BOBBY JINDAL
Governor

HAROLD LEGGETT, PH.D.
Secretary

Louisiana Department of Environmental Quality

Office of Environmental Services

Certified Mail No.

Agency Interest (AI) No. 1060
Activity No. PER20070004

Mr. Carl Handley
Plant Manager
Southwestern Electric Power Company (SWEPCO)
American Electric Power
510 North Allen
Shreveport, LA 71101

RE: Prevention of Significant Deterioration (PSD) Permit, PSD-LA-726,
Southwest Electric Power Company (SWEPCO), J. Lamar Stall Unit #1,
Shreveport, Caddo Parish, Louisiana

Dear Mr. Handley:

Enclosed is your permit, PSD-LA-726. Construction of the proposed project is not allowed until such time as the corresponding Part 70 Operating Permit is issued.

Should you have any questions, contact Mr. Christopher Smith of the Air Permits Division at (225) 219-3831.

Sincerely,

Cheryl Sonnier Nolan
Assistant Secretary

_____
Date

CSN:CWS

c: US EPA Region VI

Post Office Box 4313, Baton Rouge, Louisiana 70821-4313
(225) 219-3181 Phone (225) 219-3309 Fax
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Agency Interest No. 1060

PSD-LA-726

AUTHORIZATION TO MODIFY AN EXISTING MAJOR STATIONARY SOURCE 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,

Southwest Electric Power Co.
P.O. Box 660164
Dallas, TX 75266-0164

is authorized to construct the J. Lamar Stall Unit #1 facility at the Arsenal Hill Power Plant near

510 North Allen Ave.
Shreveport, LA 71101

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 _____, 2008.

Cheryl Sonnier Nolan
Assistant Secretary
Office of Environmental Services
Louisiana Department of Environmental Quality

BRIEFING SHEET

J. Lamar Stall Unit #1
Agency Interest No.: 1060
Southwest Electric Power Company (SWEPCO)
Shreveport, Caddo Parish, Louisiana
PSD-LA-726

PURPOSE

Southwest Electric Power Company (SWEPCO) owns and operates the Arsenal Hill Power Plant, an existing electrical power generating facility, in Shreveport, Louisiana. SWEPCO is a division of American Electric Power. The Arsenal Hill Power Plant has been in operation since the 1920's. SWEPCO proposes to install and operate the J. Lamar Stall Unit #1, a combined-cycle facility consisting of two combustion turbine generators (CTGs) with duct-fired heat recovery steam generators (HSRGs) and associated ancillary equipment. Each CTG will be rated at 180 MW, nominal. The CTGs and DBs will be fired exclusively with pipeline-quality natural gas. The two CTG/HRSG trains will generate steam for the Steam Turbine Generator (STG) to produce electricity. Electricity produced by the STG and CTGs will be exported to the local power market. The J. Lamar Stall Unit #1 facility will be located next to SWEPCO's existing Arsenal Hill Power Station.

RECOMMENDATION

Approval of the proposed construction and issuance of a permit.

REVIEWING AGENCY

Louisiana Department of Environmental Quality, Office of Environmental Services, Air Permits Division

PROJECT DESCRIPTION

SWEPCO proposes to install and operate the J. Lamar Stall Unit #1, a combined-cycle facility consisting of two combustion turbine generators (CTGs) with heat recovery steam generators (HSRGs) and associated ancillary equipment. Each HRSG will be equipped with Duct Burners (DBs). Each CTG will be rated at 180 MW, nominal. The DBs' design rated capacities will be 250 MM BTU/hr each. The CTGs and DBs will be fired exclusively with pipeline-quality natural gas.

The two CTG/HRSG trains will generate steam for the Steam Turbine Generator (STG) to produce electricity. Electricity produced by the STG and CTGs will be exported to the local power market.

The new CTGs and HRSGs will operate up to 8,760 hours per year. Inlet evaporative coolers will be used for turbine power augmentation during periods of peak power demand, such as the summer months. Low NO_X combustors will be used to reduce the combustion turbine NO_X emissions. The duct burners will also use low NO_X combustors, and the combined emissions from the turbines and duct burners will be further reduced using selective catalytic (SCR) reduction technology.

Start-up/shut-down emissions from the natural gas combustion turbines and HRSG trains, CTG-1 and CTG-2, have been included in the Part 70 permit. Because the J. Lamar Stall Unit #1 will use natural gas to fuel the turbines, only Nitrogen Oxides (NO_X), Carbon Monoxide (CO), and Volatile Organic

Compounds (VOCs) are the pollutants of concern.

Estimated emissions from the project, in tons per year, are as follows:

Pollutant	Emissions	PSD de minimis	Review required?
PM/PM10	218.76	25/15	Yes
SO_2	106.40	40	Yes
NO_X	275.47	40	Yes
CO	614.98	100	Yes
VOC	121.17	40	Yes
Sulfuric Acid	16.17	7	Yes

TYPE OF REVIEW

Particulate matter (PM/PM_{10}), sulfur dioxide (SO_2), nitrogen oxide (NO_X), carbon monoxide (CO), volatile organic compound (VOC), and sulfuric acid (H_2SO_4) emissions from the proposed installation of the J. Lamar Stall Unit #1 facility will be above PSD significance levels. Therefore, the requested permit was reviewed in accordance with PSD regulations for PM/PM_{10}, SO_2, NO_X, CO, VOC, and H_2SO_4 emissions.

BEST AVAILABLE CONTROL TECHNOLOGY

PM/PM_{10}, SO_2, NO_X, CO, VOC, and H_2SO_4 emissions are above PSD significance levels and must undergo PSD analyses. The selection of control technology was based on the BACT analysis using a "top down" approach and did include consideration of control of toxic materials.

CTG-1 - Turbine/HRSG Train w/ Duct Burners (EQT012) and
CTG-2 - Turbine/HRSG Train w/ Duct Burners (EQT013)

PM/PM_{10}: BACT is the combustion technology/design and proper operation of the turbines and duct burners and the use of pipeline quality natural gas.

SO_2: BACT is the use of low-sulfur pipeline quality natural gas on the turbine/HRSG trains.

NO_X: BACT is to meet a 4 ppmvd limit at 15% oxygen limit (annual average) by using low NO_X turbine combustors and low NO_X duct burners combined with Selective Catalytic Reduction (SCR) control technology.

CO: BACT is to meet a 10 ppmvd limit at 15 percent oxygen (annual average) at base load using efficient and complete combustion technology on the turbines and the duct burners.

VOC: The use of efficient and complete combustion technology to control VOC to 4.9 ppmvd corrected to 15 percent O_2 is BACT on the turbines and duct burners.

H_2SO_4: The use low-sulfur pipeline quality natural gas and proper SCR unit design are BACT on the turbines and duct burners.

