UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 2
290 BROADWAY
NEW YORK, NY 10007-1866

OCT 29 2001

Certified Mail - Return Receipt Requested

Ms. Sarah Slusser, Vice President
AES Puerto Rico, L.P.
1001 North 19th Street
Arlington, Virginia 22209

Re: Prevention of Significant Deterioration of Air Quality (PSD) Permit for the Proposed AES Puerto Rico Cogeneration Plant (AES-PRCP)
Administrative Permit Modification

Dear Ms. Slusser:

On September 18, 1998, the Region 2 Office of the U.S. Environmental Protection Agency (EPA) issued a final PSD permit to the AES Puerto Rico, L.P. company for the construction and operation of a 454 megawatt (net) coal-fired steam electric cogeneration facility known as the AES Puerto Rico Cogeneration Plant (AES-PRCP) in Guayama, Puerto Rico. The PSD permit consisted of a project description and summary of the control technologies provided in an Attachment I. The permit conditions were found in an Attachment II. An Attachment III contained the project's air quality impacts and an Attachment IV contained EPA's response to comments on the initial draft permit. Subsequently, the PSD permit was administratively appealed with the EPA's Environmental Appeals Board. All appeals were ultimately dismissed and the final PSD permit became effective on May 27, 1999.

On July 11, 2000, AES requested EPA to make certain corrections in the AES's PSD permit due to a mathematical error in calculating parts per million (ppm) equivalencies of mass emission rates for the pollutant emissions from the circulating fluidized boiler. This request only affected the ppm values in the permit. Emissions in lb/hr, lb/MMBTU, and tons/year will not change. On September 11, 2000, at the request of EPA, AES provided the specific reasons (and a demonstration) as to why there was a need to make the requested changes. That is, the original ppm, lb/hr, and lb/MMBtu values were based on the "environmentally worst-case coal" allowed by the permit of 1% sulfur content with a heating value of 11,000 Btu/lb. However, the worst ppm values actually occurs at the design coal of 0.76% sulfur content with a heating value of 11,600 Btu/lb with no effect on the worst lb/hr and lb/MMBtu values.

On January 30, 2001, AES also requested EPA to make additional changes in the PSD permit due to refinements in the project design. Some of the changes include: a reduction in the number of coal piles from 3 to 2; elimination of the two limestone storage areas and the addition of a 150-day active limestone supply in an enclosed dome with no PM_{10} emissions; placement of the limestone dryer further to the east and increasing its height from 30.5 to 40 meters; reconfiguration of the conveyor routing and conveyor lengths for transporting materials to and from the dock; and adding the option of transporting ash on-site from the batch mixer to the ash rock processing and storage area via a 300-foot conveyor, etc. These proposed changes will result in a net decrease in PM_{10} emissions from the materials handling operations.

On May 25, 2001, at EPA's request, AES-PRCP submitted a dispersion modeling of all of the proposed PM_{10} sources at the proposed powerplant. The revised modeling indicates that the Significant Impact Area for PM_{10} does not change. In addition, the revised PM_{10} air quality impacts decrease over those modeled for the original PSD permit.

EPA reviewed AES's proposed changes and has determined that the changes will not result in any increase in emissions from the facility. The changes will also decrease ambient air impacts. Therefore, the proposed changes and clarifications to the PSD permit can be processed without having to undergo public review. More specific listings of the changes have been included at the end of Attachment I and II of this permit. Please note that this final PSD permit does not contain Attachment IV, EPA's response to comments on the initial draft permit. This PSD permit supersedes the previous PSD permit issued to AES-PRCP.

This determination is final Agency action under the Clean Air Act (the Act). Under Section 307 (b)(1) of the Act, judicial review of this final action is available only by the filing of a petition for review in the United States Court of Appeals for the appropriate circuit within 60 days from the date on which this final permit decision is published in the Federal Register. Under Section 307 (b)(2) of the Act, this final permit decision shall not be subject to later judicial review in civil or criminal proceedings for enforcement.

If you have any questions regarding this letter, please call Mr. Steven C. Riva, Chief, Permitting Section, Air Programs Branch, at (212) 637-4074.

Sincerely,

William J. Muszynski, P.E.
Acting Regional Administrator

Attachments

cc: Gladys M. Gonzales, Chairman
Puerto Rico Environmental Quality Board (w/attachments)

Attachment I

AES Puerto Rico Cogeneration Project
Project Description

General Project Description:

AES Puerto Rico, L.P. (AES-PRLP) proposes to construct and operate a 454 megawatt (net) coal-fired steam electric cogeneration facility located in Guayama, Puerto Rico. The AES Puerto Rico Cogeneration Project (AES-PRCP) will generate electricity for sale to the Puerto Rico Electric Power Authority (PREPA) and steam for the process and/or heating needs of one or more industries in the vicinity of the site. This cogeneration facility will consist of two bituminous coal-fired circulating fluidized bed (CFB) boilers which together will have a maximum heat input rate of 4,922.7 million British Thermal Units per hour (MMBTU/hr) at 105% maximum continuous rating (MCR). In addition, each CFB will be capable of generating approximately 1.8 million lb/hr of steam at 2,400 psig and 1,000°F at the superheater outlet. These boilers will supply superheated steam to two extraction/condensing turbines to drive electric generators and supply process steam flow to industrial facilities of up to 290,000 lb/hr.

