Commonwealth of Virginia

VIRGINIA DEPARTMENT OF ENVIRONMENTAL QUALITY

www.deq.virginia.gov

Stefanie K. Taillon
Acting Secretary of Natural and Historic Resources

Michael S. Rolband, PE, PWD, PWS Emeritus
Director

January 30, 2025

Mr. Robb Truedinger
Authorized Representative
c/o Mr. Daniel Glazer
Amazon Data Services, Inc.
13200 Woodland Park Road
Herndon, VA 20171

Location: Loudoun County
Registration No.: 73860

Dear Mr. Truedinger:

Attached is a permit to construct and operate emissions units at a data center in accordance with the provisions of the Virginia State Air Pollution Control Board Regulations for the Control and Abatement of Air Pollution. This permit document combines the terms and conditions from and supersedes your permit document dated May 10, 2024.

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 January 29, 2025.

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

This permit approval to construct and operate shall not relieve Amazon Data Services, Inc. of the responsibility to comply with all other local, state, and federal permit regulations.

The proposed diesel fired engine gen-set sets may be subject to 40 CFR 63, Maximum Achievable Control Technology, (MACT) Subpart ZZZZ and 40 CFR 60, New Source Performance Standard (NSPS), Subpart IIII. Virginia has not accepted delegation of these rules. In summary, the units may be required to comply with certain federal emission standards and operating limitations. The Department of Environmental Quality (DEQ) advises you to review the referenced MACT and NSPS to ensure compliance with applicable emission and operational limitations. As the owner/operator you may be also responsible for any monitoring, notification, reporting and recordkeeping requirements of the MACT and NSPS. Notifications shall only be sent to EPA, Region III.

To review any federal rules referenced in the above paragraph or in the attached permit, the US Government Publishing Office maintains the text of these rules at **www.ecfr.gov**, Title 40, Part 60 and 63.

The Board's Regulations as contained in Title 9 of the Virginia Administrative Code 5-170-200 provide that you may request a formal hearing from this case decision by filing a petition with the Board within 30 days after this case decision notice was mailed or delivered to you. Please consult the relevant regulations for additional requirements for such requests.

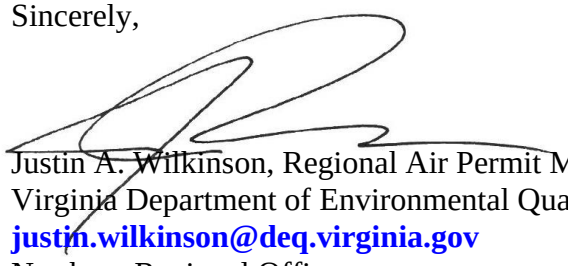
As provided by Rule 2A:2 of the Supreme Court of Virginia, you have 30 days from the date you actually received this permit or the date on which it was mailed to you, whichever occurred first, within which to initiate an appeal of this decision by filing a Notice of Appeal with:

Michael S. Rolband, 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 Ms. Katie DeVoss at (571) 866-6090 or **katie.devoss@deq.virginia.gov**.

Sincerely,



Justin A. Wilkinson, Regional Air Permit Manager
Virginia Department of Environmental Quality
justin.wilkinson@deq.virginia.gov
Northern Regional Office
13901 Crown Court, Woodbridge, VA 22193
(703) 583-3800

JAW/KD/73860 mNSR (2025-01-30)
Attachments: Permit

Commonwealth of Virginia

VIRGINIA DEPARTMENT OF ENVIRONMENTAL QUALITY

www.deq.virginia.gov

Stefanie K. Taillon
Acting Secretary of Natural and Historic Resources

Michael S. Rolband, PE, PWD, PWS Emeritus
Director

STATIONARY SOURCE PERMIT TO CONSTRUCT AND OPERATE

This permit document supersedes your permit document dated May 10, 2024.

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

Amazon Data Services, Inc.
13200 Woodland Park Road
Herndon, VA 20171
Registration No.: 73860

is authorized to construct and operate

diesel engine gen-sets

located at

IAD-12 at 22630 Dulles Summit Court,
IAD-15 at 22631 Dulles Summit Court,
IAD-16 at 22651 Dulles Summit Court,
IAD-76 at 22520 Randolph Drive,
IAD-230 at 22665 Dulles Summit Court
Sterling, VA 20166

in accordance with the Conditions of this permit.

Approved on January 30, 2025.

Justin A. Wilkinson
Regional Air Permit Manager

Permit consists of 27 pages.
Permit Conditions 1 to 39.
Appendix A – Engine Control Module Data Verification Procedure
Appendix B – Source Testing Report Format

INTRODUCTION

This permit document is based on and combines permit terms and conditions in accordance with 9VAC5-80-1255 from the following permit approvals and the respective permit applications:

- Minor NSR Permit dated January 30, 2025, based on the permit application dated July 19, 2024, and supplemental information dated September 3, 2024, and January 29, 2025.

- Minor NSR Permit dated May 10, 2024 based on the permit application dated November 29, 2023, and supplemental information dated December 29, 2023, March 19, 2024, March 21, 2024, April 5, 2024 and April 9, 2024.

- Minor NSR Permit dated February 9, 2022 based on the permit application dated November 9, 2021, February 3, 2016, August 12, 2015, October 9, 2014, March 22, 2013, December 17, 2012, March 6, 2012, March 1, 2012, January 16, 2012, January 18, 2012, December 8, 2011, June 3, 2011, February 4, 2011 and, and a letter request dated July 7, 2011, and supplemental information dated January 28, 2022, May 9, 2013, May 2, 2013 and April 29, 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. In addition, this facility may be subject to additional applicable requirements not listed in this permit.

Words or terms used in this permit shall have meanings as provided in 9VAC5-80-1110 (definitions) and 9VAC5-10-20 of the State Air Pollution Control Board Regulations for the Control and Abatement of Air Pollution. The regulatory reference or authority for each condition is listed in parentheses () after each condition. The enabling permit program, or permit programs is provided below each permit condition in the regulatory authority parenthetical as follows: 9VAC5-80-850 for Article 5, 9VAC5-80-1180 for Article 6, 9VAC5-80-1985 for Article 8, and 9VAC5-80-2050 for Article 9. The most recent effective date for a condition is listed in brackets [ ] after each regulatory reference. When identical conditions on approval for one or more emission units are combined, the listed effective date does not alter the prior effective date(s) for any such conditions as issued in a previous permit action. In accordance with 9VAC5-80-1120F, any condition not marked as state-only enforceable (SOE) is state and federally enforceable.

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 9VAC5-170-60 of the Board's Regulations. Information provided to federal officials is subject to appropriate federal law and regulations governing confidentiality of such information.

