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

STATEMENT OF BASIS

Little Gypsy Generating Plant
Entergy Louisiana, LLC
Montz, St. Charles Parish, Louisiana
Agency Interest Number: 687
Activity Number: PER20080005
Draft Permit 2520-00009-V2

I. APPLICANT:

Company:
Entergy Louisiana, LLC
17420 River Road, Montz, LA 70068-9008

Facility:
Little Gypsy Generating Plant
17420 River Road, Montz, St. Charles Parish, Louisiana
Approximate UTM coordinates are 744.90 kilometers East and 3322.30 kilometers North, Zone 15

II. FACILITY AND CURRENT PERMIT STATUS:

Little Gypsy Plant, an existing electric generation facility, began prior to 1962. The Little Gypsy Plant currently operates under Permit Nos. 2520-00009-V1 and PSD-LA-720, both issued on November 30, 2007.

III. PROPOSED PERMIT / REOPENING INFORMATION:

Proposed Permit

A permit application and Emission Inventory Questionnaire were submitted by Entergy Louisiana Inc on May 30, 2008.

Entergy Louisiana, LLC proposes to:

- Incorporate a Case-by-case determination of Maximum Achievable Control Technology (MACT) for the CFB Boilers (EQT 11 and EQT 12) in accordance with Section 112(g) of the Clean Air Act; and
- Revise the emission rates of mercury and hydrochloric acid for the CFB Boilers (EQT 11 and EQT 12) in order to reflect the emission limitations imposed by the above referenced MACT determination.

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Project Description

Little Gypsy Electric Generating Plant consists of three electric generating units. Unit 1 boiler burns natural gas as its primary fuel and no. 2 fuel oil as its secondary fuel. It has a maximum heat input of 2,292 MMBTU/hr for natural gas and 2,247 MMBTU/hr for fuel oil. Unit 1 exhausts out of two stacks, C1A and C1B. Unit 2 boiler burns natural gas as its primary fuel and no. 2 fuel oil as its secondary fuel. It has a maximum heat input of 4,550 MMBTU/hr for natural gas and 3,692 MMBTU/hr for fuel oil. Unit 2 exhausts out of two stacks, C2A and C2B. Unit 3 boiler burns natural gas as its primary fuel and no. 2 fuel oil as its secondary fuel. It has a maximum heat input of 5,578 MMBTU/hr for natural gas and 5,328 MMBTU/hr for fuel oil. Unit 3 exhausts out of one stack. There are two fuel oil storage tanks on site, T1 and T2. Fuel combustion is the primary source of air emissions from the facility.

Little Gypsy Electric Generating Plant will also consist of two (2) circulating fluidized bed (CFB) boilers, represented in this permit as EQT 11 and EQT 12. In a CFB boiler, solid fuel and a sorbent (typically limestone) are jointly fed directly to the combustion chamber. Primary air is injected from the bottom of the combustion chamber to provide combustion air as well as to fluidize the burning bed. Fluidization of the bed allows for high heat transfer rates at relatively low combustion temperatures. Because of the turbulence and velocity in the circulating bed, the fuel mixes with the bed material quickly and uniformly. Secondary air is introduced at various levels to ensure solids circulation, provide staged combustion for NOx reduction as well as control of carbon monoxide (CO) and volatile organic compounds (VOCs), and supply air for continuous combustion in the upper part of the combustion chamber.

As fuel is added to the CFB boiler it is quickly heated above its ignition point, ignites and becomes part of the burning bed. The fuel particles are entrained within the bed until they are consumed or removed in either the gas stream or with the bed ash. Entrainment of the fuel particles in the gas stream occurs when their size is in the range where the terminal and gas velocities are equal. As the fuel particle size decreases to the point that the terminal velocity is exceeded by the gas velocity, the particles are blown from the bed, collected by a particle separator, and returned to the boiler. These boilers will be fueled with petroleum coke and coal. Each boiler will have a maximum heat input of 2,828 MM BTU/hr.

