

**COMMONWEALTH OF VIRGINIA
Department of Environmental Quality
Blue Ridge Regional Office**

STATEMENT OF LEGAL AND FACTUAL BASIS

Bear Garden Generating Station
Located in New Canton, Virginia
Permit No. (BBRO- 32004)

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 and Power Company has applied for a Title V Operating Permit for its Bear Garden Generating Station facility. The Department has reviewed the application and has prepared a draft/proposed Title V Operating Permit.

Engineer/Permit Contact: _____ Date: November 20, 2013
Terry Moore
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Jed Brown

Regional Director: _____ Date: November 21, 2013
Robert J. Weld

FACILITY INFORMATION

Permittee

Virginia Electric and Power Company
5000 Dominion Boulevard
Glen Allen, VA 23060

Facility

Bear Garden Generating Station
2608 C.G. Woodson Dr.
New Canton, VA

AFS ID Number: 51- 029-00028

SOURCE DESCRIPTION

NAICS Code: 221112 – Electric Power Generation

Bear Garden Generating Station (Bear Garden) is located approximately 1.5 miles southeast of New Canton, near Route 670 in Buckingham County and consists of two dual-fuel combustion turbines with associated heat recovery steam generators (HRSG); one tandem compound reheat, condensing steam turbine receiving steam from the two HRSG's; one natural gas-fired auxiliary boiler, a natural gas pipeline heater, two 2.275 million gallon above ground distillate fuel oil storage tanks; one 10-cell steam-cycle cooling tower; one 6-cell chiller cooling tower, one 1000 kW emergency diesel generator; and one diesel engine driven fire suppression water pump.

The facility is a Title V major source of PM10, NOx, CO, VOC, SO2 and GHG; and is classified as an area source of HAP emissions¹. This source is located in an attainment area for all pollutants, and is a PSD major source. The facility is currently permitted under (1) a PSD Permit issued December 31, 2003, and amended on March 13, 2009, February 10, 2011 and January 29, 2013 (hereafter referred to as amended 12/31/03 permit) and (2) a Minor NSR Permit issued on June 30, 2009 (hereafter referred to as 6/30/09 permit).

COMPLIANCE STATUS

A full compliance evaluation of this facility, including a site visit, has been conducted. 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

¹HAP emission calculations were included in the original PSD permit application. Subsequent permit engineering analyses state that the facility is not a major source of HAPs (e.g., 10/2/03 engineering analysis). The number of permitted generators and size of burners have been reduced which would further reduce the potential HAP emissions.

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 are contained in the Emission Unit and the Insignificant Emission Unit tables of this federal operating permit, as represented by Bear Garden’s application.

There are two GE Frame 7FA Combustion Turbines (CT) permitted to burn either natural gas or low sulfur diesel fuel. The maximum rated capacity of each CT is:

- Firing natural gas: 1,887 million Btu/hr and 183 MW
- Firing Diesel fuel: 2,020 million Btu/hr and 194 MW

Each CT is equipped with a Heat Recovery Steam Generator (HRSG) with supplementary natural gas fired, 400 million Btu/hr duct burner. Each CT is equipped with dry/low-NOx lean pre-mix burner, and water injection (used for oil firing mode only) to reduce NOx formation. Also, Selective Catalytic Reduction (SCR) is required for each CT/HRSG unit to control NOx emissions in the exhaust gas stream. The natural gas pipeline to the facility is equipped with a 5.04 million Btu/hr natural gas fired heater, which is used to ensure that the natural gas fuel for the combustion turbines is delivered to the turbines at the required inlet temperature and pressure conditions. Water used to cool the CTs is processed through a ten cell cooling tower and a six cell cooling tower supplies the inlet air chiller system. The cooling tower and air chiller system are equipped with mist eliminators to control particulate emissions and each uses non-chromium based water treatment.

Other emission units include a 25.1 million Btu/hr natural gas fired boiler, a 10.1 million Btu/hr/600 kW diesel fuel fired emergency generator, a 2.8 million Btu/hr diesel fuel fired emergency fire pump, two 2.275 million gallon above ground distillate oil storage tanks, Lube Oil Systems/Waste Oil Systems/Hydraulic Oil Systems and a No. 2 Fuel Oil Truck Unloading/Loading Station.

EMISSIONS INVENTORY

The 2012 annual emission update is summarized below in the Criteria and Hazardous Air Pollutant tables.

2012 Actual Criteria Pollutant Emission in Tons/Year				
VOC	CO	SO ₂	PM ₁₀	NO _x (NO ₂)
3.02	21.78	8.61	24.01	106.92

Pollutant	2012 Hazardous Air Pollutant Emission in Tons/Yr
Toluene	0.005

EMISSION UNIT APPLICABLE REQUIREMENTS

The applicant included the following information in their Title V permit application dated December 23, 2008:

- An Acid Rain Permit Application
- A NOx Budget Permit Application, and
- A CAIR Permit Application

Therefore, this Federal Operating Permit (FOP) will be issued under Article 3 instead of Article 1; and Article 3 regulatory citations are stated in the permit conditions². The FOP includes conditions addressing Acid Rain (Title IV) and CAIR regulatory requirements. However, NOx Budget requirements from the Title V permit boiler plate are not included because of the Court’s 2008 decisions³.

Because of the changes in the facility’s permitted equipment, permit amendments and amendments to federal NSPS and MACT rules since the December 23, 2008 Title V application (12/23/08 application), Dominion submitted an updated application dated April 30, 2013 (4/30/13 application). The updated application corrects information in the 12/23/08 application⁴, and addresses stationary engine rules (NSPS Subpart IIII and MACT Subpart ZZZZ) and the following permits:

- December 31, 2003 permit amended March 13, 2009, February 10, 2011 and January 29, 2013
 - March 13, 2009 reduced number of CT and HRSG from three to two, reduced the auxiliary boiler Btu input, removed black start engines from the permit, changed the water cooling systems (reduction in the number of cooling tower cells and adding an inlet air chiller system)
 - February 10, 2011 reduced the duct burners Btu input and the kW of the

²The Article 3 regulatory citation corresponds to the similar Article 1 citation stated in the Title V permit condition (e.g., for permit content 9 VAC 5-80-490 is cited instead of 9 VAC 5-80-110).

³On December 23, 2008, the US Court of Appeals for the DC Circuit remanded CAIR without vacatur. The Court’s July 11, 2008 decision stands; however, CAIR remains in place while US EPA develops a replacement and puts it in place. The allowances in NOx Budget Trading Program were converted into the CAIR Ozone season accounts by US EPA.

⁴The Emission Unit IDs are revised to reflect the facility’s identification numbering system and the ID# associated with the Acid Rain Permit (i.e., the CT’s are now identified as “Unit 1A” and “Unit 1B”). Also, Page 1 of the 12/23/08 application identified “states within 50 miles” of the facility; however, there are no states within 50 miles, as stated in the 4/13/08 application.

- emergency generator and replaced NSPS Subparts GG and Da with NSPS KKKK
- January 29, 2013⁵ revised Appendix A of the permit (Bear Garden Generating Station Permit Definitions) to change the definition of shutdown for the combustion turbines when firing natural gas.
- June 30, 2009 added the pipeline natural gas heater which resulted in the CTs and HRSGs/duct burners becoming subject to NSPS Subpart KKKK⁶.

The FOP, unless stated otherwise in this SOB, includes the conditions from the amended 12/31/03 permit and the 6/30/09 permit.

EMISSION UNIT APPLICABLE REQUIREMENTS - Combustion Turbines (CT) (Unit 1A and Unit 1B) and Heat Recovery Steam Generator (HRSG) with supplementary firing duct burners (1ADB and 1BDB)

As a result of the 6/30/09 permit for the natural gas pipeline heater the CT and the HRSG with duct burners became subject to NSPS Subpart KKKK (see **EMISSION UNIT APPLICABLE REQUIREMENTS - Fuel Burning Equipment Pipeline Gas Heater**) and exempt from NSPS Subpart GG and Da⁷. Therefore, applicable requirements from NSPS Subparts KKKK and A are included in the FOP⁸. Because some NSPS requirements differ from similar requirements of the underlying permit⁹ FOP conditions are separated, where needed, into “a” to show amended 12/31/03 permit condition requirements and “b” to show NSPS requirements. If there are no

⁵January 29, 2013 amendment of the December 31, 2003 permit: Dominion requested the installation and use of Opflex, a software system, which will allow the combustion turbine to operate at 43% of maximum load when firing with natural gas. Appendix A of the December 31, 2003 permit includes definition of startup and shutdown for the two CTs; and “50% of the maximum load” is used in the definition. Therefore, the permit, including Appendix A, was amended to address the change to “43% of maximum load”.

