Commonwealth of Virginia

VIRGINIA DEPARTMENT OF ENVIRONMENTAL QUALITY

NORTHERN REGIONAL OFFICE
13901 Crown Court, Woodbridge, Virginia 22193
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www.deq.virginia.gov

Travis A. Voyles
Acting Secretary of Natural and Historic Resources

Michael S. Rolband, PE, PWD, PWS Emeritus
Director
(804) 698-4020

Thomas A. Faha
Regional Director

February 8, 2023

Mr. Darren Williams
Cloud Data Center Operations Manager
Microsoft Corporation
10880 Airman Avenue
Manassas, VA 20112

Location: Fauquier County
Registration No.: 74201

Dear Mr. Williams:

Attached is a mNSR permit to modify and operate emission units at a data center facility located at 7471 Bear Wallow Road, Warrenton, Virginia 20186 (Fauquier County) in accordance with the provisions of the Virginia Regulations for the Control and Abatement of Air Pollution. This permit document supersedes your permit document dated April 10, 2019, as amended February 3, 2021.

The Department of Environmental Quality (DEQ) deemed the application complete on February 7, 2023. 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 modify and operate shall not relieve Microsoft Corporation of the responsibility to comply with all other local, state, and federal permit regulations.

The emergency diesel engine generator sets (gen-sets) may be subject to 40 CFR 63, Maximum Achievable Control Technology (MACT), Subpart ZZZZ, for Stationary Reciprocating Internal Combustion Engines; and 40 CFR 60, New Source Performance Standard (NSPS), Subpart IIII, for Stationary Compression Ignition Internal Combustion Engines. In summary, the units are required to comply with certain federal emission standards and operating limitations. The DEQ advises you to review the referenced MACT and NSPS to ensure compliance with applicable emission and operational limitations. As the owner/operator, you are

also responsible for any monitoring, notification, reporting and recordkeeping requirements of the MACT and NSPS. Notifications shall 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, Parts 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 30-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. Cameron Stewart at (571) 866-6093, or via email at cameron.stewart@deq.virginia.gov.

Sincerely,

Justin A. Wilkinson
Air Permit Manager

JAW/CLS/74201 mNSR (2023-02-08)

Attachment(s):Permit
Source Testing Report Format

Commonwealth of Virginia

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Director
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Thomas A. Faha
Regional Director

STATIONARY SOURCE PERMIT TO MODIFY AND OPERATE

This permit document supersedes the permit document dated April 10, 2019, as amended February 3, 2021.

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

Microsoft Corporation
10880 Airman Avenue
Manassas, VA 20112
Registration No.: 74201

is authorized to modify and operate

emission units at a data center

located at

7471 Bear Wallow Road
Warrenton, VA 20186
(Fauquier County)

in accordance with the Conditions of this permit.

Approved on: February 8, 2023

Justin A. Wilkinson
Regional Air Permit Manager

Permit consists of 20 pages (w/o the attachment).
Permit Conditions 1 to 30.
Attachment A – Source Testing Report Format (1 page)

INTRODUCTION

This permit approval is based on the following permit approvals and the respective permit applications from Facility Registration Numbers 40902 and 74201:

Permit Program: Approval/Amendment Date	Application/Letter Signature Date	Application Supplemental Information Date
Superseded SOP: 6/25/2002	2/15/2002	-
Minor NSR: 4/4/2007	7/28/2006 (8/1/2006)	2/7/2007
Minor NSR amendment: 3/15/2010	3/26/2008	-
Minor NSR exemption: 12/13/2010	6/22/2010	6/26/2012
Minor NSR: 6/12/2013	4/30/2012	4/18/2013
Minor NSR: 10/29/2013	4/9/2013, 5/31/2013 (6/4/2013)	10/1/2013, 10/7/2013, 10/11/2013
Minor NSR: 6/27/2014	5/21/2014 (5/29/2014)	5/29/2014, 6/20/2014
Minor NSR: 5/13/2015	10/23/2014, 3/17/2015	2/9/2015, 3/2/2015, 4/3/2015
Minor NSR: 10/5/2015	7/27/2015	8/12/2015, 8/27/2015
Minor NSR: 4/6/2016	N/A (reopened 10/5/2015 permit)	-
Minor NSR: 8/25/2016	4/4/2016	5/16/2016
Minor NSR Significant Amendment: 3/30/2017	12/20/2016	2/7/2017
Minor NSR Minor Amendment: 6/18/2018	12/21/2017, 5/14/2018	2/28/2018
Minor NSR: 4/10/2019	9/7/2018	2/12/2019, 3/27/2019
Minor NSR amendment: 8/21/2020	5/19/2020, 6/15/2020	6/12/2020, 6/17/2020
Minor NSR amendment: 2/3/2021	10/22/2020	1/29/2021
Minor NSR: 2/8/2023	9/21/2022	10/19/2022, 1/27/2023, 2/7/2023

