COMMONWEALTH OF VIRGINIA
Department of Environmental Quality
Southwest Regional Office

STATEMENT OF LEGAL AND FACTUAL BASIS

Wolf Hills Energy, LLC
14555 Industrial Park Road, Washington County, Virginia
Permit No. SWRO11348

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. The facility is also subject to the acid rain regulations at 9 VAC 5-80-360 through 9 VAC 5-80-680. As required by 40 CFR Part 70 and 9 VAC 5 Chapter 80, Wolf Hills Energy, LLC has applied for renewal of the Title V Operating Permit for its peaking power plant in Washington County, Virginia. The Department has reviewed the application and prepared a draft Article 3 Federal Operating Permit.

Air Permit Contact: _____ Date: _____
Bruce Mullins
(276) 676-4825

Air Permit Manager: _____ Date: _____
Rob Feagins

Regional Director: _____ Date: _____
Allen J. Newman, P.E.

FACILITY INFORMATION

Permittee
Wolf Hills Energy, LLC
14302 FNB Parkway
Omaha, Nebraska 68154

Facility Location
Wolf Hills Energy, LLC
14555 Industrial Park Road
Bristol, Virginia 24202

County-Plant ID No. 51-191-00180

SOURCE DESCRIPTION

NAICS Code: 221112 – Fossil Fuel Electric Power Generation

Wolf Hills Energy is a peaking electric power generation facility consisting of five Pratt & Whitney FT8 Twin Pac simple cycle gas turbine generator sets and one Caterpillar C27 diesel engine-generator set. Each Twin Pac generator set has a maximum heat input of 520.5 MMBtu/hr, with a rated base load of 57.3 MW output, and is powered by two gas turbines using natural gas exclusively as a fuel. The Caterpillar diesel engine-generator set has a maximum heat input of 7.4504 MMBtu/hr, with a maximum rated output of 750 kW, and is used for emergency (black start) purposes, only.

Air emissions from the combustion turbines include particulate matter (PM/PM-10), volatile organic compounds (VOC), nitrogen oxides (NO_x), sulfur dioxide (SO_2), carbon monoxide (CO), and trace amounts of hazardous air pollutants (HAP).

The facility is considered a Title V major source of NO_x and CO. This facility is located in an attainment area for all pollutants, and is not a PSD major source. The facility is currently permitted under a state major new source review (NSR) permit issued on April 3, 2014, and a Phase II Acid Rain permit effective through December 31, 2015. The expiration date of the current Title V operating permit is July 19, 2014.

COMPLIANCE STATUS

A full compliance evaluation of this facility, including a site visit, was completed on August 21, 2013. 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

Emission Unit ID	Stack ID	Emission Unit Description	Size/Rated Capacity	Pollution Control Device (PCD) Description	PCD ID	Pollutant(s) Controlled
WH01	1a	Pratt & Whitney FT8 Twin Pac #1a gas turbine	260.25 MMBtu/hr	Water injection Oxidation catalyst	CD-1 CD-11	NO_x CO & VOC
WH02	1b	Pratt & Whitney FT8 Twin Pac #1b gas turbine	260.25 MMBtu/hr	Water injection Oxidation catalyst	CD-2 CD-12	NO_x CO & VOC
WH03	2a	Pratt & Whitney FT8 Twin Pac #2a gas turbine	260.25 MMBtu/hr	Water injection Oxidation catalyst	CD-3 CD-13	NO_x CO & VOC
WH04	2b	Pratt & Whitney FT8 Twin Pac #2b gas turbine	260.25 MMBtu/hr	Water injection Oxidation catalyst	CD-4 CD-14	NO_x CO & VOC
WH05	3a	Pratt & Whitney FT8 Twin Pac #3a gas turbine	260.25 MMBtu/hr	Water injection Oxidation catalyst	CD-5 CD-15	NO_x CO & VOC
WH06	3b	Pratt & Whitney FT8 Twin Pac #3b gas turbine	260.25 MMBtu/hr	Water injection Oxidation catalyst	CD-6 CD-16	NO_x CO & VOC
WH07	4a	Pratt & Whitney FT8 Twin Pac #4a gas turbine	260.25 MMBtu/hr	Water injection Oxidation catalyst	CD-7 CD-17	NO_x CO & VOC
WH08	4b	Pratt & Whitney FT8 Twin Pac #4b gas turbine	260.25 MMBtu/hr	Water injection Oxidation catalyst	CD-8 CD-18	NO_x CO & VOC
WH09	5a	Pratt & Whitney FT8 Twin Pac #4a gas turbine	260.25 MMBtu/hr	Water injection Oxidation catalyst	CD-9 CD-19	NO_x CO & VOC
WH10	5b	Pratt & Whitney FT8 Twin Pac #4b gas turbine	260.25 MMBtu/hr	Water injection Oxidation catalyst	CD-10 CD-20	NO_x CO & VOC
BS1	BS1a	Caterpillar diesel engine-generator set, model C27	7.4504 MMBtu/hr	Turbocharging/ Aftercooling	-----	NO_x

EMISSIONS INVENTORY

A copy of the 2013 Emission Statement is attached (Attachment A). Emissions of greenhouse gases are provided in the application. Emissions are summarized in the following table:

	Criteria and Greenhouse Gas Pollutant Emissions in Tons/Year									
	VOC	CO	SO_2	PM-10	PM-2.5	NO_x	CO_2	CH_4	N_2O	CO_2e
Total	0.3	2.2	0.2	1.8	1.8	14.2	36,673	0.68	0.07	36,708.57

EMISSION UNIT APPLICABLE REQUIREMENTS - Combustion Turbines (WH01 - WH10) and Diesel Engine-Generator Set (BS1)

Limitations

The following limitations are applicable requirements from the state major NSR permit issued on April 3, 2014. Condition numbers are from the NSR permit.

