



# COMMONWEALTH of VIRGINIA

## DEPARTMENT OF ENVIRONMENTAL QUALITY

PIEDMONT REGIONAL OFFICE  
4949-A Cox Road, Glen Allen, Virginia 23060  
(804) 527-5020 Fax (804) 527-5106  
www.deq.virginia.gov

Douglas W. Domenech  
Secretary of Natural Resources

David K. Paylor  
Director

Michael P. Murphy  
Regional Director

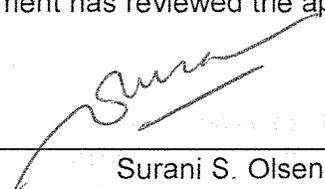
### COMMONWEALTH OF VIRGINIA Department of Environmental Quality Piedmont Regional Office

#### STATEMENT OF LEGAL AND FACTUAL BASIS

Virginia Electric & Power Company  
Bellmeade Power Station  
1860 Commerce Road - Richmond, Virginia 23224  
Permit No. PRO-50988

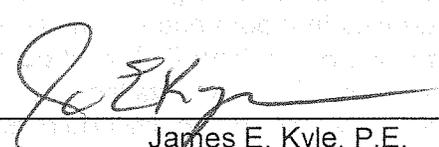
Title V of the 1990 Clean Air Act Amendments required each state to develop a permit program to ensure that certain facilities have federal Air Pollution Operating Permits, called Title V Operating Permits. As required by 40 CFR Part 70 and 9 VAC 5 Chapter 80, Virginia Electric & Power Company has applied for a Title V Operating Permit for its Bellmeade Power Station, Virginia facility. The Department has reviewed the application and has prepared a draft Title V Operating Permit.

Engineer/Permit Contact: \_\_\_\_\_

  
Surani S. Olsen  
(804) 527-5095

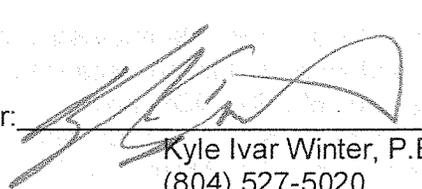
Date: 10/21/2013

Air Permit Manager: \_\_\_\_\_

  
James E. Kyle, P.E.  
(804) 527-5020

Date: 10/21/2013

Deputy Regional Director: \_\_\_\_\_

  
Kyle Ivar Winter, P.E.  
(804) 527-5020

Date: 10/22/13

## **FACILITY INFORMATION**

### Permittee

Dominion Generation  
d/b/a Virginia Power  
5000 Dominion Boulevard  
Glen Allen, Virginia 23060

### Facility

Bellmeade Power Station  
1860 Commerce Road  
Richmond, Virginia

County-Plant Identification Number: 51-760-0389

## **CURRENT PERMIT ACTION DESCRIPTION**

This permitting action is a renewal to the Dominion Bellemeade Power Station Title V operating permit issued on March 11, 2008 with an expiration date of December 31, 2012. The renewal application for the Title V operating permit was received on June 21, 2012. An initial application review letter dated July 20, 2012 was sent to Dominion Electric and Power Company. The renewal application was considered timely since it was submitted six months prior to permit expiration. Since Dominion Electric and Power Company's renewal application was timely, the current Title V permit and permit shield will remain in effect according to 9 VAC 5-80-80 F and 9 VAC 5-80-170 C.

## **SOURCE DESCRIPTION**

NAICS Code: 221112 – Electric Power Generation – production of electrical power using two combined cycle combustion turbines and one steam turbine.

Dominion – Bellemeade Power Station is an electric generation facility. The facility uses two ASEA Brown Boveri combustion turbines that burn natural gas and no. 2 fuel oil (as a backup fuel) to generate electricity. Each turbine has a John Zink duct burner to burn off the fly ash emitted by the turbine. The turbines were originally installed in 1988. Other equipment in the facility include emergency generator, diesel fire pump, non-halogenated cold solvent degreaser, and fuel storage tanks.

The facility was previously permitted under a NSPS Permit issued on June 12, 1989 for the first owner, Richmond Power Enterprise, and amended for Virginia Power the new owner on April 1, 1999. The facility is a Title V major source of SO<sub>2</sub>, NO<sub>x</sub>, and CO pollutants. This source is located in an attainment area for all pollutants, and is a PSD minor source. The facility is currently permitted under a Title V permit issued on March 11, 2008 and an amended New Source Review Permit issued on August 5, 2013. All turbines are subject to the requirements of 40 CFR 60, Subpart GG.

**COMPLIANCE STATUS**

A full compliance evaluation of this facility, including a site visit, has been conducted on March 1, 2012. In addition, all reports and other data required by permit conditions or regulations, which are submitted to DEQ, are evaluated for compliance. Based on these compliance evaluations, the facility has not been found to be in violation of any state or federal applicable requirements at this time.

**EMISSION UNIT AND CONTROL DEVICE IDENTIFICATION**

The emissions units at this facility consist of the following :

Emission Unit ID	Stack ID	Emission Unit Description	Size/Rated Nominal Capacity	Pollution Control Device (PCD) Description	PCD ID	Pollutant Controlled
<b>Fuel Burning Equipment</b>						
ES-1A (Gas) ES-1B (Oil)	EP-1	Unit 1 ASEA Brown Boveri Type 11N Combustion Turbine	1163.5 mmBtu/hr 1081.3 mmBtu/hr	ABB Steam Injection System & Babcock - Hitachi Dry Catalytic System	CD-1 & CD-3	NO <sub>x</sub>
ES-2A (Gas) ES-2B (Oil)	EP-2	Unit 2 ASEA Brown Boveri Type 11N Combustion Turbine	1163.5 mmBtu/hr 1081.3 mmBtu/hr	ABB Steam Injection System & Babcock - Hitachi Dry Catalytic System	CD-2 & CD-4	NO <sub>x</sub>
ES-3A (Gas) ES-3B (Oil)	EP-1	John Zink Co. - Unit 1 Combustion Turbine Duct Burners	80 mmBtu/hr	ABB Steam Injection System & Babcock - Hitachi Dry Catalytic System	CD-1 & CD-3	NO <sub>x</sub>
ES-4A (Gas) ES-4B (Oil)	EP-2	John Zink Co. - Unit 2 Combustion Turbine Duct Burners	80 mmBtu/hr	ABB Steam Injection System & Babcock - Hitachi Dry Catalytic System	CD-2 & CD-4	NO <sub>x</sub>
ES-7	EP-7	Caterpillar Emergency Diesel Generator	890 hp/664.0 kW	-	-	-
ES-8	None	Cummins Diesel Fire Pump	208 HP			
<b>Process Equipment:</b>						
IS-10	Fugitive	Safety Kleen Non-Halogenated Cold Solvent Degreaser	30 gallons	None		VOC