Permit No. 2520-00009-V1, issued on November 30, 2007, authorized the following project, to be conducted in two phases as described below:

During Phase I, the CFB Boilers (EQT 11 and EQT 12) and the supporting equipment will be constructed. Unit 1 Boiler, Unit 2 Boiler, and Unit 3 Boiler will be fully operational in accordance with terms and conditions of this permit. The existing boilers will be able to fire natural gas, No. 2 fuel oil, and No. 4 fuel oil.

Phase II will begin on the date that the CFB Boilers (EQT 11 and EQT 12) achieve commercial operation. On this date, Unit 3 Boiler (EQT 7) will cease all operations. Unit 3 Boiler will then be decommissioned and dismantled. At no time will Unit 3 Boiler and the CFB Boilers be operated concurrently. The facility will accept a fuel sulfur limitation that is sufficiently restrictive to disallow the combustion of No. 4 fuel oil.

Permitted Air Emissions

Section 12 of the Permit Application, dated May 30, 2008, lists the permitted emission rate after the project (in tons per year) for each pollutant in the permit. These changes are summarized in the Permitted Air Emissions Section.

Estimated changes in permitted emissions in tons per year are as follows:

Pollutant	Phase II Before	Phase II After	Change
Hydrochloric acid	170.382	82.574	- 87.808
Mercury	0.282	0.078	- 0.204

Prevention of Significant Deterioration Applicability

The proposal contained in the permit application dated May 30, 2008 and submitted in support of this draft permit does not increase any pollutant by significant amounts. Therefore, PSD review was not required.

MACT Requirements

Little Gypsy Generating Plant is a major source for toxic air pollutants. However, electric utility steam generating units are exempt from the requirements of LAC 33:III.Chapter 51 per LAC 33:III.5105.B.2.

Little Gypsy Generating Plant is a major source for hazardous air pollutants. The proposed permit seeks to apply a case-by-case MACT determination in accordance with Section 112(g) of the Clean Air Act for repowering Little Gypsy Generating Plant. This MACT determination imposes separate conditions for each of the following categories of HAPs: acid gases (including hydrofluoric acid and hydrochloric acid), mercury, metallic HAPs, and organic HAPs.

The MACT emission limitations that apply to hydrofluoric acid, hydrochloric acid, and mercury will be determined based upon the mix of bituminous coal, subbituminous coal, and petroleum coke that is fed to each boiler at any give time. Little Gypsy will utilize a lime spray dryer and activated carbon injection in conjunction with a baghouse in order to control emissions of mercury. Little Gypsy will utilize a CFB boiler with limestone in the fluid bed, and a lime spray dryer in

conjunction with a baghouse in order to control emission of hydrochloric acid and hydrofluoric acid.

For metallic HAPs, Little Gypsy will comply with the existing particulate matter emission limitation of 0.011 lb/MMBTU. Since metallic HAPs are a subset of total particulate matter, compliance with this emission limitation will ensure that metallic HAPs are being controlled in accordance with MACT. Little Gypsy will utilize a baghouse in order to control emissions of metallic HAPs. Further, a performance test will be conducted in order to demonstrate that Little Gypsy will comply with their metallic HAP emission limitations when complying with the particulate matter emission limitation mentioned above.

For organic HAPs, Little Gypsy will monitor carbon monoxide emissions and control them to an emission rate of no more than 0.10 lb/MMBTU (when the steam production output is greater than or equal to 60%) or to an emission rate of 0.15 lb/MMBTU (when the steam production output is less than 60%). Since carbon monoxide and organic HAPs are both products of incomplete combustion, compliance with this emission limitation will ensure that organic HAPs are being controlled in accordance with MACT. Little Gypsy will utilize good combustion practices in order to control emissions of organic HAPs. Further, a performance test will be conducted in order to demonstrate that Little Gypsy will comply with their organic HAP emission limitations when complying with the carbon monoxide emission limitation mentioned above.

