Construction Permit
Source Analysis & Technical Review

Company	**Las Brisas Energy Center LLC**	Permit Numbers	**85013, HAP48, PAL41, PSD-TX-1138**
City	**Corpus Christi**	Project Number	**138509**
County	**Nueces**	Account Number	**N/A**
Project Type	**Initial**	Regulated Entity Number	**RN105520779**
Project Reviewer	**Mr. Randy Hamilton, P.E.**	Customer Reference Number	**CN603358771**
Site Name	**Petroleum Coke-Fired Power Plant**		

Project Overview

Las Brisas Energy Center (LBEC) proposes to construct and operate new steam-electric utility generating facilities using four circulating fluidized bed (CFB) boilers, each with a design maximum heat input of 3,080 million British thermal units per hour (MMBtu/hr) and 300 MW net electric output. The gross electric output of the four steam electric generators is about 1,400 MW; the net electric output of the LBEC is about 1,200 MW. The proposed fuel is petroleum coke. The project is sized with the capability to take all the petroleum coke produced by the Corpus Christi petroleum refineries, located nearby along the Corpus Christi Ship Channel. Natural gas is proposed as the CFB startup fuel, with vaporized propane as a back-up startup fuel if natural gas is unavailable.

Emission Summary

Air Contaminant	Current Allowable Emission Rates (tpy)	Proposed Allowable Emission Rates (tpy)	Change in Allowable Emission Rates (tpy)
PM	none	1,767	n/a
PM_{10}	none	1,664	
$PM_{2.5}$	none		
VOC	none	283	
NO_X	none	3,824	
CO	none	5,977	
SO_2	none	8,096	
HAPs	none	>25	

Compliance History Evaluation - 30 TAC Chapter 60 Rules

A compliance history report was reviewed on:	
Compliance period:	
Site rating & classification:	**average by default - facility not built**
Company rating & classification:	
If the rating is 40<RATING<45, what was the outcome, if any, based on the findings in the formal report:	
Has the permit changed on the basis of the compliance history or rating?	**no**

Public Notice Information - 30 TAC Chapter 39 Rules

Rule Citation	Requirement	
39.403	Is Public Notice Required?	**Yes**
	If no, give reason:	
	Date Application Received:	**May 19, 2008**
	Date Administratively Complete:	**May 23, 2008**

Rule Citation	Requirement	
	Small Business Source?	**No**
	Date Leg Letters mailed:	**May 23, 2008**
39.603	Date Published:	**June 19, 2008**
	Publication Name:	***Corpus Christi Caller Times***
	Pollutants:	**NO_X, SO_2, CO, organic compounds, PM/PM_{10}/$PM_{2.5}$, H_2SO_4, NH_3, Hg, HCl, HF, Pb, NaOH**
	Date Affidavits/Copies Received:	**June 30, 2008**
	Is bilingual notice required?	**Yes, but no publication in Spanish found.**
	Language:	**Spanish**
	Date Published:	**June 19, 2008**
	Publication Name:	***Corpus Christi Caller Times***
	Date Affidavits/Copies Received:	**June 30, 2008**
	Date Certification of Sign Posting / Application Availability Received:	**July 29, 2008**
39.604	Public Comments Received?	**Yes**
	Hearing Requested?	**Yes**
	Meeting Request?	**Yes**
	Date Meeting Held:	**October 7, 2008**
	Date Response to Comments sent to OCC:	**will occur after end of 2nd notice period**
	Request(s) withdrawn?	**No**
	Date Withdrawn:	
	Consideration of Comments:	
	Is 2nd Public Notice required?	**Yes**
39.419	If no, give reason:	
	Date 2nd Public Notice Mailed:	**January 7, 2009**
	Preliminary Determination:	**Issue**
39.603	Date Published:	
	Publication Name:	***Corpus Christi Caller Times***
	Pollutants:	**NO_X, SO_2, CO, organic compounds, PM/PM_{10}/$PM_{2.5}$, H_2SO_4, NH_3, Hg, HCl, HF, Pb, NaOH**
	Date Affidavits/Copies Received:	
	Is bilingual notice required?	**Yes**
	Language:	**Spanish**
	Date Published:	
	Publication Name:	
	Date Affidavits/Copies Received:	
	Date Certification of Sign Posting / Application Availability Received:	
	Public Comments Received?	
	Meeting Request?	
	Date Meeting Held:	
	Hearing Request?	
	Date Hearing Held:	

Rule Citation	Requirement
	Request(s) withdrawn?
	Date Withdrawn:
	Consideration of Comments:
39.421	Date RTC, Technical Review & Draft Permit Conditions sent to OCC:
	Request for Reconsideration Received?
	Final Action:
	Are letters Enclosed?