Condition 2: The permittee shall meet all the applicable requirements of 40 CFR 60, Subpart GG – Standards of Performance for Stationary Gas Turbines.

Condition 3: SO_2 and PM emissions from each combustion turbine shall be controlled by the use of pipeline quality natural gas fuel with maximum sulfur content not to exceed 0.8 percent by weight. The annual average sulfur content of the natural gas fuel shall not exceed 0.3 grains per 100 dry standard cubic feet, calculated monthly as the average of each consecutive 12 month period.

Condition 4: Except during startup, shutdown, black start testing and black start events, NO_x emissions from each combustion turbine shall be controlled by water injection. When natural gas is fired in a combustion turbine, water shall be injected into the combustion turbine to control NO_x emissions. The rate of water injection shall be at least that established during emissions tests as being sufficient to meet the emissions standards set forth in this permit.

Condition 5: CO and VOC emissions from each combustion turbine shall be controlled by a high temperature oxidation catalyst. The catalysts shall be operated within their optimum operating temperature range, and the catalyst material shall be tested periodically to predict and determine catalyst life for operation at this facility.

Condition 6: CO, VOC, PM and formaldehyde emissions from each combustion turbine shall be minimized by the use of good combustion practices.

Condition 7: NO_x emissions from the engine-generator set shall be controlled by turbocharging and aftercooling. The permittee shall maintain documentation that demonstrates turbocharging and aftercooling devices have been installed on the engine-generator set. The engine-generator set shall be provided with adequate access for inspection.

Condition 11: The permittee shall operate and maintain the engine-generator set according to the manufacturer's written instructions or procedures developed by the permittee that are approved by the engine manufacturer. In addition, the permittee may only change those settings that are permitted by the manufacturer and do not increase air emissions.

Condition 12: The engine-generator set shall only be operated as follows:

a. In situations where immediate action on the part of the facility is needed due to a failure or loss of electrical power service resulting from a failure of the primary power provider and the failure or loss of power service is beyond the reasonable control of the facility. Operation under these circumstances shall not exceed 6,000 hours per year, calculated monthly as the sum of each consecutive 12-month period. Compliance for the consecutive 12-month period shall be demonstrated monthly by adding the total for the most recently completed calendar month to the individual monthly totals for the preceding 11 months.

b. For the purpose of maintenance checks and readiness testing, provided that the tests are recommended by Federal, State or local government, the manufacturer, the vendor, or the insurance company associated with the engine. Maintenance checks and readiness testing of the unit is limited to 100 hours per year. These 100 hours shall be counted toward the 6,000 hours per year provided for emergency operation as defined in paragraph a. of this condition. Compliance for the consecutive 12-month period shall be demonstrated monthly by adding the total for the most recently completed calendar month to the individual monthly totals for the preceding 11 months.

Condition 13: The approved fuel for all of the combustion turbines is pipeline quality natural gas. A change in the fuel may require a permit to modify and operate.

Condition 14: The approved fuel for the engine-generator set is diesel fuel. The diesel fuel shall meet the ASTM D975 specification for S15 diesel fuel oil with a maximum sulfur content per shipment of 0.0015 percent. A change in the fuel may require a permit to modify and operate.

Condition 15: The five Twin Pac generator sets shall consume no more than 4,679 million standard cubic feet (MMSCF) of natural gas per year, calculated daily as the sum of each consecutive 365-day period.

Condition 16: The fuel-bound nitrogen content of the natural gas to be burned in the turbines shall not exceed 0.015 percent by weight. The fuel-bound nitrogen shall be determined in accordance with 40 CFR Part 60, Subpart GG, Section 60.335(b)(9). The permittee shall monitor the nitrogen content of the natural gas being fired in each turbine, in accordance with 40 CFR 60.334(h)(2). Fuel monitoring for nitrogen content of the natural gas fuel (required by NSPS Subpart GG) may be waived by the Administrator of the EPA.

A custom fuel monitoring schedule was approved by the U.S. Environmental Protection Agency (EPA) in a letter to the permittee dated May 8, 2001. In accordance with the EPA-approved custom fuel monitoring schedule, monitoring of fuel nitrogen content shall not be required while natural gas is the only fuel fired in the gas turbines. Therefore, the fuel nitrogen monitoring and determination provisions in Condition 16 are not included in the Title V permit. The EPA letter is attached (Attachment B) to this Statement of Basis.

Condition 19: Emissions from the operation of the ten (10) combustion turbines shall not exceed the limits specified below:

	(each at base/peak load) lb/hr	(combined total) tons/yr
Particulate Matter	3.0	27.7
PM-10	3.0	27.7
Sulfur Dioxide	0.27	2.0
Nitrogen Oxides (as NO_2)	(25 ppmvd* for FBN ≤ 0.015%) 29.6	249.0
Carbon Monoxide	(25 ppmvd*) 18.0	151.6
Volatile Organic Compounds	2.2	18.9

*(ppm by volume, one hour average at 15% oxygen as a dry sample and at ambient pressure, as measured per EPA Methods 10 and 20 of 40 CFR 60 Appendix A)
FBN – Fuel Bound Nitrogen, percent by weight

The approved methods for determining compliance with this condition include compliance with conditions 2 – 6, 13, 15 and 16; or DEQ-approved source emission tests. DEQ reserves the authority to require source emission tests for any regulated air pollutant.