Equipment List –

Equipment to be Constructed:					
Ref. No(s).	**Equipment Description**	**Rated Capacity**	**Add-on Controls**	**Delegated Federal Requirements**	**Original Permit Date**
63 through 88	(26) Caterpillar Model 3516E Non-Emergency Engine gen-sets	2,750 ekW 4,043 bhp (each)	Selective Catalytic Reduction (SCR) and Catalyzed Diesel Particulate Filter (cDPF)*	None	January 30, 2025
89	One (1) Caterpillar Model C18 Emergency Engine gen-set	750 ekW 1,112 bhp	None	None	January 30, 2025

* Caterpillar (5X4X3 SCR + DPF System, #547-2580), Safety Power (9550, H3C29), or Miratech (#M3Z-72-63-J-23060132)

Equipment previously permitted:				
Ref. No(s).	**Equipment Description**	**Rated Capacity**	**Delegated Federal Requirements**	**Original Permit Date**
1	One (1) Caterpillar Model 3516C Emergency Engine gen-set	2,000 ekW 2,937 bhp	None	August 9, 2011
2 through 5	Four (4) Caterpillar Model C175-16 Emergency Engine gen-sets	3,000 ekW 4,423 bhp (each)	None	April 21, 2011
6 through 13	Eight (8) Caterpillar Model 3516C-HD Emergency Engine gen-sets	2,500 ekW 3,604 bhp (each)	None	January 26, 2012
14 and 15	Two (2) Caterpillar Model 3516C-HD Emergency Engine gen-sets	2,500 ekW 3,604 bhp (each)	None	March 23, 2012
16 and 17	Two (2) Caterpillar Model 3516C-HD Diesel Engine gen-sets	2,500 ekW 3,634 bhp (each)	None	February 7, 2013

18 and 19	Two (2) MTU Model 16V4000G83L Emergency Engine gen-sets	2,500 ekW 3,681 bhp (each)	None	February 7, 2013
20 through 22	Three (3) Caterpillar Model 3516C-HD Emergency Engine gen-sets	2,500 ekW 3,634 bhp (each)	None	February 24, 2016
23	One (1) Caterpillar Model 3516C-HD Emergency Engine gen-set	2,500 ekW 3,634 bhp	None	February 7, 2013
24	One (1) MTU Model 16V4000G94S Emergency Engine gen-set	2,500 ekW 3,617 bhp	None	February 9, 2022
25	One (1) MTU Model 16V4000G83L Emergency Engine gen-set	2,500 ekW 3,681 bhp	None	February 7, 2013
26 through 28	Three (3) Caterpillar Model 3516C-HD Emergency Engine gen-sets	2,500 ekW 3,634 bhp (each)	None	February 7, 2013
29 through 35	Seven (7) Caterpillar Model 3516C-HD Emergency Engine gen-sets	2,500 ekW 3,634 bhp (each)	None	February 7, 2013
36 through 38	Three (3) Caterpillar Model 3516C-HD Emergency Engine gen-sets	2,500 ekW 3,634 bhp (each)	None	February 7, 2013
39 through 44	Six (6) Caterpillar Model 3516C-HD Emergency Engine gen-sets	2,500 ekW 3,634 bhp (each)	None	February 7, 2013
47 through 60	Fourteen (14) Caterpillar Model 3516C-HD Emergency Engine gen-sets	2,500 ekW 3,634 bhp (each)	None	December 15, 2015
45, 46, 61 and 62	Four (4) Caterpillar Model 3516C-HD Emergency Engine gen-sets	2,500 ekW 3,634 bhp	None	May 10, 2024
T1 through T4	Four (4) Caterpillar model 3516C Emergency Engine gen-sets	2,000 kW 2,937 bhp (each)	None	April 21, 2011
T5 and T6	Two (2) Caterpillar Model 3516C-HD Emergency Engine gen-sets	2000 ekW 2937 bhp (each)	None	December 15, 2015

The facility previously operated a different unit using Ref. No. 24, which was removed from the site in 2021. The removed unit was permitted under a mNSR permit dated February 7, 2013 for an emergency engine gen-set (MTU Model 16V4000G83L rated at 2,500 ekW) in building IAD-15.

Specifications included in the above tables are for informational purposes only and do not form enforceable terms or conditions of the permit.

PROCESS REQUIREMENTS

1. **Emission Controls –** Emissions from the emergency diesel engine gen-sets shall be controlled by the following:

   a. Nitrogen oxides (NO_X) emissions from the emergency diesel engine gen-sets (Ref. Nos. 1 through 44, and 47 through 60, and T1 through T6) shall be controlled by electronic fuel injection and turbocharged engines. The permittee shall maintain documentation that demonstrates the control devices have been installed on the engine gen-set sets.

   b. Nitrogen oxides (NO_X) emissions from the emergency diesel engine gen-sets (Ref. Nos. 45, 46, 61, 62, and 89) shall be controlled by engine design.

   c. Carbon monoxide (CO), particulate matter (PM_{10}/$PM_{2.5}$), volatile organic compounds (VOCs) and visible emissions from the emergency diesel engine gen-sets (Ref. Nos. 1 through 62, 89, and T1 through T6) shall be controlled by the use of good operating practices and performing maintenance in accordance with the manufacturer recommendations. In addition, the permittee may only change those settings that are permitted by the manufacturer and do not degrade the air emissions from the emergency diesel engine gen-sets.

   (9VAC5-80-1180 and 9VAC5-50-260) [1/30/2025]

2. **Emission Controls (SCR) –** Nitrogen oxide (NO_X) emissions from the non-emergency diesel engine gen-sets (Ref. Nos. 63 through 88) shall be controlled by closed loop Selective Catalytic Reduction (SCR). Each SCR system shall be equipped with a temperature probe to continuously monitor the exhaust temperature at the outlet of the entire SCR+cDPF emissions control system while the engine gen-set is operational. Engine exhaust gas shall be treated with urea when the catalyst bed exhaust temperature of 572°F is achieved, except for periods of start-up, shutdown, or malfunction.

   The permittee shall operate the engine gen-set and SCR such that the exhaust temperature at the outlet of the entire SCR+cDPF emissions control system does not exceed 1,022°F. The SCR shall be provided with adequate access for inspection and shall be in operation when the engine gen-sets are operating as stated above.
   (9VAC5-80-1180 and 9VAC5-50-260) [1/30/2025]

3. **Emission Controls (cDPF) –** Particulate matter (PM_{10} and $PM_{2.5}$), carbon monoxide (CO), and volatile organic compounds (VOC) emissions from the non-emergency diesel engine gen-sets (Ref. Nos. 63 through 88) shall be controlled by a catalyzed Diesel Particulate Filter (cDPF). The cDPF shall be provided with adequate access for inspection and shall be in operation when the non-emergency diesel engine gen-sets are operating.
   (9VAC5-80-1180 and 9VAC5-50-260) [1/30/2025]

4. **Monitoring Devices (SCR and cDPF) –** Each non-emergency diesel engine gen-set (Ref. Nos. 63 through 88) shall be equipped with devices to continuously measure and record the following:

   a. The SCR exhaust temperature at the outlet of the entire SCR+cDPF emissions control system. The information shall be recorded at a minimum frequency of once every fifteen minutes and correlated to run date and engine operating hours.

   b. The NO_X emissions measured after the catalyst, expressed in ppm. The information shall be recorded at a minimum frequency of once every fifteen minutes and correlated to run date and engine operating hours.

   c. The differential pressure drop across the entire SCR+cDPF emissions control system to demonstrate proper function. The backpressure monitor shall notify the permittee when the high backpressure limit of the engine is approached. The emissions control system shall be observed by the permittee with a frequency as recommended by the process/control equipment manufacturer.

   d. The cDPF exhaust temperature at the inlet of the entire SCR+cDPF emissions control system. The information shall be recorded at a minimum frequency of once every fifteen minutes and correlated to run date and engine operating hours.