Construction Permit & Amendment Requirements - 30 TAC Chapter 116 Rules

Rule Citation	Requirement	
116.111(a)(2)(G)	Is the facility expected to perform as represented in the application?	**Yes**
116.111(2)(A)(i)	Are emissions from this facility expected to comply with all TCEQ air quality Rules & Regulations, and the intent of the Texas Clean Air Act?	**Yes**
116.111(2)(B)	Emissions will be measured using the following methods:	**CEMS, Periodic stack tests, fuel analyses**
	Comments on emission verification:	
116.111(2)(D)	Subject to NSPS?	**Yes**
	Subparts **A** & **Da, Db, IIII**	
116.111(2)(E)	Subject to NESHAPS?	**No**
	Subparts &	
116.111(2)(F)	Subject to NESHAPS (MACT) for source categories?	
	Subparts **A, B** & **ZZZZ**	
116.111(2)(H)	Is nonattainment review required?	**No**
	Is the site located in a nonattainment area?	**No**
	Is the site a federal major source for a nonattainment pollutant?	**na**
	Is the project a federal major source for a nonattainment pollutant by itself?	**na**
	Is the project a federal major modification for a nonattainment pollutant?	**na**
	Did the project emission increases for nonattainment pollutant minus the two-year average actual emissions trigger netting?	**na**
	If yes, attach Table 1N & 9N. If no, explain:	
	Is the contemporaneous increase significant?	**na**
	If the contemporaneous increase is significant a nonattainment review is required.	
116.111(2)(I)	Is PSD applicable?	**Yes**
	Is the site a federal major source (100/250 tons/yr)?	**No**
	Is the project a federal major source by itself?	**Yes**
	Is the project a federal major modification?	**No**
	Did project emission increases, without decreases, for pollutant of concern, minus the two-year average actual emissions trigger netting?	**na-grassroots site**
	Was the contemporaneous increase significant?	**na**
	If yes, explain:	
	Is the change excluded by 40 CFR 52.21(b)(2)(iii)?	**no**
	If yes, explain:	
116.111(a)(2)(L)	Is Mass Emissions Cap and Trade applicable to the new or modified facilities?	**no**
	If yes, did the proposed facility, group of facilities, or account obtain allowances to operate:	
116.140 - 141	Permit Fee: $ **$75,000** Fee certification:	**Yes**

Title V Applicability - 30 TAC Chapter 122 Rules

Rule Citation	Requirement	
122.10(13)(A)	Is the site a major source under FCAA Section 112(b)?	**yes**
	Does the site emit 10 tons or more of any single HAP?	**yes**
	Does the site emit 25 tons or more of a combination?	**yes**
122.10(13)(C)	Does the site emit 100 tons or more of any air pollutant?	**yes**
122.10(13)(D)	Is the site a non-attainment major source?	**no**
122.602	**Periodic Monitoring (PM) applicability: Yes** Through Title V	
122.604	**Compliance Assurance Monitoring (CAM) applicability: Yes** NO_X, SO_2, and PM/PM_{10},are controlled by control devices; will use CEMS and COMS for compliance	

Request for Comments

Received From	Program/Area Name	Reviewed By	Comments
Region: 14	**Corpus Christi**	**David Turner, Joe Montoya**	**on draft permit of 11/23, via fax 12/05/08**
City:	**no local program**		
County:	**no local program**		
Toxicology:		**Jong-Song Lee**	**in memo dated 12/29/2008**
Compliance:			
Legal:			
Comment resolution and/or unresolved issues:			

Process/Project Description

LBEC proposes to construct and operate new steam-electric utility generating facilities using four circulating fluidized bed (CFB) boilers, each with a design maximum heat input of 3,080 million British thermal units per hour (MMBtu/hr) and 300 MW net electric output. The gross electric output of the four steam electric generators is about 1,400 MW; the net electric output of the LBEC is about 1,200 MW. The proposed fuel is petroleum coke. The project is sized with the capability to take all the petroleum coke produced by the Corpus Christi petroleum refineries, located nearby along the Corpus Christi Ship Channel. Natural gas is proposed as the CFB startup fuel, with vaporized propane as a back-up startup fuel if natural gas is unavailable.