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 9 VAC 5-80-1110 and 9 VAC 5-10-20 of the Commonwealth of Virginia's 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.

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's Regulations. Information provided to federal officials is subject to appropriate federal law and regulations governing confidentiality of such information.

Equipment List – Equipment at this facility subject to permit requirements of 9 VAC 5-80-1100 *et. seq.* consists of:

Ref. No.	Equipment Description	Rated Capacity	Add-On Control Technology	Delegated Federal Requirements	Original Permit Date
CLOUD-1 through CLOUD-3	Three (3) MTU Model 20V4000 DS3000 emergency diesel engine gen-sets, date of manufacture 2016	4,680 bhp 3,000 kW (each unit)	Selective Catalytic Reduction (SCR)* Miratech Model SP-CBL81-18090128	--	April 10, 2019
CLOUD-4	One (1) Cummins Model 500DFEK emergency diesel engine gen-set, date of manufacture 2020	755 bhp 500 kW	--	--	April 10, 2019, last amended February 3, 2021
CLOUD-5 and CLOUD-6	Two (2) Cummins Model C3000 D6e emergency diesel engine gen-sets, date of manufacture 2020	4,307 bhp 3,000 kW (each unit)	SCR* Miratech Model M3ZS-70-80-20010072	--	April 10, 2019, last amended February 3, 2021
CLOUD-7 through CLOUD-12	Six (6) Cummins Model C3000 D6e emergency diesel engine gen-sets, date of manufacture 2020	4,307 bhp 3,000 kW (each unit)	SCR* Miratech Model M3ZS-70-80-20010072	--	April 10, 2019, last amended February 3, 2021
CLOUD-13 and CLOUD-14	Two (2) Cummins Model C3000 D6e emergency diesel engine gen-sets, date of manufacture 2020	4,307 bhp 3,000 kW (each unit)	SCR* Miratech Model M3ZS-70-80-20010072	--	April 10, 2019, last amended February 3, 2021

* The SCR System, Miratech model numbers M3ZS-70-80-20010072 and SP-CBL81-18090128, have closed loop dosing to control NO_x by 90%.

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

PROCESS REQUIREMENTS

1. **Emission Controls –** The emergency diesel engine gen-sets shall control emissions as follows:

   a. Visible emissions, particulate matter (PM_{10} and $PM_{2.5}$) emissions, carbon monoxide (CO) emissions, volatile organic compound (VOC) emissions, and nitrogen oxides (NO_X) emissions from each emergency diesel engine gen-set (Ref. Nos. CLOUD-1 through CLOUD-14) shall be controlled by the use of good operating practices and performing appropriate 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 increase air emissions.

   b. NO_X (as NO_2) emissions from each emergency diesel engine gen-set (Ref. Nos. CLOUD-1 through CLOUD-3 and CLOUD-5 through CLOUD-14) shall be controlled by closed loop SCR. Each SCR system shall be equipped with a temperature probe to monitor the catalyst bed exhaust temperature at all times when the engine gen-set to which it is connected is operating. The diesel exhaust fluid (DEF) dosing enabling temperature shall be 572°F (300°C) (catalyst bed exhaust temperature). The engine gen-sets (Ref. Nos. CLOUD-1 through CLOUD-3 and CLOUD-5 through CLOUD-14) engine exhaust gas shall be treated with DEF when the engine is operating at or above 572°F (300°C) but below 1,022°F (550°C). The SCR shall be considered fully operational for controlled emission calculation purposes when DEF dosing is occurring.

   c. Nitrogen oxides (NOx) emissions from the emergency diesel engine gen-set (Ref. No. CLOUD-4) shall be controlled by engine design.

