



NRO-169-14

COMMONWEALTH of VIRGINIA

DEPARTMENT OF ENVIRONMENTAL QUALITY

NORTHERN REGIONAL OFFICE

13901 Crown Court, Woodbridge, Virginia 22193-1453

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www.deq.virginia.gov

Molly Joseph Ward
Secretary of Natural Resources

David K. Paylor
Director

Thomas A. Faha
Regional Director

September 30, 2014

Ms. Cathy C. Taylor
Director, Electric Environmental Services
Dominion Resources Services, Inc.
5000 Dominion Boulevard
Glen Allen, VA 23060

Location: Prince William County
Registration Number: 70225

Dear Ms. Taylor:

Attached is a minor amendment to your Prevention of Significant Deterioration/Non-attainment permit dated October 5, 2001, and most recently amended on June 11, 2013, to modify and operate the Possum Point Power Station electrical power generation facility in accordance with the provisions of the Virginia Regulations for the Control and Abatement of Air Pollution. Permit changes are reflected in Condition 19 on page 7 and in Appendix A on page 29. This amended permit supersedes your permit dated October 5, 2001, as last amended on June 11, 2013.

The Department of Environmental Quality (DEQ) deemed the application complete on May 30, 2014, and has determined that the application meets the requirements of 9 VAC 5-80-1945 A, B and C for a minor amendment to a prevention of significant deterioration (PSD) permit and of 9 VAC 5-80-2220 A, B and C for a minor amendment to a major source nonattainment permit.

This permit contains legally enforceable conditions. Failure to comply may result in a Notice of Violation and/or civil charges. Please read all permit conditions carefully.

This permit approval to modify and operate shall not relieve Virginia Electric and Power Company of the responsibility to comply with all other local, state, and federal permit regulations.

The Board's Regulations as contained in Title 9 of the Virginia Administrative Code 5-170-200 provide that you may request a formal hearing from this case decision by filing a

Ms. Cathy C. Taylor
September 30, 2014
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petition with the Board within 30 days after this case decision notice was mailed or delivered to you. 9 VAC 5-170-200 provides that you may request direct consideration of the decision by the Board if the Director of the DEQ made the decision. Please consult the relevant regulations for additional requirements for such requests.

As provided by Rule 2A:2 of the Supreme Court of Virginia, you have 30 days from the date you actually received this permit or the date on which it was mailed to you, whichever occurred first, within which to initiate an appeal of this decision by filing a Notice of Appeal with:

David K. Paylor, Director
Department of Environmental Quality
P. O. Box 1105
Richmond, VA 23218

If this permit was delivered to you by mail, three days are added to the thirty-day period in which to file an appeal. Please refer to Part Two A of the Rules of the Supreme Court of Virginia for information on the required content of the Notice of Appeal and for additional requirements governing appeals from decisions of administrative agencies.

If you have any questions concerning this permit, please contact John McKie at 703-583-3831 or via email at john.mckie@deq.virginia.gov.

Sincerely,



James B. LaFratta
Regional Air Permit Manager

TAF/JBL/JRM/14169psd.docx

Attachments: Permit
 Source Testing Report Format

cc: OAPP (electronic file submission)
 Manager, Data Analysis (electronic file submission)
 Manager, NRO Air Compliance (electronic file submission)
 Associate Director, Office of Air Enforcement and Compliance Assistance (3AP20), U.S.
 EPA, Region III



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**PREVENTION OF SIGNIFICANT DETERIORATION PERMIT
NON-ATTAINMENT PERMIT
STATIONARY SOURCE PERMIT TO MODIFY AND OPERATE
This permit includes designated equipment subject to
New Source Performance Standards (NSPS).**

This permit supersedes your permit as last amended June 11, 2013.

In compliance with the Federal Clean Air Act and the Commonwealth of Virginia Regulations for the Control and Abatement of Air Pollution,

Virginia Electric and Power Company
5000 Dominion Boulevard
Glen Allen, Virginia 23060
Registration No. 70225
AIRS ID No. 51-153-0002

is authorized to modify and operate

an electrical power generation plant

located at

19000 Possum Point Road
Dumfries, Virginia

in accordance with the Conditions of this permit.

Approved on October 5, 2001

Amended November 18, 2002; December 8, 2004; July 11, 2008; May 20, 2011; June 11, 2013; and September 30, 2014

Thomas A. Faha
Regional Director

Permit consists of 29 pages.
Permit Conditions 1 to 66.
Appendix A
Source Testing Report Format.
U.S. EPA Memorandum dated June 2, 1997

PERMIT CONDITIONS - the regulatory reference or authority for each condition is listed in parentheses () after each condition.

APPLICATION

1. Except as specified in this permit, the permitted facility is to be modified and operated as represented in the permit application dated July 13, 2000, including amendment information dated: October 25, 2000; March 1, 2001; May 31, 2001; June 11, 2001; July 17, 2001; August 14, 2001; August 16, 2001; August 17, 2001; August 20, 2001; July 12, 2002; January 9, 2013; May 17, 2013; October 18, 2013; and, May 28, 2014. Any changes in the permit application specifications or any existing facilities that alter the impact of the facility on air quality may require a permit. Failure to obtain such a permit prior to construction may result in enforcement action.
(9 VAC 5-50-390 and 9 VAC 5-80-1210)

PROCESS REQUIREMENTS

2. **Equipment List** - Equipment to be constructed at this facility consists of:
 - two General Electric(GE) 7FA combustion turbines (Units 6A and 6B) each with a nominal design rating of 171 MW_e and 1,937 million Btu's per hour heat input firing natural gas or 2,080 million Btu's per hour, firing distillate fuel oil (subject to NSPS Subpart GG);
 - one set of duct burners in the heat recovery steam generator (HRSG) of each GE 7FA combustion turbine, each set with a nominal design heat input rating of 385 million Btu's per hour (subject to NSPS Subpart Da);
 - one auxiliary boiler with a nominal design maximum rated heat input capacity of 99 million Btu's per hour (subject to NSPS Subpart Dc);
 - one natural gas pipeline heater with a nominal design rating of 17.37 million Btu's per hour heat input (subject to NSPS Subpart Dc);
 - one natural gas pipeline heater with a nominal design rating of 11.85 million Btu's per hour heat input (subject to NSPS Subpart Dc); and
 - one 2 million gallon, above ground, distillate fuel oil storage tank

Equipment to be modified at this facility consists of:

- one tangentially-fired Combustion Engineering boiler (Unit 3) with a nominal design maximum rated heat input capacity of 1,150 million Btu's per hour

- one tangentially-fired Combustion Engineering boiler (Unit 4) with a nominal design maximum rated heat input capacity of 2,350 million Btu's per hour

Equipment to be permanently shut down at this facility consists of:

- two tangentially-fired Combustion Engineering boilers (Units 1 and 2) with a design maximum rated heat input capacity of 1,000 million Btu's per hour apiece

Previously permitted equipment at this facility prior to the date of this permit consists of:

- one tangentially-fired Combustion Engineering boiler (Unit 5) with a nominal design rated heat input capacity of 8,500 million Btu's per hour (subject to NSPS subpart D)

Other significant emissions-generating equipment at this facility prior to the date of this permit consists of:

- six GE MS5001L combustion turbines, each with a nominal design-rated net capacity of 13 MW_e (245 million Btu's per hour)

(9 VAC 5-80-1100, 9 VAC 5-80-2000 A, and 9 VAC 5-80-1605 A)

3. **Emission Controls – Combustion Turbines** - Nitrogen oxides (NO_x) emissions from the GE 7FA combustion turbines shall be controlled by “dry/low-NO_x” combustion when firing natural gas and water injection when firing distillate fuel oil. The nitrogen oxides in the exhaust of the combustion turbines, downstream of the duct burners, shall be controlled by selective catalytic reduction (SCR) with ammonia injection. The SCR equipment shall be provided with adequate access for inspection. The SCR shall be in operation when the turbines are operating, except when operation of the SCR would occur under conditions outside of those recommended by the SCR system vendor, including, but not limited to, when emissions of ammonia would be excessive.
(9 VAC 5-50-260)
4. **Emission Controls – Auxiliary Boiler** - Nitrogen oxides (NO_x) emissions from the auxiliary boiler shall be controlled by employing “low-NO_x” burners.
(9 VAC 5-50-260)
5. **Emission Controls – Units 3 & 4** - Nitrogen oxides (NO_x) emissions from the Units 3 and 4 boilers shall be controlled by employing “low-NO_x” burners.
(9 VAC 5-50-260)
6. **Fugitive VOC Emission Controls** - Fugitive emission controls shall include the following, or equivalent, as a minimum:

Volatile organic compounds shall not be intentionally spilled, discarded to sewers, stored in open containers, or handled in any other manner that would result in evaporation beyond that consistent with air pollution control practices for minimizing emissions.

