



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION 2  
290 BROADWAY  
NEW YORK, NY 10007-1866

JUL - 5 2006

Certified Mail - Return Receipt Requested

Mr. Jaime Plaza, Head  
Environmental Protection and Quality Assurance Division  
Puerto Rico Electric Power Authority  
P.O. Box 364267  
San Juan, PR 00936-4267

Re: Prevention of Significant Deterioration of Air Quality (PSD) – Final Modification  
to the December 5, 1996 PSD Permit for the PREPA Cambalache Electric Generating  
Facility

Dear Mr. Plaza:

The purpose of this letter is to present the Puerto Rico Electric Power Authority (PREPA) a final PSD permit modification for its Cambalache Combustion Turbine Project. This final PSD permit modification is the result of a revised Best Available Control Technology (BACT) application submitted by PREPA under a Compliance Order issued by EPA to PREPA on October 24, 2001.

By way of background, on July 31, 1995, the Region 2 Office of the U.S. Environmental Protection Agency (EPA) issued a final PSD permit to PREPA approving the Cambalache project. This permit was subsequently revised on December 5, 1996. Between July 1997 and September 2001, PREPA operated the Cambalache plant with steam injection and selective catalytic reduction (SCR) to control NO<sub>x</sub> as required by the PSD permit. However, during this period, despite PREPA's best efforts and those of Alstom (the construction contractor) and Englehard (the SCR vendor), the SCR system failed to operate near its original design specifications. Specifically, the SCR system was required to achieve a NO<sub>x</sub> emission rate of 10 ppm<sub>dv</sub> @ 15% O<sub>2</sub> with an ammonia slip of no greater than 10 ppm<sub>dv</sub> @ 15% O<sub>2</sub>. The SCR system, operated in accordance with manufacturer's instructions, produced ammonia levels consistently in excess of 100 ppm<sub>dv</sub> @ 15% O<sub>2</sub>. PREPA met with EPA Region 2 in July 1998, March 1999, October 1999 and January 2000 to discuss the continuing problems with the SCR system. Based on the information provided by PREPA, EPA agreed that the SCR system could not consistently achieve the expected reductions in NO<sub>x</sub> emissions at this facility without a high level of ammonia emissions, and attendant potential risks to the public.

On October 24, 2001, EPA issued a Compliance Order to PREPA. The Compliance Order required PREPA to remove the SCR system, to perform stack tests for PM, PM<sub>10</sub>, NO<sub>x</sub> and sulfuric acid mist, and to submit to EPA a revised best available control technology (BACT) analysis for these pollutants. On July 11, 2003, PREPA submitted to EPA a revised BACT analysis. This submittal was augmented on September 22, 2003 and April 22, 2005 to include air quality analyses. PREPA submitted additional information to EPA by way of e-mail on June 16, 2005, October 17, 2005, November 15, 2005 and February 7, 2006. This proposed PSD permit modification also includes changes requested by PREPA in a submittal dated June 28, 2001. These include the following:

1. To lower the permitted fuel bound nitrogen in the fuel oil from 0.1% to 0.055%;
2. To lower PM and PM<sub>10</sub> emission limits based on 1997, 2001, 2002 and 2003 performance tests;
3. To add a limit of 780 startups per year: 80% of the startups would last 2 hours or less and 20% of the startups would last 3 hours or less. Previously, there were no limits on the number of startups.
4. Add operational changes to allow 6,000 hours/365-day operation at spinning reserve for all three turbines combined. The existing PSD permit allows 2,000 hours/365-day for each of the three turbines at spinning reserve.

Based upon PREPA's September 22, 2003 submittal, EPA has deemed that the best available control technology (BACT) demonstration meets the requirements of 40 CFR §52.21 and that the air quality analyses for NO<sub>x</sub>, CO, PM and PM<sub>10</sub> demonstrate that PREPA will meet the National Ambient Air Quality Standards (NAAQS). More specifically, as a result of these changes, maximum permitted annual NO<sub>x</sub> emissions will go from 460 tons/year to 1,801 tons/year; maximum permitted carbon monoxide emissions will go from 515 tons/year to 713 tons/year. On the other hand, PM and PM<sub>10</sub> emissions will be reduced and all ammonia emissions will be eliminated. The maximum permitted particulate matter limit will decrease from 946 tons/year to 263 tons/year and the maximum permitted particulate matter under 10 microns limit will decrease from 946 tons/year to 670 tons/year. As a result of the removal of the SCR, up to 959 tons/year of ammonia will be eliminated. Moreover, for NO<sub>x</sub> and CO, the air quality impacts analyses for this project were done in accordance with the modeling guidelines and are below the applicable EPA Significant Impact Levels, Monitoring de minimis levels, PSD Increment and NAAQS for each averaging time.