Air pollutant-emitting equipment necessary for supporting the operation of the CFBs and steam turbine generators is included in the draft air permit. Combustion-type facilities include: two auxiliary boilers, used to provide process steam during CFB startups, shutdowns, and during the commissioning phase of the project (the last phase of construction); two propane vaporizers to vaporize the propane back-up fuel; and eleven diesel engines to provide, variously, emergency electric generation, firefighting water pumping capability, and emergency boiler feed water pumping capability. Each auxiliary boiler and propane vaporizer will be limited to operate no more than 2,500 hours per year; each engine, no more than 500 hours per year.

The steam-electric generation process requires that the steam circulated in the boiler-steam turbine loop be condensed to water before being pumped up to operating pressure and returned to the boiler. LBEC

proposes two water-cooled cooling towers, each with a cooling water circulation design rate of 300,000 gallons per minute.

The permit includes vessels used to hold solids: the petroleum coke fuel; limestone and lime for sulfur dioxide (SO_2) control; soda ash for water quality treatment; sand for CFB bed stabilization; and fly ash and boiler bottom ash solid wastes. The materials stored in these silos or bins are moved pneumatically, and fabric filters, (also called baghouses), are used to clean the exhaust emissions from these facilities.

Eleven liquid fuel storage tanks are proposed for storing diesel fuel for the emergency engines, and one tank each for acid and base water treatment chemicals. Pressurized storage tanks are proposed to store ammonia, used for nitrogen oxides (NO_X) control, and the propane fuel.

Pollution Prevention, Sources, Controls and BACT- [30 TAC 116.111(a)(2)(C)]

A. CFB Boilers

State and federal law require application of BACT for the control of air emissions from LBEC. BACT requires consideration of both technical feasibility and economic reasonableness. To identify BACT, the Texas Commission on Environmental Quality (TCEQ) Air Permits Division (APD) staff follow air pollution technology development for coal combustion through review of recently issued air permits issued around the country, attendance at workshops and conferences, interaction with vendor experts, state and federal regulators, plant tours, etc. In the last five years, many new solid fossil-fuel-fired power plant have been proposed in the United States, with many air permits already issued and others still under review. In its evaluation, the APD compared the proposed LBEC emissions with several recently proposed and issued permits to identify proposed BACT technologies and emission limits. In addition, the EPA's acid rain program generates unit-specific SO_2 and NO_x monitoring data which allows evaluation of current emission rates for similar electric generating facilities operating in the United States. This information may be used to assess performance of SO_2 and NO_x pollution controls.

The following table summarizes the proposed emission limits expressed as performance standards for the CFB boilers.

Pollutant	Emission Rate (lb/MMBtu)	Averaging time
NO_x	0.10	hourly
NO_x	0.070	30-day rolling
SO_2	0.178	30-day rolling
SO_2	0.15	12-month-rolling
CO	0.11	12-month rolling
PM/PM_{10} total	0.033	annual
PM/PM_{10} filter	0.011	annual
Pb	0.00000095	annual
VOC	0.0050	annual

Fluorides (as HF)	0.000082	annual
HCl	0.00089	annual
H_2SO_4	0.022	annual
Mercury	0.0000020	12-month rolling
	not lb/MMBtu	
Ammonia	10 ppm	3-hour
Ammonia	5 ppm	12-month rolling