(9 VAC 5-50-270)

7. **Monitoring Devices – Combustion Turbines** - The GE 7FA combustion turbines shall be equipped with devices to continuously monitor and record the fuel consumption and the ratio of water to fuel being fired in the turbine when water injection is being used to control NO_x emissions. This system shall be accurate to within ±5.0 percent and shall be approved by the Northern Regional Office (NRO) Air Compliance Manager. Each monitoring device shall be installed, maintained, calibrated and operated in accordance with approved procedures which shall include, as a minimum, the manufacturer's written requirements or recommendations. Each monitoring device shall be provided with adequate access for inspection and shall be in operation when the GE 7FA combustion turbines are operating.
(9 VAC 5-80-1180, 9 VAC 5-50-20 C, 9 VAC 5-50-260, and 40 CFR Part 60, Subpart GG)

OPERATING/EMISSION LIMITATIONS

8. **Permanent Shutdown** – Prior to commencing operation of the GE 7FA combustion turbines, the permittee shall certify to the DEQ Northern Regional Office (NRO) that the Unit 1 and Unit 2 boilers have been permanently shut down. Reactivation of these units would be subject to the provisions of 9 VAC 5 Chapters 50 and 80.
(9 VAC 5-80-1100 and 9 VAC 5-50-10)
9. **Start up and Shut Down** – For the purpose of applying the conditions of this permit, start up and shut down of the GE 7FA combustion turbines are defined in Appendix A, except as follows.

For the purpose of applying the NO_x conditions of this permit, start up of the GE 7FA combustion turbines is defined as given in Appendix A plus any additional time required for the temperature of the catalyst bed in the selective catalytic reduction (SCR) unit to reach the minimum temperature at which the SCR vendor has determined that the SCR can be expected to continuously meet the design efficiency. This temperature is to be determined during the break-in period prior to the contractual “provisional acceptance” of the turbines, not to exceed six months past the initial firing, and is to be approved by the NRO Air Compliance Manager. If the temperature is determined to be greater than 600 °F, the permittee must provide documentation as to why it is higher than the 500 to 600 °F range that was presented to DEQ during the permit application process.

For the purpose of applying the NO_x conditions of this permit, shut down of the GE 7FA combustion turbines is defined as given in Appendix A plus each period when the temperature of the catalyst bed in the selective catalytic reduction unit falls below the

temperature used to determine “start up” and during which the temperature does not return to the start up temperature prior to the turbine temporarily ceasing to operate.

For the purpose of applying the conditions of this permit, the duct burners, auxiliary boiler, and natural gas pipeline heaters shall be considered to be in a period of start up or shutdown only when the rate of fuel input is in a period of identifiable and continuous fluctuation immediately following the start or immediately prior to the termination of a period of operation.

For the purpose of applying the conditions of this permit, start up and shutdown of the Units 3 and 4 boilers occur only when the Units 3 and 4 generators are not supplying electrical power to the utility grid at a stable minimum load to be determined during the break-in period prior to the contractual “provisional acceptance” of the boiler modifications, not to exceed six months past the initial firing, and is to be approved by the NRO Air Compliance Manager. Periods when the boilers are being fired in a stand-by mode shall not be considered as periods of start up or shutdown.

(9 VAC 5-170-160)

10. **Fuel Throughput – Combustion Turbines** – The two GE 7FA combustion turbines in combination shall consume no more than 14.1 million gallons of distillate fuel oil per year. Compliance with this limit shall be determined monthly as the total for the most recent twelve complete calendar months.

The two GE 7FA combustion turbines in combination shall consume no more than 30,838 million cubic feet of natural gas per year. Compliance with this limit shall be determined monthly as the total for the most recent twelve complete calendar months.

(9 VAC 5-80-1180)

11. **Fuel Throughput – Duct Burners** – The two duct burners in combination shall not consume more than 1,520 million cubic feet of natural gas per year and shall operate only when the turbines are firing natural gas. Compliance with these limitations shall be determined monthly as the total for the most recent twelve complete calendar months.

(9 VAC 5-80-1180)

12. **Fuel Throughput - Auxiliary Boilers** - The auxiliary boilers shall not consume more than 489 million cubic feet of natural gas per year. Compliance with this limit shall be determined monthly as the total for the most recent twelve complete calendar months.

(9 VAC 5-80-1180)

13. **Fuel Throughput – Pipeline Heaters** - The 11.85 million Btu per hour natural gas pipeline heater shall not consume more than 102 million cubic feet of natural gas per year.

Compliance with this limit shall be determined monthly as the total for the most recent twelve complete calendar months.

The 17.37 million Btu per hour natural gas pipeline heater shall not consume more than 150 million cubic feet of natural gas per year. Compliance with this limit shall be determined monthly as the total for the most recent twelve complete calendar months.
(9 VAC 5-80-1180)

14. **Fuel – Combustion Turbines** - The approved fuels for the GE 7FA combustion turbines are natural gas with a maximum sulfur content of 0.3 grains per 100 dry standard cubic feet and distillate fuel oil with a maximum sulfur content of 0.05 percent by weight. A change in the fuel may require a permit to modify and operate.
(9 VAC 5-80-1100)

15. **Fuel – Duct Burners** - The approved fuel for the duct burners is natural gas with a maximum sulfur content of 0.3 grains per 100 dry standard cubic feet. A change in the fuel may require a permit to modify and operate.
(9 VAC 5-80-1100)

16. **Fuel – Pipeline Heaters** - The approved fuel for the natural gas pipeline heaters is natural gas with a maximum sulfur content of 0.3 grains per 100 dry standard cubic feet. A change in the fuel may require a permit to modify and operate.
(9 VAC 5-80-1100)

17. **Fuel - Auxiliary Boiler** - The approved fuel for the auxiliary boiler is natural gas with a maximum sulfur content of 0.3 grains per 100 dry standard cubic feet. A change in the fuel may require a permit to modify and operate.
(9 VAC 5-80-1100)

18. **Fuel – Units 3 & 4 Boilers** - The approved fuel for the Units 3 and 4 boilers is natural gas with a maximum sulfur content of 0.3 grains per 100 dry standard cubic feet. A change in the fuel may require a permit to modify and operate.
(9 VAC 5-80-1100)

19. **Fuel Certification** - The permittee shall obtain a certification from the fuel supplier with each shipment of distillate fuel oil. Each fuel supplier certification shall include the following:

- a. The name of the fuel supplier;
- b. The date on which the distillate fuel oil was received;
- c. The volume of distillate fuel oil delivered in the shipment;

- d. A statement that the distillate fuel oil was “low sulfur diesel” fuel. Low sulfur diesel fuel is defined as diesel fuel with a sulfur content equal to or less than 0.05% sulfur by weight.