**EMISSIONS INVENTORY**

This section consists of two tables summarizing:  
 1. The actual annual emission of criteria pollutants  
 2. The actual annual emission of hazardous pollutants

Actual emission data is from the annual emission update. A copy of the 2012 annual emission update is attached. Emissions are summarized in the following tables.

**2012 Actual Emissions**

Emission Unit	2012 Criteria Pollutant Emission in Tons/Year				
	VOC	CO	SO <sub>2</sub>	PM <sub>10</sub>	NO <sub>x</sub>
ES-1A Unit 1 ASEA Brown Boveri Type 11N Gas Combustion Turbine	1.71	68.47	1.6	0.95	73.5
ES 1B Unit 1 ASEA Brown Boveri Type 11N Fuel Oil Combustion Turbine	0.02	0.07	Included above in ES-1A emissions	0.01	Included above in ES-1A emissions
ES-2A Unit 2 ASEA Brown Boveri Type 11N Gas Combustion Turbine	1.74	69.78	1.7	0.97	73.30
ES-2B Unit 2 ASEA Brown Boveri Type 11N Fuel Oil Combustion Turbine	0.02	0.08	Included above in ES-2A emissions	0.01	Included above in ES-2A emissions
ES-3A Unit 1 John Zink Co. Gas Combustion Turbine Duct Burners	1.59	3.17	Included above in ES-1A emissions	0.08	Included above in ES-1A emissions
ES 3B Unit 1 John Zink Co. Oil Combustion Turbine Duct Burners	0	0	0	0	0
ES-4A Unit 2 John Zink Co. Gas Combustion Turbine Duct Burners	3.43	6.86	Included above in ES-2A emissions	0.18	Included above in ES-2A emissions
ES 4B Unit 2 John Zink Co. – Oil Combustion Turbine Duct Burners	0	0	0	0	0
ES-7 Caterpillar Emergency Diesel Generator	0.00	0.02	0.01	0.00	0.09
<b>Total</b>	<b>8.51</b>	<b>148.45</b>	<b>3.31</b>	<b>2.20</b>	<b>146.89</b>

### 2012 Facility Hazardous Air Pollutant Emissions

Pollutant	2012 Hazardous Air Pollutant Emission in Tons/Yr
Pb	0.00005
Formaldehyde	3.57
Toluene	0.65
Total	4.22

#### EMISSION UNIT APPLICABLE REQUIREMENTS - (emission unit ID# ES-1, ES 2, ES 3, and ES 4)

The ASEA Brown Boveri combustion turbine engines are subject to NSPS (40 CFR 60) Subpart GG and 9 VAC 5-50-410 since the turbines are combined cycle gas turbines with HRSGs that are greater than 10.7 gigajoules per hour built after November 3, 1977. NSPS Subpart GG regulates their operating, monitoring and testing requirements.

The John Zink Duct Burners were permitted and began construction just prior to the June 9, 1989; therefore, are subject to NSPS (40 CFR 60) Subpart Dc and 9 VAC 5-50-410:

Some requirements are the most stringent of several superimposed stack requirements or as determined as Best Available Control Technology (BACT).

#### Limitations

The following Title V permit limitations consist of emission standards and/or operational conditions based upon State BACT determinations, NSPS standards, and CAIR requirements for the equipment in the facility that were taken from the August 5, 2013 New Source Review (NSR) Permit. The condition numbers listed below are the condition numbers of the NSR permit.

Condition No. 2 - Except where this permit is more restrictive than the applicable requirement, the NSPS equipment as described in Condition 1 shall be operated in compliance with the requirements of 40 CFR Part 60, Subpart GG.

Condition No. 3 - Nitrogen oxides emissions from each gas turbine/heat recovery steam generator (HRSG) duct burner set shall be controlled by steam injection followed by selective catalytic reduction. The emission control system shall be provided with adequate access for inspection.

Condition No. 4 - Sulfur dioxide emissions from each gas turbine/HRSG duct burner set shall be controlled by limiting the sulfur content of the fuel as follows:

No. 2 Distillate Oil            0.20 percent by weight maximum

Natural Gas 0.22 grains per 100 cubic foot at standard conditions,  
 annual rolling average

The permittee shall maintain records of all sample analysis reports indicating sulfur content of the natural gas and the NO.2 distillate oil. Sampling frequency of the No. 2 Distillate Oil used in the turbines/HRSG duct burners shall be as specified in Section 60.334 of Subpart GG. Test method shall be according to Section 60.335 (b) (2) (i) of Subpart GG. These records shall be available for inspection by the DEQ. Such records shall be current for the most recent five (5) years.

Condition No. 5 - The approved fuels for the gas turbines/HRSG duct burners (duct burners, natural gas only until satisfactory opacity test) are natural gas and No. 2 distillate oil. A change in the fuels may require a permit to modify and operate.