In addition, the July 8, 2004 Standards of Performance for Stationary Gas Turbines allows existing facilities to elect to use a NO<sub>x</sub> continuous emission monitor system (CEMS) instead of the steam-to-fuel ratio established during the performance tests to demonstrate compliance with the NO<sub>x</sub> limit. The NO<sub>x</sub> CEMS must be installed, operated, and maintained according to the appropriate performance specification requirements in 40 CFR Part 60, Appendix B. On December 1, 2004, PREPA requested that EPA delete the requirement to comply with the steam-to-fuel ratio established during the original performance tests since it

already relies on the NOx CEMS that meets the performance specifications requirements to demonstrate compliance.

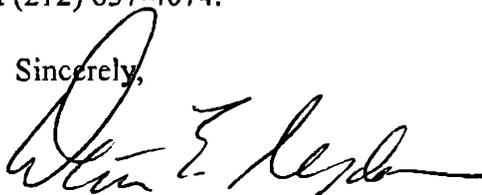
On March 22, 2006, EPA issued a preliminary determination, subject to public review, to approve the changes to the PSD permit delineated above. No comments were submitted to EPA during the 30-day public review period, which commenced upon publication of EPA's preliminary determination in El Vocero and The San Juan Star on March 29, 2006, and expired on April 28, 2006. As such, no changes have been made from the draft PSD permit issued to PREPA on March 22, 2006, to the final permit that is being issued today.

The EPA concludes that this final permit meets all applicable requirements of the PSD regulations codified at 40 CFR §52.21, and the Clean Air Act (the Act). Accordingly, I hereby approve PREPA's PSD permit modification. This letter and its attachment represent EPA's final permit decision, and is effective immediately. The permit conditions are delineated in Attachment I and Attachment II.

This determination is a final Agency action under the Clean Air Act. 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,



Walter E. Mugdan, Director  
Division of Environmental Planning and Protection

Attachments

**ATTACHMENT I**  
**PREPA Cambalache Combustion Turbine Project**  
**Project Description**

**\*GENERAL PROJECT DESCRIPTION:** The Puerto Rico Electric Power Authority (PREPA) has constructed and currently operates a 248 megawatt (MW) combustion turbine simple-cycle electric generating station on a 52-acre site in Cambalache, in the Municipality of Arecibo. The facility produces electricity from three ABB GT 11N distillate oil-fired combustion turbines, each with a power output of 83 MW. Each combustion turbine consists of a compressor, combustor and turbine. Energy is generated at each of the combustion turbines by drawing in ambient air with the compressor, heating the air by means of burning fuel oil and expanding the hot combustion gases in a 5-stage turbine. Each combustion turbine burns No. 2 fuel oil having a maximum sulfur content of 0.15 percent by weight. In addition, the facility is allowed to operate in a spinning reserve mode (60 percent load) for up to 6,000 hours/365-day for the entire powerplant.

**\*PSD-Affected Pollutants Emitted at the PREPA Cambalache Combustion Turbine Project:** The facility is classified as a major stationary source because it has the potential to emit more than 250 tons per year of at least one pollutant regulated by the Clean Air Act. The facility is subject to the Prevention of Significant Deterioration of Air Quality (PSD) standards for oxides of nitrogen (NO<sub>x</sub>), sulfur dioxide (SO<sub>2</sub>), sulfuric acid mist (H<sub>2</sub>SO<sub>4</sub>), carbon monoxide (CO), particulate matter (PM), particulate matter less than 10 microns (PM<sub>10</sub>), and volatile organic compounds (VOC).

