NRO-169-13

COMMONWEALTH of VIRGINIA

DEPARTMENT OF ENVIRONMENTAL QUALITY
NORTHERN REGIONAL OFFICE

Douglas W. Domenech
Secretary of Natural Resources

13901 Crown Court, Woodbridge, Virginia 22193
(703) 583-3800 Fax (703) 583-3821
www.deq.virginia.gov

David K. Paylor
Director

Thomas A. Faha
Regional Director

August 27, 2013

Mr. Scott Davis
DuPont Fabros Technology, Inc.
1212 New York Avenue, N. W., Suite 900
Washington, DC 20005

Registration No.: 73370

Dear Mr. Davis:

Attached is a permit to construct and operate diesel engine generator sets at the Ashburn Corporate Campus (ACC) data centers in Ashburn, Virginia, in accordance with the provisions of the Virginia State Air Pollution Control Board's (Board) Regulations for the Control and Abatement of Air Pollution (Regulations). This permit supersedes your permit dated November 18, 2010.

This permit contains legally enforceable conditions. Failure to comply may result in appropriate enforcement. Please read all permit conditions carefully.

In the course of evaluating the application and arriving at a final decision to approve the project, the Department of Environmental Quality (DEQ) deemed the application complete on July 19, 2013.

This permit approval to modify and operate shall not relieve DuPont Fabros Technology, Inc. of the responsibility to comply with all other local, state, and federal permit regulations. It should be noted the proposed and certain previously installed engine-generator sets are affected facilities under 40 CFR 60, New Source Performance Standard (NSPS) Subpart IIII and 40 CFR 63, Maximum Achievable Control Technology (MACT) Subpart ZZZZ. Each unit is required to comply with certain federal emission standards and operating limitations over the useful life of the unit. As the owner/operator of the units, the DEQ advises you to review the NSPS and MACT to ensure compliance with applicable emission standards, operational limitations, and the monitoring, notification, reporting and recordkeeping requirements. Applicable notifications shall be sent to EPA, Region III. The NSPS and MACT can be found at **www.ecfr.gov.**

The Board's Regulations as contained in Title 9 of the Virginia Administrative Code (VAC) 5-170-200 provide that you may request a formal hearing from this case decision by filing a petition with the Board within thirty days after this case decision notice was mailed or delivered to you. 9 VAC 5-170-200 also provides that you may request direct consideration of

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the decision by the Board if the Director of the DEQ made the decision. Please consult the relevant regulations for additional requirements for such requests.

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

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

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

If you have any questions concerning this permit, please contact Justin Wilkinson at (703)583-3820.

Sincerely,

James B. LaFratta
Regional Air Permit Manager

TAF/JBL/JAW/13-169-mNSR.doc

Attachment: Permit

cc: Regional Air Compliance Manager (electronic file submission)
Dan Hopkins, DuPont Fabros Technology, Inc. (electronic file submission)
File

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David K. Paylor
Director

Thomas A. Faha
Regional Director

STATIONARY SOURCE PERMIT TO CONSTRUCT AND OPERATE

This permit supersedes your permit dated November 18, 2010.

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

DuPont Fabros Technology, Inc.
1212 New York Ave, NW, Suite 900
Washington, D.C. 20005

Registration No.: 73370

is authorized to construct and operate

diesel engine generator sets

located at

44490 Chillum Place (ACC 2 – Rhino)
44520 Hastings Drive (ACC 3 – Quill)
44480 Hastings Drive (ACC 4 – Grizzly)
44521 Hastings Drive (ACC 5 – Fox)
44461 Chillum Place (ACC 6 – Fox)
44393 Hastings Drive (ACC 7 – Alshain Ventures, LLC)
Ashburn, Virginia 20147

in accordance with the Conditions of this permit.

Approved on August 27, 2013

Thomas A. Faha
Regional Director

INTRODUCTION

Any changes in the permit application specifications or any existing facilities which alter the impact of the facility on air quality may require a permit. Failure to obtain such a permit prior to construction may result in enforcement action.

Words or terms used in this permit shall have meanings as provided in 9 VAC 5-80-1110 (definitions) and 9 VAC 5-10-20 of the State Air Pollution Control Board's (Board) Regulations for the Control and Abatement of Air Pollution (Regulations). The regulatory reference or authority for each condition is listed in parentheses () after each condition.

Annual requirements to fulfill legal obligations to maintain current stationary source emissions data will necessitate a prompt response by the permittee to requests by the Department of Environmental Quality (DEQ) or the Board for information to include, as appropriate: process and production data; changes in control equipment; and operating schedules. Such requests for information from the DEQ will either be in writing or by personal contact.

The availability of information submitted to the DEQ or the Board will be governed by applicable provisions of the Freedom of Information Act, §§ 2.2-3700 through 2.2-3714 of the Code of Virginia, § 10.1-1314 (addressing information provided to the Board) of the Code of Virginia, and 9 VAC 5-170-60 of the State Air Pollution Control Board Regulations. Information provided to federal officials is subject to appropriate federal law and regulations governing confidentiality of such information.

The permit consists of the following:

SECTION	AFFECTED FACILITY	No. of Pages	No. of Conditions
I	ACC 2, ACC 3, ACC 4, ACC 5, ACC 6, ACC7	2	0
II	ACC 2 - Rhino	14	25
III	ACC 3 - Quill	11	22
IV	ACC 4 - Grizzly	13	23
V	ACC 5 - Fox	13	23
VI	ACC 6 - Fox	12	21
VII	ACC 7 - Alshain	12	24
GC	Campus-Wide & General Conditions	4	11

Source Testing Report Format

II. ACC 2 - RHINO

APPLICATION

Except as specified in this permit, the permitted facility is to be constructed and operated as represented in the letter request dated February 23, 2010 with supplemental information dated March 18, 2010 and the permit application dated April 21, 2008 with supplemental information dated May 6, 2008, June 16, 2008, permit application dated December 6, 2007, and permit application dated March 24, 2005. Any changes in the permit application specifications or any existing facilities which alter the impact of the facility on air quality may require a permit. Failure to obtain such a permit prior to construction may result in enforcement action.
(9 VAC 5-50-390 and 9 VAC 5-80-1210 D)

PROCESS REQUIREMENTS

1. **Equipment List** – Equipment at this facility consists of the following:

Equipment permitted prior to the date of this permit					
Reference No.	**Equipment Description**	**Rated Capacity**		**Federal Requirements**	**Original Permit Date**
RPU-1, RPU-2, RPU-5, RPU-6, RPU-8	Five MTU Friedrichshafen, Rotary Uninterruptible Power Supply (UPS) Engines, Model 16V4000-G81	2937 BHP generating 1800 ekW each	Steuler CERNOx-16V400/2000 SCR Open Loop System	N/A	3/24/05
RPU-3 RPU-4 RPU-7	Three Detroit Diesel, Rotary UPS Engines, Model 16V4000-G80	2935 BHP generating 1800 ekW each	Steuler CERNOx-16V400/2000 SCR Open Loop System	N/A	3/24/05
RPU-RI RPU-R2	Two Detroit Diesel, Rotary UPS Engines, Model 16V4000-G80	2935 BHP generating 1800 ekW each	N/A	N/A	3/24/05
EG-9 EG-10 EG-11 EG-12	Four Detroit Diesel, Stand-By Generators, Engine Model 16V4000-G81	2936 BHP generating 1820 ekW each	N/A	N/A	3/24/05

Equipment Exempt from Permitting				
Reference No.	**Equipment Description**	**Rated Capacity**	**Exemption Citation**	**Exemption Date**
Tank 1 through Tank 14	Fourteen Above Ground Storage Tanks (AST) for Diesel fuel oil	6,000 gallons each, nominally	9 VAC 5-80-1320 B.8	3/24/05

Specifications included in the permit under this condition are for informational purposes only and do not form enforceable terms or conditions of the permit unless the specifications form the basis for conditions in the permit.
(9 VAC 80-1180 D 3)

2. **Emission Controls** – Emissions from the engine-generator sets shall be controlled by the following:

   a. Oxides of Nitrogen (as NO_2) emissions from each engine-generator set (RPU-1 through RPU-8) shall be controlled by an open loop selective catalytic reduction (SCR) control device on each engine-generator set. Each SCR system shall be equipped with temperature probes to monitor the catalyst bed exhaust temperature at all times when the engine is operating. The SCR urea enabling temperature shall be 570°F when using diesel fuel with a sulfur content $\leq$ 0.05% (500 parts per million). At such time as the sulfur content of the fuel used by the diesel engine falls below a content of 50 parts per million (ppm), the SCR urea enabling temperature shall be adjusted to 540°F. At such time as the sulfur content of the fuel used by the diesel engine falls below a content of 15 ppm, the SCR urea enabling temperature shall be adjusted to 500°F or such higher temperature as testing or other reliable information, as approved by DEQ, demonstrates is necessary to achieve at least ninety percent control of NOx emissions. Engine exhaust gas shall be treated with urea solution when the engine is operating at or above twenty percent load and the appropriate fuel-based temperature as identified above has been achieved, except for periods of start-up, shutdown, or malfunction. In the event that engine exhaust temperature exceeds 950°F, urea injection shall be discontinued and any operations above that level will be considered a malfunction. The SCR system control device shall be provided with adequate access for inspection.

   b. Oxides of Nitrogen (as NO_2) emissions from the engine-generator sets, RPU-R1, RPU-R2, EG-9 through EG-12, shall be controlled by the use of good operating practices.

   c. Carbon Monoxide (CO), Volatile Organic Compounds (VOC), and Particulate Matter (PM) emissions from the engine-generator sets, (RPU-1 through RPU-8, RPU-R1, RPU-R2, EG-9 through EG-12), shall be controlled by good design and operating practices which at a minimum are those designated by the equipment vendors.

   d. Sulfur Dioxide (SO_2) emissions from the engine-generator sets (RPU-1 through RPU-8, RPU-R1, RPU-R2, EG-9 through EG-12) shall be controlled by the use of low sulfur diesel fuel with a sulfur content not to exceed 0.05% (500 ppm). Subsequent to the issuance of this permit, the SO_2 emissions shall be controlled by the use of ultra low sulfur diesel fuel that conforms to the fuel specifications listed in Condition 9.

e. Visible emissions from each engine-generator set (RPU-1 through RPU-8, RPU-R1, RPU-R2, EG-9 through EG-12) shall be controlled by good operating practices.

(9 VAC 5-80-1180 and 9 VAC 5-50-260)

3. **Monitoring Devices –**

a. Each engine-generator set with SCR (RPU-1 through RPU-8) shall be equipped with a device to monitor and record the urea injection rate at a frequency of not less than once every fifteen minutes during the operation of each engine-generator set.

b. Each engine-generator set with SCR (RPU-1 through RPU-8) shall be equipped with a device to monitor and record the catalyst bed exhaust temperature at a frequency of not less than once every fifteen minutes during the operation of each engine-generator set.

c. Each engine (RPU-1 through RPU-8, RPU-R1, RPU-R2, EG-9 through EG-12) shall be equipped with a non-resettable hour meter and a device to monitor and record the engine-generator kilowatt output at a frequency of not less than once every fifteen minutes. A record of the engine operation shall be maintained to provide dates, run times, and reason the unit is operated as defined in Condition 5.

d. Each monitoring device shall be provided with adequate access for inspection and shall be in operation when the engines are operating.

e. Each monitoring device shall be installed, maintained, calibrated and operated in accordance with approved procedures which shall include, as a minimum, the manufacturer's written requirements or recommendations.

(9 VAC 5-80-1180 D and 9 VAC 5-50-410)

4. **Monitoring Device Observation** – To ensure good performance, the monitoring devices designated in Condition 3 shall be observed by the permittee during each test firing. Data captured by the monitoring devices shall be reviewed or observed by the permittee at a frequency of not less than once each twenty-four period during which the engine-generator sets are called into service. Observations shall be maintained on site in a permanent log book.
(9 VAC 5-80-1180 D)

OPERATING LIMITATIONS

5. **Operating Scenarios** – All engine-generator sets shall be operated in a manner consistent with the following modes of operation only:

a. Emergency / Critical Power Generation:

i. Emergency: The engine-generator sets (RPU-1 through RPU-8, RPU-R1, RPU-R2, EG-9 through EG-12) may be operated 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 the 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 be allowed for the period of time the primary electrical power provider service is unavailable. Once primary electrical power provider service is available the engine-generator sets may be operated in accordance with Critical Power Generation as defined below.

ii. ISO-Declared Emergency: The engine-generator sets (RPU-1 through RPU-8, RPU-R1, RPU-R2, EG-9 through EG-12) may be operated for participation in an Independent System Operator's (ISO) Emergency Load Response Program (ELRP) during times of an ISO-declared emergency, as defined in the ISO's emergency operations manual. Operations under this scenario shall not exceed 60 hours per generator each calendar year.

iii. Critical Power Generation: The engine-generator sets (RPU-1 through RPU-8, RPU-R1, RPU-R2, EG-9 through EG-12) may be operated in situations where immediate action on the part of the facility is needed due to a loss or anticipated loss of acceptable electrical power service from the primary power provider and the loss or anticipated loss of power service is beyond the reasonable control of the facility. Operation under these circumstances shall be allowed until such time as acceptable power provider service is restored or the loss of acceptable power provider service is no longer reasonably anticipated.

b. Alternate Power Generation: An engine-generator set may be operated voluntarily for the purposes of peak-shaving, demand response, or as part of an interruptible power supply arrangement with a power provider, other market participant, or system operator if the engine is equipped with a selective catalytic reduction system (SCR) that achieves the manufacturer's guaranteed maximum emission reductions based on fuel type. Prior to construction of the SCR unit, when changing from Emergency Power or Critical Power Generation to Alternate Power Generation, the permittee shall submit appropriate documentation to the DEQ and receive DEQ approval for the change in the method of operation of the engine-generator set.

c. The engine-generator sets (RPU-1 through RPU-8, RPU-R1, RPU-R2, EG-9 through EG-12) may be operated for periodic maintenance, testing, and operational training.

Total annual emissions for all Ashburn campus facilities (ACC 2, ACC 3, ACC 4, ACC 5, ACC 6 and ACC 7) shall not exceed the limits stated in Condition GC-1.a. Total annual emissions for all Ashburn campus facilities (ACC 2, ACC 3, ACC 4, ACC 5, ACC 6 and ACC 7) participation in the ELRP shall not exceed the limits stated in Condition GC-2.
(9 VAC 5-80-1180)

6. **SCR Control for RPU-R1, RPU-R2, EG-9 through EG-12** – In addition to the requirements of Condition 5.b, any diesel engine driven engine-generator set, RPU-R1, RPU-R2, EG-9,EG-10, EG-11, EG-12, that individually operates more than twenty hours during the ozone season (June 1 through August 31), or more than forty hours in a consecutive rolling twelve-month period shall install SCR within 180 days of exceedance of the operating hours specified. The hours operated shall be determined by summing the periods of time the engine operates more than thirty consecutive minutes above 500 ekW, excluding initial

performance testing as required by Condition 18. Compliance for the consecutive twelve-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 eleven months. Prior to construction of the SCR unit, the permittee shall notify the DEQ in accordance with Condition 24.
(9 VAC 5-80-1180)

7. **Operation of the Engine-Generator Sets** – The permittee must operate and maintain the engine-generator sets (RPU-1 through RPU-8, RPU-R1, RPU-R2, EG-9 through EG-12) and associated control devices 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 impact on air emissions.
(9 VAC 5-80-1180)

8. **Fuel** – The approved fuel for the engine-generator sets, (RPU-1 through RPU-8, RPU-R1, RPU-R2, EG-9 through EG-12) is diesel fuel oil. A change in the fuel may require a permit to modify and operate.
(9 VAC 5-80-1180)

9. **Fuel Specifications** – The diesel fuel oil delivered subsequent to the issuance of this permit shall comply with the specifications below:

   a. DIESEL FUEL which conforms to the ASTM D975 specifications for grade ultra-low sulfur (ULSD) No. 1-D or No. 2-D, or Grade No. 1-D S15 or 2-D S15,

      Maximum sulfur content per shipment: 0.0015%; or

   b. DIESEL FUEL that

      i. Has a minimum cetane number of forty, or has a maximum aromatic content of thirty-five percent by volume, and

      ii. Has a sulfur content per shipment not to exceed 0.0015%.

   (9 VAC 5-80-1180 and 9 VAC 5-50-260)

10. **Fuel Certification** – The permittee shall obtain a certification from the fuel supplier with each shipment of diesel fuel oil. Each fuel supplier certification shall include the following:

    a. The name of the fuel supplier;

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

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

    d. A statement that the diesel fuel oil:

       i. Complies with the American Society for Testing and Materials (ASTM) specification, D975, as specified in Condition 9, or

ii. Has a sulfur content per shipment not to exceed 0.0015% by weight (15 ppm) and either a minimum cetane number of forty or maximum aromatic content of thirty-five percent by volume; or

iii. Alternatively, the permittee must obtain approval from the Regional Air Compliance Manager of the DEQ's Northern Regional Office (NRO) if other documentation will be used to certify the diesel fuel.

(9 VAC 5-80-1180)

11. **Fuel Sampling and Analysis –**

a. The permittee shall sample and analyze fuel from each storage tank, Tank 1 through Tank 14, that supplies fuel oil to engine-generator sets equipped with SCR, (RPU-1 through RPU-8, EG-9 through EG-12) during each calendar quarter that fuel oil is received and a tank is filled. Fuel sampling shall be conducted in accordance with ASTM Method 5453 or other DEQ approved method to determine fuel sulfur content by weight.

b. The results of the fuel analysis shall be reported to the Regional Air Compliance Manager of the DEQ's NRO within thirty calendar days after the end of each calendar quarter. Data shall include: fuel sulfur content by weight (weight % or ppm), company and individual collecting the sample, identification of sampling method used, sample volume, number of samples, date sample collected, location of fuel when sample taken, date of analysis, company and individual conducting the analysis.

c. At such time as the sulfur content of a tank is determined to be 0.0015% (15 ppm Sulfur by weight), the permittee may discontinue fuel sampling of that tank.

(9 VAC 5-80-1180)

EMISSION LIMITS

12. **Process Emission Limits** – Emissions from the operation of each engine-generator set shall not exceed the hourly limits specified below:

a. **RPU-1, 2, 5, 6, 8 (G81)**

Nitrogen Oxides (as NO_2)	4.6 lbs/hr *	with SCR operating
	46.0 lbs/hr *	without SCR operating
Carbon Monoxide (CO)	5.3 lbs/hr	
Particulate Matter (PM_{10})	1.0 lbs/hr	
Sulfur Dioxide (SO_2)	0.6 lbs/hr	
Volatile Organic Compounds (VOC)	3.6 lbs/hr	

b. **EG-9,10,11,12** (G81)

Nitrogen Oxides (as NO_2)	46.0 lbs/hr *	without SCR operating
Carbon Monoxide (CO)	5.3 lbs/hr	
Particulate Matter (PM_{10})	1.0 lbs/hr	
Sulfur Dioxide (SO_2)	0.6 lbs/hr	
Volatile Organic Compounds (VOC)	3.6 lbs/hr	

c. **RPU-3,4,7** (G80)

Nitrogen Oxides (as NO_2)	8.7 lbs/hr *	with SCR operating
	87.4 lbs/hr *	without SCR operating
Carbon Monoxide (CO)	6.7 lbs/hr	
Particulate Matter (PM_{10})	1.0 lbs/hr	
Sulfur Dioxide (SO_2)	0.6 lbs/hr	
Volatile Organic Compounds (VOC)	4.5 lbs/hr	

d. **RPU-R1,RPU-R2** (G80)

Nitrogen Oxides (as NO_2)	87.4 lbs/hr *	
Carbon Monoxide (CO)	6.7 lbs/hr	
Particulate Matter (PM_{10})	1.0 lbs/hr	
Sulfur Dioxide (SO_2)	0.6 lbs/hr	
Volatile Organic Compounds (VOC)	4.5 lbs/hr	

*NO_2 – subject to change based on initial compliance test emission rate determination. If the compliance test shows a lower rate (average of three one-hour test runs x 120%), the facility has the option of using the lower hourly rate by undergoing a permit amendment to incorporate the new lower rate.

Emission limits are derived from manufacturer data. Compliance with the hourly nitrogen oxides (as NO_2) emission limit shall be demonstrated by stack testing, as stated in Condition 18. Compliance with the sulfur dioxide emissions limit shall be based on the fuel sulfur content and the fuel supplier certification, as stated in Condition numbers 8, 9, and 10. Compliance with the other pollutant limits shall be based on the proper operation and maintenance of the diesel engines or by testing, if required.
(9 VAC 5-80-1180 and 9 VAC 5-50-260)

13. **Campus-Wide Annual Emission Limits** – The annual campus-wide emissions shall be determined by summing the annual emissions from each facility at the Ashburn Corporate Campus (ACC 2, ACC 3, ACC 4, ACC 5, ACC 6, and ACC 7) to demonstrate compliance with the campus-wide emission limits specified in Conditions GC-1.a. and GC-2.
(9 VAC 5-80-1180)

14. **Annual Emissions Calculations –**

a. The total annual emissions of nitrogen oxides (as NO_2) from the diesel engine-generator sets shall be calculated monthly as the sum of each consecutive twelve-month period. Compliance for the consecutive twelve-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 eleven months.

