September 25, 2018

Ms. Alicia Knight

Senior Associate Vice President for Operations

The George Washington University

2025 F Street NW, Suite 215

Washington, D.C. 20052

**RE: Permit Nos. 6688-R1 and 6689-R1 to Operate Two 9.73 MMBtu/hr Dual Fuel (Natural Gas/No. 2 Fuel-Oil) -Boilers at George Washington University’s Shenkman Hall 616 23rd Street NW, Washington, DC**

Dear Ms. Knight:

Pursuant to sections 200.1 and 200.2 of Title 20 of the District of Columbia Municipal Regulations (20 DCMR), a permit from the Department of Energy and Environment (“the Department”) shall be obtained before any person can construct and operate a stationary source in the District of Columbia. The applications of the George Washington University (“the Permittee”) to operate the two (2) listed Smith Cast Iron dual fuel-fired (natural gas and No. 2 fuel oil) Hot Water Boilers located in Washington, DC have been reviewed:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  **Equipment****Location** | **Emission Unit ID** | **Serial Number** | **Natural Gas Rating (MMBTU/hr)** | **No. 2 Fuel Oil Rating (MMBTU/hr)** | **Permit Number** |
| Shenkman Hall616 23rd Street NWWashington, DC | EUN-610, Shenkman Hall Boiler #1 | 60308933 | 9.73 | 9.73 | 6688-R1 |
| Shenkman Hall616 23rd Street NWWashington, DC | EUN-611, Shenkman Hall Boiler #2 | 60308934 | 9.73 | 9.73 | 6689-R1 |

Based on the plans and specifications as detailed in the air permit applications received on February 20, 2018, the applications are hereby approved, and the operation of the hot water boilers are permitted, subject to the following conditions:

I. General Requirements:

* 1. This approval is issued pursuant to the air pollution control requirements of the applicable sections of 20 DCMR for the operation of the boilers.

b. This set of permits will expire on September 24, 2023. If continued operation after this date is desired, the Permittee shall submit applications for renewal by June 24, 2023. [20 DCMR 200.4]

1. Operation of equipment under the authority of this set of permits shall be considered acceptance of its terms and conditions.
2. The Permittee shall allow authorized officials of the District, upon presentation of identification, to:

1. Enter upon the Permittee’s premises where a source or emission unit is located, an emissions related activity is conducted, or where records required by this permit are kept;

2. Have access to and copy, at reasonable times, any records that must be kept under the terms and conditions of this permit;

3. Inspect, at reasonable times, any facilities, equipment (including monitoring and air pollution control equipment), practices, or operations regulated or required under this permit; and

4. Sample or monitor, at reasonable times, any substance or parameter for the purpose of assuring compliance with this permit or any applicable requirement.

1. This set of permits shall be kept on the premises and produced upon request.
2. This set of permits supersedes Permits No. 6688 and 6689, issued on May 15, 2013.
3. Failure to comply with the provisions of these permits may be grounds for suspension or revocation. [20 DCMR 202.2]

II. Emission Limitations:

* 1. Each of the boilers (identified as Boiler #1 and Boiler #2) shall not emit pollutants in excess of those specified in the following table [20 DCMR 201]: *Note that, unless other credible evidence of a violation, such as test results required under Condition IV(a), are identified, compliance with Conditions III(a), (b), (c), and (d) of this permit will be considered compliance with this condition.*

|  |  |  |
| --- | --- | --- |
| **Pollutant** | **Short-Term Limit** **(Natural Gas) (lb/hr)** | **Short-Term Limit** **(No. 2 Fuel Oil) (lb/hr)** |
| Carbon Monoxide (CO) | 0.801 | 0.335 |
| Oxides of Nitrogen (NOx) | 0.954 | 1.34 |
| Total Particulate Matter (PM Total)1 | 0.073 | 0.221 |
| Sulfur Dioxide (SO2) | 0.006 | 0.015 |
| Volatile Organic Compounds (VOC) | 0.053 | 0.023 |

1PM Total includes both filterable and condensable fractions.

* 1. b. Visible emissions shall not be emitted into the outdoor atmosphere from the boilers, 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, cleaning, adjustment of combustion controls, or malfunction of the equipment [20 DCMR 606.1]

*Note that 20 DCMR 606 is subject to an EPA-issued call for a State Implementation Plan (SIP) revision (known as a “SIP call”) requiring the District to revise 20 DCMR 606. See “State Implementation Plans: Response to Petition for Rulemaking; Restatement and Update of EPA’s SSM Policy Applicable to SIPs; Findings of Substantial Inadequacy; and SIP Calls To Amend Provisions Applying to Excess Emissions During Periods of Startup, Shutdown and Malfunction”, 80 Fed. Reg. 33840 (June 12, 2015). It is likely that this federal action will result in changes to the requirements of 20 DCMR 606. Any such changes, once finalized in the DCMR, will supersede the language of Condition II(b) as stated above.*