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

2. **Monitoring Devices –**

   a. Each emergency diesel engine gen-set (Ref. Nos. CLOUD-1 through CLOUD-14) shall be equipped with a non-resettable hour metering device to monitor the operating hours. The non-resettable hour meter used to continuously measure the hours of operation for each engine gen-set shall be observed by the owner with a frequency of not less than once each day the engine is operated.

   b. The closed loop SCR system on each emergency diesel engine gen-set (Ref. Nos. CLOUD-1 through CLOUD-3 and CLOUD-5 through CLOUD-14) shall be equipped with a device to measure and record the nitrogen oxide (NO) emissions (expressed in ppm), measured after the catalyst, and the catalyst bed exhaust temperature at least once every 15 minutes. The information shall be correlated to run date, engine load/kilowatt output, and engine operating hours. The control device shall be equipped with a non-resettable hour meter to continuously measure its hours of operation. Total operating time and load shall be recorded for all periods when the emergency diesel engine gen-sets

(Ref. Nos. CLOUD-1 through CLOUD-3, and CLOUD-5 through CLOUD-14) are operating.

c. Hour meters for the emergency diesel engine gen-sets (Ref. Nos. CLOUD-1 through CLOUD-14), exhaust temperature sensors and nitrogen oxide (NO) sensors for the diesel engine gen-sets (Ref. Nos. CLOUD-1 through CLOUD-3, and CLOUD-5 through CLOUD-14), shall be installed, maintained, calibrated (as appropriate) and operated in accordance with approved procedures which shall include, as a minimum, the manufacturer's written requirement or recommendations.

d. Hour meters for the emergency diesel engine gen-set (Ref. Nos. CLOUD-1 through CLOUD-14), exhaust temperature sensors and nitrogen oxide (NO) sensors for the emergency diesel engine gen-sets (Ref. Nos. CLOUD-1 through CLOUD-3 and CLOUD-5 through CLOUD-14), shall be provided with adequate access for inspection and shall be in operation when the engines are operating (as applicable).

(9 VAC 5-80-1180 D)

OPERATING LIMITATIONS

3. **Operation of the Engine-Gen-Sets –** The permittee shall operate and maintain each emergency diesel engine gen-set (Ref. Nos. CLOUD-1 through CLOUD-14) 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 does not increase air emissions.
(9 VAC 5-80-1180)

4. **Operating Limitations (Ozone Season) –** No emergency diesel engine gen-set (Ref. Nos. CLOUD-1 through CLOUD-14) shall be operated for scheduled maintenance checks and readiness testing (Scheduled MCRT), stack testing or operator 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 the DEQ NRO for exceptions to this requirement, with approvals made on a case-by-case basis.
(9 VAC 5-80-1180)

5. **Operating Limitations (Ozone Season) – Integration Operational Period –** During the integration operational period of each emergency diesel engine gen-set (Ref. Nos. CLOUD-1 through CLOUD-14), 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 Metropolitan Washington, D.C. 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.
(9 VAC 5-80-1180)

6. **Emergency Power Generation –** The emergency diesel engine gen-sets (Ref. Nos. CLOUD-1 through CLOUD-14) 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 Independent System Operator (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.

