TECHNICAL SUPPORT MEMORANDUM FOR PROPOSED SYNTHETIC MINOR PERMITTING ACTION

Permit No. 7322-SM

TO: File

THROUGH: Stephen S. Ours, P.E.
Chief, Permitting Branch

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Date: 2022.06.01 13:18:06 -04'00'

FROM: John C. Nwoke
Environmental Engineer

John Nwoke

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Date: 2022.06.01 13:13:28 -04'00'

SUBJECT: United States Department of Commerce Synthetic Minor Permit No. 7322-SM for Operations at 1401 Constitution Avenue NW, Washington DC

DATE: June 1, 2022

This Technical Support Memorandum has been prepared to document the basis for a facility-wide synthetic minor operating permit for the following:

Applicant and Permittee:
United States Department of Commerce
1401 Constitution Avenue NW
Washington DC 20230

Facility Location:
United States Department of Commerce
1401 Constitution Avenue NW
Washington DC 20230

Application Signatory per 20 DCMR 200.13:
Anthony Kesslak, Manager Occupational Safety and Health

FACILITY DESCRIPTION AND BACKGROUND INFORMATION:

The United States Department of Commerce Herbert Clark Hoover Building is located at 1401 Constitution Avenue NW, Washington DC 20230. This facility operates under the NAICS code of 921110 as a Federal Executive Office Building. The facility's emission unit inventory consists of three (3) identical diesel-fueled emergency generator sets and four (4) natural gas-fired miscellaneous/insignificant fuel burning sources.

The generator sets are listed in the table below:

Emission Units[1]					
Emission Unit ID	**Emission Unit Location**	**Emission Unit Name**	**Installation Date**	**Chapter 2 Permit No.†**	**Description**
Unit 1	Triple Housing bounded by 1st and 2nd corridor; between 2nd and 3rd floor	Emergency Generator	November 2012	6848	One (1) Cummins 2,000 kWe emergency diesel generator driven by a Model Year 2010 Cummins 2,919 hp diesel engine. Engine serial number 08565441/01
Unit 2	Triple Housing bounded by 1st and 2nd corridor; between 2nd and 3rd floor	Emergency Generator	November 2012	6849	One (1) Cummins 2,000 kWe emergency diesel generator driven by a Model Year 2010 Cummins 2,919 hp diesel engine. Engine serial number 08565441/02
Unit 3	Triple Housing bounded by 1st and 2nd corridor; between 2nd and 3rd floor	Emergency Generator	November 2012	6850	One (1) Cummins 2,000 kWe emergency diesel generator driven by a Model Year 2010 Cummins 2,919 hp diesel engine. Engine serial number 08568441/01

[1] Kitchen equipment are listed under Section IV under Miscellaneous/Insignificant activities.

† These units were previously permitted under the stated Chapter 2 permit numbers. The reference here is for informational purposes only.

On January 24, 2022, the Air Quality Division (AQD) of the Department of Energy and Environment (the Department) received, via its online permit application system, an application filing, signed January 18, 2022 (an update with substantial corrections to the initial application filing of November 24, 2021), for a synthetic minor permit for the facility. The proposed permitting action accompanying this Technical Support Memorandum addresses this application.

DISCUSSION OF PROPOSED SYNTHETIC MINOR LIMITATIONS

In the application, the applicant requested a limit of 400 hours per generator set per year for each of the three emergency generator sets (Unit 1, Unit 2, and Unit 3), and a limit on the hours of operation of the cafeteria kitchen of the United States Department of Commerce. The hours of operation in question are the period in which the combustion sources are in operation. As demonstrated in the emissions summary below, these limits will ensure that emissions are maintained below the District's major source threshold of 25 tons per year of NO_x, which is the only pollutant that would have exceeded one of the District's major source thresholds if no restrictions were placed on the operations, and therefore the potential to emit, of the facility were taken.

A historical review of the equipment at the facility identified that the 400 hour per year limit on all generator sets in Section III(a) of the permit, found in Condition III(a)(2)(A) is adequate for all the facility's operational need and thus this condition is being adopted pursuant to 20 DCMR 200.7.

With the establishment of the operational limits in Conditions III(a)(2)(A), along with associated monitoring and record keeping requirements[1], and a requirement to report exceedances of these operational limits found in Condition I(c)(3)(B), the operational limits are enforceable as a practical matter, and pursuant to 20 DCMR 200.6, this facility qualifies for synthetic minor status.