1. Total suspended particulate matter (TSP) emissions from the each of the boilers shall not be greater than 0.10 pounds per million BTU. [20 DCMR 600.1]. *Note that, unless other credible evidence of a violation, such as test results required under Condition IV(a), are identified, compliance with Conditions III(a), (b), (c), and (d) of this permit will be considered compliance with this condition.*

d. 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]

e. NOx and CO emissions shall not exceed those achieved with the performance of annual combustion adjustments on each boiler, performed using the primary fuel used for the boiler. To show compliance with this condition, the Permittee shall, each calendar year, perform adjustments of the combustion processes of the boilers with the following characteristics [20 DCMR 805.1(a)(4) and 805.8(a) and (b)]:

* + 1. Inspection, adjustment, cleaning or replacement of fuel burning equipment, including the burners and moving parts necessary for proper operation as specified by the manufacturer;
		2. Inspection of the flame pattern or characteristics and adjustments necessary to minimize total emissions of NOx and, to the extent practicable, minimize emissions of CO;
		3. Inspection of the air-to-fuel ratio control system and adjustments necessary to ensure proper calibration and operation as specified by the manufacturer; and
		4. Adjustments shall be made such that the maximum emission rate for any contaminant does not exceed the maximum allowable emission rates as set forth in Condition II of this permit.

III. Operational Limitations:

* 1. a. The primary fuel for the boilers shall be natural gas.[20 DCMR 201]

 b. The only approved alternative fuel for the boilers shall be No. 2 fuel oil containing a maximum of 0.0015 percent sulfur by weight. [20 DCMR 201, 20 DCMR 801.2(a), and 20 DCMR 801.3 (after July 1, 2018)] *Note that this is a streamlined permit condition. Therefore, compliance with this limitation will ensure compliance with all of these standards.*

 c. The boilers shall operate on No. 2 fuel oil only for the following reasons: [20 DCMR 201, 40 CFR 63.11195(e) and 40 CFR63.11237]

 1. During periods of gas supply emergencies;

 2. During periods of gas curtailment; or

 3. For periodic testing on liquid fuel not to exceed a combined total of 48 hours

 during any calendar year.

d. The boilers shall be operated and maintained at all times in a manner consistent with the manufacturer’s specifications for the equipment. [20 DCMR 201]

e. At all times, including periods of startup, shutdown, and malfunction, the Permittee shall, to the extent practicable, maintain and operate each boiler in a manner consistent with good air pollution control practice for minimizing emissions. Determination of whether acceptable operating procedures are being used will be based on information available to the Department which may include, but is not limited to, monitoring results, opacity observations, review of operating and maintenance procedures, and inspection of the source. [20 DCMR 201]

IV. Monitoring and Testing Requirements:

a. In addition to any specific testing requirements specified in this permit, the Department reserves the right to require that the Permittee perform additional emission tests using methods approved in advance by the Department. [20 DCMR 502.1]

b. If the Department requests testing of this equipment in accordance with Condition IV(a), the Permittee shall conduct performance testing on the boilers using each of the fuels (natural gas and No. 2 fuel oil) (unless otherwise specified in the request), to determine compliance with Conditions II(a) (except SO2), (b), and (c), or a subset of these requirements as requested, and shall furnish the Department with a written report of the results of such performance test in accordance with the following requirements [20 DCMR 502]:

1. One (1) original test protocol shall be submitted to the following address a minimum of thirty (30) days in advance of the proposed test date. The test shall be conducted in accordance with Federal and District requirements.

Chief, Compliance and Enforcement Branch

Department of Energy and Environment

Air Quality Division

1200 First Street NE, 5th Floor

Washington DC 20002

2. The test protocol and date(s) shall be approved by the Department prior to initiating any testing. The Department must have the opportunity to observe the test for the results to be considered for acceptance.

3. The final results of the testing shall be submitted to the Department within sixty (60) days of the test completion. One (1) original copy of the test report shall be submitted to the address in Condition IV(b)(1) above.

4. The final report of the results shall include the emissions test report (including raw data from the test) as well as a summary of the test results and a statement of compliance or non-compliance with permit conditions to be considered valid. The summary of results and statement of compliance or non-compliance shall contain the following information:

A. A statement that the Permittee has reviewed the report from the emissions testing firm and agrees with the findings.

B. Permit number(s) and condition(s) which are the basis for the compliance evaluation.

C. Summary of results with respect to the permit condition.

D. Statement of compliance or non-compliance with each permit condition.

5. The results must demonstrate to the Department’s satisfaction that the emission unit is operating in compliance with the applicable regulations and conditions of this permit; if the final report of the test results shows non-compliance the Permittee shall propose corrective action(s). Failure to demonstrate compliance through the test may result in enforcement action.

c. At least once per quarter, during operation of each boiler, the Permittee shall conduct visual observations of the emissions from each boiler. If no operations are occurring for a given boiler during a given quarter, this shall be so noted. If emissions are visible, the Permittee shall make arrangements for prompt visible emissions testing by a person certified in accordance with EPA Reference Method 9 (40 CFR 60, Appendix A). Such a test shall consist of a minimum of 30 minutes of opacity observations for the boiler in question and shall be performed while firing the same fuel as was in use when the visible emissions were observed.