Condition No. 7- The two gas turbines together shall consume no more than the quantity of fuel annually, calculated as the sum of each consecutive 12 month period, as follows:

- a. Natural gas:  $14,221 \times 10^6$  cubic feet at standard conditions maximum when used 100 percent throughout the year.
- b. The annual quantity of natural gas ( $NG_{GT}$ ) shall be reduced when No. 2 distillate oil is used according to the following formula:

Annual  $NG_{GT}$  =

$$14,221 \times 10^6 \text{ std ft}^3 - \frac{\text{Gallons No. 2 distillate oil used in turbines}}{6800.7 \text{ gallons per hour}} \times 974 \times 10^3$$

- c. No. 2 distillate oil:  $13,601 \times 10^3$  gallons maximum in the numerator of the second term of formula 7.b. It shall be reduced by an amount determined by the following formula:

$$\frac{(\text{Annual } NG_{GT} - 12,273 \times 10^6) \times 6800.7}{974 \times 10^3}$$

where Annual  $NG_{GT}$  is the quantity in (7.b).

Condition No. 8 - The two duct burners together shall consume no more than the quantity of fuel annually, calculated as the sum of each consecutive 12 month period, as follows:

- a. Natural gas:  $504 \times 10^6$  cubic feet at standard conditions maximum when used 100 percent throughout the year.
- b. In the event No. 2 distillate oil is approved for use in the duct burners, allowable natural gas usage shall be reduced as follows:

Annual  $NG_{DB}$  =

$$504 \times 10^6 \text{ std ft}^3 - \frac{\text{Gallons No. 2 distillate oil used in duct burners}}{571.4 \text{ gallons per hour}} \times 77.5 \times 10^3$$

- c. No. 2 distillate oil:  $571 \times 10^3$  gallons maximum in the numerator of the second term of formula 8.b.

Condition No. 10- The permittee shall maintain adequate storage/supply of ammonia consistent with the needs and requirements of the facility.

Condition No. 11 - The permittee shall install and operate continuous monitoring systems to monitor and record:

- a. Nitrogen oxides concentration at each gas turbine/HRSG duct burner stack.
- b. Oxygen or carbon dioxide concentration at each gas turbine/HRSG duct burner stack.

The CEMS shall be installed, maintained, calibrated and operated in accordance with the performance specifications and test procedures (as applicable) identified in 40 CFR Part 75, Appendices A and B (except when reporting data to meet the requirements of 40 CFR 60 Subpart GG; then bias adjustment of valid hourly data, and data substitution for monitor downtime will not be used). All continuous monitoring systems shall also comply with the requirements of 40 CFR Part 60.13.

Condition No. 12 - The permittee shall install and operate ammonia flow meter devices to measure and record the injection rate of ammonia to the selective catalytic reduction systems. They shall be maintained and calibrated according to the manufacturer's specifications.

Condition No. 13- The permittee shall submit excess NO<sub>x</sub> emission reports to the Director, Piedmont Regional Office within 30 days after the end of each calendar quarter for which there are excess emissions as described in 40 CFR 60 Subpart GG. Details of the quarterly reports are to be arranged with the Director, Piedmont Region. If there are no excess NO<sub>x</sub> emissions during the calendar quarter, the permittee shall submit a report semiannually stating that no excess emission occurred during the semiannual reporting period. The initial quarterly report shall be submitted to the Director, Piedmont Region, postmarked by the 30<sup>th</sup> day of the end of the previous quarter, unless no excess emissions occur during that quarter. Each subsequent quarterly or semiannual report shall be postmarked by the 30<sup>th</sup> day following the end of the reporting period. All quarterly and semiannual monitoring reports shall conform to the Continuous Emission Monitoring System Report Format enclosed with this permit.

Condition No. 14 - Combustion products from the operation of each gas turbine prior to operation of SCR shall not exceed the limitations specified below (except during startup and shutdown conditions as defined below):

<u>For Natural Gas Firing</u>		<u>lbs/hr</u>
PM (TSP)		0.6
PM <sub>10</sub>		0.6
SO <sub>2</sub>		0.7
NO <sub>x</sub>	42.0 ppmvd at 15 percent O <sub>2</sub> (4-hour average)	180.3
VOC		0.7

CO		28.0
<u>For Distillate Oil Firing</u>		
PM (TSP)		28.0
PM <sub>10</sub>		28.0
SO <sub>2</sub>	38.3 ppmvd at 15 percent O <sub>2</sub> (1-hour average)	226.0
NO <sub>x</sub>	65.0 ppmvd at 15 percent O <sub>2</sub> (4-hour average)	273.6
VOC		8.0
CO		28.0
Lead		0.04

A "startup" is defined as the period commencing with ignition of the unit and consisting of two (2) hours of continuous emission monitoring system (CEMS) data.

A "shutdown" is defined as the period comprising the final two (2) hours of CEMS data prior to the time when no fuel is being combusted.

"Short term emission limits" represent averages for a one-hour average period for PM, SO<sub>2</sub>, CO, VOC and lead. "Short term emission limits" represent a four-hour rolling average for NO<sub>x</sub>.

The exemption of emissions during startup and shutdown applies only to the lb/hr and ppm state limits of NO<sub>x</sub> in the permit, but not to the ppm limits set forth in the NSPS 40 CFR 60 Subpart GG. The permit does not exclude the permittee from meeting the NO<sub>x</sub> requirements in the NSPS, 40 CFR 60, Subpart GG, for startup and shutdown. The permittee is subject to all requirements of NSPS 40 CFR 60, Subpart GG. The NSPS at 60.334 (j) states that excess emissions shall be reported for all periods of unit operation, including startup, shutdown and malfunction.

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 these emission limits may be determined as stated in Conditions 4 and 7 of the August 5, 2013 New Source Performance Standards Permit.

Condition 15- Emissions from the operation of each duct burner (ES-3 or ES-4) shall not exceed the limitations specified below

<u>For natural gas firing</u>		<u>lbs/hr</u>
PM (TSP)		0.39
PM <sub>10</sub>		0.39
SO <sub>2</sub>		0.05
NO <sub>x</sub>	8.2 ppmvd at 15 percent O <sub>2</sub> (4-hour average)	---
VOC		7.6
CO		15.2

For distillate oil firing (only after permit amendment and satisfactory opacity testing)

		<u>lbs/hr</u>
PM (TSP)		3.1
PM <sub>10</sub>		3.1
SO <sub>2</sub>	38.3 ppmvd at 15 percent O <sub>2</sub> (1-hour average)	16.7
NO <sub>x</sub>	11.7 ppmvd at 15 percent O <sub>2</sub> (4-hour average)	--
VOC		12.0
CO		24.0
Lead		0.0013

The NO<sub>x</sub> emissions from each stack when burning either natural gas or No. 2 oil shall not exceed 8.2 and 11.7 ppmvd at 15 percent O<sub>2</sub>, respectively, after exhaust gas treatment by SCR.