<b><u>Pollutant</u></b>	<b><u>PSD Significant Emission Rate (tons/year)</u></b>	<b><u>Projected Facility Emission Rate (tons/year)</u></b>
*Nitrogen oxides (NO <sub>x</sub> )	40	*1,801
Sulfur dioxide (SO <sub>2</sub> )	40	1,800
Sulfuric acid mist (H <sub>2</sub> SO <sub>4</sub> )	7	420
*Carbon monoxide (CO)	100	*713
*Particulate matter - total (PM)	25	*263
*Particulate matter less than 10 microns (PM <sub>10</sub> )	15	*670
Volatile Organic Compounds (VOC)	40	180

\* denotes a June 2006 revision

**ATTACHMENT I**

**PREPA Cambalache Combustion Turbine Project  
Project Description**

**PREPA Cambalache Combustion Turbine Control Equipment:** The existing facility shall employ Best Available Control Technology to control the pollutants described above.

\*Emissions of **nitrogen oxides** shall be controlled by the use of a steam injection system.

Emissions of **sulfur dioxide** and **sulfuric acid mist** shall be controlled by the use of only low sulfur No.2 fuel oil in which the sulfur content may not exceed 0.15% by weight.

Emissions of **carbon monoxide, total particulate matter, particulate matter less than 10 microns,** and **volatile organic compounds** shall be controlled by implementing good combustion practices. PREPA is required to operate each turbine within the designed combustion parameters of the ABB GT 11N distillate oil fired combustion turbine. In addition, PREPA is required to monitor the combustion temperature and volumetric flow rate of each turbine, and PREPA is required to maintain each turbine in good working order.

\* denotes a June 2006 revision

## **ATTACHMENT II**

### **PREPA Cambalache Combustion Project PSD Permit Conditions**

The PREPA Cambalache Combustion Turbine Project as described in Attachment I is subject to the following conditions.

#### **I. Permit Expiration**

1. 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 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 combustion turbine 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 both commencement of construction and startup of each combustion turbine within fifteen (15) days after such date.

#### **III. Plant Operations**

All equipment, facilities, and systems, including the combustion and electric generation units, 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 turbines are operating.

#### **IV. Right to Entry**

Pursuant to Section 114 of the Clean Air Act (Act), 42 U.S.C. §7414, the Administrator and/or his/her authorized representatives have the right to enter and inspect for all purposes authorized under Section 114 of the Act. The permittee acknowledges that the Regional Administrator and/or his/her authorized representatives, upon the presentation of credentials shall be permitted:

**ATTACHMENT II**

**PREPA Cambalache Combustion Project  
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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 access and to 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 relevant to this permit.

**V. Transfer of Ownership**

In the event of any changes in control or ownership of facilities to be constructed, 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. Severability**

The provisions of this PSD Permit are severable, and, if any provisions of this PSD Permit are held invalid, the remainder of this PSD Permit shall not be affected thereby.

**VII. Operating Requirements**

1. Each ABB GT 11N distillate oil fired combustion turbine unit shall be limited to a maximum fuel consumption rate of 6,261 gallons per hour.
2. Each ABB GT 11N distillate oil fired combustion turbine unit shall use No. 2 distillate fuel oil which contains no more than:
  - a. 0.15 percent sulfur by weight; and
  - b. 0.055 percent nitrogen by weight.
3. Each ABB GT 11N distillate oil fired combustion turbine unit shall be limited to a maximum heat input of 847 million British Thermal Units per hour (MM Btu/hr), based upon lower heating value (LHV).

\* denotes a June 2006 revision

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**PREPA Cambalache Combustion Project  
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**VII. Operating Requirements (cont'd)**

4. Except for startup and shutdown, each ABB GT 11N distillate oil fired combustion turbine unit shall only be allowed to operate at the following two heat input levels:
  - a. base load (847 MM Btu/hr); and
  - b. "spinning reserve" mode (581 MM Btu/hr).
- \* 5. All three ABB GT 11N distillate oil fired combustion turbine units shall be allowed to operate for up to a combined number of 6,000 hours per 365-day rolling average at the "spinning reserve" mode heat input level. Daily compliance shall be determined by adding the total amount of hours operated at the "spinning reserve" mode during each calendar day to the total hours operated at the "spinning reserve" mode in the preceding 364 calendar days.
6. For the purposes of this PSD permit, startup and shutdown shall be defined as:
  - \* a. Startup for each ABB GT 11N distillate oil fired combustion turbine is defined as the period beginning with the initial firing of No. 2 fuel oil in the combustion turbine combustor and ending at the time when the load has increased to the "spinning reserve" mode. The facility shall be limited to 780 startups per year. At least 80% (624) of the 780 startups shall end within 2 hours and the remaining 20% (156) shall end no later than 3 hours after startup begins.
  - \* b. Shutdown for each ABB GT 11N distillate oil fired combustion turbine is defined as the period of time beginning with the load decreasing from the "spinning reserve" mode and ending with the cessation of operation of the combustion turbine. The facility shall be limited to 780 shutdowns per year. The duration of the shutdowns shall not exceed one (1) hour for any given combustion turbine shutdown.
7. At all times, including periods of startup, shutdown, and malfunction, PREPA shall, to the extent practicable, maintain and operate the three ABB GT 11N distillate oil fired combustion turbines 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 EQB which may include, but is not limited to, monitoring results, opacity observations, review of operating and maintenance procedures, and inspection of the plant.