In lieu of the fuel supplier certification stating a specific sulfur content of the shipment, the permittee may demonstrate compliance with the maximum sulfur content limit of the oil to be burned in the combustion turbines by obtaining a sample analysis of each shipment of distillate oil delivered to the station. The sampling method used shall be ASTM D4294 or another ASTM method incorporated in 40 CFR 60 by reference. Sampling frequency, for both sulfur and nitrogen content, shall be as specified in Section 60.334 of Subpart GG (9 VAC 5-170-160)

20. **Storage** – The 2 million gallon, above ground storage tank shall store only distillate fuel oil or other petroleum-based liquids that have a true vapor pressure equal to or lower than that of distillate fuel oil.
(9 VAC 5-170-160, 9 VAC 5-50-410)

21. **Emission Limits – Combustion Turbines and Duct Burners** – Stack Emissions from the operation of the GE 7FA combustion turbines and associated duct burners (DB’s) shall not exceed the limits specified below except that the short term limits do not apply during start-up, shutdown, or malfunction:

	Short Term Limits (each unit)			Annual Limits (units combined)
	NG with DB’s <u>Off</u>	NG with DB’s <u>On</u>	DFO	Total
PM-10 (particulate matter ≤ 10 microns in diameter)	18.3 lbs/hr	22.2 lbs/hr	53.1 lbs/hr	185 tons/yr
Sulfur Dioxide	1.74 lbs/hr	2.08 lbs/hr	98.9 lbs/hr	59.7 tons/yr
Nitrogen Oxides (as NO ₂)	3.5 ppmvd	3.5 ppmvd	22 ppmvd	285 tons/yr
Carbon Monoxide	32 lbs/hr 9 ppmvd	63 lbs/hr 19.3 ppmvd	79 lbs/hr 38 ppmvd	336 tons/yr
Volatile Organic Compounds	1.2 ppmvd	2.3 ppmvd	2.6 ppmvd	34.6 tons/yr
Formaldehyde	6.2 x 10 ⁻⁴ lbs/mmBtu	6.2 x 10 ⁻⁴ lbs/mmBtu	2.8 x 10 ⁻⁴ lbs/mmBtu	9.8 tons/yr

“ppmvd” = parts per million by volume on a dry gas basis

“NG” = natural gas or liquefied natural gas

“DB” = duct burner

“DFO” = distillate fuel oil

All concentration limits are at 15 percent O₂.

All concentration and hourly emission limits represent averages for a three-hour sampling period, except for the NO_x limits when compliance is determined by continuous emissions monitors, in which case rolling averages are calculated hourly for the most recent eight hours of operation. Compliance with 40 CFR Part 60, Subpart GG limits shall be based on the averaging time specified in the current version of that subpart (which on May 29, 2013 was a 4-hour rolling average).

These emissions are derived from the estimated overall emission contribution from operating limits. Exceedance of the operating limits shall be considered credible evidence of the exceedance of emission limits.

(9 VAC 5-50-260, 9 VAC 5-80-1180, 9 VAC 5-80-1705, 9 VAC 5-80-1715, 9 VAC 5-80-2120)

22. **Emission Limits – Duct Burners** – For each stack servicing a GE 7FA combustion turbine and its associated duct burners, the emissions from the operation of the duct burners shall not exceed the limits specified below except for periods of start-up, shutdown, or malfunction:

0.03 pounds of particulate matter per million Btu’s heat input

0.20 pounds of sulfur dioxide per million Btu’s heat input

1.6 pounds of nitrogen oxides (as NO₂) per megawatt-hour, gross energy output;

0.20 pounds of nitrogen oxides (as NO₂) per million Btu’s heat input

Compliance with the emission limits of this condition shall be determined on a 30-day rolling average basis. Compliance with the nitrogen oxides limits of this condition shall be determined by one of the methods allowed by 40 CFR 60.46a (j) and (k) for an affected duct burner used in combined cycle systems or by an alternate method approved by the NRO Air Compliance Manager.

(9 VAC 5-50-410 (Subpart Da))

23. **Emission Limits – Units 3 & 4 Boilers** - Upon completion of the conversion of the Units 3 and 4 boilers to natural gas firing, but in no event later than contractual provisional acceptance of the GE 7FA combustion turbines or six months following initial firing of the turbines, whichever is earliest, emissions from the operation of the Units 3 and 4 boilers combined shall not exceed the limits specified below except that the short term limits do not apply for periods of start up, shutdown, or malfunction:

	Short Term Limits		Annual Limits (units combined)
	<u>Unit 3</u>	<u>Unit 4</u>	
PM-10			115 tons/yr
Sulfur Dioxide			14 tons/yr
Nitrogen Oxides			3,066 tons/yr
Carbon Monoxide	27.3 lbs/hr 0.024 lbs/MMBtu	55.7 lbs/hr 0.024 lbs/MMBtu	363 tons/yr
Volatile Organic Compounds	0.0054 lbs/MMBtu	0.0054 lbs/MMBtu	83 tons/yr

All concentration and hourly emission limits represent averages for a three-hour sampling period.
(9 VAC 5-80-1180)

24. **Emission Limits – Auxiliary Boiler** - Emissions from the operation of the auxiliary boilers shall not exceed the limits specified below except that the short term limits do not apply during periods of start-up, shutdown, or malfunction:

	<u>Short Term Limits</u> (Per Unit)	<u>Annual Limits</u> (Both Units)
PM-10	0.7 lbs/hr	1.8 tons/yr
Sulfur Dioxide	0.1 lbs/hr	0.3 tons/yr
Nitrogen Oxides (as NO ₂)	0.036 lbs/MMBtu	9.0 tons/yr
Carbon Monoxide	14.9 lbs/hr	37.3 tons/yr
VOC	0.4 lbs/hr	1.0 tons/yr

All concentration and hourly emission limits represent averages for a three-hour sampling period.

These emissions are derived from the estimated overall emission contribution from operating limits. Exceedance of the operating limits shall be considered credible evidence of the exceedance of emission limits.
(9 VAC 5-50-260)

25. **Emission Limits 17.37 MMBtu Pipeline Heater** - Emissions from the operation of the 17.37 MMBtu/hr natural gas pipeline heater shall not exceed the limits specified below:

Nitrogen Oxides (as NO ₂)	1.4 lbs/hr	6.1 tons/yr
Carbon Monoxide	1.5 lbs/hr	6.3 tons/yr

All hourly emission limits represent averages for a three-hour sampling period.

These emissions are derived from the estimated overall emission contribution from operating limits. Exceedance of the operating limits shall be considered credible evidence of the exceedance of emission limits.
(9 VAC 5-50-260)

26. Emission Limits - 11.85 MMBtu Pipeline Heater - Emissions from the operation of the 11.85 MMBtu/hr natural gas pipeline heater shall not exceed the limits specified below:

Nitrogen Oxides (as NO ₂)	1.0 lbs/hr	4.2 tons/yr
Carbon Monoxide	1.1 lbs/hr	4.7 tons/yr

All hourly emission limits represent averages for a three-hour sampling period.

These emissions are derived from the estimated overall emission contribution from operating limits. Exceedance of the operating limits shall be considered credible evidence of the exceedance of emission limits.

(9 VAC 5-50-260)

27. Visible Emission Limit – Combustion Turbines - Visible emissions from the GE 7FA combustion turbines stacks shall not exceed 20 percent opacity except during one six-minute period in any one hour in which visible emissions shall not exceed 27 percent opacity as determined by the EPA Method 9 (reference 40 CFR 60, Appendix A). This condition applies at all times except during startup, shutdown, and malfunction.

(9 VAC 5-50-20, 9 VAC 5-50-80 and 9 VAC 5-50-410)

28. Visible Emission Limit – Units 3 & 4 Boilers, Auxiliary Boiler, and Pipeline Heaters - Visible emissions from the Units 3 and 4 boilers, the auxiliary boiler, and the pipeline heaters shall not exceed 10 percent opacity except during one six-minute period in any one hour in which visible emissions shall not exceed 20 percent opacity as determined by the EPA Method 9 (reference 40 CFR 60, Appendix A). This condition applies at all times except during startup, shutdown, and malfunction.

(9 VAC 5-50-20, 9 VAC 5-50-80 and 9 VAC 5-50-260)

29. Requirements by Reference – Combustion Turbines - Except where this permit is more restrictive than the applicable requirement, the GE 7FA combustion turbines described in Condition 2 shall be operated in compliance with the current requirements of 40 CFR 60, Subpart GG. Exceptions include, but are not limited to:

a) The permittee need not monitor the water-to-fuel ratio as required at §60.334(a), so long as the NO_x continuous emissions monitoring data availability is no less than 95 percent on a quarterly basis. (This waiver is authorized by the determination memorandum issued by John B. Rasnic, Stationary Source Compliance Div., OAQPS, U.S. EPA, on March 12, 1993, titled “NSPS Subpart GG, Alternative Method,” Applicability Determination Index Control Number 9400024)

b) The daily monitoring of the fuel sulfur content required by §60.334(b) for natural gas may be replaced with procedures from 40 CFR Part 75, Appendix D, if:

- i) the permittee obtains an approved Phase-II Acid Rain permit for each unit;
- ii) the permittee submits a monitoring plan that commits to using pipeline quality natural gas as the primary fuel for the two combustion turbines, and this monitoring plan is signed by the designated representative for the units;
- iii) the permittee uses one of the options in Section 2.3.1.4 of 40 CFR Part 75, Appendix D to verify that the fuel burned in the combustion turbines qualifies to be classified as pipeline natural gas; and,
- iv) only so long as pipeline quality natural gas is the primary fuel.