Scn 3 - CTG-1 Cold Start-up (SCN007);
Scn 4 - CTG-1 Hot Start-up (SCN008);
Scn 5 - CTG-1 Shut-down (SCN009);
Scn 7 - CTG-2 Cold Start-up (SCN011);
Scn 8 - CTG-2 Hot Start-up (SCN012); and
Scn 9 - CTG-2 Shut-down (SCN013)

NO_X: Start-up and shut-down events will be completed as quickly as possible according to the manufacturer's recommended procedures.

CO: Start-up and shut-down events will be completed as quickly as possible according to the manufacturer's recommended procedures.

VOC: Start-up events will be completed as quickly as possible according to the manufacturer's recommended procedures.

CT – Cooling Tower (EQT014)

PM/PM_{10}: The use of mist eliminators to attain a 0.001% drift rate is BACT for the cooling tower.

DFP – Diesel Fire Pump (EQT016)

PM/PM_{10}: The use of low sulfur fuels, limiting annual operating hours, and proper maintenance of the engine are BACT for the diesel fire pump.

SO_2: The use of low sulfur fuels, limiting annual operating hours, and proper maintenance of the engine are BACT for the diesel fire pump.

NO_X: The use of low sulfur fuels, limiting annual operating hours, and proper maintenance of the engine are BACT for the diesel fire pump.

CO: The use of low sulfur fuels, limiting annual operating hours, and proper maintenance of the engine are BACT for the diesel fire pump.

VOC: The use of low sulfur fuels, limiting annual operating hours, and proper maintenance of the engine are BACT for the diesel fire pump.

BRIEFING SHEET

J. Lamar Stall Unit #1
Agency Interest No.: 1060
Southwest Electric Power Company (SWEPCO)
Shreveport, Caddo Parish, Louisiana
PSD-LA-726

AIR QUALITY IMPACT ANALYSIS

Prevention of Significant Deterioration regulations require an analysis of existing air quality for those pollutants, PM_{10}, SO_2, NO_X, CO, VOC, and H_2SO_4 emitted in significant amounts from a proposed facility.

AERMOD modeling of PM_{10} emissions associated with the installation show maximum predicted 24-hour and Annual PM_{10} impacts above the significance level; therefore, refined modeling is required. Because the 24-hour maximum impact for PM_{10} is above the de minimis level, preconstruction monitoring may be required. However, the ambient air monitoring station in Shreveport, Louisiana, provides sufficient data and alleviates the need to conduct preconstruction monitoring.

Screen dispersion modeling of SO_2 and CO emissions are below their preconstruction monitoring exemption levels and ambient significance levels. No preconstruction monitoring, refined modeling, or increment analysis is required for SO_2 and CO.

AERMOD modeling of NO_X emissions associated with the installation show a maximum predicted annual NO_X impact above the significance level of 1 $\mu g/m^3$. Because the annual maximum impact for NO_X is below the de minimis level of 14 $\mu g/m^3$, preconstruction monitoring is not required. However, further refined NAAQS modeling and increment consumption analyses is required.

Dispersion modeling indicates the impacts of PM_{10} and NO_X are below above the National Ambient Air Quality Standards (NAAQS) and within the allowable increment consumption limits of these pollutants.

Since the predicted maximum increment consumption for PM_{10} and NO_X emissions were below the applicable increment standards, the installation of the J. Lamar Stall Unit #1 will not cause or contribute to any PSD increment violation.

VOC emissions from the proposed facility will exceed 100 tons per year; therefore, an ambient air quality analysis and preconstruction monitoring are required for ozone.

An ambient impacts analysis for Ozone was performed for this project because the increase in VOC emissions is 121.17 TPY. According to the guidelines, the methane-normalized VOC to NO_X ratio was calculated for the proposed project sources and the proposed site wide emissions. Because both ratios are less than 2:1, the site is a NO_X-dominated source. Therefore, no significant increase in ozone is expected due to the installation of the J. Lamar Stall Unit #1.

The results of the screening analysis for H_2SO_4 emissions indicate that the predicted H_2SO_4 concentrations of 0.612 $\mu g/m^3$ for the 8-hour standard are estimated to be less 7.5% of the Ambient Air Standard. Therefore, a refined analysis is not required.

BRIEFING SHEET

J. Lamar Stall Unit #1
Agency Interest No.: 1060
Southwest Electric Power Company (SWEPCO)
Shreveport, Caddo Parish, Louisiana
PSD-LA-726

ADDITIONAL IMPACTS

Soils, vegetation, and visibility will not be adversely impacted by the proposed facility, nor will any Class I area be affected. The project will not result in any significant secondary growth effects. Approximately 11 new full-time, permanent, operations, and maintenance jobs will be created with an annual payroll of approximately $717,000.

PROCESSING TIME

Application Dated:	April 27, 2007
Application Received:	May 1, 2007
Additional Information Dated:	May 17, June 25, September 25, October 31, November 8, 13, 20, December 20, 26, 27, 2007, and January 7, 2008
Effective Completeness Date:	January 8, 2008

PUBLIC NOTICE

A notice requesting public comment on the proposed project was published in *The Advocate*, Baton Rouge, Louisiana, on <<Date>>, 2008; and in <<*Local Paper*>>, Shreveport, Louisiana, on <<Date>>, 2008. Copies of the public notice were also mailed to individuals who have requested to be placed on the mailing list maintained by the Office of Environmental Services on <<Date>>, 2008. A proposed permit was also submitted to U.S. EPA Region VI on <<Date>>, 2008. All comments will be considered prior to a final permit decision.

PRELIMINARY DETERMINATION SUMMARY

J. Lamar Stall Unit #1
Agency Interest No.: 1060
Southwestern Electric Power Company (SWEPCO)
Shreveport, Caddo Parish, Louisiana
PSD-LA-726
January 8, 2008

I. APPLICANT

Southwest Electric Power Co.
P.O. Box 660164
Dallas, TX 75266-0164

II. LOCATION

The J. Lamar Stall Unit #1 will be located at SWEPCO's Arsenal Hill Power Plant, located at 510 N. Allen Ave., Shreveport,, Louisiana. Approximate UTM coordinates are 428.49 kilometers East, 3,598.14 kilometers North, Zone 15.

III. PROJECT DESCRIPTION

SWEPCO proposes to install and operate the J. Lamar Stall Unit #1, a combined-cycle facility consisting of two combustion turbine generators (CTGs) with heat recovery steam generators (HSRGs) and associated ancillary equipment. Each HRSG will be equipped with Duct Burners (DBs). Each CTG will be rated at 180 MW, nominal. The DBs' design rated capacities will be 250 MM BTU/hr each. The CTGs and DBs will be fired exclusively with pipeline-quality natural gas.

The two CTG/HRSG trains will generate steam for the Steam Turbine Generator (STG) to produce electricity. Electricity produced by the STG and CTGs will be exported to the local power market.