Emissions will be controlled through the use of CFB boiler and scrubber designs with limestone and lime injection, respectively, an electrostatic precipitator and a selective non-catalytic reduction system, in conjunction with the use of low sulfur coal. No. 2 fuel oil will be used as a start-up fuel.

In addition, the facility will include one limestone dryer with a maximum heat input rate of 13 MMBTU/hr. The limestone dryer will consist of a crusher, in which a stream of heated air both classifies (separates by size fraction) the ground limestone, and dries the material. The limestone dryer will use propane and combustion controls to minimize emissions. The applicant also proposes to include a diesel generator, a diesel-engine driven boiler feed water pump and a diesel-engine driven fire water pump to ensure the safe operation and shutdown of the cogeneration facility in the unlikely event of a complete loss of off-site power.

Cooling System:

The exhaust steam coming from the turbines is fed to a cooling tower. Circulating water flow in the tower will be 225,000 gallons per minute (gpm). The cooling tower will have a drift eliminator which will reduce drift to 0.001% of circulating water flow.

Coal and Limestone Receiving and Handling Systems:

In order to minimize fugitive particulate emissions during unloading and to meet physical requirements of docking and unloading, gravity-feed belt conveyor and self-unloading ships will

be employed for delivering coal to the facility. The coal will be transported by overland conveyor approximately 3,800 feet to the site and stored in on-site stockpiles. The overland conveyor between the facility and the harbor will be capable of supplying coal and limestone delivered by ship to the facility's coal and limestone stockpiles.

Lime Receiving and Handling System:

The lime handling system includes equipment for storing lime delivered to the site by truck and discharging lime to the circulating dry scrubber reactant preparation system.

Trucks delivering lime to the site will be equipped with a pneumatic transport to convey lime to the storage silo. A baghouse design vent filter and vent fan located on the silo roof will filter the air from the trucks unloading transport air and displaced air from the silo.

Solid Waste Handling and Processing:

The facility will process fly ash and scrubber residue, bed ash, and sludge from the cooling tower sidestream treatment system thickener into manufactured aggregate. The facility will include a system to receive the solid waste streams and process them into conditioned by-product by gravimetrically controlled mixing of the waste stream with water. The conditioned by-product will be trucked or conveyed by belt conveyor to the by-product processing yard. Ash in its dry form will be fully contained during removal from the CFB boilers and air emission control systems, handling, and storage. Two ash storage silos are proposed to be located at the facility: one for bed ash and one for fly ash. Two full-capacity mechanical exhausters will be provided for conveying ash to the silos.

Coal Storage:

Coal will be stored at the facility in two outdoor piles. The inactive storage pile contains a nominal 30-day supply and is intended for use in the event of a coal delivery interruption. This pile will be created when the plant is built, and will be covered with soil and grass except in the event that access to this supply is needed. A 20-day active storage pile, compacted to prevent weathering, will be created by the stacking tubes.

Each of the two coal storage piles onsite will be lined with a geosynthetic liner. Any stormwater run-off from the coal pile areas will be collected in a lined pond. The water collected will be recycled and utilized within the facility as part of the zero-water-discharge design.

Attachment I (cont'd)

AES Puerto Rico Cogeneration Project
Project Description

Limestone Storage:

A 150-day active supply of limestone will be stored in an enclosed storage area.

Dust Control Systems:

Dust control and collection systems will be installed at all material transfer points. The dust collection system will be either induced-draft filter bag units or insertible cartridge-type filters designed to be inserted directly into a conveyor head chute or conveyor loading skirt, as appropriate.

PSD-Affected Pollutants Emitted at the AES Puerto Rico Cogeneration Project and Their Potential to Emit:

The AES-PRCP will have as constituents in the combustion by-products, the PSD-affected pollutants listed below which are formed in the following ways:

Nitrogen Oxides (NO_x) - formed from the high-temperature oxidation of nitrogen contained in the combustion air (thermal NO_x) and from the oxidation of nitrogen that is bound in the fuel (fuel NO_x). The relative amounts of thermal and fuel NO_x formed depend primarily on the flame temperature and the fuel nitrogen content, respectively. The potential to emit for NO_x is 2,058 tons/year.

Sulfur Dioxide (SO_2) - formed from the oxidation of organic sulfur contained in the fuel. Approximately 98% of the sulfur in bituminous coal is emitted as sulfur dioxides. The remaining 2% of fuel-bound sulfur is taken out as sulfate salts in the bottom ash or in the boiler itself. The potential to emit for SO_2 is 453 tons/year.

Particulate Matter (PM), Particulate Matter Under 10 Microns (PM_{10}) - consist of coal ash, unreacted limestone and reaction products of the SO_2 removal process (calcium sulfate or gypsum). The potential to emit for PM_{10} is 316 tons/year.

Volatile Organic Compounds (VOCs) - due to incomplete combustion of organic compounds in the fuel. The potential to emit for VOC is 99.5 tons/year.

Attachment I (cont'd)

AES Puerto Rico Cogeneration Project
Project Description

Carbon Monoxide (CO) - formed as a result of the incomplete combustion of the carbon contained in the fuel. Incomplete combustion can be caused mainly by fuel-rich conditions, insufficient combustion oxygen, and/or low combustion temperatures. The potential to emit for CO is 2,055 tons/year.

Fluorides and Sulfuric Acid Mist - released in trace amounts from the combustion of coal. Fluoride emissions vary depending on the fluorine content of the fuel. The potential to emit for fluorides is 9.8 tons/year. Similarly, sulfuric acid mist depend primarily upon the sulfur content of the fuel and the degree of emission control. The potential to emit for sulfuric acid mist is 50 tons/year.