Condition 20: Emissions from the operation of the engine-generator set shall not exceed the limits specified below:

Nitrogen Oxides (as NO_2)	13.2 lb/hr	39.6 tons/yr
Carbon Monoxide	0.6 lb/hr	1.9 tons/yr

These emissions are derived from the estimated overall emission contribution from operating limits. Exceedance of the operating limits may be considered credible evidence of the exceedance of emission limits. Compliance with these emission limits may be determined as stated in Conditions 7, 11, 12 and 14.

Condition 21: Emissions of NO_x from the operation of each combustion turbine shall not exceed 112.7 ppmvd as a one hour average at 15% oxygen, adjusted to International Standards Organization (ISO) standard ambient conditions in accordance with Subpart GG of the NSPS. The permittee shall provide hourly average records of the ambient temperature, ambient humidity, and combustor inlet pressure so that the NO_x emissions data can be corrected to ISO standard ambient conditions, upon the request of the DEQ, in order to demonstrate compliance with this emission standard. The permittee shall expeditiously repair or replace ambient monitoring instrumentation in the event of instrument malfunction. In the event of malfunction, equivalent data may be provided from local meteorological sources.

Condition 22: Visible emissions from each combustion turbine exhaust stack shall not exceed ten (10) percent opacity as determined by EPA Method 9 (Reference 40 CFR 60, Appendix A). This condition applies at all times except during startup, shutdown or malfunction.

Condition 23: Visible emissions from the engine-generator set exhaust stack shall not exceed ten (10) percent opacity except during one 6-minute period in any one hour in which visible emissions shall not exceed twenty (20) percent opacity as determined by EPA Method 9 (Reference 40 CFR 60, Appendix A). This condition applies at all times except during startup, shutdown or malfunction.

As turbines with an individual heat input at peak load greater than 10 million Btu per hour that were constructed after October 3, 1977, the following new source performance standards of 40 CFR Part 60, Subpart GG – Standards of Performance for Stationary Gas Turbines apply to the turbines:

40 CFR 60.332(a)(1) and (b): Emission standard for NO_x as calculated using the specified equation;

40 CFR 60.333(a): Emissions of SO_2 from any gas turbine shall not exceed 0.015 percent by volume; and

40 CFR 60.333(b): Sulfur content of any fuel shall not exceed 0.8 percent by weight.

Applicable facility limitations from NSPS Subpart GG have been incorporated into the requirements from the state major NSR permit.

A review of the provisions of 40 CFR Part 63, Subpart ZZZZ – National Emission Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines indicates the emergency black start engine is subject to the subpart as a new engine located at an area source of hazardous air pollutants (HAP). The provisions of 40 CFR 63.6590(c)(1) indicate new engines located at area sources of HAP must meet the requirements of Subpart ZZZZ by meeting the new source performance standards (NSPS) of 40 CFR Part 60, Subpart IIII – Standards of Performance for Stationary Compression Ignition Internal Combustion Engines and that no further requirements apply to such engines under Subpart ZZZZ.

As a model year 2007 and later emergency stationary compression ignition engine with a displacement of less than 30 liters per cylinder that is not a fire pump engine, the following provisions of 40 CFR Part 60, Subpart IIII apply to the emergency generator engine:

40 CFR 60.4205(b): Must comply with the emission standards for new non-road engines in §60.4202;

40 CFR 60.4202(a)(2): Must be certified to the emission standards in 40 CFR 89.112 and 40 CFR 89.113;

Information in the application submitted by the permittee for the current NSR permit indicates the generator engine is certified to the applicable emission standards; therefore, the certification requirement is not included in the Title V permit.

40 CFR 60.4206: Must achieve applicable emission standards over the entire life of the engine;

40 CFR 60.4207(b): Must purchase diesel fuel that meets the requirements of 40 CFR 80.510(b) for non-road diesel fuel;

40 CFR 60.4211(a)(1): Operate and maintain the engine according to manufacturer instructions;

40 CFR 60.4211(a)(2): Change only those emission-related settings as permitted by the manufacturer;

40 CFR 60.4211(a)(3): Meet requirements of 40 CFR Part 89;

40 CFR 60.4211(c): Must purchase an engine certified to the standards in §60.4205(b);

Information in the application submitted by the permittee for the current NSR permit indicates the generator engine is certified to the applicable emission standards; therefore, the certification requirement of §60.4211(c) is not included in the Title V permit.

40 CFR 60.4211(f): Operational limitations for emergency engines;

The current NSR permit only allows operation of the engine during situations due to a failure or loss of electrical power resulting from a failure of the primary power provider or for the purpose of maintenance checks and readiness testing. Therefore, provisions from §60.4211(f) pertaining to operation other than loss of electrical power, maintenance and readiness testing are not included in the Title V permit.

40 CFR 60.4212(c): Exhaust emissions must not exceed the Not To Exceed (NTE) numerical requirements determined from the specified equation.

> Emission standards indicated in 40 CFR 89.112, applicable to the engine-generator set are as follows:
>
> NMHC + NOx = 6.4 g/kW-hr
> CO = 3.5 g/kW-hr
> PM = 0.20 g/kW-hr
>
> Applying the equation specified in 40 CFR 60.4212(c), the NTE limits are as follows:
>
> NMHC + NOx = 8.0 g/kW-hr
> CO = 4.4 g/kW-hr
> PM = 0.25 g/kW-hr
>
> These NTE limits are incorporated into the provisions of NSR permit condition 20 for the Title V permit.

Monitoring

The following monitoring requirements are applicable requirements from the state major NSR permit issued on April 3, 2014. Condition numbers are from the NSR permit.