   (9 VAC 5-80-1110 and 9 VAC 5-80-1180)

7. **Operating Hours –**

   a. The two (2) emergency diesel engine gen-sets (Ref. Nos. CLOUD-1 and CLOUD-2) combined shall not operate more than 240 hours per year when emissions are uncontrolled, calculated monthly as the sum of each consecutive 12-month period (all uses); and

   b. The two (2) emergency diesel engine gen-sets (Ref. Nos. CLOUD-1 and CLOUD-2) combined shall not operate more than 760 hours per year when emissions are controlled with SCR, calculated monthly as the sum of each consecutive 12-month period (all uses); and

   c. The emergency diesel engine gen-set (Ref. No. CLOUD-3) shall not operate more than 380 hours per year when emissions are uncontrolled, calculated monthly as the sum of each consecutive 12-month period (all uses); and

   d. The emergency diesel engine gen-set (Ref. No. CLOUD-3) shall not operate more than 120 hours per year when emissions are controlled with SCR, calculated monthly as the sum of each consecutive 12-month period (all uses); and

   e. The ten (10) emergency diesel engine gen-sets (Ref. Nos. CLOUD-5 through CLOUD-14) combined shall not operate more than 1,200 hours per year when emissions are uncontrolled, calculated monthly as the sum of each consecutive 12-month period (all uses); and

   f. The ten (10) emergency diesel engine gen-sets (Ref. Nos. CLOUD-5 through CLOUD-14) combined shall not operate more than 3,800 hours per year when emissions are controlled with SCR, calculated monthly as the sum of each consecutive 12-month period (all uses); and

   g. The emergency diesel engine gen-set (Ref. No. CLOUD-4) shall not operate more than 500 hours per year, calculated monthly as the sum of each consecutive 12-month period (all uses).

   Compliance for each 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)

8. **Operating Hours –** Each individual emergency diesel engine gen-set (Ref. Nos. CLOUD-1 through CLOUD-14) shall not operate more than 27 hours per year for scheduled maintenance checks and readiness testing (Scheduled MCRT) (as provided in Condition 6c.).

   Each emergency diesel engine gen-set (Ref. Nos. CLOUD-1 through CLOUD-14) shall not operate more than 500 hours per year for all purposes (as provided in Condition 6) combined.

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.
(9 VAC 5-80-1180)

9. **Fuel Specifications –** The approved fuel for the emergency diesel engine gen-sets (Ref. Nos. CLOUD-1 through CLOUD-14) is ultra-low sulfur diesel fuel oil that:

   a. Does not exceed the American Society for Testing and Materials (ASTM) specification, D975, for 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 40 or maximum aromatic content of 35 volume percent.

   (9 VAC 5-80-1180)

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

    a. The name of the fuel supplier;

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

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

    d. A statement that the diesel fuel conforms to the applicable fuel specification requirements of Condition 9; and

    e. The sulfur content of the diesel fuel.

    Fuel sampling and analysis, independent of that used for certification, as may be periodically required or conducted by the DEQ, may be used to determine compliance with the fuel specifications stipulated in Condition 9. Exceedance of these specifications may be considered credible evidence of the exceedance of emission limits.
    (9 VAC 5-80-1180)

EMISSION LIMITS

11. **Emission Limits (Hourly) –** Emissions from the operation of each emergency diesel engine gen-set (Ref. Nos. CLOUD-1 through CLOUD-14) shall not exceed the limits specified below:

Unit	NOx (as NO_2) Uncontrolled (lb/hr)	NOx (as NO_2) Controlled with SCR (lb/hr)	CO (lb/hr)	VOC (lb/hr)	PM_{10} (lb/hr)	$PM_{2.5}$ (lb/hr)
CLOUD-1 through CLOUD-3 with SCR (each unit)	66.94	6.69	10.00	2.80	1.56	1.56
CLOUD-4	9.56	--	3.16	0.28	0.19	0.19
CLOUD-5 and CLOUD-6 with SCR (each unit)	64.31	6.43	5.68	1.51	1.43	1.43
CLOUD-7 through CLOUD-14 with SCR (each unit)	64.31	6.43	4.17	1.51	1.43	1.43

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

12. **Emission Limits (Annual) –** Emissions from the combined operation of the emergency diesel engine gen-sets (Ref. Nos. CLOUD-1 through CLOUD-14) shall not exceed the limits specified below:

Unit	NO_x (as NO_2) (tpy)	CO (tpy)	VOC (tpy)	PM_{10} (tpy)	$PM_{2.5}$ (tpy)
CLOUD-1 and CLOUD-2 (Combined)	10.58	5.00	1.40	0.78	0.78
CLOUD-3	13.12	2.50	0.70	0.39	0.39
CLOUD-5 through CLOUD-14 (Combined)	50.80	11.18	3.78	3.58	3.58
CLOUD-4	2.39	0.79	0.07	0.05	0.05
CLOUD-1 through CLOUD-14 (Combined)	76.89	19.47	5.95	4.79	4.79

These emissions are derived from the estimated overall emission contribution from operating limits. Exceedance of the operating limits may be considered credible evidence of the exceedance of emission limits. Compliance with these emission limits may be determined as stated in Conditions 7 and 11.
(9 VAC 5-80-1180)

13. **Visible Emission Limit –** Visible emissions from each emergency diesel engine gen-set (Ref. Nos. CLOUD-1 through CLOUD-14) shall not exceed 5% opacity except during one six-minute period in any one hour in which visible emissions shall not exceed 10% opacity as determined by EPA Method 9 (reference 40 CFR 60, Appendix A). This condition applies at all times except during startup, shutdown and malfunction.
(9 VAC 5-80-1180)

INITIAL COMPLIANCE DETERMINATION

14. **Stack Tests –** Initial performance tests shall be conducted on one (1) of the emergency diesel engine gen-sets Cummins Model C3000 D6e from Phase 3 of construction (Ref. Nos. CLOUD-13 and CLOUD-14) for NO_X (as NO_2) using EPA Reference Method 7 or 7E and CO using EPA Reference Method 10 or 10A, to determine compliance with the emission limits contained in Condition 11.

a. Emissions testing for the 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 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 11. 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 fuel oil;

   iii. NO_x concentration after the catalyst;

   iv. SCR catalyst bed exhaust temperature; and

   v. Urea solution injection rate.

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. Tests shall be conducted and reported and data reduced as set forth in 9 VAC 5-50-30;

e. The details of the tests are to be arranged with the Regional Air Compliance Manager of the DEQ NRO. The permittee shall submit the test protocol to the Regional Air Compliance Manager of the DEQ 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 the DEQ 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 within 60 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)

15. **Visible Emissions Evaluation (VEE) –** Concurrent with the initial performance tests required by Condition 14, VEE in accordance with 40 CFR Part 60, Appendix A, Method 9, shall also be conducted by the permittee on the emergency diesel engine gen-set selected for the stack tests of Condition 14. The details of the test shall be arranged with the Air Compliance Manager of the DEQ NRO. The permittee shall submit a VEE protocol in conjunction with the initial stack test protocol required by Condition 14, at least 30 days prior to testing.

    a. Should conditions prevent concurrent opacity observations, the Air Compliance Manager of the DEQ NRO shall be notified in writing, within seven days, and visible emissions testing shall be rescheduled within 30 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 Air Compliance Manager of the DEQ NRO within 60 days after test completion and shall conform to the test report format enclosed with this permit (Attachment A).

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

CONTINUING COMPLIANCE DETERMINATION

16. **Facility Construction –** The emergency diesel engine gen-sets (Ref. Nos. CLOUD-1 through CLOUD-14) shall be constructed so as to allow for emissions testing upon reasonable notice, 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 at the appropriate locations and safe sampling platforms and access shall be provided.
    (9 VAC 5-50-30 F and 9 VAC 5-80-1180)

17. **Emissions Testing/VEE –** Upon request by the DEQ, the permittee shall conduct stack tests and/or VEEs of the emergency diesel engine gen-sets (Ref. Nos. CLOUD-1 through CLOUD-14) to demonstrate compliance with the emission limits contained in this permit. The details of the tests shall be arranged with the Air Compliance Manager of the DEQ NRO.
    (9 VAC 5-50-30 G and 9 VAC 5-80-1200)

RECORDS

18. **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 Air Compliance Manager of the DEQ NRO. These records shall include, but are not limited to:

    a. Hourly average of NO concentration (in ppm) measured at the outlet of the SCR exhaust catalyst of the emergency diesel engine gen-sets (Ref. Nos. CLOUD-1 through CLOUD-3, and CLOUD-5 through CLOUD-14), for each hour that the engine gen-set with SCR is operated.