\* denotes a June 2006 revision

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**VIII. Emission Limitations For Each ABB GT 11N Combustion Turbine**

**1. Oxides of Nitrogen (NO<sub>x</sub>)**

- \* a. The NO<sub>x</sub> emissions shall not exceed 147.7 pounds per hour (lbs/hr) calculated as NO<sub>2</sub>.
- \* b. The concentration of NO<sub>x</sub> in the exhaust gas shall not exceed 42 parts-per-million by volume on a dry basis (ppmdv), corrected to 15% oxygen between 60 to 100% load.
- \* c. NO<sub>x</sub> emissions for each combustion turbine shall not exceed 0.741 lb/MMBTU (8-hour rolling average) during startup and shall not exceed 0.337 lb/MMBTU (8-hour rolling average) during shutdown.

**2. Sulfur Dioxide (SO<sub>2</sub>)**

- a. The SO<sub>2</sub> emissions shall not exceed 137 lbs/hr.
- b. The concentration of SO<sub>2</sub> in the exhaust gas shall not exceed 28 ppmdv, corrected to 15% oxygen.

**3. Sulfuric Acid Mist (H<sub>2</sub>SO<sub>4</sub>)**

- a. The H<sub>2</sub>SO<sub>4</sub> emissions shall not exceed 32 lbs/hr.
- b. The concentration of H<sub>2</sub>SO<sub>4</sub> in the exhaust gas shall not exceed 4.3 ppmdv, corrected to 15% oxygen.

**4. Carbon Monoxide (CO)**

- a. The CO emissions shall not exceed:
  - (i) 104 lbs/hr at the "spinning reserve" mode heat input level; and
  - (ii) 20 lbs/hr at the base load heat input level.

\* denotes a June 2006 revision

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**PREPA Cambalache Combustion Project  
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**VIII. Emission Limitations For Each ABB GT 11N Combustion Turbine (cont'd)**

- b. The concentration of CO in the exhaust gas, corrected to 15% oxygen, shall not exceed:
  - (i) 71 ppm<sub>dv</sub> at the "spinning reserve" mode heat input level; and
  - (ii) 9 ppm<sub>dv</sub> at the base load heat input level.

- \* c. CO emissions for each combustion turbine shall not exceed 0.430 lb/MMBTU (8-hour rolling average) during startup and shall not exceed 0.685 lb/MMBTU (8-hour rolling average) during shutdown.

**5. Particulate Matter (PM)**

- a. The PM emissions shall not exceed:

- \* (i) 20 lbs/hr at the "spinning reserve" mode heat input level; and
- \* (ii) 20 lbs/hr at the base load heat input level.

- b. The concentration of PM in the exhaust gas, corrected to 15% oxygen, shall not exceed:

- \* (i) 0.0055 grains per dry standard cubic feet (gr/dscf) at the "spinning
- \* (ii) 0.0047 gr/dscf at the base load heat input level.

**6. Particulate Matter < 10 microns (PM-10)**

- \* a. The PM-10 emissions shall not exceed:

- (i) 51 lbs/hr at the "spinning reserve" mode heat input level; and
- (ii) 51 lbs/hr at the base load heat input level.

\* denotes a June 2006 revision

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**VIII. Emission Limitations For Each ABB GT 11N Combustion Turbine (cont'd)**

b. The concentration of PM-10 in the exhaust gas, corrected to 15% oxygen, shall not exceed:

- \* (i) 0.0141 gr/dscf at the "spinning reserve" mode heat input level; and
- \* (ii) 0.0120 gr/dscf at the base load heat input level.