Condition No. 17- Toxic pollutant emissions from the operation of the gas turbines/HRSG duct burners shall be limited by the fuel consumption limits in Conditions 7 and 9.

Condition No. 18 -Visible emissions from each gas turbine/HRSG duct burner stack shall not exceed 20 percent opacity as determined by EPA Method 9 (reference 40 CFR 60, Appendix A), except as provided in 9 VAC 5-50-80 of State Regulations.

**Monitoring**

The monitoring and recordkeeping requirements in Condition Nos. 4, 11, 12, and 19 of the NSR permit have been modified to meet Part 70 requirements. The turbines are subject to NSPS Subpart GG and required to install and operate a continuous monitoring system to monitor the fuel consumption and the ratio of water injected to fuel being fired in each turbine with ±5% accuracy. The facility is also required to monitor the sulfur content of the No. 2 distillate oil being fired in the combustion turbines in accordance with 40 CFR Section 60.334(b) and according to sampling frequency specified in 40 CFR 60.335 (b). The Nitrogen oxides concentration and oxygen or carbon dioxide concentration at the stack of each gas turbine and duct burner are monitored using continuous monitoring systems (CEMS). The CEMS shall comply with the requirements of 40 CFR 60.13. The injection rate of ammonia to the selective catalytic reduction systems are measured using ammonia flow meter devices.

The facility is a major source subject to Title V permitting and therefore subject to 40 CFR Part 64, Compliance and Assurance Monitoring (CAM). An emission unit is subject to CAM if it meets all of the following criteria on a pollutant-by-pollutant basis:

- Emits or has the potential to emit uncontrolled quantities of one or more regulated pollutants at or above major source levels.
- Is subject to one or more emissions limitations for the regulated air pollutants for which it is a major source before control(s), and
- Uses an add-on control device to achieve compliance with the emissions limitations.

The facility is exempt from CAM since the facility uses CEMS to monitor its NOx emissions and uses periodic sampling and analysis to monitor the sulfur content in the fuel oil that is used in the turbines.

### Recordkeeping

The permit includes the requirements for maintaining records of all monitoring and testing required by the August 5, 2013 NSR permit as follows:

- Records of all emission data and operating parameters required by the terms of this permit including process throughputs and recordkeeping and reporting requirements of applicable NSPS and 9 VAC 5-50-50 of State Regulations.
- Records of the fuel consumption and the ratio of water injected to fuel being fired in each turbine.
- Records of all sample analysis reports indicating sulfur content of the distillate oil being fired in the combustion turbines.
- Records of all sample analysis reports indicating sulfur content of the natural gas fuel.
- Records of the injection rate of ammonia to the selective catalytic reduction systems.
- All emissions monitoring information, copies of all reports, compliance certification, and other submissions and all records made or required under the Acid Rain Program.
- Copies of all documents used to complete the Acid Rain permit application and any other submission under the Acid Rain Program or to demonstrate compliance with the requirements of the Acid Rain Program.

### Testing

The following is the requirement in the NSR issued on August 5, 2013 related to testing:

Condition No. 6 - The permitted facility shall be designed and constructed to allow emissions testing and monitoring upon reasonable notice at any time, using appropriate methods. The permittee shall provide sampling ports adequate for test methods applicable to each gas turbine/HRSG duct burner including safe sampling platforms, safe access to platforms and utilities for sampling and testing equipment.

The permit does not require source tests. The Department and EPA has authority to require testing not included in this permit if necessary to determine compliance with an emission limit or standard. In addition, it is added in the draft Title V permit that if testing is conducted in addition to the monitoring specified in this permit, the permittee shall use the following test methods in accordance with procedures approved by the DEQ as follows:

Regulated Pollutant	Reference Method
VOC	EPA Methods 18, 25, 25a
NO <sub>x</sub>	EPA Method 7
SO <sub>2</sub>	EPA Method 6

Regulated Pollutant	Reference Method
CO	EPA Method 10
PM/PM <sub>10</sub>	EPA Methods 5, 202 / 17, 201A
Visible Emissions	EPA Method 9

**Reporting**

The draft Title V permit includes quarterly NSPS Subpart Dc and Subpart GG fuel reporting requirements.

The permit includes quarterly excess NOx emissions reporting requirements and biannual excess SO2 emissions reporting requirements as regulated by NSPS subpart GG. The excess SO2 emissions are determined based on the analysis of sulfur content of the natural gas fuel. NSPS Db reporting requirements are now submitted on a semi-annual basis.

**EMISSION UNIT APPLICABLE REQUIREMENTS – (emission unit ID ES-7 and ES-8)**

The emergency diesel generator (ES-7) and the diesel fire pump (ES-8) are subject to MACT ZZZZ since it is an internal combustion engine located in area source of hazardous air pollutants.

**Limitations**

The following limitations for the fire pump or generator were taken from the conditions of the August 5, 2013 New Source Performance Standards Permit and the draft Title V permit. The limitations consist of emission standards and/or operational conditions based upon BACT determinations or MACT requirements for the equipment in the facility.

Condition No. 5 of the August 5, 2013 NSR- The approved fuel for the emergency diesel generator (ES-7) is No. 2 distillate oil. A change in the fuels may require a permit to modify and operate.

Condition No. 9 of the August 5, 2013 NSR - The emergency diesel electric generator (ES-7) shall not consume more than 6,136 gallons of No. 2 distillate oil per year, calculated as the sum of each consecutive 12 month period.