Fugitive Dust Emissions - derived from the material handling systems (coal, limestone and ash systems) including the following activities:

- unloading or loading of ships or trucks;
- material transfer points; and
- exposure of materials to wind (in open storage piles).

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Attachment II

AES Puerto Rico Cogeneration Project
PSD Permit Conditions

The AES-PRCP as described in Attachment I is subject to the following conditions:

I. Permit Expiration

This PSD Permit shall become invalid if construction:

a. has not commenced (as defined in 40 CFR Part 52.21(b)(9)) within 18 months after the approval takes effect;
b. is discontinued for a period of 18 months or more; or
c. is not completed within a reasonable time.

II. Notification of Commencement of Construction and Startup

The EPA Regional Administrator (RA) shall be notified in writing of the anticipated date of initial startup (as defined in 40 CFR Part 60.2) of each facility of the source not more than sixty (60) days nor less than thirty (30) days prior to such date. The RA shall be notified in writing of the actual date of commencement of construction and startup within fifteen (15) days after such date.

III. Plant Operations

All equipment, facilities, and systems installed or used to achieve compliance with the terms and conditions of this PSD Permit shall at all times be maintained in good working order and be operated as efficiently as possible so as to minimize air pollutant emissions. The continuous emission monitoring systems required by this permit shall be on-line and in operation 95% of the time when boilers are operating.

IV. Right to Entry

The Regional Administrator and/or her authorized representatives, upon the presentation of credentials shall be permitted:

1. to enter at any time upon the premises where the source is located or in which any records are required to be kept under the terms and conditions of this PSD Permit;

2. at reasonable times to have access to and copy any records required to be kept under the terms and conditions of this PSD Permit;

3. to inspect any equipment, operation, or method required in this PSD Permit; and

4. to sample emissions from the source.

V. Transfer of Ownership

In the event of any changes in control or ownership of facilities to be constructed or modified, this PSD Permit shall be binding on all subsequent owners and operators. The applicant shall notify the succeeding owner and operator of the existence of this PSD Permit and its conditions by letter, a copy of which shall be forwarded to the Regional Administrator.

VI. Types of Fuel

AES-PRCP shall combust the following fuels:

1) Low sulfur coal with a maximum sulfur content of 1.0% by weight.
2) Distillate oil with a maximum sulfur content of 0.05% sulfur by weight (startup and emergency equipment fuel).
3) Propane.

VII. Pollution Control Equipment

AES-PRCP shall install and shall continuously operate the following air pollution controls:

1) A Selective Non-Catalytic Reduction (SNCR) system (urea injection) for the control of NO_x at the CFBs;
2) A limestone injection system and circulating dry scrubber, which uses lime, for the control of SO_2 at the CFBs;
3) An Electrostatic Precipitator (ESP) for the control of PM and PM_{10} at the CFBs;
4) Baghouses for the control of PM and PM_{10} emissions at the limestone dryer.
5) Drift eliminators for the control of particulates from the cooling tower.

VIII. Best Available Control Technology (BACT) and Emission Limitations for Each of the Two Circulating Fluidized Boilers (CFBs)

1-CFB. **Particulate Matter (PM), Particulate Matter Under 10 Microns (PM_{10})**

a.1 Emissions of PM shall not exceed 0.015 lb/MMBTU or 36.9 lb/hour, whichever is more stringent.

a.2 Emissions of PM_{10} (condensible and noncondensible) shall not exceed 0.015 lb/MMBTU or 36.9 lb/hour, whichever is more stringent.

a.3 Because condensible PM_{10} emissions from fluidized bed boilers have not been widely quantified, there is a possibility that the actual condensible portion of PM_{10} would cause the above emission rate to be exceeded. In the event that AES-PRCP cannot meet the above limit because of condensible PM_{10}, EPA may adjust the PM_{10} emission rate to a level not to exceed 0.05 lb/MMBTU, pending EPA's review of the stack test results. This change in the permit will be accomplished administratively.

b. Opacity of emissions shall not exceed 20 percent (six-minute average) except for one six-minute set per hour which shall not exceed 27 percent.

c. The control efficiency of particulate matter emissions shall be established during all particulate performance testing and shall be a minimum of 99% at all times of normal operation (daily average).

2-CFB. **Nitrogen Oxides (NO_x)**

a. Emissions of nitrogen oxides shall not exceed on a 24-hour rolling average basis 57 parts per million dry volume (ppm_{dv}) corrected to 7% oxygen, or 0.10 lb/million British thermal units (BTU), or 246.1 lb/hour, whichever is more stringent.

3-CFB. **Carbon Monoxide (CO)**

a. Emissions of CO shall not exceed 0.10 lb/MMBTU on an eight-hour average basis, 94 ppm_{dv} corrected to 7% oxygen, or 246.1 lb/hour, whichever is more stringent.

4-CFB. **Sulfur Dioxide (SO_2)**

a. Emissions of sulfur dioxide shall not exceed on a 3-hour average basis 9.00 ppm_{dv} corrected to 7% oxygen, or 0.022 lb/MMBTU, or 54.1 lb/hour, whichever is more stringent.

b. The maximum sulfur content of the coal shall be 1.0% S by weight. The maximum sulfur content of the No. 2 fuel oil shall be 0.05% sulfur by weight.