    b. Hourly average SCR catalyst bed exhaust temperature of each hour that each SCR equipped emergency diesel engine gen-set (Ref. Nos. CLOUD-1 through CLOUD-3, and CLOUD-5 through CLOUD-14), is operated.

    c. Monthly and annual hours of operation of each emergency diesel engine gen-set (Ref. Nos. CLOUD-1 through CLOUD-3, and CLOUD-5 through CLOUD-14), when emissions are controlled with SCR, calculated monthly as the sum of each consecutive 12-month period.

    d. Monthly and annual hours of operation of each emergency diesel engine gen-set (Ref. Nos. CLOUD-1 through CLOUD-3, and CLOUD-5 through CLOUD-14), when emissions are uncontrolled, calculated monthly as the sum of each consecutive 12-month period.

    e. Monthly and annual hours of operation for the emergency diesel engine gen-sets (Ref. Nos. CLOUD-1 and CLOUD-2) combined, when emissions are uncontrolled, calculated monthly as the sum of each consecutive 12-month period, to verify compliance with the hours of operation limitation specified in Condition 7.a.

    f. Monthly and annual hours of operation for the emergency diesel engine gen-sets (Ref. Nos. CLOUD-1 and CLOUD-2) combined, when emissions are controlled with SCR, calculated monthly as the sum of each consecutive 12-month period, to verify compliance with the hours of operation limitation specified in Condition 7.b.

    g. Monthly and annual hours of operation for the emergency diesel engine gen-sets (Ref. Nos. CLOUD-5 through CLOUD-14) combined, when emissions are uncontrolled, calculated monthly as the sum of each consecutive 12-month period, to verify compliance with the hours of operation limitation specified in Condition 7.e.

    h. Monthly and annual hours of operation for the emergency diesel engine gen-sets (Ref. Nos. CLOUD-5 through CLOUD-14) combined, when emissions are controlled with SCR, calculated monthly as the sum of each consecutive 12-month period, to verify compliance with the hours of operation limitation specified in Condition 7.f.

i. Monthly and annual hours of operation for each of the emergency diesel engine gen-sets (Ref. Nos. CLOUD-1 through CLOUD-14), for all purposes, calculated monthly as the sum of each consecutive 12-month period, to verify compliance with the hours of operation limitation specified in Condition 8 and Condition 7.g.

j. Monthly and annual hours of operation for each of the emergency diesel engine gen-sets (Ref. Nos. CLOUD-1 through CLOUD-14), for the purposes of scheduled maintenance checks and readiness testing (Scheduled MCRT), calculated monthly as the sum of each consecutive 12-month period, to verify compliance with the hours of operation limitation specified in Condition 8.

k. Monthly logs of hour meter monitoring device observations as required by Condition 2.

l. Monthly Summary Table for each emergency diesel engine gen-set to include:

    i. Operating hours;

    ii. Total engine hours on a rolling 12-month basis;

    iii. Engine operation hours with and without SCR fully operational on a 12-month basis (Ref. Nos. CLOUD-1 through CLOUD-3, and CLOUD-5 through CLOUD-14);

    iv. Reasons for operation (for emergency units only); and

    v. Startup (date and time), shutdown (date and time).

m. All fuel supplier certifications or the results of fuel sampling in accordance with permit Condition 10.

n. The manufacturer's written operating instructions or procedures developed by the owner/operator that are approved by the engine manufacturer for the emergency diesel engine gen-sets (Ref. Nos. CLOUD-1 through CLOUD-14).

o. Results of all stack tests and VEEs.

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 25.

s. Records of changes in settings that are permitted by the manufacturer of the emergency diesel engine gen-sets (Ref. Nos. CLOUD-1 through CLOUD-14).

t. Records, as necessary, to demonstrate compliance with the operating limitations of Condition 4, which includes, but is not limited to, the times, dates and reasons for operation of each emergency diesel engine gen-set that was operating between May 1 and September 30.

u. To verify compliance with Condition 5, maintain records for the emergency diesel engine gen-sets (Ref. Nos. CLOUD-1 through CLOUD-14) 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.