NO_X For NO_x, the proposed hourly BACT limit requires use of combustion controls, including low NO_x burners and over-fired air. The proposed 30-day limit requires selective non-catalytic reduction (SNCR), which consists of NH_3 injection into the upper furnace where the ammonia reacts with NO_X to form nitrogen and water. Selective catalytic reduction (SCR), which uses a catalyst bed to promote the ammonia-NO_X reactions at lower temperatures than are in the upper furnace, was investigated as a potentially more effective control technology. The use of SCR was rejected for the CFBs because in the flue gases exiting the boiler economizer, where SCR is normally installed on pulverized-coal (PC) boilers, the fly ash (particulate matter) properties in a CFB are very different from a PC boiler. The CFB fly ash mass loading is higher, the particle size is larger, and the calcium oxide content of the particulate is higher than any PC boiler using SCR. These lead to technical concerns as to whether the SCR would be able to withstand plugging and premature deactivation; SCR vendors are not willing to guarantee the performance of their catalysts on a petroleum coke-fired CFB at this time. No coal or petroleum coke fired CFBs are known to have used SCR. The use of SCR was rejected as BACT for the CFBs because it has not been shown to be technically feasible.

The TCEQ follows the EPA requirement that the PSD BACT determination consider the most stringent level of BACT that has been established for a similar facility. As part of the BACT evaluation, the EPA's data base of BACT determinations, the RACT-BACT-LAER Clearinghouse, was searched for solid-fuel boilers rated greater than 250 MMBtu/hr heat input. The emission limit of 0.070 lb NO_X/MMBtu, 30-day rolling average was the most stringent limit found for petroleum coke or coal-fired CFBs. Therefore, the proposed control technology and emission limit of 0.070 lb NO_X/MMBtu is BACT for LBEC's proposed petroleum coke-fired CFBs.

SO_2 For SO_2 control, LBEC proposes to use two control systems. First, the CFB bed will be composed primarily of limestone, which decomposes, or calcines, upon heating, to form lime, which in turn reacts to form gypsum with the SO_2 and SO_3 released from the burning petroleum coke. With control efficiencies in the 90%-98% range, this "in-process" control gives CFBs a cost advantage over PC boilers that use the more capital, energy, and water-intensive, wet flue gas desulfurization (FGD) systems at the tail end of the process. A wet FGD may now achieve 98%-99% removal efficiency as BACT for SO_2. Recent designs of coal and coke-fired CFBs have included tail end SO_2 cleanup in addition to the limestone bed control. LBEC proposes to use a lime slurry injected into the flue gas stream before it enters the PM collection system to remove additional SO_2 from the flue gas This type of control is called a dry FGD system (or lime spray dryer), because the gypsum product is collected as a dry powder with the PM (flyash), rather than a scrubber sludge in wet FGD.

The proposed SO_2 emission limits for LBEC are consistent with the most stringent SO_2 emission limits of other recently issued permits for very similar facilities and fuels. The TCEQ recently issued an air quality

permit for Calhoun County Navigation District's proposed 100% petroleum coke-fired CFB, of the same size, and using the same control technology as proposed by LBEC, with an emission limit of 0.178 lb SO_2/MMBtu, 30-day rolling average. The EPA's RBLC data base lists three petroleum coke-fired CFB projects of similar size and using the same control technology as proposed by LBEC, with an emission limit of 0.15 lb SO_2/MMBtu, rolling 30-day average: Big Cajun I, a 240 MW unit permitted in 2008 but not under construction, owned by NRG Louisiana; Rodemacher Unit 3, consisting of two 300 MW units under construction, owned by CLECO; and Northside CFB Units 1 and 2, also two 300 MW units, operating since 2002, owned by JEA. A distinguishing feature of the three projects permitted at 0.15 lb SO_2/MMBtu is that although there is some evidence that they were designed to achieve this limit on 100% petroleum coke with the same or similar sulfur content, each of them is designed and permitted to burn lower sulfur fuel than petroleum coke. The only plant of the three already in operation, JEA Northside, normally operates with a blend of 90% petroleum coke and 10% bituminous coal. Therefore, each of the these plants has the ability to blend the fuel to reduce SO_2 emissions on a 30-day rolling average, whereas LBEC does not. Because of this reduced flexibility for LBEC, emission limits of 0.178 lb SO_2/MMBtu, 30-day rolling average, and 0.15 lb SO_2/MMBtu, rolling 12-month average, are BACT for the SO_2 emissions from the proposed LBEC CFBs.