(This waiver is authorized by the determination issued by R. Douglas Neeley, Region 4, U.S. EPA, on March 29, 2000, titled "Alternative Testing and Monitoring for Combined Cycle System," Applicability Determination Index Control Number 0000031)

c) The daily monitoring of the fuel nitrogen content (for natural gas only) required by §60.334(b) is waived for natural gas.

(This waiver is authorized by the determination issued by R. Douglas Neeley, Region 4, U.S. EPA, on March 29, 2000, titled "Alternative Testing and Monitoring for Combined Cycle System," Applicability Determination Index Control Number 0000031)

d) The GE injection control algorithm described in the U.S. EPA memorandum, dated June 2, 1997, and attached to this permit may be used in lieu of the Subpart GG ISO correction equation, so long as the conditions stated in the memorandum are met.

(This waiver is authorized by the U.S. EPA memorandum from Bruce Jordan, Emission Standards Division, OAQPS, and John Rasnica, Manufacturing, Energy and Transportation Division, OAQPS, to EPA Regional Offices, dated June 2, 1997)
(9 VAC 5-50-400 and 9 VAC 5-50-410)

30. Requirements by Reference – Duct Burners - Except where this permit is more restrictive than the applicable requirement, the duct burners described in Condition 2 shall be operated in compliance with the current requirements of 40 CFR 60, Subpart Da.
(9 VAC 5-50-400 and 9 VAC 5-50-410)

31. Requirements by Reference – Auxiliary Boiler - Except where this permit is more restrictive than the applicable requirement, the auxiliary boiler described in Condition 2 shall be operated in compliance with the current requirements of 40 CFR 60, Subpart Dc.
(9 VAC 5-50-400 and 9 VAC 5-50-410)

32. **Requirements by Reference – Pipeline Heaters** - Except where this permit is more restrictive than the applicable requirement, the natural gas pipeline heaters of greater than 10 million Btu's per hour heat input described in Condition 2 shall be operated in compliance with the current requirements of 40 CFR 60, Subpart Dc.
(9 VAC 5-50-400 and 9 VAC 5-50-410)

33. **Other Permits** – Except where the conditions of this permit are more stringent, the conditions of this permit do not supersede the conditions of the state operating permit issued July 21, 2000 to implement reasonably available control technology (RACT) measures. This permit does not relieve the permittee of any responsibility to comply with the state operating permit issued September 26, 2000 to implement requirements of the ozone ambient air quality standard attainment plan.
(9 VAC 5-80-800 D)

34. **Exceptions** – Except as explicitly granted in this permit, exceptions to the requirements by reference and to other applicable permits, on the basis that the requirements of this permit are more restrictive or that explicitly proposed alternative measures are equivalent in function, are only valid if approved by the NRO Air Compliance Manager and, for requirements of 40 CFR Part 60, by written authorization from the U;S; EPA Region-III office.
(9 VAC 5-50-400 and 9 VAC 5-170-160)

RECORDS

35. **On Site Records** - The permittee shall maintain records of emission data and operating parameters as necessary to demonstrate compliance with this permit. The content and format of such records shall be agreed upon with the NRO Air Compliance Manager. These records shall include, but are not limited to:
- a. The times of operation of each GE 7FA combustion turbine when firing with distillate fuel oil.
 - b. The times of operation of the duct burners for each GE 7FA combustion turbine.
 - c. Hourly throughput of distillate fuel oil and natural gas to each GE 7FA combustion turbine, for purposes of calculating hourly emissions for pollutants for which there is not a continuous emissions monitor.
 - d. Annual throughput of distillate fuel oil and natural gas to each GE 7FA combustion turbine, calculated monthly as the total for the most recent twelve complete calendar months.
 - e. Hourly throughput of natural gas to the duct burners for each GE 7FA combustion turbine, for purposes of calculating hourly emissions for pollutants for which there is not a continuous emissions monitor.
 - f. Annual throughput of natural gas to the duct burners for each GE 7FA combustion turbine, calculated monthly as the total for the most recent twelve complete calendar months.
 - g. Hourly throughput of natural gas to the auxiliary boiler, for purposes of calculating hourly emissions.
 - h. Annual throughput of natural gas to the auxiliary boiler, calculated monthly as the total for the most recent twelve complete calendar months.
 - i. Annual throughput of natural gas to each natural gas pipeline heater, calculated monthly as the total for the most recent twelve complete calendar months.
 - j. Annual throughput of natural gas to the Units 3 and 4 boilers, calculated monthly as the total for the most recent twelve complete calendar months.
 - k. All fuel supplier certifications.
 - l. All fuel sampling results and other records required by 40 CFR Part 60, Subparts Da, Dc, Kb, and GG, as they apply to the permitted emission units, unless explicitly waived by other conditions of this permit or by approval from the NRO Air Compliance Manager.
 - m. The hourly loads at which each GE 7FA combustion turbine has operated.

- n. Monthly emissions calculations for PM-10, sulfur dioxide (SO₂), nitrogen oxides (NO_x as NO₂), carbon monoxide (CO), VOC, and formaldehyde (CH₂O) from the GE 7FA combustion turbines stacks using calculation methods approved by the NRO Air Compliance Manager to verify rolling average compliance with the lb/hr, ton/yr, and ppmvd (3-hr rolling average) emissions limitations in Condition 21. PM-10, SO₂, CO, VOC, and CH₂O emissions are calculated hourly for the most recent three hours of operation. NO_x emissions are calculated hourly for the most recent eight hours of operation.
- o. Monthly emissions calculations for PM-10, sulfur dioxide, nitrogen oxides, carbon monoxide, and VOC from the Units 3 and 4 stacks using calculation methods approved by the NRO Air Compliance Manager to verify compliance with the lb/hr, ton/yr, and lbs/MMBtu emissions limitations in Condition 23.
- p. Monthly emissions calculations for PM-10, sulfur dioxide, nitrogen oxides, carbon monoxide, and VOC from the auxiliary boiler using calculation methods approved by the NRO Air Compliance Manager to verify compliance with the lb/hr and ton/yr emissions limitations in Condition 24.
- q. Monthly emissions calculations for nitrogen oxides and carbon monoxide from the natural gas pipeline heaters using calculation methods approved by the NRO Air Compliance Manager to verify compliance with the lb/hr and ton/yr emissions limitations in Conditions 25, and 26.
- r. Continuous monitoring system calibrations and calibration checks, percent operating time, and excess emissions.
- s. Results of the flue gas plume observations required each shift and the time and lighting conditions when the observations were conducted.
- t. Results of all stack tests, visible emission evaluations and CEMS performance evaluations.
- u. Maintenance records on the GE 7FA combustion turbine fuel use and water-to-fuel ratio monitors.

These records shall be available for inspection by the DEQ and shall be current for the most recent five years.

