



NRO-167-13

COMMONWEALTH of VIRGINIA

DEPARTMENT OF ENVIRONMENTAL QUALITY

NORTHERN REGIONAL OFFICE

13901 Crown Court, Woodbridge, Virginia 22193-1453

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

www.deq.virginia.gov

Douglas W. Domenech
Secretary of Natural
Resources

David K. Paylor
Director

Thomas A. Faha
Regional Director

August 19, 2013

Mr. Dan Barbee
General Manager, Facilities
The Aerospace Corporation
14725 Lee Road
Chantilly, VA 20151

Location: Fairfax County
Registration Number: 73977
Facility ID No. 51-059-01099

Dear Mr. Barbee:

Attached is an administrative amendment to your new source review permit dated April 9, 2012, to construct and operate diesel engine-generator sets at a data center facility in accordance with the provisions of the Commonwealth of Virginia State Air Pollution Control Board Regulations for the Control and Abatement of Air Pollution (Regulations). Permit changes are reflected in Conditions 13 and 23, on pages 6 and 10, respectively. The amended pages supersede the corresponding pages of your permit dated April 9, 2012. Also, page 1 of the permit has been updated to reflect that the permit has been amended. In addition, it appears that two documents, 'Test Report Format' and 'Appendix A -Table 1 Monitoring Data', (see attached) referenced in Conditions 16, 17 and 23, of your April 9, 2012, permit may have been inadvertently omitted when the permit was sent to you; these documents are also attached.

The aforementioned changes to your permit (Conditions 13 and 23) were made in accordance with 9 VAC 5-80-1260.C through the 'Reopening for Cause' provisions of 9 VAC 5-80-1300.A.2, resulting from a review of your April 9, 2012, permit. The Department of Environmental Quality (DEQ) notified you of its intent to reopen the April 9, 2012, permit via letter dated May 28, 2013.

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 The Aerospace Corporation of the responsibility to comply with all other local, state, and federal permit regulations. Please note that the diesel engine generator sets (Ref Nos. G-1 through G-4) may be affected facilities under 40 CFR Part 60, New Source Performance Standards (NSPS) Subpart IIII (Stationary Compression Ignition Internal Combustion Engines) and 40 CFR Part 63, National Emission Standards for Hazardous Air Pollutants for Source Categories (MACT)

Subpart **ZZZZ** (Stationary Reciprocating Internal Combustion Engines). As the owner/operator of the potentially affected units, DEQ advises you to review the NSPS and MACT to ensure compliance with applicable emission standards, operational limitations, and the monitoring, notification, reporting and recordkeeping requirements. Applicable notifications shall be sent to EPA, Region III. Both the NSPS and MACT may be found at www.ecfr.gov.

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

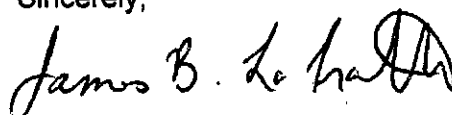
As provided by Rule 2A:2 of the Supreme Court of Virginia, you have thirty days from the date you actually received this permit or the date on which it was mailed to you, whichever occurred first, within which to initiate an appeal of this decision by filing a Notice of Appeal with:

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

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

If you have any questions concerning this permit, please contact me at (703) 583-3928 or via email at james.lafratta@deq.virginia.gov.

Sincerely,


James B. LaFratta
Regional Air Permit Manager

TAF/JBL /13-167MNSR Amendment

Attachments: Pages 1, 6 and 10 of mNSR Permit issued April 9, 2012, amended August 16, 2013;
Test Report Format; and
Appendix A -Table 1 Monitoring Data

cc: DEQ-NRO Manager/Inspector, Air Compliance (pdf copy via email)



NRO-167-13

COMMONWEALTH of VIRGINIA

DEPARTMENT OF ENVIRONMENTAL QUALITY

NORTHERN REGIONAL OFFICE

13901 Crown Court, Woodbridge, Virginia 22193-1453

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

www.deq.virginia.gov

Douglas W. Domenech
Secretary of Natural
Resources

David K. Paylor
Director

Thomas A. Faha
Regional Director

STATIONARY SOURCE PERMIT TO CONSTRUCT AND OPERATE

This permit page and pages 6 and 10 supersede the corresponding pages of your permit dated April 9, 2012.

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

The Aerospace Corporation
14725 Lee Road
Chantilly, VA 20151
Registration No.: 73977

is authorized to construct and operate

diesel engine generator sets at a data center & base building

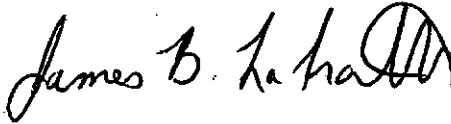
located at

14725 Lee Road
North Tower, South Tower, Visitor Center
Chantilly, VA 20151

in accordance with the Conditions of this permit.

Approved on:

April 9, 2012, amended August 19, 2013

for 
Thomas A. Faha,
Regional Director

Permit consists of 14 pages.
Permit Conditions 1 to 34.

* NO₂ – Upon DEQ verification of the initial performance test, the facility has the option of using a lower emission rate (average of three one-hour test runs x 120%) by undergoing a permit amendment to incorporate the new lower rate.

The hourly NO_x emissions are derived from manufacturer's data at maximum or other design capacity of the diesel engines. Compliance with the hourly NO_x emission limit may be based on testing, if required by DEQ.

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

12. **Annual Engine-Generator Emission Limits** - Facility-wide emissions from the engine-generator sets (Unit Ref. No.'s G-1 through G-4) shall not exceed the limits specified below:

Nitrogen Oxides (as NO ₂)	11.7 tons/yr
Carbon Monoxide (CO)	10.4 tons/yr
Volatile Organic Compounds (VOC)	2.0 tons/yr

These emissions are derived from the estimated overall emission contribution from operating limits. Exceedance of the operating limits may be considered credible evidence of the exceedance of emission limits. Compliance with these emission limits shall be determined by calculation methods as stated in Condition 13 or other means acceptable to DEQ.

