Department of Environmental Protection

Jeb Bush
Governor

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

David B. Struhs
Secretary

December 20, 2002

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

Mr. G. Dwain Waters, Air Quality Programs Supervisor
Gulf Power Company
Stanton Energy Center Combined Cycle Unit A
One Energy Place
Pensacola, FL 32520

Re: Request for Additional Information
Revision of NO_X and CO CEMS span data – Specific Condition Number 41
File No. 0950137-003-AC (PSD-FL-313)

Dear Mr. Waters:

The Department is in receipt of your PSD application to revise the permit for Stanton A Combined Cycle Unit. The application remains incomplete. In order to continue processing your application, the Department will need the additional information below. Should your response to any of the below items require new calculations, please submit the new calculations, assumptions, reference material and appropriate revised pages of the application form.

1. For acid rain NO_X monitors, the following summarizes the general requirements for setting the span per 40 CFR Part 75, Appendix A. The actual requirements can be somewhat complicated, as there are several options and specifications, depending on allowable fuels and emission controls.

   Generally the rule requires the majority of readings to be between 20 and 80% of full-scale range, but provides for exceptions for measurements made on high and low spans of dual span monitors that meet the rule requirements for span selection. The high span is based on the maximum potential concentration (MPC), and the low span is based on the maximum expected pollutant (MEC) concentration.

   The MPC is selected using one of five options, but typically for CTs the "table value" is selected. For dual fuel CTs, the MPC "table value" is 200 ppm. The MEC is selected from one of three options, but usually the permit limit is selected (10 ppm).

   Spans are selected by multiplying a factor by the MPC and MEC. The high span is selected by multiplying the MPC by a factor between 1.00 and 1.25, and rounding to the next highest multiple of 10 ppm (if the span is <= 500 ppm). If a state rule requires a lower span, that value may be used instead. A dual span is required where the MEC is < 20.0% of the high span value. The low span value is 100 to 125% of the MEC.

   So, based on the allowable fuels of oil and gas, and the higher permitted NO_X limit of 10 ppm, a dual span monitor is required, and the NO_X spans would be a high span of 200 to 250 ppm, and a low span of 10 to 20 ppm. Typically, other unit owners and operators have dual span monitors of 200 ppm high and 20 ppm low.

   In summary, the Department is not inclined to eliminate the wording from Specific Condition Number 41 (which has been requested) which currently states "The span for the lower range shall not be greater than 10 ppm, and the span for the upper range shall not be greater than 30 ppm, as corrected to 15% O_2." However, the Department is willing to allow the span for the lower range of the NO_X monitor to be set between 10 and 20 ppm and the upper range to be set between 200 and 250 ppm. Please comment.

2. The requirements are more general for CO monitors under 40 CFR Part 60, Appendix B. CO monitors are covered under Performance Specifications 4 and 4A, with PS 4 primarily applicable to monitors with spans of 1000 ppm, and PS 4A primarily applicable to monitors with spans of 200 ppm, with provision for dual range monitors with a high level value of 2000 ppm. Both refer extensively to PS 2, which specify requirements for SO_2 and NO_X monitors. Generally, PS 2 refers to a span value set by regulation, with specifications for measuring a high level gas concentration, and it specifies a different high level for uncontrolled emissions measurement and measurement of emissions after control. For uncontrolled emissions, the high-level value is between 1.25 and 2 times the maximum potential concentration. For controlled emissions, the high-level value would be between 1.5 times the emission standard and the required span.

   PS 4A adds specifications for dual range monitors that are intended to measure emissions under normal operation and short duration peaks of high concentrations. The low range is set as for controlled emissions, and the high range must be capable of measuring a minimum high-level value of 2000 ppm, with no gap between the low and high ranges.

   Since Part 60 requirements are written assuming that a span will be specified, it appears that is appropriate to specify the span or spans for the CO monitor, considering the potential normal and short-duration emission levels.

   In summary, the Department is not inclined to eliminate the wording from Specific Condition Number 41 (which has been requested) which currently states "The span for the lower range shall not be greater than 20 ppm, and the span for the upper range shall not be greater than 100 ppm, as corrected to 15% O_2." However, the Department is willing to allow the span for the lower range of the CO monitor to be set between 20 and 30 ppm and the upper range to be set between 500 and 1000 ppm. Please comment.