Condition 8: Continuous monitoring systems shall be installed and operated to monitor and record the fuel consumption and ratio of water injected to fuel being fired in each turbine. These monitoring systems shall be operated at all times that water is being injected into the turbines. The systems shall be maintained and calibrated in accordance with manufacturer's specifications. As a minimum, the monitoring systems shall be inspected at least annually thereafter by a professional engineer employed or retained by the permittee. The permittee shall maintain the records of fuel consumption and ratio of water to fuel being fired at the site. These records shall be kept on file for the most current five year period and available for inspection by DEQ personnel.

Condition 9: The engine-generator set shall be equipped with a non-resettable hour metering device to monitor the operating hours. The non-resettable hour meter used to continuously measure the hours of operation for the engine-generator set shall be observed by the permittee with a frequency of not less than once each day the engine-generator set is operated. The permittee shall keep a log of these observations. Each monitoring device shall be installed, maintained, calibrated (as appropriate) and operated in accordance with approved procedures which shall include, as a minimum, the manufacturer's written requirements or recommendations. Each monitoring device shall be provided with adequate access for inspection and shall be in operation when the engine-generator set is operating.

Condition 18: The permittee shall monitor the sulfur content of the natural gas being fired in the combustion turbines, in accordance with Subpart GG of the NSPS and subsection a. below. The permittee shall comply with the Subpart GG sulfur content monitoring schedule monitoring schedule provisions (40 CFR 60.334(h)) until the permittee obtains EPA approval to conduct monitoring in accordance with the custom fuel sulfur monitoring schedule contained in subsections b. and c. of this condition. The permittee may submit subsequent custom fuel sampling schedules through the DEQ for EPA approval. The permittee shall maintain records certifying the sulfur content of the gas.

a. Analysis for the sulfur content of the natural gas shall be conducted as referenced in 40 CFR 60.334(h)(1) and 40 CFR 60.335(b)(10), using one of the approved ASTM reference methods for the measurement of sulfur in gaseous fuels or an approved alternative method. Fuel vendor analyses by these methods may be used.

b. Sulfur monitoring shall be conducted twice monthly for twelve (12) months. If this monitoring demonstrates compliance with allowable permit limits, then sulfur monitoring shall be conducted once per month for six months.

Based on previous periods of monitoring demonstrating compliance at higher frequencies, the facility is not currently required to conduct sulfur monitoring at the frequencies indicated in Condition 18.b of the NSR permit. Condition 18 has been inserted into the Title V permit in a manner reflecting the facility's current quarterly monitoring frequency indicated in Condition 18.c.

c. If the monitoring required in paragraph b. above demonstrates consistent compliance with the fuel sulfur content allowable permit limits, sulfur monitoring shall be conducted once per quarter.

d. Should any sulfur analysis required above indicate noncompliance, the permittee shall notify the Southwest Regional Office. Sulfur monitoring shall be conducted each day the turbines operate during the interim period prior to this initial schedule receiving EPA approval, or during an interim period when this custom schedule is being reexamined due to noncompliance, and those results may be submitted to show compliance.

e. If there is a change in fuel supply, the permittee must notify the Director, Southwest Regional Office of such change for reexamination of this custom schedule. A change in fuel quality may be deemed a change in fuel supply. Sulfur monitoring shall be conducted weekly during the interim period when this custom schedule is being reexamined.

These records shall be available on site for inspection by the DEQ and shall be current for the most recent five (5) years.

A major source subject to Title V permitting may be subject to the provisions of 40 CFR Part 64 – Compliance Assurance Monitoring (CAM) if it meets all of the following criteria on a pollutant-by-pollutant basis:

a. Emits or has the potential to emit uncontrolled quantities of one or more regulated air pollutants at or above major source levels,

b. Is subject to one or more emissions limitations for the regulated air pollutants for which it is major before control, and

c. Uses an add-on control device to achieve compliance with the emissions limitations.

The combustion turbines are emission units that meet all the above criteria as follows:

a. The combustion turbines emit uncontrolled quantities of NO_x and CO above major source levels,

b. The combustion turbines are each subject to NO_x emission limits of 29.6 lb/hr and 25 ppmvd as contained in the NSR permit dated April 3, 2014, and are each subject to CO emission limits of 18.0 lb/hr and 25 ppmvd from the same permit.

c. The combustion turbines use water injection to comply with the NO_x emission limit, and oxidation catalysts to comply with the CO limit.

Because the combustion turbines meet the above criteria only when considering NO_x and CO, CAM is required only for those pollutants. The applicant submitted CAM information as required by 40 CFR 64.5, Deadlines for Submittals.

The permittee has installed the following:

a. A water flow meter for monitoring water injected into the turbines;

b. A fuel flow meter for monitoring fuel consumption by the turbines; and

c. A data acquisition system for recording values for water-to-fuel ratio, fuel consumption and turbine loading.

The permittee has amended the wording of the indicator range for NO_x and CO limits and replaced the "Indicator Ranges for Water-to-Fuel Ratio" table in the current CAM plan with graphical representations (curves) of the computer programming that controls the water injection system of each turbine. According to the permittee, although water injection largely correlates with fuel consumption, water injection requirements for a turbine are actually driven by the exhaust gas temperature (EGT) of that turbine and ambient temperature. Each turbine was tuned separately prior to and during initial emissions testing. A "Topper Curve" has been programmed into the computer system for each turbine which provides a maximum water flow at a given exhaust gas temperature. This curve was provided by the turbine manufacturer and is designed to prevent overwatering conditions while maintaining stable combustion dynamics. Base water injection schedules, or targets, were also provided by the turbine manufacturer for EGT versus ambient temperatures ranging for minus 20 to 100 degrees Fahrenheit. During commissioning, these schedules were modified using a NO_x tune adjustment. The product specification for the installed water valve references a five percent flow accuracy which is incorporated into the final ratio target. The referenced curves are incorporated into the CAM plan.