The new CTGs and HRSGs will operate up to 8,760 hours per year. Inlet evaporative coolers will be used for turbine power augmentation during periods of peak power demand, such as the summer months. Low NO_X combustors will be used to reduce the combustion turbine NO_X emissions. The duct burners will also use low NO_X combustors, and the combined emissions from the turbines and duct burners will be further reduced using selective catalytic (SCR) reduction technology.

Start-up/shut-down emissions from the natural gas combustion turbines and HRSG trains, CTG-1 and CTG-2, have been included in this Part 70 permit. Start-up begins from the time of first flame in the turbine and ends when the gas turbine reaches dry low NO_X mode (DLN) as directed by the control system. Cold Start is a start-up beginning more than 24 hours after the same unit shut-down. Warm Start is a start-up beginning less than 24 hours after the same unit shut-down. Shut-down begins when the turbine exits DLN mode and ends with the termination of fuel flow to the turbine. Because the J. Lamar Stall Unit #1 will use natural gas to fuel the turbines, only Nitrogen Oxides (NO_X), Carbon Monoxide (CO), and Volatile Organic Compounds (VOCs) are the pollutants of concern.

The start-up/shut-down emissions for the combustion turbines are represented in four different

scenarios depending on the type of operation being performed. These four different scenarios include the following: cold start-up operations, warm start-up operations, shut-down operations, and normal operations. Cold start-ups are typically 4 hours each for 48 hours of cold start-ups per year. Warm start-ups are typically 2 hours each for 80 hours of warm start-ups per year. Shut-downs are typically 1 hour or less per event and last for 52 hours of shut-downs per year.

PCS0004, CTG-1, and PCS0005, CTG-2, list the Annual (TPY) emission rates which represent the maximum potential- to-emit (PTE) for the units. This rate includes both annual rates for normal operations (with an adjusted operating time) and also the start-up & shut-down operating rates. The permittee can select one of the following scenarios and its associated emission rates to operate under without exceeding the maximum PTE for CTG-1 or CTG-2. SCN0007, Scn 3, and SCN0011, Scn 7, provide the Maximum (lb/hr) emissions for cold start-up operations during the year for CTG-1 and CTG-2. SCN0008, Scn 4, and SCN0012, Scn 8, provide the Maximum (lb/hr) emissions for warm start-up operations during the year for CTG-1 and CTG-2. SCN0009, Scn 5, and SCN0013, Scn 9, provide the Maximum (lb/hr) emissions for shut-down operations during the year for CTG-1 and CTG-2.

SCN0010, Scn 6, and SCN0014, Scn 10, provide the Average (lb/hr), Maximum (lb/hr), and Annual (TPY) emissions for normal, year-round, operations of CTG-1 and CTG-2. Start-up/shut-down emissions are not included in scenarios 6 or 10.

Other ancillary equipment will be utilized necessary for the process. Ancillary equipment includes a Cooling Tower (CT), once Diesel Fire Pump (DFP), a Fuel Gas Heater (FG HTR), water treatment units, and ammonia storage facilities.

Estimated emissions from the project, in tons per year, are as follows:

Pollutant	Emissions	PSD de minimis	Review required?
PM_{10}	218.76	25/15	Yes
SO_2	106.40	40	Yes
NO_X	275.47	40	Yes
CO	614.98	100	Yes
VOC	121.17	40	Yes
H_2SO_4	16.17	7	Yes

IV. SOURCE IMPACT ANALYSIS

A proposed net increase in the emission rate of a regulated pollutant above de minimis levels for new major or modified major stationary sources requires review under Prevention of Significant Deterioration regulations, 40 CFR 52.21. PSD review entails the following analyses:

PRELIMINARY DETERMINATION SUMMARY

J. Lamar Stall Unit #1
Agency Interest No.: 1060
Southwestern Electric Power Company (SWEPCO)
Shreveport, Caddo Parish, Louisiana
PSD-LA-726
January 8, 2008

A. A determination of the Best Available Control Technology (BACT);

B. An 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 growth 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 modified major stationary in excess of the specified significant emission rates. The top down approach to the BACT process involves 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. Additionally, BACT shall not result in emissions of any pollutant which would exceed any applicable standard under 40 CFR Parts 60 and 61.

For this project, BACT analyses are required for PM_{10}, SO_2, NO_X, CO, VOC, and H_2SO_4 emissions from the J. Lamar Stall Unit #1 facility. Where PM_{10} is addressed in the BACT analysis, it is assumed that particulate matter (PM) is also being considered.

<u>BACT analyses for PM/PM_{10}</u>

CTG-1 - Turbine/HRSG Train w/ Duct Burners (EQT012) and
CTG-2 - Turbine/HRSG Train w/ Duct Burners (EQT013)

Emissions of PM/PM_{10} from the turbines are primarily a result of inert solids contained in the fuel, combustion air, water (when water injection is used), and from unburned fuel hydrocarbons that agglomerate to form particles. These particles pass through the system and

are emitted with the exhaust gas.

Fabric Filter

A typical fabric filter control device (baghouse) installed on a combustion source would have an outlet grain loading of about 0.01 grains per dry standard cubic foot of exhaust gas (gr/dscf). Particulate emissions from the proposed turbine/duct burner trains are equivalent to an outlet grain loading between 0.003 and 0.004 gr/dscf. This comparison indicates that the PM emissions from the installation of fabric filters on CTG-1 and CTG-2 are below the level that the fabric filter is able to control. Therefore, the use of fabric filters is not a technically feasible control option.

Electrostatic Precipitator

There is no documented application of an electrostatic precipitator (ESP) on a gas fired turbine or combined-cycle system. The size of particulate emitted from these turbines is too small for an ESP to effectively remove them. The additional fuel fired to generate the electricity required to operate the ESP would produce far more criteria pollutants than the PM that would be removed by the ESP. Therefore, the use of an electrostatic precipitator is not a technically feasible BACT option for control of particulate emissions.

Combustion Technology/Design and Proper Operation

Essentially all of the PM emitted from gas turbines is less than one micron in diameter. PM and PM_{10} emission rates are inherently low because the turbines achieve high combustion efficiencies and are designed to fire pipeline quality natural gas. The turbines are designed as will be operated to combust the fuel as completely as possible in order to attain the highest possible thermal efficiency and to control turbine PM/PM_{10} emissions to low levels. The duct burners in the HRSG are also fired with natural gas. Firing clean fuel in the HRSGs will keep PM emissions to a minimum. Therefore, good combustion technology/design and proper operation of the turbines and duct burners is a technically feasible BACT option.

CT – Cooling Tower (EQT014)

Use of Mist Eliminators

Cooling tower emissions were calculated based on a 0.001 percent drift rate and an assumed total dissolved solids (TDS) content of 2,000 ppm in the cooling water. The use of mist eliminators to attain the 0.001 percent drift rate is proposed as a technically feasible BACT option for the cooling tower.