⁶June 30, 2009 permit: The permitting and installation of the pipeline natural gas heater was considered a modification under NSPS Subpart KKKK. Subpart KKKK applicability date for construction, modification, or reconstruction is 2/18/05. Also, Subpart KKKK defines stationary combustion turbine as “all equipment, including but not limited to the turbine, the fuel, air, lubrication and exhaust gas systems (except emissions control equipment), heat recovery system, and any ancillary components and subcomponents comprising any simple cycle stationary combustion turbine, any regenerative/recuperative cycle stationary combustion turbine, any combined cycle combustion turbine, and any combined heat and power combustion turbine based system...[underlined added for emphasis]”. The heater ensures that the natural gas for the combustion turbines is delivered to the turbines at the required inlet temperature and pressure conditions.

⁷Per 40 CFR Subpart KKKK 60.4305(b) “Stationary combustion turbines regulated under this subpart are exempt from the requirements of subpart GG of this part. Heat recovery steam generators and duct burners regulated under this subpart are exempted from the requirements of subparts Da, Db and Dc of this part.”

⁸The 2/10/11 amendment of the 12/31/03 permit removed “Subpart GG” and “Subpart Da” and specific requirements from these subparts from the 12/31/03 permit. References to Subparts GG and Da were replaced with KKKK. Also, regulatory citations from these subparts were replaced with regulatory citations from KKKK that contained similar language. The FOP includes new conditions to identify and adequately address the applicable requirements of Subpart KKKK (e.g., NOx emission standards, NOx CEMS requirements)..

⁹e.g., Subpart KKKK’s NOx limit is ppm, and the averaging time is 1-hour if CEMS are used to demonstrate compliance. The NOx permitted limit is as NO2 expressed in both ppmvd and lbs/hr average for a three-hour sampling period. More information is provided in the discussion of limitations, monitoring and recordkeeping.

NSPS applicable requirements “b” is not listed in the permit.

The CTs are equipped with NO_x controls (e.g., water injection and SCR) and potential uncontrolled emissions exceed the CAM applicability threshold. However, the CTs are exempt from the CAM Rule per 40 CFR 64.2(b)(1)(vi)¹⁰.

Limitations

- a. NSR Conditions 3, 13, 12, 8, 18, 4, 5, 21 and the definition of standard cubic foot of gas defined in Appendix A¹¹ of the amended 12/31/03 permit¹² are included as limitations in FOP **Conditions 1 through 9**. These limitations include: emission limits (PM₁₀, SO₂, NO_x, CO, VOC and H₂SO₄); approved fuels for the CTs and associated duct burners; use of SCR for NO_x control¹³; restriction of the operation of the duct burners to when the turbines are firing natural gas; limits on fuel usage, including the sulfur content; and visible emissions limits for each CT/HRSG stack.
- b. Subpart KKKK emissions limits for SO₂¹⁴, and NO_x¹⁵ are included in FOP **Condition 5.b**. Excess NO_x emissions as defined by the subpart is also provided in FOP **Condition 5.b** because FOP Condition 5.a contains NSR Condition 18 of the amended 12/3/03 permit which defines excess emissions with respect to the permitted short term emissions.

Subpart KKKK includes monitoring equipment in its general requirements (see §60.4333(a), which is addressed in FOP **Condition 9**. This condition also addresses the general duty

¹⁰§64.2(b)(1) “*Exempt emission limitations or standards*. The requirements of this part shall not apply to any of the following emission limitations or standards:

(vi) Emission limitations or standards for which a part 70 or 71 permit specifies a continuous compliance determination method, as defined in §64.1.” Note: Condition 28 of the 12/31/03 amended permit requires a CEMS to measure and record NO_x emissions.

¹¹This definition is stated in FOP Condition 2, which is NSR Condition 13 of the amended 12/3/03 permit.

¹²The conditions of the amended 12/31/03 permit are listed in the order as they appear in the FOB. This applies throughout this SOB.

¹³SCR equipment will be in operation with the CTs are in normal operating mode. Nonnormal operating mode (i.e., startup and shutdown) is defined in Attachment A of the amended 12/31/03 permit. Attachment A is not included as a document in the FOP permit, but the contents are included in the conditions of the FOP.

¹⁴The permitted SO₂ limit of 3.1 lbs/hr for each unit is less than the corresponding lbs/hr of Subpart KKKK’s 26 ng SO₂/J (0.060 lb SO₂/MMBtu) emission standard – i.e., 137.22 lbs/hr*. Also, the permitted hourly limit represents averages for a three-hour sampling period while the subpart’s limit is an hourly limit. The subpart’s MMBtu limit is included in the FOP because the facility is exempted from fuel monitoring because of the 0.060 lb SO₂/MMBtu exemption. Compliance with this limit is demonstrated by documentation or representative fuel sampling as provided in §60.4365.

*2,287 MMBtu/hr x 0.060 lb/MMBtu = 137.22 lbs/hr. The combined CT and duct burner fired with natural gas is 2,287 MMBtu (i.e., Each CT rated at 1,887 and duct burner rated at 400 MMBtu/hr).

¹⁵The permitted NO_x limit of 2.5 ppmvd is less than Subpart KKKK’s 15 ppm; both are corrected to 15% O₂. However, the subpart’s standard is listed in the FOP because (1) the permitted hourly limit represents averages for a three-hour sampling period and the subpart’s limit is an hourly limit; and (2) the subpart’s excess NO_x emissions reporting requirements.

requirement of 40 CFR Subpart A 60.11(d) and is in addition to the FOP General **Condition 79**. Subpart KKKK's definition of stationary combustion turbine is not limited to the turbine itself and includes the fuel, air, lubrication and exhaust gas systems, etc. (see §60.4420) a facility wide condition addressing NSPS Subparts KKKK and A is included as FOP **Condition 39**.

Monitoring

- a. NSR Conditions 16, 7, 28 and 30 of the amended 12/31/03 permit contain the following monitoring requirements and are included in FOP **Conditions 10 through 13**: fuel certification or sulfur analysis; continuous monitoring and recording of fuel consumption by the CTs; CEMS to measure NO_x; CEMS to measure SO₂ for Acid Rain; a CEMS quality control program; and excess emissions reporting. NSR Condition 35 requires visual emissions observations for each CT/HRSG and the emergency generator, and therefore, is included as facility wide FOP **Condition 47.a**.

Because distillate oil is also used by other fuel burning equipment the sulfur monitoring and fuel certification requirements contained in Appendix A and NSR Condition 16 of the 12/31/03 permit are included as facility wide FOP **Conditions 46.a. and 45**, respectively.

- b. Monitoring requirements from Subpart KKKK are included in FOP **Conditions 10.b** (total sulfur content), **12.b** (NO_x emissions monitoring, and installation, calibration and operation of the monitoring system), **13.b** and **c** (NO_x CEM QA) and **45.b** (total sulfur sampling).

The monitoring requirements and recordkeeping requirements (see Recordkeeping below), along with the test results and the fact that testing can be required by the VADEQ (see **Testing** below), are considered to provide sufficient monitoring for the applicable requirements for the CT/HRSG/Duct Burners at Bear Garden. These requirements reflect the facility's selected Subpart KKKK's compliance demonstration option.

Recordkeeping

NSR Condition 27¹⁶ of the amended 12/31/03 permit contains the following recordkeeping and is included as FOP **Condition 14.a**: throughput of fuels; periods of startup, shutdown, and malfunction; continuous power output; date and time when burning distillate fuel oil; fuel analysis/supplier certifications; emissions calculations¹⁷; CEM information; and stack test results, visible emissions evaluations, and performance evaluations.

¹⁶For NSR paragraph (l): The following added to clarify "excess emission limits" of the permit limits from NSPS limits: "of the permitted emissions limits".

¹⁷The emissions methodology referenced in NSR Condition 27.k of the amended 12/31/03 permit addresses the following emissions units and is FOP **Condition 14.a.vii**: CT/HRSG, the emergency generator, black start diesel generators (no longer located at the facility), fire water pump and auxiliary boiler. This methodology is item No. 2 of Trinity Consultants September 24, 2001 letter to Ms. Margaret Key. No other calculations methods have been approved by the Blue Ridge Regional Office.

Specific applicable recordkeeping requirements of NSPS Subpart KKKK are listed in FOP **Condition 14.b**. NSR Condition 42 of the amended 12/31/03 permit contains the following recordkeeping and is included as FOP **Condition 15**: maintenance and training records.

FOP **Condition 48.b** requires records to demonstrate compliance with the visible emissions observations requirements stated in FOP **Condition 47.a**.

Testing

NSR Condition 36 of the amended 12/31/03 permit contains the following testing requirements and is included as FOP **Condition 16**: stacks must be constructed to allow for testing.