The permittee will be required to monitor, operate, calibrate and maintain the above-listed devices according to the CAM plan proposed by the applicant and summarized in the following table:

Applicable Requirement	NO_x Limits	CO Limits
Measurement Approach	Monitor fuel consumption, water-to-fuel ratio target (as defined in the indicator range section of this table) and water-to-fuel ratio	Monitor turbine load and verify catalyst activity
Monitoring Methods and Location	-Fuel consumption by fuel flow meter; -Water consumption by water flow meter; -Water-to-fuel ratio target by individual engine water schedule and fuel flow meter; and -Water-to-fuel ratio by fuel flow meter and water flow meter	Turbine instrumentation for load Representative samples of catalyst for activity
Indicator Range	The water-to-fuel injection ratio will be greater than the value 5% below the water-to-fuel ratio target. This is a direct comparison of the fuel flow meter to the water injection schedule established in the attached (Attachment C) Exhaust Gas Temperature Curve/Tuning Curve/Topper Curve tables and emissions test data as being sufficient to meet the NO_x emissions standards set forth in this permit. An excursion is defined as a water-to-fuel ratio that does not meet or exceed the value 5% below water-to-fuel ratio target.	Turbines to be operated at a minimum of 50 percent load, and an excursion is defined as a value less than 50 percent load, except during startup and shutdown.
Data Collection Frequency	Fuel consumption, water-to-fuel ratio data and water-to-fuel ratio target to be measured continuously.	Load data to be collected hourly. Catalysts from 2 of 10 units to be sampled annually.
Averaging Period	Hourly for fuel consumption, water-to-fuel ratio and water-to-fuel ratio target	Three-hour periods for load data
Recordkeeping	Data acquisition system (DAS) stores hourly averages for water-to-fuel ratio, water-to-fuel ratio target and fuel consumption.	DAS records turbine load Reports of catalyst activity to be maintained for 5 years.
QA/QC Practices and Criteria	Fuel and water flow meters to be calibrated annually.	Instrumentation for recording turbine loading to be calibrated annually per manufacturer's recommendations.

The indicators to be monitored reflect performance of the water injection system for each combustion turbine, turbine loading and the performance of the oxidation catalysts. The range of operation for water-to-fuel ratio for the turbines is based on initial performance tests and manufacturer design. Performance test data was used to verify the accuracy of the water-to-fuel ratio and turbine loading indicator ranges so that ongoing compliance with the NO_x and CO emission limits can be reasonably assured. Operation of the water injection controls, combustion turbines and oxidation catalysts in a manner that each indicator is maintained within the appropriate range will provide a reasonable assurance of compliance with the NO_x and CO emission limits. The monitoring proposed in the Compliance Assurance Monitoring plan augments that required by 40 CFR Part 60, Subpart GG – Standards of Performance for Stationary Gas Turbines.

The operating permit will contain conditions requiring the permittee to conduct monitoring in accordance with 40 CFR 70.6(a)(3)(i) and 40 CFR 64.6(c).

The permittee will be required to visually observe each combustion turbine exhaust stack at least once each calendar week to determine the presence of visible emissions while operating (does not include condensed water vapor/steam). If during the observation, visible emissions are observed, a visible emission evaluation (VEE) shall be conducted on each affected unit in accordance with 40 CFR 60, Appendix A, EPA Method 9. The VEE shall be conducted for a minimum of six minutes. If any of the observations exceed 10 percent opacity, the VEE shall be conducted for a total of 60 minutes. A Method 9 VEE shall not be required if the visible emissions condition is corrected as expeditiously as possible such that no visible emissions exist; the emissions unit is operating at normal conditions; and, the cause and corrective measures taken are recorded. A record of each visible emissions observation shall be maintained, including, at a minimum, the date, time, name of the emission unit, the applicable emission requirement, the results of the observation and the name of the observer. A record of each VEE shall be maintained and shall include, at a minimum, any data required by the 40 CFR 60, Appendix A, Method 9. This will satisfy the periodic monitoring requirement for the visible emission limitation included in the permit.

As turbines with an individual heat input at peak load greater than 10 million Btu per hour that were constructed after October 3, 1977, the following provisions of NSPS Subpart GG apply to the turbines:

> 40 CFR 60.334(a): Install, calibrate, maintain and operate a continuous monitoring system to monitor and record fuel consumption and ratio of water and steam to fuel being fired;
>
> 40 CFR 60.334(g): Develop and keep on-site a parameter monitoring plan explaining the procedures used to document proper operation of the NO_x emission controls;

40 CFR 60.334(h)(1): Monitor total sulfur content of fuel being fired using methods described in §60.335(b)(10);

40 CFR 60.334(h)(2): Monitor the nitrogen content of fuel if a fuel-bound nitrogen allowance is used to calculate the NO_x emission standard as specified in §60.332;

The permittee does not use the fuel-bound nitrogen allowance and the EPA-approved custom fuel monitoring schedule does not require monitoring of fuel-bound nitrogen. Therefore, this monitoring requirement is not included in the Title V permit.