Note also that the facility also operates a number of small units that burn fuel that would not normally be subject to the permitting requirements of 20 DCMR Chapter 2 due to their < 5 MMBTU/hr heat input ratings (see 20 DCMR 200.14). However, because these miscellaneous/insignificant activities have the potential to emit NOx, they have been included in Condition IV of the permit. The units identified in the application are listed in Condition IV(e) of the permit, but the facility is not required to obtain permits to install new units in this category. Rather, they are required to maintain a current inventory of these units, track fuel usage and hours of operation of the kitchen equipment to show compliance with Condition IV(f)(2)(B) of the permit, and regularly estimate emissions from the equipment. Estimated emissions from the kitchen equipment is under three percent of the plantwide emissions based on AP42 estimates for a residential furnace. The Permittee however, based its estimate of kitchen equipment emissions on actual fuel consumption, assuming a 24-hour operation. This approach in fact overestimated the emissions from the kitchen equipment. Because the Permittee had requested a limit on the hours of operation of the kitchen equipment, this restriction was placed in Condition IV(f)(2)(B) based on a telephone conversation held with Permittee on March 15, 2022 to limit the hours of operation of the combustion sources to eighteen (18) hours in any 24-hour period. These emissions estimates are to be incorporated into the annual emissions reports required for the facility and will be used to ensure that emissions from the facility do not exceed major source thresholds.

[1] See Conditions III(a)(3)(B), and III(a)(4)(A)(ii), for these associated monitoring and record keeping requirements.

EMISSIONS SUMMARY:

The following is an estimate of overall potential emissions from the facility:

FACILITY-WIDE EMISSIONS SUMMARY [TONS PER YEAR]		
Pollutants	**Potential Emissions without 20 DCMR 200.6 Limits†**	**Potential Emissions with 20 DCMR 200.6 Limits‡**
Sulfur Dioxide (SO_2)	0.031	0.029
Oxides of Nitrogen (NO_x)	29.06	23.95
Particulate Matter (PM)	0.477	0.438
Volatile Organic Compounds (VOCs)	0.735	0.629
Carbon Monoxide (CO)	2.361	2.187

† Assumes 500 hours per year of operation for all generator sets.

‡ Assumes 400 hours per year of operation for each of the three emergency generator sets operating in full standby mode (reflective of the operational mode of the engines) and kitchen hours of operation not to exceed 18 hours in any 24-hour period. These limits are being established in the permit pursuant to 20 DCMR 200.6 and 200.7.

REGULATORY REVIEW:

This facility has been found to be subject to the requirements of the following regulations (except as specified in notes below):

Federal and District Enforceable:
20 DCMR Chapter 1 - General Rules
20 DCMR Chapter 2 - General and Non-Attainment Area Permits
20 DCMR 500 - Records and Reports
20 DCMR 502 - Sampling, Tests, and Measurements
20 DCMR 600 - Fuel-Burning Particulate Emission
20 DCMR 604 - Open Burning
20 DCMR 605 - Control of Fugitive Dust
20 DCMR 606 - Visible Emissions
20 DCMR 774 - Architectural and Industrial Maintenance Coatings
20 DCMR 800 - Control of Asbestos
20 DCMR 801 - Sulfur Contents of Fuel Oils
20 DCMR 805 - Reasonably Available Control Technology for Major Stationary Sources of the Oxides of Nitrogen
40 CFR 51.212, 52.12, 52.30, 60.11, and 61.12 - Credible Evidence
40 CFR 60, Subpart IIII- Standards of Performance for Stationary Compression Ignition Internal Combustion Engines (CIICE)

40 CFR 63, Subpart ZZZZ - National Emission Standards for Hazardous Air Pollutants for Reciprocating Internal Combustion Engines (NESHAP for RICE)

District Enforceable Only:
20 DCMR 402 – Chemical Accident Prevention *(Note: AQD did not make a positive determination that this regulation was applicable to the facility, but included it as a standard requirement in the permit.)*
20 DCMR 900 - Engine idling
20 DCMR 901 - Vehicular exhaust emissions
20 DCMR 902 - Lead Content of Gasoline
20 DCMR 903 - Odorous or other nuisance air pollutants
20 DCMR 1406 - Emission Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines

20 DCMR Chapter 2 – General and Non-Attainment Area Permits:
All stationary engines are subject to Chapter 2 permitting requirements, regardless of size. As such, all of the significant units at the facility are subject to Chapter 2 permitting requirements.