The amended 12/31/03 permit required initial performance tests for SO₂, NO_x, CO, PM₁₀, VOC, and VEE from each CT/HRSG unit. NSPS Subpart KKKK requires initial performance test for NO_x and SO₂. These performance tests have been completed¹⁸ and compliance with the permitted emission limits and NSPS standards have been demonstrated. Therefore, the following conditions are not included in the FOP:

- NSR Condition 29: CMS performance evaluation procedures associated with the initial stack test.
- NSR Condition 32: initial stack test
- NSR Condition 33: labeled as “not used” in the amended 12/31/03 permit.
- NSR Condition 34: initial visible emissions evaluation
- NSR Condition 37: construction notification, start-up dates, anticipated continuous monitoring system performance evaluation and performance test

NSPS Subpart KKKK requires subsequent annual performance tests unless continuous emission monitoring is used. The FOP includes conditions requiring CEMS for demonstrating compliance with NO_x emission limits, and the sampling of fuel or use of fuel certification in lieu of fuel sulfur monitoring, therefore stack testing to demonstrate compliance with Subpart KKKK’s applicable emissions limits is not required.

Stack testing to demonstrate compliance with the short term emission limits of the 12/31/03 permit is not included in the FOP because of the margin of compliance as demonstrated by the initial performance testing¹⁹ is considered sufficient; This conclusion is further supported by the

¹⁸Testing was performed for each CT s for the following operating conditions and the results were submitted to the VADEQ in the May 2011 Stack Test Report:

- CT firing Distillate Fuel Oil (duct burner off) at 50% and 100% load
- CT firing Natural Gas as follows:
 - At 50% load duct burner off (Condition 1)
 - At 100% load duct burner off (Condition 2)
 - At 100% load duct burner on (Condition 3)

¹⁹The attached Table 1 (see Attachment A of the SOB) provides the margin of compliance of the measured

continuous monitoring requirements of Subpart KKKK, the provisions for the Acid Rain Program, and the general duty requirement for all sources that stack testing can be required by the VADEQ as any time upon reasonable notice.

Reporting

Condition 31 of the amended 12/31/03 permit contains excess emissions reporting requirements and is included in the FOP *Condition 17.a*. Subpart KKKK's excess emissions reporting requirements are included in FOP *Condition 17.b*.

Streamlined Requirements

The following conditions from the amended 12/31/03 permit are not included in the FOP as delineated below:

- NSR Condition 1: Application dates – Not a federal applicable requirement
- NSR Condition 2: Equipment List – Not a federal applicable requirement
- NSR Conditions 22 and 23: “Except where this permit is more restrictive than the applicable requirement, the [CTs in condition 22; duct burners in condition 23] shall be operated in compliance with the requirements of 40 CFR 60, Subpart KKKK”. The applicable requirements of Subpart KKKK are identified in the FOP; and these conditions do not identify additional underlying requirements. Therefore, they are not explicitly stated in the FOP.

The following general conditions from the amended 12/31/03 permit are addressed by the FOP conditions as delineated below:

- NSR Condition 39 Right of Entry – FOP *Condition 81* General Conditions – Inspection and Entry Requirements.
- NSR Condition 40 Notification for Malfunction – FOP *Condition 66* General Conditions – Failure/Malfunction Reporting. This FOP condition also addresses Condition 12 of the 6/30/09 permit.
- NSR Condition 41 Violation of Ambient Air Quality Standard – FOP *Condition 41* Facility Wide Conditions – Violation of Ambient Air Quality Standard. The 6/30/09 permit also contains this requirement (i.e., Condition 13). However, the language of two conditions differs. Because the language in Condition 13 is directly from the current regulations it is included in the FOP instead of Condition 41.
- NSR Condition 43 Permit Suspension/Revocation – FOP *Condition 91* General Conditions – Permit Revocation or Termination for Cause.

pollutants, expressed as a percentage of the permitted limit; and the attached Table 2 (see Attachment B of the SOB) provides a summary of the measured emissions from the May 2011 Stack Test Report. Table 2.a is for CT 1A and Table 2.b is for CT 1B. The reported test results were less than 11% of the emission limit, except for the following:

- Both CTs for NO_x from distillate oil at 50% and 100% load, with duct burner off
- Both CTs for NO_x from natural gas at 50% load and 100% load, duct burner off and duct burner on
- CT Unit 1A CO from distillate oil at 50% load, with duct burner off

- NSR Condition 44 Change of Ownership – FOP *Condition 85* General Conditions – Transfer of Permits.
- NSR Condition 45 Registration/Update – FOP *Condition 44* Facility Wide Conditions – Registration/Update.

EMISSION UNIT APPLICABLE REQUIREMENTS - Ancillary Equipment: Steam Turbine Cooling Tower (CWC Tower) and Chiller Cooling Tower (AIC Tower)

Limitation

NSR Condition 6 of the amended 12/31/03 permit requires the PM from the cooling towers to be controlled by the use of drift eliminators and is included in the FOP *Condition 18*. The cooling towers are not subject to the MACT Industrial Process Cooling Towers Subpart Q²⁰ and are not subject to CAM²¹.

Monitoring and Recordkeeping – No specific requirements identified because there are no regulatory limitations. The mist eliminators are part of the cooling towers.

Testing – No specific requirement identified.

Reporting – No specific requirement identified.

Streamlined Requirements – None identified.

EMISSION UNIT APPLICABLE REQUIREMENTS – Ancillary Equipment: Distillate Fuel Oil Storage Tanks (T001 and T002)

Limitation

NSPS Subpart Kb for Volatile Organic Compound Storage vessels is not applicable to T001 and T002 because of the vapor pressure of the distillate oil and the storage capacity of the tanks is less than the exemption thresholds stated in 40 CFR 60.110b(b). However, NSR Condition 17 restricts the contents of the storage tanks and is included as FOP *Condition 19*.

Monitoring and Recordkeeping

A recordkeeping condition is included as FOP *Condition 20* to keep records of material stored and the associated maximum true vapor pressure in kPa. These records in the FOP are considered sufficient for monitoring of the applicable requirements for the storage tanks at Bear

²⁰MACT Industrial Process Cooling Towers Subpart Q is not applicable because this MACT applies to new and existing process cooling towers that are operated with chromium-based water treatment chemicals and are either major sources or are integral parts of facilities that are major sources for HAPs (see 40 CFR 63.400). The facility is not major for HAPs and chromium-based water treatment is not used

²¹The cooling towers are equipped with mist eliminators, which are considered a part of the cooling tower design; and the potential total PM10 emissions from both towers are estimated to be 2.97 tpy. The criteria of 40 CFR 64.2(a) is not met (i.e., there is no particulate emission limit and the potential PM10 emissions do not exceed major source threshold). Therefore, the cooling towers are not subject to CAM

Garden.

Testing – No specific requirement identified.

Reporting – No specific requirement identified.

Streamlined Requirements

The following conditions from the amended 12/31/03 permit are not included in the FOP because the tanks are not subject to 40 CFR Part 60 Subpart Kb:

- NSR Condition 25: incorporation of Subpart Kb by reference.
- NSR Condition 27.i: fuel sampling results (from Subpart Kb)
- NSR Condition 27.j: “Records of the dimension of each fuel oil storage tank and an analysis showing the capacity of the tank.

EMISSION UNIT APPLICABLE REQUIREMENTS - Fuel Burning Equipment Pipeline Gas Heater (GPLHTR)

The 6/30/09 permit includes requirements only for the pipeline gas heater. The 6/30/09 permit identifies the heater as being subject to 40 CFR Subpart KKKK. However, no specific applicable requirements (limitations, monitoring, recordkeeping and reporting) from Subpart KKKK are listed in the permit or identified to be included in the FOP. The following requirements are applicable to the pipeline heater; but, are addressed by the conditions in the FOP as delineated below:

- Subpart KKKK requires monitoring of the sulfur content of fuel (see **Combustion Turbines (CT) and Heat Recovery Steam Generator (HRSG) with supplementary firing duct burners**). The natural gas used by the gas pipeline heater is the same gas that is used by the CT’s and HRSG. Therefore, the fuel monitoring and recordkeeping requirements for the CT’s in the FOP will suffice for the pipeline gas heater.
- FOP *Condition 38* addresses applicability of Subpart KKKK and 40 CFR 60 Subpart A.

Limitations

NSR Conditions 3 and 5 the 6/30/09 permit contain the following the limitations and are included in FOP *Conditions 21 and 22* of the FOP: the approved fuel is natural gas; and emissions limits for NO_x (as NO₂), CO and VOC. The pipeline heater is subject to the visible emissions requirements for new sources as stated in 9 VAC 5-50-80, which is addressed by FOP *Condition 40*.