**7. Volatile Organic Compounds (VOC)**

a. The VOC emissions (as methane) shall not exceed:

- (i) 11 lbs/hr at the "spinning reserve" mode heat input level; and
- (ii) 13 lbs/hr at the base load heat input level.

b. The concentration of VOC (as methane) in the exhaust gas, corrected to 15% oxygen, shall not exceed:

- (i) 13 ppm<sub>dv</sub> at the "spinning reserve" mode heat input level; and
- (ii) 11 ppm<sub>dv</sub> at the base load heat input level.

**8. Lead (Pb)**

a. The Pb emissions shall not exceed:

- (i) 0.016 lbs/hr at the "spinning reserve" mode heat input level; and
- (ii) 0.023 lbs/hr at the base load heat input level.

b. The concentration of Pb in the exhaust gas, corrected to 15% oxygen, shall not exceed 5.0  $\mu$ gr/dscf.

**9. Opacity limitation:**

Opacity of emissions, as measured by 40 CFR Part 60, Method 9, shall not exceed 20%, except for one period of not more than six (6) minutes in any thirty (30) minute interval when the opacity shall not exceed 60%.

\* denotes a June 2006 revision

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**IX. Pollution Control Equipment**

- \* 1. PREPA shall install and shall continuously operate a steam injection system at each ABB GT 11N distillate oil fired combustion turbine.
- 2. The steam to fuel ratio for each unit shall be established during the performance testing. PREPA shall comply with the steam to fuel ratio determined during the performance testing and contained within the written report submitted to EPA.
- 3. Each ABB GT 11N distillate oil fired combustion turbine shall continuously use No.2 fuel oil in which:
  - a. the sulfur content does not exceed 0.15% by weight; and
  - \* b. the nitrogen content does not exceed 0.055% by weight.
- 4. Each ABB GT 11N distillate oil fired combustion turbine shall continuously operate in accordance with its designed specified combustion parameters.

**X. Fuel Sampling Requirements**

- 1. PREPA shall sample the fuel being fired in the three ABB GT 11N combustion turbines on each occasion that fuel is transferred to the storage tanks at the facility from any other source. The fuel sampling shall include but not be limited to determining the fuel's:
  - a. sulfur content (% by weight); and
  - b. nitrogen content (% by weight).
- 2. Compliance with the sulfur content standard shall be determined using the testing methods established in 40 CFR 60.335(d).
- 3. Compliance with the nitrogen content standard shall be determined using analytical methods and procedures that are accurate to within 5 percent and are approved by the Administrator to determine the nitrogen content of the fuel being fired.

\* denotes a June 2006 revision

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**XI. Continuous Emission Monitoring (CEM) Requirements**

1. Prior to the date of startup and thereafter, PREPA shall install, calibrate, maintain, and operate the following continuous monitoring systems in each of the combustion turbine exhaust stack.
  - a. A continuous opacity monitoring system (COMS) to measure and record stack opacity levels. The system shall meet all applicable EPA monitoring performance specifications (including but not limited to 40 CFR Part 60.13 and 40 CFR Part 60, Appendix B, Performance Specifications 1).
  - b. A continuous emission monitoring system (CEMS) to measure and record stack gas NO<sub>x</sub> (as measured as NO<sub>2</sub>) concentrations. The system shall meet all applicable EPA monitoring performance specifications (including but not limited to 40 CFR Part 60.13 and 40 CFR Part 60, Appendix B, Performance Specifications 2, and Appendix F).
  - c. A CEMS to measure and record stack gas oxygen concentrations. The system shall meet all applicable EPA monitoring performance specifications (including but not limited to 40 CFR Part 60.13 and 40 CFR Part 60, Appendix B, Performance Specifications 3, and Appendix F).
  - d. A CEMS to measure and record stack gas carbon monoxide concentrations. The system shall meet all applicable EPA monitoring performance specifications (including but not limited to 40 CFR Part 60.13 and 40 CFR Part 60, Appendix B, Performance Specifications 4, and Appendix F).
  - e. A continuous monitoring system to measure and record stack gas volumetric flow rates. The system shall meet all applicable EPA monitoring performance specifications of 40 CFR Part 60, Appendix A, Method 19.
  - f. Continuous monitoring systems to measure and record stack temperatures and steam to fuel ratios. Upon request of EPA, PREPA shall conduct a performance evaluation of the monitor when testing procedures are formalized by the Agency in the future.