CO and VOC For CO and VOC, LBEC proposes good combustion practice and boiler design to minimize these products of incomplete combustion, which is consistent with the technology approved for other CFB permits around the country.

The proposed LBEC performance standard for CO, 0.011 lb CO/MMBtu, 30-day rolling average, is similar, but not identical to the most stringent performance standards of other similar CFB permits. The PDS for Rodemacher 3 in Louisiana describes performance at 0.10 lb CO/MMBtu, 30-day rolling average for CFB loads at or near full load and 0.15 lb CO/MMBtu for loads at 75% or less. The Rodemacher 3 permit includes only the 0.15 lb CO/MMBtu performance standard, while the allowable annual tons are calculated on 0.10 lb/MMBtu. Two more recent petroleum coke fueled CFB projects in Louisiana, Rodemacher 3, and Entergy's Little Gypsy 3, have permit performance standards of 0.10 lb CO/MMBtu, 30-day rolling average for loads at or greater than 60%, and 0.15 lb CO/MMBtu, 24-hour rolling average, for loads at 60% or less. A PSD permit was issued in June 2008 for VEPCO's Virginia City Hybrid Energy Center (VCHEC), a MW bituminous coal, coal waste, and biomass-fired CFB, with a single variable CO performance standard based on 0.10 lb/MMBtu for load equal to or greater than 75% for and 0.15 lb/MMBtu for loads less 75% and weighted according to the amount of time operating within each range. It is not clear whether any of these limits are more stringent than the proposed limit for LBEC.

The proposed emissions of VOC are fairly consistent with other recent permits. The proposed LBEC performance standard is 0.0050 lb VOC/MMBtu, annual average. Other recent petroleum coke-fired CFB permit limits include: Entergy Little Gypsy, NRG Cajun I, and CLECO Rodemacher 3, all in Louisiana, each with a performance standard of 0.0047 lb/MMBtu, 30-day rolling average; and JEA Northside, 0.0050 lb/MMBtu, 3-hr average. Various other recent coal-fired CFB projects have a permit limit of 0.0050 lb/MMBtu, 3-hr average, including: VEPCO VCHEC, Sunnyside Ethanol, LLC, River Hill Power Company, Greene Energy Resource Recovery Project, and Gascoyne Generating Station. The proposed emissions of CO and VOC reflect application of BACT.

PM/PM_{10} For PM/PM_{10}, filter catch, LBEC proposes to use a fabric filter baghouse as BACT. The proposed performance standard of 0.011 lb PM filterable/MMBtu is fairly consistent with the lowest of recent proposed permits for CFBs in the U.S. The most recent permit in the RBLC data base, VEPCO's VCHEC, has limits of 0.010 lb filterable PM/MMBtu, 3-hr average. In addition, this permit requires a PM

CEMS, and specifies a limit of 0.009 lb PM/MMBtu, 30-day rolling average with compliance based on the CEMS. Three permits issued for CFBs in Pennsylvania, Reliant Seward Power, Sunnyside Ethanol, and River Hill Power, have a limit of 0.01 lb filterable PM/MMBtu, 3-hr average. Because the Pennsylvania permits did not include a trailing zero after the limit, it has been pointed out that compliance with the PM filterable performance standard would be established by any test value below 0.015 lb/MMBtu, based on appropriate rounding. In addition, none of the preceding projects are based on petroleum coke fuel. The petroleum coke-fired CFB air permits, JEA Northside, NRG Big Cajun I, Entergy Little Gypsy, and CLECO Rodemacher all have limits of 0.011 lb PM filterable/MMBtu, 30-day average. Because the LBEC CFBs are to use petroleum coke, the slightly higher limit of the petroleum coke projects is the appropriate choice for filterable PM BACT.

The total PM/PM_{10} reflects the contribution of condensibles, or so-called back half catch, and includes H_2SO_4 and HCl. The calcium in the limestone combustion bed, flue gas, spray dryer chamber, and baghouse is expected to absorb much of the acid gases. Establishing the condensible portion of PM is complicated because the quantification of H_2SO_4 and other condensing species is difficult and some test results using EPA test methods for condensibles have produced questionable results. The proposed control technology and emission limits of 0.011 lb PM filterable/MMBtu and 0.033 lb total PM/MMBtu, three-hour average, represent BACT.

