



# COMMONWEALTH of VIRGINIA

## DEPARTMENT OF ENVIRONMENTAL QUALITY VALLEY REGIONAL OFFICE

Molly Joseph Ward  
Secretary of Natural Resources

4411 Early Road, P.O. Box 3000, Harrisonburg, Virginia 22801  
(540) 574-7800 Fax (540) 574-7878  
www.deq.virginia.gov

David K. Paylor  
Director

Amy Thatcher Owens  
Regional Director

June 17, 2014

Mr. Robert B. McKinley  
Vice President, Generation Construction  
Dominion Resources Service, Inc.  
5000 Dominion Boulevard  
Glen Allen, Virginia 23060

Facility: Warren County Power Station  
Location: Warren County  
Registration No.: 81391  
Plant ID No.: 51-187-0041

Dear Mr. McKinley:

Attached is a significant amendment to your Prevention of Significant Deterioration (PSD) permit dated December 21, 2010, as amended October 24, 2013, to construct and operate an electric power generating facility located in Warren County, Virginia, in accordance with the provisions of the Commonwealth of Virginia State Air Pollution Control Board Regulations for the Control and Abatement of Air Pollution. This permit supersedes your permit dated December 17, 2010, as amended October 24, 2013.

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

The Department of Environmental Quality (DEQ) deemed the application complete on January 14, 2014, and has determined that the application meets the requirements of 9 VAC 5-80-1955 for a significant amendment to a PSD permit. The Department solicited written public comments by placing a newspaper advertisement in the *Northern Virginia Daily* on April 10, 2014. The required comment period, provided by 9 VAC 5-80-1775 F, expired on May 27, 2014. A public hearing was held on May 12, 2014.

This permit approval 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 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 of service of this decision (the date you actually received this decision 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, Virginia 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, at <http://www.courts.state.va.us/courts/scv/rules.html>, for information on the required content of the Notice of Appeal and for additional requirements governing appeals from decisions of administrative agencies.

Please be aware that your facility appears to be subject to the New Source Performance Standards (NSPS) of 40 Code of Federal Regulations (CFR) 60, Subparts Dc, IIII, and KKKK, as well as the National Emission Standards for Hazardous Air Pollutants (NESHAP) Standards of 40 CFR 63, Subpart ZZZZ. The federal requirements may be accessed using the electronic code of federal regulations website at <http://www.ecfr.gov>, and selecting Title 40.

If you have any questions concerning this permit, please contact Jeremy Funkhouser of the Valley Regional Office at (540) 574-7820 or at [jeremy.funkhouser@deq.virginia.gov](mailto:jeremy.funkhouser@deq.virginia.gov).

Sincerely,

*-signed original-*

Amy T. Owens  
Regional Director

Attachments: Permit

c: File DEQ-VRO  
Barry Brandon, Air Compliance Inspector (via email)  
Director, OAPP (via email)  
Manager, Data Analysis (via email)  
Chief, Air Enforcement Branch (3AP20), U.S. EPA, Region III (via email)



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**PREVENTION OF SIGNIFICANT DETERIORATION PERMIT  
STATIONARY SOURCE PERMIT TO CONSTRUCT AND OPERATE  
This permit includes designated equipment subject to  
New Source Performance Standards (NSPS) and National Emission Standards  
for Hazardous Air Pollutants for Reciprocating Internal Combustion Engines.**

This permit supersedes your permit dated December 17, 2010, as amended October 24, 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.: 81391  
Plant ID No.: 51-187-0041

is authorized to construct and operate

an electric power generation facility

located at

Lots 3, 5, 6, 7, 8, 9, and 10, Warren Industrial Park  
Warren County

in accordance with the Conditions of this permit.

Approved on: \_\_\_\_\_ December 17, 2010

Amended on: \_\_\_\_\_ October 24, 2013

Amended on: \_\_\_\_\_ June 17, 2014

Approved by: \_\_\_\_\_  
Regional Director, Valley Region

Permit consists of 38 pages.  
Permit Conditions 1 to 87.  
Source Testing Report Format  
Attachments A and B

**PERMIT CONDITIONS** - the regulatory reference or authority for each condition is listed in parentheses ( ) after each condition. All parts per million (ppm) are parts per million by volume on a dry gas basis (ppmvd), corrected to 15 percent oxygen, unless otherwise stated. All heat inputs in British thermal units (Btu) are based on higher heating values.

## **INTRODUCTION**

This permit approval is based on the permit applications dated January 7, 2010, January 18, 2010, February 12, 2010, March 16, 2010, April 14, 2010, April 23, 2010, June 24, 2010, July 2, 2010, July 27, 2010, August 6, 2010, August 24, 2010, August 27, 2010, September 1, 2010 (2 items), September 2, 2010, September 24, 2010, February 28, 2013, and August 29, 2013, and supplemental information dated April 27, 2010, May 20, 2010, March 8, 2013, March 22, 2013, July 1, 2013, November 7, 2013, December 3, 2013, and January 9, 2014. Any changes in the permit application specifications or any existing facilities which 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. In addition, this facility may be subject to additional applicable requirements not listed in this permit.

Words or terms used in this permit shall have meanings as provided in 9 VAC 5-10-20 of the State Air Pollution Control Board Regulations for the Control and Abatement of Air Pollution. The regulatory reference or authority for each condition is listed in parentheses ( ) after each condition.

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, §§ 2.2-3700 through 2.2-3714 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.

## **PROCESS REQUIREMENTS**

### **1. Equipment List**

Equipment to be constructed at this facility consists of:

- three combined-cycle power generating units (T-1, T-2, & T-3) where each unit includes the following emission units:

- one Mitsubishi natural gas-fired combustion turbine (CT) generator, Model M501 GAC, rated at 299,600 kW and 2,996 million Btu per hour heat input (NSPS Subpart KKKK); and
  - one heat recovery steam generator (HRSG) with supplementary natural gas-fired duct burners (DB), each duct burner with a design rating of 500 million Btu per hour heat input when firing natural gas (NSPS Subpart KKKK);
- one natural gas-fired auxiliary boiler, rated at 47.6 million Btu per hour heat input (B-1) (NSPS Subpart Dc);
  - one natural gas-fired fuel gas heater, rated at 24.0 million Btu per hour heat input (GH-1) (NSPS Subpart Dc);
  - one diesel-fired emergency generator, rated at 2,220 brake horsepower (EG-1) (NSPS Subpart IIII and 40 CFR 63 Subpart ZZZZ);
  - one propane-fired emergency generator, rated at 60 kW (EPG-1) (NSPS Subpart JJJJ and 40 CFR 63 Subpart ZZZZ);
  - one diesel-fired emergency fire water pump, rated at 376 brake horsepower (FWP-1) (NSPS Subpart IIII and 40 CFR 63 Subpart ZZZZ);
  - three turbine inlet chillers (600,000 gal/hr each) (IC-1, IC-2, & IC-3); and
  - one 6,000 gallon distillate oil storage tank (ST-1).

(9 VAC 5-80-1180 D.3 and 9 VAC 5-80-1605 A)

### **PREVENTION OF SIGNIFICANT DETERIORATION PERMIT**

This section (Conditions 2 through 71) establishes conditions pursuant to 9 VAC 5-80-1605 *et seq.* These conditions are federally enforceable under the federal Clean Air Act. Additional Source Wide Conditions are contained in Conditions 76 through 84.

### **PROCESS REQUIREMENTS – COMBINED-CYCLE UNITS (T-1, T-2, & T-3)**

2. **Emission Controls: Nitrogen Oxides** – Oxides of nitrogen (NO<sub>x</sub>) emissions from each CT (CT-1, CT-2, & CT-3) and HRSG duct burner (DB1, DB2, & DB3) shall be controlled by use of a two-stage, lean pre-mix dry low-NO<sub>x</sub> combustor, a selective catalytic reduction (SCR) control system using ammonia injection, and good combustion practices. The SCR system shall be provided with adequate access for inspection and shall be in operation when the turbines are in normal operating mode (at all times except during startup and shutdown, as defined in Condition 20).  
(9 VAC 5-50-280 and 9 VAC 5-80-1705)

3. **Emission Controls: Carbon Monoxide** – Carbon monoxide (CO) emissions from each CT (CT-1, CT-2, & CT-3) and HRSG duct burner (DB1, DB2, & DB3) shall be controlled by an oxidation catalyst and good combustion practices. The oxidation catalyst shall be provided with adequate access for inspection and shall be in operation when the turbines are in normal operating mode (at all times except during startup and shutdown, as defined in Condition 20).  
(9 VAC 5-50-280 and 9 VAC 5-80-1705)
4. **Emission Controls: Volatile Organic Compounds** – Volatile Organic Compound (VOC) emissions from each CT (CT-1, CT-2, & CT-3) and HRSG duct burner (DB1, DB2, & DB3) shall be controlled by an oxidation catalyst and good combustion practices. The oxidation catalyst shall be provided with adequate access for inspection and shall be in operation when the turbines are in normal operating mode (at all times except during startup and shutdown, as defined in Condition 20).  
(9 VAC 5-50-280 and 9 VAC 5-80-1705)
5. **Emission Controls: Sulfuric Acid Mist** – Sulfuric acid mist emissions from each CT (CT-1, CT-2, & CT-3) and HRSG duct burner (DB1, DB2, & DB3) shall be controlled through the use of pipeline natural gas meeting the specifications in Condition 15.  
(9 VAC 5-50-280 and 9 VAC 5-80-1705)
6. **Monitoring Devices: SCR** - Each SCR system shall be equipped with devices to continuously measure or allow calculation of, and record ammonia feed rate, gas stream flow rate, and catalyst bed inlet gas temperature. Each monitoring device shall be installed, maintained, calibrated and operated in accordance with approved procedures that 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 SCR system is operating.  
(9 VAC 5-50-20 C and 9 VAC 5-80-1705)
7. **Monitoring Devices: Oxidation Catalyst** - Each oxidation catalyst shall be equipped with a device to continuously measure and record temperature at the catalyst bed inlet. Each monitoring device shall be installed, maintained, calibrated and operated in accordance with approved procedures that shall include, at 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 oxidation catalyst is operating.  
(9 VAC 5-50-20 C and 9 VAC 5-80-1705)

8. **Monitoring Device Observation: SCR** – The devices used to continuously measure or allow calculation of ammonia feed rate, gas stream flow rate, and SCR catalyst bed inlet gas temperature shall be observed by the permittee with a frequency sufficient to ensure good performance of the SCR system but not less than once per day of operation. The permittee shall continuously record measurements from the control equipment monitoring devices.  
(9 VAC 5-50-50 H)
9. **Monitoring Device Observation: Oxidation Catalyst** - The devices used to continuously measure catalyst bed inlet temperature for each oxidation catalyst shall be observed by the permittee with a frequency sufficient to ensure good performance of the oxidation catalyst but not less than once per day of operation. The permittee shall continuously record measurements from the control equipment monitoring devices.  
(9 VAC 5-50-50 H)