   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. Each monitoring device shall be provided with adequate access for inspection and shall be in operation when the SCR and cDPF are operating.
   (9VAC5-80-1180 D) [1/30/2025]

5. **Monitoring –**

   a. <u>Fuel Flow</u>: Each diesel engine gen-set (Ref. Nos. 1 through 89 and T1 through T6) shall be equipped with a device to continuously measure and record individual fuel consumption (in gallons).

   b. <u>Engine Operating Hours</u>: Each diesel engine gen-set (Ref. Nos. 1 through 89 and T1 through T6) shall be equipped with a non-resettable hour meter which measures the duration of time that an engine is operated.

   Each monitoring device (as required in a. and b. above) shall be observed by the permittee with a frequency of not less than once each day the emergency diesel engine gen-set is operated. The permittee shall keep a log of these observations.

Each monitoring device shall be installed, maintained, calibrated (as appropriate), and operated in accordance with approved procedures which shall include, as a minimum, the manufacturer's written requirements or recommendations. The details of the monitoring device calibrations are to be arranged with the Regional Air Compliance Manager of the DEQ's Northern Regional Office (NRO).

Each monitoring device shall be provided with adequate access for inspection and shall be in operation when the engines are operating.
(9VAC5-80-1180 D and 9VAC5-50-20 C) [1/30/2025]

OPERATING LIMITATIONS

6. **Emergency Power Generation –** The emergency diesel engine gen-sets (Ref. Nos. 1 through 62, 89, and T1 through T6) shall only be operated in the following modes:

   a. In situations that arise 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:

      i. A failure of the electrical grid;

      ii. On-site disaster or equipment failure; or

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

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

      i. 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;

      ii. Capacity deficiency or capacity excess conditions;

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

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

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

c. For scheduled maintenance checks and readiness testing (Scheduled MCRT).

d. For unscheduled maintenance, testing, and operational training.

e. For the integration operational period, which is the period of time beginning with the first time the affected unit is started on-site and ending when the affected unit is fully integrated with the sources electrical system.

(9VAC5-80-1180) [1/30/2025]

7. **Operation of the Engine Gen-Sets –** The permittee shall operate and maintain each diesel engine gen-set (Ref. Nos. 24, 45, 46, and 61 through 89) and control device according to the manufacturer's written instructions or procedures developed by the permittee that are approved by the engine manufacturer. In addition, the permittee may only change those settings that are permitted by the manufacturer and do not increase air emissions. (9VAC5-80-1180) [1/30/2025]

8. **Operating Limitations (Ozone Season) –** No diesel engine gen-set (Ref. Nos. 24, 45, 46, and 61 through 89) shall be operated for scheduled maintenance checks and readiness testing (Scheduled MCRT), stack testing, or operational training (that involves fuel combustion) between the hours of 7 a.m. to 5 p.m. any day during May 1 through September 30. The permittee may petition the Regional Air Compliance Manager of DEQ's NRO, for exceptions to this requirement, with approvals made on a case-by-case basis.
(9VAC5-80-1180) [1/30/2025]

9. **Operating Limitations (Ozone Season) – Integration Operational Period –** During the integration operational period of each diesel engine gen-set (Ref. Nos. 24, 45, 46, and 61 through 89), any operation of the unit (that involves fuel combustion) between the hours of 7 a.m. to 5 p.m. any day during the ozone season of May 1 through September 30 shall only occur if the forecast Air Quality Index (AQI) for ozone as published on the AirNow website (**https://airnow.gov**) for Northern Virginia for that day is less than or equal to 100. In the event that AirNow-EnviroFlash (**www.enviroflash.info**) issues an Air Alert for Northern Virginia for a day which the forecasted AQI for ozone was less than or equal to 100, operation of each unit (which involves fuel combustion) shall be minimized to the maximum extent practical.
(9VAC 5-80-1180) [1/30/2025]

10. **Operating Hours –** Each emergency diesel engine gen-set (Ref. Nos. 24, 45, 46, 61, and 62) shall not operate more than 32 hours per year for scheduled maintenance checks and readiness testing (Scheduled MCRT).

    The emergency diesel engine gen-set (Ref. No. 89) shall not operate more than 35 hours per year for scheduled maintenance checks and readiness testing (Scheduled MCRT).

    Each individual emergency diesel engine gen-set (Ref. Nos. 1 through 62, 89, and T1 through T6) shall not operate more than 500 hours per year for all purposes (as provided in Condition 6).

    The annual limits for hours of operation shall be calculated monthly as the sum of each consecutive 12-month period. Compliance for the consecutive 12-month period shall be demonstrated monthly by adding the total for the most recently completed calendar month to the individual monthly totals for the preceding 11 months.
    (9VAC5-80-1180) [1/30/2025]

11. **Fuel Specification –** The approved fuel for the diesel engine gen-sets (Ref. Nos. 1 through 89 and T1 through T6) is diesel fuel oil. For the purposes of this permit document, diesel fuel oil is defined as ultra-low sulfur diesel fuel oil (ULSD), renewable diesel, or a blend of these fuels, and shall meet the specifications below:

    DIESEL FUEL OIL:

    a. Does not exceed the American Society for Testing and Materials (ASTM) specification, D975 grade 1-D S15 or 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.
    (9VAC5-80-1180 and 9VAC5-50-260) [1/30/2025]

12. **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; and

    d. A statement that the diesel fuel oil:

        i. complies with the ASTM specifications for Grade No. 1-D S15 or Grade No. 2-D S15 (also known as ultra-low sulfur diesel (ULSD)); 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.

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

    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 11. Exceedance of these specifications may be considered credible evidence of the exceedance of emission limits.
    (9VAC5-80-1180) [1/30/2025]

13. **Diesel Fuel Throughput Limit –**

    a. The emergency diesel engine gen-sets (Ref. Nos. 1 through 62, 89, and T1 through T6) and the non-emergency diesel engine gen-sets for all operations when emissions are not controlled by SCR (Ref. Nos. 63 through 88), combined, shall consume no more than 655,523 gallons of diesel fuel oil per year, calculated daily as the sum of each consecutive 365-day period (all uses).

    b. The non-emergency diesel engine gen-sets for all operations when emissions are controlled by SCR (Ref. Nos. 63 through 88), combined, shall consume no more than 226,000 gallons of diesel fuel oil per year, calculated daily as the sum of each consecutive 365-day period.