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.

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

19. **Initial Notifications –** The permittee shall furnish written notification to the DEQ NRO of:

a. The actual date on which construction of each emergency diesel engine gen-set (Ref. Nos. CLOUD-4, and CLOUD-7 through CLOUD-14) commenced within 30 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;

iv. Emission control equipment; and

v. Fuel used.

b. The anticipated start-up date of each emergency diesel engine gen-set (Ref. Nos. CLOUD-4, and CLOUD-7 through CLOUD-14), postmarked not more than 60 days nor less than 30 days prior to such date.

c. The actual start-up date of each emergency diesel engine gen-set (Ref. Nos. CLOUD-4, and CLOUD-5 through CLOUD-14), within 15 days after such date. The actual start-up date shall be the date on which the engine completes manufacturer's trials, but shall be no later than 30 days after start-up for manufacturer's trials.

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

20. **BACT Evaluation for Phased Construction –** Notwithstanding the permit invalidation provisions of Conditions 21 and 22 of this permit, if a program of continuous construction of the nine emergency diesel engine gen-sets (Ref. Nos. CLOUD-4, CLOUD-7 through CLOUD-14) is not commenced within 18 months from the date of this permit or discontinued for a period of 18 months or more, or is not completed within a reasonable time, the emission controls required by Condition 1 of this permit and the NO_x emission limits in Conditions 11 and 12 of this permit will be re-evaluated in conjunction with future submittals related to the phased construction (Phases 2 and 3) activities covered in this permit.

To that end, no earlier than 18 months but no later than 6 months prior to the commencement of each phased construction of the diesel engine gen-sets (applicable to Ref. Nos. CLOUD-4, CLOUD-7 through CLOUD-14) – as described in the Equipment List of this permit), the permittee shall provide written notification to the DEQ NRO for approval that the emissions controls and emission limits in this permit are still appropriate. Future emission reduction strategies determined to be applicable to future phased construction activities may require amending this permit to incorporate these strategies on the permitted equipment.
(9 VAC 5-80-1180 and 9 VAC 5-50-280 D)

GENERAL CONDITIONS

21. **Permit Invalidation (Phase 2) –** This permit to construct the emergency diesel engine gen-sets (Ref. Nos. CLOUD-4, CLOUD-7 through CLOUD-12) shall become invalid, unless an extension is granted by the DEQ, if:

A program of continuous construction is not commenced within 18 months from January 2020.
(9 VAC 5-80-1210)

22. **Permit Invalidation (Phase 3) –** This permit to construct the emergency diesel engine gen-sets (Ref. Nos. CLOUD-13 and CLOUD-14) shall become invalid, unless an extension is granted by the DEQ, if:

    A program of continuous construction is not commenced within 18 months from January 2021.
    (9 VAC 5-80-1210)

23. **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 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

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

    (9 VAC 5-80-1210 G)

24. **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)

25. **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 the DEQ personnel upon request.
    (9 VAC 5-50-20 E and 9 VAC 5-80-1180 D)

26. **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.
    (9 VAC 5-20-180 J and 9 VAC 5-80-1180 D)

27. **Notification for Facility or Control Equipment Malfunction –** The permittee shall furnish notification to the Air Compliance Manager of the DEQ NRO of malfunctions of the affected facility or related air pollution control equipment that may cause excess emissions for more than one hour. Such notification shall be made 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 14 days 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 Air Compliance Manager of the DEQ NRO.
    (9 VAC 5-20-180 C and 9 VAC 5-80-1180)

28. **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)

29. **Change of Ownership –** In the case of a transfer of ownership of a stationary source, the new owner shall abide by any current minor NSR permit issued to the previous owner. The new owner shall notify the Air Compliance Manager of the DEQ NRO of the change of ownership within 30 days of the transfer.
(9 VAC 5-80-1240)

30. **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)

Attachment A

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