#### **PROCESS REQUIREMENTS - EMERGENCY UNITS (EG-1 & FWP-1)**

10. **Monitoring Devices** – The permittee must install a non-resettable hour meter on the emergency generator (EG-1) and the emergency fire water pump (FWP-1) prior to the startup of each unit. The hour meters shall be provided with adequate access for inspection.  
(9 VAC 5-80-1705 and 40 CFR 60.4209)
11. **Maintenance and Operation** – The permittee must maintain and operate the emergency generator (EG-1) and the emergency fire water pump (FWP-1) according to the manufacturer's written instructions, or procedures developed by the permittee that are approved by the manufacturer, over the entire life of the engine. In addition, the permittee may only change those settings that are approved by the manufacturer.  
(9 VAC 5-80-1705, 9 VAC 5-50-280, 40 CFR 60.4206 and 40 CFR 60.4211)

#### **PROCESS REQUIREMENTS - AUXILIARY BOILER (B-1) and FUEL GAS HEATER (GH-1)**

12. **Emission Controls: Nitrogen Oxides** – Oxides of nitrogen (NO<sub>x</sub>) emissions from the auxiliary boiler (B-1) and the fuel gas heater (GH-1) shall be controlled by ultra low-NO<sub>x</sub> burners.  
(9 VAC 5-50-280 and 9 VAC 5-80-1705)
13. **Emission Controls: Carbon Monoxide and Volatile Organic Compounds** - CO and VOC emissions from the auxiliary boiler (B-1) and the fuel gas heater (GH-1) shall be controlled by good combustion practices, operator training and proper emissions unit design, construction and maintenance. Boiler and heater operators shall be trained in the proper operation of all such equipment. Training shall consist of a review and familiarization of the manufacturer's operating instructions, at minimum. The permittee shall maintain records of the required training including a statement of time, place and

nature of training provided. The permittee shall have available good written operating procedures and a maintenance schedule for the boiler and heater. These procedures shall be based on the manufacturer's recommendations, at minimum. All records required by this condition shall be kept on site and made available for inspection by the DEQ.  
(9 VAC 5-50-280 and 9 VAC 5-80-1705)

14. **Emission Controls: Sulfuric Acid Mist** – Sulfuric acid mist emissions from the auxiliary boiler (B-1) and the fuel gas heater (GH-1) shall be controlled through the use of pipeline natural gas meeting the specifications in Condition 44.  
(9 VAC 5-50-280 and 9 VAC 5-80-1705)

**OPERATING/EMISSION LIMITATIONS – COMBINED-CYCLE UNITS (T-1, T-2, & T-3)**

15. **Fuel** - The approved fuel for each CT (CT-1, CT-2, & CT-3) and each HRSG duct burner (DB1, DB2, & DB3) is pipeline natural gas. The pipeline natural gas shall not exceed a sulfur content of 0.00096 percent by weight (i.e., 0.32 grains per 100 dry standard cubic feet) on a 12-month rolling average basis, and a sulfur content of 0.0015 percent by weight (i.e., 0.50 grains per 100 dry standard cubic feet) at any time. A standard cubic foot of gas is defined as a cubic foot of gas at standard conditions (68°F and 29.92 in Hg) as specified in 40 CFR 72.2. A change in the fuel may require a permit to modify and operate.  
(9 VAC 5-50-410, 9 VAC 5-80-1705, 9 VAC 5-80-1715, 9 VAC 5-50-280, and 40 CFR 60.4330(a)(2))
16. **Fuel Throughput** – The combustion turbines (CT-1, CT-2, & CT-3) and duct burners (DB1, DB2, & DB3) combined shall consume no more than  $90,073 \times 10^6$  scf of natural gas per year. Throughput shall be calculated monthly as the sum of each consecutive 12-month period. Compliance for the consecutive 12-month period shall be demonstrated monthly by adding the total for the most recently completed calendar month to the individual monthly totals for the preceding 11 months.  
(9 VAC 5-80-1715)
17. **Fuel Monitoring** – The permittee shall use the fuel quality characteristics in a current, valid purchase contract, tariff sheet or transportation contract for the fuel, specifying that the total sulfur content for natural gas being fired at the electric power generation facility meets the limitations in Conditions 15 and 44, and demonstrate that potential sulfur dioxide emissions shall not exceed the limits specified in Conditions 74 and 75.

If the permittee elects not to demonstrate the sulfur content using the above option, the permittee may:

- a. determine and record the total sulfur content of the natural gas once per unit operating day, or

- b. develop custom schedules for determination of the total sulfur content of the natural gas, based on the design and operation of the affected facility and the characteristics of the fuel supply. Except as provided in 40 CFR 60.4370(c)(1) and (c)(2), custom schedules shall be substantiated with data and shall receive prior EPA approval.

(9 VAC 5-50-410, 40 CFR 60.4365(a), 40 CFR 60.4370(b) and 40 CFR 60.4370(c))

18. **Short-Term Emission Limits** - Emissions from the operation of each combined-cycle power generating unit (T-1, T-2, & T-3) shall not exceed the limits specified below:

	Short term emission limits
PM-10 (includes condensable PM)	<ul style="list-style-type: none"> <li>▪ 8.0 lb/hr without duct burner firing</li> <li>▪ 14.0 lb/hr with duct burner firing</li> <li>▪ 0.0027 lb/MMBtu without duct burner firing</li> <li>▪ 0.0040 lb/MMBtu with duct burner firing</li> </ul>
PM-2.5*	<ul style="list-style-type: none"> <li>▪ 8.0 lb/hr without duct burner firing*</li> <li>▪ 14.0 lb/hr with duct burner firing*</li> <li>▪ 0.0027 lb/MMBtu without duct burner firing*</li> <li>▪ 0.0040 lb/MMBtu with duct burner firing*</li> </ul>
Oxides of nitrogen (as NO <sub>2</sub> )	<ul style="list-style-type: none"> <li>▪ 25.3 lb/hr</li> <li>▪ 2.0 ppmvd</li> </ul>
Carbon monoxide	<ul style="list-style-type: none"> <li>▪ 9.9 lb/hr and 1.5 ppmvd without duct burner firing</li> <li>▪ 17.4 lb/hr and 2.4 ppmvd with duct burner firing</li> </ul>
Volatile organic compounds	<ul style="list-style-type: none"> <li>▪ 2.6 lb/hr and 0.7 ppmvd without duct burner firing</li> <li>▪ 6.1 lb/hr and 1.6 ppmvd with duct burner firing</li> </ul>
Sulfuric acid mist (H <sub>2</sub> SO <sub>4</sub> )	<ul style="list-style-type: none"> <li>▪ 0.00066 lb/MMBtu without duct burner firing</li> <li>▪ 0.0013 lb/MMBtu with duct burner firing</li> </ul>

Where:

ppmvd = parts per million by volume on a dry gas basis, corrected to 15 percent O<sub>2</sub>.

Short-term emission limits represent averages for a three-hour sampling period except for nitrogen oxides and carbon monoxide, which shall be calculated as a one-hour average.

Limits apply at all times except during startup, shutdown, and malfunction. Periods considered startup and shutdown are defined in Condition 20 of this permit.

These emissions are derived from the estimated overall emission contribution from operating limits. Exceedance of the operating limits may be considered credible evidence of the exceedance of emission limits. Compliance with these limits may be determined as stated in Conditions 2, 3, 4, 5, 15, 21, and 51.

Short-term emissions of sulfuric acid mist shall be calculated using the maximum sulfur content specified in Condition 15, or sampling data collected in accordance with Condition 17.

\* This permit may be changed in accordance with 9 VAC 5-80-1925, to reduce the emission limit based on results from stack testing as required in Condition 60 of this permit.

(9 VAC 5-50-280, 9 VAC 5-50-410, 9 VAC 5-80-1705, 9 VAC 5-80-1715, 40 CFR 60.4320, and 40 CFR 60.4330)

19. **Annual Emission Limits** – Total emissions from the operation of all three combined-cycle power generating units (T-1, T-2, & T-3) including duct burners shall not exceed the limits specified below:

Pollutant	Annual Emissions (tons)
PM-10 (includes condensable PM)	159.1
PM-2.5	159.1*
Oxides of Nitrogen (as NO <sub>2</sub> )	317.7
Carbon Monoxide	348.6
Volatile Organic Compounds	181.0
Sulfuric Acid Mist (H <sub>2</sub> SO <sub>4</sub> )	30.5

\* This permit may be changed in accordance with 9 VAC 5-80-1925, to reduce the emission limit based on results from stack testing as required in Condition 60 of this permit.

Annual emission limits are derived from the estimated overall emission contribution from operating limits, including periods of startup and shutdown. Annual emissions shall be calculated monthly as the sum of each consecutive 12-month period. Exceedance of the operating limits may be considered credible evidence of the exceedance of emission limits. Compliance with these limits may be determined as stated in Conditions 2, 3, 4, 5, 15, 16, 21, and 51. Annual emissions of sulfuric acid mist shall be calculated using the 12-month rolling average sulfur content, provided in Condition 15, or sampling data collected in accordance with Condition 17.

(9 VAC 5-50-280, 9 VAC 5-50-410, 9 VAC 5-80-1705, and 9 VAC 5-80-1715)

20. **Startup/Shutdown** – The short-term emission limits contained in Condition 18 apply at all times except during periods of startup and shutdown.

a. Startup and shutdown periods are defined as follows:

- i. Cold Startup – refers to restarts made 72 hours or more after shutdown. Exclusion from the short-term emissions limits for cold startup periods shall not exceed 4.2 hours per occurrence.
  - ii. Warm Startup – refers to restarts made more than 8 but less than 72 hours after shutdown. Exclusion from the short-term emissions limits for warm startup periods shall not exceed 2.1 hours per occurrence.
  - iii. Hot Startup – refers to restarts made 8 hours or less after shutdown. Exclusion from the short-term emissions limits for hot startup periods shall not exceed 1.5 hours per occurrence.
  - iv. Shutdown – refers to the period between the time the turbine load drops below 60 percent operating level and the fuel supply to the turbine is cut. Exclusion from the short-term emissions limits for shutdown shall not exceed 0.5 hours per occurrence.
- b. The permittee shall operate the Continuous Emission Monitoring Systems (CEMS) during periods of startup and shutdown.
  - c. The permittee shall record the time, date and duration of each startup and shutdown period.
  - d. The permittee shall operate the facility so as to minimize the frequency and duration of startup and shutdown events.

