

GOVERNMENT OF THE DISTRICT OF COLUMBIA
Department of Energy and Environment

CHAPTER 2 TECHNICAL SUPPORT MEMORANDUM

TO: File

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

FROM: John Nwoke *SSO For JCN*
Environmental Engineer

**SUBJECT: The George Washington University (GWU)
Lisner Hall Dual Fuel-Fired Boilers
Permit Nos. 6790-R1 and 6791-R1 to Operate Two (2) Existing 7.0
MMBTU per Hour each, Dual Fuel-Fired Boilers**

DATE: May 30, 2019

BACKGROUND INFORMATION

On October 30, 2018, the Air Quality Division (AQD) of the Department of Energy and Environment (DOEE) received operating permit renewal applications for two identical existing dual fuel-fired (natural gas as primary and No. 2 fuel oil as back-up fuel) boilers. The boilers are each rated at 7.0 MMBTU/hour of heat input and are located in Lisner Hall, 2023 G Stree, NW, Washington DC.

The boilers were previously permitted under Permit Nos. 6790 and 6791, issued on January 24, 2014. These permits expired on January 23, 2019, but have been being extended pursuant to 20 DCMR 200.3. The renewal of the permits is now being considered under Permit Nos. 6790-R1 and 6791-R1.

The George Washington University has not requested that any of the materials submitted with this application be held confidential.

TECHNICAL INFORMATION

The two boilers are of the Cleaver Brooks FLX-700 model, flexible water tube design. The serial numbers for the boilers are 08860-1-1 and 08860-1-2 for EUN-321 and EUN-322, respectively. Each of the boilers is of the flexible packaged water tube, 5 Pass steam design with a nominal capacity of 167 HP with heat input rating of 7.0 MMBtu/hr. Detailed technical information was filed with the applications.

CHAPTER 2 TECHNICAL SUPPORT MEMORANDUM

The George Washington University – Lisner Hall

Permit Nos. 6790-R1 and 6791-R1 to Operate Two 7.0 MMBTU/hour Dual Fuel-Fired Boilers at 2023 G Street NW, Washington DC

May 30, 2019

Page 2

Emissions Evaluation

The boiler emissions when burning natural gas and No. 2 fuel oil, respectively, are shown in Table 1.

Table 1 – Emissions from Each 7 MMBtu/hr Boiler

Pollutant	Short-Term Limit (Natural Gas) (lb/hr)	Short-Term Limit (No. 2 Fuel oil) (lb/hr)	Maximum Annual Limit Based on No. 2 Fuel oil (tons/y)
Carbon Monoxide (CO)	0.576	0.239	1.050
Oxides of Nitrogen (NO _x)	0.686	0.956	4.190
Total Particulate Matter (PM Total) ¹	0.052	0.158	0.691
Sulfur Dioxide (SO ₂)	0.004	0.010	0.045
Volatile Organic Compounds (VOC)	0.038	0.017	0.311

¹PM Total includes both filterable and condensable fractions.

REGULATORY REVIEW

20 DCMR Chapter 2, Section 200: General Permit Requirements

The two boilers are of the Cleaver Brooks FLX-700 model, flexible water tube design. The provisions of this section are applicable to the boilers as they are stationary sources of air pollution. A permit is therefore required to operate each boiler. The permit is valid for five years and may be extended through a renewal process three months prior to the expiration date.

20 DCMR Chapter 2, Section 204: Permit Requirements for Sources Affecting Non-Attainment Areas

The review of the applicability assessment that GWU submitted pursuant to 20 DCMR 204.6 shows that the project's emissions were under the NSR "significant" thresholds for all regulated pollutants. 20 DCMR 204 was not determined to be applicable when these units were installed.

20 DCMR Chapter 2, Section 205: New Source Performance Standards

Subsection 205.1 of 20 DCMR adopts the federal New Source Performance Standards (NSPS) under 40 CFR Part 60.

40 CFR 60 Subpart Dc does not apply to the temporary boilers because each boiler is less than 10 million Btu per hour of heat input, which is below the threshold of applicability.