Each month's NOx emissions shall be calculated as follows:

i. NO_2 Emissions from engine-generator sets (RPU-1, 2, 5, 6, 8,) =

{(Total hours of operation of engine-generator sets RPU-1, 2, 5, 6, 8 for the current month while SCR is operational x 3.7 lb/hr*) ÷ 2000

+

(Total hours of operation of engine-generator sets RPU-1, 2, 5, 6, 8 for the current month while SCR is not operating x 37.0 lb/hr*)

÷ 2000}

PLUS

ii. NO_2 Emissions from engine-generator sets (EG-9,10,11,12) =

(Total hours of operation of engine-generator sets EG-9, 10, 11, 12, for the current month x 37.0 lb/hr*) ÷ 2000

PLUS

iii. NO_2 Emissions from engine-generator sets (RPU-3,4,7) =

(Total hours of operation of engine-generator sets RPU-3,4,7,R1,R2 for the current month while SCR is operational x 7.3 lb/hr*) ÷ 2000

+

(Total hours of operation of engine-generator sets RPU-3,4,7,R1,R2 for the current month while SCR is not operating x 72.9 lb/hr*) ÷ 2000

PLUS

iv. NO_2 Emissions from engine-generator sets (RPU-R1,RPU-R2) =

(Total hours of operation of engine-generator sets RPU-R1,RPU-R2 for the current month x 72.9 lb/hr*) ÷ 2000

*NO_2 – To be verified and subject to change based on initial compliance test emission rate determination. If the compliance test shows a lower rate (average of three one-hour test runs x 120%), the facility has the option of using the lower hourly rate by undergoing a permit amendment to incorporate the new lower rate.

b. The total annual emissions for CO, SO_2, PM_{10}, and VOC from the diesel engine-generator sets shall be calculated monthly as the sum of each consecutive twelve-month period. Compliance for the consecutive twelve-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 eleven months.

Each month's emissions shall be calculated as follows:

CO = (Total hours of operation of engine-generator sets RPU-1, 2, 5, 6, 8, EG-9, 10, 11, 12 for the current month x 4.2 lb/hr) ÷ 2000
+
(Total hours of operation of engine-generator sets RPU-3, 4, 7, R1, R2 for the current month x 5.6 lb/hr) ÷ 2000

SO_2 = (Total hours of operation of engine-generator sets RPU-1, 2, 3, 4, 5, 6, 7, 8, RPU-R1, R2, EG-9, 10, 11, 12 for the current month x 0.6 lb/hr) ÷ 2000

PM_{10} = (Total hours of operation of engine-generator sets RPU-1, 2, 3, 4, 5, 6, 7, 8, RPU-R1, R2, EG-9, 10, 11, 12 for the current month x 1.0 lb/hr) ÷ 2000

VOC = (Total hours of operation of engine-generator sets RPU-1, 2, 5, 6, 8, EG-9, 10, 11, 12 for the current month x 2.9 lb/hr) ÷ 2000
+
(Total hours of operation of engine-generator sets RPU-3, 4, 7, R1, R2 for the current month x 3.8 lb/hr) ÷ 2000

(9 VAC 5-80-1180 and 9 VAC 5-50-260)

15. **Visible Emission Limit** – Visible emissions from the operation of each engine-generator set shall not exceed five percent opacity except during one six-minute period in any one hour in which visible emissions shall not exceed ten percent opacity as determined by the EPA Method 9 (reference 40 CFR 60, Appendix A). This condition applies at all times except during startup, shutdown, and malfunction.

    Visible emissions during startup, shutdown, and malfunction from each engine-generator set shall not exceed ten percent opacity except during one six-minute period in any one hour in which visible emissions shall not exceed twenty percent opacity as determined by the EPA Method 9 (reference 40 CFR 60, Appendix A).
    (9 VAC 5-80-1180 and 9 VAC 5-50-260)

16. **Emissions Testing** – The permitted facility shall be constructed so as to allow for emissions testing upon reasonable notice at any time, using appropriate methods. This includes constructing the equipment such that volumetric flow rates and pollutant emission rates can be accurately determined by applicable test methods and providing a stack or duct that is free from cyclonic flow. Sampling ports shall be provided when requested at the appropriate locations in accordance with EPA reference method 1 (Ref. 40 CFR 60, Appendix A). In addition, safe sampling platforms and access shall be provided.
    (9 VAC 5-50-30 F and 9 VAC 5-80-1180)

INITIAL COMPLIANCE DETERMINATION

17. **Testing Verification Meeting** – The permittee shall arrange to meet with the Regional Air Compliance Manager of the DEQ's NRO to discuss the stack testing requirements per

Condition 18, portable analyzer testing per Condition 18.b, and the annual performance assessment testing per Condition 19. The meeting shall take place prior to the submittal of the final stack test protocol, required by Condition 18.a.v, and is required in order for the protocol to be accepted.
(9 VAC 5-50-30 and 9 VAC 5-80-1200)

18. **Performance Testing –**

a. **Stack Test:** Performance tests shall be conducted for nitrogen oxides (as NO_2), on four of the eight diesel engines equipped with SCR (RPU-1 through RPU-8), two of the four diesel engines without SCR (EG-9 through EG-12), and one of the two diesel engines without SCR (RPU-R1, RPU-R2), using the emission compliance testing procedures outlined in 40 CFR 60, Appendix A to demonstrate compliance with the NOx (as NO_2) emission limits in Conditions 12.a,12.b, 12.c, and 12.d.

i. NOx (as NO_2) emissions testing from each selected engine-generator set shall consist of three one-hour test runs. The average of the three runs shall be reported as the short-term emissions for the engine-generator set.

ii. Testing shall be conducted with the engines operating at >90% capacity, unless multiple load band testing is approved by DEQ during the Testing Verification Meeting required by Condition 17.

iii. Recorded information shall include, but not be limited to:

1. generator load/kilowatt output;
2. urea solution consumption for units equipped with SCR;
3. catalyst bed exhaust temperature for units equipped with SCR;
4. Fuel consumption and fuel sulfur content by weight;
5. NOx (as NO_2) emission rate as determined by:
   a. the reference method; and
   b. the portable analyzer.

iv. The stack testing shall be performed to demonstrate compliance within ninety days from the date of issuance of the permit. Tests shall be conducted, reported, and the data reduced as set forth in 9 VAC 5-50-30 and the test methods and procedures contained in each applicable section or subpart listed in 9 VAC 5-50-410.

v. The details of the tests are to be arranged with the Regional Air Compliance Manager of the DEQ's NRO. The permittee shall submit two copies, one paper copy and one on removable electronic media, of the test protocol to the Regional Air Compliance Manager of the DEQ's NRO and one paper copy to the Regional Air Permit Manger of the DEQ's NRO at least thirty days prior to testing.

vi. Should conditions occur which would require rescheduling the testing, the permittee shall notify the Regional Air Compliance Manager of the DEQ's NRO in writing, within seven days of the scheduled test date or as soon as the rescheduling is deemed necessary. In any case the stack testing shall be rescheduled within thirty days.

vii. Two copies, one paper copy and one on removable electronic media, of the test results shall be submitted to the Regional Air Compliance Manager of the DEQ's NRO and one paper copy to the Regional Air Permit Manager of the DEQ's NRO within forty-five days after test completion and shall conform to the test report format enclosed with this permit.

b. **Initial Portable Analyzer Test:** An initial portable analyzer test shall be performed in conjunction with the performance testing for each engine-generator tested to establish a correlation between the stack test results and the portable analyzer results, for use in the Annual Performance Assessment required by Condition 19. The procedure for the initial portable analyzer testing and the correlation determination shall be submitted in conjunction with the initial stack test protocol and agreed upon by the Regional Air Compliance Manager of the DEQ's NRO.

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

CONTINUED COMPLIANCE VERIFICATION

19. **Annual Performance Assessment –**

a. Engines selected for stack testing:

i. Concurrent with the initial performance test the permittee shall perform portable analyzer testing to determine the nitrogen oxide (as NO_2) emission concentration for the installed engine-generator sets chosen for the initial performance testing. Following the initial portable analyzer test, subsequent testing shall be conducted in a manner that each engine-generator set is tested, at minimum, once every four years. The portable analyzer testing shall be performed at a comparable load at which the engine-generator set operated during the stack test performance demonstration. Details of the test shall be arranged with the Regional Air Compliance Manager of the DEQ's NRO. Any changes to the procedure for the portable analyzer testing shall be submitted to the Regional Air Compliance Manager of DEQ's NRO at least thirty days prior to conducting the portable analyzer testing. Results of the testing shall be maintained on-site in accordance with Condition 23.e.

ii. Additional nitrogen oxide (as NO_2) stack testing may be required if the difference between the initial NOx emission concentration established for the portable analyzer during the performance demonstration per Condition 18.b, and the NOx emission concentration determined during the annual portable analyzer test per Condition 18.a.i is equal to or greater than ten percent (10%).

b. Engines not selected for stack testing:

i. Within the first twelve months, subsequent to the issuance of this permit, concurrent with the annual maintenance, and annually thereafter, the permittee shall perform a portable analyzer test to determine the nitrogen oxide (as NO_2) emission concentration for, at minimum, twenty-five percent of the installed engine-generator sets. The testing shall be conducted in a manner that each engine-generator set is

tested, at a minimum, once every four years. Details of the test shall be arranged with the Regional Air Compliance Manager of the DEQ's NRO. Any changes to the procedure for the portable analyzer testing shall be submitted to the Regional Air Compliance Manager of DEQ's NRO at least thirty days prior to conducting the portable analyzer testing. Results of the testing shall be maintained on-site in accordance with Condition 23.e.

c. Immediately prior to conducting the portable analyzer test, the portable analyzer shall be calibrated using EPA Protocol 1 gases.

   i. Calibrations shall be accurate to within five parts per million (ppm) of the sample gas.

   ii. The permittee shall maintain on-site records of annual calibration testing, calibration gas certifications, and any corrective action that may have been taken.

(9 VAC 5-80-1180)

20. **Stack Tests** – Upon request by the DEQ, the permittee shall conduct additional performance testing to demonstrate compliance with the emission limits contained in this permit. The details of the tests shall be arranged with the Regional Air Compliance Manager of the DEQ's NRO.
(9 VAC 5-80-1200 and 9 VAC 5-50-30 G)

21. **Visible Emissions Evaluation (VEE)** – Upon request by the DEQ, the permittee shall conduct a visible emission evaluation to demonstrate compliance with the visible emission limits contained in this permit. The details of the tests shall be arranged with the Regional Air Compliance Manager of the DEQ's NRO.
(9 VAC 5-80-1200 and 9 VAC 5-50-30 G)

22. **SCR Compliance Demonstration** – The permittee shall conduct testing for NOx (as NO_2) on the engine-generator sets equipped with SCR within sixty days following each change or regeneration of the catalyst in the SCR system by either stack testing or by use of the portable analyzer. This testing shall be arranged with the Regional Air Compliance Manager of the DEQ's NRO.
(9 VAC 5-50-30 and 9 VAC 5-80-1200)

RECORDS

23. **On Site Records** – The permittee shall maintain records of emission data and operating parameters as necessary to demonstrate compliance with this permit. The content and format of such records shall be arranged with the Regional Air Compliance Manager of the DEQ's NRO:

These records shall include, but are not limited to:

a. Monthly hours of operation of each engine-generator set (RPU-1 through RPU-8, RPU-R1, RPU-R2, EG-9 through EG-12), the corresponding generator load, with and without the SCR operational, and the reason operated as defined in Condition 5.

b. Monthly hours of operation above 500 ekW during the ozone season (June 1 through August 31) of each engine-generator set, RPU-R1, RPU-R2, EG-9,EG-10, EG-11, and EG-12.

c. Monthly and annual emissions calculations for NO_X (as NO_2), CO, SO2, VOC, and PM10 from the engine-generator sets (RPU-1 through RPU-8, RPU-R1, RPU-R2, EG-9 through EG-12) using the calculation methods in Conditions 13 and 14 to verify compliance with the annual emissions limitations in Condition GC-1.a.

d. Logs of monitoring device observations per Condition 4.

e. All fuel supplier certifications per Condition 10.

f. Fuel sampling analyses per Condition 11 indicating the sulfur content of the diesel fuel oil to verify the urea enabling temperature in accordance with Condition 2.a.

g. A record of the date that each engine-generator set equipped with SCR adjusted the urea enabling temperature to 540°F and 500°F or such higher temperature as as specified by Condition 2.a.

h. A NOx Urea Table (Urea Load Map) for each engine-generator set, (RPU-1 through RPU-8) equipped with SCR to verify that the SCR is operating as specified by the manufacturer. Each NOx Urea Table shall include the engine load, temperature after the catalyst, NOx concentration before and after the catalyst, the urea consumption rate, and the catalyst effeciency.

i. All VEE, emission stack test reports, portable analyzer calibrations, and annual performance assessment results for each engine-generator.

j. A copy of the maintenance schedule and records of scheduled and unscheduled maintenance in accordance with Condition GC-5.

k. Operator training in accordance with Condition GC-5.

l. Monthly and annual emissions calculations for NO_X (as NO_2) from the engine-generator sets (RPU-1 through RPU-8, RPU-R1, RPU-R2, EG-9 through EG-12) using the calculation methods in Condition 14 to verify compliance with the annual emissions limitations in Condition GC-2.

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

(9 VAC 5-80-1180 and 9 VAC 5-50-50)

NOTIFICATIONS

24. **Notifications** – The permittee shall furnish written notification to the Regional Air Compliance Manager of the DEQ's NRO of:

    a. The monthy hours of operation above 500 ekW during the ozone season (June 1 through August 31) of RPU-R1,RPU-R2, EG-9,EG-10, EG-11, and EG-12, postmarked no later than September 30.

    (9 VAC 5-50-50 and 9 VAC 5-80-1180)

25. **Quarterly Reports** – For tanks with diesel fuel oil subject to fuel sampling and analysis per Condition 11, the permittee shall submit results of the fuel analysis to the Regional Air Compliance Manager of the DEQ's NRO within thirty calendar days after the end of each calendar quarter. If no shipments of diesel fuel oil were received during the quarter, the quarterly report shall consist of the dates included in the quarterly period and a statement that no diesel fuel oil was received during the quarterly period. If diesel fuel oil was received during the quarterly period, the reports shall include data in accordance with Condition 11.b.

III. ACC 3 – QUILL

APPLICATION

This permit approval is based on the letter request dated February 23, 2010 with supplemental information dated March 18, 2010 and the permit application dated April 21, 2008 with supplemental information dated May 6, 2008, and June 12, 2008, and permit application dated November 14, 2005 with supplemental information dated December 20, 2005. Any changes in the permit application specifications or any existing facilities which alter the impact of the facility on air quality may require a permit. Failure to obtain such a permit prior to construction may result in enforcement action.

PROCESS REQUIREMENTS

a. **Equipment List** – Equipment at this facility consists of the following:

Equipment permitted prior to the date of this permit				
Reference No.	**Equipment Description**	**Rated Capacity**	**Add- On Controls**	**Federal Requirements**
RPU-2 RPU-3 RPU-4 RPU-5 RPU-6 RPU-R1	Six Detroit Diesel MTU, Rotary Uninterruptible Power Supply Engines, Model 16V4000-G81	2936 hp, generating 1800 ekW, each	N/A	9 VAC 5-50-410
RPU-1 RPU-7 RPU-8 RPU-9 RPU-10 RPU-R2	Six Detroit Diesel MTU, Rotary Uninterruptible Power Supply Engines, Model 16V4000-G81	2936 hp, generating 1800 ekW, each	N/A	N/A
EG-11 EG-12 EG-13 EG-14 EG-15	Five Detroit Diesel MTU, Standby Engines, Model 16V4000-G81	2936 hp, generating 1820 ekW, each	N/A	N/A

Equipment Exempt from Permitting				
Reference No.	**Equipment Description**	**Rated Capacity**	**Exemption Citation**	**Exemption Date**
RPU-1TK Through RPU-10TK RPU-R1TK RPU-R2TK EG-11TK Through EG-15TK	Seventeen Above Ground Storage Tanks (AST) for Diesel fuel oil	120 gallons, each	9 VAC 5-80-1105B.8	5/12/06
D-UST-1 D-UST-2	Two Underground Storage Tanks (UST) for Diesel fuel oil	50,000 gallons, each	9 VAC 5-80-1105B.8	5/12/06

Specifications included in the permit under this Condition are for informational purposes only and do not form enforceable terms or conditions of the permit unless the specifications form the basis for conditions in the permit.
(9 VAC 80-1180 D 3)

2. **Emission Controls –**

   a. Oxides of Nitrogen (NO_X) emissions from the diesel engines shall be controlled by good engine design to include direct diesel injection, engine control module, turbocharger and charge air cooler.

   b. Sulfur Dioxide (SO_2) emissions from the diesel engines shall be controlled by the use of low sulfur diesel fuel with a sulfur content not to exceed 0.05% (500 ppm). Subsequent to the issuance of this permit, the SO_2 emissions shall be controlled by the use of ultra low sulfur diesel fuel that conforms to the fuel specifications listed in Condition 8.

   c. Carbon Monoxide (CO), Volatile Organic Compounds (VOC), and Particulate Matter (PM) emissions from the engine-generator sets shall be controlled by good design and operating practices which at a minimum are those designated by the equipment vendors.

   d. Visible emissions from the diesel engines shall be controlled by good operating practices.

   (9 VAC 5-80-1180 and 9 VAC 5-50-260)

3. **Monitoring Devices –**

   a. Each engine-generator set shall be equipped with a non-resettable hour meter and a device to monitor and record the engine-generator kilowatt output at a frequency of not less than once every fifteen minutes. A record of the engine operation shall be maintained to provide dates, operating hours and associated load, and reason the unit is operated as defined in Condition 5.

b. Each monitoring device shall be installed, maintained, calibrated and operated in accordance with approved procedures which shall include, as a minimum, the manufacturer's written requirements or recommendations.

c. Each monitoring device shall be provided with adequate access for inspection and shall be in operation when the engines are operating.

(9 VAC 5-80-1180 D)

4. **Monitoring Device Observation** – To ensure good performance, the process monitoring device used to continuously measure operating hours and load shall be observed by the permittee during each test firing. Data captured by the monitoring devices shall be reviewed or observed by the permittee at a frequency of not less than once each twenty-four period during which the engine-generator sets are called into service. Observations shall be maintained on site in a permanent log book.
(9 VAC 5-80-1180 D)

OPERATING LIMITATIONS

5. **Operating Scenarios** – All engine-generator sets shall be operated in a manner consistent with the following modes of operation only:

a. Emergency / Critical Power Generation:

i. Emergency: The engine-generator sets (RPU-1 through RPU-10, RPU-R1, RPU-R2, EG-11 through EG-15) may be operated 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 the 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 be allowed for the period of time the primary electrical power provider service is unavailable. Once primary electrical power provider service is available the engine-generator sets may be operated in accordance with Critical Power Generation as defined below.

ii. ISO-Declared Emergency: The engine-generator sets (RPU-1 through RPU-10, RPU-R1, RPU-R2, EG-11 through EG-15) may be operated for participation in an Independent System Operator's (ISO) Emergency Load Response Program (ELRP) during times of an ISO-declared emergency, as defined in the ISO's emergency operations manual. Operations under this scenario shall not exceed 60 hours per generator each calendar year.

iii. Critical Power Generation: The engine-generator sets (RPU-1 through RPU-10, RPU-R1, RPU-R2, EG-11 through EG-15) may be operated in situations where immediate action on the part of the facility is needed due to a loss or anticipated loss of acceptable electrical power service from the primary power provider and the loss or anticipated loss of power service is beyond the reasonable control of the facility. Operation under these circumstances shall be allowed until such time as acceptable

power provider service is restored or the loss of acceptable power provider service is no longer reasonably anticipated.

b. Alternate Power Generation: An engine-generator set may be operated voluntarily for the purposes of peak-shaving, demand response, or as part of an interruptible power supply arrangement with a power provider, other market participant, or system operator if the engine is equipped with a selective catalytic reduction system (SCR) that achieves the manufacturer's guaranteed maximum emission reductions based on fuel type. Prior to construction of the SCR unit, when changing from Emergency Power or Critical Power Generation to Alternate Power Generation, the permittee shall submit appropriate documentation to the DEQ and receive DEQ approval for the change in the method of operation of the engine-generator set.

c. The engine-generator sets (RPU-1 through RPU-10, RPU-R1, RPU-R2, EG-11 through EG-15) may be operated for periodic maintenance, testing, and operational training.

Total annual emissions for all Ashburn campus facilities (ACC 2, ACC 3, ACC 4, ACC 5, ACC 6 and ACC 7) shall not exceed the limits stated in Condition GC-1.a. Total annual emissions for all Ashburn campus facilities (ACC 2, ACC 3, ACC 4, ACC 5, ACC 6, and ACC 7) participation in the ELRP shall not exceed the limits stated in Condition GC-2.
(9 VAC 5-80-1180)

6. **Operation of the Engine-Generator Sets** – The permittee must operate and maintain the engine-generator sets (RPU-1 through RPU-10, RPU-R1, RPU-R2, EG-11 through EG-15) and control devices 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 impact on air emissions.
(9 VAC 5-80-1180

7. **Fuel** – The approved fuel for the engine-generator sets is diesel fuel. A change in the fuel may require a permit to modify and operate.
(9 VAC 5-80-1180)

8. **Fuel Specifications** – The diesel fuel delivered subsequent to the issuance of this permit shall comply with the specifications below:

a. DIESEL FUEL OIL which conforms to the ASTM D975 specifications for grade ultra-low sulfur (ULSD) No. 1-D or No. 2-D, or Grade No. 1-D S15 or 2-D S15,

Maximum sulfur content per shipment: 0.0015%; or

b. DIESEL FUEL that

i. Has a minimum cetane number of forty, or has a maximum aromatic content of thirty-five percent by volume, and

ii. Has a sulfur content per shipment not-to-exceed 0.0015%

(9 VAC 5-80-1180 and 9 VAC 5-50-260)

9. **Fuel Certification** – The permittee shall obtain a certification from the fuel supplier with each shipment of diesel fuel oil. Each fuel supplier certification shall include the following:

a. The name of the fuel supplier;

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

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

d. A statement that the diesel fuel oil

i. Complies with the American Society for Testing and Materials (ASTM) specification, D975, as specified in Condition 8, or

ii. Has a sulfur content per shipment not to exceed 0.0015% by weight (15 ppm) and either a minimum cetane number of forty or maximum aromatic content of thirty-five percent by volume, or

iii. Alternatively, the permittee must obtain approval from the Regional Air Compliance Manager of the DEQ's NRO if other documentation will be used to certify the diesel fuel with the American Society for Testing and Materials specifications (ASTM D975);

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 8. Exceedance of these specifications may be considered credible evidence of the exceedance of emission limits.
(9 VAC 5-80-1180)

10. **Requirements by Reference** – Diesel engine-generator sets (RPU-2 through RPU-6, RPU-R1) are subject to 40 CFR 60, Subpart IIII which is federally enforceable only, at this time.

