable, expected, periodic, and quantifiable and that are submitted by the permitted facility and approved by the Air Permits Division are considered authorized discharges. Approved activities are noted in the General Condition XVII Activities List of this permit. To be approved as an authorized discharge, these very small releases must:
 1. Generally be less than 5 TPY
 2. Be less than the minimum emission rate (MER)
 3. Be scheduled daily, weekly, monthly, etc., or
 4. Be necessary prior to plant startup or after shutdown [line or compressor pressuring/depressuring for example]

These releases are not included in the permit totals because they are small and will have an insignificant impact on air quality. This general condition does not authorize the maintenance of a nuisance, or a danger to public health and safety. The permitted facility must comply with all applicable requirements, including release reporting under LAC 33:I.3901.

- XVIII. Provisions of this permit may be appealed in writing pursuant to La. R.S. 30:2024(A) within 30 days from receipt of the permit. Only those provisions specifically appealed will be suspended by a request for hearing, unless the secretary or the assistant secretary elects to suspend other provisions as well. Construction cannot proceed except as specifically approved by the secretary or assistant secretary. A request for hearing must be sent to the following:

Attention: Office of the Secretary, Legal Services Division
 La. Dept. of Environmental Quality
 Post Office Box 4302
 Baton Rouge, Louisiana 70821-4302

- XIX. Certain Part 70 general conditions may duplicate or conflict with state general conditions. To the extent that any Part 70 conditions conflict with state general conditions, then the Part 70 general conditions control. To the extent that any Part 70 general conditions duplicate any state general conditions, then such state and Part 70 provisions will be enforced as if there is only one condition rather than two conditions.