

GOVERNMENT OF THE DISTRICT OF COLUMBIA
Department of Energy and Environment

CHAPTER 2 TECHNICAL MEMORANDUM

TO: File

FROM: Stephen S. Ours, P.E. *SSO*
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SUBJECT: **JBG/Federal Center, L.L.C. at the United States Department of Transportation (USDOT) Headquarters
Permit Nos. 7018 through 7025 to Operate Four Dual-Fuel Boilers and Four Diesel Emergency Generators**

DATE: March 17, 2016

BACKGROUND INFORMATION

This memorandum addresses a permit application package for operation permits for four dual-fuel boilers and four diesel-fired emergency generators at the United States Department of Transportation (USDOT) Headquarters, located at 1200 New Jersey Avenue SE, Washington, DC 20590 submitted by JBG/Federal Center, L.L.C. (“the applicant”). The four identical 10.5 MMBtu/hr Ajax dual-fuel boilers and four diesel-fired emergency generators were installed in 2005/2006 without required construction permits. Three of the emergency generator sets are 1,250 kWe and one is 1,500 kWe (electrical output). All the emergency engines were installed in 2005.

When the applicant realized that air quality permits were needed for such units, application forms were submitted for the four boilers and two emergency generators in 2011. In 2012 the U.S. Department of Transportation applied for permits for the remaining two generators.

The Air Quality Division (AQD) reviewed the applications at the time that they were submitted and had concerns that there existed between JBG/Federal Center, L.L.C. and USDOT a “support facility” relationship. Assessing the total potential to emit (PTE) of the four boilers and four generators in combination, the facility had the potential to emit greater than 25 tons per year of oxides of nitrogen (NO_x), the major source threshold and non-attainment new source review (NSR) threshold in the District.

After numerous discussions involving potential “inherent constraints” on the operations at the facility and the feasibility/value of installing controls under NSR, it was agreed that:

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1. JBG/Federal Center L.L.C. would take responsibility for all eight pieces of equipment;
2. The applicant would propose limits on their operations to keep their PTE below the major source and NSR thresholds; and
3. The applicant would be subject to Title V permitting to make these limits federally enforceable unless the Department established a synthetic minor permitting program prior to completing the permitting process.

To this end, in April 2015, the applicant submitted an updated permit application package for all eight units. This package is being addressed at this time.

Permittee has not requested that any of the materials submitted with this application be held confidential.

TECHNICAL INFORMATION

All units were already installed and have been in operation, therefore these permits are to be issued as operation permits only. All these emission units are required to obtain Chapter 2 permit before installation and operation pursuant to the District's air quality regulations. More detailed technical information is found in the application.

REGULATORY REVIEW

20 DCMR Chapter 2, Section 200 - General Permit Requirements:

The boilers are each 10.5 MMBtu/hr Ajax boilers model WRFC-10500 located in the East and West building with dual fired (natural gas and diesel) capability. Since each of the boilers has a heat input greater than 5 MMBtu, a Chapter 2 permit is required before construction and operation. Similarly, all stationary engines are subject to Chapter 2 permitting requirements, regardless of size. In this case, the applications were submitted well after the installation.

20 DCMR Chapter 2, Section 204 - Permit Requirements for Major Sources Located in Non-Attainment Areas (New Source Review):

Upon initial review of the application submitted in 2011, it appeared that the equipment should have obtained a permit pursuant to the District's New Source Review (NSR) regulation as in effect at the time of installation of the equipment in 2006/2007 due to the potential of the equipment to emit oxides of nitrogen (NO_x) at rates above 25 tons per year (this regulation was subsequently significantly revised in 2012, but it is likely that the equipment, as constructed, and with no operational limits, would have triggered either the older version or the newer version of the rule). In most situations, if equipment is installed without permits, the installation of which triggers NSR, AQD is obliged to not allow an after-the-fact "synthetic minor"-like limitation to be put in place to avoid having to go back and apply the controls and offsets required by this regulation. However, in certain limited circumstances, such as when the cost of such controls would greatly exceed any related environmental benefits, AQD may grant an after-the-fact operational limitation to avoid NSR applicability after the fact. Because the generators make up

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most of the potential to emit (PTE) of the facility and because their operations have been and are expected to remain extremely limited, and because emission controls would be very costly to reduce emissions from seldom-used equipment, AQD decided to establish, at the applicant's request, certain limitations on operation of the equipment. Specifically, the proposed permits limit the hours of operation of the boilers to 17,520 hours per 12-month rolling period. This is the equivalent of 8 months per year of continual operation of three of the four boilers (the fourth boiler is a redundant boiler – all four boilers will never be operated simultaneously).

Additionally, the four generators are limited to 800 hours per 12-month rolling period of operation, in aggregate while the largest of the generators is limited to 200 hours of operation per 12-month rolling period itself. These operational limits limit NO_x emissions to approximately 22.95 tons per year (including unlimited operation of some insignificant sources at the facility).