The permittee shall furnish a copy of notifications sent to the EPA as required by 40 CFR 60, Subpart IIII, to the Regional Air Compliance Manager of the DEQ's NRO.

Once 40 CFR 60, Subpart IIII has been adopted into the provisions of the Board's Regulations, the following requirement applies:

Except where this permit is more restrictive than the applicable requirement, the NSPS equipment as described in Condition 1 shall be operated in compliance with the requirements of 40 CFR 60, Subpart IIII.
(9 VAC 5-80-1180 and 9 VAC 5-50-400)

EMISSION LIMITS

11. **Process Emission Limits** – Emissions from the operation of the each diesel engine-generator sets shall not exceed the limits specified below:

RPU-1 through RPU-10, RPU-R1, RPU-R2, EG-11 through EG-15	
Nitrogen Oxides (as NO_2)	46.0 lbs/hr *
Carbon Monoxide (CO)	5.3 lbs/hr
Particulate Matter (PM_{10})	1.0 lbs/hr
Sulfur Dioxide (SO_2)	0.6 lbs/hr
Volatile Organic Compounds (VOC)	3.6 lbs/hr

*NO_2 – subject to change based on initial compliance test emission rate determination. If the compliance test shows a lower rate (average of three one-hour test runs x 120%), the facility has the option of using the lower hourly rate by undergoing a permit amendment to incorporate the new lower rate.

Emission limits are derived from manufacturer data. Compliance with the hourly nitrogen oxides (as NO_2) emission limit shall be demonstrated by stack testing, as stated in Condition 16. Compliance with the sulfur dioxide emissions limit shall be based on the fuel sulfur content and the fuel supplier certification, as stated in Condition numbers 7, 8, and 9. Compliance with the other pollutant limits shall be based on the proper operation and maintenance of the diesel engines or by testing, if required.
(9 VAC 5-80-1180 and 9 VAC 5-50-260)

12. **Campus-Wide Annual Emission Limits** – The annual campus-wide emissions shall be determined by summing the annual emissions from each facility at the Ashburn Corporate Campus (ACC 2, ACC 3, ACC 4, ACC 5, ACC 6, and ACC 7) to demonstrate compliance with the campus-wide emission limits specified in Conditions GC-1.a. and GC-2.
(9 VAC 5-80-1180)

13. **Annual Emissions Calculations** –

    a. Prior to the initial performance demonstration, the total annual emissions of Nitrogen Oxides (as NO_2) from the diesel engine-generator sets shall be calculated monthly as the sum of each consecutive twelve-month period. Compliance for the consecutive twelve-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 eleven months.

    Each month's NOx emissions shall be calculated as follows:

    NO_x Emissions from the engine-generator sets =

    (Total hours of operation of all engine-generator sets for the current month x 37.0 lb/hr*) ÷ 2000.

*NO_x – To be verified and subject to change based on initial compliance test emission rate determination. If the compliance test shows a lower rate (average of three one-hour test runs x 120%), the facility has the option of using the lower hourly rate by undergoing a permit amendment to incorporate the new lower rate.

b. The total annual emissions for CO, SO_2, PM_{10}, and VOC from the diesel engine-generator sets shall be calculated monthly as the sum of each consecutive twelve-month period. Compliance for the consecutive twelve-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 eleven months.

Each month's emissions shall be calculated as follows:

CO = (Total hours of operation of all engine-generator sets for the current month x 4.2 lb/hr) ÷ 2000

SO_2 = (Total hours of operation of all engine-generator sets for the current month x 0.6 lb/hr) ÷ 2000

PM_{10} = (Total hours of operation of all engine-generator sets for the current month x 1.0 lb/hr) ÷ 2000

VOC = (Total hours of operation of all engine-generator sets for the current month x 3.0 lb/hr) ÷ 2000

(9 VAC 5-80-1180and 9 VAC 5-50-260)

14. **Visible Emission Limit** – Visible emissions from the operation of each engine-generator set shall not exceed five percent opacity except during one six-minute period in any one hour in which visible emissions shall not exceed ten percent opacity as determined by the EPA Method 9 (reference 40 CFR 60, Appendix A). This condition applies at all times except during startup, shutdown, and malfunction.

Visible emissions during startup, shutdown, and malfunction from each engine-generator set shall not exceed ten percent opacity except during one six-minute period in any one hour in which visible emissions shall not exceed twenty percent opacity as determined by the EPA Method 9 (reference 40 CFR 60, Appendix A).
(9 VAC 5-80-1180, 9 VAC 5-50-260)

15. **Emissions Testing** – The permitted facility shall be constructed so as to allow for emissions testing upon reasonable notice at any time, using appropriate methods. This includes constructing the equipment such that volumetric flow rates and pollutant emission rates can be accurately determined by applicable test methods and providing a stack or duct that is free from cyclonic flow. Sampling ports shall be provided when requested at the appropriate locations in accordance with EPA reference method 1 (Ref. 40 CFR 60, Appendix A). In addition, safe sampling platforms and access shall be provided.
(9 VAC 5-50-30 F and 9 VAC 5-80-1180)

INITIAL COMPLIANCE DETERMINATION

16. **Testing Verification Meeting** – The permittee shall arrange to meet with the Regional Air Compliance Manager of the DEQ's NRO to discuss the stack testing requirements per Condition 17, the Visible Emissions Evaluation requirements per Condition 18, and the Annual Performance Assessment per Condition 19. The meeting shall take place prior to the submittal of the final stack test protocol, required by Condition 17.d, and is required in order for the protocol to be accepted.
(9 VAC 5-50-30 and 9 VAC 5-80-1200)

17. **Stack Test** – Initial performance tests shall be conducted for nitrogen oxides (as NO_2) on eight of the seventeen engine-generator sets as stated: two of the four engine-generator sets (RPU- 2, 3, 5, and 7), two of the five engine-generator sets (RPU-1, 8, 9, 10, and R2), two of three engine-generator sets (RPU-4, 6, and R2), and two of the five engine-generator sets (EG-11, 12, 13, 14, and 15) using the emission compliance testing procedures outlined at 40 CFR 60, Appendix A to demonstrate compliance with the NOx (as NO_2) emission limit in Condition 11.

    a. NOx (as NO_2) emissions testing from each selected engine-generator set shall consist of three one-hour test runs. The average of the three runs shall be reported as the short-term emissions for the engine-generator set.

    b. Testing shall be conducted with the engines operating at >90% capacity, unless multiple load band testing is approved by DEQ during the Testing Verification Meeting required by Condition 16.

    c. The stack testing shall be performed to demonstrate compliance within 150 days from issuance of the permit. Tests shall be conducted, reported, and the data reduced as set forth in 9 VAC 5-50-30 and the test methods and procedures contained in each applicable section or subpart listed in 9 VAC 5-50-410.

    d. The details of the tests are to be arranged with the Regional Air Compliance Manager of DEQ's NRO. The permittee shall submit two copies, one paper copy and one on removable electronic media, of the test protocol to the Regional Air Compliance Manager of the DEQ's NRO and one paper copy to the Regional Air Permit Manger of the DEQ's NRO at least thirty days prior to testing.

    e. Should conditions occur which would require rescheduling the testing, the permittee shall notified the Regional Air Compliance Manager of the DEQ's NRO in writing, within seven days of the scheduled test date or as soon as the rescheduling is deemed necessary. In any case the emissions testing shall be rescheduled within thirty days.

    f. Two copies, one paper copy and one on removable electronic media, of the test results shall be submitted to the Regional Air Compliance Manager of the DEQ's NRO and one paper copy to the Regional Air Permit Manager of the DEQ's NRO within forty-five days after test completion and shall conform to the test report format enclosed with this permit.

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

18. **Initial Visible Emissions Evaluation** – Visible Emission Evaluations (VEE) in accordance with 40 CFR Part 60, Appendix A, Method 9, shall be conducted by the permittee on the two engine-generator sets not selected for initial performance testing in Condition 17.

    a. Testing shall be performed on the exhaust stack of the each engine while operating at >90% of its rated capacity.

    b. Each test shall consist of thirty sets of twenty four consecutive observations (at fifteen second intervals) to yield a six minute average.

    c. The details of the tests are to be arranged with the Regional Air Compliance Manager during the Testing Verification Meeting required by Condition 16. The permittee shall submit a test protocol in conjunction with the initial stack test protocol as required by Condition 17.d at least thirty days prior to testing.

    d. The evaluation shall be performed within 150 days of the date of issuance of the permit.

    e. Should conditions occur which would require rescheduling the testing, the permittee shall notify the Regional Air Compliance Manager of the DEQ's NRO in writing, within seven days of the scheduled test date or as soon as the rescheduling is deemed necessary. In any case the visible emissions testing shall be rescheduled within thirty days.

    f. Two copies, one paper copy and one on removable electronic media, of the test result shall be submitted to the Regional Air Compliance Manager of the DEQ's NRO within forty-five days after test completion and shall conform to the test report format enclosed with this permit.

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

CONTINUED COMPLIANCE VERIFICATION

19. **Annual Performance Assessment –**

    a. Engines selected for stack testing:

        i. Within the first twelve months subsequent to the initial performance tests, concurrent with the annual maintenance, and annually thereafter, the permittee shall perform a portable analyzer test to determine the nitrogen oxide (as NO_2) emission concentration for, at minimum, twenty-five percent of the installed engine-generator sets. The testing shall be conducted in a manner that each engine-generator set is tested, at minimum, once every four years. The annual portable analyzer test shall be performed at a comparable load at which the engine-generator set operated during the stack test performance demonstration. Details of the test shall be arranged with the Regional Air Compliance Manager of the DEQ's NRO. Any changes to the procedure for the portable analyzer testing shall be submitted to the Regional Air Compliance Manager of DEQ's NRO at least thirty days prior to

conducting the portable analyzer testing. Results of the testing shall be maintained on-site in accordance with Condition 22.d.

ii. Additional nitrogen oxide (as NO_2) stack testing may be required if the difference between the initial NOx emission concentration established during the performance demonstration per Condition 17, and the NOx emission concentration determined during the annual portable analyzer test per Condition 19.a.i is equal to or greater than ten percent (10%).

b. Engines not selected for stack testing:

i. Within the first twelve months, subsequent to the issuance of this permit, concurrent with the annual maintenance, and annually thereafter, the permittee shall perform a portable analyzer test to determine the nitrogen oxide (as NO_2) emission concentration for, at minimum, twenty-five percent of the installed engine-generator sets. The testing shall be conducted in a manner that each engine-generator set is tested, at a minimum, once every four years. Details of the test shall be arranged with the Regional Air Compliance Manager of the DEQ's NRO. Any changes to the procedure for the portable analyzer testing shall be submitted to the Regional Air Compliance Manager of DEQ's NRO at least thirty days prior to conducting the portable analyzer testing. Results of the testing shall be maintained on-site in accordance with Condition 22.d.

c. Immediately prior to conducting the portable analyzer test, the portable analyzer shall be calibrated using EPA Protocol 1 gases.

i. Calibrations shall be accurate to within five parts per million (ppm) of the sample gas.

ii. The permittee shall maintain on-site records of annual calibration testing, calibration gas certifications, and any corrective action that may have been taken.

(9 VAC 5-80-1180)

20. **Stack Tests** – Upon request by the DEQ, the permittee shall conduct additional performance testing to demonstrate compliance with the emission limits contained in this permit. The details of the tests shall be arranged with the Regional Air Compliance Manager of the DEQ's NRO.
(9 VAC 5-80-1200 and 9 VAC 5-50-30 G)

21. **Visible Emissions Evaluation (VEE)** – Upon request by the DEQ, the permittee shall conduct a visible emission evaluation to demonstrate compliance with the visible emission limits contained in this permit. The details of the tests shall be arranged with the Regional Air Compliance Manager of the DEQ's NRO.
(9 VAC 5-80-1200 and 9 VAC 5-50-30 G)

RECORDS

22. **On Site Records** – The permittee shall maintain records of emission data and operating parameters as necessary to demonstrate compliance with this permit. The content and format of such records shall be arranged with the Regional Air Compliance Manager of the DEQ's NRO.

    These records shall include, but are not limited to:

    a. Monthly hours of operation of the engine-generator sets with the corresponding operating load, and the reason operated as defined in Condition 5.

    b. Monthly and annual emissions calculations for NO_X (as NO_2), CO, SO2, VOC, and PM10 from the engine-generator sets using the calculation methods in Conditions 12 and 13 to verify compliance with the annual emissions limitations in Condition GC-1.a.

    c. All fuel supplier certification per Condition 9.

    d. All VEE, emission stack test reports, portable analyzer calibrations, and annual performance assessment results for each engine-generator.

    e. A copy of the maintenance schedule and records of scheduled and unscheduled maintenance in accordance with Condition GC-5.

    f. Operator training in accordance with Condition GC-5.

    g. Monthly and annual emissions calculations for NO_X (as NO_2) from the engine-generator sets using the calculation methods in Condition 13 to verify compliance with the annual emissions limitations in Condition GC-2.

    These records shall be available for inspection by the DEQ and shall be current for the most recent five years.
    (9 VAC 5-80-1180 and 9 VAC 5-50-50)

IV. ACC 4 - GRIZZLY

APPLICATION

This permit approval is based on the letter request dated February 23, 2010 with supplemental information dated March 18, 2010 and the permit application dated April 21, 2008, with supplemental information dated May 6, 2008, June 16, 2008, and permit application dated August 11, 2006, and supplemental information dated September 21, 2006, June 7, August 30, and October 3, 2007; and permit application dated December 6, 2007. Any changes in the permit application specifications or any existing facilities which alter the impact of the facility on air quality may require a permit. Failure to obtain such a permit prior to construction may result in enforcement action.

PROCESS REQUIREMENTS

1. **Equipment List** – Equipment at this facility consists of the following:

Equipment to be Operated

Reference No.	Equipment Description	Rated Capacity	Add-On Control Technology	Federal Requirements
EG-1A,1B through EG-4A,4B EG-13A,13B Through EG-16A,16B	Sixteen Caterpillar 3516B Diesel Engine-Generators	3286 hp generating 2250 ekW, each	N/A	9 VAC 5-50-410
EG-5A, 5B Through EG-12A, 12B	Sixteen Caterpillar 3516B Diesel Engine-Generators	3286 hp generating 2250 ekW, each	Steuler CERNOX 35162250 SCR Open Loop System	9 VAC 5-50-410

Equipment Exempt from Permitting

Reference No.	Equipment Description	Rated Capacity	Exemption Citation	Exemption Date
EG-1AT through EG-16AT	Sixteen above ground storage tanks (AST) for No.2 diesel fuel	100 gallons each	9 VAC 5-80-1105B.8	August 1, 2008
EG-1BT Through EG-16BT	Sixteen ASTs for No.2 diesel fuel	100 gallons each	9 VAC 5-80-1105B.8	August 1, 2008
FT-1 through FT-4	Four underground storage tanks (UST) for No.2 diesel fuel	50,000 gallons each	9 VAC 5-80-1105B.8, 40 CFR 60 Subpart Kb	August 1, 2008
GB-1A, 2A GB-1B, 2B	Four Aerco Model BMK 2.0 gas fired boilers	1.4 MMBtu/Hr each	9 VAC 5-80-1105B.1	August 1, 2008

Specifications included in the permit under this condition are for informational purposes only and do not form enforceable terms or conditions of the permit unless the specifications form the basis for conditions in the permit.
(9VAC 80-1180 D 3)

2. **Emission Controls** – Emissions from the engine-generator sets shall be controlled by the following;

   a. Nitrogen Oxides (as NO_2) emissions from each diesel engine-generator set shall be controlled by the manufacturer's low NO_X 'B' emission package.

   b. NO_2 emissions from each engine-generator set (Ref. Nos. EG-5A through EG-12A and EG-5B through EG-12B) shall be controlled by an open loop Selective Catalytic Reduction (SCR) control device on each engine-generator set. Each SCR system shall be equipped with a temperature probe to monitor the catalyst bed exhaust temperature at all times when the engine-generator set is operating. The SCR urea enabling temperature shall be 500°F or such higher temperature as testing or other reliable information, as approved by DEQ, demonstrates is necessary to achieve at least ninety percent control of NOx emissions. Engine exhaust gas shall be treated with urea solution when the engines are operating at or above twenty percent load and the urea enabling temperature as identified above has been achieved, except for periods of start-up, shutdown, or malfunction. In the event that engine exhaust gas temperature exceeds 950°F, urea injection shall be discontinued and any operations above that level will be considered a malfunction. The SCR system control device shall be provided with adequate access for inspection.

   c. Sulfur Dioxide (SO_2) emissions from the diesel engines shall be controlled by the use of ultra-low sulfur diesel fuel with a sulfur content not to exceed 0.0015% (15 ppm).

   d. Carbon Monoxide (CO), Volatile organic compounds (VOC), and Particulate Matter (PM) emissions from the engine-generator sets, (Ref. Nos. EG-1A through EG-16A and EG-1B through EG-16B), shall be controlled by good design and operating practices which at a minimum are those designated by the equipment vendors.

   e. Visible emissions from the diesel engines shall be controlled by good operating practices.

   (9 VAC 5-80-1180 and 9 VAC 5-50-260)

3. **Monitoring Devices** –

   a. Each engine-generator set equipped with SCR (Ref. Nos. EG-5A through EG-12A and EG-5B through EG-12B) shall have a device to monitor and record the urea injection rate at a frequency of not less than once every fifteen minutes during the operation of each engine-generator set.

   b. Each engine-generator set equipped with SCR (Ref. Nos. EG-5A through EG-12A and EG-5B through EG-12B) shall have a device to monitor and record the catalyst bed exhaust temperature at a frequency of not less than once every fifteen minutes during the operation of each engine-generator set.

c. Each engine (Ref. Nos. EG-1A through EG-16A and EG-1B through EG-16B) shall be equipped with a non-resettable hour meter and a device to monitor and record the engine-generator kilowatt output at a frequency of not less than once every fifteen minutes. A record of the engine operation shall be maintained to provide dates, operating hours and associated load, and the reason the unit is operated as described in Condition 5.

d. Each monitoring device shall be provided with adequate access for inspection and shall be in operation when the engines are operating.

e. Each monitoring device shall be installed, maintained, calibrated and operated in accordance with approved procedures which shall include, as a minimum, the manufacturer's written requirements or recommendations.

(9 VAC 5-80-1180 D)

4. **Monitoring Device Observation** – To ensure good performance, the monitoring devices designated in Condition 3 shall be observed by the permittee during each test firing. Data captured by the monitoring devices shall be reviewed or observed by the permittee at a frequency of not less than once each twenty-four period during which the engine-generator sets are called into service. Observations shall be maintained on site in a permanent log book.
(9 VAC 5-80-1180 D)

OPERATING LIMITATIONS

5. **Operating Scenarios** – All engine-generator sets shall be operated in a manner consistent with the following modes of operation only:

a. Emergency / Critical Power Generation:

i. Emergency: The engine-generator sets (Ref. Nos. EG-1A through EG-16A and EG-1B through EG-16B) may be operated 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 the 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 be allowed for the period of time the primary electrical power provider service is unavailable. Once primary electrical power provider service is available the engine-generator sets may be operated in accordance with Critical Power Generation as defined below.

ii. ISO-Declared Emergency: The engine-generator sets (Ref. Nos. EG-1A through EG-16A and EG-1B through EG-16B) may be operated for participation in an Independent System Operator's (ISO) Emergency Load Response Program (ELRP) during times of an ISO-declared emergency, as defined in the ISO's emergency operations manual. Operations under this scenario shall not exceed 60 hours per generator each calendar year.

iii. Critical Power Generation: The engine-generator sets (Ref. Nos. EG-1A through EG-16A and EG-1B through EG-16B) may be operated in situations where immediate action on the part of the facility is needed due to a loss or anticipated loss of acceptable electrical power service from the primary power provider and the loss or anticipated loss of power service is beyond the reasonable control of the facility. Operation under these circumstances shall be allowed until such time as acceptable power provider service is restored or the loss of acceptable power provider service is no longer reasonably anticipated.

b. Alternate Power Generation: An engine-generator set may be operated voluntarily for the purposes of peak-shaving, demand response, or as part of an interruptible power supply arrangement with a power provider, other market participant, or system operator if the engine is equipped with a selective catalytic reduction (SCR) system that achieves the manufacturer's guaranteed maximum emission reductions based on fuel type. Prior to construction of the SCR unit, when changing from Emergency Power or Critical Power Generation to Alternate Power Generation, the permittee shall submit appropriate documentation to the DEQ and receive DEQ approval for the change in the method of operation of the engine-generator set.

c. The engine-generator sets (Ref. Nos. EG-1A through EG-16A and EG-1B through EG-16B) may be operated for periodic maintenance, testing, and operational training.