    Compliance for the consecutive 365-day period shall be demonstrated daily by adding the total for the most recently completed calendar day to the individual daily totals for the preceding 364 days.
    (9VAC5-80-1180) [1/30/2025]

EMISSION LIMITS

14. **Emission Limits (Hourly – Emergency) –** Emissions from the operation of the emergency engine gen-sets (Ref. Nos. 1 through 62, 89, and T1 through T6) shall not exceed the limits specified below:

Pollutant	Ref. Nos. 1 and T1-T6	Ref. Nos. 2-5	Ref. Nos. 6-15	Ref. Nos. 16-17, 20-23, 26-44, 47-60
PM_{10}	0.57 lbs/hr	0.59 lbs/hr	0.40 lbs/hr	0.40 lbs/hr
$PM_{2.5}$	0.57 lbs/hr	0.59 lbs/hr	0.40 lbs/hr	0.40 lbs/hr
Nitrogen Oxides (as NO_2)	38.85 lbs/hr	58.51 lbs/hr	47.67 lbs/hr	48.06 lbs/hr
Carbon Monoxide	3.95 lbs/hr	13.13 lbs/hr	5.86 lbs/hr	6.09 lbs/hr
Volatile Organic Compounds	1.14 lbs/hr	2.56 lbs/hr	1.17 lbs/hr	1.21 lbs/hr

Pollutant	Ref. Nos. 18-19 and 25	Ref. No. 24	Ref. Nos. 45, 46, 61, and 62	Ref. No. 89
PM_{10}	0.74 lbs/hr	0.68 lbs/hr	0.40 lbs/hr	0.32 lbs/hr
$PM_{2.5}$	0.74 lbs/hr	0.68 lbs/hr	0.40 lbs/hr	0.32 lbs/hr
Nitrogen Oxides (as NO_2)	45.24 lbs/hr	47.77 lbs/hr	48.06 lbs/hr	14.34 lbs/hr
Carbon Monoxide	6.54 lbs/hr	9.81 lbs/hr	6.09 lbs/hr	4.73 lbs/hr
Volatile Organic Compounds	1.11 lbs/hr	1.70 lbs/hr	1.21 lbs/hr	1.91 lbs/hr

Compliance with these emission limits shall be based on the proper operation and maintenance of the emergency diesel engine gen-sets or by testing, if required. (9VAC5-80-1180 and 9VAC5-50-260) [1/30/2025]

15. **Emission Limits (Hourly - Non-Emergency) –** Emissions from the operation of the non-emergency engine gen-sets (Ref. Nos. 63 through 88) shall not exceed the limits specified below:

Pollutant	Caterpillar 3516E (Ref. Nos. 63 through 88)	
	Uncontrolled by SCR	Controlled by SCR
Nitrogen Oxides (NO_X as NO_2)	53.48 lb/hr	4.44 lb/hr
Particulate Matter (PM_{10})	0.20 lb/hr	
Particulate Matter ($PM_{2.5}$)	0.20 lb/hr	
Carbon Monoxide (CO)	3.10 lb/hr	
Volatile Organic Compounds (VOC)	0.49 lb/hr	

Compliance with these emission limits shall be based on the proper operation and maintenance of the emergency diesel engine gen-sets and pollution control devices, or by testing, if required.
(9VAC5-80-1180 and 9VAC5-50-260) [1/30/2025]

16. **Annual Engine Gen-set Emission Limits –** Total emissions from all diesel engine gen-sets (Ref. Nos. 1 through 89 and T1 through T6) shall not exceed the limits specified below:

Pollutant	Ref. Nos. 1 through 62, T1 through T6, and 63 through 88 without SCR	Ref. Nos. 63 through 88 with SCR	Facility-Wide
Particulate Matter (PM_{10})	5.53 tons/yr	0.11 tons/yr	5.64 tons/yr
Particulate Matter ($PM_{2.5}$)	5.53 tons/yr	0.11 tons/yr	5.64 tons/yr
Nitrogen Oxides (as NO_2)	93.52 tons/yr	2.60 tons/yr	96.12 tons/yr
Carbon Monoxide	53.96 tons/yr	1.82 tons/yr	55.78 tons/yr
Volatile Organic Compounds	17.84 tons/yr	0.29 tons/yr	18.12 tons/yr

Compliance with these emission limits shall be determined by calculation methods as stated in Conditions 1, 2, 3, 11, 13, 14, and 15.
(9VAC5-80-1180) [1/30/2025]

17. **Visible Emission Limit –**

    a. Visible emissions from each non-emergency engine gen-set (Ref. Nos. 63 through 88) shall not exceed 5% opacity as determined by EPA Method 9 (reference 40 CFR 60, Appendix A). This requirement applies at all times except during startup, shutdown and malfunction.

    b. Visible emissions from each emergency diesel engine gen-set (Ref. Nos. 1 through 62, 89, and T1 through T6) 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.

    During start-up and shut-down times, visible emissions from the engines (Ref. Nos. 1 through 89 and T1 through T6) shall not exceed ten percent except during one six-minute period in any one hour in which visible emissions shall not exceed twenty percent opacity. (9VAC5-80-1180, 9VAC5-50-260, and 9VAC5-170-160) [1/30/2025]

INITIAL COMPLIANCE DETERMINATION

18. **Stack Test –** Initial performance tests shall be conducted on one (1) emergency diesel engine gen-set (Ref. No. 24) and two (2) emergency diesel engine gen-sets (Ref. Nos. 45, 46, 61, and 62) for NO_X (as NO_2) and CO using appropriate EPA reference methods as approved by the Regional Air Compliance Manager of the DEQ's NRO to determine compliance with the emission limits contained in Condition 14.

    a. Emissions testing of each pollutant for each selected emergency diesel engine-gen-set shall consist of three one-hour test runs under load. The average of the three runs shall be reported as the short-term emission rate for that emergency diesel engine gen-set.

    b. Testing shall be performed on the exhaust stack of the emergency diesel engine gen-set to demonstrate compliance with the NO_X and CO emission limits specified in Condition 14. Testing shall be conducted with the emergency diesel engine gen-set operating at ≥ 90 percent of its rated capacity, unless multiple load band testing is approved by DEQ;

    c. Recorded emergency diesel engine gen-set operational information shall include, but not be limited to:

        i. Generator load/kilowatt output.

        ii. Fuel consumption and fuel sulfur content of the diesel fuel oil.

d. Perform testing to demonstrate compliance within 120 days after the integration operational period has commenced. The integration operational period is defined as: the period of time beginning with the first time the affected unit is started on-site and ending when the affected unit is fully integrated with the source electrical system. If this deadline falls within the ozone season (May 1 through September 30) the facility shall perform testing to demonstrate compliance within 30 days after the end of the ozone season. Tests shall be conducted and reported and data reduced as set forth in 9VAC5-50-30;

e. The details of the tests are to be arranged with the Regional Air Compliance Manager of DEQ's NRO. The permittee shall submit the test protocol to the Regional Air Compliance Manager of DEQ's NRO, at least thirty days prior to testing to ensure adequate time for DEQ approval. If the test protocol is received by the DEQ with less than thirty days for review and acceptance, DEQ approval may not be issued in a timely manner to allow for testing to take place according to the permittee's schedule;

f. Should conditions occur which would require rescheduling the testing, the permittee shall notify the Regional Air Compliance Manager of DEQ's NRO, in writing, within seven days of the scheduled test date or as soon as the rescheduling is deemed necessary; and

g. Two copies, one paper copy and one on removable electronic media, of the test results shall be submitted to the Regional Air Compliance Manager, DEQ's NRO within 60 days after test completion and shall conform to the test report format enclosed with this permit.