5-CFB. **Sulfuric Acid Mist**

a. Emissions of sulfuric acid mist shall not exceed based on the average of three 1-hour stack performance tests 0.64 ppm_{dv} corrected to 7% oxygen, or 0.0024 lb/MMBTU, or 5.9 lb/hour, whichever is more stringent.

6-CFB. **Fluorides (as Hydrogen Fluoride)**

a. Emissions of fluorides shall not exceed 4.78×10^{-4} lb/MMBTU or 1.18 lb/hour, whichever is more stringent.

7-CFB. **Volatile Organic Compounds (VOCs)**

a. Emissions of VOCs shall not exceed based on the average of three 1-hour stack performance tests 7.70 ppm_{dv} corrected to 7% oxygen, 0.0047 lb/MMBTU, or 11.6 lb/hour, whichever is more stringent.

8-CFB. **Ammonia (NH_3)**

a. The ammonia slip associated with the urea injection shall not exceed 10 ppm_{dv}, corrected to 7% oxygen.

IX. Best Available Control Technology (BACT) and Emission Limitations for the Limestone Dryer (LD)

1-LD. The limestone dryer operation shall be limited to a 50% capacity factor, calculated on a calendar year basis or 4,380 hours per calendar year.

2-LD. The limestone dryer shall only burn propane.

3-LD. The limestone dryer shall utilize combustion controls to minimize air emissions.

4-LD. **Particulate Matter (PM), Particulate Matter Under 10 Microns (PM_{10})**

a.1 Emissions of PM shall not exceed 0.095 lb/MMBTU or 1.24 lb/hour, whichever is more stringent.

a.2 Emissions of PM_{10} shall not exceed 0.095 lb/MMBTU or 1.24 lb/hour, whichever is more stringent.

b. Opacity of emissions shall not exceed 20 percent (six-minute average) except for one six-minute set per hour which shall not exceed 27 percent.

c. The control efficiency of particulate matter emissions shall be established during all particulate performance testing and shall be a minimum of 99% at all times of normal operation (daily average).

5-LD. **Nitrogen Oxides (NO_x)**

a. Emissions of nitrogen oxides shall not exceed based on the average of three 1-hour stack performance tests 0.15 lb/million British thermal units (BTU), or 1.95 lb/hour, whichever is more stringent.

6-LD. **Carbon Monoxide (CO)**

a. Emissions of CO shall not exceed based on the average of three 1-hour stack performance tests 0.02 lb/MMBTU, or 0.26 lb/hour, whichever is more stringent.

7-LD. **Sulfur Dioxide (SO_2)**

a. Emissions of sulfur dioxide shall not exceed based on the average of three 1-hour stack performance tests 0.02 lb/MMBTU, or 0.26 lb/hour, whichever is more stringent.

8-LD. **Volatile Organic Compounds (VOCs)**

a. Emissions of VOCs shall not exceed based on the average of three 1-hour stack performance tests 0.01 lb/MMBTU, or 0.13 lb/hour, whichever is more stringent.

X. Best Available Control Technology (BACT) and Emission Limitations for the Cooling Tower (CT)

1-CT. The drift rate shall be limited to 2.25 gallons/minute (0.001% of circulating water flow). This level shall be achieved through the use of drift eliminators which provide surface area upon which water droplets may impact and fall back into the cooling tower.

Attachment II (cont'd)

AES Puerto Rico Cogeneration Project
PSD Permit Conditions

2-CT. **Particulate Matter (PM), Particulate Matter Under 10 Microns (PM_{10})**

a. Emissions of PM_{10} shall not exceed 0.33 lb/hour.

b. Emissions of PM shall not exceed 15 lb/hour.

3-CT. **Volatile Organic Compounds (VOC)**

a. Emissions of VOC shall not exceed 0.5 lb/hour.

XI. Storage Tanks

1-ST. The AES-PRCP shall have the following storage tanks:

a. 150,000-gallon startup fuel tank.
b. 2,000-gallon mobile equipment fuel tank.
c. 700-gallon diesel generator tank.
d. 300-gallon fire pump tank.
e. 200-gallon emergency boiler feed pump tank.

2-ST There shall be a maximum of four turnovers per year in the startup fuel tank, producing approximately 47.9 lb/year of VOC emissions (AP-42).

3-ST. The remaining tanks shall contain diesel fuel and shall emit less than 5 lb/year of VOC (AP-42).

XII. Emergency Equipment

The emergency equipment consists of a fire water pump driven by a diesel engine, a diesel generator, and an emergency boiler feed pump driven by a diesel engine. The equipment shall only be operated under the following conditions:

1-EE. The maximum annual operating hours for each of the above-named equipment shall be 200 hours/calendar year, except during emergencies. This 200-hour allowance is intended to allow for proper maintenance of the equipment.

Attachment II (cont'd)

AES Puerto Rico Cogeneration Project
PSD Permit Conditions

2-EE. The fire pump shall be used for fighting fires when no electricity is available at the facility.

3-EE. The diesel generator shall be used during emergencies for critical plant functions (i.e., emergency lighting) when no electricity from PREPA's grid is available at the site (this situation is characterized as "black plant mode").

4-EE. The emergency boiler feed pump shall be used to pump cooling water into one or both boilers if one or both turbines trip unexpectedly and are unable to utilize the steam generated by the boilers.

5-EE. None of these three emergency equipment shall be used during a standard startup or shutdown of the facility as well as during any dispatch load level requested by PREPA.

6-EE. The emergency equipment shall only burn distillate oil with a maximum sulfur content of 0.05% S by weight.