Total annual emissions for all Ashburn campus facilities (ACC 2, ACC 3, ACC 4, ACC 5, ACC 6, and ACC 7) shall not exceed the limits stated in Condition GC-1.a. Total annual emissions for all Ashburn campus facilities (ACC 2, ACC 3, ACC 4, ACC 5, ACC 6, and ACC 7) participation in the ELRP shall not exceed the limits stated in Condition GC-2. (9 VAC 5-80-1180)

6. **Operation of the Engine-Generator Sets** – The permittee must operate and maintain the engine-generator sets and control devices 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 impact on air emissions. (9 VAC 5-80-1180)

7. **Fuel** – The approved fuel for the engine-generator sets is ultra-low sulfur diesel (ULSD) with a sulfur content at or below 0.0015% by weight (15 ppm). A change in the fuel may require a permit to modify and operate. (9 VAC 5-80-1180)

8. **Fuel Specification** – The diesel fuel oil shall comply with the specifications below:

   a. DIESEL FUEL which conforms to the ASTM D975 specifications for grade ultra-low sulfur No. 1-D or No. 2-D, or Grade No. 1-D S15 or 2-D S15,

      Maximum sulfur content by weight per shipment: 0.0015%, or

b. DIESEL FUEL that:

i. Has a minimum cetane number of forty, or has a maximum aromatic content of thirty-five percent by volume, and

ii. Has a sulfur content per shipment not-to-exceed 0.0015%.

(9 VAC 5-80-1180)

9. **Fuel Certification** – The permittee shall obtain a certification from the fuel supplier with each purchased shipment of diesel fuel oil. Each fuel supplier certification shall include the following:

a. The name of the fuel supplier;

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

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

d. A statement that the diesel fuel oil:

i. Complies with the American Society for Testing and Materials (ASTM) specification, D975, as specified in Condition 8, or

ii. Has a sulfur content per shipment not to exceed 0.0015% by weight (15 ppm) and either a minimum cetane number of forty or maximum aromatic content of thirty-five percent by volume, or

iii. Alternatively, the permittee must obtain approval from the Regional Air Compliance Manager of the DEQ's NRO if other documentation will be used to certify the diesel fuel type.

(9 VAC 5-80-1180)

10. **Requirements by Reference** – Diesel engine-generator sets (Ref. Nos. EG-1A through EG-16A and EG-1B through EG-16B) are subject to 40 CFR 60, Subpart IIII which is federally enforceable only, at this time.

The permittee shall furnish a copy of notifications sent to the EPA as required by 40 CFR 60, Subpart IIII, to the Regional Air Compliance Manager of the DEQ's NRO at the address listed in Condition GC-10.

Once 40 CFR 60, Subpart IIII has been adopted into the provisions of the Board's Regulations, the following requirement applies:

Except where this permit is more restrictive than the applicable requirement, the NSPS equipment as described in Condition 1 shall be operated in compliance with the requirements of 40 CFR 60, Subpart IIII.

(9 VAC 5-80-1180 and 9 VAC 5-50-400)

EMISSION LIMITS

11. **Emission Limits** – Emissions from the operation of the each diesel engine-generator sets shall not exceed the limits specified below:

a. Engine-generator sets (EG-5A through EG-12A and EG-5B through EG-12B) (Units with SCR)

	With SCR operating	W/out SCR operating
Particulate Matter (PM_{10})	0.6 lbs/hr	0.6 lbs/hr
Sulfur Dioxide (SO_2)	0.04 lbs/hr	0.04 lbs/hr
Nitrogen Oxides (as NO_2)	6.6 lbs/hr*	65.9 lbs/hr*
Carbon Monoxide (CO)	9.3 lbs/hr	9.3 lbs/hr
Volatile Organic Compounds (VOC)	1.0 lbs/hr	1.0 lbs/hr

b. Engine-generator sets (EG-1A through EG-4A, EG-13A through EG-16A, EG-1B through EG-4B, and EG-13B through EG-16B) (Units without SCR)

Particulate Matter (PM_{10})	0.6 lbs/hr
Sulfur Dioxide (SO_2)	0.04 lbs/hr
Nitrogen Oxides (as NO_2)	65.9 lbs/hr*
Carbon Monoxide (CO)	9.3 lbs/hr
Volatile Organic Compounds (VOC)	1.0 lbs/hr

c. Following the performance testing required by Condition 17 and the permit amendment as approved by DEQ, the monthly average of all units (EG-1A through EG-16A and EG-1B through EG-16B) which operated during that given month, calculated in accordance with Condition 13.c.

Nitrogen Oxides (as NO_2)	46.4 lbs/hr/engine

*NO_2 – subject to change based on initial compliance test emission rate determination. If the compliance test shows a lower rate (average of three one-hour test runs x 120%), the facility has the option of using the lower hourly rate by undergoing a permit amendment to incorporate the new lower rate.

Compliance with the hourly nitrogen oxides (as NO_2) emission limits shall be demonstrated by stack testing, as stated in Condition 18. Compliance with the sulfur dioxide emissions limit shall be based on the fuel sulfur content and the fuel supplier certification, as stated in Condition numbers 8 and 9. Compliance with the other pollutant limits shall be based on the proper operation and maintenance of the diesel engines or by testing, if required. (9 VAC 5-80-1180 and 9 VAC 5-50-260)

12. **Campus-Wide Annual Emission Limits** – The annual campus-wide emissions shall be determined by summing the annual emissions from each facility on the Ashburn Campus (ACC 2, ACC 3, ACC 4, ACC 5, ACC 6, and ACC 7) to demonstrate compliance with the campus-wide emission limits specified in Conditions GC-1.a and GC-2. (9 VAC 5-80-1180 and 9 VAC 5-50-260)

13. **Emissions Calculations –**

a. Annual Emissions Calculations for NOx - The total annual emissions of Nitrogen Oxides (as NO_2) from the diesel engine-generator sets shall be calculated monthly as the sum of each consecutive twelve-month period. Compliance for the consecutive twelve-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 eleven months.

Each month's NOx emissions shall be calculated as follows:

i. NO_2 Emissions from engine-generator sets equipped with SCR

(EG-5A through EG-12A) and (EG-5B through EG-12B) =

{(Total hours of operation of engine-generator sets EG-5A through EG-12A and EG-5B through EG-12B for the current month while SCR is operational x 5.5 lb/hr*) ÷ 2000

+

(Total hours of operation of engine-generator sets EG-5A through EG-12A and EG-5B through EG-12B for the month while SCR is not operating x 55.0 lb/hr*) ÷ 2000}

+

ii. NO_2 Emissions from engine-generator sets without SCR

(EG-1A through EG-4A), (EG-13A through EG-16A), (EG-1B through EG-4B), and (EG-13B through EG-16B) =

{(Total hours of operation of engine-generator sets EG-1A through EG-4A, EG-13A through EG-16A, EG-1B through EG-4B, and EG-13B through EG-16B for the current month x 55.0 lb/hr*) ÷ 2000}.

*NO_2 – To be verified and subject to change based on initial compliance test emission rate determination. If the compliance test shows a lower rate (average of three one-hour test runs x 120%), the facility has the option of using the lower hourly rate by undergoing a permit amendment to incorporate the new lower rate.

b. Annual Emissions Calculations for CO, SO_2, PM_{10}, and VOC - The total annual emissions for CO, SO_2, PM_{10}, and VOC from the diesel engine-generator sets shall be calculated monthly as the sum of each consecutive twelve-month period. Compliance for the consecutive twelve-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 eleven months.

Each month's emissions shall be calculated as follows:

CO = (Total hours of operation of engine-generator sets EG-1A through EG-16A and EG-1B through EG-16B for the current month x 5.2 lb/hr) ÷ 2000

SO_2 = (Total hours of operation of engine-generator sets EG-1A through EG-16A and EG-1B through EG-16B for the current month x 0.04 lb/hr) ÷ 2000

PM_{10} = (Total hours of operation of engine-generator sets EG-1A through EG-16A and EG-1B through EG-16B for the current month x 0.4 lb/hr) ÷ 2000

VOC = (Total hours of operation of engine-generator sets EG-1A through EG-16A and EG-1B through EG-16B for the current month x 0.74 lb/hr) ÷ 2000

c. The monthly average NOx emission rate of all units shall be determined by dividing the monthly emissions calculated in 13.a.i and 13.a.ii by the total combined hours of all engine-generator sets operating during the month.

(9 VAC 5-80-1180 and 9 VAC 5-50-260)

14. **Visible Emission Limit** – Visible emissions from the engine-generator sets (EG-1A through EG-16A and EG-1B through EG-16B) shall not exceed five percent opacity except during one six-minute period in any one hour in which visible emissions shall not exceed ten percent opacity as determined by the EPA Method 9 (reference 40 CFR 60, Appendix A). This condition applies at all times except during startup, shutdown, and malfunction.

    Visible emissions during startup, shutdown, and malfunction from the engine-generators shall not exceed ten percent opacity except during one six-minute period in any one hour in which visible emissions shall not exceed twenty percent opacity as determined by the EPA Method 9 (reference 40 CFR 60, Appendix A).
    (9 VAC 5-80-1180 and 9 VAC 5-50-260)

15. **Emissions Testing** – The thirty-two diesel engine-generator sets (EG-1A through EG-16A and EG-1B through EG-16B) shall be constructed so as to allow for emissions testing upon reasonable notice at any time, using appropriate methods. This includes constructing the facility/equipment such that volumetric flow rates and pollutant emission rates can be accurately determined by applicable test methods and providing a stack or duct that is free from cyclonic flow. Sampling ports shall be provided when requested and safe sampling platforms and access shall be provided.
    (9 VAC 5-50-30 F and 9 VAC 5-80-1180)

INITIAL COMPLIANCE DETERMINATION

16. **Testing Verification Meeting** – The permittee shall arrange to meet with the Regional Air Compliance Manager of the DEQ's NRO to discuss the stack testing requirements per Condition 17, portable analyzer testing per Condition 17.b, and the annual performance assessment testing per Condition 19. The meeting shall take place prior to the submittal of the final test protocol required by Condition 17.a.v, and is required in order for the protocol to be accepted.
    (9 VAC 5-50-30 and 9 VAC 5-80-1200)

17. **Performance Testing –**

a. **Stack Test:** Initial performance tests shall be conducted for nitrogen oxides (as NO_2) on ten of the thirty-two engine-generator sets. The ten engines tested will consist of five engines which are equipped with SCR (EG-5A through EG-12A and EG-5B through EG-12B) and five engines without SCR (EG-1A through EG-4A, EG-13A through EG-16A, EG-1B through EG-4B, and EG-13B through EG-16B), using the emission compliance testing procedures outlined at 40 CFR 60, Appendix A to demonstrate compliance with the emission limits in Conditions 11.a. and 11.b.

i. NO_2 emissions testing from each selected engine-generator set shall consist of three one-hour test runs. The average of the three runs shall be reported as the short-term emissions for the engine-generator set.

ii. Testing shall be performed on the exhaust stack of five of the engine-generator sets without SCR to demonstrate compliance with the NOx emission limit in Condition 11.b. Testing shall be conducted with the engines operating at >90% capacity, unless multiple load band testing is approved by DEQ during the Testing Verification Meeting required by Condition 16. The results of the testing shall be used in determining compliance.

iii. Testing shall be performed on the exhaust stack of five of the engine-generator sets equipped with SCR to demonstrate compliance with the NOx emission limit in Condition 11.a, with and without the SCR operational. Testing shall be conducted with the engines operating at >90% capacity, unless multiple load band testing is approved by DEQ during the Testing Verification Meeting required by Condition 16. The results of the testing shall be used in determining compliance.

iv. The initial performance testing shall be performed to demonstrate compliance within 120 days from the date of issuance of the permit. Tests shall be conducted, reported, and the data reduced as set forth in 9 VAC 5-50-30 and the test methods and procedures contained in each applicable section or subpart listed in 9 VAC 5-50-410.

v. The details of the tests are to be arranged with the Regional Air Compliance Manager of the DEQ's NRO. The permittee shall submit two copies, one paper copy and one on removable electronic media, of the test protocol to the Regional Air Compliance Manager of the DEQ's NRO and one paper copy to the Regional Air Permit Manger of the DEQ's NRO at least thirty days prior to testing.

vi. Should conditions occur which would require rescheduling the testing, the permittee shall notify the Regional Air Compliance Manager of the DEQ's NRO in writing, within seven days of the scheduled test date or as soon as the rescheduling is deemed necessary. In any case the stack testing shall be rescheduled within thirty days.

vii. Rescheduled testing shall be conducted under the same conditions as the initial performance tests or other condition as approved in writing from the Regional Air Compliance Manager of the DEQ's NRO.

viii. Two copies, one paper copy and one on removable electronic media, of the test results shall be submitted to the Regional Air Compliance Manager of the DEQ's

NRO and one paper copy to the Regional Air Permit Manager within forty-five days after test completion and shall conform to the test report format enclosed with this permit.

b. **Initial Portable Analyzer Test:** An initial portable analyzer test shall be performed in conjunction with the initial performance testing for each engine-generator tested to establish a correlation between the stack test results and the portable analyzer results for use in the annual performance assessment required by Condition 19. The procedure for the initial portable analyzer testing and the correlation determination shall be submitted in conjunction with the initial stack test protocol and agreed upon by the Regional Air Compliance Manager of the DEQ's NRO.

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

18. **Initial Visible Emissions Evaluation** – Visual emission evaluations (VEE) in accordance with 40 CFR 60, Appendix A, Reference Method 9 shall be conducted by the permittee on four of the remaining engine-generator sets (EG-1A through EG-16A and EG-1B through EG-16B) not selected for initial stack testing in Condition 17.

a. Testing shall be performed on the exhaust stack of two engines while operating at >75% of its rated capacity and on two engines while operating at >90% of its rated capacity.

b. Each test shall consist of thirty sets of twenty four consecutive observations (at fifteen second intervals) to yield a six minute average. The details of the tests are to be arranged with the Regional Air Compliance Manager of the DEQ's NRO.

c. The details of the tests are to be arranged with the Regional Air Compliance Manager during the Testing Verification Meeting required by Condition 16. The permittee shall submit a test protocol in conjunction with the initial stack test protocol as required by Condition 17.a.v at least thirty days prior to testing.

d. The evaluation shall be performed within 120 days of the date of issuance of the permit.

e. Should conditions occur which would require rescheduling the testing, the permittee shall notify the Regional Air Compliance Manager of the DEQ's NRO in writing, within seven days of the scheduled test date or as soon as the rescheduling is deemed necessary. In any case the visible emissions testing shall be rescheduled within thirty days.

f. Rescheduled testing shall be conducted under the same conditions (as possible) as the initial performance tests.

g. Two copies, one paper copy and one on removable electronic media, of the test result shall be submitted to the Regional Air Compliance Manager of the DEQ's NRO within forty-five days after test completion and shall conform to the test report format enclosed with this permit.

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

CONTINUED COMPLIANCE VERIFICATION

19. **Annual Performance Assessment –**

a. Engines selected for stack testing:

i. Concurrent with the initial performance test the permittee shall perform portable analyzer testing to determine the nitrogen oxide (as NO_2) emission concentration for the installed engine-generator sets chosen for the initial performance testing. Following the initial portable analyzer test, subsequent testing shall be conducted in a manner that each engine-generator set is tested, at minimum, once every four years. The portable analyzer testing shall be performed at a comparable load at which the engine-generator set operated during the stack test performance demonstration. Details of the test shall be arranged with the Regional Air Compliance Manager of the DEQ's NRO. Any changes to the procedure for the portable analyzer testing shall be submitted to the Regional Air Compliance Manager of DEQ's NRO at least thirty days prior to conducting the portable analyzer testing. Results of the testing shall be maintained on-site in accordance with Condition 23.g.

ii. Additional nitrogen oxide (as NO_2) stack testing may be required if the difference between the initial NOx emission concentration established for the portable analyzer during the performance demonstration per Condition 17.b, and the NOx emission concentration determined during the annual portable analyzer test per Condition 19.a.i is equal to or greater than ten percent (10%).

b. Engines not selected for stack testing:

i. Within the first twelve months, subsequent to the issuance of this permit, concurrent with the annual maintenance, and annually thereafter, the permittee shall perform a portable analyzer test to determine the nitrogen oxide (as NO_2) emission concentration for, at minimum, twenty-five percent of the installed engine-generator sets. The testing shall be conducted in a manner that each engine-generator set is tested, at a minimum, once every four years. Details of the test shall be arranged with the Regional Air Compliance Manager of the DEQ's NRO. Any changes to the procedure for the portable analyzer testing shall be submitted to the Regional Air Compliance Manager of DEQ's NRO at least thirty days prior to conducting the portable analyzer testing. Results of the testing shall be maintained on-site in accordance with Condition 23.g.

c. Immediately prior to conducting the portable analyzer test, the portable analyzer shall be calibrated using EPA Protocol 1 gases.

i. Calibrations shall be accurate to within five parts per million (ppm) of the sample gas.

ii. The permittee shall maintain on-site records of annual calibration testing, calibration gas certifications, and any corrective action that may have been taken.

(9 VAC 5-80-1180)

20. **Stack Tests** – Upon request by the DEQ, the permittee shall conduct additional performance testing to demonstrate compliance with the emission limits contained in this permit. The details of the tests shall be arranged with the Regional Air Compliance Manager of the DEQ's NRO.
(9 VAC 5-80-1200 and 9 VAC 5-50-30 G)

21. **Visible Emissions Evaluation (VEE)** – Upon request by the DEQ, the permittee shall conduct a visible emission evaluation to demonstrate compliance with the visible emission limits contained in this permit. The details of the tests shall be arranged with the Regional Air Compliance Manager of the DEQ's NRO.
(9 VAC 5-80-1200 and 9 VAC 5-50-30 G)

22. **SCR Compliance Demonstration** – The permittee shall conduct testing for NOx (as NO_2) on the engine-generator sets equipped with SCR within sixty days following each change or regeneration of the catalyst in the SCR system by either stack testing or by use of the portable analyzer. This testing shall be arranged with the Regional Air Compliance Manager of the DEQ's NRO.
(9 VAC 5-50-30 and 9 VAC 5-80-1200)

RECORDS

23. **On Site Records** – The permittee shall maintain records of emission data and operating parameters as necessary to demonstrate compliance with this permit. The content and format of such records shall be arranged with the Regional Air Compliance Manager of the DEQ's NRO:

    These records shall include, but are not limited to:

    a. Monthly hours of operation of the engine-generator sets (EG-5A through EG-12A and EG-5B through EG-12B), the corresponding generator load, with and without the SCR operational, and the reason operated as defined in Condition 5.

    b. Monthly hours of operation of the engine-generator sets (EG-1A through EG-4A, EG-13A through EG-16A, EG-1B through EG-4B, and EG-13B through EG-16B) with the corresponding operating load, and the reason operated as defined in Condition 5.

    c. Monthly and annual emissions calculations for NO_X (as NO_2), CO, SO2, VOC, and PM10 from the engine-generator sets (EG-1A through EG-16A and EG-1B through EG-16B) using the calculation methods in Conditions 12 and 13 to verify compliance with the ton/yr emissions limitations in Condition GC-1.a.

    d. Monthly overall (all units that ran that month only) average lb/hr emissions calculation for NO_X (as NO_2) for to verify compliance with the lb/hr emissions limitation in Condition 11.c.

e. A NOx Urea Table (Urea Load Map) for each engine-generator set, (EG-5A through EG-12A and EG-5B through EG-12B), equipped with SCR to verify that the SCR is operating as specified by the manufacturer. Each NOx Urea Table shall include the engine load, temperature after the catalyst, NOx concentration before and after the catalyst, the urea consumption rate, and the catalyst efficiency.

f. All fuel supplier certifications per Condition 9.

g. All VEE, emission stack test reports, portable analyzer calibrations, and annual performance assessment results for each engine-generator.

h. A copy of the maintenance schedule and records of scheduled and unscheduled maintenance in accordance with Condition GC-5.

i. Logs of monitoring device observations as per Condition 4.

j. Operator training in accordance with Condition GC-5.

k. Monthly and annual emissions calculations for NO_X (as NO_2) from the engine-generator sets (EG-1A through EG-16A and EG-1B through EG-16B) using the calculation methods in Condition 13 to verify compliance with the annual emissions limitations in Condition GC-2.