DFP – Diesel Fire Pump (EQT016)

Use of Low Sulfur Fuels, Limiting Annual Operating Hours, & Proper Engine Maintenance

The use of low sulfur fuels, a limitation on the operating hours, and proper maintenance of the Diesel Fire Pump engine is the technically feasible BACT option for this source.

BACT analyses for SO_2

CTG-1 - Turbine/HRSG Train w/ Duct Burners (EQT012) and CTG-2 - Turbine/HRSG Train w/ Duct Burners (EQT013)

Emissions of SO_2 from the combustion of natural gas are expected to be very low. Natural gas will be fired in the turbines and the duct burners. Based on typical actual levels in sweet natural gas, actual SO_2 emissions from the new combustion units are expected to be less than 6 tons per year.

Flue Gas Desulfurization

Flue gas desulfurization is a post–combustion control method of SO_2 from combustion sources. However, flue gas desulfurization systems are not technically feasible as BACT because of the low SO_2 concentration in the exhaust gases and the tremendous volume of the exhaust gases.

Limitation of Sulfur in the Fuels

The natural gas used in CTG-1 and CTG-2 will be pipeline-quality natural gas with an annual average sulfur content in the gas of 0.2 grains sulfur/100 scf and a maximum sulfur content of 2 grains sulfur/100 scf. The limitation of sulfur content in the fuels by using pipeline-quality natural gas is BACT for CTG-1 and CTG-2.

DFP – Diesel Fire Pump (EQT016)

Use of Low Sulfur Fuels, Limiting Annual Operating Hours, & Proper Engine Maintenance

The use of low sulfur fuels, a limitation on the operating hours, and proper maintenance of the Diesel Fire Pump engine is the technically feasible BACT option for this source.

BACT analyses for NOx

CTG-1 - Turbine/HRSG Train w/ Duct Burners (EQT012) and CTG-2 - Turbine/HRSG Train w/ Duct Burners (EQT013)

Nitrogen oxide emissions from turbines and duct burners are the result of either the combination of elemental nitrogen and oxygen in air within the combustion device (thermal NO_X), or the oxidation of nitrogen contained in the fuel (fuel NO_X). The natural gas fuel does not contain a significant amount of nitrogen; therefore, most of the NO_X emissions from the turbine are a result of thermal NO_X.

Low NO_X Combustors and Low NO_X Burners

With Low NO_X combustors, pre-mixing the fuel and combustion air minimizes the flame temperature and the generation of NO_X. For the proposed turbines, lean pre-mix combustors will be used to limit NO_X formation at turbine loads between 60% and 100% of base load. The turbine fuel will be natural gas. Duct burner emissions are reduced through the use of low NO_X burners firing natural gas.

Selective Catalytic Reduction (SCR)

In a selective catalytic reduction system, ammonia is injected into the turbine and duct burner exhaust gases upstream of a catalyst bed. The ammonia reacts with NO_X on the catalyst surface to form N_2 and H_2O. Optimal NO_X reduction occurs at catalyst bed temperatures between 575°F and 750°F for conventional (typically vanadium or titanium based) catalyst types. The NO_X removal efficiency depends on the flue gas temperature, amount of catalyst, and the NH_3 to NO_X ratio in the flue gas stream.

SWEPCO proposes to use low NO_X combustors on the turbines, low NO_X burners on the duct burners, and an SCR system meet the 4 ppmvd limit at 15% oxygen limit (annual average) as BACT for CTG-1 and CTG-2.

Scn 3 - CTG-1 Cold Start-up (SCN007);
Scn 4 - CTG-1 Hot Start-up (SCN008);
Scn 5 - CTG-1 Shut-down (SCN009);
Scn 7 - CTG-2 Cold Start-up (SCN011);
Scn 8 - CTG-2 Hot Start-up (SCN012); and
Scn 9 - CTG-2 Shut-down (SCN013)

Selective Catalytic Reduction (SCR)

Selective Catalytic Reduction (SCR) has been identified as BACT for NO_X emissions during normal operation. However, this approach is not technically feasible as BACT during start-up or shut-down operations. An SCR system requires temperatures typically within 575 °F and 750°F in order to operate effectively. Injection of ammonia before attaining the required

minimum temperature would result in the emissions of large quantities of unreacted ammonia with little NO_X reduction. Ammonia injection is initiated during startup after the SCR attains the minimum operating temperature.

Low NO_X Combustion Technology

Low NO_X Combustion technology depends on exact mixing and injection of fuel and air (and water, if water injection is also used) to result in a flame that produces low NO_X emissions. However, the flow dynamics through the combustors at reduced load operations preclude operations in the low NO_X combustion mode. Therefore, low NO_X combustion technology is not technically feasible as BACT for start-up and shut-down emissions.

Manufacturer's Recommended Procedures

The most technically feasible option available to minimize emissions during start-up and shut-down operations is to progress through the event as quickly as possible to attain the low emissions mode of operation (in the case of start-up) or zero emissions (in the case of shutdown). BACT for start-up and shut-down events is the completion of the event as quickly as possible while following the manufacturer's recommended procedures.

DFP – Diesel Fire Pump (EQT016)

Use of Low Sulfur Fuels, Limiting Annual Operating Hours, & Proper Engine Maintenance

The use of low sulfur fuels, a limitation on the operating hours, and proper maintenance of the Diesel Fire Pump engine is the technically feasible BACT option for this source.

BACT analyses for CO

CTG-1 - Turbine/HRSG Train w/ Duct Burners (EQT012) and
CTG-2 - Turbine/HRSG Train w/ Duct Burners (EQT013)

Carbon monoxide (CO) emissions from turbines and duct burners are the result of incomplete fuel combustion. Operating conditions that can enhance CO formation include low temperature, insufficient residence time, and insufficient oxygen in the combustion zone. Insufficient oxygen can be the result of a low air-to-fuel ratio, inadequate mixing or both.

Catalytic Oxidation Control

In catalytic oxidation, the turbine and duct burner exhaust gases pass through a catalyst bed (typically platinum/rhodium) where CO is oxidized to CO_2. The catalyst oxidation unit would have to be placed far enough downstream of the turbine and duct burner to allow for a significant temperature drop in order to be effective. Normal operating conditions for CO catalytic oxidation units are between 600°F and 700°F, and the range of exhaust temperatures

the turbine and duct burner firing area generate is 1,000°F to 1,600°F. Therefore the catalyst must be located in a section of the HRSG with the appropriate temperature window.

Catalytic oxidation of CO will also cause the undesirable oxidation of SO_2 to SO_3. It is expected that 15% (mol) to 25% (mol) of the SO_2 in the flue gas would be oxidized to SO_3. Implementation of CO catalytic oxidation would therefore result in an increase in H_2SO_4 mist emitted to the atmosphere, and hence, an increase in particulate matter emissions.