H_2SO_4 and Fluorides For the acid gases H_2SO_4 and HF, LBEC proposes control with a limestone bed CFB, lime spray dryer, and baghouse with 95% average removal efficiency and proposed emission limits of 0.022 lb H_2SO_4/MMBtu, 3-hour average, 0.019 lb H_2SO_4/MMBtu, annual average, and 0.000082 lb HF/MMBtu. The emission limits reflect BACT.

BACT for Emissions during Startup/Shutdown The flue gas emission control systems for NO_X and SO_2 require minimum operating temperatures in order to operate. The maximum hourly BACT emission rates for CFB Boiler Startup/Shutdown emissions, reflecting these operating temperature limitations, are identified in the permit maximum allowable emission rate table. These operating conditions do not increase allowable tons per year of emissions. The baghouse needs to be preheated before introducing the flue gases from petroleum coke combustion. This preheating will be done with natural gas or propane, which produce very little PM. In order to assure maximum control of PM during startups and shutdowns, if bypass ductwork is constructed, the baghouses will not be bypassed while firing petroleum coke. In addition to this measure, the applicant has agreed to develop a written plan to minimize emissions during startups and shutdowns. BACT is applied for CFB S/S.

BACT for Non-federally regulated NSR Pollutants The introduction of ammonia for NO_X control may result in some emissions of ammonia, because at higher NO_X reductions, some ammonia may slip through the reaction zone without reacting with NO_X. Ammonia slip is limited to 10 ppmv on an hourly basis and 5 ppmv on an annual basis. These limits are consistent with other permit and regulatory limits for ammonia and reflect BACT.

For nonmercury metals, the baghouse PM/PM_{10} emission limit provides BACT level control of these solid materials. For mercury, the applicant proposes to use activated carbon injection as necessary, to meet an emission limit of $2.0(10^{-6})$ lb/MMBtu, on a 12-month rolling average, to be verified by continuous emission monitors. In addition, LBEC will conduct an optimization program to maximize the Hg removal. The degree of Hg removal will depend on the Hg input through the fuel; more recent data, such as measured at JEA Northside, suggests that there is very little Hg in the petroleum coke. For HCl, an acid gas, the

limestone bed CFB, lime spray dryer, and baghouse with 95% average removal efficiency and proposed emission limit of 0.00089 lb HCl/MMBtu, annual average, reflect BACT.

B. Auxiliary Boilers

The two proposed natural gas-fired boilers, each rated at 180 MMBtu/hr of heat input, are limited by permit condition to operate no more than 2,500 hours per rolling 12-month period. The applicant proposes to control emissions of NO_X to 0.035 lb NO_X/MMBtu (~29 parts per million by volume, dry basis, at 3% O_2) and CO to 50 ppmvd, 3% O_2 (0.037 lb CO/MMBtu),. Typically, a combination of flue gas recirculation, low-NO_X burners, and tight air-fuel ratio control are used to achieve these limits. Because of the limited operation of the auxiliary boilers, and the resulting relatively high marginal costs of additional control, it is not necessary to meet the TCEQ BACT guidance of 0.010 lb NO_X/MMBtu (8 ppmvd @ 3% O_2) for natural gas-fred boilers above 40 MMBtu/hr with unrestricted hours of operation. The CO limit of 50 ppmvd at 3% O_2 is the TCEQ BACT guidance level for CO for natural gas-fired boilers. The use of pipeline natural gas constitutes BACT for SO_2, PM, and VOC. Proposed emissions are based on AP-42 emissions for PM and VOC, and 0.25 grain hydrogen sulfide per 100 scf of natural gas for SO_2. Combined annual allowable emissions from the two auxiliary boilers are: 16 tpy NO_X, 19 tpy CO, 3.4 tpy PM_{10}, 2.5 tpy VOC, and 0.3 tpy SO_2.

