



# Department of Environmental Protection

Lawton Chiles  
Governor

Twin Towers Office Building  
2600 Blair Stone Road  
Tallahassee, Florida 32399-2400

Virginia B. Wetherell  
Secretary

August 12, 1997

## CERTIFIED MAIL--RETURN RECEIPT REQUESTED

Mr. A. K. Sharma  
Director of Power Supply  
Kissimmee Utility Authority  
1701 West Carroll Street  
Kissimmee, Florida 34741

Dear Mr. Sharma:

Re: Permit Modification AC49-205703 (PSD-FL-182)  
DEP File Number: 0970043-003  
Modification of Compliance Testing Methods

The Department hereby modifies the following Specific Conditions related to compliance testing.

### Specific Condition 8:

Initial Compliance with the NO<sub>x</sub>, SO<sub>2</sub>, sulfuric acid mist, CO, PM, PM<sub>10</sub>, and VOC standards shall be determined (while operating at 95-100% of the permitted maximum heat rate input corresponding to the particular ambient conditions) within 180 days of initial operation of the maximum capability of the unit and annually thereafter for SO<sub>2</sub>, NO<sub>x</sub>, and CO only, by the following reference methods as described in 40 CFR 60, Appendix A (July, 1991 version) and adopted by reference in F.A.C. Rule 17-2.700 Rule 62-297.401, F.A.C.

- |            |   |
|------------|---|
| Method 1   | Sample and Velocity Traverses   |
| Method 2   | Volumetric Flow Rate  |
| Method 3   | Gas Analysis  |
| Method 5   | Determination of Particulate Emissions from Stationary Sources  |
| or         |   |
| Method 17  |   |
| Method 9   | Visual Determination of the Opacity of Emissions from Stationary Sources  |
| Method 8   | Determination of Sulfuric Acid Mist and Sulfur Dioxide Emissions from Stationary Sources (for fuel oil firing only) |
| Method 10  | Determination of Carbon Monoxide Emissions from Stationary Sources  |
| Method 20  | Determination of Nitrogen Oxides, Sulfur Dioxide, and Diluent Emissions from Stationary Gas Turbines                |
| Method 25A | Determination of Total Gaseous Organic Concentrations Using a Flame Ionization Analyzer                             |

*"Protect, Conserve and Manage Florida's Environment and Natural Resources"*

Other DEPR approved methods may be used for compliance testing after prior Departmental approval.

Annual compliance with the NO<sub>x</sub> standard may be determined by using data collected as part of the annual Relative Accuracy Test Audit (RATA) testing as described in 40 CFR 60, Appendix B, Performance Specification 2, Section 7.1.2, instead of performing Methods 7E and 20 as separate tests. EPA Method 10 will be conducted simultaneously with the NO<sub>x</sub>/O<sub>2</sub> RATA tests. The 20-30 minute tests conducted for the RATA testing will be strung together in a manner that fulfills additional requirements of EPA Methods 10 and 20 as to test run time (3 one hour runs) and O<sub>2</sub> stratification investigation. The collected data will be bias corrected to comply with the RATA test requirements, but will not be bias corrected for compliance with NSPS so as to meet the requirements of methods 10 and 20 (the NSPS test methods). No less than eight test points will be used for the RATA testing which will comply with both the RATA test requirements and the NSPS test requirements. The NO<sub>x</sub> span for methods 20 and 7E should not exceed 50 ppm instead of a span of 300 ppm as required by Subpart GG. Mass emissions of NO<sub>x</sub> and CO shall be determined pursuant to the procedures in 40 CFR 60, Appendix A, Method 19 or 40 CFR 75, Appendix F.

**Specific Condition 10:**

Compliance with the SO<sub>2</sub> and sulfuric acid mist emission limits can also be determined by calculations based on fuel analysis using ASTM D4294 for the sulfur content of liquid fuels and ASTM D3246-81 for sulfur content of gaseous fuel.

**Specific Condition 13:**

During performance tests, to determine compliance with the allowable NSPS NO<sub>x</sub> standard, measured NO<sub>x</sub> emissions at 15 percent oxygen will be adjusted to ISO ambient atmospheric conditions by the following correction factor:

$$NO_x = (NO_{x\text{ obs}}) \left( \frac{P_{ref}}{P_{obs}} \right)^{0.5} e^{19(H_{obs} - 0.00633)} \left( \frac{288^\circ K}{T_{amb}} \right)^{1.53}$$

where:

NO<sub>x</sub> = Emissions of NO<sub>x</sub> at 15 percent oxygen and ISO standard ambient conditions.