Monitoring and Recordkeeping

The emissions limits in FOP *Condition 22* are for emission inventory purposes (The emissions are based on maximum hourly consumption at 8,670 hours per year.). Therefore, no monitoring is required. FOP *Condition 23* requires emission calculations and supporting data to demonstrate compliance with FOP *Conditions 21 and 22*. FOP *Condition 47.b* requires at least a

weekly visible emissions observation to demonstrate compliance with FOP *Condition 40*; and FOP *Condition 48.b* requires associated recordkeeping to demonstrate compliance with FOP *Condition 447.b*. The monitoring and recordkeeping requirements in the FOP are considered sufficient for monitoring.

Testing

NSR Condition 2 of the 6/30/99 permit requires the heater to be constructed to allow for emissions testing and is included in FOP *Condition 24* of the FOP.

Reporting – No specific requirement identified.

Streamlined Requirements

The following conditions from the 6/30/09 permit are not included in the FOP as delineated below:

- NSR Condition 1 Equipment List – Not a federal applicable requirement.
- NSR Condition 4 Requirements by Reference: 40 CFR 60, Subpart KKKK incorporated by reference – KKKK applicable requirements listed in the FOP.
- NSR Condition 6 Initial notification – Notification requirement has been completed.
- NSR Condition 7 Permit Invalidation – Construction is complete.
- NSR Condition 15 Permit Copy – Not a federal applicable requirement.

The following general conditions from the 6/30/09 permit are addressed by the FOP conditions as delineated below:

- NSR Condition 8 Permit Suspension/Revocation – FOP *Condition 91* General Conditions – Permit Revocation or Termination for Cause.
- NSR Condition 9 Right of Entry – FOP *Condition 81* General Conditions – Inspection and Entry Requirements.
- NSR Condition 10 Maintenance/Operating Procedures – FOP *Condition 79* General Conditions – Startup, Shutdown, and Malfunction.
- .
- NSR Condition 12 Notification for Malfunction – FOP *Condition 66* General Conditions – Failure/Malfunction Reporting.
- NSR Condition 13 Violation of Ambient Air Quality Standard – FOP *Condition 43* Facility Wide Conditions – Violation of Ambient Air Quality Standard.
- NSR Condition 14 Change of Ownership – FOP *Condition 85* General Conditions – Transfer of Permits.

EMISSION UNIT APPLICABLE REQUIREMENTS - Fuel Burning Equipment Auxiliary Boiler (AUXBLR)

Because the auxiliary boiler is permitted to burn only natural gas, the only applicable requirements of 40 CFR 60 Subpart Dc are notifications of the date of construction or

reconstruction and actual startup, as stated in §60.48c. The boiler has been constructed and operated; and the facility has submitted the required notifications. Therefore, these requirements are not included in the FOP. The boiler is not subject to 40 CFR 63 MACT Boilers and Process Heaters for major sources of HAPs Subpart DDDDD because the facility is an area source of HAP. The boiler is exempt from MACT Boilers Industrial, Commercial, and Institutional Boiler Subpart JJJJJ for Area Sources per §63.11195(e)²².

Limitations

NSR Conditions 14, 9 and 4 from the 12/31/03 permit contain the following the limitations and are included as FOP *Conditions 25 through 27*: the approved fuel is natural gas; SO₂ emissions are controlled by the use of low sulfur natural gas; and yearly consumption of natural gas.

Monitoring and Recordkeeping

NSR Condition 27 of the 12/31/03 permit contains the following recordkeeping requirements and is included as FOP *Condition 28*: natural gas usage (daily, monthly and annual); and natural gas analysis or supplier certifications. Also, FOP *Condition 47.b* requires visible emissions observations to demonstrate compliance with FOP *Condition 40*. Because the only permitted fuel is natural gas the monitoring and recordkeeping requirements in the FOP are considered sufficient for monitoring.

Testing – No specific requirement identified.

Reporting – No specific requirement identified.

Streamlined Requirements

NSR Condition 24 (i.e., incorporation of 40 CFR 60, Subpart Dc by reference) of the amended 12/31/03 permit is not included in the FOP because no applicable requirements from that subpart have been identified.

EMISSION UNIT APPLICABLE REQUIREMENTS - Fuel Burning Equipment Diesel Engines, Emergency Generator (EDG) and Emergency Fire Suppression Water Pump (EDFP)

Limitations

The following conditions from the amended 12/31/03 permit contain limitations for the emergency generator and/or the emergency fire pump and are included in the FOP as delineated below:

²²§63.11195: “The types of boilers listed in paragraphs (a) through (k) of this section are not subject to this subpart and to any requirements in this subpart...

(e) A gas-fired boiler as defined in this subpart [see §63.11237 below]”.

§63.11237: “*Gas-fired boiler* includes any boiler that burns gaseous fuels not combined with any solid fuels and burns liquid fuel only during periods of gas curtailment, gas supply interruption, startups, or periodic testing on liquid fuel. Periodic testing of liquid fuel shall not exceed a combined total of 48 hours during any calendar year.”

- NSR Conditions 20, 2, 10 and 35 contain the following limitations for the emergency generator and are included as **Conditions 29, 30, 33 and 47.a** of the FOP: NO_x emissions limits; opacity limit; annual consumption of distillate oil: and visible emissions observations.
- NSR Condition 11 contains the following limitation for the emergency fire pump and is included as **Condition 34** of the FOP: annual consumption of distillate oil.
- NSR Conditions 15 and 4 contain the following the limitations for the emergency generator and emergency fire water pump, and are included as **Conditions 31 and 32** of the FOP: use of low sulfur distillate fuel oil; and maximum sulfur content for that distillate fuel oil. Also, see **Streamlined Requirements** below concerning the value of the allowable sulfur content.

The emergency fire suppression water pump is subject to the visible emissions limits for new sources as stated in 9 VAC 5-50-80, which is included in the FOP as **Condition 40**.

The emergency generator and fire suppression water pump are both equipped with engines²³ that are subject to the NSPS Subpart IIII and MACT Subpart ZZZZ. The applicable requirements of Subpart IIII are identified in FOP **Condition 35**²⁴. The facility is an area source of HAPs and both engines are classified as new per §63.6590(a)(2)(iii)²⁵. Therefore, per §63.6590(c)²⁶ both engines meet the requirements of Subpart ZZZZ²⁷ by complying with the requirements of NSPS

²³ Engine data – provided by Liz Willoughby’s 2/25/13 email and 5/20/13 telephone conversation

Engine Use	Emergency Generator	Emergency Fire Water Pump
Fuel	Diesel	Diesel
Model	600DQCA-A030K136	JU6H-UFAD98
Serial #	C100102821	PE6068L083407
Year	4/20/2010	2009
# Cylinders	6	6
Displacement (total)	23 L	6.8 L
HP (braking)	1220	315@ 1760 RPM
Engine Speed Type	Constant	Constant

²⁴The applicability determination for Subpart IIII is summarized in Attachment C of the SOB; and includes the amendment published in the Federal Register 1/30/13.

²⁵ 63.6590(a)(2)(iii): “A stationary RICE located at an area source of HAP emissions is new if you commenced construction of the stationary RICE on or after June 12, 2006.” New RICE must comply with NSPS Subpart IIII or JJJJ and no further requirements under from Subpart ZZZZ, per §63.6590(c).

²⁶“§63.6590(c): “An affected source that meets any of the criteria in paragraphs (c)(1) through (7) of this section must meet the requirements of this part by meeting the requirements of 40 CFR part 60 subpart IIII, for compression ignition engines or 40 CFR part 60 subpart JJJJ, for spark ignition engines. No further requirements apply for such engines under this part.”

(1) A new or reconstructed stationary RICE located at an area source;...[(2) through (7) are not applicable to this facility]”

²⁷Subpart ZZZZ was amended 1/30/13 (published date in the Federal Register, with an effective date of 4/1/13). The amendment included a definition of *Emergency stationary RICE* (see §63.6675). However, the applicability of

Subpart IIII stated in FOP *Condition 36*.

Monitoring and Recordkeeping

NSR Condition 27 of the amended 12/31/03 permit contains the following recordkeeping requirements and is included as *Condition 37.a* of the FOP: annual distillate oil throughput of each emission unit; and fuel analysis records or supplier certifications. The visible emissions observations requirement for the generator as required by NSR Condition 35 of the amended 12/31/03 permit is included in FOP *Condition 47.a*. FOP *Condition 47.b* requires visible emissions observations to address visible emissions standard for new sources as stated in 9 VAC5-50-80.

Because the engines are for emergency use, the visible emission and recordkeeping²⁸ requirements of the FOP and the work practices of Subpart IIII are considered sufficient for monitoring.