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

13. **Annual Emissions Calculations** – The total annual emissions of each regulated pollutant from the diesel engine-generator sets shall be calculated monthly as the sum of each consecutive twelve-month period. Refer to Condition 23 for record keeping requirements to demonstrate compliance with this condition.

Monthly emissions for each pollutant shall be calculated using the equations listed below:

$$\begin{aligned}\text{NO}_x \text{ tons/yr} &= ((\text{Total monthly hours of operation of the engine-generator set Unit Ref. No. G-1} \times 19.24 \text{ lb/hr}^*) + (\text{Total monthly hours of operation (with SCR operating) of the engine-generator sets Unit Ref. No.'s G-2 through G-4} \times 9.14 \text{ lb/hr}^*) + (\text{Total monthly hours of operation (without SCR operating) of the engine-generator sets Unit Ref. No.'s G-2 through G-4} \times 60.08 \text{ lb/hr}^*)) \div 2000 \\ \text{CO tons/yr} &= ((\text{Total monthly hours of operation of the engine-generator set Unit Ref. No. G-1} \times 2.78 \text{ lb/hr}) + (\text{Total monthly hours of operation of the engine-generator sets Unit Ref. No.'s G-2 through G-4} \times 13.0 \text{ lb/hr})) \div 2000 \\ \text{VOC tons/yr} &= ((\text{Total monthly hours of operation of the engine-generator set Unit Ref. No. G-1} \times 0.34 \text{ lb/hr}) + (\text{Total monthly hours of operation of the engine-generator sets Unit Ref. No.'s G-2 through G-4} \times 2.56 \text{ lb/hr})) \div 2000\end{aligned}$$

- ii. The anticipated start-up date of each engine-generator set (Unit Ref. No.'s G-1 through G-4), postmarked not more than sixty days nor less than thirty days prior to such date.
- iii. The actual start-up date of each engine-generator set (Unit Ref. No.'s G-1 through G-4) within 15 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.
- iv. The anticipated date of performance tests of each engine-generator set (Unit Ref. No.'s G-1 through G-4) postmarked at least thirty days prior to such date.

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

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

These records shall include, but are not limited to:

- a. A monthly log of the monitoring device data required by Condition 3. Data may be recorded as shown in Appendix A - Table 1 Monitoring Data, or other format as approved by DEQ. A monthly log shall be maintained to provide dates, engine run times, and the reason for operation as defined in Condition 5.
- b. Annual hours of operation for each engine-generator set (including with SCR operating and without SCR operating, as applicable), calculated monthly as the sum of each consecutive twelve month period to demonstrate compliance with the requirements of Conditions 6 & 7.
- c. Monthly and annual emissions calculations for NO_x (as NO₂), CO and VOC from the engine-generator sets (Ref. No.'s G-1 through G-4) using the calculation methods in Condition 13 to verify compliance with the ton/yr emissions limitations in Condition 12.
- d. All fuel supplier certifications per Condition 10.
- e. All VEE and emission stack test reports for each engine-generator.
- f. A copy of the maintenance schedule and records of scheduled and unscheduled maintenance in accordance with Condition 28.
- g. Operator training in accordance with Condition 28.
- h. 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. 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 the occurrence.
- i. Records of the manufacturer's written instructions or procedures developed by the owner or operator that are approved by the engine manufacturer.
- j. Records of changes in settings that are permitted by the manufacturer of the engine-generator sets.

Compliance for the consecutive twelve-month period referenced in Subsections d., e., and f. above shall be demonstrated monthly by adding the total for the most recently completed calendar month to the individual monthly totals for the preceding eleven months.

SOURCE TESTING REPORT FORM

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

APPENDIX A TABLE 1 MONITORING DATA

Facility:
Registration No.
Date:

MONITORING DATA

Unit Ref #	Engine Run Time						
Date & Time	Run Time with SCR (minutes)	Run Time without SCR (minutes)	SCR Catalyst Bed Temperature (Degrees F)	DOC Catalyst Bed Temperature (Degrees F)	Engine Generator Load/Electrical Output (kW)	NOx Emission Rate (Expressed as NO2, lbs/hr)	Reason for Operation
1/1/2008 0:00							
1/1/2008 0:15							
1/1/2008 0:30							
1/1/2008 0:45							
1/1/2008 1:00							
1/1/2008 1:15							
1/1/2008 1:30							
1/1/2008 1:45							
1/1/2008 2:00							
1/1/2008 2:15							
1/1/2008 2:30							
1/1/2008 2:45							
ETC							

These are the Excel Worksheet Functions that allow the cell values to be transferred to the Monthly Summary Table. Cell ranges will require expansion.

Total	=SUM(B3:B14)	=SUM(B3:B14)	=SUM(B3:B14)	=SUM(B3:B14)	=SUM(B3:B14)	=SUM(B3:B14)
Max	=MAX(B3:B14)	=MAX(B3:B14)	=MAX(B3:B14)	=MAX(B3:B14)	=MAX(B3:B14)	=MAX(B3:B14)
Min	=MIN(B4:B14)	=MIN(B4:B14)	=MIN(B4:B14)	=MIN(B4:B14)	=MIN(B4:B14)	=MIN(B4:B14)
Avg	=AVERAGE(B5:B14)	=AVERAGE(B5:B14)	=AVERAGE(B5:B14)	=AVERAGE(B5:B14)	=AVERAGE(B5:B14)	=AVERAGE(B5:B14)