NO<sub>x obs</sub> = Measured NO<sub>x</sub> emission at 15 percent oxygen, ppmvd.

P<sub>ref</sub> = Reference combustor inlet absolute pressure at 101.3 kilopascals (1 atmosphere) ambient pressure.

- $P_{obs}$  = Measured combustor inlet absolute pressure at test ambient pressure.
- $H_{obs}$  = Specific humidity of ambient air at test.
- $e$  = Transcendental constant (2.718).
- $T_{amb}$  = Temperature of ambient air at test ( $^{\circ}K$ ).

Note: Measured  $NO_x$  emissions will not be ISO corrected for comparison with the BACT standard.

#### **Specific Condition 14:**

Test results will be the average of 3 valid runs, each to be of at least one hour in duration to comply with EPA Method 10. Each 60-minute test may be divided into segments that conform with RATA test run times (20-30 minutes; see Specific Condition 8). The Central District office will be notified at least 30 days in writing in advance of the compliance test(s). The sources shall operate between 95% and 100% of permitted capacity during the compliance test(s) as adjusted for ambient temperature. Compliance test results shall be submitted to the Central District office no later than 45 days after completion.

#### **Specific Condition 16:**

The permittee shall comply with the following requirements:

- (a) Install, calibrate, maintain, and operate a continuous emission monitor in each stack to measure and record the nitrogen oxides emissions from each source. The continuous emission monitor must comply with 40 CFR 60, Appendix B, Performance Specification 2 (July 1, 1992);
- (b) A continuous monitoring system shall be installed to monitor and record the fuel consumption on each unit. ~~While water injection is being utilized for  $NO_x$  control, the water to fuel ratio at which compliance is achieved shall be incorporated into the permit and shall be continuously monitored.~~ The system shall meet the requirements of 40 CFR Part 60.334, Subpart GG; except that the monitoring of water to fuel ratio and fuel bound nitrogen is waived as long as the permittee will report excess emissions using the data collected by the continuous monitoring system in accordance with the following conditions:
  1. Each  $NO_x$  CEMs must be capable of calculating  $NO_x$  emissions concentrations corrected to 15%  $O_2$  and ISO conditions.
  2. Monitor data availability shall be no less than 95 percent on a quarterly basis.
  3.  $NO_x$  CEMS should provide at least 4 data points for each hour and calculate a one-hour average.

To implement condition (b)1, KUA shall use ambient data (temperature, relative humidity, pressure) to correct excess emissions data to ISO conditions if requested by the Department. If monitor availability drops below 95% on a quarterly basis as prescribed in condition (b)2, KUA shall use water to fuel ratio and fuel-bound nitrogen data to monitor excess emissions in subsequent quarters until the minimum CEMS monitor availability is above 95%. The use of CEMS to monitor excess emissions is more stringent than the surrogate parameter monitoring in 40 CFR 60.334 since the CEMS directly measures NO<sub>x</sub> emissions. The CEMS also provides monitoring when no water injection is used to control NO<sub>x</sub> emissions (i.e., when firing natural gas, dry low NO<sub>x</sub> burners are used).

- (c) In addition, literature on equipment selected shall be submitted as it becomes available. A CT-specific graph of the relationship between ambient temperature and heat inputs to the CT shall be submitted to DEPR's Central District office and the Bureau of Air Regulation.

### Specific Condition 23

Semi-annual ~~Quarterly~~ excess emission reports, in accordance with the July 1, 1992 version of 40 CFR 60.7 and 60.334 shall be submitted to DEPR's Central District office. Excess emissions for NO<sub>x</sub> shall be reported using data collected by the continuous emissions monitors. Since CEM data will be used for the reporting of excess emissions for NO<sub>x</sub> the monitoring of water/fuel ratio and fuel-bound nitrogen required by 40 CFR 60, Subpart GG is waived.

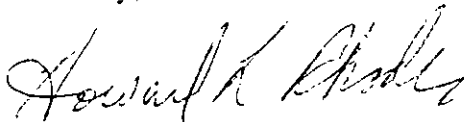
### References to ISO conditions in footnote C) in Tables 1 and 2:

Emission rates are based on 100% load ~~and at ISO conditions.~~

The department did not change the annual test requirement for SO<sub>2</sub> emissions in Specific Condition 8 because compliance with the SO<sub>2</sub> emission limit can also be determined by fuel analysis as stated in Specific Condition 10.