As discussed above, the applicant has requested 400 hour per year operational limitations for each of the three emergency generator sets (Unit 1, Unit 2, and Unit 3) and a limit of the hours of operation of the kitchen equipment to 18 hours in any 24-hour period pursuant to 20 DCMR 200.6. In addition to 20 DCMR 200.6, 20 DCMR 200.7 is applicable to the generator set limitations as the 400 hour per year operational limits, previously established in Chapter 2 permits 6848 through 6850 were also established as after-the-fact emission limits to avoid the applicability of 20 DCMR 204, Non-Attainment New Source Review (NNSR).

20 DCMR Chapter 3 – Operating Permits and Acid Rain Programs:
As discussed above in the "Discussion of Proposed Synthetic Minor Limitations", 20 DCMR Chapter 3 will no longer be applicable upon the issuance of this permit with its limits established pursuant to 20 DCMR 200.6. The acid rain portions of 20 DCMR Chapter 3 are not, and have never been, applicable to the facility.

20 DCMR Chapter 5 – Source Monitoring and Testing:
Throughout the permit, appropriate monitoring, testing, and record keeping requirements have been established to ensure that all emission and operational limits in the permit are enforceable as a practical matter. These requirements are established under the authority of Chapter 5.

Regulatory Review for Miscellaneous/Insignificant Fuel Burning Equipment:

20 DCMR Chapter 6, Section 600: Fuel Burning Particulate Emission
Total suspended particulate emission from each of the insignificant sources of emissions varies based on the size. However, the emission must not exceed 0.13 pounds per million BTU. This requirement is contained in Condition IV(f)(1)(A) of the permit. Additionally, should any insignificant fuel burning equipment be present that exceeds 3.5 MMBTU/hr in individual heat

input rating, Condition IV(f)(1)(B) is included in the permit with the relevant equation from this regulation to establish the applicable emission limit.

20 DCMR Chapter 6, Section 606: Visible Emissions
The visible emissions limitations of 20 DCMR 606.1 are applicable to all units. Visible emissions shall not be emitted into the outdoor atmosphere from the operation of these units; provided, that discharges not exceeding forty percent (40%) opacity (unaveraged) shall be permitted for two 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 equipment.

Note that language has been included in the permit notifying the facility that there is an outstanding call for a State Implementation Plan (SIP) revision from EPA that may result in revisions to the applicable regulation. As such, if the regulation is changed, the new regulatory requirements will superseded those expressed in the permit specifically.

20 DCMR Chapter 8, Section 801: Sulfur Content of Fuel Oils
The kitchen equipment can only burn natural gas. Therefore, the sulfur content of fuel oil limitations does not apply.

20 DCMR Chapter 8, Section 805: Reasonably Available Control Technology for Major Stationary Sources of the Oxides of Nitrogen (NOx RACT)
Pursuant to 805.1(b) Any person owning, leasing, operating, or controlling a stationary source that is or was at any time subject to § 805 shall continue to comply with all requirements of § 805, even if emissions from the subject stationary source no longer exceed the twenty-five (25) ton per year applicability requirement of § 805. The US Department of Commerce was classified as a major source (though unpermitted) prior to obtaining permits 6848 through 6850 for the generators. So, NOx RACT generally applies to the facility. However, none of the equipment at the facility are subject to NOx RACT standards. In particular, the kitchen equipment is exempt from requirements pursuant to 20 DCMR 805.1(c)(2) which exempts any fuel burning equipment having a heat input capacity of less than 5 MMBTU/hr. As such, no NOx RACT requirements have been incorporated into the permit for these units.

40 CFR 60, Subpart Db - Standards of Performance for Industrial-Commercial-Institutional Steam Generating Units
The requirements of 40 CFR 60, Subpart Db are not applicable to kitchen equipment since each has heat input rates of less than 100 MMBtu/hr.

40 CFR 60, Subpart Dc – Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units:
The kitchen equipment are insignificant sources and have heat input ratings less than the 10 MMBTU threshold for this regulation. Therefore, this regulation is not applicable.

40 CFR 63, Subpart DDDDD - National Emission Standards for Hazardous Air Pollutants for Major Sources: Industrial, Commercial, and Institutional Boilers and Process Heaters
The requirements of 40 CFR 63, Subpart DDDDD are not applicable to the kitchen equipment because the US Department of Commerce is not a major source of HAPs.

40 CFR 63, Subpart JJJJJJ - National Emission Standards for Hazardous Air Pollutants for Industrial, Commercial, and Institutional Boilers Area Sources:
The kitchen equipment all burn natural gas at this facility and hence meet the definition of gas-fired units. Therefore, this subpart is not applicable.