7-EE. Emissions and total annual operating hours from the emergency equipment shall not exceed:

Pollutant	Fire Pump (lb/hr)	Diesel Generator (lb/hr)	Emergency Boiler Feed Pump (lb/hr)
NO_x	10.4	14.58	12.34
CO	5.1	0.55	2.67
SO_2	0.13	0.29	0.82
PM_{10}	0.3	0.68	0.82
VOC	0.5	0.06	0.99
Annual Planned Operating Hours	200 hr	200 hr	200 hr

Attachment II (cont'd)

AES Puerto Rico Cogeneration Project
PSD Permit Conditions

8-EE. AES-PRCP shall measure the sulfur content of the fuel oil for each fuel delivery. The sulfur content of the fuel shall be measured by the most current method applicable to fuel oil promulgated by the American Society for Testing and Materials (ASTM). The results of the testing shall be included in the quarterly reports.

9-EE. AES-PRCP shall record and maintain records on the hours of operation for each emergency equipment and the amounts of fuel fired for each occurrence. All information shall be recorded in a permanent form suitable for inspection. The file shall be retained for at least five years following the date of such measurement, calculation, and record.

XIII. Fugitive Emissions

The following activities shall be incorporated into the materials storage and handling systems:

1. **Coal Handling**

a. The coal transfer from ship to boom shall be enclosed.

b. The boom transfer at the surge hopper shall be controlled by a dust suppression system.

c. All conveyors shall be enclosed and sealed.

d. The two transfer houses shall be enclosed and equipped with dust suppression systems.

e. Enclosed stacking tubes shall be utilized.

f. The 30-day inactive coal pile shall be earth-covered and grassed.

g. The transfer at ten (10) reclaim hoppers shall be enclosed in an underground tunnel.

h. The conveyor transfer to crusher, the crusher, the crusher transfer to conveyor, and the powerhouse bag filters shall be enclosed and connected to fabric filters.

i. Total PM_{10} fugitive emissions from coal handling shall not exceed 1.13 tons/year.

2A. **Limestone Handling (if Delivered by Ship)**

a. The limestone transfer from ship to boom shall be enclosed.

b. The boom transfer at the surge hopper shall be controlled by a dust suppression system.

c. All conveyors shall be enclosed and sealed.

d. The two transfer houses shall be enclosed and equipped with dust suppression systems.

e. An enclosed stacking tube shall be utilized.

f. The 150-day pile of limestone shall be enclosed.

g. The conveyor transfer to crusher and the crusher shall be enclosed and connected to a fabric filter.

h. The pneumatic conveyor shall be connected to a fabric filter.

i. The transfer at reclaim hopper shall be enclosed in an underground tunnel.

2B. **Limestone Handling (if Delivered by Truck)**

a. The 150-day pile of limestone shall be enclosed.

b. The conveyor transfer to crusher and the crusher shall be enclosed and connected to a fabric filter.

c. The pneumatic conveyor shall be connected to a fabric filter.

d. The transfer at reclaim hopper shall be enclosed in an underground tunnel.

e. Total PM_{10} fugitive emissions from limestone handling (delivered by ship and truck) shall not exceed 1.66 tons/year.

Attachment II (cont'd)

AES Puerto Rico Cogeneration Project
PSD Permit Conditions

3. **Lime Handling**

   a. The pneumatic conveyor shall be connected to a fabric filter.

   b. The screw feeder shall be completely enclosed.

   c. Total PM_{10} fugitive emissions from lime handling shall not exceed 0.0235 ton/year.

4. **Ash Handling**

   a. The fly ash pneumatic conveyor, the fly ash silo to mixer, the bed ash pneumatic conveyor, the bed ash silo to mixer transfer, the batch mixer, and the transfer into truck area shall be enclosed and sealed.

   b. The ash rock processing lifts shall be wetted and compacted.

   c. The truck travel to spread and crush area, the transfer from truck area, the ash rock lift fracture area, the ash rock storage wind erosion, and the bulldozing area shall be wetted.

   d. The reclaim hopper shall be underground and enclosed.

   e. All conveyors shall be enclosed and sealed.

   f. Total PM_{10} fugitive emissions from ash handling shall not exceed 0.70 ton/year.

XIV. Continuous Emission Monitoring (CEM)/Continuous Opacity Monitoring (COM) Requirements

1. Prior to the date of startup and thereafter, AES-PRCP shall install, calibrate, maintain, and operate the following continuous monitoring systems in each of the two flues of the fluidized bed combustion unit exhaust stack:

   a. Continuous emission monitoring (CEM) systems to measure stack gas NO_x (as measured NO_2) and SO_2 concentrations and a continuous opacity monitoring system. The systems shall meet EPA monitoring performance specifications (40 CFR Part 60.13 and 40 CFR Part 60, Appendix B, Performance Specifications 1, 2, and 3, and Appendix F).

Attachment II (cont'd)

AES Puerto Rico Cogeneration Project
PSD Permit Conditions

b. A continuous monitoring system to measure stack gas volumetric flow rates. The system shall meet EPA monitoring performance specifications (40 CFR Part 52, Appendix E). EPA may approve an alternative to this monitoring system, such as using monitored data for emission rates on a lb/MMBTU basis and calculated plant heat input data on a MMBTU/hr basis, provided that EPA deems that this procedure will produce representative data.

c. A CEM system to measure CO and a continuous monitoring system to measure carbon dioxide or oxygen. These systems, at a minimum, shall meet EPA monitoring performance specifications of 40 CFR Part 60, Appendix B, Performance Specifications 3 and 4, and 40 CFR Part 60, Appendix F.