A copy of this letter shall be attached to the reference air construction permit and shall become a part of that permit.

Sincerely,



Howard L. Rhodes, Director  
Division of Air Resources  
Management

HLR/ch

Enclosure



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
WASHINGTON, D.C. 20460

MAY 31 1994

OFFICE OF  
AIR AND RADIATION

MEMORANDUM

SUBJECT: NSPS Subpart GG - Alternative Control Technologies and Monitoring Methods

FROM: John B. Rasnic, Director *John B Rasnic*  
Stationary Source Compliance Division  
Office of Air Quality Planning and Standards

TO: Air, Pesticides, and Toxics Management Division  
Directors  
Regions I and IV

Air and Waste Management Division Director  
Region II

Air, Radiation, and Toxics Division Director  
Region III

Air and Radiation Division Director  
Region V

Air, Pesticides, and Toxics Division Director  
Region VI

Air and Toxics Division Directors  
Regions VII, VIII, IX, and X

OPTIONAL FORM 98 (7-90)		FAX TRANSMITTAL		# of pages ▶ 5
To	Martin Costello	From	David Mc Neal	
Dept/Agency		Phone #	404-562-9102	
Fax #	904/922-6979	Fax #		
NSN 7540-01-317-7368 5099-101 GENERAL SERVICES ADMINISTRATION				

I have recently received inquiries about using alternative technologies and monitoring methods to control NO<sub>x</sub> emissions from NSPS Subpart GG-regulated gas turbines. Subpart GG provides a standard of performance for gas turbines, based on using water injection technology, and describes a corresponding continuous water-to-fuel ratio NO<sub>x</sub> monitoring method. I understand that some turbines are using NO<sub>x</sub> control methods other than water injection and some of the Regional Offices have asked what type of monitoring approaches, if any, should be required for those control technologies since Subpart GG does not address this issue directly.

The Stationary Source Compliance Division (SSCD), in cooperation with other OAQPS staff, has determined that the mandate of section 111 of the Clean Air Act was to continuously

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reduce NO<sub>x</sub> emissions from gas turbines (a major source of emissions) and the intent of Subpart GG was to continuously monitor that emission reduction. Therefore, if a Subpart GG facility uses a control technology other than water injection (including Selective Catalytic Reduction, Selective Non-Catalytic Reduction, and Dry Low NO<sub>x</sub> Combustor) this facility should propose a compatible continuous alternative NO<sub>x</sub> monitoring method.

If you have any question, please call Zofia Kosim, of my staff at 703-308-8733.



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
WASHINGTON, D.C. 20460

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MAR 12 1993

MAR 15 1993

MAR 15 1993

AIR, RADIATION & TOXICS  
OFFICE OF REGIONAL  
AIR AND RADIATION

MEMORANDUM

AIR ENFORCEMENT BRANCH  
EPA Region II

SUBJECT: Approval of the Use of NO<sub>x</sub> CEMS as an Alternative Method to the Water-fuel Ratio Monitoring under NSPS Subpart GG

FROM: John B. Rasnic, Director *John Rasnic*  
Stationary Source Compliance Division  
Office of Air Quality Planning and Standards

TO: Karl Mangels, Chief  
New York Compliance Section  
Air Compliance Branch, Region II

In response to your January 12, 1993, memorandum to Linda Lay, SSCD investigated the feasibility of our approval of your request. You asked SSCD to approve a request from East Syracuse Generating Company to allow the use of the NO<sub>x</sub> continuous emission monitoring system (CEMS) as an alternative monitoring method to the continuous water-fuel ratio monitoring method.

East Syracuse Generating Company is to commence development of a 100 MW natural gas-fired cogeneration combustion turbine facility in the village of East Syracuse, New York. The facility is allowed to use a limited amount of low sulfur distillate oil as a backup fuel. To control the emissions of NO<sub>x</sub>, this turbine will use both water injection and selective catalytic reduction as required by the New York State Department of Environmental Conservation (NYSDEC). Since the NYSDEC permit conditions are more restrictive than the requirements of NSPS Subpart GG, East Syracuse is asking for a waiver from the following monitoring requirements:

1. Fuel sulfur monitoring
2. Fuel nitrogen monitoring
3. Continuous water-fuel ratio monitoring for NO<sub>x</sub> compliance.