The emissions limitations imposed by the above referenced MACT determination are summarized below:

Pollutant	Limitation	Averaging Period	Applies when firing ...
Hydrochloric Acid	0.0035 lb/MMBTU	Avg. of three 1 hr. tests	Bituminous coal
	0.0016 lb/MMBTU	Avg. of three 1 hr. tests	Petroleum coke
	0.0016 lb/MMBTU	Avg. of three 1 hr. tests	Subbituminous coal
Hydrofluoric acid	0.000157 lb/MMBTU	Avg. of three 1 hr. tests	Bituminous coal
	0.000157 lb/MMBTU	Avg. of three 1 hr. tests	Petroleum coke
	0.000834 lb/MMBTU	Avg. of three 1 hr. tests	Subbituminous coal
Mercury	0.008 lb/GWh	12 month rolling avg.	Bituminous coal
	0.003 lb/GWh	12 month rolling avg.	Petroleum coke
	0.005 lb/GWh	12 month rolling avg.	Subbituminous coal
Organic HAPs*	***0.10 lb CO/MMBTU	24 hr. block avg.	All fuels
	****0.15 lb CO/MMBTU	24 hr. block avg.	All fuels
Metallic HAPs**	0.011 lb PM/MMBTU	24 hr. avg.	All fuels

*Control of carbon monoxide (CO) is approved as a surrogate for control of organic HAPs. This approval was made because both CO and organic HAPs are products of incomplete combustion. A reduction in CO will indicate more complete combustion, which will translate to a reduction in organic HAP emissions.

**Control of particulate matter (PM) is approved as a surrogate for control of metallic HAPs. Metallic HAPs are a subset of total PM. Any technology that controls PM will also control metallic HAPs. A reduction in PM emissions will translate to a reduction in metallic HAP emissions.
*** Applies when unit operates at greater than or equal to 60 percent of its maximum steam production output capacity.
****Applies when unit operates at less than 60 percent of its maximum steam production output capacity.

The monitoring requirements imposed by the above referenced MACT determination are summarized below:

Pollutant	Monitoring conducted using ...
Hydrochloric acid	Annual Stack Test
Hydrofluoric acid	Annual Stack Test
Mercury	Mercury Continuous Emissions Monitoring System (CEMS)
Organic HAPs	Carbon Monoxide Continuous Emissions Monitoring System (CEMS)
Metallic HAPs	Monitoring Requirements of 40 CFR 64

All requirements imposed in accordance with Section 112(g) of the Clean Air Act can be found in the Specific Requirements section of this permit under the group entitled CRG0001 – MACT Requirements for CFB Boilers.

The facility complies with the ambient air standards (AAS).

Air Modeling Analysis

Emissions associated with the proposed modification were reviewed by the Air Quality Assessment Division to ensure compliance with the NAAQS and AAS. LDEQ did not require the applicant to model emissions.

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.

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.

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Regulatory Analysis

The applicability of the appropriate regulations is straightforward and provided in the Facility Specific Requirements Section of the draft permit, or where provided, Tables 1 and 2 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, or where provided, Tables 1 and 2 of the draft permit.

IV. Permit Shields

There is no permit shield.

V. Periodic Monitoring

Compliance Assurance Monitoring

Federal regulation 40 CFR 64-Compliance Assurance Monitoring is applicable to this facility. Applicability for each pollutant requires that the unit be subject to an emission limitation or standard and must use an active control device to achieve compliance. The following emission sources with pollution control equipment have a pre-control emission rate of a pollutant over 100 tons per year and were determined to require a CAM Plan: 3A – CFB Boiler Unit 3A and 3B – CFB Boiler Unit 3B.

The baghouse serves to collect and reduce particulate emissions associated with the combustion of coal and petroleum coke. The monitoring of the differential pressure across the baghouse in addition to the monitoring of the readings from the continuous opacity monitoring system (COMS) ensures that particulate emissions are being controlled.

Little Gypsy Generating Plant will conduct performance tests to determine the appropriate ranges that assure compliance with the particulate matter emission rates within ninety (90) days of initial startup of each CFB Boiler. Within ninety (90) days of the completion of the performance test, Little Gypsy Generating Plant will submit a revised CAM Plan that incorporates these indicator ranges to LDEQ for approval and, upon submittal, begin to operate under the proposed CAM Plan.

Once LDEQ approves the CAM Plan, Little Gypsy Generating Plant will file an administrative amendment with the LDEQ Air Permits Division to incorporate the specifics of the plan, including the indicator ranges determined during the performance test, into the Title V permit within 180 days of the commencement of commercial operation of the CFB Boilers.