Condition No. IV.A.4 of the Title V permit- As stated in the National Emission Standards for Hazardous Air Pollutants for Reciprocating Internal Combustion Engines (RICE MACT, Subpart ZZZZ), the facility shall, as a minimum:

- a. Change oil and filter every 500 hours of operation or annually, whichever comes first, for each engine;
- b. Inspect air cleaner every 1,000 hours of operation or annually, whichever comes first, and replace as necessary; and
- c. Inspect all hoses and belts every 500 hours of operation or annually, whichever

comes first, and replace as necessary.  
(9 VAC 5-80-110, 40 CFR §§63.6625 (h) and Table 2d (4) of 40 CFR 63 Subpart ZZZZ)

Condition No. IV.A.5 of the Title V permit - Except as specified in this permit, the facility shall comply with all the requirements of Maximum achievable control technology standards (MACT), Subpart ZZZZ that are applicable to the emergency generator (ES-7) and the diesel fire pump (ES-8) by May 3, 2013.

### **Monitoring**

MACT ZZZZ §63.6625(f) also requires that the facility installs a non resettable hour meter if one is not already installed to continuously measure the hours of operation for each engine.

### **Recordkeeping**

MACT ZZZZ has maintenance and recordkeeping requirements for the emergency ICEs as follows:

- The facility is required to keep records of the hours of operation of each engine that is recorded through the non-resettable hour meter. The owner or operator must document how many hours are spent for emergency operation, including what classified the operation as emergency and how many hours are spent for non-emergency operation.
- The facility is required to keep records of the maintenance conducted on the stationary RICE in order to demonstrate that the stationary RICE is operated and maintained according to its own maintenance plan.
- The facility is required to keep records in a form suitable and readily available for expeditious review according to § 63.10(b)(1). As specified in § 63.10(b)(1), the facility must keep each record for 5 years following the date of each occurrence, measurement, maintenance, corrective action, report, or record. The facility must keep each record readily accessible in hard copy or electronic form for at least 5 years after the date of each occurrence, measurement, maintenance, corrective action, report, or record, according to § 63.10(b)(1).

### **Testing**

The permit does not require source tests. The Department and EPA has authority to require testing not included in this permit if necessary to determine compliance with an emission limit or standard.

### **Reporting**

As the owner and operator of diesel emergency generator and fire pump engines, the facility is required by MACT ZZZZ to submit the following report:

If the emergency generator operates or is contractually obligated to be available for more than 15 hours per calendar year for the purposes (emergency demand response) specified in §

63.6640(f)(2)(ii) and (iii) or that operates for the purpose (non-emergency demand response) specified in § 63.6640(f)(4)(ii), the facility must submit an annual report according to the requirements in paragraphs 63.6650( h)(1) through (3) of MACT ZZZZ. The report must contain the following information:

- Company name and address where the engine is located.
- Date of the report and beginning and ending dates of the reporting period.
- Engine site rating and model year.
- Latitude and longitude of the engine in decimal degrees reported to the fifth decimal place.
- Hours operated for the purposes specified in § 63.6640(f)(2)(ii) and (iii), including the date, start time, and end time for engine operation for the purposes specified in § 63.6640(f)(2)(ii) and (iii).
- Number of hours the engine is contractually obligated to be available for the purposes specified in § 63.6640(f)(2)(ii) and (iii).
- Hours spent for operation for the purpose specified in § 63.6640(f)(4)(ii), including the date, start time, and end time for engine operation for the purposes specified in § 63.6640(f)(4)(ii). The report must also identify the entity that dispatched the engine and the situation that necessitated the dispatch of the engine.
- If there were no deviations from the fuel requirements in § 63.6604 that apply to the engine (if any), a statement that there were no deviations from the fuel requirements during the reporting period.
- If there were deviations from the fuel requirements in § 63.6604 that apply to the engine (if any), information on the number, duration, and cause of deviations, and the corrective action taken.

#### **EMISSION UNIT APPLICABLE REQUIREMENTS – Emission Unit ID: IS-10 Process Equipment**

##### **Limitations**

The following Title V permit limitations consist of emission standards based on the State's VOC emission standard for existing stationary source. The Maintenance Shop Degreaser (IS-10) is subject to 9 VAC 5-40-3280 and 3290, with the standard for volatile organic compounds for existing stationary source.

##### **Monitoring, Recordkeeping, Testing, and Reporting**

There are no monitoring, recordkeeping, testing, and reporting requirements for the Maintenance Shop Degreaser unit (IS-10).

#### **FACILITY WIDE APPLICABLE REQUIREMENTS**

##### **Limitations**

The following Title V permit limitations consist of emission standards and/or operational

conditions based upon State BACT determinations and NSPS standards for the equipment in the facility that were taken from the August 5, 2013 New Source Review (NSR) Permit .

Condition No. 16 - Aggregate annual emission limits of the following criteria pollutants shall not exceed the quantities specified below:

PM (TSP)	41.9 tons per year
PM <sub>10</sub>	41.9 tons per year
Nitrogen Oxides	239.0 tons per year
Carbon Monoxide	243.3 tons per year
Sulfur Dioxide	215.0 tons per year
VOC	58.1 tons per year

Each pollutant's annual emissions shall be calculated as follows:

$$\text{NO}_x \text{ ton/year} = \frac{(1 - 0.805) \text{ ton/lb}}{2 \times 10^9 \text{ scf/MMcf}} \times (\text{NG}_{\text{GT}} \text{ scf} \times 156 \text{ lb/MMcf}) + (\text{NG}_{\text{DB}} \text{ scf} \times 103.2 \text{ lb/MMcf}) +$$

$$\frac{1 - 0.805 \text{ (ton/lb)}}{2 \times 10^6 \text{ gal/Mgal}} \times (\text{FO}_{\text{GT}} \text{ gal} \times 32.7 \text{ lb/Mgal} + \text{FO}_{\text{DB}} \text{ gallons} \times 14 \text{ lb/Mgal})$$

$$\text{SO}_2 \text{ ton/year} = \frac{1 \text{ ton/lb}}{2 \times 10^9 \text{ scf/MMcf}} \times (\text{NG}_{\text{GT}} \text{ scf} \times 0.72 \text{ lb/MMcf}) + (\text{NG}_{\text{DB}} \text{ scf} \times 0.65 \text{ lb/MMcf}) +$$