(9 VAC 5-50-280, 9 VAC 5-80-1715, and 9 VAC 5-80-1705)

21. **Operating Hours: Duct Burners** – Each duct burner (DB1, DB2, & DB3) shall not operate more than 6,000 hours per year, calculated monthly as the sum of each consecutive 12-month period. Compliance for the consecutive 12-month period shall be demonstrated monthly by adding the total for the most recently completed calendar month to the individual monthly totals for the preceding 11 months.  
(9 VAC 5-50-280 and 9 VAC 5-80-1705)
22. **Emission Limits: Duct Burners** – Emissions from the operation of each duct burner (DB1, DB2, & DB3) operating independently of each combined-cycle system (T-1, T-2, & T-3) shall not exceed 54 ppm of oxides of nitrogen (expressed as NO<sub>2</sub>) at 15 percent O<sub>2</sub>.  
(9 VAC 5-80-1705, 9 VAC 5-50-410, and 40 CFR 60.4320)
23. **Duct Burner Operational Restriction** – The duct burners (DB1, DB2, & DB3) shall not operate between the hours of 10 p.m. and 5 a.m. Eastern Standard Time (EST) during the period between September 1st and April 30th, except that the duct burners may be operated during a Pennsylvania-New Jersey-Maryland Interconnection, LLC (PJM)

Independent System Operator's (ISO) declared emergency. This duct burner operational restriction is included to demonstrate that the project will not cause or contribute to an exceedance of the applicable PM-2.5 PSD Class I increment.  
(9 VAC 5-80-1705, Virginia Code 10.1 1307.02., and Virginia Code 10.1-1307.3 A.5.)

24. **Pollution Prevention: Ammonia** – Emissions of ammonia resulting from unreacted ammonia emitted from the SCR (ammonia slip) shall not exceed 2 ppmvd during steady-state conditions and 5 ppmvd during non-steady-state operations. Compliance with the ammonia slip limit shall be determined based on a one-hour block average. Steady-state operation is based on a steady load for the duration of the CEMS hour and is defined as less than a 5% rate of load change within the hour. At least three months prior to startup, the permittee shall submit a plan for approval for monitoring the ammonia slip and demonstrating compliance with the ammonia slip limit from each SCR system to the DEQ. Implementation of the plan shall commence upon startup of the facility. The permittee shall demonstrate compliance with the ammonia slip limit at least 95% of the time the SCR is operating. Compliance with the 95% time percentage requirement shall be calculated daily and based on a 30-day rolling period. Alternatively, if on a given day less than 100 hours of operation has occurred in the prior 30 days, compliance with the 95 percent limits may be based on the most recent 100 hours of SCR operation.  
(9 VAC 5-80-1705, 9 VAC 5-170-160, and Virginia Pollution Prevention Act, § 10.1-1425.11)
25. **Visible Emission Limit** - Visible emissions from each combined-cycle (T-1, T-2, & T-3) stack 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 EPA Method 9 (reference 40 CFR 60, Appendix A). This condition applies at all times except during startup, shutdown (as defined in Condition 20), and malfunction.  
(9 VAC 5-50-20, 9 VAC 5-50-280, and 9 VAC 5-80-1705)
26. **Requirements by Reference** - Except where this permit is more restrictive, the CTs (CT-1, CT-2, & CT-3) and duct burners (DB1, DB2, & DB3) as described in Condition 1 shall be operated in compliance with the requirements of 40 CFR 60, Subpart KKKK.  
(9 VAC 5-50-400 and 9 VAC 5-50-410)

### **AIR QUALITY RELATED VALUES**

27. **Source Reductions and Emission Offsets** – The permittee shall implement the following actions to secure a total of emission offsets equal to the Total Annual NO<sub>x</sub> Limit, (TANL: the sum of NO<sub>x</sub> limits for the combustion turbines, duct burners and emergency engines in Conditions 19, 35, 36, 47, and 48) at the Facility. The National Park Service has determined that for the Warren County Power Station these actions provide full mitigation or acceptable net environmental benefits for all potential or actual adverse impacts to Air Quality Related Values, including visibility and aquatic resources, at Shenandoah National Park (SNP).

- a. Definitions – Solely for the purposes of this permit Condition 27, the following definitions shall apply:
- i. “Emissions Offsets” means Emission Reduction Credits, Allowances under the Acid Rain Program or other emissions reductions that are obtained to mitigate potential impacts of the permitted facility on the air quality and related values in SNP.
  - ii. “Eligible SO<sub>2</sub> Allowances” means those Allowances (as defined in the Clean Air Act, section 402(3)) that originate from Dominion owned facilities in the region shown on Attachment A (“Originating Account”).
  - iii. “Eligible NO<sub>x</sub> Allowances” means any NO<sub>x</sub> Allowances as that term is defined in a federally-approved NO<sub>x</sub> emissions trading program.
  - iv. “Facility NO<sub>x</sub> Emission Ton” means each ton of NO<sub>x</sub> emissions from the permitted facility.
  - v. “Allowable Annual NO<sub>x</sub> Emissions” means 330.7 tons NO<sub>x</sub> per year, which represents the maximum Facility NO<sub>x</sub> Emission Tons authorized under the permit.
  - vi. “Emissions Reduction Credits” means the number of tons per year of creditable emissions reductions.
  - vii. “Offset Ratio” means the ratios shown on the map at Attachment A.
- b. Emission Offsets from specific facilities – The permittee shall secure a reduction in emissions from a source or sources in the manner prescribed as follows:
- i. The permittee shall permanently cease all permitted SO<sub>2</sub> and NO<sub>x</sub> emissions at North Branch Power Station in Grant County, West Virginia. Based on the actual emissions in 2007-2008 and the distance and direction of North Branch Power Station from the Park these reductions shall result in an Emission Offset of 243 TPY toward the TANL offset requirement. Neither the permitted nor actual SO<sub>2</sub> and NO<sub>x</sub> emission reductions from the North Branch Power Station may be used as Emissions Offsets for any other purpose.
  - ii. The permittee shall retire permanently the 175 TPY of NO<sub>x</sub> offsets procured from World Kitchen in Martinsburg, West Virginia approved by the DEQ by letter of 11/17/07. Based on the distance and direction of World Kitchen from the Park, this retirement of emission reduction credits shall result in 17.5 TPY emission offsets toward the TANL requirement.

c. Allowances or Emission Reduction Credits retirements

The permittee shall secure and retire Eligible SO<sub>2</sub> Allowances, Eligible NO<sub>x</sub> Allowances, or Emission Reduction Credits in the amount equivalent to 70.2 TPY of Emission Offsets toward the TANL requirement by a combination of the following.

- i. Retire Eligible SO<sub>2</sub> Allowances or Eligible NO<sub>x</sub> Allowances by transferring them from the Originating Account each year (by making the appropriate designation(s) in the Allowance Tracking System transfer form) into an account administered by the U.S. EPA for the Acid Rain Program to be identified by the DEQ.
  - (a) To ensure that Eligible SO<sub>2</sub> Allowance or Eligible NO<sub>x</sub> Allowance retirements benefit air quality and related values in SNP, any such Allowance that originates from facilities located in an area with an Offset Ratio (from the Attachment A map) higher than 10:1 shall require retirement of an additional ten percent of Eligible SO<sub>2</sub> Allowances or Eligible NO<sub>x</sub> Allowances in order to offset one Facility NO<sub>x</sub> Emission Ton. For example, Eligible SO<sub>2</sub> Allowances that originate from the 20:1 Offset Ratio area shall be retired at the rate of 22:1; Eligible SO<sub>2</sub> Allowances that originate from the 30:1 Offset Ratio area shall be retired at the rate of 33:1; and Eligible SO<sub>2</sub> Allowances that originate from the 40:1 Offset Ratio area shall be retired at the rate of 44:1 until all of the Allowable Annual NO<sub>x</sub> Emissions are offset.
  - (b) The permittee is prohibited from replenishing or causing to be replenished those retired allowances in the Originating Account of the specific Dominion unit that the allowances originated from, by securing, purchasing or otherwise acquiring allowances from any other accounts and transferring them into that Originating Account. After the date of initial operation, the only allowances that can be placed in that account are those allocated by EPA to that account of a vintage year of and after startup of the equipment listed in Condition 1.
- ii. Secure and retire Emission Reduction Credits multiplied by the Offset Ratio of the plant location shown on Attachment A.
- iii. The requirements of c.i. and ii. in equation form are:

$$(\text{Eligible SO}_2 \text{ or NO}_x \text{ Allowance}_{\text{Plant in area of 10:1 Offset Ratio or less}} / \text{Offset Ratio}) +$$

$$(\text{Eligible SO}_2 \text{ or NO}_x \text{ Allowance}_{\text{Plant in area greater than 10:1 Offset Ratio}} / (1.1 \times \text{Offset Ratio}))$$

$$\geq 70.2 - \sum (\text{ERC}_{\text{Plant}}/\text{Offset Ratio})$$

- d. Procedure and timing.
- i. The actions in items Condition 27 b. and c. shall be completed and in effect prior to startup of the equipment listed in Condition 1.
  - ii. Prior to startup of the equipment listed in Condition 1, the permittee shall provide to the DEQ written documentation from the air pollution control agency that regulates each of the sources identified in 27 b. and c.ii. that the requirements of Condition 27 b. and c.ii. (if that option is selected) have been met and that the emission reductions are recognized by the agency as creditable, permanent, and federally enforceable. The document shall state that the emissions reduction has not been and will not be credited toward another reduction requirement. The facility shall not commence operation until the DEQ has approved in writing the documentation submitted by the permittee pursuant to this subsection as satisfying the requirements of Condition 27 b. and c.ii. (if that option is selected).
  - iii. The permittee shall submit a report to the DEQ prior to the commencement of operation of the permitted facility that demonstrates that the Allowances have been retired in accordance with Condition 27.c.i. Annual reports demonstrating compliance with the retirement obligations and prohibition on replenishment in Condition 27 c. i. must be submitted to the DEQ within 90 days of the end of each calendar year (i.e. 30 days after the compliance deadline under the Acid Rain Program). These reports shall continue to be required for the life of the facility or until all obligations under this permit condition are satisfied with permanent emission reductions. To the extent the permittee accepts federally enforceable limitations on the Total Annual NO<sub>x</sub> Emissions in the future, the permittee will only be required to retire Eligible SO<sub>2</sub> Allowances or ERCs such that the sum of the retired allowances at a plant multiplied by that plant's Offset Ratio is equal to the new Total Annual NO<sub>x</sub> Emissions minus 260.5. All reports shall be sent to the DEQ, and

Superintendent  
Shenandoah National Park  
3655 U.S. Highway 211 East  
Luray, VA 22835

At any time, but after at least 30 days notice to the public and the Federal Land Manager, the DEQ, in consultation with the Federal Land Manager, may approve an alternative mitigation plan proposed by the permittee in lieu of this condition. At a minimum, such a plan shall result in actual sulfur dioxide or nitrogen oxides reductions from an existing

stationary source(s) within one of the areas identified in Attachments A and B of at least the Allowable Annual NO<sub>x</sub> Emissions multiplied by the corresponding Offset Ratio. Such reductions must be practically enforceable, permanent, and quantifiable, and must be created after January 19, 2010. The reductions must result in the same or greater reduction in impacts to aquatic resources and visibility to the SNP as the retirements of allowances outlined in paragraphs a through c of this condition.  
(9 VAC 5-170-160, 9 VAC 5-80-1705, and 9 VAC 5-80-1985 E)