Pressure drop across the catalyst bed causes the only energy penalty of significance associated with the use of CO catalytic oxidation as emissions control. This pressure drop, assumed to be between 1 and 3 inches of water, results in a backpressure on the turbine that restricts the turbine power output and increases its heat rate.

An analysis of the cost of implementing CO oxidation catalyst was conducted using the procedure from the OAQPS Cost Control Manual. The cost effectiveness of CO oxidation catalyst was determined to be $7,143 per ton CO removed. The high cost of control, combined with the added environmental and energy affects, make the use of catalytic oxidation technically and economically infeasible.

Efficient and Complete Combustion

With proper combustion technology and design, maintaining good combustion efficiency in the units minimizes the generation of CO. Combustion efficiency in turbines and duct burners is a function of both design and operation. Proper fuel-to-air ratio and a design that provides the necessary residence time, temperature, and turbulence within the combustion zone ensure good combustion.

For CTG-1 and CTG-2, premix combustors will be used to limit CO emissions to 10 ppmvd at base load. During reduced load operations, CO emissions from the CTGs will be limited to 50 ppmvd. Good combustion design of the duct burners limits the contribution to CO emissions from incomplete combustion of fuel in the duct burners. Overall CO emissions from the CTG/HRSG trains are expected to be limited to 10 ppmvd at base load. All CO emission values have been corrected to 15 percent O_2.

The good combustion design/operation is BACT for CTG-1 and CTG-2. CO emission will be limited to 10 ppmvd at 15% oxygen limit (annual average) at base load from the CTG/HRSG trains.

Scn 3 - CTG-1 Cold Start-up (SCN007);
Scn 4 - CTG-1 Hot Start-up (SCN008);
Scn 5 - CTG-1 Shut-down (SCN009);
Scn 7 - CTG-2 Cold Start-up (SCN011);
Scn 8 - CTG-2 Hot Start-up (SCN012); and
Scn 9 - CTG-2 Shut-down (SCN013)

Good Combustion Practices

Start-up emissions of CO occur at low load conditions. Efficient operation of the turbines, and the lowest CO emissions, occur in the turbines when the flames operate at higher loads. Therefore, good combustion practices do not produce the lowest CO emissions for CTG-1 and CTG-2 during start-up and are not technically feasible as BACT.

Manufacturer's Recommended Procedures

The most technically feasible option available to minimize emissions during start-up and shut-down operations is to progress through the event as quickly as possible to attain the lowest emissions mode of operation (in the case of start-up) or zero emissions (in the case of shutdown). BACT for start-up and shut-down events is the completion of the event as quickly as possible while following the manufacturer's recommended procedures.

DFP – Diesel Fire Pump (EQT016)

Use of Low Sulfur Fuels, Limiting Annual Operating Hours, & Proper Engine Maintenance

The use of low sulfur fuels, a limitation on the operating hours, and proper maintenance of the Diesel Fire Pump engine is the technically feasible BACT option for this source.

BACT analyses for VOC

CTG-1 - Turbine/HRSG Train w/ Duct Burners (EQT012) and
CTG-2 - Turbine/HRSG Train w/ Duct Burners (EQT013)

Emissions of VOC from the turbines are primarily a result of incomplete fuel combustion. The magnitude of the emissions is proportional to the hydrocarbon content of the fuel.

Catalytic Oxidation

Catalytic oxidation is the only technology identified for reducing VOC in combustion applications. However VOC control is a secondary benefit of catalytic oxidation. Catalytic oxidation is used primarily for CO control following steam injection systems. Although, it has the potential to reduce 50 percent of the VOC to CO_2 and H_2O, there have been no applications of catalytic oxidation for the sole purpose of controlling VOC emissions. Therefore, catalytic oxidation is technically infeasible as BACT to control VOC from CTG-1 and CTG-2.

Efficient and Complete Combustion

The fuel fired in the turbines will be pipeline quality natural gas; therefore, VOC emissions from the turbines will be minimal. Unburned hydrocarbons in the turbine exhaust are predominately methane. Vendor data indicates emission rates of 2.3 ppmvd VOC (corrected to 15 percent O_2) from the turbines. The efficient and complete combustion of the fuel will control VOC emissions to 4.9 ppmvd corrected to 15 percent O_2 is BACT for CTG-1 and CTG-2.

Scn 3 - CTG-1 Cold Start-up (SCN007);
Scn 4 - CTG-1 Hot Start-up (SCN008);
Scn 7 - CTG-2 Cold Start-up (SCN011); and
Scn 8 - CTG-2 Hot Start-up (SCN012)

Good Combustion Practices

Start-up emissions of VOC occur at low load conditions. Efficient operation of the turbines, and the lowest VOC emissions, occur in the turbines when the flames operate at higher loads. Therefore, good combustion practices do not produce the lowest VOC emissions for CTG-1 and CTG-2 during start-up and are not technically feasible as BACT.

Manufacturer's Recommended Procedures

The most technically feasible option available to minimize emissions during start-up operations is to progress through the event as quickly as possible to attain the low emissions mode of operation (in the case of start-up). BACT for start-up events is the completion of the event as quickly as possible while following the manufacturer's recommended procedures.

DFP – Diesel Fire Pump (EQT016)

Use of Low Sulfur Fuels, Limiting Annual Operating Hours, & Proper Engine Maintenance

The use of low sulfur fuels, a limitation on the operating hours, and proper maintenance of the Diesel Fire Pump engine is the technically feasible BACT option for this source.

BACT analyses for H_2SO_4

CTG-1 - Turbine/HRSG Train w/ Duct Burners (EQT012) and
CTG-2 - Turbine/HRSG Train w/ Duct Burners (EQT013)

Use of Low Sulfur Fuel

Emissions of H_2SO_4 are formed through the oxidation of sulfur present in the fuel. Some of

the sulfur in the fuel may be submitted as SO_3, which reacts with water in the atmosphere to form H_2SO_4. Assuming that 10 weight percent of the SO_2 converts to SO_3, the total equivalent H_2SO_4 emission rate from the turbines and duct burners is very conservative. There is no demonstrated emission control technology to further reduce SO_3 emissions from equipment of this type. The use of a low sulfur fuel such as pipeline-quality natural gas is BACT for CTG-1 and CTG-2.

A summary of BACT costs for technologies eliminated for economic reasons is presented in Table I.

B. ANALYSIS OF EXISTING AIR QUALITY

Prevention of Significant Deterioration regulations require an analysis of existing air quality for those pollutants to be emitted in significant amounts from a proposed facility. PM_{10}, SO_2, NO_X, CO, VOC, and H_2SO_4 are pollutants of concern in this case.

AERMOD modeling of PM_{10} emissions associated with the modification show a maximum predicted 24-hour PM_{10} impact of 28.1 $\mu g/m^3$, above the significance level of 5 $\mu g/m^3$. The maximum predicted annual PM_{10} impact is 2.04 $\mu g/m^3$, above the significance level of 1 $\mu g/m^3$. Because the 24-hour maximum impact for PM_{10} is above the de minimis level of 10 $\mu g/m^3$, preconstruction monitoring is required. However; the ambient air monitoring station in Shreveport, Louisiana, provides sufficient data and alleviates the need to conduct preconstruction monitoring.