Regulatory Review for Emergency Generator Sets:

20 DCMR 801 – Sulfur Content of Fuel Oils:
This regulation limits fuel oil sulfur content to 1% by weight in all circumstances. There are more stringent requirements for commercial fuel oil, but the only portion of 20 DCMR 801 applicable to the emergency engines is the 1% sulfur content limit. This requirement is streamlined with the more stringent requirements found in 40 CFR 60.4207(b) for the NSPS engines.

20 DCMR 805 – Reasonably Available Control Technology for Major Stationary Sources of the Oxides of Nitrogen:
Although 20 DCMR 805 applies to the facility as discussed above, the requirements of 20 DCMR 805 do not apply to the engines. Pursuant to 20 DCMR 805.1(c)(5), the requirements of 20 DCMR 805 do not apply to emergency standby engines operated less than five hundred (500) hours for any purpose, and less than 100 hours for maintenance and testing, during any consecutive twelve (12) month period. The emergency generators all have operation hour limits of 400 hours listed in Condition III(a)(2)(A) of the permit and limits of 100 hours for maintenance and testing listed in Condition III(a)(2)(C) of the permit.

40 CFR 60, Subpart IIII – Standards of Performance for Stationary Compression Ignition Internal Combustion Engines:
The engines of three diesel emergency generator sets at the facility are subject to 40 CFR 60, Subpart IIII. 40 CFR 60, Subpart IIII applies to stationary compression ignition internal combustion engines (CI-ICE) that: 1) commenced construction after July 11, 2005 and were manufactured after April 1, 2006, or 2) were modified or reconstructed after July 11, 2005.

The three (3) diesel CI-ICE identified below are subject to 40 CFR 60, Subpart IIII:

Emission Unit ID	Emission Unit Location	Generator Output (kWe)	Engine Output (hp)	Install Date
Unit 1	Between 2nd & 3rd floor/flanked by 1st & 2nd corridor	2,000	2,919	2012
Unit 2	Between 2nd & 3rd floor/flanked by 1st & 2nd corridor	2,000	2,919	2012
Unit 3	Between 2nd & 3rd floor/flanked by 1st & 2nd corridor	2,000	2,919	2012

The requirements of this regulation are incorporated throughout Condition III(a) of the permit for these units.

40 CFR 60, Subpart JJJJ – Standards of Performance for Stationary Spark Ignition Engines:
This subpart does not apply to this facility because this facility only includes compression ignition (diesel) engines.

40 CFR 63, Subpart ZZZZ – National Emission Standards for Hazardous Air Pollutants for Reciprocating Internal Combustion Engines (NESHAP for RICE):
40 CFR 63, Subpart ZZZZ applies to stationary reciprocating internal combustion engines (RICE) at major or area sources of HAP emissions to regulate/monitor HAPs such as acetaldehyde, acrolein, benzene, toluene, xylene, cadmium, chromium, lead, etc., through surrogate compounds such as formaldehyde, CO and/or VOC.

A facility that emits or has the potential to emit 10 TPY of any single HAP or 25 TPY of any combination of HAPs, is considered a major source. Any source that is not a major source is an area source. Because this facility does not have the potential to emit more than 10 TPY of a single HAP or an aggregate of more than 25 TPY of total HAPs, it is an area source. Therefore, the area source NESHAP requirements of Subpart ZZZZ are applicable to this facility.

Subpart ZZZZ is applicable to new or reconstructed diesel compression ignition (CI) engines at this facility, where "new" is defined as those engines that are manufactured or reconstructed after June 12, 2006. However, the only requirements for these units are to comply with 40 CFR 60, Subpart IIII, as applicable. This situation affects Unit 1, Unit 2, and Unit 3 generator sets previously discussed as covered by 40 CFR 60, Subpart IIII. Only the NSPS requirements have been cited in the permit for these units because Subpart ZZZZ does not add any additional compliance requirements.

PROCEDURE FOR SUBMITTING COMMENTS OR REQUESTING PUBLIC HEARING:

During the public comment period, any interested person may submit written comments on the draft permit and may request a public hearing, if no public hearing has already been scheduled. A request for public hearing shall be in writing and shall state the nature of the issues proposed to be raised in the hearing. The Department shall grant such a request if it is deemed appropriate. The venue, date, and time for any public hearing will be announced in the D.C. Register and on the Department's website.

COMMENT PERIOD:

Beginning Date: June 10, 2022
Ending Date: July 11, 2022

All written comments should be addressed to the following individual and office:

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