C. Propane Vaporizers

The two proposed propane-fired vaporizers, each rated at 16 MMBtu/hr of heat input, are limited by permit condition to operate no more than 2,500 hours per rolling 12-month period. The applicant proposes to control emissions of NO_X and CO to 0.10 lb NO_X/MMBtu (82 parts per million by volume, dry basis, at 3% O_2) and ~0.040 lb CO/MMBtu (50 ppmvd, 3% O_2), respectively. Typically, no special burner design is required to meet these limits. Based on a discussion with the proposed vaporizer vendor, there are no low-NO_X burners available for these particular units at this size. Because of the limited operation of the propane vaporizers and the apparent lack of a readily available low-NO_X burner design suitable for these units, BACT is applied for NO_X control with no additional control. The CO limit of 50 ppmvd 3% O_2 is BACT for CO. The use of propane fuel gas constitutes BACT for SO_2, PM, and VOC. Proposed emissions are based on AP-42 emissions for PM, VOC, and SO_2. Combined annual allowable emissions from the two propane vaporizers are: 4.0 tpy NO_X, 3.2 tpy CO, 0.30 tpy PM_{10}, 0.34 tpy VOC, and 0.1 tpy SO_2.

D. Diesel Engines

The eleven emergency diesel engines have output ratings as follows: 2 generators - 1,600 kW electric each; - 1 fire water pump engine - 360 horsepower (hp); 4 booster fire water pump engines - 100 hp each; and 4 boiler feed water pumps - 2,000 hp each. The proposed maximum usage of each engine is limited to 500 hours per year. The engines are required to meet EPA's recently adopted NSPS Subpart IIII for stationary diesel engines, which also limits the sulfur content of the diesel fuel. Based on the limited hours of operation, compliance with the NSPS represents BACT for these engines.

E. Cooling Towers

The proposed cooling towers, used to remove waste heat from the steam electric generation process, will be a source of PM/PM_{10} emissions caused by the evaporation of water mist that contains dissolved solids. Dissolved solids become solid airborne particulate when the droplet dries. The method of controlling these emissions is to use high-efficiency drift eliminators to knock out water particles that contain the dissolved solids. The applicant proposes to use high efficiency mist eliminators with a drift rate (lb water drift emission/lb circulated water) of 0.0005%. This rate represents BACT for the control of PM/PM_{10} from the cooling towers. Total proposed emissions are 105 tpy PM and 2.6 tpy PM_{10}.

F. Material Storage and Handling Equipment

LBEC proposes to control PM/PM_{10} from the material storage and handling operations by using enclosed conveyors to bring the petroleum coke into the plant, pneumatic piping for solids conveying, and baghouses to control air vent emissions. The baghouses are specified to meet an emission limit of 0.01 grain PM/dscf for the low-flow baghouses, and 0.005 grain PM/dscf for the high-flow baghouses (ash and petroleum coke). There will be no open storage of solids on the plant property. These levels of control represent BACT for the emissions from the solid material storage and handling equipment.

LBEC proposes to use pressurized storage tanks for storage of propane and ammonia. The only emissions associated with these tanks are very small amounts of fugitive emissions that escape from connections and seals. LBEC will use an audio/visual/olfactory leak detection program to ensure that fugitive leaks from the ammonia storage tanks are minimized. This level of control represents BACT for the pressurized storage tanks.

Impacts Evaluation - 30 TAC 116.111(a)(2)(J)

Was modeling conducted?	**Yes**	Type of Modeling:	**AERMOD v07026**
Will GLC of any air contaminant cause violation of NAAQS?			**No**
Is this a sensitive location with respect to nuisance?			**No**
[§116.111(a)(2)(A)(ii)] Is the site within 3000 feet of any school?			**No**
Additional site/land use information:			

Summary of Modeling Results

Please see the Preliminary Determination Summary. The modeling results show that the proposed LBEC will not violate any NAAQS, PSD increments, or state property line standards. A state effects evaluation of metals, HF, and HCl was conducted with modeling and review by TCEQ's toxicology section; the predicted impacts are considered acceptable.

Permit Concurrence and Related Authorization Actions

Is the applicant in agreement with special conditions?	**Yes**
Company representative(s):	**John Riley, Chris Thiele**
Contacted Via:	**phone**
Date of contact:	**January 7, 2009**
Other permit(s) or permits by rule affected by this action:	**No**
List permit and/or PBR number(s) and actions required or taken:	**n/a**

Project Reviewer Date Team Leader/Section Manager/Backup Date