20 DCMR Chapter 3: Operating Permits and Acid Rain Programs

CHAPTER 2 TECHNICAL SUPPORT MEMORANDUM

The George Washington University – Lisner Hall

Permit Nos. 6790-R1 and 6791-R1 to Operate Two 7.0 MMBTU/hour Dual Fuel-Fired Boilers at 2023 G Street NW, Washington DC

May 30, 2019

Page 3

A source that has the potential to emit more than 25 tons per year of oxides of nitrogen (NO_x) is considered a Major Source and is required to obtain a Title V permit. Based on the PTE calculations in the applications, emissions of oxides of nitrogen are below the major source thresholds of 25 tons per year. However, the boilers are part of the facility's Title V Operating permit equipment inventory. Condition I(h) of the draft Chapter 2 permit requires GWU to submit an application to update/modify the facility's Title V Operating permit to include the requirements of the Chapter 2 permit.

The project is not subject to the Acid Rain Program.

20 DCMR Chapter 5, Section 500: Source Monitoring and Testing Requirements

Appropriate monitoring and testing requirements have been included in Condition IV of the permits with associated record keeping and reporting requirements in Condition V of the permit to ensure that compliance with the conditions of the permits can be evaluated.

20 DCMR Chapter 6, Section 600: Fuel Burning Particulate Emission

Total suspended particulate emission from each of the boilers shall not exceed 0.11 pounds per million Btu. This requirement is contained in Condition II(b) of the permits.

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 the 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. This requirement is contained in Condition II(c) of the permits. The affirmative defense provision of 20 DCMR 606.5 is also found in Condition II(c). The exception for uncombined water of 20 DCMR 606.7 is found in Condition II(d). Specific testing requirements related to this regulation are also included in the boiler permits.

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: Asbestos, Sulfur, Nitrogen Oxides, and Lead

The provision of 20 DCMR 801.3 with respect to sulfur content of fuel oils is applicable since the equipment may burn fuel as alternative under limited circumstances. The sulfur content of fuel oil purchased after July 1, 2018 may not exceed 0.0015 percent sulfur. This requirement is contained in Condition III(b) of the permits.

CHAPTER 2 TECHNICAL SUPPORT MEMORANDUM

The George Washington University – Lisner Hall

Permit Nos. 6790-R1 and 6791-R1 to Operate Two 7.0 MMBTU/hour Dual Fuel-Fired Boilers at 2023 G Street NW, Washington DC

May 30, 2019

Page 4

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

NOx RACT is applicable to this equipment pursuant to 20 DCMR 805.1(a)(4) because the facility it is a major stationary source of NOx and the equipment is a part of that major stationary source. See the discussion above related to 20 DCMR Chapter 3 applicability. While a specific RACT is not specified for boilers with heat input ratings below 20 MMBTU/hr, AQD has previously determined that compliance with the requirements of 20 DCMR 805.8 qualifies as RACT. As such, these requirements have been established in Conditions II(f) and V(h) of this set of permits. Note that this is condition is being newly established in this permit as it was incorrectly left out of the previous version of the permit, issued January 24, 2014.

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. This requirement is contained in Condition II(e) of the permit.

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

This regulation is not applicable because the units are below the size applicability threshold of 10 MMBTU/hr heat input. See 40 CFR 60.40c(a).

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

These boilers would have the potential to be covered by this subpart, but the applicant has asserted that they intend to operate the boilers on oil only in accordance with the allowances specified in the definition of a “gas-fired boiler” found in 40 CFR 63.11237. The requirement to do so has been placed in Condition III(e) of the permits. As such, the equipment is not subject to Subpart JJJJJ, pursuant to 40 CFR 63.11195(e).

RECOMMENDATIONS

The attached permits incorporate all applicable federal and District air pollution control laws and regulations, and if operated within the strictures of the permits, the equipment will apply with these same laws and regulations.

The permit action for the boilers will be published in the DC Register and on DOEE’s website on June 7, 2019. Public comments for the permit action will be solicited from June 7, 2019 through July 9, 2019. AQD will resolve any comments received before taking final action on the applications. If no comments are received, I recommend that

CHAPTER 2 TECHNICAL SUPPORT MEMORANDUM

The George Washington University – Lisner Hall

Permit Nos. 6790-R1 and 6791-R1 to Operate Two 7.0 MMBTU/hour Dual Fuel-Fired Boilers at 2023 G Street NW, Washington DC

May 30, 2019

Page 5

permit Nos. 6790-R1 and 6791-R1 be issued in accordance with 20 DCMR 200.2 promptly following the end of the public comment period.

SSO/JCN