Rule 62-4.050(3), F.A.C. requires that all applications for a Department permit must be certified by a professional engineer registered in the State of Florida. This requirement also applies to responses to Department requests for additional information of an engineering nature. Please note that per Rule 62-4.055(1): *"The applicant shall have ninety days after the Department mails a timely request for additional information to submit that information to the Department..... Failure of an applicant to provide the timely requested information by the applicable date shall result in denial of the application."*

If you have any questions, please call Michael P. Halpin, P.E. at 850/921-9519.

Sincerely,

Michael P. Halpin, P.E.
FDEP/DARM
New Source Review Section

Joseph Kahn, DEP/DARM
Errin Pichard, DEP/DARM
Len Kozlov, DEP-CD
Mr. John Bunyak, NPS
Mr. Gregg Worley, EPA

Span requirements for NOx monitors per 40 CFR Part 75, Appendix A.

App. A § 2 2. Equipment Specifications

App. A § 2.1 *2.1 Instrument Span and Range*
In implementing sections 2.1.1 through 2.1.6 of this appendix, set the measurement range for each parameter (SO2, NOx,, CO2, O2, or flow rate) high enough to prevent full-scale exceedances from occurring, yet low enough to ensure good measurement accuracy and to maintain a high signal-to-noise ratio. To meet these objectives, select the range such that the majority of the readings obtained during typical unit operation are kept, to the extent practicable, between 20.0 and 80.0 percent of the full-scale range of the instrument. These guidelines do not apply to: (1) SO2 readings obtained during the combustion of very low sulfur fuel (as defined in § 72.2 of this chapter); (2) SO2 or NOx readings recorded on the high measurement range, for units with SO2 or NOx emission controls and two span values, unless the emission controls are operated seasonally (for example, only during the ozone season); or (3) SO2 or NOx readings less than 20.0 percent of full-scale on the low measurement range for a dual span unit provided that the maximum expected concentration (MEC), low-scale span value, and low-scale range settings have been determined according to sections 2.1.1.2, 2.1.1.4(a), (b), and (g) of this appendix (for SO2), or according to sections 2.1.2.2, 2.1.2.4(a) and (f) of this appendix (for NOx).

App. A § 2.1.2
2.1.2 NOx Pollutant Concentration Monitors
Determine, as indicated in sections 2.1.2.1 through 2.1.2.5 of this appendix, the span and range value(s) for the NOx pollutant concentration monitor so that all expected NOx concentrations can be determined and recorded accurately.

App. A § 2.1.2.1
2.1.2.1 Maximum Potential Concentration

App. A § 2.1.2.1(a)
(a) The maximum potential concentration (MPC) of NOx for each affected unit shall be based upon whichever fuel or blend combusted in the unit produces the highest level of NOx emissions. Make an initial determination of the MPC using the appropriate option as follows:
Option 1: Use 800 ppm for coal-fired and 400 ppm for oil- or gas-fired units as the maximum potential concentration of NOx (if an MPC of 1600 ppm for coal-fired units or 480 ppm for oil- or gas-fired units was previously selected under this part, that value may still be used, provided that the guidelines of section 2.1 of this appendix are met). For cement kilns, use 2000 ppm as the MPC. For process heaters, use 200 ppm if the unit burns only gaseous fuel and 500 ppm if the unit burns oil;
Option 2: Use the specific values based on boiler type and fuel combusted, listed in Table 2-1 or Table 2-2;
Option 3: Use NOx emission test results;
Option 4: Use historical CEM data over the previous 720 (or more) unit operating hours when combusting the fuel or blend with the highest NOx emission rate; or
Option 5: If a reliable estimate of the uncontrolled NOx emissions from the unit is available from the manufacturer, the estimated value may be used.

App. A § 2.1.2.1(c)
(c) Report the method of determining the initial MPC and the calculation of the maximum potential NOx emission rate in the monitoring plan for the unit. Note that whichever MPC option in paragraph 2.1.2.1(a) of this appendix is selected, the initial MPC value is subject to periodic review under section 2.1.2.5 of this appendix. If an MPC value is found to be either inappropriately high or low, the MPC shall be adjusted in accordance with section 2.1.2.5, and corresponding span and range adjustments shall be made, if necessary.