You have already made determinations on the first two issues and asked SSCD to address only the third issue, use of NO<sub>x</sub> CEMS, that is required by the State permit, instead of the water-fuel ratio monitoring method.

SSCD determined that the use of a NO<sub>x</sub> CEMS can be allowed as an alternative monitoring method if the facility meets the following conditions:

MAY-13-97 14:08 FROM: AIR TECH/RAD BR

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- Each turbine meets the emission limitation (STD) determined according to 40 CFR part 60.332. The "Y" value for the applicable equation and supporting documentation should be provided by the applicant and the limitation for NO<sub>x</sub> emissions from pipeline quality natural gas should be fixed by EPA assuming the "F" value equals 0. The emission limitation shall be expressed in ppwv, dry, corrected to 15 percent O<sub>2</sub>.
- Each NO<sub>x</sub> CEMS meets the applicable requirements of 40 CFR §60.13, Appendix B, and Appendix F for certifying, maintaining, operating and assuring quality of the system.
- Each NO<sub>x</sub> CEMS must be capable of calculating NO<sub>x</sub> emissions concentrations corrected to 15% O<sub>2</sub> and ISO conditions.
- Monitor data availability shall be no less than 95 percent on the quarterly basis.
- NO<sub>x</sub> CEMS should provide 4 data points for each hour and calculate a 1-hour average.
- Each owner or operator of a NO<sub>x</sub> CEMS shall submit an excess emissions (calculated according to the requirements of paragraph 60.13(h)) and monitoring systems performance report and/or a summary report form to the Administrator on a quarterly basis, if excess emissions are determined, or semiannually. The report shall be postmarked by the 30th day following the end of each reporting period. Written reports shall include information required in paragraphs 60.7(c) and 60.7(d). This report shall also contain the content of nitrogen in fuel oil for each reporting period when oil is fired and a clearly calculated corresponding emission limitation (STD).
- Recordkeeping requirements shall follow the requirements specified in 40 CFR §60.7.


  
 ? what if more

In addition, to upgrade the EPA data, we recommend that the NO<sub>x</sub> CEMS be used to demonstrate compliance with the emission limitation on a continuous basis and that the quarterly report include the NO<sub>x</sub> mass emissions for the reported period as reported to the State.

If you have any questions, please call Zofia Kosia at 703-308-8733.

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cc: Air, Pesticides, and Toxics Management Division  
Directors  
Regions I and IV

Air and Waste Management Division Director  
Region II

Air, Radiation, and Toxics Division Director  
Region III

Air and Radiation Division Director  
Region V

Air, Pesticides, and Toxics Division Director  
Region VI

Air and Toxics Division Directors  
Regions VII, VIII, IX, and X

Fold at line over top of envelope to return address

**SENDER**

- Complete items 1 and/or 2 for additional services.
- Complete items 3, 4a, and 4b.
- Print your name and address on the reverse of this form so that we can return this card to you.
- Attach this form to the front of the mailpiece, or on the back if space does not permit.
- Write "Return Receipt Requested" on the mailpiece below the article number.
- The Return Receipt will show to whom the article was delivered and the date delivered.

I also wish to receive the following services (for an extra fee):

- 1.  Addressee's Address
- 2.  Restricted Delivery

Consult postmaster for fee.

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3. Article Addressed to:  
 A.K. Sharma  
 Kossinnec Utility Auth.  
 1701 W. Carroll St.  
 Kossinnec, IL 34741

4a. Article Number  
 P 265 659 437

4b. Service Type  
 Registered  Certified  
 Express Mail  Insured  
 Return Receipt for Merchandise  COD

7. Date of Delivery  
 8/18

5. Received By: (Print Name)  
 MICHELE ERNST

8. Addressee's Address (Only if requested and fee is paid)

6. Signature: (Addressee or Agent)  
 X *Michele Ernst*

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PS Form 3811, December 1994

Domestic Return Receipt

P 265 659 437

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 Do not use for International Mail (See reverse)

Sender	<i>A.K. Sharma</i>
Street & Number	<i>1701 W</i>
Post Office, State, & ZIP Code	<i>Kossinnec, IL</i>
Postage	\$
Certified Fee	
Special Delivery Fee	
Restricted Delivery Fee	
Return Receipt Showing to Whom & Date Delivered	
Return Receipt Showing to Whom, Date, & Addressee's Address	
TOTAL Postage & Fees	\$
Postmark or Date	

PS Form 3800, April 1995

*097043003-28-15-97*  
*PSD-FI-182*