AERMOD dispersion modeling of SO_2 emissions associated with the modification show a maximum predicted 3-hour impact of 7.96 $\mu g/m^3$, below the significance level of 25 $\mu g/m^3$. The maximum predicted 24-hour SO_2 impact is 4.27 $\mu g/m^3$, which is below the significance level of 5 $\mu g/m^3$. The maximum predicted annual SO_2 impact is 0.515 $\mu g/m^3$, below the significance level of 1 $\mu g/m^3$.

AERMOD modeling of NO_X emissions associated with the modification show a maximum predicted annual NO_X impact of 4.67 $\mu g/m^3$, above the significance level of 1 $\mu g/m^3$. Because the annual maximum impact for NO_X is below the de minimis level of 14 $\mu g/m^3$, preconstruction monitoring is not required. However, further refined NAAQS modeling and increment consumption analyses is required.

AERMOD dispersion modeling of CO emissions associated with the modification show a maximum predicted 1-hour CO impact of 1,401 $\mu g/m^3$, below the significance level of 2,000 $\mu g/m^3$. The maximum predicted 8-hour CO impact is 392 $\mu g/m^3$, below the significance level of 500 $\mu g/m^3$. Because the 8-hour maximum impact for CO is below the de minimis level of 575 $\mu g/m^3$, preconstruction monitoring, further refined NAAQS modeling, and increment consumption analyses were not required.

VOC emissions from the proposed facility will exceed 100 tons per year; therefore, an

ambient air quality analysis and preconstruction monitoring are required for ozone.

An ambient impacts analysis for Ozone was performed for this project because the increase in VOC emissions is 121.17 TPY. SWEPCO's proposed to utilize the guidance provided in Section 3.12 of the Texas Commission on Environmental Quality (TCEQ) *Air Quality Modeling Guidelines, RG-25, February 1999* in performing the requested ozone ambient impacts analysis. The TCEQ guidelines are currently accepted by U.S. Environmental Protection Agency Region VI for estimating ozone impacts for Prevention of Significant Deterioration permit applications. For VOC dominated sources, the TCEQ guidance is to use the VOC/NO_X Point Source Screening Tables developed by Richard Scheffe (1998) if the methane-normalized VOC to NO_X ratio is 2:1 or higher. For NO_X-dominated sources, the TCEQ guidance is that no significant increase of ozone is expected if the methane-normalized VOC to NO_X ratio is 2:1 or less.

According to the guidelines, the methane-normalized VOC to NO_X ratio was calculated for the proposed project sources and the proposed site wide emissions. Because both ratios are less than 2:1, the site is a NO_X-dominated source. Therefore, no significant increase in ozone is expected due to the installation of the J. Lamar Stall Unit #1.

The results of the screening analysis for H_2SO_4 emissions indicate that the predicted H_2SO_4 concentrations of 0.612 $\mu g/m^3$ for the 8-hour standard are estimated to be less 7.5% of the Ambient Air Standard. Therefore, a refined analysis is not required.

C. NATIONAL AMBIENT AIR QUALITY STANDARDS (NAAQS) ANALYSIS

Because the maximum modeled PM_{10} and NO_X impacts exceeded the PSD significance levels, refined NAAQS modeling was required. To determine the total ambient impact for comparison with the NAAQS, the maximum concentrations for PM_{10} and NO_X must be added to the background concentration in the area. The background concentration is the ambient concentration in the impact area resulting from sources not considered to be "nearby" sources, such as area and mobile sources, natural sources, and distant point sources.

The maximum 24-hour total PM_{10} impact including background is predicted to be 64.7 $\mu g/m^3$, 43% of the NAAQS of 150 $\mu g/m^3$ for the 24-hour PM_{10} averaging period. The maximum Annual total NO_X impact including background is predicted to be 26.1 $\mu g/m^3$, 26% of the NAAQS of 100 $\mu g/m^3$ for the Annual NO_X averaging period.

Refined modeling demonstrates compliance with the PM_{10} and NO_X NAAQS; therefore, SWEPCO's proposal will not cause or contribute to a violation of the applicable NAAQS standard.

D. PSD INCREMENT ANALYSIS

Because the maximum modeled PM_{10} and NO_X impacts exceeded the PSD significance levels, a determination of PSD increment consumption was required. The maximum predicted PM_{10} increment consumption for the 24-hour averaging period is 21.7 $\mu g/m^3$ (73% of the significance level), predicted to occur at the plant boundary. The maximum predicted PM_{10} increment consumption for the Annual averaging period is 2.72 $\mu g/m^3$ (16% of the significance level), predicted to occur 36 m from the plant boundary. The maximum predicted NO_X increment consumption for the Annual averaging period is 5.83 $\mu g/m^3$ (23% of the significance level), predicted to occur 4.27 m from the plant boundary.

Since the predicted maximum increment consumption for PM_{10} and NO_X emissions were below the applicable increment standards, the proposed modification will not cause or contribute to any PSD increment violation.

A summary of the air quality analyses is also presented in Table II.

E. SOURCE RELATED GROWTH IMPACTS

Operation of this facility is not expected to have any significant effect on residential growth or industrial/commercial development in the area of the facility. No significant net change in employment, population, or housing will be associated with the project. As a result, there will not be any significant increases in pollutant emissions indirectly associated with American Electric Power's proposal. Secondary growth effects will include temporary construction related jobs. Approximately 11 new full-time, permanent, operations, and maintenance jobs will be created with an annual payroll of approximately $717,000. Over the 30-year life of the plant, approximately $61,000,000 of property tax revenues will be generated for Caddo Parish and Shreveport, Louisiana.

F. SOILS, VEGETATION, AND VISIBILITY IMPACTS

There will be no significant impact on area soils, vegetation, or visibility.

G. CLASS I AREA IMPACTS

Arkansas' Caney Creek Wilderness Area, the nearest Class I area, is over 207 kilometers from the site, precluding any significant impact. The federal land manager of the Caney Creek Wilderness Area has examined the emissions increases from the installation and operation of the J. Lamar Stall Unit #1 facility and determined that there will be no adverse impacts to the Class I area.

H. TOXIC EMISSIONS IMPACT

The selection of control technology based on the BACT analysis did include a consideration of control of toxic emissions.

V. CONCLUSION

The Air Permits Division has made a preliminary determination to approve the construction of the J. Lamar Stall Unit #1 facility at SWEPCO's Arsenal Hill Power Plant in Shreveport, in Caddo 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

J. Lamar Stall Unit #1
Agency Interest No.: 1060
Southwestern Electric Power Company (SWEPCO)
Shreveport, Caddo Parish, Louisiana
PSD-LA-726

1. 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 January 8, 2008, and subject to the following emissions limitations and other specified conditions. Specifications submitted are contained in the application and Emission Inventory Questionnaire dated April 27, 2007, along with supplemental information dated May 17, June 25, September 25, October 31, November 8, 13, 20, December 20, 26, 27, and January 7, 2008.

