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: PER20020006
Draft Permit 2520-00009-V1

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 No. 2520-00009-V0, issued January 13, 1999.

III. PROPOSED PERMIT / PROJECT INFORMATION:

Proposed Permit

A permit application and Emission Inventory Questionnaire were submitted by Entergy Louisiana Inc on August 22, 2002, requesting a Part 70 operating permit and a Prevention of Significant Deterioration (PSD) permit. By letter dated November 3, 2003, Entergy Louisiana, Inc. withdrew their PSD permit request. A revised application that replaced the original application in its entirety was submitted on September 5, 2006, requesting a Part 70 operating permit and a Prevention of Significant Deterioration (PSD) permit. Additional information was received August 5, 2005, October 20, 2006, and December 12, 2006.

With this modification, Little Gypsy Plant proposes to:

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- Construct and operate two CFB Boilers (EQT 11 and EQT 12)
- Construct and operate numerous associated fuel handling equipment
- Remove from the site Unit 3 Boiler (EQT 7) once the two CFB Boilers are constructed and begin commercial operation. Unit 3 Boiler will remain a permitted source at this facility until the two CFB Boilers begin commercial operation, at which time Unit 3 Boiler will not be operated concurrently with the two CFB Boilers.

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.

During Phase I of this project, 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.

Phase II of this project 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.

Section 6 of the Permit Application, dated September 5, 2006, lists the permitted emission rate before and after the project (in tons per year) for each emission point in the permit. These changes are summarized in the Permitted Air Emissions Section.

Permitted Air Emissions

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

Phase I:

Pollutant	Before	Phase I emissions	Change
PM_{10}	246.83	941.80	+ 694.97
SO_2	11101.39	10973.02	- 128.37
NO_X	48138.13	33057.40	- 15080.73
CO	2289.86	4482.36	+ 2192.50
VOC	85.59	298.27	+ 212.68

Phase II:

Pollutant	Phase I emissions	Phase II emissions	Change
PM_{10}	941.80	519.87	- 421.93
SO_2	10973.02	4443.28	- 6529.74
NO_X	33057.40	18832.88	- 14224.52
CO	4482.36	4825.16	+ 342.80
VOC	298.27	277.45	- 20.82

Prevention of Significant Deterioration Applicability

PM_{10}, SO_2, CO, VOC, H_2SO_4, and Fluorides (as Hydrogen Fluoride, or HF) are being increased by significant amounts by the project. Therefore, the Little Gypsy 3 Repowering Project is subject to the requirements of the PSD program. The net emissions increase due to this project, in tons per year, is shown in the following table:

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Pollutant	Potential Controlled Emissions	Emissions Decrease from Unit 3 Decomissioning	Net Emissions Change
NO_x	1,404	3,433	- 2,029
SO_2	3,539	5.5	3,534
PM/PM_{10}	260	25	235
CO	2,359	702	1,657
VOC	110.9	46	64.9
H_2SO_4	28.3	-	+ 28.3
HF	19.7	-	+ 19.7
Lead	0.35	-	+ 0.35

This application was reviewed for compliance with the Louisiana Part 70 operating permit program, Louisiana Air Quality Regulations, and NSPS. NESHAP regulations do not apply.

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.

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

Air Modeling Analysis

The results of the dispersion modeling that was performed in support of this project are included below. The dispersion modeling shows compliance with the National Ambient Air Quality Standards (NAAQS).

Dispersion Model(s) Used: AERMOD

Pollutant	Time Period	Calculated Maximum Ground Level Concentration	Louisiana Toxic Air Pollutant Ambient Air Quality Standard or (National Ambient Air Quality Standard {NAAQS})
PM_{10}	24 hour average	73.55 $\mu g/m^3$	(150 $\mu g/m^3$)
SO_2	3 hour average	631.9 $\mu g/m^3$	(1300 $\mu g/m^3$)
	24 hour average	161.4 $\mu g/m^3$	(365 $\mu g/m^3$)

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.

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.

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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 a permit modification 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.

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)]
EQTs 3-7 & EQTs 11-12	National Emission Standards for Hazardous Air Pollutants for Industrial, Commercial, and Institutional Boilers and Process Heaters [40 CFR 63, Subpart DDDDD]	DOES NOT APPLY. Units are fossil-fuel fired electric utility steam generating units with a capacity greater than 25 megawatts that serves as a generator that produces electricity for sale. [40 CFR 63.7491(c)]
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]

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VI. Applicability and Exemptions of Selected Subject Items

ID No:	Requirement	Notes
	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.