Testing

NSR Condition 36 of the amended 12/31/03 permit requires the emergency generator to be constructed to allow for testing and is the FOP *Condition 38*.

Reporting – No specific requirement identified.

Streamlined Requirements

Because Subpart IIII restricts the sulfur content of the fuel oil to 15 ppm (0.00015 per cent by weight), the sulfur content listed in Condition 15 of the amended 12/31/03 permit is changed to 0.0015 in FOP *Condition 31*.

FACILITY WIDE CONDITIONS

Requirements, including those from the underlying permit, that apply to more than one group of emission units at the facility are listed as FOP *Conditions 39 through 51*.

Limitations

FOP *Condition 40* addresses the visible emissions requirements for new sources as stated in 9 VAC 5-50-80, which applies to all emission points at the facility, except for those associated with the CTs/HRSGs and the emergency generator. These stacks are subject to a lower opacity limit as stated in the amended 12/31/03 permit.

NSR Conditions 13 and 42 of the amended 12/31/03 permit contain requirements that apply to several emissions units. Therefore, these requirements are included in the FOP as delineated below:

Subpart ZZZZ to the engines at this facility is not contingent on the engine meeting the definition of emergency.
²⁸This includes the use of a non-resettable hour meter to record the operating hours of each engine.

- NSR Condition 13 defines distillate oil and is included as FOP *Condition 41*.
- NSR Condition 42 requires the duration and frequency of excess emissions to be minimized through maintenance, operating procedures, training, etc.; and is included as FOP *Condition 42*.

Monitoring and Recordkeeping

NSR Condition 16 of the amended 12/31/03 permit requires sulfur monitoring or analysis for fuel oil; and NSR Appendix A provides the fuel oil sampling methods. These requirements are included as FOP *Conditions 45 and 46.a*, respectively.

As previously discussed in this SOB, FOP *Condition 47* requires periodic monitoring for visible emissions and associated recordkeeping to address compliance with permitted opacity limits (NSR Condition 21 of the amended 12/31/03 permit – see FOP *Condition 8* for the turbine/HRSG stack and FOP *Condition 30* for emergency generator) and regulatory opacity limit for new sources (see FOP *Condition 40*). The opacity standards also provide an indicator of compliance with PM limits.

FOP *Condition 48* addresses recordkeeping requirements of the following FOP conditions:

- *Condition 45* sulfur monitoring or analysis for fuel oil.
- *Condition 47* visible emissions monitoring.

FOP *Condition 49* is Condition No. 11 from the 6/30/09 permit, which requires recordkeeping 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.

The above monitoring and recordkeeping requirements restate or supplement the monitoring sufficiency previously stated in this SOB.

Testing – No specific requirement identified. FOP *Conditions 50 and 51* include general, facility wide testing.

Reporting – No specific requirement identified.

Streamlined Requirements

NSR Condition 26 of the amended 12/31/03 permit requires that “[e]xcept as explicitly granted in this permit, exceptions to the requirements by reference, on the basis that the requirements of this permit are more restrictive, are only valid if approved in writing by the Blue Ridge Regional Office and by USEPA Region III.” This condition is not included in the FOP because exceptions have not been identified. Exceptions to NSPS Subpart GG were previously listed in the PSD permit, but were removed when the permit was amended to address the applicability of NSPS Subpart KKKK.

INSIGNIFICANT EMISSION UNITS

The insignificant emission units identified in *Condition No. 52*²⁹ of the FOP 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 5-80-490.

PERMIT SHIELD AND INAPPLICABLE REQUIREMENTS

The submitted Title V applications identified the following requirements as being nonapplicable³⁰ NSPS Subpart Kb and CAM. The applicability of these requirements and the following requirements are previously addressed in this SOB: NSPS Subparts GG and Da; MACT Subparts DDDDD (Boiler at major HAP source), JJJJJ (Boiler at HAP area source) and Q (Cooling Tower). The permit shield and inapplicable requirements are addressed by FOP *Condition 53*.

GENERAL CONDITIONS

The permit contains general conditions required by 40 CFR Part 70 and 9 VAC 5-80-490 that apply to all Federal-operating permitted sources. This includes 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 the general conditions are provided below.

Comments on General Conditions

Permit Expiration – No 55 through 60

These conditions refer 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”.

Failure/Malfunction Reporting – No 66 through 69

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

²⁹The updated Title V application (April 2013) identified the following as insignificant emission units/activities: Lube Oil Systems/Waste Oil Systems/Hydraulic Oil System (IS-1); No. 2 Fuel Oil Truck Unloading/Loading Station (IS-2); and the two cooling towers. However, the two cooling towers are not included in the *Condition 52 Insignificant Emission Units* because these units are subject to federal applicable requirement in the amended 12/31/03 permit, which are included in the FOP.

³⁰In review of the draft permit, the facility requested that the boiler MACT Subpart DDDDD be included in the permit as an inapplicable requirement.

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.

The facility is subject to 9 VAC 5-50-50 C for new sources and not 9 VAC 5-40-50 C for existing sources.

Permit Modification – No 73

This general boilerplate condition contains several referenced state regulations; and the 9 VAC 5-80-50 is replaced with 9 VAC 5-80-360 Applicability, Federal Operating Permit For Acid Rain Sources.

Malfunction as an Affirmative Defense – No 87 through 90

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 Conditions – Malfunction as an Affirmative Defense (FOP *Conditions 88 through 90*) and General Conditions – Failure/Malfunction Reporting (FOP *Conditions 66 through 69*). For further explanation see the comments on General Conditions – Failure/Malfunction Reporting.

Asbestos Requirements – No. 94

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.

TITLE IV REQUIREMENTS

Title IV Acid Rain requirements are included in the FOP as *Conditions 98 through 101*, and the Title IV Phase II Acid Rain Permit Application is included in the FOP as Attachment A.

CLEAN AIR INTERSTATE RULE (CAIR) REQUIREMENTS

CAIR requirements are included in the FOP as *Condition 102* and the CAIR Permit is included in the FOP as Attachment B.

GREENHOUSE GAS (GHG) EMISSIONS

From the facility's (521900 facility identifier) annual GHG report for 2012:

Total CO₂e – 1,541,615 metric tpy

Total CO₂e mass equivalent – 1,329.6 metric tpy

GHG permitting requirements have not been identified for the emissions units at this facility.

STATE ONLY APPLICABLE REQUIREMENTS

There are no state only requirements in the Title V permit.

FUTURE APPLICABLE REQUIREMENTS

No future applicable requirements identified. However, US EPA is developing a replacement for CAIR; and proposed changes (amendments, corrections, etc) to NSPS Subpart KKKK were published in the 8/29/12 Federal Register.

COMPLIANCE PLAN

None

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 public notice in the Farmville Herald from October 4, 2013 to November 4, 2013. This permit was sent to EPA for concurrent review as a draft/proposed permit.

The DEQ received an email during the public comment period inquiring about the noise from the plant and whom to contact. A response was sent to the commenters. The comment and response, along with follow-up emails from and to the commenters, are provided in Attachment D. Because the comment did not address the Federal Operating Permit or federal enforceable applicable requirements there is no change to the draft/proposed permit. Also, it was determined that a public hearing was not required and EPA's concurrent review time period remained. EPA's concurrent review ended November 18, 2013, with no comments received.

Attachments:

- A: Table 1 Bear Garden – Initial Compliance Test Results' % of Permitted Limits for CT 1A and 1B
- B: Table 2 Bear Garden – Comparison of Allowable Emission Limits and Initial Performance Stack Test Results for CT 1A and 1B
- C: NSPS Subpart IIII Applicability Determination Summary for Bear Garden
- D: Comments received and responses

Dominion Bear Garden Generating Station (Reg. No. 32004)
Statement of Legal and Factual Basis July 2013 for Permit No. BBRO-32004
Attachment A

Table 1 – Initial Compliance Test Results’ % of Permitted Limits for CT 1A and 1B