(9 VAC 5-50-50)

CEMS

36. **CEMS - Combustion Turbines and Duct Burners** - Continuous Emission Monitoring Systems, meeting the design specifications of 40 CFR Part 75, shall be installed to measure and record the emissions of nitrogen oxides (measured as NO₂) and carbon monoxide, as ppmvd corrected to 15% O₂, from the combination of each GE 7FA combustion turbine and its duct burners. The CEMS shall also measure and record the percent of oxygen in the exhaust stream. The CEMS shall be installed, calibrated, maintained, audited and operated in accordance with the requirements of 40 CFR 75. For the purposes of this permit, data shall be reduced to 8-hour rolling averages for NO_x and 3-hour rolling averages for carbon monoxide. The CEMS data for CO emissions may be grounds for DEQ to request that a stack test be performed to prove compliance, especially, but not limited to a case in which the permittee has not taken corrective action when the data indicate that a non-compliance condition may exist. This condition does not exempt the permittee from other applicable state and federal monitoring requirements.
(9 VAC 5-50-40 and 9 VAC 5-80-420)
37. **CEMS - Unit 3 & 4 Boilers** - Continuous Emission Monitoring Systems (CEMS) shall be installed to measure and record the emissions of nitrogen oxides (NO_x measured as NO₂) and carbon monoxide (CO) from the Units 3 and 4 boilers as lbs/MMBtu. The NO_x CEMS shall be installed, calibrated, maintained, audited and operated in accordance with the requirements of 40 CFR 75. For the purposes of this permit, the CO CEMS shall be operated in accordance with the requirements of 40 CFR 60 and data shall be reduced to 3-hour rolling averages for carbon monoxide. The CEMS data for CO emissions may be grounds for DEQ to request that a stack test be performed to prove compliance, especially, but not limited to a case in which the permittee has not taken corrective action when the data indicate that a non-compliance condition may exist. This condition does not exempt the permittee from other applicable state and federal monitoring requirements.
(9 VAC 5-50-40)
38. **CEMS Performance Evaluations** - Performance evaluations of the continuous monitoring systems shall be conducted in accordance with 40 CFR Part 75, Appendix A, and shall take place during the performance tests under 9 VAC 5-50-30 or within 30 days thereafter. Two copies of the performance evaluations report shall be submitted to the NRO Air Compliance Manager within 45 days of the evaluation. The continuous monitoring systems shall be installed and operational prior to conducting initial performance tests. Verification of operational status shall, as a minimum, include completion of the manufacturer's written requirements or recommendations for installation, operation and calibration of the device. A 30 day notification, prior to the demonstration of continuous monitoring system's performance, and subsequent notifications shall be submitted to the NRO Air Compliance Manager.
(9 VAC 5-50-40)

39. **CEMS Quality Control Program** - For the NO_x CEMS the quality control requirements of 40 CFR Part 75 shall be met; for the carbon monoxide CEMS, a CEMS quality control program which is equivalent to the requirements of 40 CFR 60.13 and Appendix B or F shall be implemented.

(9 VAC 5-50-40)

40. **Reports for Continuous Monitoring Systems** - The permittee shall furnish written reports to the NRO Air Compliance Manager of excess emissions from any process monitored by a continuous monitoring system (CEMS) on a quarterly basis, postmarked no later than the 30th day following the end of each calendar quarter. These reports shall include, but are not limited to the following information:

- a. The magnitude of excess emissions, any conversion factors used in the calculation of excess emissions, and the date and time of commencement and completion of each period of excess emissions;
- b. Specific identification of each period of excess emissions that occurs during startups, shutdowns, and malfunctions of the process, the nature and cause of the malfunction (if known), the corrective action taken or preventative measures adopted;
- 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; and
- d. When no excess emissions have occurred or the continuous monitoring systems have not been inoperative, repaired or adjusted, such information shall be stated in that report.

(9 VAC 5-50-50)

INITIAL COMPLIANCE DETERMINATION

41. **Stack Test Combustion Turbines** - Initial performance tests shall be conducted for sulfur dioxide, nitrogen oxides, carbon monoxide, PM-10, total volatile organic compounds (VOC), and formaldehyde from each GE 7FA combustion turbine to determine compliance with the emission limits contained in Condition 21. The test methods to be used are the following U.S. EPA and California Air Resources Board (CARB) reference methods, except that equivalent test methods may be substituted upon request, if approved by the NRO Air Compliance Manager as equivalent and allowable by applicable regulations:

<u>Pollutant</u>	<u>Test Method</u>
PM-10	EPA Methods 201A and 202
Sulfur dioxide	(See 40 CFR §60.335)
Nitrogen oxides (as NO ₂)	(See 40 CFR §60.335)
Carbon monoxide	EPA Method 10
VOC	EPA Method 25 or 25A
Formaldehyde	CARB Method 430

The tests shall be performed, reported and demonstrate compliance within 60 days after achieving the maximum production rate at which the facility will be operated but in no event later than 180 days after start-up of the permitted facility. Tests shall be conducted and reported and data reduced as set forth in 9 VAC 5-50-30 and the test methods and procedures contained in each applicable section or subpart listed in 9 VAC 5-50-410. tests shall be conducted for three different operating scenarios: distillate fuel oil firing with the duct burners off; natural gas firing with the duct burners off and natural gas firing with the duct burners on except that testing for formaldehyde emissions needs only be conducted for distillate fuel oil firing with duct burners off and natural gas firing with the duct burners on. For each operating scenario, testing for nitrogen oxides and sulfur dioxide shall be conducted as required by 40 CFR §60.335. For each operating scenario, the testing for PM₁₀, VOC, and formaldehyde shall be conducted at the maximum operating load. For each operating scenario, the testing for carbon monoxide shall be conducted at 50% of the combustion turbine load and at the maximum operating load. The details of the tests are to be agreed upon with the NRO Air Compliance Manager. The permittee shall submit a test protocol with two copies at least 30 days prior to testing for review by the NRO Air Compliance Manager. Two copies of the test results shall be submitted to the NRO Air Compliance Manager within 45 days and shall conform to the test report format enclosed with this permit. The NRO Air Compliance Manager may approve waivers to requirements of 40 CFR

§60.335 if pre-approved by the U.S. EPA. The NRO Air Compliance Manager may waive the requirement for testing when the units are firing natural gas and the duct burners are off if testing when the units are firing natural gas and the duct burners are on shows compliance with the emission limits of Condition 21 for natural gas firing with the duct burners off. (9 VAC 5-50-30, 9 VAC 5-80-1200, and 9 VAC 5-50-410)

42. **Stack Test Duct Burners** - Initial performance tests shall be conducted for PM-10, sulfur dioxide, and nitrogen oxides from the duct burners using U.S. EPA reference method 201A and methods conforming to 40 CFR §60.46a to determine compliance with the emission limits contained in Condition 22. Any or all of these tests may be waived by the NRO Air Compliance Manager if the permittee or the DEQ obtains a waiver from U.S. EPA for the 40 CFR §60.46a testing requirements and the stack testing for the GE 7FA combustion turbines includes the duct burners. The tests shall be performed, reported and demonstrate compliance within 60 days after achieving the maximum production rate at which the facility will be operated, but in no event later than 180 days after start-up of the permitted facility. Tests shall be conducted and reported and data reduced as set forth in 9 VAC 5-50-30 and the test methods and procedures contained in each applicable section or subpart listed in 9 VAC 5-50-410. The details of the tests are to be agreed upon with the NRO Air Compliance Manager. The permittee shall submit a test protocol with two copies at least 30 days prior to testing for review by the NRO Air Compliance Manager. Two copies of the test results shall be submitted to the NRO Air Compliance Manager within 45 days after test completion and shall conform to the test report format enclosed with this permit. (9 VAC 5-50-30, 9 VAC 5-80-1200, and 9 VAC 5-50-410)
43. **Stack Test Unit 3 & 4 Boilers** - Initial performance tests shall be conducted for total volatile organic compounds (VOC) from each of the Units 3 and 4 boilers using reference method 25 to determine compliance with the emission limits contained in Condition 23. The tests shall be performed, reported and demonstrate compliance within 60 days after achieving the maximum production rate at which the facility will be operated following conversion of the boilers to natural gas firing, but in no event later than 180 days after restarting the units. Tests shall be conducted and reported and data reduced as set forth in 9 VAC 5-50-30. The details of the tests are to be approved by the NRO Air Compliance Manager. The permittee shall submit a test protocol with two copies at least 30 days prior to testing for review by the NRO Air Compliance Manager. One copy of the test results shall be submitted to the NRO Air Compliance Manager within 45 days after test completion and shall conform to the test report format enclosed with this permit. (9 VAC 5-50-30, 9 VAC 5-80-1200)
44. **Stack Test Auxiliary Boiler** - Initial performance tests shall be conducted for nitrogen oxides and carbon monoxide from the auxiliary boiler using U.S. EPA reference methods 7, 7A, or 7E, and 10, to determine compliance with the emission limits contained in Condition 24. The tests shall be performed, reported and demonstrate compliance within 60 days after achieving the maximum production rate at which the facility will be operated but in no event later than 180 days after start-up of the permitted facility. Tests shall be conducted and

reported and data reduced as set forth in 9 VAC 5-50-30 and the test methods and procedures contained in each applicable section or subpart listed in 9 VAC 5-50-410. The details of the tests are to be agreed upon with the NRO Air Compliance Manager. The permittee shall submit a test protocol with two copies at least 30 days prior to testing for review by the NRO Air Compliance Manager. Two copies of the test results shall be submitted to the NRO Air Compliance Manager within 45 days after test completion and shall conform to the test report format enclosed with this permit. Fuel throughput-based emission factors that can be compared to hourly fuel throughput data for future emission limit compliance determinations shall be calculated from the test results for nitrogen oxides and carbon monoxide and included in the report.