20 DCMR Chapter 3 - Operating Permit Requirements:

Upon review of the submitted documentation, the combined potential emissions from the four boilers and four emergency generators would exceed the 25 tons per year major source threshold for NO_x if operated without the operational constraints. This would make this source a major source, and therefore a Chapter 3 (Title V) permit would be applicable. As discussed above, the proposed Chapter 2 permits will limit the facility's PTE below the major source threshold, but because the District does not have a "synthetic minor" permit program in place, a Title V permit will be required in order to establish the limits in a federally enforceable permit document. In the proposed Chapter 2 permits, an application for a Title V permit is required to be submitted within twelve months of the issuance of this set of permits. This source is expected to qualify as a synthetic minor if the District establishes a synthetic minor permit program in the future.

20 DCMR Chapter 5 - Source Monitoring and Testing:

Throughout both proposed permit documents, appropriate monitoring, testing, and record keeping requirements have been established to ensure that all emission and operational limits in the permits are enforceable as a practical matter. These requirements are established under the authority of Chapter 5.

20 DCMR Chapter 6 - Particulates:

The visible emission limitations of 20 DCMR 606 are applicable to this facility. Visible emissions shall not be emitted into the outdoor atmosphere from the boiler, except that discharges not exceeding forty percent (40%) opacity (unaveraged) shall be permitted for two (2) minutes in any sixty (60) minute period and for an aggregate of twelve (12) minutes in any twenty-four hour (24 hr.) period during start-up, or malfunction of the equipment. This requirement is contained in both the boiler and generator permits. Additionally, in the boiler permits, the total suspended particulate matter (TSP) limits found in 20 DCMR 600.1 are found in Condition II(d).

20 DCMR Chapter 8, Section 801 - Sulfur Content of Fuel Oils

This recently revised regulation is applicable to the back-up diesel/No. 2 fuel oil to be used in the dual-fuel boilers. Its requirements have been included in the boiler permits. Additionally, the

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basic 1% sulfur in fuel oil limit found in 20 DCMR 801.1 is applicable to both the boilers and the generator sets. However, because the applicant applied to use fuel with a sulfur content of 0.081% sulfur by weight or less in the boilers (reference the permit applications) and 0.05% sulfur or less in the generator sets (reference the PTE calculations), these limits have been included as a limit in the permits in lieu of the less stringent 1% standard.

20 DCMR Chapter 8, Section 805 - Reasonably Available Control Technology for Major Stationary Sources of the Oxides of Nitrogen:

Because the limit on operations contained in the permits limit NO_x emissions below 25 tons per year from all equipment at the facility combined, this regulation is not applicable.

20 DCMR Chapter 9, Section 903 - Odorous or Other Nuisance Air Pollutants

“An emission into the atmosphere of odorous or other air pollutants from any source in any quantity and of any characteristic, and duration which is, or is likely to be injurious to the public health or welfare, or which interferes with the reasonable enjoyment of life or property is prohibited [20 DCMR 903.1]” is applicable to all sources.

40 CFR 60, Subpart Dc – Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units

The four identical boilers have heat input ratings more than 10 MMBTU/hr and were installed after June 9, 1989 therefore this regulation is applicable. The back-up fuel for the boilers is diesel fuel containing no more than 0.081% sulfur by weight, according to the application. According to 40 CFR 60.42c(d), the sulfur dioxide standard under this rule will be met if the fuel sulfur content does not exceed 0.5% by weight. As the 0.081% stated in the application is being adopted pursuant to 20 DCMR 201 and after July 1, 2016 a 0.05% standard goes into effect pursuant to 20 DCMR 801, this 0.5% standard has been streamlined with these other requirements in the proposed permit. The particulate matter/visible emissions standards of 40 CFR 60.43c are not applicable to these units as they have heat input ratings less than 30 MMBTU/hr.

40 CFR 60, Subpart IIII – Standards of Performance for Stationary Compression Ignition Internal Combustion Engines:

Due to the age of the generator engines (installed in 2005), these units are not subject to this NSPS standard.

40 CFR 63, Subpart ZZZZ – National Emission Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines:

This regulation would be triggered by the emergency engines associated with the emergency generator sets, but for limitations placed in the permit. Because the equipment is not permitted to operate in a demand response capacity and it is also not permitted to operate for more than 15 hours in any calendar year during brownout conditions (conditions where there is a voltage or frequency reduction from the grid of more than 5%), this regulation is not applicable. These operational limitations are found in the generator permits, along with monitoring and record

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keeping requirements to ensure that these limits are enforceable as a practical matter.

40 CFR 63, Subpart JJJJJ - National Emission Standards for Hazardous Air Pollutants for Industrial, Commercial, and Institutional Boilers Area Sources

The boilers at this facility are existing boilers and are permitted to burn natural gas as primary fuel. Diesel is to be used only during gas supply interruption; therefore this subpart is not applicable as the units are considered gas-fired boilers under the rule. The source indicated that it has a contract with General Services Administration for non-interruptible natural gas, therefore the chance of using diesel in these boilers are very slim. To ensure that the boilers remain excluded from the applicability of this regulation, Condition III(c) of the boiler permits was established to require that the boilers be operated in such a way as to maintain this exemption.

RECOMMENDATIONS

The public notices have been scheduled for publication in the D.C. Register and on the Department's website on March 25, 2016. The draft permits will be available for public comment through April 25, 2016.

Any relevant comments received will be addressed before the associated permit is issued. If no adverse comments are received, I recommend that the permits be issued as proposed upon closing of the public comment period.

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