2. Not less than 60 days prior to the date of startup of the boiler(s), AES-PRCP shall submit to the EPA a Quality Assurance Project Plan for the certification of the CEM systems. CEM performance testing may not begin until the Quality Assurance Project Plan has been approved by EPA.

3. AES-PRCP shall notify EPA 15 days in advance of the date upon which demonstration of the CEM system performance will commence (40 CFR Part 60.13(c)). The CEM system performance date shall be no later than the date of the initial performance testing required under Permit Condition XV. of this permit.

4. AES-PRCP shall submit a written report to EPA of the results of all monitor performance specification tests conducted on the monitoring system(s) within 45 days of the completion of the tests. The continuous emission monitors must meet all the requirements of the applicable performance specification test in order for the monitors to be certified.

5. AES-PRCP shall submit a written report of all excess emissions to EPA for every calendar quarter. All quarterly reports shall be postmarked by the 30th day following the end of each quarter and shall include the information specified below:

a. The magnitude of excess emissions computed in accordance with 40 CFR Part 60.13(h), any conversion factor(s) used, and the date and time of commencement and completion of each time period of excess emissions.

b. Specific identification of each period of excess emissions that occurs during startups, shutdowns, and malfunctions for each fluidized bed combustion unit. The nature and cause of any malfunction (if known) and the corrective action taken or preventive measures adopted shall also be reported.

c. The date and time identifying each period during which the continuous monitoring system was inoperative except for zero and span checks and the nature of the system repairs or adjustments.

d. When no excess emissions have occurred or the CEM system has not been inoperative, repaired, or adjusted, such information shall be stated in the report.

e. Results of quarterly monitor performance audits, as required in 40 CFR Part 60, Appendix F.

f. Excess emissions shall be defined as:

i) any consecutive 24-hour period during which the average emission of NO_x, as measured by the CEM system, exceeds the corresponding mass or concentration emission limit set for NO_x in Condition VIII.2-CFB above.

ii) any eight-hour period during which the average emission of CO, as measured by the CEM system, exceeds the corresponding mass or concentration emission limit set for CO in Condition VIII.3-CFB above.

iii) any 3-hour period during which the average emission of SO_2, as measured by the CEM system, exceeds the corresponding mass or concentration emission limits set for SO_2 in Condition VIII.4-CFB above.

iv) any 6-minute period during which the average opacity, as measured by the CEM system, exceeds 20% opacity, except for one 27% opacity per each one-hour period.

g. For the purposes of this permit, excess emissions indicated by the CEM systems, except during startup or shutdown, shall be considered violations of the applicable emission limits.

6. AES-PRCP shall maintain a file of all measurements, including CEM system performance evaluations; all CEM systems or monitoring device calibration checks; adjustments and maintenance performed on these systems or devices; and all other information required by 40 CFR Part 60 recorded in a permanent form suitable for inspection. The file shall be retained for at least five years following the date of such measurement, maintenance, reports, and records.

7. Emissions in excess of the applicable emission limit listed under Condition VIII. of this permit, during periods of startup and shutdown, shall not be considered a violation of the applicable emission limit.

8. For the purposes of this permit, startup and shutdown shall be defined as:

a. **Startup** - Circulating Fluidized Bed (CFB) boiler startup is defined as the period beginning with initial use of the burners firing low sulfur distillate fuel oil (< 0.05% S) and ending at the time when the load has increased to 227.15 MW, when both CFB boilers are operating, or 113.58 MW, when a single CFB boiler is operating. The duration of the startup shall not exceed fourteen (14) consecutive hours for any given individual boiler startup.

b. **Shutdown** - CFB boiler shutdown is defined as the period of time beginning with the load decreasing from 227.15 MW, when both CFB boilers are operating, or 113.58 MW, when a single CFB boiler is operating, and ending when the bed material fluidizing air has been discontinued. The duration of the shutdown shall not exceed eight (8) consecutive hours for any given individual boiler shutdown.

9. At all times, including periods of startup, shutdown, and malfunction, AES-PRCP shall, to the extent practicable, maintain and operate the CFBs including associated air pollution control equipment in a manner consistent with good air pollution control practice for minimizing emissions. Determination of whether acceptable operating and maintenance procedures are being used will be based on information available to EPA and/or PREQB which may include, but is not limited to, monitoring results, opacity observations, review of operating and maintenance procedures, and inspection of the facility.

XV. Performance Test Requirements

1. Within 60 days after achieving the maximum production rate of the boilers, but no later than 180 days after initial startup as defined in 40 CFR Part 60.2, and at such other times as specified by the EPA, AES-PRCP shall conduct performance tests for SO_2, NO_x, PM, PM_{10}, CO, VOCs, lead, fluorides, opacity, sulfuric acid mist, and fugitive emissions. All performance tests shall be conducted at the maximum operating capacity of the unit(s) being tested and/or other loads specified by EPA.

2. At least 60 days prior to actual testing, AES-PRCP shall submit to the EPA a Quality Assurance Project Plan detailing methods and procedures to be used during the performance stack testing. A Quality Assurance Project Plan that does not have EPA approval may be grounds to invalidate any test and require a re-test.

3. AES-PRCP shall demonstrate that the lead emissions from the facility do not exceed the PSD significance level of 0.6 tons per year. AES-PRCP estimates that its maximum hourly emission of lead from the CFB boilers is 0.0208 lb/hour (0.087 ton/year).