(9VAC5-50-30 and 9VAC5-80-1200) [5/10/2024]

19. **Stack Test –** Initial performance tests shall be conducted on five (5) emergency diesel engine gen-sets (Ref. Nos. 63 through 88) for NO_X (as NO_2) and CO using appropriate EPA reference methods as approved by the Regional Air Compliance Manager of the DEQ's NRO to determine compliance with the controlled emission limits contained in Condition 15.

a. Emissions testing of each pollutant for each selected emergency diesel engine gen-set shall consist of three (3) one-hour test runs under load. The average of the three (3) runs shall be reported as the short-term emission rate for that emergency diesel engine gen-set.

b. Testing shall be performed on the emergency diesel engine gen-sets to demonstrate compliance with the controlled NO_X and CO emission limits specified in Condition 15. Testing shall be conducted with the emergency diesel engine gen-set operating at ≥ 90 percent of its rated capacity, unless multiple load band testing is approved by DEQ;

c. Recorded emergency diesel engine gen-set operational information shall include, but not be limited to:

   i. Generator load/kilowatt output;

   ii. Fuel consumption and fuel sulfur content of the diesel fuel oil;

   iii. NO_X concentration after the catalyst;

   iv. SCR exhaust temperature at the outlet of the entire SCR+cDPF emissions control system;

   v. Urea solution injection rate; and

   vi. Differential pressure drop across the entire SCR+cDPF emissions control system.

d. Perform testing to demonstrate compliance within 120 days after the integration operational period has commenced. If this deadline falls within the ozone season (May 1 through September 30) the facility shall perform testing to demonstrate compliance within 30 days after the end of the ozone season. The permittee may petition the Regional Air Compliance Manager of DEQ's NRO, for exceptions to this requirement, with approvals made on a case-by-case basis. Tests shall be conducted and reported and data reduced as set forth in 9VAC5-50-30;

e. The details of the tests are to be arranged with the Regional Air Compliance Manager of DEQ's NRO. The permittee shall submit the test protocol to the Regional Air Compliance Manager of DEQ's NRO, at least 30 days prior to testing to ensure adequate time for DEQ approval. If the test protocol is received by the DEQ with less than 30 days for review and acceptance, DEQ approval may not be issued in a timely manner to allow for testing to take place according to the permittee's schedule;

f. Should conditions occur which would require rescheduling the testing, the permittee shall notify the Regional Air Compliance Manager of DEQ's NRO, in writing, within seven (7) days of the scheduled test date or as soon as the rescheduling is deemed necessary; and

g. Two (2) copies (one (1) paper copy and one (1) electronic copy) of the test results shall be submitted to the Regional Air Compliance Manager, DEQ's NRO within 60 days after test completion and shall conform to the test report format enclosed with this permit.

(9VAC5-50-30 and 9VAC5-80-1200) [1/30/2025]

20. **Stack Test (Renewable Diesel) –** Initial performance tests shall be conducted on two (2) diesel engine gen-sets (Ref. Nos. 1 through 89) while utilizing renewable diesel or a blend of renewable diesel and ULSD for NO_X (as NO_2) and CO using appropriate EPA reference methods as approved by the Regional Air Compliance Manager of the DEQ's NRO to determine compliance with the emission limits contained in Conditions 14 and 15.

    a. Emissions testing of each pollutant for each selected diesel engine gen-set shall consist of three (3) one-hour test runs under load. The average of the three (3) runs shall be reported as the short-term emission rate for that diesel engine gen-set.

    b. Testing shall be performed on the exhaust stack of the diesel engine gen-sets to demonstrate compliance with the NO_X and CO emission limits specified in Conditions 14 and 15. Testing shall be conducted with the diesel engine gen-set operating at ≥ 90 percent of its rated capacity, unless multiple load band testing is approved by DEQ;

    c. Recorded diesel engine gen-set operational information shall include, but not be limited to:

        i. Generator load/kilowatt output.

        ii. Fuel consumption and fuel sulfur content of the diesel fuel oil.

    d. <u>For any engine gen-set that has not commenced the integration operational period upon receipt of the first shipment of renewable diesel or a blend of renewable diesel and ULSD utilized by the units:</u> Perform testing to demonstrate compliance within 120 days after the integration operational period has commenced. If this deadline falls within the ozone season (May 1 through September 30), the facility shall perform testing to demonstrate compliance within 30 days after the end of the ozone season. Tests shall be conducted and reported and data reduced as set forth in 9VAC5-50-30;

    e. <u>For any engine gen-set that has commenced the integration operational period upon receipt of the first shipment of renewable diesel or a blend of renewable diesel and ULSD utilized by the units:</u> Perform testing to demonstrate compliance within 120 days of the renewable diesel fuel or a blend of renewable diesel and ULSD first utilized by the affected units. The permittee may petition the DEQ's NRO Air Compliance Manager for an extension to this deadline, with approvals made on a case-by-case basis. If the applicable deadline falls within the ozone season (May 1 through September 30), the facility shall perform testing to demonstrate compliance within 30 days after the end of the ozone season. Tests shall be conducted and reported and data reduced as set forth in 9VAC5-50-30;

f. The details of the tests are to be arranged with the Regional Air Compliance Manager of DEQ's NRO. The permittee shall submit the test protocol to the Regional Air Compliance Manager of DEQ's NRO, at least 30 days prior to testing to ensure adequate time for DEQ approval. If the test protocol is received by the DEQ with less than 30 days for review and acceptance, DEQ approval may not be issued in a timely manner to allow for testing to take place according to the permittee's schedule;

g. Should conditions occur which would require rescheduling the testing, the permittee shall notify the Regional Air Compliance Manager of DEQ's NRO, in writing, within seven (7) days of the scheduled test date or as soon as the rescheduling is deemed necessary; and

h. Two (2) copies (one (1) paper copy and one (1) electronic copy) of the test results shall be submitted to the Regional Air Compliance Manager, DEQ's NRO within 60 days after test completion and shall conform to the test report format enclosed with this permit.

(9VAC5-50-30 and 9VAC5-80-1200) [1/30/2025]

21. **Visible Emissions Evaluation –** Concurrent with the initial performance tests required in Conditions 18, 19, and 20, Visible Emission Evaluations (VEE) in accordance with 40 CFR Part 60, Appendix A, Method 9, shall also be conducted by the permittee on the diesel engine gen-set selected for initial performance testing. The details of the tests are to be arranged with the Regional Air Compliance Manager of DEQ's NRO. The permittee shall submit a VEE protocol in conjunction with the initial stack test protocol required by Conditions 18, 19, and 20, at least 30 days prior to testing.

a. Should conditions prevent concurrent opacity observations, the Regional Air Compliance Manager of the DEQ's NRO shall be notified in writing, within seven (7) days, and visible emissions testing shall be rescheduled within thirty-days. Rescheduled testing shall be conducted under the same operating conditions as the initial performance tests.

b. Two copies of the test result (one hard copy and one on electronic media) shall be submitted to the Regional Air Compliance Manager of the DEQ's NRO within sixty (60) days after test completion and shall conform to the test report format enclosed with this permit (Attachment B).