These records shall be available for inspection by the DEQ and shall be current for the most recent five years.
(9 VAC 5-80-1180 and 9 VAC 5-50-50)

V. ACC 5 - FOX

APPLICATION

This permit approval is based on the letter request dated February 23, 2010 with supplemental information dated March 18, 2010 and the permit application dated April 21, 2008 with supplemental information dated May 6, 2008, June 16, 2008, and permit application dated October 26, 2007, and permit application November 29, 2007. Any changes in the permit application specifications or any existing facilities which alter the impact of the facility on air quality may require a permit. Failure to obtain such a permit prior to construction may result in enforcement action.
(9 VAC 5-50-390 and 9 VAC 5-80-1210 D)

PROCESS REQUIREMENTS

1. **Equipment List** – Equipment at this facility consists of the following:

Equipment to be Constructed in Phase 1				
Reference No.	**Equipment Description**	**Rated Capacity**	**Add-On Control Technology**	**Federal Requirements**
EG-1A EG-2A EG-1B EG-2B	Four Detroit Diesel Engine-Generators Model 16V4000-G83	3353 Bhp, each 2250 ekW, each	N/A	9 VAC 5-50-410
EG-3A Through EG-8A, EG-3B Through EG-8B	Twelve Detroit Diesel Engine-Generators Model 16V4000-G83	3353 Bhp, each 2250 ekW, each	Steuler CERNOx-16V400/2250 SCR Open Loop System	9 VAC 5-50-410
Equipment to be Constructed in Phase 2				
Reference No.	**Equipment Description**	**Rated Capacity**	**Add-On Control Technology**	**Federal Requirements**
EG-15A EG-16A EG-15B EG-16B	Four Detroit Diesel Engine-Generators Model 16V4000-G83	3353 Bhp, each 2250 ekW, each	N/A	9 VAC 5-50-410
EG-9A Through EG-14A, EG-9B Through EG-14B	Twelve Detroit Diesel Engine-Generators Model 16V4000-G83	3353 Bhp, each 2250 ekW, each	Steuler CERNOx-16V400/2250 SCR Open Loop System	9 VAC 5-50-410

Equipment Exempt from Permitting				
Reference No.	**Equipment Description**	**Rated Capacity**	**Exemption Citation**	**Exemption Date**
EG-1AT through EG-16AT	Sixteen above ground storage tanks (AST) for No.2 diesel fuel	150 gallons, each	9 VAC 5-80-1105B.8	August 1, 2008
EG-1BT Through EG-16BT	Sixteen ASTs for No.2 diesel fuel	150 gallons, each	9 VAC 5-80-1105B.8	August 1, 2008
FT-1 Through FT-4	Four underground storage tanks (UST) for No.2 diesel fuel	50,000 gallons, each	9 VAC 5-80-1105B.8., 40 CFR 60 Subpart Kb	August 1, 2008
GB-1A, 2A GB-1B, 2B	Four Aerco Model BMK 2.0 gas fired boilers	1.4 MMBtu/Hr each	9 VAC 5-80-1105B.1	August 1, 2008

Specifications included in the permit under this condition are for informational purposes only and do not form enforceable terms or conditions of the permit unless the specifications form the basis for conditions in the permit.
(9VAC 80-1180 D 3)

2. **Emission Controls** – Emissions from the engine-generator sets shall be controlled by the following:

   a. Nitrogen Oxides (as NO_2) emissions from engine-generator sets (EG-1A through EG-16A, EG-1B through EG-16B) shall be controlled by good engine design (four cycle turbocharged and inter-cooled).

   b. Oxides of Nitrogen (as NO_2) emissions from each engine-generator set (EG-3A through EG-14A, EG-3B through EG-14B) shall be controlled by an open loop selective catalytic reduction (SCR) control device on each engine-generator set. Each SCR system shall be equipped with a temperature probe to monitor the catalyst bed exhaust temperature at all times when the engine is operating. The SCR urea enabling temperature shall be 500°F or such higher temperature as testing or other reliable information, as approved by DEQ, demonstrates is necessary to achieve at least ninety percent control of NOx emissions. Engine exhaust gas shall be treated with urea solution when the engines are operating at or above twenty percent load and the urea enabling temperature as identified above has been achieved, except for periods of start-up, shutdown, or malfunction. In the event that engine exhaust gas temperature exceeds 950°F, urea injection shall be discontinued and any operations above that level will be considered a malfunction. The SCR system control device shall be provided with adequate access for inspection.

   c. Carbon Monoxide (CO), Volatile Organic Compounds (VOC), and Particulate Matter (PM) emissions from the engine-generator sets, (EG-1A through EG-16A and EG-1B through EG-16B) shall be controlled by good design and operating practices which at a minimum are those designated by the equipment vendors.

d. Sulfur Dioxide (SO_2) emissions from the engine-generator sets (EG-1A through EG-16A and EG-1B through EG-16B) shall be controlled by the use of ultra low sulfur fuel with a sulfur content not to exceed 0.0015% (15 ppm).

e. Visible emissions from each engine-generator set (EG-1A through EG-16A and EG-1B through EG-16B) shall be controlled by good operating practices.

(9 VAC 5-80-1180 and 9 VAC 5-50-260)

3. **Monitoring Devices –**

a. Each engine-generator set with SCR (EG-3A through EG-14A and EG-3B through EG-14B) shall be equipped with a device to monitor and record the urea injection rate at a frequency of not less than once every fifteen minutes during the operation of each engine-generator set.

b. Each engine-generator set with SCR (EG-3A through EG-14A and EG-3B through EG-14B) shall be equipped with a device to monitor and record the catalyst bed exhaust temperature at a frequency of not less than once every fifteen minutes during the operation of each engine-generator set.

c. Each engine (EG-1A through EG-16A and EG-1B through EG-16B) shall be equipped with a non-resettable hour meter and a device to monitor and record the engine-generator kilowatt output at a frequency of not less than once every fifteen minutes. A record of the engine operation shall be maintained to provide dates, operating hours and associated load, and reason the unit is operated as defined in Condition 5.

d. Each monitoring device shall be provided with adequate access for inspection and shall be in operation when the engines are operating.

e. Each monitoring device shall be installed, maintained, calibrated and operated in accordance with approved procedures which shall include, as a minimum, the manufacturer's written requirements or recommendations.

(9 VAC 5-80-1180 D)

4. **Monitoring Device Observation** – To ensure good performance, the monitoring devices designated in Condition 3 shall be observed by the permittee during each test firing. Data captured by the monitoring devices shall be reviewed or observed by the permittee at a frequency of not less than once each twenty-four period during which the engine-generator sets are called into service. Observations shall be maintained on site in a permanent log book.
(9 VAC 5-80-1180 D)

OPERATING LIMITATIONS

5. **Operating Scenarios** – All engine-generator sets shall be operated in a manner consistent with the following modes of operation only:

a. Emergency / Critical Power Generation:

   i. Emergency: The engine-generator sets (EG-1A through EG-16A and EG-1B through EG-16B) may be operated 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 the 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 be allowed for the period of time the primary electrical power provider service is unavailable. Once primary electrical power provider service is available the engine-generator sets may be operated in accordance with Critical Power Generation as defined below

   ii. ISO-Declared Emergency: The engine-generator sets (EG-1A through EG-16A and EG-1B through EG-16B) may be operated for participation in an Independent System Operator's (ISO) Emergency Load Response Program (ELRP) during times of an ISO-declared emergency, as defined in the ISO's emergency operations manual. Operations under this scenario shall not exceed 60 hours per generator each calendar year.

   iii. Critical Power Generation: The engine-generator sets (EG-1A through EG-16A and EG-1B through EG-16B) may be operated in situations where immediate action on the part of the facility is needed due to a loss or anticipated loss of acceptable electrical power service from the primary power provider and the loss or anticipated loss of power service is beyond the reasonable control of the facility. Operation under these circumstances shall be allowed until such time as acceptable power provider service is restored or the loss of acceptable power provider service is no longer reasonably anticipated.

b. Alternate Power Generation: An engine-generator set may be operated voluntarily for the purposes of peak-shaving, demand response, or as part of an interruptible power supply arrangement with a power provider, other market participant, or system operator if the engine is equipped with a selective catalytic reduction system (SCR) that achieves the manufacturer's guaranteed maximum emission reductions based on fuel type. Prior to construction of the SCR unit, when changing from Emergency Power or Critical Power Generation to Alternate Power Generation, the permittee shall submit appropriate documentation to the DEQ and receive DEQ approval for the change in the method of operation of the engine-generator set.

c. The engine-generator sets (EG-1A through EG-16A and EG-1B through EG-16B) may be operated for periodic maintenance, testing, and operational training.

Total annual emissions for all Ashburn campus facilities (ACC 2, ACC 3, ACC 4, ACC 5, ACC 6, and ACC 7) shall not exceed the limits stated in Condition GC -1. Total annual emissions for all Ashburn campus facilities (ACC 2, ACC 3, ACC 4, ACC 5, ACC 6, and ACC 7) participation in the ELRP shall not exceed the limits stated in Condition GC-2. (9 VAC 5-80-1180)

6. **Operation of the Engine-Generator Sets** – The permittee must operate and maintain the engine-generator sets and control devices 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 impact on air emissions.
(9 VAC 5-80-1180)

7. **Fuel** – The approved fuel for the engine-generator sets is ultra-low sulfur diesel (ULSD) with a sulfur content at or below 0.0015% by weight (15 ppm). A change in the fuel may require a permit to modify and operate.
(9 VAC 5-80-1180)

8. **Fuel Specification** – The diesel fuel oil shall comply with the specifications below:

   a. DIESEL FUEL which conforms to the ASTM D975 specifications for grade ultra-low sulfur No. 1-D or No. 2-D, or Grade No. 1-D S15 or 2-D S15,

      Maximum sulfur content per shipment: 0.0015%; or

   b. DIESEL FUEL that

      i. Has a minimum cetane number of forty, or has a maximum aromatic content of thirty-five percent by volume, and

      ii. Has a sulfur content per shipment not-to-exceed 0.0015%.

   (9 VAC 5-80-1180)

9. **Fuel Certification** – The permittee shall obtain a certification from the fuel supplier with each purchased shipment of diesel fuel oil. Each fuel supplier certification shall include the following:

   a. The name of the fuel supplier;

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

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

   d. A statement that the diesel fuel oil:

      i. Complies with the American Society for Testing and Materials (ASTM) specification, D975, as specified in Condition 8, or

      ii. Has a sulfur content per shipment not to exceed 0.0015% by weight (15 ppm) and either a minimum cetane number of forty or maximum aromatic content of thirty-five percent by volume, or

      iii. Alternatively, the permittee must obtain approval from the Regional Air Compliance Manager of the DEQ's Northern Regional Office (NRO) if other documentation will be used to certify the diesel fuel type.

   (9 VAC 5-80-1180)

10. **Requirements by Reference** – Diesel engine-generator sets (EG-1A through EG-16A and EG-1B through EG-16B) are subject to 40 CFR 60, Subpart IIII which is federally enforceable only, at this time.

    The permittee shall furnish a copy of notifications sent to the EPA as required by 40 CFR 60, Subpart IIII, to the Regional Air Compliance Manager of the DEQ's NRO.

    Once 40 CFR 60, Subpart IIII has been adopted into the provisions of the Board's Regulations, the following requirement applies:

    Except where this permit is more restrictive than the applicable requirement, the NSPS equipment as described in Condition 1 shall be operated in compliance with the requirements of 40 CFR 60, Subpart IIII.

    (9 VAC 5-80-1180, 9 VAC 5-50-400, and 9 VAC 5-50-410)

EMISSION LIMITS

11. **Emission Limits** – Emissions from the operation of the each diesel engine-generator sets shall not exceed the limits specified below:

    a. Engine-generator sets (EG-3A through EG-14A and EG-3B through EG14B) (Units with SCR)

	With SCR operating	W/out SCR operating
Particulate Matter (PM_{10})	0.63 lbs/hr	0.63 lbs/hr
Sulfur Dioxide (SO_2)	0.04 lbs/hr	0.04 lbs/hr
Nitrogen Oxides (as NO_2)	4.7 lbs/hr*	47.5 lbs/hr*
Carbon Monoxide (CO)	6.2 lbs/hr	6.2 lbs/hr
Volatile Organic Compounds (VOC)	0.9 lbs/hr	0.9 lbs/hr

    b. Engine-generator sets (EG-1A, 2A, 1B, 2B, 15A, 15B, 16A, 16B) (Units without SCR)

Particulate Matter (PM_{10})	0.63 lbs/hr
Sulfur Dioxide (SO_2)	0.04 lbs/hr
Nitrogen Oxides (as NO_2)	47.5 lbs/hr*
Carbon Monoxide (CO)	6.2 lbs/hr
Volatile Organic Compounds (VOC)	0.9 lbs/hr

    *NO_2 – subject to change based on initial compliance test emission rate determination. If the compliance test shows a lower rate (average of three one-hour test runs x 120%), the facility has the option of using the lower hourly rate by undergoing a permit amendment to incorporate the new lower rate.

Compliance with the hourly nitrogen oxides (as NO_2) emission limit shall be demonstrated by stack testing, as stated in Condition 17. Compliance with the sulfur dioxide emissions limit shall be based on the fuel sulfur content and the fuel supplier certification, as stated in Condition numbers 7, 8, and 9. Compliance with the other pollutant limits shall be based on the proper operation and maintenance of the diesel engines or by testing, if required. (9 VAC 5-80-1180)

12. **Campus-Wide Annual Emission Limits** – The annual campus-wide emissions shall be determined by summing the annual emissions from each facility on the Ashburn Campus (ACC 2, ACC 3, ACC 4, ACC 5, ACC 6, and ACC 7) to demonstrate compliance with the campus-wide emission limits specified in Conditions GC-1.a and GC-2. (9 VAC 5-80-1180 and 9 VAC 5-50-260)

13. **Annual Emissions Calculations –**

a. The total annual emissions of Nitrogen Oxides (as NO_2) from the diesel engine-generator sets shall be calculated monthly as the sum of each consecutive twelve-month period. Compliance for the consecutive twelve-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 eleven months.

Each month's NOx emissions shall be calculated as follows:

i. NO_2 Emissions from engine-generator sets equipped with SCR

(EG-3A through EG-14A and EG-3B through EG-14B) =

{(Total hours of operation of engine-generator sets EG-3A through EG-14A and EG-3B through EG-14B for the current month while SCR is operational x 4.0* lb/hr) ÷ 2000

+

(Total hours of operation of engine-generator sets EG-3A through EG-14A and EG-3B through EG-14B for the month while SCR is not operating x 40.0* lb/hr) ÷ 2000}

+

ii. NO_2 Emissions from engine-generator sets without SCR

(EG-1A through EG-14A, EG-15A, EG-16A, EG-1B through EG-4B, EG-15B, and EG- 16B) =

{(Total hours of operation of engine-generator sets EG-1A through EG-4A, EG-15A, EG-16A, EG-1B through EG-4B, EG-15B, and EG-16B for the current month x 40.0* lb/hr) ÷ 2000}.

*NO_2 – To be verified and subject to change based on initial compliance test emission rate determination. If the compliance test shows a lower rate (average of three one-hour test runs x 120%), the facility has the option of using the lower hourly rate by undergoing a permit amendment to incorporate the new lower rate.

b. The total annual emissions for CO, SO_2, PM_{10}, and VOC from the diesel engine-generator sets shall be calculated monthly as the sum of each consecutive twelve-month period. Compliance for the consecutive twelve-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 eleven months.

Each month's emissions shall be calculated as follows:

CO = (Total hours of operation of engine-generator sets EG-1A through EG-16A and EG-1B through EG-16B for the current month x 5.2 lb/hr) ÷ 2000

SO_2 = (Total hours of operation of engine-generator sets EG-1A through EG-16A and EG-1B through EG-16B for the current month x 0.04 lb/hr) ÷ 2000

PM_{10} = (Total hours of operation of engine-generator sets EG-1A through EG-16A and EG-1B through EG-16B for the current month x 0.53 lb/hr) ÷ 2000

VOC = (Total hours of operation of engine-generator sets EG-1A through EG-16A and EG-1B through EG-16B for the current month x 0.7 lb/hr) ÷ 2000

(9 VAC 5-80-1180 and 9 VAC 5-50-260)

14. **Visible Emission Limit** – Visible emissions from the engine-generator sets (EG-1A through EG-16A and EG-1B through EG-16B) shall not exceed five percent opacity except during one six-minute period in any one hour in which visible emissions shall not exceed ten percent opacity as determined by the EPA Method 9 (reference 40 CFR 60, Appendix A). This condition applies at all times except during startup, shutdown, and malfunction.

Visible emissions during startup, shutdown, and malfunction from the engine-generators shall not exceed ten percent opacity except during one six-minute period in any one hour in which visible emissions shall not exceed twenty percent opacity as determined by the EPA Method 9 (reference 40 CFR 60, Appendix A).
(9 VAC 5-80-1180 and 9 VAC 5-50-260)

15. **Emissions Testing** – The thirty-two diesel engine-generator sets (EG-1A through EG-16A and EG-1B through EG-16B) shall be constructed so as to allow for emissions testing upon reasonable notice at any time, using appropriate methods. This includes constructing the facility/equipment such that volumetric flow rates and pollutant emission rates can be accurately determined by applicable test methods and providing a stack or duct that is free from cyclonic flow. Sampling ports shall be provided when requested and safe sampling platforms and access shall be provided.
(9 VAC 5-50-30 F and 9 VAC 5-80-1180)

INITIAL COMPLIANCE DETERMINATION

16. **Testing Verification Meeting** – The permittee shall arrange to meet with the Regional Air Compliance Manager of the DEQ's NRO to discuss the stack testing requirements per Condition 17, portable analyzer testing per Condition 17.b, and the annual performance assessment testing per Condition 19. The meeting shall take place prior to the submittal of

the final test protocol required by Condition 17.a.v, and is required in order for the protocol to be accepted.
(9 VAC 5-50-30 and 9 VAC 5-80-1200)

17. **Performance Testing –**

a. **Stack Test:** Initial performance tests shall be conducted for nitrogen oxides (as NO_2) on twelve of the thirty-two engine-generator sets. The twelve tested will consist of six units which are equipped with SCR (EG-3A through EG-14A and EG-3B through EG-14B) and six units without SCR (EG-1A through EG-4A, EG-15A, EG-16A, EG-1B through EG-4B, EG-15B, and EG-16B), using the emission compliance testing procedures outlined at 40 CFR 60, Appendix A to demonstrate compliance with the emission limits in Conditions 11.a. and 11.b.

i. NO_2 emissions testing from each selected engine-generator set shall consist of three one-hour test runs. The average of the three runs shall be reported as the short-term emissions for the engine-generator set.

ii. Testing shall be performed on the exhaust stack of six of the engine-generator sets without SCR to demonstrate compliance with the NOx emission limit in Condition 11.b. Testing shall be conducted with the engines operating at >90% capacity, unless multiple load band testing is approved by DEQ during the Testing Verification Meeting required by Condition 16. The results of the testing shall be used in determining compliance.

iii. Testing shall be performed on the exhaust stack of six of the engine-generator sets equipped with SCR to demonstrate compliance with the NOx emission limit in Condition 11.a, with and without the SCR operational. Testing shall be conducted with the engines operating at >90% capacity, unless multiple load band testing is approved by DEQ during the Testing Verification Meeting required by Condition 16. The results of the testing shall be used in determining compliance.

iv. The tests shall be performed within sixty days after achieving maximum production rate but in no event later than 180 days after initial startup of each piece of equipment subject to testing. Tests shall be conducted, reported, and the data reduced as set forth in 9 VAC 5-50-30 and the test methods and procedures contained in each applicable section or subpart listed in 9 VAC 5-50-410.

v. The details of the tests are to be arranged with the Regional Air Compliance Manager of the DEQ's NRO. The permittee shall submit two copies, one paper copy and one on removable electronic media, of the test protocol to the Regional Air Compliance Manager of the DEQ's NRO and one paper copy to the Regional Air Permit Manger of the DEQ's NRO at least thirty days prior to testing.

vi. Should conditions occur which would require rescheduling the testing, the permittee shall notify the Regional Air Compliance Manager of the DEQ's NRO in writing, within seven days of the scheduled test date or as soon as the rescheduling is deemed necessary. In any case the stack testing shall be rescheduled within thirty days.

vii. Rescheduled testing shall be conducted under the same conditions as the initial performance tests or other condition as approved in writing from the Regional Air

Compliance Manager of the DEQ's NRO.

viii. Two copies, one paper copy and one on removable electronic media, of the test results shall be submitted to the Regional Air Compliance Manager of the DEQ's NRO and one paper copy to the Regional Air Permit Manager of the DEQ's NRO within forty-five days after test completion and shall conform to the test report format enclosed with this permit.

b. **Initial Portable Analyzer Test:** An initial portable analyzer test shall be performed in conjunction with the initial performance testing for each engine-generator tested to establish a correlation between the stack test results and the portable analyzer results, for use in the annual performance assessment required by Condition 19. The procedure for the initial portable analyzer testing and the correlation determination shall be submitted in conjunction with the initial stack test protocol and agreed upon by the Regional Air Compliance Manager of the DEQ's NRO.

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

18. **Initial Visible Emissions Evaluation** – Visual emission evaluations (VEE) in accordance with 40 CFR 60, Appendix A, Reference Method 9 shall be conducted by the permittee on four of the remaining engine-generator sets (EG-1A through EG-16A and EG-1B through EG-16B) not selected for initial stack testing in Condition 17.

a. Testing shall be performed on the exhaust stack of two engines while operating at >75% of its rated capacity and on two engines while operating at >90% of its rated capacity.

b. Each test shall consist of thirty sets of twenty four consecutive observations (at fifteen second intervals) to yield a six minute average. The details of the tests are to be arranged with the Regional Air Compliance Manager of the DEQ's NRO.

c. The details of the tests are to be arranged with the Regional Air Compliance Manager during the Testing Verification Meeting required by Condition 16. The permittee shall submit a test protocol in conjunction with the initial stack test protocol as required by Condition 17.a.v at least thirty days prior to testing.

d. The evaluation shall be performed within sixty days after achieving maximum production rate at which each engine-generator set will be operated, but in no event later than 180 days after start-up of each permitted engine-generator set.

e. Should conditions occur which would require rescheduling the testing, the permittee shall notify the Regional Air Compliance Manager of the DEQ's NRO in writing, within seven days of the scheduled test date or as soon as the rescheduling is deemed necessary. In any case the visible emissions testing shall be rescheduled within thirty days.

f. Rescheduled testing shall be conducted under the same conditions (as possible) as the initial performance tests.

g. Two copies, one paper copy and one on removable electronic media, of the test result shall be submitted to the Regional Air Compliance Manager of the DEQ's NRO within forty-five days after test completion and shall conform to the test report format enclosed with this permit.