TABLE 2-2. -- MAXIMUM POTENTIAL CONCENTRATION FOR NOX -- Gas- And Oil-Fired Units

Unit type	Maximum potential concentration for NOx (ppm)
New combustion turbine, permitted to fire either oil or natural gas	200
New combustion turbine, permitted to fire only natural gas	150

App. A § 2.1.2.2
2.1.2.2 Maximum Expected Concentration

App. A § 2.1.2.2(a)
(a) Make an initial determination of the maximum expected concentration (MEC) of NOx during normal operation for affected units with add-on NOx controls of any kind (e.g., steam injection, water injection, SCR, or SNCR) and for turbines that use dry low-NOx technology. Also determine the MEC for uncontrolled units and units that use only low NOx burners (LNB) for NOx control, if more than one type of fuel is combusted in the unit. Determine a separate MEC value for each type of fuel (or blend) combusted in the unit, except for fuels that are only used for unit startup and/or flame stabilization and except for the fuel or blend that was used to determine the MPC under section 2.1.2.1 of this appendix. Calculate the MEC of NOx using Equation A-2, if applicable, inserting the maximum potential concentration, as determined using the procedures in section 2.1.2.1 of this appendix. Where Equation A-2 is not applicable, set the MEC either by: (1) measuring the NOx concentration using the testing procedures in this section; (2) using historical CEM data over the previous 720 (or more) quality assured monitor operating hours; or (3) if the unit has add-on NOx controls or uses dry low NOx technology, and has a federally-enforceable permit limit for NOx concentration, the permit limit may be used as the MEC. Include in the monitoring plan for the unit each MEC value and the method by which the MEC was determined. Note that each initial MEC value is subject to periodic review under section 2.1.2.5 of this appendix. If an MEC value is found to be either inappropriately high or low, the MEC shall be adjusted in accordance with section 2.1.2.5, and corresponding span and range adjustments shall be made, if necessary.

$$MEC = MPC\ (100\text{-}RE)/100$$

(Eq. A-2)
Where:
MEC = Maximum expected concentration (ppm).
MPC = Maximum potential concentration (ppm), as determined by Eq. A-1a or A-1b in section 2.1.1.1 of this appendix.
RE = Expected average design removal efficiency of control equipment (%).

App. A § 2.1.2.3
2.1.2.3 Span Value(s) and Range(s)
(a) Determine the high span value of the NOx monitor as follows. The high span value shall be obtained by multiplying the MPC by a factor no less than 1.00 and no greater than 1.25. Round the span value upward to the next highest multiple of 100 ppm. If the NOx span concentration is <= 500 ppm, the span value may either be rounded upward to the next highest multiple of 10 ppm, or to the next highest multiple of 100 ppm. The high span value shall be used to determine the concentrations of the calibration gases required for daily calibration error checks and linearity tests. Note that for certain applications, a second (low) NOx span and range may be required (see section 2.1.2.4 of this appendix).
(b) If an existing State, local, or federal requirement for span of a NOx pollutant concentration monitor requires or allows the use of a span value lower than that required by this section or by section 2.1.2.4 of this appendix, the State, local, or federal span value may be used, where a satisfactory explanation is included in the monitoring plan, unless span and/or range adjustments become necessary in accordance with section 2.1.2.5 of this appendix. Span values higher than required by this section or by section 2.1.2.4 of this appendix must be approved by the Administrator.
(c) Select the full-scale range of the instrument to be consistent with section 2.1 of this appendix and to be greater than or equal to the high span value. Include the full-scale range setting and calculations of the MPC and span in the monitoring plan for the unit.

App. A § 2.1.2.4
2.1.2.4 Dual Span and Range Requirements
For most units, the high span value based on the MPC, as determined under section 2.1.2.3 of this appendix will suffice to measure and record NOx concentrations (unless span and/or range adjustments must be made in accordance with section 2.1.2.5 of this appendix). In some instances, however, a second (low) span value

based on the MEC may be required to ensure accurate measurement of all expected and potential NOx concentrations. To determine whether two NOx spans are required, proceed as follows:

App. A § 2.1.2.4(a)
(a) Compare the MEC value(s) determined in section 2.1.2.2 of this appendix to the high full-scale range value determined in section 2.1.2.3 of this appendix. If the MEC values for all fuels (or blends) are >= 20.0 percent of the high range value, the high span and range values determined under section 2.1.2.3 of this appendix are sufficient, irrespective of which fuel or blend is combusted in the unit. If any of the MEC values is < 20.0 percent of the high range value, two spans (low and high) are required, one based on the MPC and the other based on the MEC.