**OPERATING/EMISSION LIMITATIONS – EMERGENCY UNITS (EG-1, FWP-1 & EPG-1)**

28. **Fuel** – The approved fuel for the emergency generator (EG-1) and the emergency fire water pump (FWP-1) is distillate fuel oil with a maximum sulfur content per shipment of 0.0015 percent by weight. A change in the fuel may require a permit to modify and operate.  
(9 VAC 5-50-280, 9 VAC 5-80-1705, 9 VAC 5-80-1715, 40 CFR 60.4207(b), and 40 CFR 80.510(b))
29. **Fuel** – The approved fuel for the emergency propane generator (EPG-1) is liquefied petroleum gas (LPG). A change in the fuel may require a permit to modify and operate.  
(9 VAC 5-50-280, 9 VAC 5-80-1705, and 9 VAC 5-80-1715)
30. **Operating Hours: Emergency Fire Water Pump** - The emergency fire water pump (FWP-1) shall not operate more than 500 hours per year, calculated monthly as the sum of each consecutive 12-month period. Compliance for the consecutive 12-month period shall be demonstrated monthly by adding the total for the most recently completed calendar month to the individual monthly totals for the preceding 11 months. The emergency fire water pump (FWP-1) shall not be operated for testing and/or maintenance during startup of any of the combined-cycle units (T-1, T-2, or T-3), as defined by Condition 20. The periodic testing of the emergency fire water pump shall be restricted to only the daylight hours between 9:00 AM and 5:00 PM eastern standard time (EST).  
(9 VAC 5-80-1715)
31. **Operating Hours: Emergency Generator** - The emergency generator (EG-1) shall not operate more than 500 hours per year, calculated monthly as the sum of each consecutive 12-month period. Compliance for the consecutive 12-month period shall be demonstrated monthly by adding the total for the most recently completed calendar month to the individual monthly totals for the preceding 11 months. The emergency generator (EG-1) shall not be operated for testing and/or maintenance during startup of any of the combined-cycle units (T-1, T-2, or T-3), as defined by Condition 20. The periodic testing of the emergency generator shall be restricted to only the daylight hours between 9:00 AM and 5:00 PM eastern standard time (EST).  
(9 VAC 5-80-1715)

32. **Operating Hours: Emergency Propane Generator** - The emergency propane generator (EPG-1) shall not operate more than 500 hours per year, calculated monthly as the sum of each consecutive 12-month period. Compliance for the consecutive 12-month period shall be demonstrated monthly by adding the total for the most recently completed calendar month to the individual monthly totals for the preceding 11 months. The emergency generator (EPG-1) shall not be operated for testing and/or maintenance during startup of any of the combined-cycle units (T-1, T-2, or T-3), as defined by Condition 20. The periodic testing of the emergency generator shall be restricted to only the daylight hours between 9:00 AM and 5:00 PM eastern standard time (EST). (9 VAC 5-80-1705 and 9 VAC 5-80-1715)

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

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

Fuel sampling and analysis, independent of that used for certification, as may be periodically required or conducted by DEQ may be used to determine compliance with the fuel specifications stipulated in Condition 28, as applicable. Exceedance of these specifications may be considered credible evidence of the exceedance of emission limits. (9 VAC 5-80-1705)

34. **Emergency Generator and Emergency Fire Water Pump Operation** - The operation of the emergency generator (EG-1), the emergency fire water pump (FWP-1), and the emergency propane generator (EPG-1) is limited to emergency situations. Emergency situations include emergency generator use to produce power for critical networks or equipment (including power supplied to portions of a facility) when electric power from the local utility (or the normal power source, if the facility runs on its own power production) is interrupted and emergency engine use to pump water in the case of fire or flood, etc. The emergency generator (EG-1), the emergency fire water pump (FWP-1), and the emergency propane generator (EPG-1) may be operated for the purpose of maintenance checks and readiness testing, provided that the tests are recommended by federal, state, or local government, the manufacturer, the vendor, or the insurance company associated with the engine. Maintenance checks and readiness testing of such units is limited to 50 hours per year for each unit. (9 VAC 5-80-1705 and 40 CFR 60.4211(e), 40 CFR 60.4219, and 40 CFR 60.4243(d))

35. **Emission Limits** - Emissions from the operation of the emergency fire water pump (FWP-1) shall not exceed the limits specified below:

Nitrogen Oxides (as NO <sub>2</sub> )	2.32 lbs/hr	0.58 tons/yr
Carbon Monoxide	0.58 lbs/hr	0.15 tons/yr
Volatile Organic Compounds	0.08 lbs/hr	0.02 tons/yr

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. Compliance with the annual emission limits may be determined as stated in Condition 30.  
(9 VAC 5-50-280, 9 VAC 5-80-1705, and 9 VAC 5-80-1715)

36. **Emission Limits** - Emissions from the operation of the emergency generator (EG-1) shall not exceed the limits specified below:

Nitrogen Oxides (as NO <sub>2</sub> )	23.49 lbs/hr	5.87 tons/yr
Carbon Monoxide	12.73 lbs/hr	3.18 tons/yr
Volatile Organic Compounds	23.49 lbs/hr	5.87 tons/yr

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. Compliance with the annual emission limits may be determined as stated in Condition 31.  
(9 VAC 5-50-280, 9 VAC 5-80-1705, and 9 VAC 5-80-1715)

37. **Emission Limits** - Emissions from the operation of the emergency propane generator (EPG-1) shall not exceed the limits specified below:

Carbon Monoxide	21.2 lbs/hr	5.3 tons/yr
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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. Compliance with the annual emission limits may be determined as stated in Condition 32.  
(9 VAC 5-50-280, 9 VAC 5-80-1705, and 9 VAC 5-80-1715)

38. **Emission Limits** - Emissions from the operation of the emergency fire water pump (FWP-1) shall not exceed the limits specified below:

	<u>NSPS Standard</u>
Particulate Matter (PM)	0.2 g/kW-hr
Non-Methane Hydrocarbons (NMHC) + Nitrogen Oxides	4.0 g/kW-hr
Carbon Monoxide	3.5 g/kW-hr

Compliance with these emission limits may be determined by keeping records of engine manufacture data indicating compliance with these emission limits.

(9 VAC 5-80-1705, 40 CFR 60.4205 (c), and 40 CFR 60.4211(c))

39. **Emission Limits** - Emissions from the operation of the emergency generator (EG-1) shall not exceed the limits specified below:

	<u>NSPS Standard</u>
Particulate Matter (PM)	0.2 g/kW-hr
Non-Methane Hydrocarbons (NMHC) + Nitrogen Oxides	6.4 g/kW-hr
Carbon Monoxide	3.5 g/kW-hr

Compliance with these emission limits may be determined by keeping records of engine manufacture data indicating compliance with these emission limits.

(9 VAC 5-80-1705, 40 CFR 60.4205 (b), and 40 CFR 60.4211(c))

40. **Emission Limits** - Emissions from the operation of the emergency propane generator (EPG-1) shall not exceed the limits specified below:

	<u>NSPS Standard</u>
Non-Methane Hydrocarbons (NMHC) + Nitrogen Oxides	13.4 g/kW-hr
Carbon Monoxide	519 g/kW-hr

Compliance with these emission limits may be determined by keeping records of engine manufacture data indicating compliance with these emission limits.

(9 VAC 5-80-1705, 40 CFR 60.4231 (c), and 40 CFR 60.4233 (c))

41. **Visible Emission Limit** - Visible emissions from the emergency generator (EG-1), the emergency fire water pump (FWP-1), and the emergency propane generator (EPG-1) shall not exceed 10 percent opacity as determined by EPA Method 9 (reference 40 CFR

60, Appendix A). This condition applies at all times except during startup, shutdown, and malfunction.

(9 VAC 5-50-80 and 9 VAC 5-80-1705)

42. **Requirements by Reference** - Except where this permit is more restrictive, the emergency generator (EG-1) and the emergency fire water pump (FWP-1) as described in Condition 1 shall be operated in compliance with the requirements outlined in 40 CFR Part 60, Subpart IIII and 40 CFR Part 63, Subpart ZZZZ.  
(9 VAC 5-50-400, 9 VAC 5-50-410, 9 VAC 5-80-1705, 9 VAC 5-60-90, 9 VAC 5-60-100, 40 CFR 60 Subpart IIII, and 40 CFR 63 Subpart ZZZZ)
43. **Requirements by Reference** - Except where this permit is more restrictive, the emergency propane generator (EPG-1) as described in Condition 1 shall be operated in compliance with the requirements outlined in 40 CFR Part 60, Subpart JJJJ and 40 CFR Part 63, Subpart ZZZZ.  
(9 VAC 5-50-400, 9 VAC 5-50-410, 9 VAC 5-80-1705, 9 VAC 5-60-90, 9 VAC 5-60-100, 40 CFR 60 Subpart JJJJ, and 40 CFR 63 Subpart ZZZZ)

**OPERATING/EMISSION LIMITATIONS – AUXILIARY BOILER (B-1) and FUEL GAS HEATER (GH-1)**

44. **Fuel** – The approved fuel for the auxiliary boiler (B-1) and the fuel gas heater (GH-1) is pipeline natural gas. The pipeline natural gas shall not exceed a sulfur content of 0.00096 percent by weight (i.e., 0.32 grains per 100 dry standard cubic feet) on a 12-month rolling average basis, and a sulfur content of 0.0015 percent by weight (i.e., 0.50 grains per 100 dry standard cubic feet), at any time. A standard cubic foot of gas is defined as a cubic foot of gas at standard conditions (68°F and 29.92 in Hg) as specified in 40 CFR 72.2. A change in the fuel may require a permit to modify and operate.  
(9 VAC 5-50-280 and 9 VAC 5-80-1705)
45. **Fuel Throughput** – The auxiliary boiler (B-1) shall consume no more than 408.8 million cubic feet of natural gas per year, calculated monthly as the sum of each consecutive 12-month period. Compliance for the consecutive 12-month period shall be demonstrated monthly by adding the total for the most recently completed calendar month to the individual monthly totals for the preceding 11 months.  
(9 VAC 5-80-1705)
46. **Fuel Throughput** – The fuel gas heater (GH-1) shall consume no more than 206.1 million cubic feet of natural gas per year, calculated monthly as the sum of each consecutive 12-month period. Compliance for the consecutive 12-month period shall be demonstrated monthly by adding the total for the most recently completed calendar month to the individual monthly totals for the preceding 11 months.  
(9 VAC 5-80-1705)

47. **Emission Limits** - Emissions from the operation of the auxiliary boiler (B-1) shall not exceed the limits specified below:

Nitrogen Oxides (as NO <sub>2</sub> )	0.011 lb/MMBtu	2.29 tons/yr
Carbon Monoxide	0.037 lb/MMBtu	7.71 tons/yr
PM-10/PM-2.5	0.24 lbs/hr	1.04 tons/yr
Volatile Organic Compounds	0.26 lbs/hr	1.13 tons/yr