(9 VAC 5-50-30, 9 VAC 5-80-1200)

45. **Visible Emissions Evaluation** - Concurrently with the initial performance tests, Visible Emission Evaluations (VEE) in accordance with 40 CFR Part 60, Appendix A, Method 9, shall be conducted by the permittee on the stacks servicing the following equipment: each GE 7FA combustion turbine; the auxiliary boiler; and the Units 3 and 4 boilers. There are no initial performance tests required for the natural gas pipeline heaters, but a single VEE test is required for each of them, too, during the period of initial testing of the respective equipment that each heater serves. Each test shall consist of ten sets of 24 consecutive observations (at 15 second intervals) to yield a six minute average, except when more observations may be required by applicable sections of 40 CFR Part 60. At least one VEE test shall be conducted for each of the operating scenarios and loads for which emissions tests are required for the stack tests above. The details of the tests are to be approved by the NRO Air Compliance Manager. The permittee shall submit a test protocol at least 30 days prior to testing. The evaluation shall be performed, reported and demonstrate compliance within 60 days after achieving the maximum production rate at which the facility will be operated but in no event later than 180 days after start-up of the permitted facility. Should conditions prevent concurrent opacity observations, the NRO Air Compliance Manager shall be notified in writing, within seven days, and visible emissions testing shall be rescheduled within 30 days. Rescheduled testing shall be conducted under the same conditions (as possible) as the initial performance tests. Two copies of the test results shall be submitted to the NRO Air Compliance Manager within 45 days after test completion and shall conform to the test report format enclosed with this permit.

(9 VAC 5-50-30, 9 VAC 5-80-1200, and 9 VAC 5-50-410)

CONTINUING COMPLIANCE DETERMINATION

46. **Stack Tests – Combustion Turbines** - Beginning 12 to 24 months following the date of the last stack test of the initial compliance demonstration, each of the GE 7FA combustion turbines shall be retested by the permittee at 21 to 27 month intervals for VOC and formaldehyde emissions as prescribed in Condition 41; except that if the VOC emission rate is determined to be less than the formaldehyde “lbs/MMBtu” limit in this permit for the turbines, no formaldehyde test will be required during that year. If during three consecutive biennial tests, including the initial performance testing, neither turbine has tests results that show emissions at greater than 80 percent of the emission limits in Condition 21, the testing interval for each turbine may be expanded up to 63 months upon approval from the NRO Air Compliance Manager. If any subsequent test results in emissions of greater than 80 percent, testing at 21 to 27 month intervals shall resume. The tests for each turbine may be staggered within the schedule above, so that they are not necessarily conducted for both units in the same calendar year. The tests need only be conducted at the maximum load in the normal operating range and the minimum load of the normal operating range, unless the minimum load is within ten percent of the maximum load, in which case testing is required at only the maximum load. The normal operating range shall be determined from records of actual operation. Upon request by the DEQ, the permittee shall conduct additional performance tests for the GE 7FA combustion turbines to demonstrate compliance with the emission limits contained in this permit. The details of the tests shall be agreed upon with the NRO Air Compliance Manager.

(9 VAC 5-50-30 G)

47. **Stack Tests – Auxiliary Boiler** - Beginning no later than five years following the date of the last stack test of the initial compliance demonstration, the auxiliary boiler shall be retested by the permittee at least once every five years for nitrogen oxides and carbon monoxide as prescribed in Condition 44. Upon request by DEQ, the permittee shall conduct additional performance tests for the auxiliary boiler to demonstrate compliance with the emission limits contained in this permit. The details of the tests shall be agreed upon with the NRO Air Compliance Manager.

(9 VAC 5-50-30 G)

48. **Visible Emissions Evaluation** – At least once per day beginning the day following completion of the initial stack tests, but in no event more than 180 days after actual start up of the GE 7FA combustion turbines, the permittee shall have someone visually observe the appropriate stack for visible emissions from each of the following when operating: the GE 7FA combustion turbines, the auxiliary boiler, the Units 3 and 4 boilers, and the natural gas pipeline heaters. If the observer sees an abnormally opaque flue gas plume, the permittee shall have a certified smoke reader conduct within 4 hours, or as soon thereafter as weather and lighting conditions permit, a 40 CFR Part 60, Method 9 visible emissions evaluation of the plume for a minimum of 12 minutes. An abnormally opaque flue gas plume is one that is obviously more opaque than the plume was at the time the plume was initially determined to

be in compliance with the applicable visible emissions limit of this permit. In lieu of a once per day observation for a particular stack, the permittee may install and operate a continuous opacity monitor that meets the design specifications of 40 CFR Part 60, Appendix B and is calibrated, maintained, and operated in accordance with the requirements of 40 CFR 60.13 and Appendix B or DEQ approved procedures that are equivalent to the requirements of 40 CFR 60.13 and Appendix B. If continuous opacity monitor(s) are installed and operated, they shall be used only to indicate the need for a Method 9 visible emissions evaluation. (9 VAC 5-50-80 and 9 VAC 5-50-260)

49. **Testing/Monitoring Ports** - The permitted facility (stacks from the combustion turbines, auxiliary boiler, and Units 3 and 4 boilers) shall be constructed so as to allow for emissions testing upon reasonable notice at any time, using appropriate methods. Test ports shall be provided when requested at the flues or stacks of the natural gas pipeline heaters in accordance with the applicable performance specification (reference 40 CFR Part 60, Appendix B).
(9 VAC 5-50-30 F)

OFFSETS

50. **Designated Offsets** – The permittee shall be responsible for ensuring that there is a permanent reduction in volatile organic compound (VOC) emissions at the Glen Burnie Division of Quebecor Printing Memphis, Inc., printing facility in Glen Burnie, Maryland of at least 114 tons per year from the annual average VOC emission rate of the years 1993 and 1994 (the last two typical years that the Glen Burnie facility has operated). This reduction must be in effect prior to start-up of any of the new facilities in Condition 2 or restart-up of the Units 3 and 4 boilers.
(9 VAC 5-80-2050 and 9 VAC 5-80-2120)
51. **Enforceability** – This permit is only valid if the permittee has provided the NRO Air Permit Manager with an official document from the State of Maryland indicating that it recognizes the reduction as creditable and permanent. At a minimum the document shall state that the emission reduction has not been and will not be credited toward another reduction requirement and that the emissions cannot be resurrected from the same facility without the owner first obtaining a permit under a federally-enforceable new source review program. The document must also provide evidence that the U.S. EPA accepts that the emission reductions are creditable for offset purposes.
(9 VAC 5-80-2120)
52. **Recordkeeping** – The permittee shall maintain at the permitted facility a copy of the document, and any supporting documentation, required by condition 51, as long as this permit is to remain in effect.
(9 VAC 5-50-2120)

NOTIFICATIONS

53. Initial Notifications - The permittee shall furnish written notification to the NRO Air Compliance Manager:

- a. The actual date on which modification of the electrical power generation plant commenced within 30 days after such date.
- b. The anticipated start-up date of the GE 7FA combustion turbines postmarked not more than 60 days nor less than 30 days prior to such date.
- c. The anticipated re-start date of the Units 3 and 4 boilers, postmarked not more than 60 days nor less than 30 days prior to such date.
- d. The actual start-up date of the facilities in subsections b. and c. of this condition within 15 days after such date.
- e. The actual date that the facilities in subsection b. of this condition provisionally accept (per the contract) the GE 7FA combustion turbines for commercial operation (to sell electrical power), within 15 days after such date.
- f. The anticipated date of continuous monitoring system performance evaluations postmarked not less than 30 days prior to such date.
- g. The intention to use continuous opacity monitoring system data results to demonstrate compliance with the applicable visible emission limit during a performance test in lieu of Reference Method 9 (reference 40 CFR Part 60, Appendix A), postmarked not less than 30 days prior to the date of the performance test.
- h. The anticipated date of performance tests of the GE 7FA combustion turbines, the duct burners, the auxiliary boiler, and the Units 3 and 4 boilers postmarked at least 30 days prior to such date.
- i. The methods from 40 CFR 60.46a (j) and (k) that will be used to determine compliance with the nitrogen oxide emission limits required in Condition 22 (same as at 40 CFR 60.44a), at least 30 days prior to the date on which the initial performance test for the duct burners is completed.
- j. The minimum temperature of the SCR catalyst bed at which the SCR vendor has determined that the SCR can be expected to continuously meet the design efficiency, as determined during the pre-commercial operation period of break-in of the GE 7FA combustion turbines. This is the temperature to be used for the definitions of start up and shutdown of the GE 7FA combustion turbines.