App. A § 2.1.2.4(b)
(b) When two NOx spans are required, the owner or operator may either use a single NOx analyzer with a dual range (low- and high-scales) or two separate NOx analyzers connected to a common sample probe and sample interface. Two separate NOx analyzers connected to separate probes and sample interfaces may be used if RATAs are passed on both ranges. For units with add-on NOx emission controls (e.g., steam injection, water injection, SCR, or SNCR) or units equipped with dry low-NOx technology, the owner or operator may use a low range analyzer and a "default high range value," as described in paragraph 2.1.2.4(e) of this section, in lieu of maintaining and quality assuring a high-scale range. Other monitor configurations are subject to the approval of the Administrator.

App. A § 2.1.2.4(f)
(f) The high span and range shall be determined in accordance with section 2.1.2.3 of this appendix. The low span value shall be 100.0 to 125.0 percent of the MEC, rounded up to the next highest multiple of 10 ppm (or 100 ppm, if appropriate). If more than one MEC value (as determined in section 2.1.2.2 of this appendix) is < 20.0 percent of the high full-scale range value, the low span value shall be based upon whichever MEC value is closest to 20.0 percent of the high range value. The low range must be greater than or equal to the low span value, and the required calibration gases for the low range must be selected based on the low span value. For units with two NOx spans, use the low range whenever NOx concentrations are expected to be consistently < 20.0 percent of the high range value, i.e., when the MEC of the fuel being combusted is < 20.0 percent of the high range value. When the full-scale of the low range is exceeded, the high range shall be used to measure and record the NOx concentrations; or, if applicable, the default high range value in paragraph (e) of this section shall be reported for each hour of the full-scale exceedance.

One Energy Place
Pensacola, Florida 32520

Tel 850.444.6111

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BUREAU OF AIR REGULATION

GULF POWER
A SOUTHERN COMPANY

November 22, 2002

Mr. Michael P. Halpin, P.E.
Professional Engineer II
Florida Department of Environmental Protection
2600 Blair Stone Road
Mail Station #5510
Tallahassee, Florida 32399-2400

RE: Stanton Energy Center Combined Cycle Unit A
File No. PSD-FL-313 (PA81-14SA2)
Request for Revision of Condition Number 41
0950137-003-AC

Dear Mr. Halpin:

During our last meeting in Tallahassee, we discussed the permit-specified span values regarding the new Stanton A Combined Cycle Unit. We indicated that the span values provided in the permit under Condition No. 41 are inconsistent with the requirements under 40 CFR Parts 60 and 75, and may not provide us with the flexibility needed to obtain accurate continuous emissions monitoring system (CEMS) data. The formulas under Part 75 and Part 60 should be used to calculate the appropriate span ranges for the CEMS and therefore the span specifications in our permit are unnecessary.

As is appropriate for units utilizing add-on control technology, our permit requires a dual-range monitoring system. This dual-range approach requires a "high" span value and a "low" span value. We are particularly concerned about the high span values set forth in the permit for the carbon monoxide (CO) and nitrogen oxides (NOx) monitors. The span values established in the permit are inconsistent with emission levels experienced during initial startup and load change of the units firing with natural gas, prior to the time that the low NOx burners are fully functional.

For instance, the NOx value (gas fired) on the attached figure illustrates a NOx value as high as approximately 105 ppmvd. This is well above the upper range specified in the permit (30 ppm). According to Part 75, Appendix A 2.1.2.3, "The high span value of the NOx value shall be determined by multiplying the MPC [maximum potential concentration] (~105 ppmvd) by a factor of no less than 1.00 and no greater than 1.25." This would result in an upper span value of approximately 140 ppm. When emissions during oil firing are considered, the maximum potential concentration for NOx can be 200 ppm. (Note: The utilization of oil would likely present short-term values above the curves provided in the attached figure.)

In regard to CO, the permit specifies a span value for the lower range of 20 ppm and an upper range of no greater than 100 ppm. As illustrated in the attached figure, CO values can have an instantaneous high of almost 950 ppm. As stated above, when fuel oil is utilized, the maximum value could be higher, with a correspondingly higher span value.