**ATTACHMENT II****PREPA Cambalache Combustion Project  
PSD Permit Conditions****XI. Continuous Emission Monitoring (CEM) Requirements (cont'd)**

2. Not less than 90 days prior to the date of startup of each combustion turbine, PREPA shall submit a written report to EPA of a Quality Assurance Project Plan for the certification of the combustion turbine's monitoring systems. Performance evaluation of the monitoring systems may not begin until the Quality Assurance Project Plan has been approved by EPA.
3. PREPA shall conduct performance evaluations of the COMS's, CEMS's and continuous monitoring systems during the initial performance testings required under Permit Condition XII of this permit or within 30 days thereafter in accordance with the applicable performance specifications in 40 CFR Part 60, Appendix B, and 40 CFR Part 52, Appendix E. PREPA shall notify the Regional Administrator (RA) 15 days in advance of the date upon which demonstration of the monitoring system(s) performance will commence.
  4. PREPA shall submit a written report to EPA of the results of all monitor performance specification evaluations conducted on the monitoring system(s) within 60 days of the completion of the tests. The monitoring systems must meet all the requirements of the applicable performance specification test in order for the monitors to be certified.

**XII. Performance Testing Requirements For Each Combustion Turbine**

1. Within 60 days after achieving the maximum production rate of the combustion turbine, 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, PREPA shall conduct performance tests for SO<sub>2</sub>, H<sub>2</sub>SO<sub>4</sub>, NO<sub>x</sub>, PM, PM<sub>10</sub>, CO, VOCs, Pb and opacity at the combustion turbines. All performance tests shall be conducted at base load conditions, "spinning reserve" mode (60% load) conditions and/or other loads specified by EPA.
2. Three test runs shall be conducted for each load condition and compliance for each operating mode shall be based on the average emission rate of these runs.
3. At least 60 days prior to actual testing, PREPA 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.

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**XII. Performance Testing Requirements For Each Combustion Turbine (Cont'd)**

4. PREPA 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 flow rate, 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<sub>x</sub> shall be conducted using 40 CFR Part 60, Appendix A, Method 7E.
  - c. Performance tests for the emissions of SO<sub>2</sub> shall be conducted using 40 CFR Part 60, Appendix A, Method 8.
  - d. Performance tests for the emissions of H<sub>2</sub>SO<sub>4</sub> shall be conducted using 40 CFR Part 60, Appendix A, Method 8.
  - e. Performance tests for the emissions of PM shall be conducted using 40 CFR Part 60, Appendix A, Method 5.
  - f. Performance tests for the emissions of PM<sub>10</sub> shall be conducted using 40 CFR Part 51, Appendix M, Method 201 (exhaust gas recycle) or Method 201A (constant flow rate), and Method 202.
  - g. Performance tests for the emissions of CO shall be conducted using 40 CFR Part 60, Appendix A, Method 10.
  - h. Performance tests for the emissions of VOCs shall be conducted using 40 CFR Part 60, Appendix A, Method 25A.
  - i. Performance tests for the emissions of Pb shall be conducted using 40 CFR Part 60, Appendix A, Method 12.
  - j. 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.

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**XII. Performance Testing Requirements For Each Combustion Turbine (cont'd)**

5. Test results indicating that emissions are below the limits of detection shall be deemed to be in compliance.
6. Additional performance tests may be required at the discretion of the EPA or EQB for any or all of the above pollutants.
7. For performance test purposes, sampling ports, platforms and access shall be provided by PREPA on each of the combustion turbine units in accordance with 40 CFR Part 60.8(e).
8. PREPA shall submit a written report to EPA of the results of all emission testing within 60 days of the completion of the performance test.
9. Operations during periods of startup, shutdown, and malfunction shall not constitute representative conditions for the purpose of a performance test.