4. AES-PRCP shall use the following test methods, or a test method which would be applicable at the time of the test and detailed in a test protocol approved by EPA:

   a. Performance tests to determine the stack gas velocity, sample area, volumetric flowrate, molecular composition, excess air of flue gases, and moisture content of flue gas shall be conducted using 40 CFR Part 60, Appendix A, Methods 1, 2, 3, and 4.

b. Performance tests for the emissions of NO_x shall be conducted using 40 CFR Part 60, Appendix A, Method 7E.

c. Performance tests for the emissions of SO_2 shall be conducted using 40 CFR Part 60, Appendix A, Method 6C.

d. Performance tests for the emissions and control efficiency of PM shall be conducted using 40 CFR Part 60, Appendix A, Method 5.

e. Performance tests for the emissions of PM_{10} shall be conducted using 40 CFR Part 51, Appendix M, Method 201 (exhaust gas recycle procedure) or Method 201A (constant flow rate procedure) and Method 202.

f. Performance tests for the emissions of CO shall be conducted using 40 CFR Part 60, Appendix A, Method 10.

g. Performance tests for the emissions of volatile organic compounds shall be conducted using 40 CFR Part 60, Appendix A, Method 25A and Method 18 (take the difference between the two results).

h. Performance tests for the emissions of fluorides shall be conducted using 40 CFR Part 60, Appendix A, Method 13B.

i. Performance tests for the emissions of sulfuric acid mist shall be conducted using 40 CFR Part 60, Appendix A, Method 8.

j. Performance tests for the emissions of lead shall be conducted using 40 CFR Part 60, Appendix A, Method 29.

k. Performance tests for the drift rate on two of the cooling tower cells shall be conducted using the isokinetic sampling system with the heated beak-pack style method (HBIK) to confirm the specified drift rate of 2.25 gallons/minute.

l. Performance tests for the visual determination of fugitive emissions from the coal, limestone, and ash handling shall be conducted using 40 CFR Part 60, Appendix A, Method 22.

m. Performance tests for the visual determination of the opacity of emissions from the stack shall be conducted using 40 CFR Part 60, Appendix A, Method 9 and the procedures stated in 40 CFR Part 60.11.

5. The ammonia slip shall be met by maintaining the optimum urea injection flow rate at various operating loads. The optimum urea injection flow rate needed to achieve the ammonia slip limit shall be determined during the performance test and shall become a condition of this permit.

6. Test results indicating that emissions are below the limits of detection shall be deemed to be in compliance.

7. Additional performance tests may be required at the discretion of the EPA for any or all of the above pollutants.

8. For performance test purposes, sampling ports, platforms and access shall be provided by AES-PRCP on the combustion exhaust system in accordance with 40 CFR Part 60.8(e).

9. Results of emission testing must be submitted to EPA within 60 days after completion of performance tests.

10. Operations during periods of startup, shutdown, and malfunction shall not constitute representative conditions for the purpose of a performance test.

XVI. Other Requirements

1. **Coal Sampling**

Coal samples shall be taken and analyzed monthly to determine ash content (% by weight); sulfur content (% by weight); and heat value (BTUs per lb). These shall be measured by the most current methods applicable to coal promulgated by the American Society for Testing and Materials (ASTM). Reports are to be submitted to EPA every calendar quarter.

Attachment II (cont'd)

AES Puerto Rico Cogeneration Project
PSD Permit Conditions

2.a **Coal Lead Content**

The lead content of the coal/fuel oil shall be monitored such that total annual lead emissions from the facility do not exceed the PSD significance level of 0.6 tons per year. AES-PRCP shall demonstrate, at least annually starting with the 400th day after facility startup and, no longer than each 365th day thereafter, that lead emissions are below the PSD significance level. The lead content of the fuels shall be measured using the most current applicable ASTM method.

2.b **Coal Fluorine Content**

The fluorine content of the coal shall be monitored on a monthly basis such that the total annual fluoride emissions from the facility do not exceed 9.8 tons per 12-month rolling average calculated every month. The fluorine content of the coal shall be measured using the most current applicable ASTM method.

3. **New Source Performance Standards (NSPS) Compliance**

AES-PRCP shall comply with the requirements codified in:

a. Standards of Performance for Electric Utility Steam Generating Units (40 CFR Part 60, Subpart Da) -- boilers.

b. Standards of Performance for Coal Preparation Plants (40 CFR Part 60, Subpart Y) -- coal handling.

c. Standards of Performance for Nonmetallic Mineral Processing Plants (40 CFR Part 60, Subpart OOO) -- limestone processing.

4. **PSD Increment and NAAQS Modeling Analyses**

AES-PRCP shall conduct air dispersion modeling analyses of the Prevention of Significant Deterioration of Air Quality (PSD) increments and National Ambient Air Quality Standards (NAAQS) for SO_2 which involves the combined impacts from other nearby existing sources. This shall be done under the following conditions:

a. The modeling analyses shall conform with the EPA "Guideline on Air Quality Models" (40 CFR § 51, Appendix W), air permit regulations (40 CFR §51 and §52), and the approved dispersion modeling protocol submitted to EPA for the AES-PRCP.

b. The emission inventory incorporated into the modeling analysis shall include, at a minimum, the background sources agreed upon by AES-PRLP and EPA in the approved modeling protocol for the AES-PRCP. Also, the modeling domain shall encompass, at a minimum, the domain agreed upon by AES-PRLP and EPA in the approved modeling protocol for the AES-PRCP. (Refer to May 18, 1995 letter from TRC to EPA; July 21, 1995 letter from EPA to TRC; October 2, 1995 letter from ENSR to EPA and October 17, 1995 letter from ENSR to EPA.)

c. The same models, assumptions, and meteorological database used by AES-PRCP in the permit application shall be used for these air quality standards.

d. AES-PRCP shall submit the modeling analyses to EPA within three (3) to six (6) months of the effective date of this PSD permit.