Because the upper span values specified in the permit for both the NOx and CO monitors are inconsistent with existing regulatory requirements under Parts 75 and 60, the permit should be revised to delete the specific values. A better approach would be to simply refer to the federal regulations.

The Department has taken this approach in the most recently proposed PSD permits for virtually identical units: "The CO [NOx] monitor shall have multi-span capability with appropriate spans established for the methods of operation (simple cycle gas firing, combined cycle gas firing, simple cycle oil firing, combined cycle oil firing, etc.)." (Proposed PSD Permit Nos. PSD-FL-327 and PSD-FL-328, Florida Power & Light Company Martin and Manatee Power Plants, Condition No. 23) Appropriately, no reference is made in these permits as to specific lower or upper span values. This approach is preferred because it avoids the need for a subsequent permit revision in the event requirements in 40 CFR Parts 60 and 75 change in the future and because the maximum potential concentrations can change over time.

We therefore propose the following revisions to the second paragraph of Condition 41, which will ensure the best means of obtaining the most accurate air emissions data:

> The NOx monitor shall be certified and operated in accordance with the following requirements. The NOx monitor shall be certified pursuant to 40 CFR Part 75 and shall be operated and maintained in accordance with the applicable requirements of 40 CFR Part 75, Subparts B and C. For purposes of determining compliance with the emission limits specified within this permit, missing data shall not be substituted. Instead, the block average shall be determined using the remaining hourly data in the 3-hour block. However, in the event that the permittee maintains 95% or greater availability of the continuous emissions monitoring systems used for determining NOx emissions compliance for the previous quarter, then compliance with the emission limits for NOx shall be based on 3 valid consecutive hours of data for a 3-hour block average. Record keeping and reporting shall be conducted pursuant to 40 CFR Part 75, Subparts F and G. The RATA tests required for the NOx monitor shall be performed using EPA Method 20 or 7E, of Appendix A of 40 CFR 60. The NOx monitor shall be a dual range monitor. ~~The span for the lower range shall not be greater than 10 ppm, and the span for the upper range shall not be greater than 30 ppm, as corrected to 15% O2.~~ The CO monitor and CO2 monitor shall be certified and operated in accordance with the following requirements. The CO monitor shall be certified pursuant to 40 CFR 60, Appendix B, Performance Specification 4. The CO2 monitor shall be certified pursuant to 40 CFR 60, Appendix B, Performance Specification 3. Quality assurance procedures shall conform to the requirements of 40 CFR 60, appendix F, and the Data Assessment Report of section 7 shall be made each calendar quarter, and reported semi-annually to the Department's Central District office. The RATA tests required for the CO monitor shall be performed using EPA Method 10, of Appendix A of 40 CFR 60. The Method 10 analysis shall be based on a continuous sampling train, and the ascarite trap may be omitted or the interference trap of section 10.1 may be used in lieu of the silica gel and

ascarite traps. The CO monitor shall be a dual range monitor. ~~The span for the lower range shall not be greater than 20 ppm, and the span for the upper range shall not be greater than 100 ppm, as corrected to 15% O2.~~ The RATA tests required for the CO2 monitor shall be performed using EPA Method 3B, of Appendix A of 40 CFR 60.

In conclusion, the span values specified in our permit do not meet the operating envelope of the units at this site. The removal of span values from Condition 41 will help us comply with 40 CFR Parts 75 and 60 and obtain the most accurate data possible.

Thank you for considering our request for permit revision. If you should have any questions regarding this request, please feel free to call me at (850) 444-6527.

Sincerely,

G. Dwain Waters, Q.E.P.
Air Quality Programs Supervisor

cc: Joseph Kahn, Florida Department of Environmental Protection
Mike Markey, Gulf Power Company
Jim Vick, Gulf Power Company
Ronnie Walston, Southern Company Services