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

CONTINUED COMPLIANCE VERIFICATION

19. **Annual Performance Assessment –**

a. Engines selected for stack testing:

i. Concurrent with the initial performance test the permittee shall perform portable analyzer testing to determine the nitrogen oxide (as NO_2) emission concentration for the installed engine-generator sets chosen for the initial performance testing. Following the initial portable analyzer test, subsequent testing shall be conducted in a manner that each engine-generator set is tested, at minimum, once every four years. The portable analyzer testing shall be performed at a comparable load at which the engine-generator set operated during the stack test performance demonstration. Details of the test shall be arranged with the Regional Air Compliance Manager of the DEQ's NRO. Any changes to the procedure for the portable analyzer testing shall be submitted to the Regional Air Compliance Manager of DEQ's NRO at least thirty days prior to conducting the portable analyzer testing. Results of the testing shall be maintained on-site in accordance with Condition 23.f.

ii. Additional nitrogen oxide (as NO_2) stack testing may be required if the difference between the initial NOx emission concentration established for the portable analyzer during the performance demonstration per Condition 17.b, and the NOx emission concentration determined during the annual portable analyzer test per Condition 19.a.i is equal to or greater than ten percent (10%).

b. Engines not selected for stack testing:

i. Within the first twelve months, subsequent to the issuance of this permit, concurrent with the annual maintenance, and annually thereafter, the permittee shall perform a portable analyzer test to determine the nitrogen oxide (as NO_2) emission concentration for, at minimum, twenty-five percent of the installed engine-generator sets. The testing shall be conducted in a manner that each engine-generator set is tested, at a minimum, once every four years. Details of the test shall be arranged with the Regional Air Compliance Manager of the DEQ's NRO. Any changes to the procedure for the portable analyzer testing shall be submitted to the Regional Air Compliance Manager of DEQ's NRO at least thirty days prior to conducting the portable analyzer testing. Results of the testing shall be maintained on-site in accordance with Condition 23.f.

c. Immediately prior to conducting the portable analyzer test, the portable analyzer shall be calibrated using EPA Protocol 1 gases.

i. Calibrations shall be accurate to within five parts per million (ppm) of the sample gas.

ii. The permittee shall maintain on-site records of annual calibration testing, calibration gas certifications, and any corrective action that may have been taken.

(9 VAC 5-80-1180)

20. **Stack Tests** – Upon request by the DEQ, the permittee shall conduct additional performance testing to demonstrate compliance with the emission limits contained in this permit. The details of the tests shall be arranged with the Regional Air Compliance Manager of the DEQ's NRO.
(9 VAC 5-80-1200 and 9 VAC 5-50-30 G)

21. **Visible Emissions Evaluation (VEE)** – Upon request by the DEQ, the permittee shall conduct an additional visible emission evaluation to demonstrate compliance with the visible emission limits contained in this permit. The details of the tests shall be arranged with the Regional Air Compliance Manager of the DEQ's NRO.
(9 VAC 5-80-1200 and 9 VAC 5-50-30 G)

22. **SCR Compliance Demonstration** – The permittee shall conduct testing for NOx (as NO_2) on the engine-generator sets equipped with SCR within sixty days following each change or regeneration of the catalyst in the SCR system by either stack testing or by use of the portable analyzer. This testing shall be arranged with the Regional Air Compliance Manager of the DEQ's NRO.
(9 VAC 5-50-30 and 9 VAC 5-80-1200)

RECORDS

23. **On Site Records** – The permittee shall maintain records of emission data and operating parameters as necessary to demonstrate compliance with this permit. The content and format of such records shall be arranged with the Regional Air Compliance Manager of the DEQ's NRO at the address referenced in Condition GC-10:

These records shall include, but are not limited to:

a. Monthly hours of operation of the engine-generator sets (EG-3A through EG-14A and EG-3B through EG-14B), the corresponding generator load, with and without the SCR operational, and the reason operated as defined in Condition 5.

b. Monthly hours of operation of the engine-generator sets (EG-1A, EG-2A, EG-15A, EG-16A, EG-1B, EG-2B, EG-15B, and EG-16B) with the corresponding operating load, and the reason operated as defined in Condition 5.

c. Monthly and annual emissions calculations for NO_X (as NO_2), CO, SO2, VOC, and PM10 from the engine-generator sets (EG-1A through EG-16A and EG-1B through EG-16B) using the calculation methods in Conditions 12 and 13 to verify compliance with the ton/yr emissions limitations in Condition GC-1.a.

d. A NOx Urea Table (Urea Load Map) for each engine-generator set, (EG-3A through EG-14A and EG-3B through EG-14B), equipped with SCR to verify that the SCR is operating as specified by the manufacturer. Each NOx Urea Table shall include the engine load,

temperature after the catalyst, NOx concentration before and after the catalyst, the urea consumption rate, and the catalyst efficiency.

e. All fuel supplier certifications per Condition 9.

f. All VEE, emission stack test reports, portable analyzer calibrations, and annual performance assessment results for each engine-generator.

g. A copy of the maintenance schedule and records of scheduled and unscheduled maintenance in accordance with Condition GC-5.

h. Logs of monitoring device observations in accordance with Condition 4.

i. Operator training in accordance with Condition GC-5.

j. Monthly and annual emissions calculations for NO_X (as NO_2) from the engine-generator sets (EG-1A through EG-16A and EG-1B through EG-16B) using the calculation methods in Condition 13 to verify compliance with the annual emissions limitations in Condition GC-2.

These records shall be available for inspection by the DEQ and shall be current for the most recent five years.
(9 VAC 5-80-1180 and 9 VAC 5-50-50)

VI. ACC 6 - FOX

APPLICATION

This permit approval is based on the permit application dated July 9, 2010. Any changes in the permit application specifications or any existing facilities which alter the impact of the facility on air quality may require a permit. Failure to obtain such a permit prior to construction may result in enforcement action.

PROCESS REQUIREMENTS

1. **Equipment List –**

Equipment to be Constructed in Phase 1				
Reference No.	**Equipment Description**	**Rated Capacity**	**Add-On Control Technology**	**Federal Requirements**
EG-1A Through EG-6A, EG-1B Through EG-6B	Twelve Caterpillar Engine-Generator sets, Model 3516C-HD	3257 bhp, each 2250 ekW, each	Steuler PEMS 8X6X3 SCR Open Loop System	9 VAC 5-50-410 and 9 VAC 5-60-100

Equipment to be Constructed in Phase 2				
Reference No.	**Equipment Description**	**Rated Capacity**	**Add-On Control Technology**	**Federal Requirements**
EG-7A Through EG-12A, EG-7B Through EG-12B	Twelve Caterpillar Engine-Generator sets, Model 3516C-HD	3257 bhp, each 2250 ekW, each	Steuler PEMS 8X6X3 SCR Open Loop System	9 VAC 5-50-410 and 9 VAC 5-60-100

Equipment Exempt from Permitting				
Reference No.	**Equipment Description**	**Rated Capacity**	**Exemption Citation**	**Exemption Date**
EG-1ADT through EG-12ADT, EG-1BDT through EG-12BDT	Twenty-four above ground storage tanks (AST) for No.2 diesel fuel	100 gallons, each	9 VAC 5-80-1105B.8	-

Equipment Exempt from Permitting (continued)				
Reference No.	**Equipment Description**	**Rated Capacity**	**Exemption Citation**	**Exemption Date**
UST-1 Through UST-4	Four underground storage tanks (UST) for No.2 diesel fuel	50,000 gallons, each	9 VAC 5-80-1105 B.8., 40 CFR 60 Subpart Kb	-
GB-1, 2, 3	Three Laars Rheos Plus gas fired boilers	1.2 MMBtu/Hr each	9 VAC 5-80-1105B.1	-

Specifications included in the permit under this condition are for informational purposes only and do not form enforceable terms or conditions of the permit unless the specifications form the basis for conditions in the permit.
(9VAC 80-1180 D 3)

2. **Emission Controls** – Emissions from the engine-generator sets shall be controlled by the following:

   a. Nitrogen Oxides (as NO_2) emissions from each engine-generator set (EG-1A through EG-12A and EG-1B through EG-12B) shall be controlled by good engine design (four cycle turbocharged and inter-cooled).

   b. Nitrogen Oxides (as NO_2) emissions from each engine-generator set (EG-1A through EG-12A and EG-1B through EG-12B) shall be controlled by an open loop selective catalytic reduction (SCR) control device on each engine-generator set. Each SCR system shall be equipped with a temperature probe to monitor the catalyst bed exhaust temperature at all times when an engine is operating. The SCR urea enabling temperature shall be 500°F or such higher temperature as testing or other reliable information, as approved by DEQ, demonstrates is necessary to achieve at least ninety percent control of Nitrogen Oxides (NOx) emissions. Engine exhaust gas shall be treated with urea solution when an engine is operating at or above twenty percent load and the urea enabling temperature as identified above has been achieved, except for periods of start-up, shutdown, or malfunction. In the event that engine exhaust gas temperature exceeds 950°F, urea injection shall be discontinued and any operations above that level will be considered a malfunction. The SCR system control device shall be provided with adequate access for inspection.

   c. Carbon Monoxide (CO), Volatile Organic Compounds (VOC), and Particulate Matter (PM) emissions from each engine-generator set, (EG-1A through EG-12A and EG-1B through EG-12B) shall be controlled by good design and operating practices which at a minimum are those designated by the equipment vendors.

   d. Sulfur Dioxide (SO_2) emissions from each engine-generator set (EG-1A through EG-12A and EG-1B through EG-12B) shall be controlled by the use of ultra low sulfur fuel with a sulfur content not to exceed 0.0015% by weight (15 ppm).

e. Visible emissions from each engine-generator set (EG-1A through EG-12A and EG-1B through EG-12B) shall be controlled by good operating practices.

(9 VAC 5-80-1180 and 9 VAC 5-50-260)

3. **Monitoring Devices –**

   a. Each engine-generator set with SCR (EG-1A through EG-12A and EG-1B through EG-12B) shall be equipped with a device to monitor and record the urea injection rate at a frequency of not less than once every fifteen minutes during the operation of each engine-generator set.

   b. Each engine-generator set with SCR (EG-1A through EG-12A and EG-1B through EG-12B) shall be equipped with a device to monitor and record the catalyst bed exhaust temperature at a frequency of not less than once every fifteen minutes during the operation of each engine-generator set.

   c. Each engine (EG-1A through EG-12A and EG-1B through EG-12B) shall be equipped with a non-resettable hour meter and a device to monitor and record the engine-generator kilowatt output at a frequency of not less than once every fifteen minutes.

   d. Each monitoring device shall be provided with adequate access for inspection and shall be in operation when the engines are operating.

   e. Each monitoring device shall be installed, maintained, calibrated and operated in accordance with approved procedures which shall include, as a minimum, the manufacturer's written requirements or recommendations.

   Refer to Condition 21 for record keeping requirements to demonstrate compliance with this condition.
   (9 VAC 5-80-1180 D)

4. **Monitoring Device Observation** – To ensure proper performance, the monitoring devices used to continuously measure the information required in Condition 3 shall be observed by the permittee during each test firing and at a minimum frequency of once per day during days in which the engine-generator sets are called into service. Refer to Condition 21 for record keeping requirements to demonstrate compliance with this condition.
   (9 VAC 5-80-1180 D)

OPERATING LIMITATIONS

5. **Operating Scenarios** – All engine-generator sets shall be operated in a manner consistent with the following modes of operation only:

   a. Emergency / Critical Power Generation:

      i. Emergency: The engine-generator sets (EG-1A through EG-12A and EG-1B through EG-12B) may be operated 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 the 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 be allowed for the period of time the primary electrical power provider service is unavailable. Once primary electrical power provider service is available the engine-generator sets may be operated in accordance with Critical Power Generation as defined below.

ii. ISO-Declared Emergency: The engine-generator sets (EG-1A through EG-12A and EG-1B through EG-12B) may be operated for participation in an Independent System Operator's (ISO) Emergency Load Response Program (ELRP) during times of an ISO-declared emergency, as defined in the ISO's emergency operations manual. Operations under this scenario shall not exceed 60 hours per generator each calendar year.

iii. Critical Power Generation: The engine-generator sets (EG-1A through EG-12A and EG-1B through EG-12B) may be operated in situations where immediate action on the part of the facility is needed due to a loss or anticipated loss of acceptable electrical power service from the primary power provider and the loss or anticipated loss of power service is beyond the reasonable control of the facility. Operation under these circumstances shall be allowed until such time as acceptable power provider service is restored or the loss of acceptable power provider service is no longer reasonably anticipated.

b. Alternate Power Generation: Except as specified in subsection 5.c below, an engine-generator set may be operated voluntarily for the purposes of peak-shaving, demand response, or as part of an interruptible power supply arrangement with a power provider, other market participant, or system operator if the engine is equipped with a selective catalytic reduction system (SCR) that achieves the manufacturer's guaranteed maximum emission reductions based on fuel type.

c. The engine-generator sets (EG-1A through EG-12A and EG-1B through EG-12B) may be operated for periodic maintenance, testing, and operational training.

Total annual emissions for all Ashburn campus facilities (ACC 2, ACC 3, ACC 4, ACC 5, ACC 6, and ACC 7) shall not exceed the limits stated in Condition GC-1. Total annual emissions for all Ashburn campus facilities (ACC 2, ACC 3, ACC 4, ACC 5, ACC 6, and ACC 7) participation in the ELRP shall not exceed the limits stated in Condition GC-2. (9 VAC 5-80-1180 and 9 VAC 5-50-260)

6. **Operation of the Engine-Generator Sets** – The permittee must operate and maintain the engine-generator sets and control devices according to the manufacturer's written instructions or procedures developed by the permittee that are approved by the engine and/or control device manufacturer. In addition, the permittee may only change those settings that are permitted by the manufacturer and do not impact on air emissions. (9 VAC 5-80-1180)

7. **Fuel Specification** – The approved fuel for the engine-generator sets shall be diesel fuel oil that meets the specifications below:

a. DIESEL FUEL which conforms to the ASTM D975 specifications for grade ultra-low sulfur No. 1-D or No. 2-D, or Grade No. 1-D S15 or 2-D S15,

   Maximum sulfur content per shipment: 0.0015% by weight (15 ppm); or

b. DIESEL FUEL that

   i. Has a minimum cetane number of forty, or has a maximum aromatic content of thirty-five percent by volume, and

   ii. Has a sulfur content per shipment not-to-exceed 0.0015% by weight (15 ppm).

A change in the fuel type or the fuel sulfur content may require a permit to modify and operate.
(9 VAC 5-80-1180 and 9 VAC 5-50-260)

8. **Fuel Certification** – The permittee shall obtain a certification from the fuel supplier with each purchased shipment of diesel fuel oil. Each fuel supplier certification shall include the following:

   a. The name of the fuel supplier;

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

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

   d. A statement that the diesel fuel oil:

      i. Complies with the American Society for Testing and Materials (ASTM) specification, D975, as specified in Condition 7.a, or

      ii. Has a sulfur content per shipment not to exceed 0.0015% by weight (15 ppm) and either a minimum cetane number of forty or maximum aromatic content of thirty-five percent by volume, or

      iii. Alternatively, the permittee must obtain approval from the Regional Air Compliance Manager of the DEQ's NRO if other documentation will be used to certify the diesel fuel type.

   (9 VAC 5-80-1180)

EMISSION LIMITS

9. **Emission Limits** – Emissions from the operation of each engine-generator set (EG-1A through EG-12A and EG-1B through EG12B) shall not exceed the limits specified below:

	With SCR operating	W/out SCR operating
Particulate Matter (PM_{10})	0.34 lbs/hr	0.34 lbs/hr
Sulfur Dioxide (SO_2)	0.04 lbs/hr	0.04 lbs/hr
Nitrogen Oxides (as NO_2)	4.12 lbs/hr*	41.20 lbs/hr*

Carbon Monoxide (CO)	4.58 lbs/hr	4.58 lbs/hr
Volatile Organic Compounds (VOC)	1.16 lbs/hr	1.16 lbs/hr

*NO_2 – subject to change based on initial compliance test emission rate determination. If the compliance test shows a lower rate (average of three one-hour test runs x 120%), the facility has the option of using the lower hourly rate by undergoing a permit amendment to incorporate the new lower rate.

Compliance with the hourly nitrogen oxides (as NO_2) emission limit shall be demonstrated by stack testing, as stated in Condition 15. Compliance with the sulfur dioxide emissions limit shall be based on the fuel sulfur content and the fuel supplier certification, as stated in Condition numbers 7 and 8. Compliance with the other pollutant limits shall be based on the proper operation and maintenance of the diesel engines or by testing, if required.
(9 VAC 5-80-1180 and 9 VAC 5-50-260)

10. **Campus-Wide Annual Emission Limits** – The annual campus-wide emissions shall be determined by summing the annual emissions from each facility on the Ashburn Campus (ACC 2, ACC 3, ACC 4, ACC 5, ACC 6, and ACC 7) to demonstrate compliance with the campus-wide emission limits specified in Conditions GC-1.a and GC-2.
(9 VAC 5-80-1180 and 9 VAC 5-50-260)

11. **Annual Emissions Calculations –**

a. The total annual emissions of Nitrogen Oxides (as NO_2) from the engine-generator sets shall be calculated monthly as the sum of each consecutive twelve-month period.

Each month's NOx emissions shall be calculated as follows:

NO_x Emissions from engine-generator sets equipped with SCR

(EG-1A through EG-12A and EG-1B through EG-12B) =

{(Total hours of operation of engine-generator sets EG-1A through EG-12A and EG-1B through EG-12B for the current month while SCR is operational x 3.43* lb/hr) ÷ 2000

+

(Total hours of operation of engine-generator sets EG-1A through EG-12A and EG-3B through EG-14B for the current month while SCR is not operating x 34.33* lb/hr) ÷ 2000}

*NO_x – To be verified and subject to change based on initial compliance test emission rate determination. If the compliance test shows a lower rate (average of three one-hour test runs x 120%), the facility has the option of using the lower hourly rate by undergoing a permit amendment to incorporate the new lower rate.

b. The total annual emissions for CO, SO_2, PM_{10}, and VOC from the diesel engine-generator sets shall be calculated monthly as the sum of each consecutive twelve-month period.

Each month's emissions shall be calculated as follows:

CO = (Total hours of operation of engine-generator sets EG-1A through EG-12A and EG-1B through EG-12B for the current month x 2.54 lb/hr) ÷ 2000

SO_2 = (Total hours of operation of engine-generator sets EG-1A through EG-12A and EG-1B through EG-12B for the current month x 0.04 lb/hr) ÷ 2000

PM_{10} = (Total hours of operation of engine-generator sets EG-1A through EG-12A and EG-1B through EG-12B for the current month x 0.24 lb/hr) ÷ 2000

VOC = (Total hours of operation of engine-generator sets EG-1A through EG-12A and EG-1B through EG-12B for the current month x 0.87 lb/hr) ÷ 2000

(9 VAC 5-80-1180)

12. **Visible Emission Limit** – Visible emissions from the engine-generator sets (EG-1A through EG-12A and EG-1B through EG-12B) shall not exceed five percent opacity except during one six-minute period in any one hour in which visible emissions shall not exceed ten percent opacity as determined by the EPA Method 9 (reference 40 CFR 60, Appendix A). This condition applies at all times except during startup, shutdown, and malfunction.

    Visible emissions during startup, shutdown, and malfunction from the engine-generators shall not exceed ten percent opacity except during one six-minute period in any one hour in which visible emissions shall not exceed twenty percent opacity as determined by the EPA Method 9 (reference 40 CFR 60, Appendix A).
    (9 VAC 5-80-1180 and 9 VAC 5-50-260)

13. **Emissions Testing** – The twenty-four diesel engine-generator sets (EG-1A through EG-12A and EG-1B through EG-12B) shall be constructed so as to allow for emissions testing upon reasonable notice at any time, using appropriate methods. This includes constructing the facility/equipment such that volumetric flow rates and pollutant emission rates can be accurately determined by applicable test methods and providing a stack or duct that is free from cyclonic flow. Sampling ports shall be provided when requested and safe sampling platforms and access shall be provided.
    (9 VAC 5-50-30 F and 9 VAC 5-80-1180)

INITIAL COMPLIANCE DETERMINATION

14. **Testing Verification Meeting** – The permittee shall arrange to meet with the Regional Air Compliance Manager of the DEQ's NRO at the address referenced in Condition GC-10 to discuss the stack testing requirements per Condition 15, portable analyzer testing per Condition 15.b, and the annual performance assessment testing per Condition 17. The meeting shall take place prior to the submittal of the final test protocol required by Condition 15.a.iv, and is required in order for the protocol to be accepted.
    (9 VAC 5-50-30 and 9 VAC 5-80-1200)

15. **Performance Testing** –

    a. **Stack Test:** Initial performance tests shall be conducted for nitrogen oxides (as NO_2) on

six of the twenty-four engine-generator sets. The six tested will consist of three units from the Phase 1 group of engine-generator sets (EG-1A through EG-6A and EG-1B through EG-6B) and three units from the Phase 2 group of engine-generator sets (EG-7A through EG-12A and EG-7B through EG-12B), using the emission compliance testing procedures outlined at 40 CFR 60, Appendix A to demonstrate compliance with the emission limits in Condition 9. However, if any engine exceeds the average emission rate for the engines tested by more than 10%, and the measured emission rate for the engine is greater than 50% of the allowable emission limit in Condition 9, then three additional engines shall be tested and evaluated also for variability of results.

i. NO_x emissions testing from each selected engine-generator set shall consist of three one-hour test runs. The average of the three runs shall be reported as the short-term emissions for the engine-generator set.

ii. Testing shall be performed on the exhaust stack of the engine-generator sets to demonstrate compliance with the NOx emission limit in Condition 9, with the SCR operational. Testing shall be conducted with the engines operating at >90% capacity, unless multiple load band testing is approved by DEQ during the Testing Verification Meeting required by Condition 14. The results of the testing shall be used in determining compliance.

iii. The tests shall be performed within sixty days after achieving maximum production rate but in no event later than 180 days after initial startup of each piece of equipment subject to testing. Tests shall be conducted, reported, and the data reduced as set forth in 9 VAC 5-50-30.

iv. The details of the tests are to be arranged with the Regional Air Compliance Manager of the DEQ's NRO. The permittee shall submit two copies, one paper copy and one on removable electronic media, of the test protocol to the Regional Air Compliance Manager of the DEQ's NRO and one paper copy to the Regional Air Permit Manger of the DEQ's NRO at least thirty days prior to testing.

v. Should conditions occur which would require rescheduling the testing, the permittee shall notify the Regional Air Compliance Manager of the DEQ's NRO in writing, within seven days of the scheduled test date or as soon as the rescheduling is deemed necessary. In any case the stack testing shall be rescheduled within thirty days.

vi. Rescheduled testing shall be conducted under the same conditions as the initial performance tests or other condition as approved in writing from the Regional Air Compliance Manager of the DEQ's NRO.

vii. Two copies, one paper copy and one on removable electronic media, of the test results shall be submitted to the Regional Air Compliance Manager of the DEQ's NRO and one paper copy to the Regional Air Permit Manager of the DEQ's NRO within forty-five days after test completion and shall conform to the test report format enclosed with this permit.

b. **Initial Portable Analyzer Test:** An initial portable analyzer test shall be performed in conjunction with the initial performance testing for each engine-generator tested to establish a correlation between the stack test results and the portable analyzer results, for use in the annual performance assessment required by Condition 17. The procedure

for the initial portable analyzer testing and the correlation determination shall be submitted in conjunction with the initial stack test protocol and agreed upon by the Regional Air Compliance Manager of the DEQ's NRO.