(9VAC5-50-30 and 9VAC5-80-1200) [1/30/2025]

CONTINUING COMPLIANCE DETERMINATION

22. **Continuing Compliance Demonstration – Fuel Flow Measuring Device –** In accordance with the procedures outlined in the DEQ issued conditional approval letter dated April 29, 2014 (see Appendix A), or other means approved by the Regional Air Compliance Manager of the DEQ's Northern Regional Office, the permittee shall conduct periodic demonstrations to validate the continued accuracy of each fuel flow measuring device required by Condition 5.a. for the emergency diesel engine gen-sets (Ref. Nos. 18, 19, 24, and 25).
(9VAC5-80-1180) [5/10/2024]

23. **Emission Testing/Visible Emissions Evaluation –** Upon request by the DEQ, the permittee shall conduct stack tests and/or VEEs of the engine gen-sets (Ref. Nos. 1 through 89) 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.
(9VAC5-80-1200 and 9VAC5-50-30 G) [1/30/2025]

24. **Testing/Monitoring Ports –** The diesel engine gen-sets (Ref. Nos. 1 through 89 and T1 through T6) 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 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 and safe sampling platforms and access shall be provided.
(9VAC5-50-30 F and 9VAC5-80-1180) [1/30/2025]

RECORDS

25. **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. Operation and control device monitoring records for each non-emergency engine gen-set equipped with a SCR (Ref. Nos. 63 through 88) as required in Condition 4. This includes records of the SCR exhaust temperature at the outlet of the entire SCR+cDPF emissions control system and NO_X emission concentration as measured by the SCR continuous monitoring device.

    b. Operation and control device monitoring records for each non-emergency engine gen-set equipped with a cDPF (Ref. Nos. 63 through 88), as required in Condition 4. This includes records of the differential pressure drop across the entire SCR+cDPF emissions control system and the cDPF catalyst bed temperature at the inlet of the entire SCR+cDPF emissions control system.

c. A monthly log of the monitoring device data required by Condition 6.

d. Records, as necessary, to demonstrate compliance with the operating limitations of Condition 8; which includes but is not limited to: times, dates and reasons for operation of each diesel engine gen-set that was operating between May 1 and September 30.

e. To verify compliance with Condition 9, maintain records for the emergency diesel engine gen-sets (Ref. Nos. 24, 45, 46, and 61 through 89) of:

   i. The forecasted AQI, as determined by the AirNow website for Northern Virginia, for ozone for the days that an emergency diesel Engine gen-set operated during the integration operational period;

   ii. The measured AQI, as determined by the AirNow website for Northern Virginia, for ozone for the days that an emergency diesel Engine gen-set operated during the integration operational period;

   iii. Documentation recording any Air Alerts issued for that operating day, as determined by AirNow-EnviroFlash; and

   iv. Details of commissioning activities, to include, but not limited to, clock hours, and duration.

f. A monthly summary table for each emergency diesel engine gen-set (Ref. Nos. 1 through 62, 89, and T1 through T6) to include:

   i. Fuel consumption.

   ii. Hours of operation.

   iii. Annual fuel consumption, calculated monthly as the sum of each consecutive twelve month period.

   iv. Annual hours of operation, calculated monthly as the sum of each consecutive twelve month period.

   v. Reasons for operation (as defined in Condition 6 for all emergency diesel engine gen-sets). For the emergency diesel engine gen-sets (Ref. Nos. 24, 45, 46, 61, 62, and 89), this shall include, but is not limited to, the date, cause of operation, cause of the emergency, the ISO-declared emergency notification, and the hours of operation.

g. Monthly and annual hours of operation of each emergency diesel engine gen-set (Ref. Nos. 24, 45, 46, 61, 62, and 89), for purposes of scheduled maintenance checks and readiness testing (Scheduled MCRT), calculated monthly as the sum of each consecutive 12-month period.

h. Daily and annual fuel consumption of each diesel engine gen-set (Ref. Nos. 1 through 89 and T1 through T6), for all purposes, with the annual fuel consumption calculated daily as the sum of each consecutive 365-day period.

i. Daily and annual fuel consumption for the combined operation of the emergency diesel engine gen-sets (Ref. Nos. 1 through 62, 89, and T1 through T6) and the non-emergency diesel engine gen-sets for operations when emissions are not controlled by SCR (Ref. Nos. 63 through 88), combined, calculated daily as the sum of each consecutive 365-day period, to verify compliance with the fuel throughput limitations specified in Condition 13.

j. Daily and annual fuel consumption for the non-emergency diesel engine gen-sets for all operations when emissions are controlled by SCR (Ref. Nos. 63 through 88), combined, calculated daily as the sum of each consecutive 365-day period, to verify compliance with the fuel throughput limitations specified in Condition 13.b.

k. Daily and annual emissions calculations for PM_{10}, $PM_{2.5}$, NO_X (as NO_2), CO, and VOC from the emergency diesel engine gen-sets (Ref. Nos. 1 through 62, 89, and T1 through T6) and the non-emergency diesel engine gen-sets for operations when emissions are not controlled by SCR (Ref. Nos. 63 through 88), combined, to verify compliance with the ton/yr emissions limitations in Condition 16.

l. Daily and annual emissions calculations for PM_{10}, $PM_{2.5}$, NO_X (as NO_2), CO, and VOC from the non-emergency diesel engine gen-sets for operations when emissions are controlled by SCR (Ref. Nos. 63 through 88), combined, to verify compliance with the ton/yr emissions limitations in Condition 16.

m. Daily and annual emissions calculations for PM_{10}, $PM_{2.5}$, NO_X (as NO_2), CO, and VOC from the emergency diesel engine gen-sets (Ref. Nos. 1 through 89, and T1 through T6), for all operations, combined, to verify compliance with the facility-wide ton/yr emissions limitations in Condition 16.

n. All fuel supplier certifications.

o. Results of all stack tests and visible emission evaluations.

p. Records of scheduled maintenance checks and readiness testing (Scheduled MCRT).

q. Records of unscheduled maintenance and operator training.

r. Records as required by Condition 34.

s. Records of the manufacturer's written instructions or procedures developed by the owner or operator that are approved by the engine manufacturer.

t. Records of changes in settings that are permitted by the manufacturer of the engine gen-set sets.

u. Records of the periodic demonstrations of the fuel flow monitoring devices to demonstrate compliance with Condition 22.

v. Documentation from the manufacturer that each diesel engine gen-set (Ref. Nos. 24, 45, 46, and 61 through 89) is certified to meet the EPA Tier 2 emission standards.

w. Engine information including make, model, serial number, model year, maximum engine power (bhp), and engine displacement for each diesel engine gen-set (Ref. Nos. 24, 45, 46, and 61 through 89).

Compliance for the consecutive 12-month period in the subsections above (as applicable) shall be demonstrated monthly by adding the total for the most recently completed month to the individual monthly totals for the preceding 11 months.

Compliance for the consecutive 365-day period in subsections above (as applicable) shall be demonstrated daily by adding the total for the most recently completed day to the individual daily totals for the preceding 364 days.

These records shall be available for inspection by the DEQ and shall be current for the most recent five years.
(9VAC5-80-1180 and 9VAC5-50-50) [1/30/2025]

NOTIFICATIONS

26. **Initial Notifications –** The permittee shall furnish written notification to the Regional Air Compliance Manager of the DEQ's NRO at the address listed below:

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

a. The actual date on which construction of each engine gen-set (Ref. Nos. 20 through 22 and 47 through 60) commenced within thirty days after such date. The notification must contain 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, and

   iv. Fuel used.

b. The anticipated commencement date of the manufacturer's trials for each emergency engine gen-set (Ref. Nos. 20 through 22 and 47 through 60), postmarked not more than thirty days nor less than fifteen days prior to such date.

c. The anticipated start-up date of each engine gen-set (Ref. Nos. 20 through 22 and 47 through 60) postmarked not more than sixty days nor less than thirty days prior to such date.

d. The actual start-up date of each engine gen-set (Ref. Nos. 20 through 22 and 47 through 60) 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, unless otherwise approved by DEQ.

e. The actual date on which installation of the diesel engine gen-sets (Ref. Nos. 45, 46, and 61 through 89) commenced in each building, within 30 days after such date. The notification must contain the following:

   i. Name and address of the permittee;

   ii. The building;

   iii. Unit reference number of the initial unit installed; and

   iv. The date installation commenced.

f. The start and end dates of the integration operational period for the diesel engine gen-sets (Ref. Nos. 24, 45, 46, and 61 through 89) within 15 days after the last generator at each building completes its integration operational period. If a period of construction is paused or halted for ≥45 days, this notification shall be provided to the DEQ within 15 days after completion of the integration operational period for the most recently installed engine gen-set. The notification must contain the following:

i. Unit reference number;

ii. Engine information including make, model, engine family, serial number, model year, maximum engine power, engine displacement, fuel used;

iii. Installation date; and

iv. Integration operational period start and end dates.