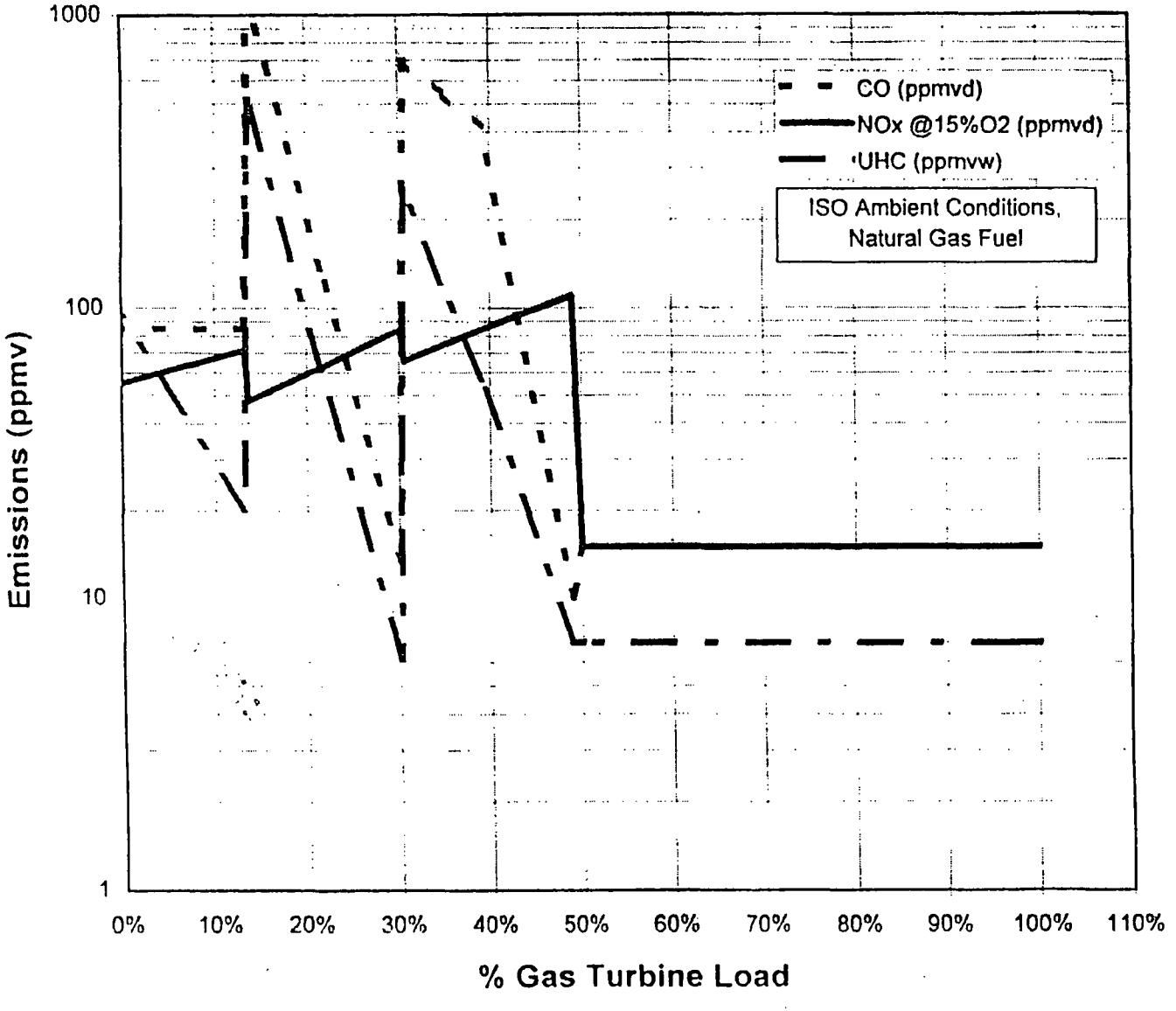

Figure 2 – Emissions Performance Curves for GE DLN-2.6 Combustor Firing Natural Gas in a Dual Fuel GE 7FA Combustion Turbine

(Simple Cycle Intermittent Duty – If Tuned to 15 ppmvd NO_X)

CERTIFICATION

"I, the undersigned, am the authorized representative for the PSD permit source for which this request is being submitted. I hereby certify, based on information and belief formed after reasonable inquiry, that the statements made and data contained in this request are true, accurate and complete."

Authorized Representative Signature:

Robert G. Moore

Robert G. Moore
Senior Vice-President of Southern Company Services &
Senior Production Officer of Southern Power

11/25/02

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1. Article Addressed to:

Mr. G. Dwain Waters
Air Quality Programs Supervisor
Gulf Power Company
Stanton Energy Center Combined Cycle Unit A
One Energy Place
Pensacola, FL 32520

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