40 CFR 60.334(h)(3): Fuel sulfur content monitoring provisions;

40 CFR 60.334(h)(4): Custom fuel monitoring provisions; and

40 CFR 60.334(i)(3): Provisions for schedules for determining total sulfur content of gaseous fuels.

Applicable monitoring requirements from NSPS Subpart GG have been incorporated into the requirements from the state major NSR permit.

Recordkeeping

The following recordkeeping requirements are applicable requirements from the state major NSR permit issued on April 3, 2014. Condition numbers are from the NSR permit.

Condition 17: The permittee shall obtain a certification from the fuel supplier with each shipment of diesel fuel. Each fuel supplier certification shall include the following:

a. The name of the fuel supplier;

b. The date on which the diesel fuel was received;

c. The quantity of diesel fuel delivered in the shipment;

d. A statement that the diesel fuel complies with the American Society for Testing and Materials specifications (ASTM D975) for S15 diesel fuel oil; and

e. The sulfur content of the diesel fuel.

Fuel sampling and analysis, independent of that used for certification, as may be periodically required or conducted by DEQ may be used to determine compliance with the fuel specifications stipulated in Condition 14. Exceedance of these specifications may be considered credible evidence of the exceedance of emission limits.

Condition 24: The permittee shall maintain records of emission data and operating parameters as necessary to demonstrate compliance with this permit. The content and format of such records shall be arranged with the Director, Southwest Regional Office. These records include, but are not limited to:

a. The combined fuel consumption of the five Twin Pac generator sets, calculated daily as the sum of each consecutive 365-day period.

b. An on-site parameter monitoring plan, or alternatively a quality-assurance plan in accordance with 40 CFR 60.334(g).

c. All the fuel analysis reports for sulfur and nitrogen content in accordance with Conditions 16 and 18.

In accordance with the EPA-approved custom fuel monitoring schedule, monitoring of fuel nitrogen content shall not be required while natural gas is the only fuel fired in the gas turbines. Therefore, the recordkeeping provision pertaining to fuel analysis reports for nitrogen content is not included in the Title V permit.

d. Annual NO_x emission reports, calculated daily as the sum of each consecutive 365-day period.

e. Continuous records of the ambient temperature, ambient humidity, and combustor inlet pressure.

f. Annual hours of operation of the engine-generator set, calculated monthly as the sum of each consecutive 12-month period. Compliance for the consecutive 12-month period shall be demonstrated monthly by adding the total for the most recently completed calendar month to the individual monthly totals for the preceding 11 months.

g. The log of non-resettable hour metering device observations for the engine-generator set.

h. All fuel supplier certifications.

i. Engine information including make, model, serial number, model year, maximum engine power (bhp), and engine displacement for the engine-generator set.

j. The manufacturer's written operating instructions or procedures developed by the owner/operator that are approved by the engine manufacturer for the engine-generator set.

k. Records of the reasons for operation for the engine-generator set, including, but not limited to, the date, cause of operation, cause of the emergency and hours of operation.

l. Scheduled and unscheduled maintenance and operator training.

These records shall be available on site for inspection by the DEQ and shall be current for the most recent 5 years.

The Title V permit includes requirements for maintaining additional records of monitoring and testing required by the permit. These records include:

a. Monitoring data, monitor performance data, monitor maintenance and corrective actions for the water flow meter; fuel flow meter and monitoring instrumentation for turbine loading;

b. Results of the weekly visual observations of the combustion turbine exhaust stacks and any visible emissions evaluations; and

c. Any written Quality Improvement Plan and any activities undertaken to implement a Quality Improvement Plan, and any such data used to document the adequacy of monitoring.

These records shall be available on site for inspection by the DEQ and shall be current for the most recent 5 years.

Condition 33: The permittee shall take the following measures in order to minimize the duration and frequency of excess emissions, with respect to air pollution control equipment and process equipment which effect such emissions:

a. Develop a maintenance schedule and maintain records of all scheduled and non-scheduled maintenance;

b. Maintain an inventory of spare parts;

c. Have available written operating procedures for equipment. These procedures shall be based on the manufacturer's recommendations, at a minimum; and

d. Train operators in the proper operation of all such equipment and familiarize the operators with the written operating procedures prior to their first operation of such equipment. The permittee shall maintain records of the training provided including the names of trainees, the date of training and the nature of the training.

Records of maintenance and training shall be maintained on site for a period of five years and shall be made available to DEQ personnel upon request.

Applicable recordkeeping requirements from NSPS Subpart GG have been incorporated into the requirements from the state major NSR permit.

Testing

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

The following condition is an applicable requirement from Condition 10 of the state major NSR permit issued on April 3, 2014:

Condition 10: The permitted facility shall be constructed so as to allow for emissions testing and monitoring upon reasonable notice at any time, using appropriate methods. Test ports shall be provided at the appropriate locations.

As turbines with an individual heat input at peak load greater than 10 million Btu per hour that were constructed after October 3, 1977, the following provisions of NSPS Subpart GG apply to the turbines:

40 CFR 60.335: Test methods and procedures.

Applicable testing requirements from NSPS Subpart GG, specifically 40 CFR 60.335(b)(10), have been incorporated into the requirements from the state major NSR permit.

Reporting

The following reporting requirements are applicable requirements from the state major NSR permit issued on April 3, 2014. Condition numbers are from the NSR permit.