Pollutant	Load	Description	Fuel	% of Permitted Limit*					
				CT 1A			CT 1B		
				ppm	lbs/hr	Opacity	ppm	lbs/hr	Opacity
NOx	50%	duct burner off	Distillate Oil	80.8	53.34	-	93.8	63.84	-
	100%	duct burner off	Distillate Oil	89.5	88.8	-	85	87.74	-
	50%	duct burner off	Natural Gas	77.6	52.02	-	77.6	52.02	-
	100%	duct burner off	Natural Gas	88.4	84.86	-	80.8	77.4	-
	100%	duct burner on	Natural Gas	92.8	92.39	-	80.8	79.57	-
SO2	50%	duct burner off	Distillate Oil	-	3.01	-	-	6.12	-
	100%	duct burner off	Distillate Oil	-	9.28	-	-	9.76	-
	50%	duct burner off	Natural Gas	-	3.516	-	-	3.55	-
	100%	duct burner off	Natural Gas	-	4.97	-	-	4.97	-
	100%	duct burner on	Natural Gas	-	4.16	-	-	4.24	-
CO	50%	duct burner off	Distillate Oil	-	41	-	-	9.96	-
	100%	duct burner off	Distillate Oil	-	11.37	-	-	8.31	-
	50%	duct burner off	Natural Gas	-	4.21	-	-	3.38	-
	100%	duct burner off	Natural Gas	-	5.66	-	-	4.3	-
	100%	duct burner on	Natural Gas	-	2.72	-	-	1.33	-
VOC	50%	duct burner off	Distillate Oil	3.33	-	-	7.00	-	-
	100%	duct burner off	Distillate Oil	10.7	-	-	8.33	-	-
	50%	duct burner off	Natural Gas	10	-	-	6.43	-	-
	100%	duct burner off	Natural Gas	1.43	-	-	7.14	-	-
	100%	duct burner on	Natural Gas	1.43	-	-	5.71	-	-
PM10	50%	duct burner off	Distillate Oil	-	not tested	-	-	not tested	-
	100%	duct burner off	Distillate Oil	-	81.15	-	-	80.69	-
	50%	duct burner off	Natural Gas	-	not tested	-	-	not tested	-
	100%	duct burner off	Natural Gas	-	37.94	-	-	26.6	-
	100%	duct burner on	Natural Gas	-	48.38	-	-	53.68	-
Opacity	50%	duct burner off	Distillate Oil	-	-	0	-	-	0
	100%	duct burner off	Distillate Oil	-	-	0	-	-	0
	50%	duct burner off	Natural Gas	-	-	not tested	-	-	not tested
	100%	duct burner off	Natural Gas	-	-	0	-	-	0
	100%	duct burner on	Natural Gas	-	-	0	-	-	0

*Test results from the May 2011 initial performance tests and permitted emissions limits are provided in Table 2.

PM10 with condensable

Dominion Bear Garden Generating Station (Reg. No. 32004)
Statement of Legal and Factual Basis July 2013 for Permit No. BBRO-32004
Attachment B

Table 2.a - Comparison of Allowable Emission Limits and Initial Performance Stack Test Results For CT 1A

Em. Unit	Fuel	Pollutant	Average Test Results*					Permit Limit			KSKK Limit		
			ppm @ 15% O2	lbs/hr	lb/MWh	lb/MMBtu	% Opacity	ppm @ 15% O2	lbs/hr	% Opacity	ppm @ 15% O2	lb/MWh	lb/MMBtu
CT 1A duct burner off	Distillate Oil (at 50% load)	NOx	4.85	25.71	0.27	-	-	6.0	48.2	-	42	1.3	-
		SO2	-	< 0.63	< 0.01	< 0.001	-	-	20.9	-	-	0.9	0.06
		CO	-	29.11	-	-	-	-	71.0	-	-	-	-
		VOC (NMOC)	0.1	-	-	-	-	3.0	-	-	-	-	-
		PM10 (total)	-	not tested	-	-	-	-	21.8	-	-	-	-
		Opacity	-	-	-	-	0	-	-	10	-	-	-
	Distillate Oil (at 100% load)	NOx	5.37	42.55	0.23	-	-	same as above			same as above		
		SO2	-	< 1.94	< 0.01	< 0.001	-						
		CO	-	8.07	-	-	-						
		VOC (NMOC)	0.32	-	-	-	-						
		PM10 (total)	-	17.69	-	-	-						
		Opacity	-	-	-	-	0						
CT 1A duct burner off	Natural Gas (at 50% load)	NOx	1.94	9.0	NA	-	-	2.5	17.3	-	15	0.43	-
		SO2	-	< 0.109	NA	< 0.00009	-	-	3.1	-	-	0.9	0.06
		CO	-	2.23	-	-	-	-	53	-	-	-	-
		VOC (NMOC)	0.14	-	-	-	-	1.4	-	-	-	-	-
		PM10 (total)	-	not tested	-	-	-	-	9.7	-	-	-	-
		Opacity	-	-	-	-	not tested	-	-	10	-	-	-

Statement of Legal and Factual Basis July 2013 for Permit No. BBRO-32004

Attachment B

Table 2.a - Comparison of Allowable Emission Limits and Initial Performance Stack Test Results For CT 1A

Em. Unit	Fuel	Pollutant	Average Test Results*					Permit Limit			K444 Limit		
			ppm @ 15% O2	lbs/hr	lb/MWh	lb/MMBtu	% Opacity	ppm @ 15% O2	lbs/hr	% Opacity	ppm @ 15% O2	lb/MWh	lb/MMBtu
CT 1A duct burner off (cont)	Natural Gas (at 100% load)	NOx	2.21	14.68	NA	-	-	same as above					
		SO2	-	< 0.154	NA	< 0.00009	-						
		CO	-	3.00	-	-	-						
		VOC (NMOC)	0.02	-	-	-	-						
		PM10 (total)	-	< 3.68	-	-	-						
		Opacity	-	-	-	-	0						
CT 1A duct burner on	Natural Gas (at 100% load)	NOx	2.32	19.31	NA	-	-	2.5	20.9	-	same as above	same as above	
		SO2	-	< 0.158	NA	< 0.00009	-	-	3.8	-			
		CO	-	2.53	-	-	-	-	93.0	-			
		VOC (NMOC)	0.02	-	-	-	-	6.8	-	-			
		PM10 (total)	-	3.29	-	-	-	-	14.6	-			
		Opacity	-	-	-	-	0	-	-	10			

Notes

- 1 * Results from stack test reports are provided for only regulatory limits. Testing not performed for sulfuric acid mist.
- 2 PM10 includes condensable.
- 3 not tested - testing not performed per DEQ approved protocol
- 4 NA - Information not available in the stack test report

Dominion Bear Garden Generating Station (Reg. No. 32004)
Statement of Legal and Factual Basis July 2013 for Permit No. BBRO-32004
Attachment B

Table 2.b - Comparison of Allowable Emission Limits and Initial Performance Stack Test Results For CT 1B

Em. Unit	Fuel	Pollutant	Average Test Results*					Permit Limit			KKKK Limit		
			ppm @ 15% O2	lbs/hr	lb/MWh	lb/MMBtu	% Opacity	ppm @ 15% O2	lbs/hr	% Opacity	ppm @ 15% O2	lb/MWh	lb/MMBtu
CT 1B duct burner off	Distillate Oil (at 50% load)	NOx	5.63	30.77	0.31	-	-	6.0	48.2	-	42	1.3	-
		SO2	-	< 1.28	< 0.01	< 0.001	-	-	20.9	-	-	0.9	0.06
		CO	-	7.07	-	-	-	-	71.0	-	-	-	-
		VOC (NMOC)	-	-	-	-	-	3.0	-	-	-	-	-
		PM10 (total)	-	not tested	-	-	-	-	21.8	-	-	-	-
		Opacity	-	-	-	-	0	-	-	10	-	-	-
	Distillate Oil (at 100% load)	NOx	5.10	42.29	0.22	-	-	same as above			same as above		
		SO2	-	< 2.04	< 0.01	< 0.001	-						
		CO	-	5.90	-	-	-						
		VOC (NMOC)	0.25	-	-	-	-						
		PM10 (total)	-	< 17.59	-	-	-						
		Opacity	-	-	-	-	0						
CT 1B duct burner off	Natural Gas (at 50% load)	NOx	1.94	9.00	NA	-	-	2.5	17.3	-	15	0.43	-
		SO2	-	< 0.110	NA	< 0.00009	-	-	3.1	-	-	0.9	0.06
		CO	-	1.79	-	-	-	-	53	-	-	-	-
		VOC (NMOC)	0.09	-	-	-	-	1.4	-	-	-	-	-
		PM10 (total)	-	not tested	-	-	-	-	9.7	-	-	-	-
		Opacity	-	-	-	-	not tested	-	-	10	-	-	-

Statement of Legal and Factual Basis July 2013 for Permit No. BBRO-32004

Attachment B

Table 2.b - Comparison of Allowable Emission Limits and Initial Performance Stack Test Results For CT 1B