MAXIMUM ALLOWABLE EMISSIONS RATES

ID No. / Description	BACT Limits
CTG-1 - Turbine/HRSG Train (EQT012) CTG-2 - Turbine/HRSG Train (EQT013)	PM/PM_{10}: 24.23 lb/hr; Combustion technology/design SO_2: 12.06 lb/hr; Use low-sulfur pipeline quality natural gas. NO_X: 30.15 lb/hr; Meet a 4 ppmvd limit at 15% oxygen limit (annual average) by using low NO_X turbine combustors and low NO_X duct burners combined with SCR control technology. CO: 143.31 lb/hr; Meet a 10 ppmvd at 15% oxygen limit (annual average) at base load using efficient and complete combustion technology VOC: 12.06 lb/hr; Meet a 4.9 ppmvd limit corrected to 15 percent O_2 by efficient & complete combustion technology H_2SO_4: 1.85 lb/hr; Use low-sulfur pipeline quality natural gas and proper SCR unit design.
Scn 3 - CTG-1 Cold Start-up (SCN007) Scn 7 - CTG-2 Cold Start-up (SCN011)	Complete start-up as quickly as possible & follow manufacturer's established procedures. NO_X: 400.00 lb/hr; CO: 1508.15 lb/hr; VOC: 214.07 lb/hr
Scn 4 - CTG-1 Hot Start-up (SCN008) Scn 8 - CTG-2 Hot Start-up (SCN012)	Complete start-up as quickly as possible & follow manufacturer's established procedures. NO_X: 400.00 lb/hr; CO: 1575.80 lb/hr; VOC: 214.07 lb/hr
Scn 5 - CTG-1 Shut-down (SCN009) Scn 9 - CTG-2 Shut-down (SCN013)	Complete start-up as quickly as possible & follow manufacturer's established procedures. NO_X: 400.00 lb/hr; CO: 964.57 lb/hr
CT – Cooling Tower (EQT014)	PM/PM_{10}: 1.40 lb/hr; Use of mist eliminators to attain the 0.001% drift rate.
DFP – Diesel Fire Pump (EQT016)	Use of low sulfur fuels, limiting annual operating hours, and proper maintenance of the engine. PM/PM_{10}: 0.68 lb/hr; SO_2: 0.64 lb/hr; NO_X: 9.61 lb/hr; CO: 2.07 lb/hr; VOC: 0.77 lb/hr.

2. The permittee shall limit the emissions of NO_X for both PCS0004 – CTG-1 and PCS0005 - CTG-2 to 400.00 lb/hr during start-up/shut-down operations. Emissions of NO_X during start-up/shut-down operations of both PCS0004 – CTG-1 and PCS0005 - CTG-2 are monitored by continuous emission monitor (CEM). Noncompliance with this limitation is a reportable violation of the permit. Notify the Office of Environmental Compliance, Enforcement Division if the NO_X emissions exceed the maximum listed in this specific condition for any twelve consecutive month period. The permittee shall keep records of the total NO_X emissions during start-up/shut-down operations each month, as well as the total the NO_X emissions during start-up/shut-down operations for the last twelve months. The permittee shall have these records available for inspection by DEQ personnel. The permittee shall submit an annual report of the NO_X emissions during start-up/shut-down operations for the preceding calendar year to the Office of Environmental Compliance, Enforcement Division.

3. In order to demonstrate compliance with the Maximum Potential to Emit (Max PTE) of 302.72 TPY of CO and 59.88 TPY of VOC, for both PCS0004 – CTG-1 and PCS0005 - CTG-2, the permittee shall perform the following monitoring and recordkeeping operations for CO and VOC.

   1. Permittee shall monitor and record the number of hours each month that PCS0004 – CTG-1 and PCS0005 - CTG-2 operated in both the cold and warm start-up mode. Start-up begins from the time of first flame in the turbine and ends when the gas turbine reaches dry low NO_X mode (DLN) as directed by the control system. Cold Start is a start-up beginning more than 24 hours after the same unit shut-down. Warm Start is a start-up beginning less than 24 hours after the same unit shut-down.

      Record each month: Time (hr/mo) $_{Cold\ SU}$ and Time (hr/mo) $_{Warm\ SU}$

   2. Permittee shall record the number of hours each month that both PCS0004 and PCS0005 operated in shut-down mode. Shut-down begins when the turbine exits DLN mode and ends with the termination of fuel flow to the turbine.

      Record each month: Time (hr/mo) $_{SD}$

   3. Permittee shall calculate the total Time (hr/yr) for cold and warm startup operations as the sum of the previous twelve month records for startup operations for both PCS0004 and PCS0005.

      Calculate: Time (hr/yr) $_{SU}$ = Time (hr/mo) $_{Cold\ SU}$ + Time (hr/mo) $_{Warm\ SU}$ for previous 12 months

   4. Permittee shall calculate the total Time (hr/yr) for shutdown operations as the sum of the previous twelve month records for shutdown operations for both PCS0004 and PCS0005.

      Calculate: Time (hr/yr) $_{SD}$ = Time (hr/mo) $_{SD}$ for previous 12 months

   5. Permittee shall calculate the total Time (hr/yr) for both startup and shutdown operations as the sum of the (a) total Time (hr/yr) for startup operations; and the (b) total Time (hr/yr) for shutdown operations.

      Calculate: Time (hr/yr) $_{SU/SD}$ = Time (hr/yr) $_{SU}$ + Time (hr/yr) $_{SD}$

6. Permittee shall calculate the Reduced Time (hr/yr) for Normal Operations as the difference between the Operating Time (hr/yr), as listed on the EIQ sheet for both PCS0004 and PCS0005, and the total Time (hr/yr) for both startup and shutdown operations.

   Calculate: Reduced Time (hr/yr) $_{NO}$ = 8,760 (hr/yr) $_{EIQ}$ - Time (hr/yr) $_{SU/SD}$

7. Permittee shall calculate the Max PTE at both PCS0004 and PCS0005 by summing the following three terms (a), (b), and (c). Permittee shall perform this calculation for each of the startup/shutdown pollutants, CO and VOC.