$$\frac{1 \text{ ton/lb}}{2 \times 10^6 \text{ gal/Mgal}} \times (\text{FO}_{\text{GT}} \text{ gallons} \times 29.7 \text{ lb/Mgal} + \text{FO}_{\text{DB}} \text{ gallons} \times 29.2 \text{ lb/Mgal})$$

$$\text{CO ton/year} = \frac{1 \text{ ton/lb}}{2 \times 10^9 \text{ scf/MMcf}} \times (\text{NG}_{\text{GT}} \text{ scf} \times 26.3 \text{ lb/MMcf}) + (\text{NG}_{\text{DB}} \text{ scf} \times 196 \text{ lb/MMcf}) +$$

$$\frac{1 \text{ ton/lb}}{2 \times 10^6 \text{ gal/Mgal}} \times (\text{FO}_{\text{GT}} \text{ gallons} \times 3.82 \text{ lb/Mgal} + \text{FO}_{\text{DB}} \text{ gallons} \times 42 \text{ lb/Mgal})$$

where:

NG<sub>GT</sub> and NG<sub>DB</sub> are the 12-month rolling averages of natural gas consumptions in the gas turbines and duct burners; and  
 FO<sub>GT</sub> and FO<sub>DB</sub> are the 12-month rolling averages of fuel oil consumptions by the gas turbines and duct burners.

Emissions recorded and calculated in accordance with the requirements of 40 CFR 75 shall be substituted for the nitrogen oxide and sulfur dioxide equations to demonstrate compliance with the annual emissions limits.

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 these emission limits may be determined as stated in Conditions 7 through 9.

## B. Monitoring and Recordkeeping

The permittee is required to maintain records of all emission data and operating parameters necessary to demonstrate compliance with the Title V permit. The content and format of such records shall be arranged with the Director, Piedmont Regional Office. These records shall be available for inspection by the DEQ and shall be current for the most recent five years.

### Streamlined Requirements

The following conditions in the August 5, 2013 NSR permit and in the March 11, 2008 Title V Permit (previous Title V permit) have not been included in the draft Title V permit for the reasons provided:

- Condition Nos. III.A.3, III.A.10, III.B.5.a., III.B.7, and III.A.17 of the Title V permit issued on March 11, 2008 were deleted from the draft Title V since the boiler has been shut-down and removed from the site and these conditions have been removed from the facility's NSR permit issued on June 30, 2010 and August 5, 2013.
- Condition No. III.B.6 of the Title V permit issued on March 11, 2008 was deleted from the draft Title V permit since it has been deleted from the NSR permit issued on August 5, 2013.
- Condition No. III.B.8 of the Title V permit issued on March 11, 2008 was revised to "

*"The permittee shall submit excess NO<sub>x</sub> emission reports to the Director, Piedmont Regional Office within 30 days after the end of each calendar quarter for which there are excess emissions as described in 40 CFR 60 Subpart GG. Details of the quarterly reports are to be arranged with the Director, Piedmont Region. If there are no excess NO<sub>x</sub> emissions during the calendar quarter, the permittee shall submit a report semiannually stating that no excess emission occurred during the semiannual reporting period. The initial quarterly report shall be submitted to the Director, Piedmont Region, postmarked by the 30<sup>th</sup> day of the end of the previous quarter, unless no excess emissions occur during that quarter. Each subsequent quarterly or semiannual report shall be postmarked by the 30<sup>th</sup> day following the end of the reporting period. All quarterly and semiannual monitoring reports shall conform to the Continuous Emission Monitoring System Report Format enclosed with this permit."*

As the requirement to submit the excess opacity emission reports was deleted in the NSR issued on June 30, 2010 and August 5, 2013 due to the removal of the auxiliary boiler from the site.

- Condition Nos. III.A.12 and III.A.13 of the Title V permit issued on March 11, 2008 were deleted and combined into condition no. 4 in the draft Title V permit since the conditions contain similar requirements.
- Condition No. IV.A and IVB of the Title V Permit issued on January 1, 2008 were deleted

from the Draft Title V Permit for Dominion Bellemeade since the distillate fuel storage tank is not subject to 40 CFR 60 Subpart Kb due to the vapor pressure of the distillate oil that is less than 1.5 pounds per square inch. The Tank is now listed as an insignificant emission unit.

- Inspection and entry condition (Condition no. 21 of the NSR)– the same requirements are already included in the Title V general conditions which are as stringent along with it being redundant.
- Malfunction reporting condition (Condition no. 23 of the NSR) – the same requirements are part of the Title V general conditions. As indicated prior, it would be redundant.
- Transfer of ownership condition relative to the permit (Condition no. 26) – the transfer requirements are already included in the Title V general conditions which make it redundant.
- The wording "Virginia Electric and Power Company" in several conditions in the Title V permit issued on March 11, 2008 were replaced with "the permittee" wording to make sure that when the owner of the facility changed, the permit is still applicable without revising the permit name in the permit.
- The equations in Condition no. V.A.1 of the Title V permit issued on March 11, 2008 were revised and units for the equations were added in Condition VI.A.1. of the draft Title V permit to make sure that the equations are enforceable. The revised equations are shown below:

$$\text{NO}_x \text{ ton/year} = \frac{(1 - 0.805) \text{ ton/lb}}{2 \times 10^9 \text{ scf/MMcf}} \times (\text{NG}_{\text{GT}} \text{ scf} \times 156 \text{ lb/MMcf}) + (\text{NG}_{\text{DB}} \text{ scf} \times 103.2 \text{ lb/MMcf}) +$$

$$\frac{1 - 0.805 \text{ (ton/lb)}}{2 \times 10^6 \text{ gal/Mgal}} \times (\text{FO}_{\text{GT}} \text{ gal} \times 32.7 \text{ lb/Mgal} + \text{FO}_{\text{DB}} \text{ gallons} \times 14 \text{ lb/Mgal})$$