Copies of the written notification referenced in items a through h above are to be sent to:

Associate Director
Office of Air Enforcement (3AP10)
U.S. Environmental Protection Agency
Region III
1650 Arch Street
Philadelphia, PA 19103-2029]

(9 VAC 5-50-50)

GENERAL CONDITIONS

54. **Permit Invalidation** - This permit to modify the electrical power generation plant shall become invalid, unless an extension is granted by the DEQ, if:

- a. A program of continuous modification is not commenced before the latest of the following:
 - i. 18 months from the date of this permit;
 - ii. Nine months from the date that the last permit or other authorization was issued from any other governmental agency;
 - iii. Nine months from the date of the last resolution of any litigation concerning any such permits or authorization; or
- b. A program of modification is discontinued for a period of 18 months or more, or is not completed within a reasonable time, except for a DEQ approved period between phases of a phased construction project.

(9 VAC 5-80-1210)

55. **Right of Entry** - The permittee shall allow authorized local, state, and federal representatives, upon the presentation of credentials:

- a. To enter upon the permittee's premises on which the facility is located or in which any records are required to be kept under the terms and conditions of this permit;
- b. To have access to and copy at reasonable times any records required to be kept under the terms and conditions of this permit or the State Air Pollution Control Board Regulations;

- c. To inspect at reasonable times any facility, equipment, or process subject to the terms and conditions of this permit or the State Air Pollution Control Board Regulations; and
- d. To sample or test at reasonable times.

For purposes of this condition, the time for inspection shall be deemed reasonable during regular business hours or whenever the facility is in operation. Nothing contained herein shall make an inspection time unreasonable during an emergency.

(9 VAC 5-170-130)

56. Notification for Control Equipment Maintenance - The permittee shall furnish notification to the NRO Air Compliance Manager of the intention to shut down or bypass, or both, air pollution control equipment for necessary scheduled maintenance, which results in excess emissions for more than one hour, at least 24 hours prior to the shutdown. The notification shall include, but is not limited to, the following information:

- a. Identification of the air pollution control equipment to be taken out of service, as well as its location, and registration number;
- b. The expected length of time that the air pollution control equipment will be out of service;
- c. The nature and quantity of emissions of air pollutants likely to occur during the shutdown period;
- d. Measures that will be taken to minimize the length of the shutdown or to negate the effect of the outage.

(9 VAC 5-20-180 B)

57. Notification for Facility or Control Equipment Malfunction - The permittee shall furnish notification to the NRO Air Compliance Manager of malfunctions of the affected facility or related air pollution control equipment that may cause excess emissions for more than one hour, by facsimile transmission, telephone, telegraph, or e-mail. Such notification shall be made as soon as practicable but not later than four daytime business hours of the malfunction. The permittee shall provide a written statement giving all pertinent facts, including the estimated duration of the breakdown, within 14 days of the occurrence. Emission units with continuous monitors subject to the requirements of 9 VAC 5-40-50 C and 9 VAC 5-50-50 C are not required to provide the written statement prescribed in this condition. When the condition causing the failure or malfunction has been corrected and the equipment is again in operation, the permittee shall notify NRO Air Compliance Manager in writing.

(9 VAC 5-20-180 C)

58. Violation of Ambient Air Quality Standard - The permittee shall, upon request of the DEQ, reduce the level of operation or shut down a facility, as necessary to avoid violating any primary ambient air quality standard and shall not return to normal operation until such time as the ambient air quality standard will not be violated.
(9 VAC 5-20-180 I)

59. Maintenance/Operating Procedures - The permittee shall take the following measures in order to minimize the duration and frequency of excess emissions, with respect to air pollution control equipment, monitoring devices, and process equipment which affect such emissions:

- a. Develop a maintenance schedule and maintain records of all scheduled and non-scheduled maintenance.
- b. Maintain an inventory of spare parts.
- c. Have available written operating procedures for equipment. These procedures shall be based on the manufacturer's recommendations, at a minimum.
- d. Train operators in the proper operation of all such equipment and familiarize the operators with the written operating procedures. The permittee shall maintain records of the training provided including the names of trainees, the date of training and the nature of the training.

Records of maintenance and training shall be maintained on site for a period of five years and shall be made available to DEQ personnel upon request.
(9 VAC 5-50-20 E)

60. Permit Suspension/Revocation - This permit may be suspended or revoked if the permittee:

- a. Knowingly makes material misstatements in the application for this permit or any amendments to it;
- b. Fails to comply with the conditions of this permit;
- c. Fails to comply with any emission standards applicable to the equipment listed in Condition 2;
- d. Causes emissions from this facility which result in violations of, or interferes with the attainment and maintenance of, any ambient air quality standard;

- e. Fails to operate this facility in conformance with any applicable control strategy, including any emission standards or emission limitations, in the State Implementation Plan in effect on the date that the application for this permit is submitted;
- f. Fails to modify or operate this facility in accordance with the application for this permit or any amendments to it; or
- g. Allows the permit to become invalid.

(9 VAC 5-80-1210)

61. **Change of Ownership** - In the case of a transfer of ownership of a stationary source, the new owner shall abide by any current permit issued to the previous owner. The new owner shall notify the NRO Air Compliance Manager of the change of ownership within 30 days of the transfer.

(9 VAC 5-80-1240)

62. **Registration/Update** - Annual requirements to fulfill legal obligations to maintain current stationary source emissions data will necessitate a prompt response by the permittee to requests by the DEQ or the Board for information to include, as appropriate: process and production data; changes in control equipment; and operating schedules. Such requests for information from the DEQ will either be in writing or by personal contact. The availability of information submitted to the DEQ or the Board will be governed by applicable provisions of the Freedom of Information Act, §§ 2.1-340 through 2.1-348 of the Code of Virginia, § 10.1-1314 (addressing information provided to the Board) of the Code of Virginia, and 9 VAC 5-170-60 of the State Air Pollution Control Board Regulations. Information provided to federal officials is subject to appropriate federal law and regulations governing confidentiality of such information.

(9 VAC 5-170-60 and 9 VAC 5-20-160)

63. **Permit Copy** - The permittee shall keep a copy of this permit on the premises of the facility to which it applies.

(9 VAC 5-170-160)

STATE ONLY ENFORCEABLE REQUIREMENTS

This section is included pursuant to 9 VAC 5-50-160, *et seq.*, and is not required under the federal Clean Air Act or under any of its applicable federal requirements.

64. **Emission Limits** - Emissions from the operation of each GE 7FA combustion turbine and its associated duct burners (DB's) shall not exceed the limits specified below:

Acrolein	6.4×10^{-6} lbs/MMBtu
Cadmium	4.8×10^{-6} lbs/MMBtu
Chromium	1.1×10^{-5} lbs/MMBtu
Manganese	7.9×10^{-4} lbs/MMBtu

All emission limits represent averages for a three-hour sampling period.