   Calculate: Max PTE = (a) + (b) + (c)

   (a) The product of the Average (lb/hr) for normal operations, submitted on the EIQ for both PCS0004 and PCS0005, and the Reduced Time (hr/yr) for Normal Operations, and 1 ton/2,000 lbs;

   (a) = (Ave (lb/hr) $_{EIQ}$) * (Reduced Time (hr/yr) $_{NO}$) * (1 ton/2,000 lbs)

   (b) The product of the Maximum (lb/hr) for startup operations, submitted in the startup calculations for both PCS0004 and PCS0005, and the total Time (hr/yr) for startup operations, and 1 ton/2,000 lbs;

   (b) = (Max (lb/hr) $_{SU}$) * (Time (hr/yr) $_{SU}$) * (1 ton/2,000 lbs)

   (c) The product of the Maximum (lb/hr) for shutdown operations, submitted in the shutdown calculations for both PCS0004 and PCS0005, and the total Time (hr/yr) for shutdown operations, and 1 ton/2,000 lbs;

   (c) = (Max (lb/hr) $_{SD}$) * (Time (hr/yr) $_{SD}$) * (1 ton/2,000 lbs)

8. Permittee shall compare the calculated Max PTE with the permit limit for both PCS0004 and PCS0005 to determine compliance with the permit limitation.

Noncompliance with this limitation of the Max PTE is a reportable violation of the permit. Notify the Office of Environmental Compliance, Enforcement Division if the calculated Max PTE (TPY) exceeds the permit limit listed in the permit. Keep records of the calculated Time (hr/yr) $_{SU/SD}$ and Max PTE (TPY). Make records available for inspection by DEQ personnel. Submit an annual report of the calculated Max PTE (TPY) for the preceding calendar year by the 31st of March to the Office of Environmental Compliance, Enforcement Division.

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 April 27, 2007, along with supplemental information dated May 31, June 25, September 25, October 31, November 8, November 20, December 20, 26, 27, 2007, and January 7, 2008.

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 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
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 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.

TABLE I: BACT COST SUMMARY

J. Lamar Stall Unit #1
Agency Interest No.: 1060
Southwestern Electric Power Company (SWEPCO)
Shreveport, Caddo Parish, Louisiana
PSD-LA-726

Control Alternatives		Availability/ Feasibility	Negative Impacts (a)	Control Efficiency	Emissions Reduction (TPY)	Capital Cost ($)	Annualized Cost ($)	Cost Effectiveness ($/ton)	Notes
CTG-1 - Turbine/HRSG Train with Duct Burners (EQT012) **CTG-2 - Turbine/HRSG Train with Duct Burners (EQT013)**									
PM/PM_{10}	Combustion Technology/Design and Proper Operation of the turbines and duct burners. Use pipeline quality natural gas.	Yes/Yes							Chosen as BACT.
	Fabric Filters (Baghouse)	Yes/No	2						
	Electrostatic Precipitator (ESP)	Yes/No	2,3						
SO_2	Use low-sulfur pipeline quality natural gas.	Yes/Yes							Chosen as BACT.
	Flue Gas Desulfurization	Yes/No	2						
NO_X	Using low NO_X turbine combustors and low NO_X duct burners combined with SCR control technology.	Yes/Yes							Chosen as BACT.
CO	Use efficient and complete combustion technology on the turbines and the duct burners.	Yes/Yes							Chosen as BACT.
	Catalytic Oxidation	Yes/No	1,2,3	90%	180	$4,699,135	$1,286,069	$7,143/ton CO	
VOC	Efficient and complete combustion technology on turbines and duct burners.	Yes/Yes							Chosen as BACT.
	Catalytic Oxidation	Yes/No	1,2,3	50%					
H_2SO_4	Use low-sulfur pipeline quality natural gas and proper SCR unit design.	Yes/Yes							Chosen as BACT.

TABLE I: BACT COST SUMMARY

J. Lamar Stall Unit #1
Agency Interest No.: 1060
Southwestern Electric Power Company (SWEPCO)
Shreveport, Caddo Parish, Louisiana
PSD-LA-726

Control Alternatives		Availability/ Feasibility	Negative Impacts (a)	Control Efficiency	Emissions Reduction (TPY)	Capital Cost ($)	Annualized Cost ($)	Cost Effectiveness ($/ton)	Notes
Scn 3 - CTG-1 Cold Start-up (SCN007); Scn 4 - CTG-1 Hot Start-up (SCN008); Scn 5 - CTG-1 Shut-down (SCN009); Scn 7 - CTG-2 Cold Start-up (SCN011); Scn 8 - CTG-2 Hot Start-up (SCN012); and Scn 9 - CTG-2 Shut-down (SCN013)									
NO_X	Complete events as quickly as possible according to the manufacturer's recommended procedures	Yes/Yes							Chosen as BACT.
	Selective Catalytic Reduction (SCR)	Yes/No	2						
	Low NO_X combustion technology	Yes/No	2						
CO VOC	Complete events as quickly as possible according to the manufacturer's recommended procedures	Yes/Yes							Chosen as BACT.
	Good combustion practices	Yes/No	2						
CT – Cooling Tower (EQT014)									
PM/PM_{10}	Use of Mist Eliminators	Yes/Yes							Chosen as BACT.
DFP – Diesel Fire Pump (EQT016)									
PM/PM_{10} SO_2 NO_X CO VOC	Use of low sulfur fuels, limiting annual operating hours, and proper maintenance of the engine	Yes/Yes							Chosen as BACT.
Notes: a) Negative impacts: 1) economic, 2) environmental, 3) energy, 4) safety									

TABLE II: AIR QUALITY ANALYSIS SUMMARY

J. Lamar Stall Unit #1
Agency Interest No.: 1060
Southwestern Electric Power Company (SWEPCO)
Shreveport, Caddo Parish, Louisiana
PSD-LA-726

Pollutant	Averaging Period	Preliminary Screening Concentration ($\mu g/m^3$)	Level of Significant Impact ($\mu g/m^3$)	Significant Monitoring Concentration ($\mu g/m^3$)	At the Monitoring Station: Monitored Values ($\mu g/m^3$)	At the Monitoring Station: Modeling results ($\mu g/m^3$)	Background ($\mu g/m^3$)	Maximum Modeled Concentration ($\mu g/m^3$)	Modeled + Background Concentration ($\mu g/m^3$)	NAAQS ($\mu g/m^3$)	Modeled PSD Increment Consumption ($\mu g/m^3$)	Allowable Class II PSD Increment ($\mu g/m^3$)
PM_{10}	24-hour	28.1	5	10	43	-	43	21.87	64.7	150	21.7	30
	Annual	2.04	1	-	-	-	-	-	-	50	2.72	17
SO_2	3-hour	7.96	25	-	-	-	-	-	-	1300	-	512
	24-hour	4.27	5	13	-	-	-	-	-	365	-	91
	Annual	0.515	1	-	-	-	-	-	-	80	-	20
NO_X	Annual	4.67	1	14	15.3	-	15.3	10.81	26.11	100	5.83	25
CO	1-hour	1,401	2000	-	-	-	-	-	-	40,000	-	-
	8-hour	392	500	575	-	-	-	-	-	10,000	-	-
Lead	3-month	-	-	0.1	-	-	-	-	-	1.5	-	-

NR = Not required.