Em. Unit	Fuel	Pollutant	Average Test Results*					Permit Limit			K444 Limit		
			ppm @ 15% O2	lbs/hr	lb/MWh	lb/MMBtu	% Opacity	ppm @ 15% O2	lbs/hr	% Opacity	ppm @ 15% O2	lb/MWh	lb/MMBtu
CT 1B duct burner off (cont)	Natural Gas (at 100% load)	NOx	2.02	13.39	NA	-	-	same as above					
		SO2	-	< 0.154	NA	< 0.00009	-						
		CO	-	2.28	-	-	-						
		VOC (NMOC)	0.01	-	-	-	-						
		PM10 (total)	-	< 2.58	-	-	-						
		Opacity	-	-	-	-	0						
CT 1B duct burner on	Natural Gas (at 100% load)	NOx	2.02	16.63	NA	-	-	2.5	20.9	-	same as above	same as above	same as above
		SO2	-	< 0.161	NA	< 0.00009	-	-	3.8	-			
		CO	-	1.24	-	-	-	-	93.0	-			
		VOC (NMOC)	0.08	-	-	-	-	6.8	-	-			
		PM10	-	3.65	-	-	-	-	14.6	-			
		Opacity	-	-	-	-	0	-	-	10			

Notes

- 1 * Results from stack test reports are provided for only regulatory limits. Testing not performed for sulfuric acid mist.
- 2 PM10 includes condensable.
- 3 not tested - testing not performed per DEQ approved protocol
- 4 NA - Information not available in the stack test report

**COMMONWEALTH OF VIRGINIA
Department of Environmental Quality
Blue Ridge Regional Office**

Bear Garden Generating Station

Statement of Legal and Factual Basis July 2013 for Permit No. BBRO-32004

**Attachment C
NSPS Subpart IIII Applicability Determination Summary**

Applicable requirements of NSPS Subpart IIII are identified below for the emergency generator and the fires suppression water pump **(see bold italic font, green highlighted)** and are included or referenced in the Federal Operating Permit (FOP) *Condition 35*:

- **[Condition 35.a] Compliance with the emission standards demonstrated by purchasing an engine certified** to these emission standards for the same model year and maximum (or in the case of fire pumps, NFPA nameplate) engine power **per §60.4211(c)**:
 - NO_x, HC, NMHC + NO_x, CO and PM for the emergency generator as specified in §60.4205(b), see §60.4202, which references (§89.112 and §89.113)
 - NMHC_F + NO_x, CO and PM for the fire water pump as specified in §60.4205(c), which references Table 4 of Subpart IIII (300 ≤ HP ≤ 600, model year 2009)

	g/kW-hr or (lbs/HP-hr)					Regulatory Citation	Source of Emission Standard
	<u>NO_x</u>	<u>HC</u>	NMHC + NO _x	CO	PM		
<u>Emergency Generator</u>	<u>9.2</u>	<u>1.3</u>	6.4	3.5	0.20	§60.4205(b)	§60.4202 (§89.112 Table 1 Tier 2)
<u>Fire Pump</u>	–	–	4.0 (3.0)	3.5 (2.6)	0.20 (0.15)	§60.4205(c)	Table 4 of Subpart IIII

- **[Condition 35.b] emissions standards for life of engine** as stated in §60.4206.
- **[Condition 35.c] engines installed per manufacture’s emissions-related specifications** as stated in §60.4211(c).
- **[Condition 35.d] Fuel requirements specified in §60.4207(b)** included (see requirements of 40 CFR 80.510(b)): Restrictions on fuel oil purchasing have beginning start dates of 10/1/07 (see §80.510(a) and 10/1/10 (see §80.510(b)).
- Deadline for importing or installing stationary CI ICE produced in previous model years (see §60.4208 – Note: fire pump engines are excluded.):
 - §60.4208(a) –Applicable to Bear Garden; however, not included in the FOP because the emission limits for the generator engine applies to engines beginning with model year 2006 – see Table 1 of §89.112.
 - §60.4208(b) – Not applicable to Bear Garden, applies to engine with a maximum

power of less than 19kW (25HP).

- Monitoring requirements per §60.4209
 - **Must meet the monitoring requirements of this section, and the monitoring requirements specified in §60.4211 – see below.**
 - [Condition 35.e] §60.4209(a) requires the generator engine and the engine pump to be equipped with a non-resettable hour meter. Subpart IIII originally required all emergency engines to be equipped with a non-resettable hour meter prior to startup of the engine. Therefore, both the generator and fire pump engines are equipped with the required meter. The 6/28/11 amendment requires the meter for only those emergency engines that do not meet the standards applicable to non-emergency engines¹. However, documentation that the engines at Bear Garden meet these standards has not been provided². Therefore, the non-resettable hour meter requirement is included in the FOP.
 - §60.4209(b) – Not applicable to Bear Garden, applies to engine equipped with diesel particulate filter to comply with emission standards in §60.4204.

- **Requirements of §60.4211:**

- [Condition 35.f] §60.4211(a)³ – All of §60.4211(a) is applicable to Bear Garden,

¹**Non-emergency engine standards for the generator and fire pump engines at Bear Garden:**

§60.4204 What emission standards must I meet for non-emergency engines if I am an owner or operator of a stationary CI internal combustion engine? *Note:* §60.4204(b) applies to the generator and fire pump engines at Bear Garden.

§60.4204(b): “Owners and operators of 2007 model year and later non-emergency stationary CI ICE with a displacement of less than 30 liters per cylinder must comply with the emission standards for new CI engines in § 60.4201 for their 2007 model year and later stationary CI ICE, as applicable.”

§60.4201 What emission standards must I meet for non-emergency engines if I am a stationary CI internal combustion engine manufacturer? *Note:* §60.4201(a) applies to the generator and fire pump engines at Bear Garden

§60.4201(a) (a): “Stationary CI internal combustion engine manufacturers must certify their 2007 model year and later non-emergency stationary CI ICE with a maximum engine power less than or equal to 2,237 kilowatt (KW) (3,000 horsepower (HP)) and a displacement of less than 10 liters per cylinder to the certification emission standards for new nonroad CI engines in 40 CFR 89.112, 40 CFR 89.113, 40 CFR 1039.101, 40 CFR 1039.102, 40 CFR 1039.104, 40 CFR 1039.105, 40 CFR 1039.107, and 40 CFR 1039.115, as applicable, for all pollutants, for the same model year and maximum engine power.”

The above regulatory citations include emission standards as delineated below:

- 40 CFR 89.112: (based on Tier and Model Year): Emission standards for HO_x, HC, NMHC + NO_x, CO and PM in g/kW-hr.
- 40 CFR 89.113: smoke opacity
- 40 CFR 1039.101: exhaust emission standards after 2014 model year
- 40 CFR 1039.102: exhaust emission standards and phase-in allowances in model year 2014 and earlier
- 40 CFR 1039.104: addresses interim provisions that apply for a limited time
- 40 CFR 1039.105: smoke standards
- 40 CFR 1039.107: evaporate emissions standards
- 40 CFR 1039.115: other requirements (crankcase emissions, adjustable parameters, prohibited controls, defeat devices)

²Liz Willoughby’s 8/29/13 email provided an “EPA Tier 2 Exhaust Emission Compliance Statement 600DQCA” for the generator engine, which states that the generator set complies with the Tier 2 emission limits (i.e., 40 CFR 89.112 – see Footnote 1).

³60.4211(a): “If you are an owner or operator and must comply with the emission standards specified in this subpart, you must do all of the following, except as permitted under paragraph (g) of this section:

(1) Operate and maintain the stationary CI internal combustion engine and control device according to the manufacturer’s emission-related written instructions;

and is included as **Condition 35.f** in the FOP. Limited information concerning parts 89, 94 and 1068 is provided below:

- Part 89 is listed in 40 CFR Part 60 Subpart IIII and Part 89 references Subpart IIII as delineated below:
 - §60.4211(a)(3): States the following: “Meet the requirements of 40 CFR parts 89, 94 and/or 1068, as they apply to you.”
 - §60.4205(b): references 60.4202(a)(2), which references 40 CFR §89.112 and 89.113.
 - §89.1(d) Applicability states the following: “This part applies as specified in 40 CFR part 60 subpart IIII, to compression-ignition engines subject to the standards of 40 CFR part 60, subpart IIII.”

Because Part 89 **includes emissions limits (§89.112 – NO_x, CO, HC and particulate)** and smoke emission standard (§89.113), the applicability of these limits and standards to the fire pump and emergency generator engines are discussed below:

§89.112 Applicability:

For the fire pump engine: 40 CFR Subpart IIII 60.4202(a) list the criteria applicability of the emission standards of §60.4202, of which includes “that are not fire pump engines”. Therefore, the *fire water pump engine is not subject to emissions standards listed in §89.112.*

For the emergency generator:

§89.112’s table 1 states emission limits based on engine size in kW and the model year of the engine. For an engine greater than 560 kW and model year 2006 or later, the Tier 2 emission standards apply⁴.

§89.113 Applicability: §89.113 is not applicable because both engines are constant speed engines and §89.113(c)(3) exempts constant speed engines⁵.