$$\text{SO}_2 \text{ ton/year} = \frac{1 \text{ ton/lb}}{2 \times 10^9 \text{ scf/MMcf}} \times (\text{NG}_{\text{GT}} \text{ scf} \times 0.72 \text{ lb/MMcf}) + (\text{NG}_{\text{DB}} \text{ scf} \times 0.65 \text{ lb/MMcf}) +$$

$$\frac{1 \text{ ton/lb}}{2 \times 10^6 \text{ gal/Mgal}} \times (\text{FO}_{\text{GT}} \text{ gallons} \times 29.7 \text{ lb/Mgal} + \text{FO}_{\text{DB}} \text{ gallons} \times 29.2 \text{ lb/Mgal})$$

$$\text{CO ton/year} = \frac{1 \text{ ton/lb}}{2 \times 10^9 \text{ scf/MMcf}} \times (\text{NG}_{\text{GT}} \text{ scf} \times 26.3 \text{ lb/MMcf}) + (\text{NG}_{\text{DB}} \text{ scf} \times 196 \text{ lb/MMcf}) +$$

$$\frac{1 \text{ ton/lb}}{2 \times 10^6 \text{ gal/Mgal}} \times (\text{FO}_{\text{GT}} \text{ gallons} \times 3.82 \text{ lb/Mgal} + \text{FO}_{\text{DB}} \text{ gallons} \times 42 \text{ lb/Mgal})$$

In addition the following paragraph was added in the condition to make sure that the condition would not be conflicting with other conditions in the draft Title V permit (such as throughput limits conditions).

*"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 these emission limits may be determined as stated in Condition Nos. III.A. 6 and 7 and IV.A.2."*

In general certain conditions within existing NSR permits may be applicable to all newly constructed or modified equipment that receive a permit such as the condition for maintenance/operating procedures.

## **GENERAL CONDITIONS**

The permit contains general conditions required by 40 CFR Part 70 and 9 VAC 5-80-110 that apply to all Federal-operating permitted sources. These include requirements for submitting semi-annual monitoring reports and an annual compliance certification report. The permit also requires notification of deviations from permit requirements or any excess emissions.

### **Comments on General Conditions**

#### **B. Permit Expiration**

This condition refers to the Board taking action on a permit application. The Board is the State Air Pollution Control Board. The authority to take action on permit application(s) has been delegated to the Regions as allowed by §2.2-604 and §10.1-1185 of the *Code of Virginia*, and the "Department of Environmental Quality Agency Policy Statement No. 2-09".

This general condition cite(s) the Article(s) that follow(s):  
Article 1 (9 VAC 5-80-50 et seq.), Part II of 9 VAC 5 Chapter 80. Federal Operating Permits for Stationary Sources

[This general condition cites the sections that follow:  
9 VAC 5-80-80. Application  
9 VAC 5-80-140. Permit Shield  
9 VAC 5-80-150. Action on Permit Applications]

#### **F. Failure/Malfunction Reporting**

Section 9 VAC 5-20-180 requires malfunction and excess emission reporting within four hours of discovery. Section 9 VAC 5-80-250 of the Title V regulations also requires malfunction reporting; however, reporting is required within two days. Section 9 VAC 5-20-180 is from the general regulations. All affected facilities are subject to section 9 VAC 5-20-180 including Title V facilities. Section 9 VAC 5-80-250 is from the Title V regulations. Title V facilities are subject to both sections. A facility may make a single report that meets the requirements of 9 VAC 5-20-180 and 9 VAC 5-80-250. The report must be made within four daytime business hours of discovery of the malfunction.

In order for emission units to be relieved from the requirement to make a written report in 14 days the emission units must have continuous monitors meeting the requirements of 9 VAC 5-50-410 or 9 VAC 5-40-41.

This general condition cites the sections that follow:

- 9 VAC 5-40-41. Emissions Monitoring Procedures for Existing Sources
- 9 VAC 5-40-50. Notification, Records and Reporting
- 9 VAC 5-50-50. Notification, Records and Reporting]

This general condition contains a citation from the Code of Federal Regulations as follows:  
40 CFR 60.13 (h). Monitoring Requirements.]

#### **J. Permit Modification**

This general condition cites the sections that follow:

- 9 VAC 5-80-50. Applicability, Federal Operating Permit For Stationary Sources
- 9 VAC 5-80-190. Changes to Permits.
- 9 VAC 5-80-260. Enforcement.
- 9 VAC 5-80-1100. Applicability, Permits For New and Modified Stationary Sources
- 9 VAC 5-80-1605. Applicability, Permits For Major Stationary Sources and Modifications Located in Prevention of Significant Deterioration Areas
- 9 VAC 5-80-2000. Applicability, Permits for Major Stationary Sources and Major Modifications Locating in Nonattainment Areas

#### **U. Malfunction as an Affirmative Defense**

The regulations contain two reporting requirements for malfunctions that coincide. The reporting requirements are listed in sections 9 VAC 5-80-250 and 9 VAC 5-20-180. The malfunction requirements are listed in General Condition U and General Condition F. For further explanation see the comments on general condition F.

This general condition cites the sections that follow:

- 9 VAC 5-20-180. Facility and Control Equipment Maintenance or Malfunction
- 9 VAC 5-80-110. Permit Content

#### **Y. Asbestos Requirements**

The Virginia Department of Labor and Industry under Section 40.1-51.20 of the Code of Virginia also holds authority to enforce 40 CFR 61 Subpart M, National Emission Standards for Asbestos.

This general condition contains a citation from the Code of Federal Regulations that follow:  
40 CFR 61.145, NESHAP Subpart M. National Emissions Standards for Asbestos as it applies to demolition and renovation.

40 CFR 61.148, NESHAP Subpart M. National Emissions Standards for Asbestos as it applies to insulating materials.

40 CFR 61.150, NESHAP Subpart M. National Emissions Standards for Asbestos as it applies

to waste disposal.

This general condition cites the regulatory sections that follow:

9 VAC 5-60-70. Designated Emissions Standards

9 VAC 5-80-110. Permit Content

### **STATE ONLY APPLICABLE REQUIREMENTS**

The following Virginia Administrative Codes have specific requirements only enforceable by the State and have been identified as applicable by the applicant:

None

### **FUTURE APPLICABLE REQUIREMENTS**

Currently the facility is not subject to any future applicable requirements.