5. **Postconstruction Ambient Monitoring**

AES-PRCP shall install and maintain an SO_2 ambient monitor in a location which is approved by EPA prior to the operation of the facility. The SO_2 ambient monitor shall operate upon commencement of operation of the facility. AES-PRCP shall also meet the following conditions:

a. The duration of the monitoring collection shall not exceed 365 days unless the monitor records an exceedance of the applicable NAAQS in which case EPA may extend the monitoring.

b. The monitor shall operate according to an approved EPA QA/QC plan.

c. The monitoring data shall be recorded and submitted to EPA and PREQB on a quarterly basis. If an exceedance is measured, AES-PRCP shall notify EPA and PREQB of such an exceedance in writing within 15 days of its completion of normal QA/QC procedures for the specified month.

6. **Maximum Annual Capacity Factor**

a. AES-PRCP shall not exceed a maximum annual capacity factor of 95% during any period of 12 consecutive months. Compliance will be demonstrated by limiting facility fuel use to a maximum of 40,966,709 MMBtu during any period of 12 consecutive months. AES-PRCP shall maintain fuel use records to demonstrate compliance with this condition.

b. "Annual capacity factor" means the ratio between the actual heat input to the steam generating units from fuel use during a period of 12 consecutive calendar months and the potential heat input to the steam generating units from fuels had the steam generating units been operated for 8,760 hours during that 12-month period at the maximum design heat input capacity of 4922.7 MMBtu/hr. Therefore, a maximum annual capacity factor of 95% means fuel use will not exceed 40,966,709 MMBtu during a period of 12 consecutive calendar months.

XVII. Malfunction

Any failure of air pollution control equipment, process equipment, or of a process to operate in a normal manner which results in an increase in emissions above any allowable emission limit stated in Condition VIII of this Attachment II and actions taken on any unit must be reported by telephone within 24 hours to:

Chief, Air Permit Division
Puerto Rico Environmental Quality Board
Santurce, Puerto Rico 00910
(787) 767-8071

In addition, the EPA Regional Administrator (RA) and the Puerto Rico Environmental Quality Board (PREQB) shall be notified in writing within (15) days of any such failure. This notification shall include: a description of the malfunctioning equipment or abnormal operation; the date of the initial failure; the period of time over which emissions were increased due to the failure; the cause of the failure; the estimated resultant emissions in excess of those allowed under Condition VIII of this Attachment II; and the methods utilized to restore normal operations. Compliance with this malfunction notification provision shall not excuse or otherwise constitute a defense to any violations of this permit or of any law or regulations which such malfunction may cause.

Attachment II (cont'd)

AES Puerto Rico Cogeneration Project
PSD Permit Conditions

XVIII. Recordkeeping and Reporting Requirements

1. All records required to be maintained by this permit shall be kept for a period of at least five (5) years.

2. All reports required by this permit shall be submitted to:

Chief, Air Compliance Branch
Division of Enforcement and Compliance Assistance
U.S. Environmental Protection Agency
Region 2
290 Broadway - 21st Floor
New York, New York 100007-1866

Copies of the reports shall also be submitted to:

a. Region 2 CEM Coordinator
U.S. Environmental Protection Agency
Region 2
Air and Water QA Team
Monitoring and Assessment Branch
2890 Woodbridge Avenue - MS-102
Edison, New Jersey 08837-3679

b. Director, Caribbean Environmental Protection Division
U.S. Environmental Protection Agency
Region 2
Centro Europa Building
1492 Ponce de Leon Avenue, Suite 417
Santurce, Puerto Rico 00907-4127

c. Director, Air Permit Division
Puerto Rico Environmental Quality Board
P.O. Box 11488
Santurce, Puerto Rico 00910

Attachment III

AES Puerto Rico Cogeneration Project
Air Quality Impacts

Projected Maximum Impacts from the AES Puerto Rico Cogeneration Project Air Quality Impacts ($\mu g/m^3$)

POLLUTANT	AVERAGING TIME	AES-PRCP's MODELED IMPACT	SIGNIFICANCE LEVEL	AES-PRCP + Background Sources PSD Increment	AES-PRCP + Background Sources NAAQS	PSD Incrt	NAAQS
NO_2	Annual	0.81	1	Not Calculated[1]	Not Calculated[1]	25	100
SO_2	Annual 24-hour 3-hour	0.55 4.97 20.0	1 5 25	Not Calculated[1]	Not Calculated[1]	20 91 512	80 365 1300
PM_{10}	Annual 24-hour	2.4 17.2	1 5	3.3 16.6	44.5 112.1	17 30	50 150
CO	8-hour 1-hour	140.3 200.5	500 2000	Increment Standard does not exist	140.3 200.5	NA	10,000 40,000

[1] Since AES-PRCP's impacts are below the "Significant Impact Level," the facility is not required to perform PSD increment or NAAQS analyses which accounts for impacts from other nearby existing sources.