**XIII. Recordkeeping Requirements**

1. Logs shall be kept and updated daily to record the following:
  - a. the gallons of No. 2 fuel oil fired on an hourly basis at each ABB GT 11N distillate oil fired combustion turbine;
  - b. the hours of operation of each ABB GT 11N distillate oil fired combustion turbine;
  - c. the sulfur content of all fuel oil burned;
  - d. the amount of steam consumed at each ABB GT 11N distillate oil fired combustion turbine to control NO<sub>x</sub> emissions;
  - e. the amount of electrical output (MW) on an hourly basis from each ABB GT 11N distillate oil fired combustion turbine;
  - f. any adjustments and maintenance performed on each ABB GT 11N distillate oil fired combustion turbine;

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**XIII. Recordkeeping Requirements (Cont'd)**

- g. any adjustments and maintenance performed on monitoring systems; and
  - h. all fuel sampling results obtained pursuant to Condition X. of this permit.
  - \* i. the number of startups and shutdowns for each combustion turbine and the duration of each event.
  - \* j. the number of hours each combustion turbine is operating at the “spinning reserve” mode heat input level.
2. All monitoring records, fuel sampling test results, calibration test results and logs must be maintained for a period of five years after the date of record, and made available upon request.
- \* 3. Startup/Shutdown NO<sub>x</sub> and CO Emissions Recordkeeping:
- a. Nitrogen Oxides - PREPA will continuously measure and record stack gas NO<sub>x</sub> concentrations in ppm<sub>vd</sub> using a CEM. The emission rate in ppm<sub>vd</sub> shall be measured and recorded every hour. Monitored oxygen concentrations (vol % dry) will be used to convert NO<sub>x</sub> concentrations to emission rates (lbs/MMBtu) pursuant to Equation 19.1 in EPA Method 19 (40 CFR Part 60 Appendix A). NO<sub>x</sub> emission rates in lbs/MMBtu will be calculated for every 8-hour rolling average (lbs/MMBtu) that contains periods of startup/shutdown per turbine.
  - b. CO - PREPA will continuously measure and record stack gas CO concentrations in ppm<sub>vd</sub> using a CEM. The emission rate in ppm<sub>vd</sub> shall be measured and recorded every hour. PREPA shall demonstrate compliance with the CO startup/shutdown mass emission limit in lbs/MMBtu by using data from the CEMs, fuel flow and Equation 19.1 (with appropriate molecular weight modification) in 40 CFR Part 60 Appendix A, Method 19. CO emission rates in lbs/MMBtu will be calculated for every 8-hour rolling average (lbs/MMBtu) that contains periods of startup/shutdown per turbine.

\* denotes a June 2006 revision

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**PREPA Cambalache Combustion Project  
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**XIV. REPORTING REQUIREMENTS**

1. PREPA 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 turbine 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 monitoring systems have 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. For the purposes of this PSD Permit, excess emissions indicated by monitoring systems, except during startup or shutdown, shall be considered violations of the applicable emission limits.
2. 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 Permit Condition VIII. of this permit and actions taken on any unit must be reported by telephone within 24 hours to:

Chief, Air Permit Division  
Puerto Rico Environmental Quality Board  
P.O. Box 11488  
Santurce, Puerto Rico 00910  
(787) 767-8071

\*

## **ATTACHMENT II**

### **PREPA Cambalache Combustion Project PSD Permit Conditions**

#### **XIV. REPORTING REQUIREMENTS (Cont'd)**

In addition, the Regional Administrator (RA) and Puerto Rico Environmental Quality Board (EQB) shall be notified in writing within fifteen (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 permit; 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.

#### **XV. OTHER REQUIREMENTS**

1. PREPA shall meet all other applicable federal, state and local requirements, including but not limited to those contained in the Puerto Rico State Implementation Plan (SIP), the General Provisions of the New Source Performance Standards (NSPS) (40 CFR Part 60, Subpart A), and the NSPS for Stationary Gas Turbines (40 CFR, Part 60, Subpart GG).
- \*2. All reports and Quality Assurance Project Plans required by this permit shall be submitted to:

Chief, Multi-Media Permits and Compliance Branch  
Caribbean Environmental Protection Division  
United States Environmental Protection Agency  
Region 2  
Centro Europa Building  
1492 Ponce de Leon Avenue, Suite 417  
Santurce, Puerto Rico 00907-4127

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**XV. OTHER REQUIREMENTS (Cont'd)**

3. Copies of all reports and Quality Assurance Project Plans shall also be submitted to:
  - a. Region 2 CEM Coordinator  
United States Environmental Protection Agency  
Region 2  
Monitoring and Assessment Branch  
2890 Woodbridge Avenue - MS - 220  
Edison, New Jersey 08837-3679
  - b. Director, Air Permit Division  
Puerto Rico Environmental Quality Board  
P.O. Box 11488  
Santurce, Puerto Rico 00910