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. Compliance with the annual emission limits may be determined as stated in Condition numbers 44 and 45.  
(9 VAC 5-50-280 and 9 VAC 5-80-1705)

48. **Emission Limits** - Emissions from the operation of the fuel gas heater (GH-1) shall not exceed the limits specified below:

Nitrogen Oxides (as NO <sub>2</sub> )	0.011 lb/MMBtu	1.16 tons/yr
Carbon Monoxide	0.037 lb/MMBtu	3.89 tons/yr
PM-10/PM-2.5	0.18 lbs/hr	0.79 tons/yr
Volatile Organic Compounds	0.13 lbs/hr	0.57 tons/yr

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. Compliance with the annual emission limits may be determined as stated in Condition numbers 44 and 46.  
(9 VAC 5-50-280 and 9 VAC 5-80-1705)

49. **Visible Emission Limit** - Visible emissions from both the auxiliary boiler (B-1) and the fuel gas heater (GH-1) stacks shall not exceed 10 percent opacity as determined by EPA Method 9 (reference 40 CFR 60, Appendix A).  
(9 VAC 5-50-280 and 9 VAC 5-80-1705)

50. **Requirements by Reference** - Except where this permit is more restrictive, the auxiliary boiler (B-1) and the fuel gas heater (GH-1) as described in Condition 1 shall be operated in compliance with the requirements of 40 CFR 60, Subpart Dc.  
(9 VAC 5-50-400, 9 VAC 5-50-410, 9 VAC 5-80-1705, and 40 CFR 60 Subpart Dc)

**CONTINUOUS EMISSION MONITORING SYSTEMS (CEMS)**

51. **CEMS - Continuous Emission Monitoring Systems (CEMS)** shall be installed to measure and record the emissions of NO<sub>x</sub> (measured as NO<sub>2</sub>) and CO, in ppmvd corrected to 15 percent O<sub>2</sub>, from each combined-cycle unit (T-1, T-2, & T-3). CEMS for NO<sub>x</sub> shall meet the design specifications of 40 CFR 75 whereas CEMS for CO shall be installed, evaluated, and operated according to the “Monitoring Requirements” in 40 CFR 60.13. The CEMS shall also measure and record the oxygen content of the flue gas at each location where NO<sub>x</sub> and CO emissions are monitored and measure heat input and power output. A CEMS or alternative method as allowed by 40 CFR 75 shall be used to measure sulfur dioxide emissions to comply with the requirements of 40 CFR 75 (acid rain program monitoring). For compliance with the emission limits contained in Condition 18, NO<sub>x</sub> data and CO data shall each be reduced to 1-hour block averages. The relative accuracy test audit (RATA) of the NO<sub>x</sub> CEMS shall be performed on a lb/MMBtu basis.  
(9 VAC 5-50-40, 9 VAC 5-80-420, 40 CFR 75, 40 CFR 60.13, and 40 CFR 60.4340(b))
52. **CEMS Performance Evaluations** - Performance evaluations of the NO<sub>x</sub> and, if applicable, sulfur dioxide continuous monitoring systems shall be conducted in accordance with 40 CFR 75, Appendix A, and shall take place during the performance tests under 9 VAC 5-50-30 or within 30 days thereafter. One copy of the performance evaluation report shall be submitted to the DEQ, within 45 days of the evaluation. The CEMS 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 the CEMS performance, and subsequent notifications shall be submitted to the DEQ.  
(9 VAC 5-50-40, 40 CFR 75, and 40 CFR 60.4345(a))
53. **CEMS Quality Control Program** - A CEMS quality control program which is equivalent to the requirements of 40 CFR 60.13 and 40 CFR 60, Appendix F shall be implemented for all continuous monitoring systems.  
(9 VAC 5-50-40, 40 CFR 60.13, 40 CFR 60.4345(e), and 40 CFR 60)
54. **Excess Emissions and Monitor Downtime for NO<sub>x</sub> CEMS** - For the purpose of this permit, periods of excess emissions and monitor downtime that must be reported under Condition 56 are defined as follows:
  - a. An excess emission is any unit operating period in which the one-hour average NO<sub>x</sub> emission rate exceeds the applicable emission limit in Condition 18; and
  - b. A period of monitor downtime is any unit operating hour in which the data for any of the following parameters are either missing or invalid: NO<sub>x</sub> concentration, O<sub>2</sub> concentration, fuel flow rate, steam flow rate, steam temperature, steam pressure, or megawatts. The steam flow rate, steam temperature, and steam

pressure are only required if the permittee uses this information for compliance purposes.

(9 VAC 5-50-50, 9 VAC 5-50-410, 40 CFR 60.7(c), and 40 CFR 60.4380)

55. **Excess Emissions and Monitor Downtime for SO<sub>2</sub> CEMS** - Excess emissions and monitoring downtime are defined, for the purpose of this permit, as follows:

- a. An excess emission occurs each unit operating hour included in the period beginning on the date and hour of any sample for which the sulfur content of the fuel being fired in the combustion turbine exceeds the applicable limit and ending on the date and hour that a subsequent sample is taken that demonstrates compliance with the sulfur limit; and
- b. A period of monitor downtime begins when a required sample is not taken by its due date. A period of monitor downtime also begins on the date and hour of a required sample, if invalid results are obtained. The period of monitor downtime ends on the date and hour of the next valid sample.

(9 VAC 5-50-50, 9 VAC 5-50-410, 40 CFR 60.7(c), and 40 CFR 60.4385)

56. **Reports for CEMS** - The permittee shall furnish written reports to the DEQ of excess emissions from any process monitored by a CEMS on a quarterly basis, postmarked no later than the 30th day following the end of 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, or 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;
- 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; and

- e. Excess emission reports for sulfur dioxide and nitrogen dioxide as required in 40 CFR 60.4395.

(9 VAC 5-50-50, 9 VAC 5-50-410, 40 CFR 60.7(c), 40 CFR 60.4375(a), and 40 CFR 60.4395)

57. **Excess Emissions for CEMS** – For purposes of identifying excess emissions:

- a. All CEMS data must be reduced to hourly averages as specified in 40 CFR 60.13(h);
- b. For each operating hour in which a valid hourly average, as described in 40 CFR 60.4345(b), is obtained for both NO<sub>x</sub> and diluent monitors, the data acquisition and handling system must calculate and record the hourly NO<sub>x</sub> emission rate in units of ppm, using the appropriate equation in 40 CFR Part 60, Appendix A, Method 19. For any hour in which the hourly average O<sub>2</sub> concentration exceeds 19.0 percent O<sub>2</sub>, a diluent cap value of 19.0 percent O<sub>2</sub> may be used in the emission calculations;
- c. Correction of measured NO<sub>x</sub> concentrations to 15 percent O<sub>2</sub> is not allowed; and
- d. Only quality assured data from the CEMS shall be used to identify excess emissions. Periods where the missing data substitution procedures in 40 CFR 75, Subpart D are applied are to be reported as monitor downtime in the excess emissions and monitoring performance report required under 40 CFR 60.7(c).

(9 VAC 5-50-50, 9 VAC 5-50-410, 40 CFR 60.7(c), and 40 CFR 60.4350)

**RECORDS**

- 58. **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 arranged with the DEQ. The records shall include, but are not limited to:
  - a. Annual throughput of natural gas to each CT (CT-1, CT-2, & CT-3), calculated monthly as the sum of each consecutive 12-month period.
  - b. Annual throughput of natural gas to each duct burner (DB1, DB2, & DB3) calculated monthly as the sum of each consecutive 12-month period.
  - c. Annual hours of operation of each duct burner (DB1, DB2, & DB3) calculated monthly as the sum of each consecutive 12-month period.

- d. Time, date and duration of each startup, shutdown, and malfunction period for each combined-cycle power generating unit (T-1, T-2, & T-3).
- e. Annual number of startup and shutdown occurrences for each combined-cycle power generating unit (T-1, T-2, & T-3), calculated monthly as the sum of each consecutive 12-month period.
- f. Records to verify sulfur content of pipeline natural gas as required in Conditions 15, 17, and 44.
- g. Continuous records of heat input for each combined-cycle power generating unit (T-1, T-2, & T-3).
- h. Continuous records of power output from combined-cycle power generating units (T-1, T-2, & T-3) and the steam turbine generator(s).
- i. Emissions calculations sufficient to verify compliance with the annual emission limitations in Conditions 19, 35, 36, and 37, calculated monthly as the sum of each consecutive 12-month period. Calculation methods shall be approved by the DEQ.
- j. Continuous monitoring system emissions data, calibrations and calibration checks, percent operating time, and excess emissions.
- k. Annual hours of operation for the emergency fire water pump (FWP-1), the emergency generator (EG-1), and the emergency propane generator (EPG-1) for emergency purposes, calculated monthly as the sum of each consecutive 12-month period.
- l. Records of time, date, and duration of operation for the emergency fire water pump (FWP-1), the emergency generator (EG-1), and the emergency propane generator (EPG-1) for maintenance checks and readiness testing and the operational status of each combined-cycle unit (T-1, T-2, and T-3) during those maintenance checks and readiness testing.
- m. Annual hours of operation for the emergency fire water pump (FWP-1), the emergency generator (EG-1), and the emergency propane generator (EPG-1) for maintenance checks and readiness testing, calculated monthly as the sum of each consecutive 12-month period.
- n. All fuel supplier certifications for the emergency units (FWP-1 & EG-1).
- o. Records of engine manufacturer data as required by Conditions 38, 39, and 40.

- p. Operation and control device monitoring records for each SCR system and each oxidation catalyst.
- q. Records for each combined-cycle unit (T-1, T-2, and T-3) showing steady-state vs. non-steady-state operation during a given hour, the ammonia slip monitoring plan, and the ammonia slip monitoring results as required by Condition 24.
- r. Scheduled and unscheduled maintenance and operator training as required by Conditions 13 and 79.
- s. Records of malfunctions as required by Condition 80.
- t. Results of all stack tests, visible emission evaluations, visible emission inspection results, and performance evaluations.
- u. Monthly and annual throughput of natural gas to the auxiliary boiler (B-1) and the fuel gas heater (GH-1) calculated monthly as the sum of each consecutive 12-month period.
- v. Records of good combustion practices for the auxiliary boiler (B-1) and the fuel gas heater (GH-1) as required by Condition 13.
- w. Emissions calculations sufficient to verify compliance with the annual emission limitations in Conditions 47 and 48, calculated monthly as the sum of each consecutive 12-month period. Calculation methods shall be approved by the DEQ.
- x. Records related to NO<sub>x</sub> offsets as required by Condition 27 d.
- y. Records related to the CEMS quality control program as required by Condition 53.