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

16. **Initial Visible Emissions Evaluation** – Visual emission evaluations (VEE) in accordance with 40 CFR 60, Appendix A, Reference Method 9 shall be conducted by the permittee on four of the twenty-four engine-generator sets (EG-1A through EG-12A and EG-1B through EG-12B) not selected for initial stack testing in Condition 15.a. The four tested will consist of two units from the Phase 1 group of engine-generator sets (EG-1A through EG-6A and EG-1B through EG-6B) and two units from the Phase 2 group of engine-generator sets (EG-7A through EG-12A and EG-7B through EG-12B).

    a. Testing shall be performed on the exhaust stack of the engines at the normal operating load of the generators.

    b. Each test shall consist of thirty sets of twenty four consecutive observations (at fifteen second intervals) to yield a six minute average. The details of the tests are to be arranged with the Regional Air Compliance Manager of the DEQ's NRO.

    c. The details of the tests are to be arranged with the Regional Air Compliance Manager during the Testing Verification Meeting required by Condition 14. The permittee shall submit a test protocol in conjunction with the initial stack test protocol as required by Condition 15.a.iv at least thirty days prior to testing.

    d. The evaluation shall be performed within sixty days after achieving maximum production rate at which each engine-generator set will be operated, but in no event later than 180 days after start-up of each permitted engine-generator set.

    e. Should conditions occur which would require rescheduling the testing, the permittee shall notify the Regional Air Compliance Manager of the DEQ's NRO in writing, within seven days of the scheduled test date or as soon as the rescheduling is deemed necessary. In any case the visible emissions testing shall be rescheduled within thirty days.

    f. Rescheduled testing shall be conducted under the same conditions (as possible) as the initial performance tests.

    g. Two copies, one paper copy and one on removable electronic media, of the test result shall be submitted to the Regional Air Compliance Manager of the DEQ's NRO within forty-five days after test completion and shall conform to the test report format enclosed with this permit.

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

CONTINUED COMPLIANCE VERIFICATION

17. **Annual Performance Assessment –**

a. Engines selected for stack testing:

i. Concurrent with the initial performance test the permittee shall perform portable analyzer testing to determine the nitrogen oxide (as NO_2) emission concentration for the installed engine-generator sets chosen for the initial performance testing. Following the initial portable analyzer test, subsequent testing shall be conducted in a manner that each engine-generator set is tested, at minimum, once every four years. The portable analyzer testing shall be performed at a comparable load at which the engine-generator set operated during the stack test performance demonstration. Details of the test shall be arranged with the Regional Air Compliance Manager of the DEQ's NRO. Any changes to the procedure for the portable analyzer testing shall be submitted to the Regional Air Compliance Manager of DEQ's NRO at least thirty days prior to conducting the portable analyzer testing. Results of the testing shall be maintained on-site in accordance with Condition 20.e.

ii. Additional nitrogen oxide (as NO_2) stack testing may be required if the difference between the initial NOx emission concentration established for the portable analyzer during the performance demonstration per Condition 15.b, and the NOx emission concentration determined during the annual portable analyzer test per Condition 17.a.i is equal to or greater than ten percent (10%).

b. Engines not selected for stack testing:

i. Within the first twelve months, subsequent to the issuance of this permit, concurrent with the annual maintenance, and annually thereafter, the permittee shall perform a portable analyzer test to determine the nitrogen oxide (as NO_2) emission concentration for, at minimum, twenty-five percent of the installed engine-generator sets. The testing shall be conducted in a manner that each engine-generator set is tested, at a minimum, once every four years. Details of the test shall be arranged with the Regional Air Compliance Manager of the DEQ's. Any changes to the procedure for the portable analyzer testing shall be submitted to the Regional Air Compliance Manager of DEQ's NRO at least thirty days prior to conducting the portable analyzer testing. Results of the testing shall be maintained on-site in accordance with Condition 21.e.

c. Immediately prior to conducting the portable analyzer test, the portable analyzer shall be calibrated using EPA Protocol 1 gases.

i. Calibrations shall be accurate to within five parts per million (ppm) of the sample gas.

ii. The permittee shall maintain on-site records of annual calibration testing, calibration gas certifications, and any corrective action that may have been taken.

(9 VAC 5-80-1180)

18. **Stack Tests** – Upon request by the DEQ, the permittee shall conduct additional performance testing to demonstrate compliance with the emission limits contained in this permit. The details of the tests shall be arranged with the Regional Air Compliance Manager of the DEQ's NRO.
(9 VAC 5-80-1200 and 9 VAC 5-50-30 G)

19. **Visible Emissions Evaluation (VEE)** – Upon request by the DEQ, the permittee shall conduct an additional visible emission evaluation to demonstrate compliance with the visible emission limits contained in this permit. The details of the tests shall be arranged with the Regional Air Compliance Manager of the DEQ's NRO.
(9 VAC 5-80-1200 and 9 VAC 5-50-30 G)

20. **SCR Compliance Demonstration** – The permittee shall conduct testing for NOx (as NO_2) on the engine-generator sets equipped with SCR within sixty days following each change or regeneration of the catalyst in the SCR system by either stack testing or by use of the portable analyzer. This testing shall be arranged with the Regional Air Compliance Manager of the DEQ's NRO.
(9 VAC 5-50-30 and 9 VAC 5-80-1200)

RECORDS

21. **On Site Records** – The permittee shall maintain records of emission data and operating parameters as necessary to demonstrate compliance with this permit. The content and format of such records shall be arranged with the Regional Air Compliance Manager of the DEQ's NRO.

    These records shall include, but are not limited to:

    a. Monthly hours of operation of the engine-generator sets (EG-1A through EG-12A and EG-1B through EG-12B) with and without the SCR operational, the corresponding date, generator load, and the reason operated as defined in Condition 5.

    b. Monthly and annual emissions calculations for NO_X (as NO_2), CO, SO2, VOC, and PM10 from the engine-generator sets (EG-1A through EG-12A and EG-1B through EG-12B) using the calculation methods in Conditions 10 and 11 to verify compliance with the ton/yr emissions limitations referenced Conditions GC-1.a.

    c. Monthly and annual emissions calculations for NO_X (as NO_2) emissions from the engine-generator sets at ACC6 and ACC7 to verify compliance with the ton/yr emission limitation referenced in Condition GC-1.b.

    d. A NOx Urea Table (Urea Load Map) for each engine-generator set, (EG-1A through EG-12A and EG-1B through EG-12B), equipped with SCR to verify that the SCR is operating as specified by the manufacturer. Each NOx Urea Table shall include the engine load,

temperature after the catalyst, NOx concentration before and after the catalyst, the urea consumption rate, and the catalyst efficiency.

e. All fuel supplier certifications per Condition 8.

f. All VEE, emission stack test reports, portable analyzer calibrations, and annual performance assessment results for each engine-generator set.

g. A copy of the maintenance schedule and records of scheduled and unscheduled maintenance in accordance with Condition GC-6.

h. Logs of monitoring device observations in accordance with Condition 4.

i. Operator training in accordance with Condition GC-6.

j. Monthly and annual emissions calculations for NO_X (as NO_2) from the engine-generator sets (EG-1A through EG-12A and EG-1B through EG-12B) using the calculation methods in Condition 11 to verify compliance with the annual emissions limitations in Condition GC-2.

Compliance for each consecutive twelve-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 eleven months.

These records shall be available for inspection by the DEQ and shall be current for the most recent five years.
(9 VAC 5-80-1180 and 9 VAC 5-50-50)

VII. ACC 7 - Alshain Ventures, LLC

APPLICATION

This permit approval is based on the permit application dated June 25, 2013, and additional information dated July 19, 2013. Any changes in the permit application specifications or any existing facilities which alter the impact of the facility on air quality may require a permit. Failure to obtain such a permit prior to construction may result in enforcement action.

PROCESS REQUIREMENTS

1. **Equipment List –**

Equipment to be Constructed:				
Reference No.	**Equipment Description**	**Rated Capacity**	**Add-On Control Technology**	**Federal Requirements**
EG-1A through EG-14A and EG-1B through EG-14B	Twenty-eight (28) Caterpillar Engine-Generator sets, Model 3516C	3273 bhp (each), 2250 ekW (each)	Steuler SCR DeNOx Open Loop System	9 VAC 5-50-410 and 9 VAC 5-60-100

Equipment Exempt from Permitting				
Reference No.	**Equipment Description**	**Rated Capacity**	**Exemption Citation**	**Exemption Date**
TA-1A through TA-14A and TA-1B through TA-14B	Twenty-eight (28) above ground storage tanks (AST) for No. 2 diesel fuel	150 gallons (each)	9 VAC 5-80-1105 B.8	August 27, 2013
UST-1 through UST-4	Four underground storage tanks (UST) for No. 2 diesel fuel	50,000 gallons (each)	9 VAC 5-80-1105 B.8.	August 27, 2013
GB-1 through GB-3	Three (3) Lochinvar Crest Commercial Condensing natural gas fired boilers, Model FBN-2500	2.5 MMBtu/Hr each	9 VAC 5-80-1105 B.1	August 27, 2013

Specifications included in the permit under this condition are for informational purposes only and do not form enforceable terms or conditions of the permit unless the specifications form the basis for conditions in the permit.
(9VAC 80-1180 D 3)

2. **Emission Controls** – Emissions from the engine-generator sets shall be controlled by the following:

   a. Nitrogen Oxides (as NO_2) emissions from each engine-generator set (EG-1A through EG-14A and EG-1B through EG-14B) shall be controlled by good engine design (four cycle turbocharged and inter-cooled).

   b. Nitrogen Oxides (as NO_2) emissions from each engine-generator set (EG-1A through EG-14A and EG-1B through EG-14B) shall be controlled by an open loop selective catalytic reduction (SCR) control device on each engine-generator set. Each SCR system shall be equipped with a temperature probe to monitor the catalyst bed exhaust temperature at all times when an engine is operating. The SCR urea enabling temperature shall be 500°F or such higher temperature as testing or other reliable information, as approved by DEQ, demonstrates is necessary to achieve at least ninety percent control of Nitrogen Oxides (NOx) emissions. Engine exhaust gas shall be treated with urea solution when an engine is operating at or above twenty percent load and the urea enabling temperature as identified above has been achieved, except for periods of start-up, shutdown, or malfunction. In the event that engine exhaust gas temperature exceeds 950°F, urea injection shall be discontinued and any operations above that level will be considered a malfunction. The SCR system control device shall be provided with adequate access for inspection.

   c. Carbon Monoxide (CO), Volatile Organic Compounds (VOC), and Particulate Matter (PM) emissions from each engine-generator set, (EG-1A through EG-14A and EG-1B through EG-14B) shall be controlled by good design and operating practices which at a minimum are those designated by the equipment vendors.

   d. Sulfur Dioxide (SO_2) emissions from each engine-generator set (EG-1A through EG-14A and EG-1B through EG-14B) shall be controlled by the use of ultra low sulfur fuel with a sulfur content not to exceed 0.0015% by weight (15 ppm).

   e. Visible emissions from each engine-generator set (EG-1A through EG-14A and EG-1B through EG-14B) shall be controlled by good operating practices.

   (9 VAC 5-80-1180 and 9 VAC 5-50-260)

3. **Monitoring Devices –**

   a. Each engine-generator set with SCR (EG-1A through EG-14A and EG-1B through EG-14B) shall be equipped with a device to monitor and record the urea injection rate at a frequency of not less than once every fifteen minutes during the operation of each engine-generator set.

   b. Each engine-generator set with SCR (EG-1A through EG-14A and EG-1B through EG-14B) shall be equipped with a device to monitor and record the catalyst bed exhaust temperature at a frequency of not less than once every fifteen minutes during the operation of each engine-generator set.

c. Each engine (EG-1A through EG-14A and EG-1B through EG-14B) shall be equipped with a non-resettable hour meter and a device to monitor and record the engine-generator kilowatt output at a frequency of not less than once every fifteen minutes.

d. Each monitoring device shall be provided with adequate access for inspection and shall be in operation when the engines are operating.

e. Each monitoring device shall be installed, maintained, calibrated and operated in accordance with approved procedures which shall include, as a minimum, the manufacturer's written requirements or recommendations.

Refer to Condition 22 for record keeping requirements to demonstrate compliance with this condition.
(9 VAC 5-80-1180 D)

4. **Monitoring Device Observation** – To ensure proper performance, the monitoring devices used to continuously measure the information required in Condition 3 shall be observed by the permittee during each test firing and at a minimum frequency of once per day during days in which the engine-generator sets are called into service. Refer to Condition 22 for record keeping requirements to demonstrate compliance with this condition.
(9 VAC 5-80-1180 D)

OPERATING LIMITATIONS

5. **Operating Scenarios** – All engine-generator sets shall be operated in a manner consistent with the following modes of operation only:

A. Emergency / Critical Power Generation:

i. In situations that arises from sudden and reasonably unforeseeable events where the primary energy or power source is disrupted or disconnected due to conditions beyond the control of an owner or operator of a facility including:

a. A failure of the electrical grid;

b. On-site disaster or equipment failure; or

c. Public service emergencies such as flood, fire, natural disaster, or severe weather conditions.

ii. For participation in an ISO-declared emergency, where an ISO emergency is:

a. An abnormal system condition requiring manual or automatic action to maintain system frequency, to prevent loss of firm load, equipment damage, or tripping of system elements that could adversely affect the reliability of an electric system or the safety of persons or property;

b. Capacity deficiency or capacity excess conditions;

c. A fuel shortage requiring departure from normal operating procedures in order to minimize the use of such scarce fuel;

d. Abnormal natural events or man-made threats that would require conservative operations to posture the system in a more reliable state; or

e. An abnormal event external to the ISO service territory that may require ISO action.

B. Alternate Power Generation:

i. Voluntarily for the purposes of peak-shaving, demand response, or as part of a power supply arrangement with a power provider, other market participant, or system operator. Operations, as outlined in this subsection, shall be allowed when the engine-generator set is operating at a load level necessary to sustain urea injection.

C. For periodic maintenance, testing, and operational training.

Total annual emissions for all Ashburn campus facilities (ACC 2, ACC 3, ACC 4, ACC 5, ACC 6, and ACC7) shall not exceed the limits stated in Condition GC-1. Total annual emissions for all Ashburn campus facilities (ACC 2, ACC 3, ACC 4, ACC 5, ACC 6, and ACC7) participation in the ELRP shall not exceed the limits stated in Condition GC-2. (9 VAC 5-80-1180 and 9 VAC 5-50-260)

6. **Operating Hours** – In addition to the annual emissions limits contained in Condition 11, each engine-generator set (EG-1A through EG-14A and EG-1B through EG-14B) shall not operate more than 340 hours per year, calculated monthly as the sum of each consecutive 12 month period. Compliance for the consecutive 12 month period shall be demonstrated monthly by adding the total for the most recently completed calendar month to the individual monthly totals for the preceding 11 months. (9 VAC 5-80-1180)

7. **Operation of the Engine-Generator Sets** – The permittee must operate and maintain the engine-generator sets and control devices according to the manufacturer's written instructions or procedures developed by the permittee that are approved by the engine and/or control device manufacturer. In addition, the permittee may only change those settings that are permitted by the manufacturer and do not impact on air emissions. (9 VAC 5-80-1180)

8. **Fuel Specification** – The approved fuel for the engine-generator sets shall be diesel fuel oil that meets the specifications below:

ULTRA LOW SULFUR DIESEL FUEL OIL:

a. Does not exceed the American Society for Testing and Materials (ASTM) specification, D975, for grade ultra low sulfur 2-D or grade 2-D S15, or,

b. Has a maximum sulfur content not to exceed 0.0015% by weight (15 ppm), and either a minimum cetane number of forty or maximum aromatic content of thirty-five volume percent.

Exceedance of these specifications may be considered credible evidence of an exceedance of emission limits. A change in the fuel type or the fuel sulfur content may require a permit to modify and operate.
(9 VAC 5-80-1180 and 9 VAC 5-50-260)

9. **Fuel Certification** – The permittee shall obtain a certification from the fuel supplier with each purchased shipment of diesel fuel oil. Each fuel supplier certification shall include the following:
   a. The name of the fuel supplier;
   b. The date on which the diesel fuel oil was received;
   c. The quantity of diesel fuel oil delivered in the shipment;
   d. A statement that the diesel fuel oil:
      i. Complies with the American Society for Testing and Materials (ASTM) specification, D975, as specified in Condition 8, or
      ii. Has a sulfur content per shipment not to exceed 0.0015% by weight (15 ppm) and either a minimum cetane number of forty or maximum aromatic content of thirty-five percent by volume, or
      iii. Alternatively, the permittee must obtain approval from the Regional Air Compliance Manager of the DEQ's NRO if other documentation will be used to certify the diesel fuel type.

   (9 VAC 5-80-1180)

EMISSION LIMITS

10. **Emission Limits** – Emissions from the operation of each engine-generator set (EG-1A through EG-14A and EG-1B through EG-14B) shall not exceed the limits specified below:

	With SCR operating	W/out SCR operating
Particulate Matter ($PM_{10}/PM_{2.5}$)	0.31 lbs/hr	0.31 lbs/hr
Sulfur Dioxide (SO_2)	0.04 lbs/hr	0.04 lbs/hr
Nitrogen Oxides (as NO_2)	4.25 lbs/hr*	42.46 lbs/hr*
Carbon Monoxide (CO)	4.75 lbs/hr	4.75 lbs/hr
Volatile Organic Compounds (VOC)	1.15 lbs/hr	1.15 lbs/hr

*NO_2 – subject to change based on initial compliance test emission rate determination. If the compliance test shows a lower rate (average of three one-hour test runs x 120%), the facility has the option of using the lower hourly rate by undergoing a permit amendment to incorporate the new lower rate.

Compliance with the hourly nitrogen oxides (as NO_2) and carbon monoxide emission limits shall be demonstrated by stack testing, as stated in Conditions 16 and 19. Compliance with the sulfur dioxide emissions limit shall be based on the fuel sulfur content and the fuel supplier certification, as stated in Condition numbers 8 and 9. Compliance with the other pollutant limits shall be based on the proper operation and maintenance of the diesel engines or by testing, if required.
(9 VAC 5-80-1180 and 9 VAC 5-50-260)

11. **Annual Emission Limits –**

a. Annual Campus-Wide Emission Limits - The annual campus-wide emissions shall be determined by summing the annual emissions from each facility on the Ashburn Campus (ACC 2, ACC 3, ACC 4, ACC 5, ACC 6, and ACC7) to demonstrate compliance with the campus-wide emission limits specified in Conditions GC-1.a and GC-2.

b. ACC6 and ACC7 Annual NOx Emission Limit – The annual NOx emissions for the ACC6 and ACC7 facility shall be determined by summing the annual emissions from each facility (ACC6 and ACC7) to demonstrate compliance with the ACC6 and ACC7 annual NOx emission limit specified in Condition GC-1.b.

c. ACC7 Annual $PM_{10}/PM_{2.5}$ Emission Limit – The annual $PM_{10}/PM_{2.5}$ emissions for the ACC7 facility shall be determined by utilizing the calculation method in Condition 12.b. to demonstrate compliance with the ACC7 annual $PM_{10}/PM_{2.5}$ emission limit specified in Condition GC-1.c.

(9 VAC 5-80-1180 and 9 VAC 5-50-260)

12. **Annual Emissions Calculations –**

a. The total annual emissions of Nitrogen Oxides (as NO_2) from the engine-generator sets shall be calculated monthly as the sum of each consecutive twelve-month period.