(9 VAC 5-60-300 and 9 VAC 5-80-180)

65. **Compliance**

The emissions from the operation of each GE 7FA combustion turbine may be presumed to be in compliance with the limits of Condition 64, so long as the units are in compliance with the PM-10 limits and the fuel type requirement of Conditions 21 and 14, respectively, of the federally enforceable section of this permit. If the units are found not to be in compliance with those requirements or there is other probable cause to suspect noncompliance with the limits of Condition 64, DEQ may request that stack emissions tests be conducted to determine compliance with the limits of Condition 64. The methods for testing to meet this condition are to be agreed to by the NRO Air Compliance Manager.

(9 VAC 5-50-220 and 9 VAC 5-170-160)

66. **Reporting**

The format for reporting the results of testing, if and when required to determine the emission rate of toxic pollutants in Condition 64, shall be arranged with the NRO Air Compliance Manager.

(9 VAC 5-50-50)

Appendix A

Possum Point Combined Cycle GE 7FA Combustion Turbines (Units 6A & 6B) Startup and Shutdown Definitions

Startup is one of the three following types of start conditions, as applicable:

Cold Start

- A cold start is defined as the process of commencing ignition of fuel in the combustion turbine after no fuel has been burned for a period of forty-eight (48) hours or greater. The period of time (commencing with the ignition of the fuel) required to place the turbine in service at minimum load is five (5) hours.

Warm Start

- A warm start is defined as the process of commencing ignition of fuel in the combustion turbine after no fuel has been burned for a period greater than eight (8) hours and less than forty-eight (48) hours. The period of time (commencing with the ignition of the fuel) required to place the turbine in service at minimum load is four (4) hours.

Hot Start

- A hot start is defined as the process of commencing ignition of fuel in the combustion turbine after no fuel has been burned for a period lasting less than eight (8) hours. The period of time (commencing with the ignition of the fuel) required to place the turbine in service at minimum load is three (3) hours. A hot start is also defined as when the unit reduces load and switches from operation on one fuel to operation on another fuel and shall last no more than three (3) hours.

Shutdown is the following type of shutdown process:

Planned Shutdown

- A shutdown is defined as the process of suspending the ignition of fuel in the combustion turbine for the purpose of removing the unit from service. A typical shutdown while operating at minimum load will see the combustion turbine operating below minimum load for less than one hour until the fuel supply is shut off. For purposes of determining compliance, a shutdown is the period of time required to remove the turbine from service and is one (1) hour excluding partial operating hours.

SOURCE TESTING REPORT FORMAT

Cover

1. Plant name and location
2. Units tested at source (indicate Ref. No. used by source in permit or registration)
3. Tester; name, address and report date

Certification

1. Signed by team leader / certified observer (include certification date)
- * 2. Signed by reviewer

Introduction

1. Test purpose
2. Test location, type of process
3. Test dates
- * 4. Pollutants tested
5. Test methods used
6. Observers' names (industry and agency)
7. Any other important background information

Summary of Results

1. Pollutant emission results / visible emissions summary
2. Input during test vs. rated capacity
3. Allowable emissions
- * 4. Description of collected samples, to include audits when applicable
5. Discussion of errors, both real and apparent

Source Operation

1. Description of process and control devices
2. Process and control equipment flow diagram
3. Process and control equipment data

* Sampling and Analysis Procedures

1. Sampling port location and dimensioned cross section
2. Sampling point description
3. Sampling train description
4. Brief description of sampling procedures with discussion of deviations from standard methods
5. Brief description of analytical procedures with discussion of deviation from standard methods

Appendix

- * 1. Process data and emission results example calculations
2. Raw field data
- * 3. Laboratory reports
4. Raw production data
- * 5. Calibration procedures and results
6. Project participants and titles
7. Related correspondence
8. Standard procedures

* Not applicable to visible emission evaluations.



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
RESEARCH TRIANGLE PARK, NC 27711

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AIR QUALITY PLANNING
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J. Torosian

MEMORANDUM

SUBJECT: Approval of General Electric Control Algorithm In Lieu of Subpart GG ISO Correction Equation

FROM: Bruce Jordan, Director
Emission Standards Division
Bruce Jordan

John B. Rasnic, Director
Manufacturing, Energy and Transportation Division
Richard Biondi

TO: See Attached List

The General Electric Company (GE) has requested from the U.S. Environmental Protection Agency (USEPA) the approval of an alternative test method. The proposed test method is the use of a specific control algorithm on selected gas turbines which is based on the use of the new source performance standards (NSPS) ISO correction equation in 40 CFR 60, subpart GG. These turbines include all of the GE heavy-duty gas turbine models with diffusion combustors.

The EPA Office of Air Quality Planning and Standards, Emission Standards Division (OAQPS/ESD) and the Office of Compliance (OC) reviewed the background documents submitted by GE regarding their control algorithm and we have determined that the algorithm developed by GE is an acceptable alternative test method to 40 CFR §60.335 for GE's heavy-duty diffusion combustors, provided that certain conditions are satisfied. These conditions of approval are identified later in this memorandum. It is our understanding that selected GE gas turbines will have equipment (Mark 5 controller) programmed with an algorithm that continuously corrects for variations in ambient humidity, temperature, and pressure yielding a relatively constant nitrogen oxide (NO_x) concentration when corrected to 15 percent oxygen (O₂). It is our determination that this alternative monitoring plan based on continuous ISO correction is equal to or more stringent than the current requirements if several conditions are added to the plan.

For NSPS allowable NO_x levels (75 and 150 ppm NO_x), the effect of variation in ambient conditions (temperature, humidity, and pressure) are relatively small. Demonstrating compliance with the NSPS allowable NO_x levels is relatively simple. A single curve of diluent injection vs. measured fuel flow is developed using the ISO subpart GG correction equation during initial compliance testing of the turbine. Compliance verification requires that the actual diluent injection flow be higher than that called for by the curve at the measured fuel flow.

However, for more stringent allowable NOx levels, as required by certain States and local agencies (as low as 3 ppm NOx), the effect of ambient conditions on the allowable NOx levels are more pronounced and GE has chosen to correct for these ambient variations.

For compliance verification of the GE developed algorithm for their heavy-duty diffusion combustors, GE must comply with following conditions to be completed during initial installation and future operation of the gas turbine:

1. As demonstrated in Attachment 1 [GE letter (with two enclosures) from Mr. Marvin Schorr to Mr. Ted Coopwood dated November 8, 1995], the NOx algorithm shall be verified as listed in Appendix B of enclosure 1 with the following modifications to the compliance test referenced in Step 9. The compliance test shall include each of the following:

a. The Preliminary Emission Test referenced in Step 6 shall be submitted as part of the compliance test. Subsequent to manually adjusting the diluent flow necessary to meet the required NOx concentrations, the compliance test shall include a list of the recorded machine parameters required to calibrate the control algorithm. These parameters include:

Gaseous Emissions: NOx, CO, etc.;

Exhaust O₂;

Ambient Conditions: temperature, humidity, and pressure; and

Machine Parameters: output, exhaust temperature, fuel flow, steam/water flow, fuel heating value (lower heating value), exhaust gas flow rate (if required).

b. The Adjustment of the Control Algorithm Constants referenced in Step 7 shall also be included as part of the compliance test. The compliance test shall reference the factory set constants vs. the constants determined based on the data gathered in Step 6.

c. In addition, testing of the control algorithm with the constants determined in Step 7 shall be included in the compliance test. This shall be performed across the load range of the turbine.

2. Proper operation of the control algorithm shall be performed by Agency inspectors according to the procedure referenced in GE's letter (with attachment) from Mr. Marvin Schorr to Mr. Sims Roy dated March 5, 1997, page 3. This letter is included as Attachment 2.

3. Excess NOx levels shall be reported by operator/owner of the gas turbine indicating cases where the actual diluent injection is less than the required diluent injection determined by the control algorithm. The turbine controller unit, referred to as the Mark V controller, provides continuous measurements of the actual diluent injection rate vs. the required diluent injection rate.

The EPA approves the use of the GE control algorithm in lieu of the current NSPS ISO subpart GG correction equation for NOx concentrations if all of the above conditions are met. If GE fails to meet any of the conditions above, then GE must notify EPA. This only applies to GE's heavy-duty diffusion combustors using the Mark 5 controller. Any deviation from this protocol could nullify approval of the use of the GE developed control algorithm.

Attachments (2)

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