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)

## **TESTING**

59. **Testing/Monitoring Ports** - The permitted facility shall be constructed so as to allow for emissions testing upon reasonable notice at any time, using appropriate methods. This includes constructing the facility such that volumetric flow rates and pollutant emission rates can be accurately determined by applicable test methods and providing stack or duct that is free from cyclonic flow. Test ports shall be provided in accordance with the applicable performance specification (reference 40 CFR Part 60, Appendix B).  
(9 VAC 5-50-30 F)

60. **Initial Performance Test – Combustion Turbines** - Initial performance tests shall be conducted on each combined-cycle unit (T-1, T-2, & T-3) for the following pollutants using the specified methods:

Pollutant	Test Method
Carbon Monoxide (CO)	40 CFR 60, Appendix A, Method 10
Volatile organic compounds (VOC)	40 CFR 60, Appendix A, Method 25A
PM-10 (All particulate matter shall be considered PM-10 and shall include condensables)	40 CFR 60, Appendix A, Methods 5 or 17 and 19, and 40 CFR 51, Appendix M, Method 202

Tests shall be conducted to determine compliance with the emission limits contained in Condition 18. The tests shall be performed, reported, and demonstrate compliance within 60 days after achieving the maximum production rate at which the unit will be operated but in no event later than 180 days after start-up of the permitted unit. CO, VOC and PM-10 emissions shall be determined at each of the operating conditions indicated for each pollutant contained in Condition 18. 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 arranged with the DEQ. The permittee shall submit a test protocol at least 30 days prior to testing. One copy of the test results shall be submitted to the DEQ, within 45 days after test completion and shall conform to the test report format enclosed with this permit.

The permittee shall perform an initial stack test for PM-2.5 in the time frames as required for testing the other pollutants in this condition if a test method for PM-2.5 has received final approval by the USEPA or DEQ at that time. If a test method for PM-2.5 has not received final approval by the USEPA or DEQ at the time initial testing as required in this condition is to be conducted, the permittee shall perform initial stack testing for PM-2.5 within 60 days of final approval of a test method by USEPA or DEQ, or as required by the DEQ. This permit limits for PM-2.5 may be changed in accordance with 9 VAC 5-80-1925, to reduce the emission limit based on results from stack testing as required in this condition.

(9 VAC 5-50-30 and 9 VAC 5-80-1705)

61. **Initial Performance Test – Combustion Turbines** – Initial performance tests shall be conducted on each combined-cycle unit (T-1, T-2, & T-3) for oxides of nitrogen (as NO<sub>2</sub>) to determine compliance with the limits contained in Condition 18 as follows:

- a. 40 CFR 60, Appendix A, Methods 7E or 20 shall be used to measure the NO<sub>x</sub> concentration (in ppm). Sampling traverse points for NO<sub>x</sub> and (if applicable) diluent gas are to be selected following EPA Method 20 or EPA Method 1 (non-particulate procedures), and sampled for equal time intervals. The sampling must be performed with a traversing single-hole probe, or, if feasible, with a stationary

multi-hole probe that samples each of the points sequentially. Alternatively, a multi-hole probe designed and documented to sample equal volumes from each hole may be used to sample simultaneously at the required points.

- b. Notwithstanding Condition 61.a. above, the permittee may test at fewer points than are specified in Method 1 or Method 20 if the following conditions are met: The permittee may perform a stratification test for NO<sub>x</sub> and diluent pursuant to the procedures specified in 40 CFR 75, Appendix A, Section 6.5.6.1(a) through (e). Once the stratification sampling is completed, the permittee may use the following alternative sample point selection criteria for the performance test:
- i. If each of the individual traverse point NO<sub>x</sub> concentrations is within  $\pm 10$  percent of the mean concentration for all traverse points, or the individual traverse point diluent concentrations differs by no more than  $\pm 5$ ppm or  $\pm 0.5$  percent O<sub>2</sub> from the mean for all traverse points, three points (located either 16.7, 50.0 and 83.3 percent of the way across the stack or duct, or, for circular stacks or ducts greater than 2.4 meters (7.8 feet) in diameter, at 0.4, 1.2, and 2.0 meters from the wall) may be used. The three points must be located along the measurement line that exhibited the highest average NO<sub>x</sub> concentration during the stratification test; or
  - ii. The permittee may sample at a single point, located at least 1 meter from the stack wall or at the stack centroid if each of the individual traverse point NO<sub>x</sub> concentrations is within  $\pm 2.5$  percent of the mean concentration for all traverse points, or the individual traverse point diluent concentrations differs by no more than  $\pm 1$ ppm or  $\pm 0.15$  percent O<sub>2</sub> from the mean for all traverse points.
- c. The performance test must be done at any load condition within plus or minus 25 percent of 100 percent of peak load. Testing may be performed at the highest achievable load point, if at least 75 percent of peak load cannot be achieved in practice. Three separate test runs for each performance test must be conducted. The minimum time per run is 20 minutes.
- d. The permittee must measure the total NO<sub>x</sub> emissions after the duct burner rather than directly after the turbine. The duct burner must be in operation during the performance test.
- e. Compliance with the applicable emission limit in Condition 18 must be demonstrated at each tested load level. Compliance is achieved if the three-run arithmetic average NO<sub>x</sub> emission rate at each tested level meets the applicable emission limit in Condition 18.

- f. The performance evaluation of the CEMS may either be conducted separately or (as described in 40 CFR 60.4405) as part of the initial performance test of the affected unit.
- g. The ambient temperature must be greater than 0°F during the performance test.
- h. The permittee may use the following as alternatives to the reference methods and procedures specified in this condition:
  - i. Perform a minimum of nine RATA reference method runs, with a minimum time per run of 21 minutes, at a single load level, within plus or minus 25 percent of 100 percent of peak load. The ambient temperature must be greater than 0°F during the RATA runs.
  - ii. Compliance with the applicable emission limit in Condition 18 is achieved if the arithmetic average of all of the NO<sub>x</sub> emission rates for the RATA runs, expressed in units of ppm, does not exceed the emission limit.

The tests shall be performed, reported, and demonstrate compliance within 60 days after achieving the maximum production rate at which the unit will be operated but in no event later than 180 days after start-up of the permitted unit. 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 arranged with the DEQ. The permittee shall submit a test protocol at least 30 days prior to testing. One copy of the test results shall be submitted to the DEQ, within 45 days after test completion but no later than 180 days after startup of the permitted unit and shall conform to the test report format enclosed with this permit.

(9 VAC 5-50-30, 9 VAC 5-80-1705, 9 VAC 5-50-410, 40 CFR 60.8, 40 CFR 60.4405, and 40 CFR 60.4400)

62. **Initial Performance Test – Combustion Turbines** – Initial performance tests shall be conducted on each combined-cycle unit (T-1, T-2, & T-3) for sulfur dioxide (SO<sub>2</sub>) to determine compliance with the limits contained in Condition 74. The permittee may use one of the following three methods (a., b. or c. below) to conduct the performance test:
- a. If the permittee chooses to periodically determine the sulfur content of the fuel combusted in the turbine, a representative fuel sample would be collected following ASTM D5287 (incorporated by reference, see 40 CFR 60.17) for natural gas. The fuel analyses may be performed either by the permittee, a service contractor retained by the permittee, the fuel vendor, or any other qualified agency. The samples for the total sulfur content of the fuel shall be analyzed using ASTM D1072, or alternatively D3246, D4084, D4468, D4810, D6228, D6667, or Gas Processors Association Standard 2377 (all of which are incorporated by reference, see 40 CFR 60.17).

- b. 40 CFR 60, Appendix A, Methods 6, 6C, 8, or 20 shall be used to measure the SO<sub>2</sub> concentration (in ppm). In addition, the American Society of Mechanical Engineers (ASME) standard, ASME PTC 9–10–1981–Part 10, “Flue and Exhaust Gas Analyses,” manual methods for sulfur dioxide (incorporated by reference, see 40 CFR 60.17) can be used instead of EPA Methods 6 or 20.
- c. 40 CFR 60, Appendix A, Methods 6, 6C, or 8 and 3A, or 20 shall be used to measure the SO<sub>2</sub> and diluent gas concentrations. In addition, the permittee may use the manual methods for sulfur dioxide ASME PTC 19–10–1981–Part 10 (incorporated by reference, see 40 CFR 60.17).

The tests shall be performed, reported, and demonstrate compliance within 60 days after achieving the maximum production rate at which the unit will be operated but in no event later than 180 days after start-up of the permitted unit. 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 arranged with the DEQ. The permittee shall submit a test protocol at least 30 days prior to testing. One copy of the test results shall be submitted to the DEQ, within 45 days after test completion but no later than 180 days after startup of the permitted facility and shall conform to the test report format enclosed with this permit.

(9 VAC 5-50-30, 9 VAC 5-80-1705, 9 VAC 5-50-410, 40 CFR 60.8, and 40 CFR 60.4415)

- 63. **Initial Performance Test – Auxiliary Boiler and Fuel Gas Heater** – Initial performance tests shall be conducted on the auxiliary boiler (B-1) and the fuel gas heater (GH-1) for NO<sub>x</sub> and CO to determine compliance with the emission limits contained in Conditions 47 and 48. The tests shall be performed, reported, and demonstrate compliance within 60 days after the boiler or fuel gas heater, as applicable, reach the maximum load level at which the unit will be operated but in no event later than 180 days after its initial startup. 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 arranged with the DEQ. The permittee shall submit a test protocol at least 30 days prior to testing. One copy of the test results shall be submitted to the DEQ, within 45 days after test completion but no later than 180 days after startup of the permitted unit and shall conform to the test report format enclosed with this permit.  
(9 VAC 5-50-30 and 9 VAC 5-80-1705)
- 64. **Compliance Demonstration – Duct Burners** – The permittee shall determine compliance with the NO<sub>x</sub> emission limits in Condition 22 by complying with the NO<sub>x</sub> emission limits contained in Condition 18.  
(9 VAC 5-50-30, 9 VAC 5-50-410, and 40 CFR 60.4400 (b)(2))

65. **Visible Emissions Evaluation – Combustion Turbines** - 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 each combined-cycle generating unit stack. Each test shall consist of 30 sets of 24 consecutive observations (at 15 second intervals) to yield a six-minute average. At least one VEE shall be conducted for each of the operating conditions for which emissions tests are required for the stack tests contained in Condition 60. The details of the tests are to be arranged with the DEQ. 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 unit will be operated but in no event later than 180 days after start-up of the permitted unit.

Should conditions prevent concurrent opacity observations, the DEQ 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. One copy of the test result shall be submitted to the DEQ, within 45 days after test completion but no later than 180 days after startup of the permitted facility and shall conform to the test report format enclosed with this permit. (9 VAC 5-50-30 and 9 VAC 5-80-1705)

66. **Visible Emissions Evaluation - Auxiliary Boiler and Fuel Gas Heater** - Concurrently with the initial performance tests in Condition 63, Visible Emission Evaluations (VEE) in accordance with 40 CFR Part 60, Appendix A, Method 9, shall be conducted by the permittee on the auxiliary boiler (B-1) and fuel gas heater (GH-1). Each test shall consist of 10 sets of 24 consecutive observations (at 15 second intervals) to yield a six-minute average. The details of the tests are to be arranged with the DEQ. The permittee shall submit a test protocol at least 30 days prior to testing. Each evaluation shall be performed, reported, and demonstrate compliance within 60 days after achieving the maximum production rate at which the boiler or fuel gas heater, as applicable, will be operated but in no event later than 180 days after start-up of the unit.