For the purpose of this notification, the integration operational period is defined as the period of time beginning with the first time the affected unit is started on-site and ending when the affected unit is fully integrated with the source's electrical system.
(9VAC5-50-50 and 9VAC5-80-1180) [1/30/2025]

27. **Renewable Diesel Notification –** Upon receipt of the first shipment of renewable diesel or a blend of renewable diesel and ULSD, the permittee shall furnish written notification of the items below to the Air Compliance Manager of the DEQ's NRO at the following address:

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

a. The actual date on which the shipment was received within fifteen (15) 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 gen-sets (with reference numbers) utilizing the fuel in the shipment; and

iv. Fuel certification (as provided in Condition 12).

(9VAC5-80-1180) [1/30/2025]

SPECIAL CONDITIONS – TRANSITORY ENGINE GEN-SET SETS

28. **Operation of the Emergency Engine Gen-Sets –** The facility shall only operate the transitory emergency engine gen-sets (Ref. Nos. T1 through T6) in support of the facility such as servicing as back up during construction, commissioning, and maintenance of the engine gen-sets (Ref. Nos. 1 through 89).
(9VAC5-80-1180) [1/30/2025]

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

    a. The actual date and reason for each occurrence that each transitory engine gen-set set (Ref. Nos. T1 through T6) was placed into service within fifteen days after such date. The notification shall 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, and

        iv. Fuel used.

    b. The actual date(s) of permanent shutdown and removal of each transitory emergency engine gen-set (Ref. Nos. T1 through T6) within fifteen days after such date.

    (9VAC5-80-1180) [2/9/2022]

GENERAL CONDITIONS

30. **Permit Invalidation –** The portion of this permit to construct the emergency engine gen-sets (Ref. Nos. 20 through 22, 24, and 47 through 60) shall become invalid, unless an extension is granted by the DEQ, if:

    a. A program of continuous construction is not commenced within the latest of the following:

        i. Eighteen months from the date of this permit;

        ii. Nine months from the date that the last permit or other authorization was issued from any other governmental entity;

        iii. Nine months from the date of the last resolution of any litigation concerning any such permits or authorization; or

    b. A program of construction is discontinued for a period of eighteen months or more, or is not completed within a reasonable time, except for a DEQ approved period between phases of a phased construction project.

    (9VAC5-80-1210)

31. **Permit Invalidation –** This permit to construct the diesel engine gen-sets (Ref. Nos. 45, 46, and 61 through 89) shall become invalid, unless an extension is granted by the DEQ, if:

    a. A program of continuous construction is not commenced within 18 months from the 'Original Permit Date' specified in the equipment list in the Introduction section of this permit; or if

    b. A program of construction is discontinued for a period of 18 months or more, or is not completed within a reasonable time.

    (9VAC5-80-1210)

32. **Permit Suspension/Revocation –** The Board may suspend or revoke any permit if the permittee:

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

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

    c. Fails to comply with any emission standards applicable to a permitted emissions unit;

    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 fails to operate in conformance with any applicable control strategy, including any emission standards or emission limitations, in the implementation plan in effect at the time that an application is submitted; or

    e. Fails to comply with the applicable provisions of 9VAC5-80-1100 et seq.

    (9VAC5-80-1210 F and 9VAC5-80-1210 G)

33. **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.
(9VAC5-170-130 and 9VAC5-80-1180)

34. **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 measures in order to minimize the duration and frequency of excess emissions, including the following:

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 shall be maintained on site for a period of five years and shall be made available to DEQ personnel upon request.
(9VAC5-50-20 E and 9VAC5-80-1180 D)

35. **Record of Malfunctions –** The permittee shall maintain records of the occurrence and duration of any bypass, malfunction, shut-down or failure of the facility or its associated air pollution control equipment that results in excess emissions for more than one hour. The records shall be maintained in a form suitable for inspection and maintained for at least two years (unless a longer period is specified in the applicable emission standard) following the date of occurrence. Records shall include the date, time, duration, description (emission unit, pollutant affected, cause of malfunction), corrective action, preventive measures taken and name of person generating the record.
(9VAC 5-20-180 J and 9VAC5-80-1180 D)

36. **Notification for Facility or Control Equipment Malfunction –** The permittee shall furnish notification to the regional Air Compliance Manager of the DEQ's NRO, 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 electronic communication. 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.
(9VAC5-20-180 C and 9VAC5-80-1180)

37. **Violation of Ambient Air Quality Standard –** Regardless of any other provision of this permit, the permittee shall, upon request of the DEQ, reduce the level of operation of the facility if the DEQ determines that is necessary to prevent a violation of any primary ambient air quality standard. Under worst case conditions, the DEQ may order that the permittee shut down the facility, if there is no other method of operation to avoid a violation of the ambient air quality standard. The DEQ reserves the right to prescribe the method of determining if a facility will cause such a violation. In such cases, the facility shall not be returned to operation until it and the associated air pollution control equipment are able to operate without violation of any primary ambient air quality standard.
(9VAC5-20-180 I and 9VAC5-80-1180)

38. **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 of the change of ownership within thirty days of the transfer.
(9VAC5-80-1240)

39. **Permit Copy –** The permittee shall keep a copy of this permit on the premises of the facility to which it applies.
(9VAC5-80-1180)

Appendix A – Engine Control Module Data Verification Procedure

COMMONWEALTH of VIRGINIA

DEPARTMENT OF ENVIRONMENTAL QUALITY

NORTHERN REGIONAL OFFICE

13901 Crown Court, Woodbridge, Virginia 22193

(703) 583-3800 Fax (703) 583-3821

www.deq.virginia.gov

Molly Joseph Ward
Secretary of Natural Resources

David K. Paylor
Director

Thomas A. Faha
Regional Director

April 29, 2014

Malcolm Gander, Ph.D.
Manager, Environmental Regulatory Compliance
Data Center Engineering
Amazon Web Services
1918 8th Avenue, 25th Floor
Seattle, WA 98101

Dear Mr. Gander:

Thank you for your e-mail dated April 16, 2014, and your proposal on how to verify the accuracy of the fuel consumption data displayed on the Engine Control Modules (ECMsyou're your diesel engines. As I stated in our meeting April 9, 2014, the Virginia Department of Environmental Quality believes that refilling diesel fuel tanks, using delivery trucks equipped with calibrated, certified fuel meters, offers a cost effective and accurate means of verifying the accuracy of ECM fuel consumption data over years of engine operation. We appreciate that you and John Fuoto, your environmental consultant, concur with this approach.