Each month's NOx emissions shall be calculated as follows:

NO_x Emissions from engine-generator sets equipped with SCR

(EG-1A through EG-14A and EG-1B through EG-14B) =

{(Total hours of operation of engine-generator sets EG-1A through EG-14A and EG-1B through EG-14B for the current month while SCR is operational x 4.25* lb/hr) ÷ 2000

+

(Total hours of operation of engine-generator sets EG-1A through EG-14A and EG-1B through EG-14B for the current month while SCR is not operating x 42.46 lb/hr) ÷ 2000}

*NO_x – To be verified and subject to change based on initial compliance test emission rate determination. If the compliance test shows a lower rate (average of three one-hour test runs x 120%), the facility has the option of using the lower hourly rate by undergoing a permit amendment to incorporate the new lower rate.

b. The total annual emissions for CO, SO_2, PM_{10}, and VOCs from the diesel engine-generator sets shall be calculated monthly as the sum of each consecutive twelve-month period.

Each month's emissions shall be calculated as follows:

CO = (Total hours of operation of engine-generator sets EG-1A through EG-14A and EG-1B through EG-14B for the current month x 4.75 lb/hr) ÷ 2000

SO_2 = (Total hours of operation of engine-generator sets EG-1A through EG-14A and EG-1B through EG-14B for the current month x 0.04 lb/hr) ÷ 2000

$PM_{10}/PM_{2.5}$ = (Total hours of operation of engine-generator sets EG-1A through EG-14A and EG-1B through EG-14B for the current month x 0.31 lb/hr) ÷ 2000

VOC = (Total hours of operation of engine-generator sets EG-1A through EG-14A and EG-1B through EG-14B for the current month x 1.15 lb/hr) ÷ 2000

(9 VAC 5-80-1180)

13. **Visible Emission Limit** – Visible emissions from the engine-generator sets (EG-1A through EG-14A and EG-1B through EG-14B) shall not exceed five percent opacity except during one six-minute period in any one hour in which visible emissions shall not exceed ten percent opacity as determined by the EPA Method 9 (reference 40 CFR 60, Appendix A). This condition applies at all times except during startup, shutdown, and malfunction.

Visible emissions during startup, shutdown, and malfunction from the engine-generators shall not exceed ten percent opacity except during one six-minute period in any one hour in which visible emissions shall not exceed twenty percent opacity as determined by the EPA Method 9 (reference 40 CFR 60, Appendix A).
(9 VAC 5-80-1180 and 9 VAC 5-50-260)

14. **Emissions Testing** – The twenty-eight diesel engine-generator sets (EG-1A through EG-14A and EG-1B through EG-14B) shall be constructed so as to allow for emissions testing upon reasonable notice at any time, using appropriate methods. This includes constructing the facility/equipment such that volumetric flow rates and pollutant emission rates can be accurately determined by applicable test methods and providing a stack or duct that is free from cyclonic flow. Sampling ports shall be provided when requested and safe sampling platforms and access shall be provided.
(9 VAC 5-50-30 F and 9 VAC 5-80-1180)

INITIAL COMPLIANCE DETERMINATION

15. **Testing Verification Meeting** – The permittee shall arrange to meet with the Regional Air Compliance Manager of the DEQ's to discuss the stack testing requirements per Condition 16.a, portable analyzer testing per Condition 16.b, and the annual performance assessment

testing per Condition 18. The meeting shall take place prior to the submittal of the final test protocol required by Condition 16.a.iv, and is required in order for the protocol to be accepted.
(9 VAC 5-50-30 and 9 VAC 5-80-1200)

16. **Performance Testing –**

a. **Stack Test:** Initial performance tests shall be conducted for nitrogen oxides (as NO_2) and carbon monoxide on five (5) of the twenty-eight (28) engine-generator sets (EG-1A through EG-14A and EG-1B through EG-14B) utilizing the appropriate EPA reference methods to determine compliance with the emission limits in Condition 10.

i. NO_x and CO emissions testing from the selected engine-generator sets shall consist of three one-hour test runs. The average of the three runs shall be reported as the short-term emissions for each engine-generator set.

ii. Testing shall be performed on the exhaust stack of the engine-generator sets to demonstrate compliance with the NOx and CO emission limits specified in Condition 10, with the SCR operational. Testing shall be conducted with the engine operating at >90% capacity, unless multiple load band testing is approved by DEQ during the Testing Verification Meeting required by Condition 15. The results of the testing shall be used in determining compliance.

iii. The testing shall be performed within sixty days after achieving maximum production rate but in no event later than 180 days after initial startup of each piece of equipment subject to testing. Testing shall be conducted, reported, and the data reduced as set forth in 9 VAC 5-50-30.

iv. The details of the testing are to be arranged with the Regional Air Compliance Manager of the DEQ's NRO. The permittee shall submit two copies, one paper copy and one on removable electronic media, of the test protocol to the Regional Air Compliance Manager of the DEQ's NRO and one paper copy to the Regional Air Permit Manger of the DEQ's NRO at least thirty days prior to testing.

v. Should conditions occur which would require rescheduling the testing, the permittee shall notify the Regional Air Compliance Manager of the DEQ's NRO in writing, within seven days of the scheduled test date or as soon as the rescheduling is deemed necessary. In any case the stack testing shall be rescheduled within thirty days.

vi. Rescheduled testing shall be conducted under the same conditions as the initial performance tests or other condition as approved in writing from the Regional Air Compliance Manager of the DEQ's NRO.

Two copies, one paper copy and one on removable electronic media, of the test results shall be submitted to the Regional Air Compliance Manager of the DEQ's NRO and one paper copy to the Regional Air Permit Manager of the DEQ's NRO within forty-five days after test completion and shall conform to the test report format enclosed with this permit.

b. **Initial Portable Analyzer Test:** An initial portable analyzer test shall be performed in conjunction with the initial performance testing for the engine-generators tested to establish a correlation between the stack test results and the portable analyzer results,

for use in the annual performance assessment required by Condition 18. The procedure for the initial portable analyzer testing and the correlation determination shall be submitted in conjunction with the initial stack test protocol and agreed upon by the Regional Air Compliance Manager of the DEQ's NRO.

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

17. **Initial Visible Emissions Evaluation** – Visual emission evaluations (VEE) in accordance with 40 CFR 60, Appendix A, Reference Method 9 shall be conducted by the permittee on the units (EG-1A through EG-14A and EG-1B through EG-14B) selected for initial stack testing in Condition 16.a.

    a. Testing shall be performed on the exhaust stack of the engine and in conjunction with the performance testing required by Condition 16.a.

    b. Each test shall consist of thirty sets of twenty four consecutive observations (at fifteen second intervals) to yield a six minute average. The details of the tests are to be arranged with the Regional Air Compliance Manager of the DEQ's NRO.

    c. The details of the tests are to be arranged with the Regional Air Compliance Manager during the Testing Verification Meeting required by Condition 15. The permittee shall submit a test protocol in conjunction with the initial stack test protocol as required by Condition 16.a.iv at least thirty days prior to testing.

    d. The evaluation shall be performed within sixty days after achieving maximum production rate at which each engine-generator set will be operated, but in no event later than 180 days after start-up of each permitted engine-generator set.

    e. Should conditions occur which would require rescheduling the testing, the permittee shall notify the Regional Air Compliance Manager of the DEQ's NRO in writing, within seven days of the scheduled test date or as soon as the rescheduling is deemed necessary. In any case the visible emissions testing shall be rescheduled within thirty days.

    f. Rescheduled testing shall be conducted under the same conditions (as possible) as the initial performance tests.

    g. Two copies, one paper copy and one on removable electronic media, of the test result shall be submitted to the Regional Air Compliance Manager of the DEQ's NRO within forty-five days after test completion and shall conform to the test report format enclosed with this permit.

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

CONTINUED COMPLIANCE VERIFICATION

18. **Annual Performance Assessment –**

a. Engines selected for stack testing:

i. Following the initial portable analyzer test, subsequent testing shall be conducted in a manner that each engine-generator set is tested, at minimum, once every four years. The portable analyzer testing shall be performed at a comparable load at which the engine-generator set operated during the stack test performance demonstration. Details of the test shall be arranged with the Regional Air Compliance Manager during the Testing Verification Meeting required by Condition 15. The procedure for the portable analyzer testing shall be submitted in conjunction with the initial stack test protocol. Results of the testing shall be maintained on-site in accordance with Condition 22.g.

ii. Additional nitrogen oxide (as NO_2) stack testing may be required if the difference between the initial NOx emission concentration established for the portable analyzer during the performance demonstration per Condition 15.b, and the NOx emission concentration determined during the annual portable analyzer test per Condition 17.a.i is equal to or greater than ten percent (10%).

b. Engines not selected for stack testing:

i. Within the first twelve months, subsequent to the startup of the unit, and annually thereafter, the permittee shall perform a portable analyzer test to determine the nitrogen oxide (as NO_2) emission concentration for, at minimum, twenty-five percent of the installed engine-generator sets at ACC-7. The testing shall be conducted in a manner that each engine-generator set is tested, at a minimum, once every four years. Details of the test shall be arranged with the Regional Air Compliance Manager during the Testing Verification Meeting required by Condition 15. The procedure for the portable analyzer testing, including proposed operating load, shall be submitted in conjunction with the initial stack test protocol. Results of the testing shall be maintained on-site in accordance with Condition 22.f.

c. Immediately prior to conducting the portable analyzer test, the portable analyzer shall be calibrated using EPA Protocol 1 gases.

i. Calibrations shall be accurate to within five parts per million (ppm) of the sample gas.

ii. The permittee shall maintain on-site records of annual calibration testing, calibration gas certifications, and any corrective action that may have been taken.

(9 VAC 5-80-1180)

19. **Stack Tests** – Upon request by the DEQ, the permittee shall conduct additional performance testing to demonstrate compliance with the emission limits contained in this permit. The details of the tests shall be arranged with the Regional Air Compliance Manager of the DEQ's NRO.
(9 VAC 5-80-1200 and 9 VAC 5-50-30 G)

20. **Visible Emissions Evaluation (VEE)** – Upon request by the DEQ, the permittee shall conduct an additional visible emission evaluation to demonstrate compliance with the visible emission limits contained in this permit. The details of the tests shall be arranged with the Regional Air Compliance Manager of the DEQ's NRO.
(9 VAC 5-80-1200 and 9 VAC 5-50-30 G)

21. **SCR Compliance Demonstration** – The permittee shall conduct testing for NOx (as NO_2) on the engine-generator sets equipped with SCR within sixty days following each change or regeneration of the catalyst in the SCR system by either stack testing or by use of the portable analyzer. This testing shall be arranged with the Regional Air Compliance Manager of the DEQ's NRO.
(9 VAC 5-50-30 and 9 VAC 5-80-1200)

RECORDS

22. **On Site Records** – The permittee shall maintain records of emission data and operating parameters as necessary to demonstrate compliance with this permit. The content and format of such records shall be arranged with the Regional Air Compliance Manager of the DEQ's NRO.

    These records shall include, but are not limited to:

    a. Monthly hours of operation of the engine-generator sets (EG-1A through EG-14A and EG-1B through EG-14B) with and without the SCR operational, the corresponding date, generator load, and the reason operated as defined in Condition 5.

    b. Monthly and annual emissions calculations for NO_X (as NO_2), CO, SO2, VOC, and $PM_{10}/PM_{2.5}$ emissions from the engine-generator sets (EG-1A through EG-14A and EG-1B through EG-14B) using the calculation methods in Condition 11 to verify compliance with the ton/yr emissions limitations referenced Conditions GC-1.a. and GC-1.c.

    c. Monthly and annual emissions calculations for NO_X (as NO_2) emissions from the engine-generator sets at ACC6 and ACC7 to verify compliance with the ton/yr emission limitation referenced in Condition GC-1.b.

    d. A NOx Urea Table (Urea Load Map) for each engine-generator set, (EG-1A through EG-14A and EG-1B through EG-14B), equipped with SCR to verify that the SCR is operating as specified by the manufacturer. Each NOx Urea Table shall include the engine load, temperature after the catalyst, NOx concentration before and after the catalyst, the urea consumption rate, and the catalyst efficiency.

    e. All fuel supplier certifications per Condition 9.

    f. All VEE, emission stack test reports, portable analyzer calibrations, and annual performance assessment results for each engine-generator set.

g. A copy of the maintenance schedule and records of scheduled and unscheduled maintenance in accordance with Condition GC-6.

h. Logs of monitoring device observations in accordance with Condition 4.

i. Operator training in accordance with Condition GC-6.

j. Monthly and annual emissions calculations for NO_X (as NO_2) from the engine-generator sets (EG-1A through EG-14A and EG-1B through EG-14B) using the calculation methods in Condition 11 to verify compliance with the annual emissions limitations in Condition GC-2.

Compliance for each consecutive twelve-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 eleven months.

These records shall be available for inspection by the DEQ and shall be current for the most recent five years.
(9 VAC 5-80-1180 and 9 VAC 5-50-50)

NOTIFICATIONS

23. **Initial Notifications** – The permittee shall furnish written notification to the Regional Air Compliance Manager of the DEQ's NRO at the address listed in Condition GC-10 of:

a. The actual date on which construction of each engine-generator set commenced within thirty days after such date. The notification must include the following:

i. Name and address of the permittee;
ii. The address of the affected source;
iii. Engine information including make, model, engine family, serial number, model year, maximum engine power and engine displacement;
iv. Emission control equipment; and
v. Fuel used.

b. The actual start-up date of each engine-generator set within fifteen days after such date. The actual start-up date shall be the date on which each engine completes manufacturer's trials, but shall be no later than thirty days after start-up for manufacturer's trials.

c. The anticipated date of performance tests of each diesel engine-generator set postmarked at least thirty days prior to such date.

(9 VAC 5-50-50 and 9 VAC 5-80-1180)

GENERAL

24. **Permit Invalidation** – Section VII of this permit that pertains to construction of the engine-generator sets, EG-1A through EG-14A and EG-1B through EG-14B at ACC 7 (Alshain), shall become invalid, unless an extension is granted by the DEQ, if:

    a. A program of continuous construction is not commenced within eighteen months from the date of this permit.

    b. A program of construction is discontinued for a period of eighteen months or more.

    (9 VAC 5-80-1210)

GC. CAMPUS-WIDE and GENERAL CONDITIONS

CAMPUS-WIDE CONDITIONS

1. **Campus-Wide Annual Emission Limits –**

   a. **Campus-Wide Annual Emission Limits** – The annual campus-wide emissions are determined by summing the annual emissions from each facility on the Ashburn Campus (ACC2, ACC3, ACC4, ACC5, ACC6, and ACC7).

	TPY
Nitrogen Oxides (as NO_2)	138.8
Carbon Monoxide (CO)	99.4
Particulate Matter (PM_{10})	10.0
Sulfur Dioxide (SO_2)	5.0
Volatile Organic Compounds (VOC)	24.4

   b. **ACC6 and ACC7 Annual Emission Limits** – The annual emissions of ACC6 and ACC7 are determined by summing the annual emissions from the ACC6 facility and ACC7 facility on the Ashburn Campus and shall not exceed:

	TPY
Nitrogen Oxides (as NO_2)	39.4

   c. **ACC7 Annual Emission Limits** – The annual emissions of the ACC7 facility on the Ashburn Campus shall not exceed:

	TPY
Particulate Matter ($PM_{10}/PM_{2.5}$)	1.48

   The total annual emissions for each pollutant from the diesel engine-generator sets shall be calculated monthly as the sum of each consecutive twelve-month period.
   (9 VAC 5-80-1180 and 9 VAC 5-50-260)

2. **Campus-Wide Emergency Load Response Program Annual Emission Limits** – The annual campus-wide NOx emissions due to participation in the Emergency Load Response Program (ELRP) are determined by summing the annual emissions due to participation in the ELRP from each facility on the Ashburn Campus (ACC2, ACC3, ACC4, ACC5, ACC6, and ACC7) and shall not exceed:

	TPY
Nitrogen Oxides (as NO_2)	39.0

   The total annual emissions for NOx from the diesel engine-generator sets shall be calculated monthly as the sum of each consecutive twelve-month period.
   (9 VAC 5-80-1180 and 9 VAC 5-50-260)

GENERAL CONDITIONS

3. **Permit Suspension/Revocation** – This permit may be suspended or revoked if the permittee:

   a. Knowingly makes material misstatements in the permit application or any amendments to it;

   b. Fails to comply with the conditions of this permit;

   c. Fails to comply with any emission standards applicable to a permitted an emissions unit, included in this permit;

   d. Causes emissions from the stationary source which result in violations of , or interfere with the attainment and maintenance of, any ambient air quality standard; or

   e. Fails to operate in conformance with any applicable control strategy, including any emission standards or emission limitations, in the State Implementation Plan in effect at the time an application for this permit is submitted.

   (9 VAC 5-80-1210 F)

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

   a. To enter upon the permittee's premises on which the facility is located or in which any records are required to be kept under the terms and conditions of this permit;

   b. To have access to and copy at reasonable times any records required to be kept under the terms and conditions of this permit or the State Air Pollution Control Board Regulations;

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

   d. To sample or test at reasonable times.

   For purposes of this condition, the time for inspection shall be deemed reasonable during regular business hours or whenever the facility is in operation. Nothing contained herein shall make an inspection time unreasonable during an emergency.
   (9 VAC 5-170-130 and 9 VAC 5-80-1180)

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

   The permittee shall take the following measures in order to minimize the duration and frequency of excess emissions:

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

   b. Maintain an inventory of spare parts.

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

d. Train operators in the proper operation of all such equipment and familiarize the operators with the written operating procedures, 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.
(9 VAC 5-50-20 E and 9 VAC 5-80-1180 D)

6. **Record of Malfunctions** – The permittee shall maintain records of the occurrence and duration of any bypass, malfunction, shutdown or failure of the facility or its associated air pollution control equipment that results in excess emissions for more than one hour. Records shall include the date, time, duration, description (emission unit, pollutant affected, cause), corrective action, preventive measures taken and name of person generating the record.
(9VAC 5-20-180 J and 9 VAC 5-80-1180 D)

7. **Notification for Facility or Control Equipment Malfunction** – The permittee shall furnish notification to the Regional Air Compliance Manager of the DEQ's NRO at the address listed in Condition GC-10 of malfunctions of the affected facility or related air pollution control equipment that may cause excess emissions for more than one hour, by facsimile transmission, telephone, telegraph, or email. Such notification shall be made as soon as practicable but no later than four daytime business hours after the malfunction is discovered. The permittee shall provide a written statement giving all pertinent facts, including the estimated duration of the breakdown, within two weeks of discovery of the malfunction. When the condition causing the failure or malfunction has been corrected and the equipment is again in operation, the permittee shall notify the Regional Air Compliance Manager of the DEQ's NRO.
(9 VAC 5-20-180 C and 9 VAC 5-80-1180)

8. **Notification for Control Equipment Maintenance** – The permittee shall furnish notification to the Regional Air Compliance Manager of the DEQ's NRO at the address listed in Condition GC-10 of the intention to shut down or bypass, or both, air pollution control equipment for necessary scheduled maintenance, which results in excess emissions for more than one hour, at least twenty-four hours prior to the shutdown. The notification shall include, but is not limited to, the following information:

   a. Identification of the air pollution control equipment to be taken out of service, as well as its location and its registration number;

   b. The expected length of time that the air pollution control equipment will be out of service;

   c. The nature and quantity of emissions of air pollutants likely to occur during the shut-down period;

d. Measures that will be taken to minimize the length of the shut-down or to negate the effect of the outage.

(9 VAC 5-20-180B)

9. **Violation of Ambient Air Quality Standard** – The permittee shall, upon request of the DEQ, reduce the level of operation or shut down a facility, as necessary to avoid violating any primary ambient air quality standard and shall not return to normal operation until such time as the ambient air quality standard will not be violated.
(9 VAC 5-20-180 I and 9 VAC 5-80-1180)

10. **Change of Ownership** – In the case of a transfer of ownership of a stationary source, the new owner shall abide by any current permit issued to the previous owner. The new owner shall notify the Regional Air Compliance Manager of the DEQ's NRO at the following address of the change of ownership within thirty days of the transfer.

    Regional Air Compliance Manager
    Department of Environmental Quality
    Northern Regional Office
    13901 Crown Court
    Woodbridge, VA 22193

    (9 VAC 5-80-1240)

11. **Permit Copy** – The permittee shall keep a copy of this permit on the premises of the facility to which it applies.
(9 VAC 5-80-1180)

SOURCE TESTING REPORT FORMAT

Report Cover

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

Certification

1. Signed by team leader/certified observer (include certification date)
2. Signed by responsible company official
3. *Signed by reviewer

Copy of approved test protocol

Summary

1. Reason for testing
2. Test dates
3. Identification of unit tested & the maximum rated capacity
4. *For each emission unit, a table showing:
   a. Operating rate
   b. Test Methods
   c. Pollutants tested
   d. Test results for each run and the run average
   e. Pollutant standard or limit
5. Summarized process and control equipment data for each run and the average, as required by the test protocol
6. A statement that test was conducted in accordance with the test protocol or identification & discussion of deviations, including the likely impact on results
7. Any other important information

Source Operation

1. Description of process and control devices
2. Process and control equipment flow diagram
3. Sampling port location and dimensioned cross section Attached protocol includes: sketch of stack (elevation view) showing sampling port locations, upstream and downstream flow disturbances and their distances from ports; and a sketch of stack (plan view) showing sampling ports, ducts entering the stack and stack diameter or dimensions

Test Results

1. Detailed test results for each run
2. *Sample calculations
3. *Description of collected samples, to include audits when applicable

Appendix

1. *Raw production data
2. *Raw field data
3. *Laboratory reports
4. *Chain of custody records for lab samples
5. *Calibration procedures and results
6. Project participants and titles
7. Observers' names (industry and agency)
8. Related correspondence
9. Standard procedures

* Not applicable to visible emission evaluation