Should conditions prevent concurrent opacity observations, the DEQ, 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. One copy of the test result shall be submitted to the DEQ, within 45 days after test completion but no later than 180 days after startup of the permitted facility and shall conform to the test report format enclosed with this permit. (9 VAC 5-50-30 and 9 VAC 5-80-1705)

### **CONTINUING COMPLIANCE DETERMINATION**

67. **Annual Performance Test – Combustion Turbines** – Annual performance tests shall be conducted on each combined-cycle unit (T-1, T-2, & T-3) for sulfur dioxide (SO<sub>2</sub>) to determine compliance with the limits contained in Condition 74. The permittee may use one of the following three methods (a., b. or c. below) to conduct the performance test:

- a. If the permittee chooses to periodically determine the sulfur content of the fuel combusted in the turbine, a representative fuel sample would be collected following ASTM D5287 (incorporated by reference, see 40 CFR 60.17) for natural gas. The fuel analyses may be performed either by the permittee, a service contractor retained by the permittee, the fuel vendor, or any other qualified agency. The samples for the total sulfur content of the fuel shall be analyzed using ASTM D1072, or alternatively D3246, D4084, D4468, D4810, D6228, D6667, or Gas Processors Association Standard 2377 (all of which are incorporated by reference, see 40 CFR 60.17).
- b. 40 CFR 60, Appendix A, Methods 6, 6C, 8, or 20 shall be used to measure the SO<sub>2</sub> concentration (in parts per million (ppm)). In addition, the American Society of Mechanical Engineers (ASME) standard, ASME PTC 9–10–1981–Part 10, “Flue and Exhaust Gas Analyses,” manual methods for sulfur dioxide (incorporated by reference, see 40 CFR 60.17) can be used instead of EPA Methods 6 or 20.
- c. 40 CFR 60, Appendix A, Methods 6, 6C, or 8 and 3A, or 20 shall be used to measure the SO<sub>2</sub> and diluent gas concentrations. In addition, the permittee may use the manual methods for sulfur dioxide ASME PTC 19–10–1981–Part 10 (incorporated by reference, see 40 CFR 60.17).

The tests shall be conducted on an annual basis (no more than 14 calendar months following the previous performance test). 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 arranged with the DEQ. The permittee shall submit a test protocol at least 30 days prior to testing. One copy of the test results shall be submitted to the DEQ, 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 5-80-1705, 9 VAC 5-50-410, and 40 CFR 60.4415(a))

68. **Stack Tests** - Upon request by the DEQ, the permittee shall conduct additional performance tests to demonstrate compliance with the emission limits contained in this permit. The details of the tests shall be arranged with the DEQ.  
(9 VAC 5-50-30 G)
69. **Visible Emissions Evaluation – Combustion Turbines** – The permittee shall conduct visible emission inspections on each combined-cycle generating unit (T-1, T-2, & T-3) stack in accordance with the following procedures and frequencies:
  - a. At a minimum of once per week, the permittee shall determine the presence of visible emissions. If during the inspection, visible emissions are observed, a visible emission evaluation (VEE) shall be conducted in accordance with 40 CFR

60, Appendix A, EPA Method 9. The VEE shall be conducted for a minimum of six minutes. If any of the observations exceed the applicable standard, the VEE shall be conducted for a total of 60 minutes.

- b. If visible emissions inspections conducted during 12 consecutive weeks show no visible emissions for a particular unit stack, the permittee may reduce the monitoring frequency to once per month for that unit stack. Anytime the monthly visible emissions inspections show visible emissions, or when requested by DEQ, the monitoring frequency shall be increased to once per week for that stack.
- c. All visible emission inspections, observations and VEE results shall be recorded.

(9 VAC 5-50-20)

70. **Visible Emissions Evaluation – Auxiliary Boiler and Fuel Gas Heater** – The permittee shall conduct visible emission inspections on the auxiliary boiler (B-1) and the fuel gas heater (GH-1) stacks in accordance with the following procedures and frequencies:

- a. At a minimum of once per month, the permittee shall determine the presence of visible emissions. If during the inspection, visible emissions are observed, a visible emission evaluation (VEE) shall be conducted in accordance with 40 CFR 60, Appendix A, EPA Method 9. The VEE shall be conducted for a minimum of six minutes. If any of the observations exceed 10 percent opacity, the VEE shall be conducted for a total of 60 minutes.
- b. All visible emissions inspections shall be performed when the boiler or fuel gas heater (as applicable) is operating.
- c. If visible emissions inspections conducted during 12 consecutive months show no visible emissions, the permittee may reduce the monitoring frequency to once per quarter. Anytime the quarterly visible emissions inspections show visible emissions, or when requested by DEQ, the monitoring frequency shall be increased to once per month.
- d. All visible emission inspections, observations and VEE results shall be recorded.

(9 VAC 5-50-20)

## **NOTIFICATIONS**

71. **Initial Notifications** - The permittee shall furnish written notification of the following to the DEQ:

- a. The actual date on which construction of the electric power generation facility commenced, within 30 days after such date.

- b. The anticipated start-up date of the electric power generation facility, postmarked not more than 60 days nor less than 30 days prior to such date.
- c. The actual start-up date of the electric power generation facility, within 15 days after such date.
- d. The actual date on which construction of the auxiliary boiler commenced, within 30 days after such date.
- e. The actual start-up date of the auxiliary boiler, within 15 days after such date.
- f. The actual date on which construction of the fuel gas heater commenced, within 30 days after such date.
- g. The actual start-up date of the fuel gas heater, within 15 days after such date.
- h. The anticipated date of CEMS performance evaluations, postmarked not less than 30 days prior to such date.
- i. The anticipated date of performance tests of the electric power generation facility, postmarked at least 30 days prior to such date.
- j. The actual dates on which construction of the emergency generator, emergency fire water pump, and emergency propane generator commenced, within 30 days after such dates.
- k. The actual start-up dates of the emergency generator, emergency fire water pump, and emergency propane generator, within 15 days after such dates.

Copies of the written notifications referenced in items a through i above are to be sent to:

Associate Director  
Office of Air Enforcement (3AP20)  
U.S. Environmental Protection Agency  
Region III  
1650 Arch Street  
Philadelphia, PA 19103-2029

(9 VAC 5-50-50 and 9 VAC 5-50-410)

**MINOR NEW SOURCE REVIEW PERMIT**

This section (Conditions 72 through 75) establishes conditions pursuant to 9 VAC 5-80-1100 *et seq.* These conditions are federally enforceable under the federal Clean Air Act.

72. **Emission Controls: Sulfur Dioxide** – Sulfur dioxide emissions from each CT (CT-1, CT-2, & CT-3) and each HRSG duct burner (DB1, DB2, & DB3) shall be controlled through the use of pipeline natural gas meeting the specifications in Condition 15. (9 VAC 5-50-260 and 9 VAC 5-80-1180)
73. **Emission Controls: Sulfur Dioxide** – Sulfur dioxide emissions from the auxiliary boiler (B-1) and the fuel gas heater (GH-1) shall be controlled through the use of pipeline natural gas meeting the specifications in Condition 44. (9 VAC 5-50-260 and 9 VAC 5-80-1180)

74. **Short-Term Emission Limits** - Emissions from the operation of each combined-cycle power generating unit (T-1, T-2, & T-3) shall not exceed the limits specified below:

	Short term emission limits
Sulfur dioxide	<ul style="list-style-type: none"> <li>▪ 4.89 lb/hr</li> <li>▪ 0.0014 lb/MMBtu</li> </ul>

Where:

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

Limits apply at all times except during startup, shutdown, and malfunction. Periods considered startup and shutdown are defined in Condition 20 of this permit.

These emissions are derived from the estimated overall emission contribution from operating limits. Exceedance of the operating limits may be considered credible evidence of the exceedance of emission limits. Compliance with these limits may be determined as stated in Conditions 15, 17, 21, and 72.

Short-term emissions of sulfur dioxide shall be calculated using the maximum sulfur content specified in Condition 15, or sampling data collected in accordance with Condition 17.

(9 VAC 5-50-260, 9 VAC 5-50-410, 9 VAC 5-80-1180, 40 CFR 60.4320, and 40 CFR 60.4330)

75. **Annual Emission Limits** – Total emissions from the operation of all three combined-cycle power generating units (T-1, T-2, & T-3) including duct burners shall not exceed 39.3 tons of sulfur dioxide (SO<sub>2</sub>) per year. Annual emission limits are derived from the estimated overall emission contribution from operating limits, including periods of startup and shutdown. Annual emissions shall be calculated monthly as the sum of each consecutive 12-month period. Exceedance of the operating limits may be considered credible evidence of the exceedance of emission limits. Compliance with these limits may be determined as stated in Conditions 15, 17, 21, and 72. Annual emissions of sulfur dioxide shall be calculated using the 12-month rolling average sulfur content, provided in

Condition 15, or sampling data collected in accordance with Condition 17.  
(9 VAC 5-50-260, 9 VAC 5-50-410, and 9 VAC 5-80-1180)

### **GENERAL CONDITIONS**

76. **Permit Invalidation** - This permit to construct and operate an electric power generation facility shall become invalid, unless an extension is granted by the DEQ, if:

- a. A program of continuous construction is not commenced within 18 months from the date of this permit.
- b. A program of construction is discontinued for a period of 18 months or more, or is not completed within a reasonable time. This provision does not apply to the period between construction of the approved phases of a phased construction project; each phase must commence construction within 18 months of the projected and approved commencement date

DEQ may extend the 18-month period upon a satisfactory showing that an extension is justified.

(9 VAC 5-80-1210 and 9 VAC 5-80-1985)

77. **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 a permitted emissions unit;
- d. Causes emissions from this facility which result in violations of, or interferes with the attainment and maintenance of, any ambient air quality standard; or
- 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 at the time an application for this permit is submitted.

(9 VAC 5-80-1210 G and 9 VAC 5-80-1985)

78. **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)

79. **Maintenance/Operating Procedures** - At all times, including periods of start-up, shutdown, and malfunction, the permittee shall, to the extent practicable, maintain and operate the affected source, including associated air pollution control equipment, in a manner consistent with good air pollution control practices for minimizing emissions. 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.