In the attached procedure and data collection sheet, we have incorporated the testing procedures described in your April 16, 2014, proposal and added a few additional requirements. I think you will find the procedure closely follows what you proposed. One change I would like to draw your attention to, is the new requirement that an engine to consume 20 percent (not 10 percent) of the fuel in the base tank over the test period. As Mr. Fuoto has pointed out, in large flat tanks, significant fuel consumption may result in only a small drop in the level of fuel in a tank. We believe a 20 percent drop in fuel volume will produce good fuel consumption comparisons and minimize relative error.

Please review the attachments and provide us with your comments.

You may contact me at R.David.Hartshorn@deq.virginia.gov or (703) 583-3895 if you have questions or need additional information.

Sincerely,

R. David Hartshorn
Air Compliance Manager

cc William G. Gillespie, Air Quality Specialist
Justin Wilkinson, Air Permit Writer

Procedure for Verifying the Accuracy of Fuel Consumption Information Displayed on the Engine Control Modules (ECMs) of Diesel Engines

April 28, 2014

1.0 Purpose

This procedure provides a means of assessing the accuracy of the fuel consumption information displayed on the Engine Control Modules (ECMs) of diesel engines.

2.0 Summary of the Method

This method measures fuel consumption of a diesel engine by two methods and compares the fuel consumption measurements. Fuel consumption measured by the ECM, is determined by recording the fuel consumption displayed on the ECM when the engine's fuel tank is full and then recording the fuel consumption displayed on the ECM at a later date after the engine has been run a significant period of time. The difference between the two ECM fuel consumption values is a measure of the fuel consumed over the test period. During the test period, fuel consumption of the diesel engine is also measured by filling the fuel tank of the engine to an accurately measured reference point at the beginning of the test period. At the end of the test period, the tank is refilled to the reference point. The amount of fuel used to refill the engine's fuel tank is a measure of the fuel consumed during the test period.

3.0 Measurement Considerations

The following information should be considered when making fuel measurements.

- The rectangular fuel tanks under many diesel engine generators vary in size but are often approximately 30 feet long, 10 feet wide, and 15 - 20 inches high. Given the flat shape of the tanks, a relatively small drop in fuel level in the tank may correspond to a fairly large volume of fuel consumed. In some tanks, a one inch change in fuel height may correspond to 150 to 200 gallons of fuel consumed.
- The relationship between the drop in fuel height in an engine fuel tank and the gallons of fuel consumed by the engine ("the gallons per inch") is not known with sufficient accuracy for many fuel tank configurations.
- Emergency diesel engine generators may be operated infrequently, some as little as ten minutes per week. These short weekly "exercise" periods, when engines operate at minimum load, result in very low fuel consumption rates. Fuel consumption comparisons may need to be done over several months or longer if the engine is only operated during weekly exercise periods.
- The configuration of some facilities may not easily allow for straight-forward use of a load bank to allow an engine to be operated at increased load and an increased fuel consumption rate to achieve large fuel level changes.
- If the engines have been run at higher loads so that a tank fill-up is required, then there should be enough change in fuel volume to make a reliable comparison between the two measurement methods. Engines may be operated a significant loads and for periods longer than 10 minutes during periods such as transformer maintenance, for example.

- Fuel transfers from on-site Above-Ground Storage Tanks (ASTs) to engine base tanks are typically not sufficiently accurate to be used in measuring engine fuel consumption. Fuel transfers from AST to engine base tanks use on-site pumps and flow meters that are not calibrated.
- Only fresh or "polished" fuel can be used for the period of comparison to assure that the fuel properties are those required to assure that the fuel injectors perform as they are designed.

4.0 Number and Type of Engines Tested

Perform ECM verification tests on 25 percent of the engines at each facility. Of the permitted engines, select at least one of each engine make, model and horsepower rating.

5.0 Fuel Consumption Tracking

5.1 Fuel Consumption Tracking for Engines with ECMs that Display Fuel Consumed

To measure fuel consumption, collect the following information and report it on the attached Fuel Consumption Data Sheet.

- Fill the engine's fuel tank from a delivery truck.
- Measure the fuel height in the engine's fuel tank. Record this height in inches. Ensure the fill height is easily measured and easily measured when a future fuel delivery is made.
- Record the "gallons of fuel combusted" displayed on the engine ECM.
- Run the engine until 20 percent of fuel in the fuel tank (or more) has been consumed.
- Refill the engine's fuel tank from a delivery truck with a certified Vehicle Tank Meter (VTM).
- Record the gallons of fuel consumed as displayed on the ECM.

The refill amount will represent the amount of fuel consumed since the previous fuel delivery. Compare VTM measured volume with the volume calculated from the ECM display (ending ECM value minus starting ECM value).

VTMs must be certified by the Virginia Department of Agriculture and Consumer Services (VDACS) every two years. For best results, DEQ recommends that facilities use VTMs that have been certified within six months of the fuel tank refill. Contact John Kirk at VDACS at (804) 786-2476 or John.Kirk@vdacs.virginia.gov more information on VTM certifications.

5.2 Fuel Consumption Tracking for Engines without ECMs that Display Fuel Consumed

Track engine fuel consumption by tracking fuel deliveries to the engine. Compare fuel consumption as measured by fuel deliveries to fuel consumption estimates computed from engine hour, percent load and manufacturer fuel consumption data.

Fuel Consumption Data Collection Sheet

Facility and Engine-Generator Information

Facility Name: _____

Facility Registration Number: _____

Engine-Generator ID: _____

Engine Information:

- Make and Model: _____
- Engine Model Year: _____
- Engine Serial Number: _____
- Engine Control Module (ECM) Version: _____

Engine Control Module (ECM) Data

1. Initial ECM Readings:
   - Date: _____
   - Time: _____
   - Engine Fuel Consumption Total (gallons): _____
   - Engine Operating Hours (hours): _____
   - Technician's Name: _____
2. Final ECM Readings:
   - Date: _____
   - Time: _____
   - Engine Fuel Consumption Total (gallons): _____
   - Engine Operating Hours (hours): _____
   - Technician's Name: _____
3. Calculated Values:
   - Fuel Consumed Over the Test Period (final ECM gallons minus initial ECM gallons): _____
   - Hours Operated (final ECM hours minus initial ECM hours): _____

Fuel Tank Measurements

1. Initial Fuel Height Measurement:
   - Date: _____
   - Time: _____
   - Fuel height (inches): _____
   - Technician's Name: _____

2. Final Fuel Height Measurement:

- Date: _____
- Time: _____
- Fuel height (inches): _____
- Technician's Name: _____

Note: The initial and final fuel height measurements must be the same.

3. Volume of fuel required to return the fuel level to the initial fuel level (gallons): _____

Was the fuel tank refilled from a fuel truck equipped with a calibrated Vehicle Tank Meter (VTM)? Circle one.

Yes No **If No, the fuel consumption comparison is invalid.**

4. Fuel Tickets and VTM Certification

Attach a copy of the fuel delivery ticket and the fuel truck's Vehicle Tank Meter certification. The fuel delivery ticket must show the name, address and phone number of the fuel delivery company and the volume of fuel delivered.

Appendix B – Source Testing Report Format

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 evaluations