Condition 27: Semi-annual reports of excess emissions shall be submitted to the Director, Southwest Regional Office in accordance with 40 CFR Part 60, Section 7(c). The time periods to be addressed are January 1 to June 30, and July 1 to December 31. The report shall be postmarked by the 30th day following the end of each six-month

period. In addition to the information required by 40 CFR Part 60, Section 7(c), each report shall include the average water-to-fuel ratio, average fuel consumption, ambient conditions, gas turbine load, and nitrogen content of the fuel during the period of excess emissions. For the purpose of this report, periods of excess emissions are defined as follows:

a. Excluding black start testing, any one hour period during which the average water-to-fuel ratio, as measured by the continuous monitoring system, falls below the average water-to-fuel ratio determined to demonstrate compliance with the nitrogen oxide ppmvd limits specified in condition 19 during the most recent compliance test.

b. Any period during which the sulfur content of the natural gas being fired in the gas turbines exceeds 0.8 percent by weight.

c. Any period during which the fuel-bound nitrogen content of the natural gas being fired in the gas turbines exceeds 0.015 percent by weight.

In accordance with the EPA-approved custom fuel monitoring schedule, monitoring of fuel nitrogen content shall not be required while natural gas is the only fuel fired in the gas turbines. Therefore, the reporting provision pertaining to fuel-bound nitrogen content in Condition 27 is not included in the Title V permit.

d. Operating hours when monitoring data is not available.

In addition to the information included in the semi-annual monitoring report required by the recordkeeping and reporting provisions of the General Conditions of the Title V permit, the semi-annual monitoring report shall also include the following:

a. Summary information on the number, duration and cause (including unknown cause, if applicable) of excursions or exceedances, as applicable, and the corrective actions taken; and

b. Summary information on the number, duration and cause (including unknown cause, if applicable) for monitor downtime incidents (other than downtime associated with zero and span or other daily calibration checks, if applicable).

As turbines with an individual heat input at peak load greater than 10 million Btu per hour that were constructed after October 3, 1977, the following provisions of NSPS Subpart GG apply to the turbines:

40 CFR 60.334(j)(1)(i) and (iv): Excess emission report provisions for NO_x;

40 CFR 60.334(j)(2)(i) and (iii): Excess emission report provisions for SO_2; and

40 CFR 60.334(j)(5): Reporting frequency.

Applicable reporting requirements from NSPS Subpart GG have been incorporated into the requirements from the state major NSR permit.

Phase II Acid Rain Program

The Phase II Acid Rain permit for this facility, issued pursuant to 9 VAC 5 Chapter 80, Part II, Article 3, *Acid Rain Operating Permits* (9 VAC 5-80-360 *et seq.*), effective from January 1, 2011 through December 31, 2015, is incorporated by reference into the Title V permit. A copy of the acid rain permit is attached to the Title V permit.

The ten combustion turbines were not eligible for SO_2 allowance allocations by the U.S. EPA under Section 405 of the Clean Air Act and the Acid Rain Program. Therefore, these units have no SO_2 allowances listed in Table 2 of 40 CFR 73.10. SO_2 allowances may be acquired from other sources in addition to those allocated by the U.S. EPA. No revision to this permit is necessary in order for the owners and operators of these units to hold additional allowances recorded in accordance with 40 CFR Part 73. The owners and operators of each unit remain obligated to hold sufficient allowances to account for SO_2 emissions from each unit in accordance with 40 CFR 72.9(c)(1).

The ten combustion turbines are gas-fired and not subject to NO_x limitations under 40 CFR Part 76.

NO_x Budget Trading Program

The NO_x Budget Trading Program was the original means by which the Virginia Air Pollution Control Board addressed the transport of ozone-generating pollutants – nitrogen oxides and sulfur dioxide – across state lines as required by EPA's NO_x SIP Call rule. The NO_x SIP Call was superseded by EPA's Clean Air Interstate Rule (CAIR). Virginia implemented CAIR through the NO_x Annual Trading Program, the NO_x Ozone Season Trading Program, and SO_2 Annual Trading Program. Since the NO_x SIP Call has been superseded by CAIR, provisions for the NO_x Budget Trading Program have been removed from the Title V permit.

Clean Air Interstate Rule (CAIR) Trading Program

A review of the CAIR permit application submitted by Wolf Hills Energy indicates each of the ten combustion turbines is subject to the NO_x Annual, SO_2, and NO_x Ozone Season CAIR programs. Therefore, the Title V permit contains a condition requiring the permittee to 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.*, 9 VAC 5-140-5010 *et seq.*, and 40 CFR Part 96) by the compliance

date in the respective Part of 9 VAC 5 Chapter 140. The CAIR permit and permit application is included in the Title V permit as an attachment.

Streamlined Requirements

There are no streamlined requirements.

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 permit sources. The acid rain operating permit regulations subsume the Title V operating permit regulations for an acid rain facility. 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

Permit Expiration

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 §§2.1-20.01:2 and §§10.1-1185 of the *Code of Virginia*, and the "Department of Environmental Quality Agency Policy Statement NO. 3-2001".

Failure/Malfunction Reporting

Section 9 VAC 5-20-180 requires malfunction and excess emissions reporting within 4 hours. Section 9 VAC 5-80-650 also requires malfunction reporting; however, reporting is required within 2 days. Section 9 VAC 5-20-180 is from the general regulations. All affected facilities are subject to this section including Title V facilities. Section 9 VAC 5-80-250 is from the Title V regulations and 9 VAC 5-80-650 is from the acid rain operating permit regulations. This facility is subject to both 9 VAC 5-20-180 and 9 VAC 5-80-650. A facility may make a single report that meets the requirements of 9 VAC 5-20-180 and 9 VAC 5-80-650. The report must be made within 4 daytime business hours of the malfunction.

Malfunction as an Affirmative Defense

The regulations contain two reporting requirements for malfunctions that coincide. The reporting requirements are listed in section 9 VAC 5-80-650 and 9 VAC 5-20-180. The malfunction requirements are listed in Conditions 74 - 77. For further explanation see the previous comments on failure/malfunction reporting.