(9 VAC 5-50-20 E)

80. **Record of Malfunctions** - The permittee shall maintain records of the occurrence and duration of any bypass, malfunction, shutdown or failure of the facility or its associated air pollution control equipment that results in excess emissions for more than one hour. Records shall include the date, time, duration, description (emission unit, pollutant

affected, cause), corrective action, preventive measures taken and name of person generating the record.  
(9 VAC 5-20-180 J)

- 81. **Notification for Facility or Control Equipment Malfunction** - The permittee shall furnish notification to the DEQ, 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 or telegraph. Such notification shall be made as soon as practicable but not later than four daytime business hours after the malfunction is discovered. The permittee shall provide a written statement giving all pertinent facts, including the estimated duration of the breakdown, within 14 days of the discovery. Owners 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 paragraph for facilities subject to the monitoring requirements of 9 VAC 5-40-40 and 9 VAC 5-50-40. When the condition causing the failure or malfunction has been corrected and the equipment is again in operation, the permittee shall notify the DEQ, in writing.  
(9 VAC 5-20-180 C)
- 82. **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)
- 83. **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 DEQ, of the change of ownership within 30 days of the transfer.  
(9 VAC 5-80-1240 and 9 VAC 5-80-1975)
- 84. **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**

The following terms and conditions are included in this permit to implement the requirements of 9 VAC 5-60-300, *et. seq.* Neither their inclusion in this Prevention of Significant Deterioration Permit nor any resulting public comment period make these terms federally enforceable.

- 85. **Emission Limits** - Emissions from the electric power generation facility shall not exceed the limits specified below:

<u>Pollutant</u>	<u>CAS #</u>	<u>Hourly Limit</u>	<u>Annual Limit</u>
Acrolein	107-02-8	0.0406 lbs/hr	0.176 tons/yr

Formaldehyde	50-00-0	1.48 lbs/hr	6.34 tons/yr
Cadmium	7440-43-9	0.0115 lbs/hr	0.00551 tons/yr
Chromium	7440-47-3	0.0146 lbs/hr	0.00702 tons/yr
Nickel	7440-02-0	0.0219 lbs/hr	0.0105 tons/yr

Annual emissions shall be calculated monthly as the sum of each consecutive 12-month period.

(9 VAC 5-60-320, 9 VAC 5-80-1180, and 9 VAC 5-80-1625 G)

86. **Emission Limits** – The permittee shall determine compliance with the toxic pollutants emission limits in Condition 85 as follows:

a. To calculate hourly toxic compound emissions from the electric power generation facility:

$$E_t = \left( \sum_{i=1}^n F_i C_i \right) \left( \frac{100 - CE}{100} \right)$$

..... Equation 1

Where:

- E<sub>t</sub> = Emission rate of toxic compound (t) (lbs/hr)
- F<sub>i</sub> = Emission factor of toxic compound (t) for each unit (i) utilized during the time period (lb/MMBtu)
- C<sub>i</sub> = Capacity of each unit (i) utilized during the time period (MMBtu/hr)
- CE = Control efficiency of volatile toxic compounds by the oxidation catalyst (%) [30 is accepted reduction unless records demonstrate a different value]

b. To calculate annual toxic compound emissions from the electric power generation facility:

$$E_t = \left( \sum_{i=1}^n F_i C_i T_i \right) \left( \frac{100 - CE}{100} \right) \left( \frac{1ton}{2000lb} \right)$$

..... Equation 2

Where:

- $E_t$  = Emission rate of toxic compound (t) (tons/year)
- $F_i$  = Emission factor of toxic compound (t) for each unit (i) utilized during the time period (lb/MMBtu)
- $C_i$  = Capacity of each unit (i) utilized during the time period (MMBtu/hr)
- $T_i$  = Hours of operation for each unit (i) utilized during the time period (hours)
- CE = Control efficiency of volatile toxic compounds by the oxidation catalyst (%) [30 is accepted reduction unless records demonstrate a different value]

Annual emissions shall be calculated monthly as the sum of each consecutive 12-month period.

(9 VAC 5-80-1180 and 9 VAC 5-80-1625 G)

87. **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 arranged with the DEQ. These records shall include, but are not limited to:
- a. Total hours that each unit operates on a monthly basis.
  - b. Average hourly, monthly and annual emissions (in pounds and tons) of each toxic compound listed in Condition 85. Toxic compound emissions shall be calculated as shown in Condition 86. Hourly emissions shall be calculated monthly. Annual emissions shall be calculated monthly as the sum of each consecutive 12-month period.

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

(9 VAC 5-80-1180, 9 VAC 5-50-50, and 9 VAC 5-80-1625 G)

## **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

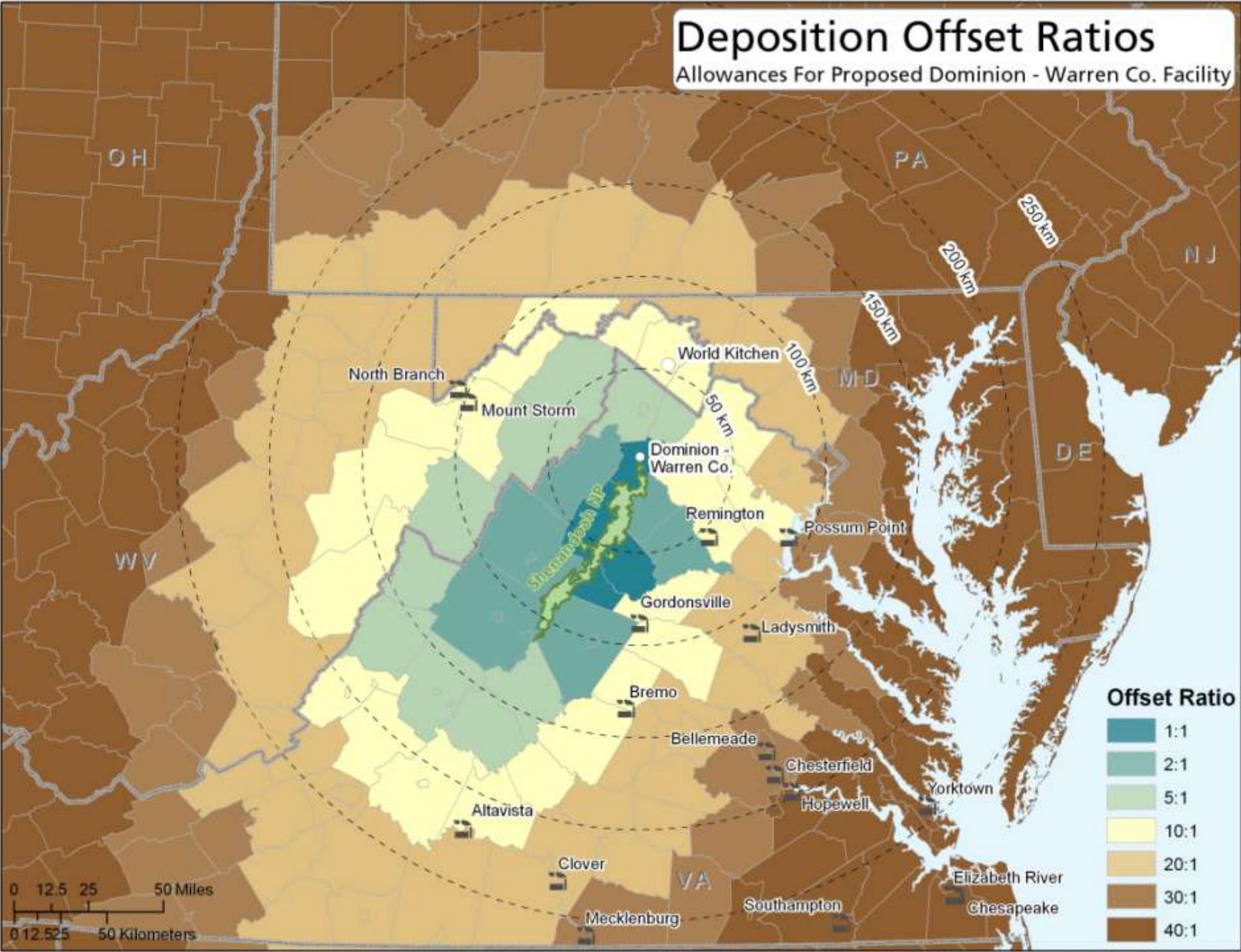
- \* 1. Process data and emission results example calculations
2. Raw field data
- \* 3. Laboratory reports
4. Raw production data
- \* 5. Calibration procedures and results
6. Project participants and titles
7. Related correspondence
8. Standard procedures

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\* Not applicable to visible emission evaluations.

# Deposition Offset Ratios

Allowances For Proposed Dominion - Warren Co. Facility



Attachment B: List of Geographic Locations From Which Allowances May Be Obtained

1:1 Locations:

Virginia Counties: Warren, Page, Madison, and Greene

2:1 Locations:

Virginia Counties: Shenandoah, Rockingham, Augusta, Albemarle, Culpeper, and Rappahannock

Virginia Cities: Harrisonburg, Staunton, Waynesboro, and Charlottesville

5:1 Locations:

Virginia Counties: Frederick, Highland, Bath, Rockbridge, Amherst, and Nelson

Virginia Cities: Winchester, Lexington, and Buena Vista

West Virginia Counties: Hampshire, Hardy, and Pendleton

10:1 Locations:

Virginia Counties: Loudoun, Prince William, Fauquier, Orange, Louisa, Fluvanna, Buckingham, Appomattox, Campbell, Bedford, Botetourt, and Alleghany

Virginia Cities: Lynchburg, Bedford, and Covington

West Virginia Counties: Jefferson, Berkeley, Morgan, Mineral, Grant, Tucker, Randolph, and Pocahontas

Maryland Counties: Allegany

20:1 Locations:

Virginia Counties: Fairfax, Stafford, Spotsylvania, Caroline, Hanover, Goochland, Powhatan, Amelia, Cumberland, Prince Edward, Nottoway, Lunenburg, Charlotte, Halifax, Pittsylvania, Henry, Patrick, Floyd, Franklin, Montgomery, Roanoke, Craig, and Giles

Virginia Cities: Fairfax, Manassas Park, Manassas, Fredericksburg, Danville, Martinsville, Roanoke, and Salem

West Virginia Counties: Monroe, Greenbrier, Nicholas, Webster, Braxton, Lewis, Upshur, Barbour, Harrison, Marion, Taylor, Preston, and Monongalia

Maryland Counties: Garrett, Washington, Frederick, and Montgomery

Pennsylvania Counties: Greene, Fayette, Somerset, Bedford, Fulton, and Franklin

30:1 Locations:

Virginia Counties: King George, Essex, King William, Henrico, Chesterfield, Dinwiddie, Brunswick, Mecklenburg, Carroll, Grayson, Wythe, Pulaski, and Bland

Virginia Cities: Richmond, Galax, and Radford

West Virginia Counties: Mercer, Summers, Raleigh, Fayette, Clay, Gilmer, and Doddridge

Pennsylvania Counties: Washington, Allegheny, Westmoreland, Armstrong, Indiana, Cambria, Blair, Cumberland, and Adams

Maryland Counties: Carroll, Howard, Prince George's, and Charles

40:1 Locations:

All other jurisdictions within the boundaries of Virginia, North Carolina, Tennessee, Kentucky, West Virginia, Ohio, Pennsylvania, New Jersey, Delaware, and Maryland