### **GREENHOUSE GAS (GHG) REQUIREMENTS**

Although the facility is a major source of GHG emissions, there are currently no applicable requirements related to the facility's GHG emissions. Any future applicable requirements will be incorporated into the title V permit as appropriate.

### **INAPPLICABLE REQUIREMENTS**

40 CFR 60 Subpart D and Da, the New source Performance Standards (NSPS) for Fossil Fuel Fired Steam Generators, Electric Utility Steam Generating Units, and Industrial-Commercial-Institutional Steam Generating Units, are not currently applicable because the facility is subject to NSPS Subpart Dc and GG due to the nature and size of the activities at the facility.

40 CFR 60 Subpart Kb, the NSPS for Volatile Organic Liquid Storage Vessels, is not applicable to the fuel oil tanks, kerosene storage tank, and diesel storage tank in the facility since the vapor pressures of the liquid are lower than the applicable levels in Subpart Kb.

40 CFR 60 subpart IIII, the NSPS for stationary compression ignition internal combustion engines, is not applicable to the emergency generator and firepump since they were constructed prior to July 11, 2005, which is the first applicability date of Subpart IIII.

40 CFR 60 Subpart KKKK, the NSPS for combustion turbines, is not applicable to the turbines in the facility since the turbines were constructed prior to February 18, 2005, which is the applicability date of Subpart KKKK.

40 CFR 63 subpart UUUUU, the Utility "Mercury and Air Toxics Standard" (MATS) is not currently applicable since combustion turbines are not covered by the MATS rule.

40 CFR 64 Compliance Assurance Monitoring (CAM) is not applicable since the facility is exempt

from CAM for reasons discussed in the attached "Proposed CAM Exemption".

40 CFR 63 Subpart Yyyy, MACT for combustion turbines, is not applicable since the facility is not a major source of HAPS.

**COMPLIANCE PLAN**

The facility is in compliance and does not need a compliance plan and schedule.

**INSIGNIFICANT EMISSION UNITS**

The insignificant emission units are presumed to be in compliance with all requirements of the Clean Air Act as may apply. Based on this presumption, no monitoring, recordkeeping or reporting shall be required for these emission units in accordance with 9 VAC 5-80-110.

Insignificant emission units include the following:

<b>Emission Unit No.</b>	<b>Emission Unit Description</b>	<b>Citation</b>	<b>Pollutant Emitted</b>	<b>Rated Capacity</b>
ES-6	Fuel Oil Day Tank	9 VAC 5-80-720 A & B	VOC	50,000 gallons
IS-2	Emergency Fuel Oil Tank (Diesel)	9 VAC 5-80-720 A & B	VOC	340 gallons
IS-3	Anhydrous Ammonia Storage Tank	9 VAC 5-80-720 B.	Ammonia	18,000 Gal.
IS-4	Combustion Turbine Unit 1 Turbine Lube Oil System	9 VAC 5-80-720 B.	VOCs	4,000 gallons
IS-5	Combustion Turbine Unit 2 Turbine Lube Oil System	9 VAC 5-80-720 B.	VOCs	4,000 gallons
IS-6	Steam Turbine Lube Oil and Hydraulic Oil System	9 VAC 5-80-720 B	VOCs	250 gallons and 4,000 gallons
IS-7	Oily Water Collection Sump	9 VAC 5-80-720 B.	VOCs	7,000 gallons
IS-8	Oily Water Separator Tank	9 VAC 5-80-720 C	VOCs	275 gallons

Emission Unit No.	Emission Unit Description	Citation	Pollutant Emitted	Rated Capacity
IS-9	Kerosene Tank Model 358	9 VAC 5-80-720 B.	VOCs	100 gallons
IS-12	Ultra Low Sulfur Diesel Tank (former Kerosene Tank)	9 VAC 5-80-720 A & B	VOC	275 gallons

Combustion air heats water in the Heat recovery steam generator (HRSG), which turns the two steam turbines. Grey and potable water from Henrico County are treated on-site for use as boiler water and steam for emission control. Additionally, anhydrous ammonia is stored on-site for use in the SCR unit.

1The citation criteria for insignificant activities are as follows:

9 VAC 5-80-720 A - Listed Insignificant Activity, Not Included in Permit Application

9 VAC 5-80-720 B - Insignificant due to emission levels

9 VAC 5-80-720 C - Insignificant due to size or production rate

#### Acid Rain Permit

The facility Acid Rain Permit was issued on October 23, 2013.

#### Cross State Air Pollution Control Rule (CSAPR)

The current affected CAIR units will be subject to the Cross-State Air Pollution Control Rule (CSAPR) (effective October 7, 2011) which replaces the Clean Air Interstate Rule (CAIR) on January 1, 2012. Virginia at this time will implement the CSAPR requirements through the federal implementation plan (FIP) as per Chapter 291 of the 2011 Virginia Acts of Assembly and 40 CFR 97.

#### Clean Air Interstate Rule (CAIR) Requirements

The two turbines (ES-1 and ES-2) are subject to federal CAIR requirements for NO<sub>x</sub>, SO<sub>2</sub>, and NO<sub>x</sub> Ozone Season, and the following permit condition was included in the draft Title V to address this rule.

Condition XII.A. The permittee shall comply with all applicable CAIR requirements (9 VAC 5-140-1010 et seq., 9 VAC 5-140-2010 et seq., 9 VAC 5-140-3010 et seq., and 40 CFR Part 96) by the compliance date in the respective Part of 9 VAC 5 Chapter 140. The CAIR application in Attachment B to this document contains specific conditions and expires upon expiration of this Title V permit.

(9 VAC 5-80-490, 40 CFR Part 96 and 9 VAC 5 Chapter 140)

**CONFIDENTIAL INFORMATION**

The permittee did not submit a request for confidentiality. All portions of the Title V application are suitable for public review.

**PUBLIC PARTICIPATION**

The proposed permit was placed on a public notice in the Style Weekly magazine from September 5, 2013 until October 4, 2013.