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Case-by-case MACT in Accordance with Section 112(g) of the Clean Air Act

Case-by-case MACT in accordance with Section 112(g) of the Clean Air Act is applicable to this facility. Section 112(g) requires that any constructed or reconstructed major source of Hazardous Air Pollutants (HAPs) receive a case-by-case MACT determination if no standard has been promulgated under Section 112(d) or Section 112(h) for the source category. The following emission sources that will be constructed at Little Gypsy Generating Plant do not have an applicable MACT standard for their source category promulgated under Sections 112(d) or 112(h) of the Clean Air Act: 3A – CFB Boiler Unit 3A and 3B – CFB Boiler Unit 3B. The MACT determination imposes separate monitoring conditions for each of the following categories of HAPs: acid gases (including hydrofluoric acid and hydrochloric acid), mercury, metallic HAPs, and organic HAPs.

Little Gypsy Generating Plant (LG) will continuously monitor mercury emissions using a mercury continuous emissions monitoring system (CEMS).

Particulate matter emissions will be used as a surrogate for metallic HAP emissions. LG will continuously monitor the parameters established in the CAM Plan that is summarized above in order to show compliance with the particulate matter limitation.

Carbon monoxide emissions will be used as a surrogate for organic HAP emissions. LG will continuously monitor carbon monoxide emissions using a carbon monoxide CEMS.

LG will verify initial compliance with the hydrochloric acid and hydrofluoric acid emissions limitations during the initial performance test for each unit. LG will verify compliance on a periodic basis by performing annual performance tests for these two pollutants.

VI. Applicability and Exemptions of Selected Subject Items		
ID No:	Requirement	Notes
Entire Facility	Comprehensive Toxic Air Pollutant Emission Control Program [LAC 33:III.Chapter 51]	EXEMPT. Electric utility steam generating units are exempt from the requirements of LAC 33:III.Chapter 51. [LAC 33:III.5105.B.2]
EQTs 3-7	Standards of Performance for Fossil-Fuel Fired Steam Generators for Which Construction is Commenced After August 17, 1971. [40 CFR 60, Subpart D]	DOES NOT APPLY. Boilers were constructed prior to August 17, 1971. [40 CFR 60.40(c)]

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VI. Applicability and Exemptions of Selected Subject Items		
ID No:	Requirement	Notes
EQT 8 & EQT 9	Storage of Volatile Organic Compounds [LAC 33:III.2103]	DOES NOT APPLY. Storage tanks store materials with a vapor pressure less than 1.5 psia. [LAC 33:III.2103.B]
	NSPS Subpart Kb – Standards of Performance for Volatile Organic Liquid Storage Vessels (Including Petroleum Liquid Storage Vessels for Which Construction, Reconstruction, or Modification Commenced after July 23, 1984. [40 CFR 60, Subpart Kb]	EXEMPT. Storage tanks store materials with a vapor pressure less than 3.5 kPa. [40 CFR 60.110b(b)]

VII. Streamlined Requirements			
Unit or Plant Site	**Programs Being Streamlined**	**Stream Applicability**	**Overall Most Stringent Program**
Little Gypsy Generating Plant	None	-	-

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VIII. Glossary

Best Available Control Technologies (BACT) - An emissions limitation (including a visible emission standard) based on the maximum degree of reduction for each pollutant subject to regulation under this part which would be emitted from any proposed major stationary source or major modification which the administrative authority, on a case-by-case basis, taking into account energy, environmental, and economic impacts and other costs, determines is achievable for such source or modification through application of production processes or available methods, systems, and techniques, including fuel cleaning or treatment or innovative fuel combustion techniques for control of such pollutant.

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

Grandfathered Status- Those facilities that were under actual construction or operation as of June 19, 1969, the signature date of the original Clean Air Act. These facilities are not required to obtain a permit. Facilities that are subject to Part 70 (Title V) requirements lose grandfathered status and must apply for a permit.

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

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.

Nonattainment New Source Review (NNSR) - A New Source Review permitting program for major sources in geographic areas that do not meet the National Ambient Air Quality Standards (NAAQS) at 40 CFR Part 50. Nonattainment NSR is designed to

ensure that emissions associated with new or modified sources will be regulated with the goal of improving ambient air quality.

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 sulphur.

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.