- Part 94 not applicable to Bear Garden because it applies to Marine engines.
- Part 1068 not applicable to Bear Garden because of the engines’ model year. Part 1068 applies to Stationary compression-ignition engines certified using the provisions of 40 CFR part 1039, as indicated in 40 CFR part 60, Subpart IIII. Part 1039 applicability is based on engine size and model year stated in Table 1 of Part 1039. For Bear Garden’s generator and fire engines the model year begins with 2011.
- §60.4211(b) – Not applicable to Bear Garden, applies to pre-2007 model year engines.
- [**Condition 35.a**] **§60.4211(c) – Applicable to Bear Garden, compliance with the**

(2) Change only those emission-related settings that are permitted by the manufacturer; and

(3) Meet the requirements of 40 CFR parts 89, 94 and/or 1068, as they apply to you.”

⁴The engine model year is 2010, as stated in the updated April 2013 Form 805. The engine meets Tier 2 emission standards per the manufacture’s certification, as provided by Liz Willoughby’s 8/29/13 email.

⁵Both engines are constant speed engines per Liz Willoughby – see the SOB.

- **emission limits demonstrated by purchasing a certified engine.**
 - §60.4211(d) – Not applicable to Bear Garden, applies to nonemergency engines or engines with a displacement greater than or equal to 30 liters per cylinder.
 - §60.4211(e) – Not applicable to Bear Garden, applies to engines that are modified or reconstructed.
 - **[Condition 35.g] §60.4211(f) – Applicable to Bear Garden, applies to emergency engines. Defines how an engine is considered an emergency stationary ICE and establishes operating hours.**
 - **[Condition 35.h] §60.4211(g) – Paragraph (1) is not applicable to Bear Garden because it applies to engines with maximum engine power less than 100 HP. Paragraphs (2) and (3) are applicable to fire pump (engines > 100 and < to 500 HP) and generator engines > 500 HP), respectively; and describes how compliance is demonstrated if engine(s) is not installed, configured, operate, and maintained according to the manufacturer's emission-related written instructions, or emission-related settings are changed in a way that is not permitted by the manufacturer.**
- Notifications, reporting, recordkeeping requirements per §60.4214 – None identified for Bear Garden as delineated below:
 - §60.4214(a) – Not applicable to Bear Garden, applies to the following engines: greater than 2,237 KW (3,000 HP), or have a displacement of greater than or equal to 10 liters per cylinder, or are pre-2007 model year engines that are greater than 130 KW (175 HP) and not certified.
 - §60.4214(b) –Initial notification is not required for an emergency engine. Records of emergency and non-emergency service not applicable to Bear Garden. This recordkeeping requirement applies to the starting model year listed in Table 5 of Subpart IIII (i.e., model years 2011, 2012 and 2013).
 - §60.4214(c) – Not applicable to Bear Garden, applies to an engine equipped with a diesel particulate filter.
 - §60.4214(d) – Not applicable to Bear Garden, applies to an emergency stationary CI ICE with a maximum engine power more than 100 HP that operates or is contractually obligated to be available for more than 15 hours per calendar year for the purposes specified in §60.4211(f)(2)(ii) and (iii) or that operates for the purposes specified in §60.4211(f)(3)(i). An annual report must be submitted.
- **[Condition 35.i] General Provisions of 40 CFR 60 Subpart A (Table 8, §60.4218) –** Applicable provisions are identified in the table. However, of the general provisions that are identified in the Table as “applies to subpart”, the following provisions do not apply to the generator and fire pump at Bear Garden as delineated below:
 - 60.8 Performance Tests. Not applicable – applies to ICE with engine displacement of ≥ 30 liters per cylinder.
 - 60.13 Monitoring requirements. Not applicable – applies to ICE with engine displacement of ≥ 30 liters per cylinder.

Moore, Terry (DEQ)

From: Luther E davis sr [mshanney@embarqmail.com]
Sent: Tuesday, October 29, 2013 10:26 AM
To: Moore, Terry (DEQ)
Subject: Bear Garden Power Plant, New Canton,VA23123

Comment:

Luther & Barbara Davis
135 Adams Ln
New Canton, Va23123 (Mailing Address) P O Box 171, New Canton,VA23123

Subject:
The gas plant at Bear Garden Generating Station, 2608 C.G. Woodson Dr, New Canton, VA 23123,
Registration No. 32004
The ROARING NOISE at night is almost unbearable!! From 10 PM to 7 AM, this plant ROARS all night. For
gas to be colorless, odorless, and tasteless, WHY does all this VERY LOUD ROARING take place and at
NIGHT??

Thank You for listening to our concern as others have also, but did not know whom to contact and I'm hoping
that you are the correct one or will know who is.

Sincerely,
Luther & Barbara Davis

Moore, Terry (DEQ)

From: Moore, Terry (DEQ)
Sent: Tuesday, November 12, 2013 4:28 PM
To: 'Luther E davis sr '
Subject: Bear Garden Generating Station

Dear Mr. and Ms Davis,

This email is in response to your comments sent to DEQ-Blue Ridge Regional Office (BRRO) regarding the draft Federal operating permit for Bear Garden Generating Station. The BRRO received your comments in an e-mail dated 10/29/13. The staff of the BRRO has reviewed your comments and offers the following response:

Comment:

“The ROARING NOISE at night is almost unbearable!! From 10 PM to 7 AM, this plant ROARS all night. For gas to be colorless, odorless, and tasteless, WHY does all this VERY LOUD ROARING take place and at NIGHT??

Thank You for listening to our concern as others have also, but did not know whom to contact and I'm hoping that you are the correct one or will know who is.”

Response:

The public notice in the Farmville Herald was for the renewal of the operating permit used to consolidate air pollution control requirements for a given facility into a single document as required by the Federal Clean Air Act. Noise is not an air pollutant and therefore regulation or control of noise is outside the scope of authority for this permit action. In addition, noise is not otherwise regulated by the DEQ.

Thank you for your comment. If you have further questions, please do not hesitate to call me at (434) 582-6251.

Sincerely,

Terry Moore

Virginia Department of Environmental Quality
Blue Ridge Regional Office - Lynchburg

Moore, Terry (DEQ)

From: Luther E davis sr [mshanney@embarqmail.com]
Sent: Friday, November 15, 2013 5:58 PM
To: Moore, Terry (DEQ)
Subject: Re: Bear Garden Generating Station

Mr. Moore,
Thank you for taking the time to inform us. In process with the county.
Sincerely,
Luther & Barbara Davis

From: "Terry Moore (DEQ)" <Terry.Moore@deq.virginia.gov>
To: "Luther E davis sr" <mshanney@embarqmail.com>
Sent: Thursday, November 14, 2013 5:00:27 PM
Subject: RE: Bear Garden Generating Station

Mr. Davis

Noise is not a regulated pollutant under the Federal Clean Air Act. I am not aware of any state agency/department that would address noise from this facility. Some local governments have noise ordinance. If Buckingham County has an ordinance you may want to contact the County, if you have not already done so, to see if the ordinance is applicable.

Terry Moore

Virginia Department of Environmental Quality
Blue Ridge Regional Office - Lynchburg
Phone: (434) 582-6251
email: terry.moore@deq.virginia.gov

From: Luther E davis sr [<mailto:mshanney@embarqmail.com>]
Sent: Thursday, November 14, 2013 10:09 AM
To: Moore, Terry (DEQ)
Subject: Re: Bear Garden Generating Station

Mr. Moore,
Thank you for your response. I beg to differ about Noise as pollutant, as Buckingham County has a noise ordinance. WHOM would be the correct dept. to contact?
Thank You,
Luther & Barbara Davis

From: "Terry Moore (DEQ)" <Terry.Moore@deq.virginia.gov>
To: "Luther E davis sr" <mshanney@embarqmail.com>
Sent: Tuesday, November 12, 2013 4:27:37 PM
Subject: Bear Garden Generating Station

Dear Mr. and Ms Davis,

This email is in response to your comments sent to DEQ-Blue Ridge Regional Office (BRRO) regarding the draft Federal operating permit for Bear Garden Generating Station. The BRRO received your comments in an e-mail dated 10/29/13. The staff of the BRRO has reviewed your comments and offers the following response:

Comment:

“The ROARING NOISE at night is almost unbearable!! From 10 PM to 7 AM, this plant ROARS all night. For gas to be colorless, odorless, and tasteless, WHY does all this VERY LOUD ROARING take place and at NIGHT??

Thank You for listening to our concern as others have also, but did not know whom to contact and I'm hoping that you are the correct one or will know who is.”

Response:

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Thank you for your comment. If you have further questions, please do not hesitate to call me at (434) 582-6251.

Sincerely,

Terry Moore

Virginia Department of Environmental Quality
Blue Ridge Regional Office - Lynchburg