STATE-ONLY APPLICABLE REQUIREMENTS

Wolf Hills Energy did not identify any state-only applicable requirements in their application; however, the following Virginia Administrative Codes have specific requirements only enforceable by the State:

9 VAC 5, Chapter 50, Part II, Article 2 – Standard of Performance for Odorous Emissions; and,

9 VAC 5, Chapter 60, Part II, Article 5 – Emission Standards for Toxic Pollutants from New and Modified Sources.

The provisions of Condition 36 of the state major NSR permit issued on April 3, 2014, implement the requirements of Article 5 referenced above and are therefore State-Only Enforceable and not included in the Title V permit.

FUTURE APPLICABLE REQUIREMENTS

Wolf Hills Energy did not identify any future applicable requirements in their application, and DEQ is unaware of any future requirements that may apply during the life of the Title V permit. Therefore, no future applicable requirements have been included in the permit.

INAPPLICABLE REQUIREMENTS

The National Emission Standards for Hazardous Air Pollutants for Stationary Combustion Turbines does not apply since the facility is not a major source of hazardous air pollutants.

The startup, shut down, and malfunction opacity exclusion listed in 9 VAC 5-40-20 A 4 cannot be included in any Title V permit. This portion of the regulation is not part of the federally approved state implementation plan. The opacity standard applies to existing sources at all times including startup, shutdown, and malfunction. Opacity exceedances during malfunction can be affirmatively defended provided all requirements of the affirmative defense section of this permit are met. Opacity exceedances during startup and shut down will be reviewed with enforcement discretion using the requirements of 9 VAC 5-40-20 E, which state, "At all times, including periods of startup, shutdown, soot blowing and malfunction, owners shall, to the extent practicable, maintain and operate any affected facility including associated air pollution control equipment in a manner consistent with air pollution control practices for minimizing emissions."

The requirements of 40 CFR Part 98 – Mandatory Greenhouse Gas Reporting are not applicable under the Title V permitting program. The definition of “applicable requirement” in 40 CFR 70.2 and 71.2 does not include requirements such as those included in Part 98, promulgated under Clean Air Act (CAA) section 114(a)(1) and 208.

As a result of several USEPA actions regarding greenhouse gases (GHG), emissions of GHG must be addressed for a Title V permit issued after January 1, 2011. The current state major NSR permit for the facility contains no GHG-specific BACT requirements and there have been no modifications at the facility requiring a review of GHG emissions. Therefore, there are no applicable BACT requirements for the facility specific to GHG.

COMPLIANCE PLAN

Wolf Hills Energy is currently in compliance with all applicable requirements. No compliance plan was required in the application.

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 5-80-490.

Insignificant emission units include the following:

Emission Unit No.	Emission Unit Description	Citation[1] (9 VAC)	Pollutant Emitted (5-80-720 B.)	Rated Capacity (5-80-720 C.)
WH01	Pratt & Whitney FT8 Twin Pac #1a	5-80-720 B.5.	All HAPs	N/A
WH02	Pratt & Whitney FT8 Twin Pac #1b	5-80-720 B.5.	All HAPs	N/A
WH03	Pratt & Whitney FT8 Twin Pac #2a	5-80-720 B.5.	All HAPs	N/A
WH04	Pratt & Whitney FT8 Twin Pac #2b	5-80-720 B.5.	All HAPs	N/A
WH05	Pratt & Whitney FT8 Twin Pac #3a	5-80-720 B.5.	All HAPs	N/A
WH06	Pratt & Whitney FT8 Twin Pac #3b	5-80-720 B.5.	All HAPs	N/A
WH07	Pratt & Whitney FT8 Twin Pac #4a	5-80-720 B.5.	All HAPs	N/A
WH08	Pratt & Whitney FT8 Twin Pac #4b	5-80-720 B.5.	All HAPs	N/A
WH09	Pratt & Whitney FT8 Twin Pac #5a	5-80-720 B.5.	All HAPs	N/A

Emission Unit No.	Emission Unit Description	Citation[1] (9 VAC)	Pollutant Emitted (5-80-720 B.)	Rated Capacity (5-80-720 C.)
WH10	Pratt & Whitney FT8 Twin Pac #5b	5-80-720 B.5.	All HAPs	N/A
BS1	Caterpillar Diesel Generator, Model C27	5-80-720 B.5.	All HAPs	N/A

[1]The citation criterion is 9 VAC 5-80-720 B - Insignificant due to emission levels.

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

A public notice regarding the draft permit was published in the *Bristol Herald Courier* newspaper in Bristol, Virginia on October 6, 2014. A copy of the draft permit and public notice was sent to the United States EPA by e-mail on October 1, 2014, for concurrent review. A copy of the public notice was sent to the affected states, including West Virginia, Kentucky, North Carolina and Tennessee by e-mail on October 3, 2014. A copy of the public notice was sent to all persons on the Title IV and Title V mailing lists either by e-mail or postal mail, as requested, no later than October 6, 2014.

Public comments were accepted from October 6, 2014, through November 5, 2014. One comment was received on October 30, 2014. The comment and DEQ response are attached. There were no changes to the draft permit as a result of the comment.

The EPA 45-day review began on October 6, 2014, and continued through November 20, 2014. No comments were received from the EPA during the 45-day review period.

Attachment A

2013 Emission Statement

Attachment B

EPA Letter

Attachment C

Exhaust Gas Temperature Curve/Tuning Curve/Topper Curve