d. Regardless of whether or not emissions are observed pursuant to Condition IV(c) of this permit, the Permittee shall conduct a minimum of one visible emissions test of each boiler each year for each fuel burned since the last visible emissions test required under this permit condition. Visible emissions testing required under Condition IV(a) meets the requirements of this condition on the year that it is conducted. If the only combustion of a given fuel since the last test was burned during periodic testing required by this permit, no visible emissions test for that fuel will be required under this condition. Such a test program shall consist of a minimum of 30 minutes of opacity observations of each boiler firing each fuel and shall be performed by a person certified in accordance with EPA Reference Method 9 (40 CFR 60, Appendix A).

e. Unless more frequent testing is specified elsewhere in this permit, in order to ensure compliance with Condition III(b) and the SO2 requirements of Condition II(a), the Permittee shall sample and test the fuel oil burned in the boilers at least once each calendar quarter or at the time of each fuel delivery, whichever is less frequent. For each sample, the Permittee must provide: [20 DCMR 502]

1. The fuel oil type and the ASTM method used to determine the type (see the definition of distillate oil in 40 CFR 60.41c for appropriate ASTM methods);

2. The weight percent sulfur of the fuel oil as determined using ASTM test method D-4294 or D-5453 or other method approved in advance by the Department;

3. The date and time the sample was taken;

4. The name, address, and telephone number of the laboratory that analyzed the

 sample; and

5. The type of test or test method performed.

In lieu of sampling and testing fuel oil each quarter for each of these data, the Permittee may obtain any or all of these data from the fuel oil supplier at the time of delivery and submit fuel receipts and fuel supplier certifications for all fuel deliveries that provide all of the above quality of fuel data (or those for which sampling and testing was not performed at the time of delivery) as well as the name of the fuel oil supplier, the date of delivery, and the sulfur content of the oil.

Note that the sulfur content data obtained from the fuel supplier must be the results of specific tests of the fuel at hand or the most recent representative fuel analysis from the fuel terminal prior to the fuel supplier obtaining the fuel for delivery to the Permittee, if such terminal analyses are performed on at least a monthly basis. General fuel specifications are not acceptable for this datum.

Terminal specifications (with references to appropriate ASTM methods as defined above) may be used to document the fuel oil type if the fuel supplier provides written certification that this was the material purchased from the terminal and delivered to the facility. If this method of determining the fuel oil type is used, the Department may opt to require occasional supplemental sampling and testing of the fuel oil to confirm these certifications.

If any of these data cannot be obtained from the fuel supplier, it is the responsibility of the Permittee to sample the fuel and have it analyzed to obtain the required data.

1. The Permittee shall monitor the times, dates, and reasons each boiler is operated while firing No.2 fuel oil to ensure compliance with Condition III(c).

V. Record Keeping and Reporting Requirements:

The Permittee shall maintain the following records for a period of not less than five (5) years from the date of each test, monitoring, sample measurement, report, application, or other activity: [20 DCMR 302.1(c)(2)(B) and 20 DCMR 500.8]]

a. The Permittee shall keep records of the results of all emissions testing required for each boiler pursuant to Conditions IV(a) and (b) of this permit;

b. The Permittee shall keep records of the results of all fuel sulfur testing and fuel supplier certifications obtained pursuant to Condition IV(e);

c. The Permittee shall maintain records of all visible emissions monitoring performed pursuant to Condition IV(c), including notes indicating when no observations were performed as a result of no operations of the boiler that week. These records shall be maintained in an organized fashion, shall include the identity of the person performing the monitoring, and shall be readily available for inspection by the Department;

d. The Permittee shall maintain records of all Method 9 visible emissions testing performed pursuant to Conditions IV(c) and (d). These records shall also include the identity of the person performing the visible emissions testing and documentation of his/her Method 9 certification. These records shall include documentation indicating whether the results show compliance with Condition II(b);

1. The Permittee shall maintain records of all instances of boiler operation using No. 2 fuel oil, including the reason for operation using that fuel, the identity of boiler(s) in which it is burned, and the number of hours the boiler(s) are operated using that fuel. Hours of operation for periodic testing using No. 2 fuel oil shall be maintained in a calendar year sum format [20 DCMR 500.2];
2. The Permittee shall maintain records of the amount of each fuel used each month in the boilers. These data shall be also maintained in a calendar year sum format [20 DCMR 500.2];
3. The Permittee shall keep records of the following information regarding the combustion adjustments required pursuant to Condition II(e): [20 DCMR 805.8(c)]

1. The date on which the combustion process was last adjusted;

2. The name, title, and affiliation of the person who made the adjustments;

3. The NOx emission rate, in ppmvd, after the adjustments were made;

4. The CO emission rate, in ppmvd, after the adjustments were made;

5. The CO2 concentration, in percent (%) by volume dry basis, after the adjustments were made;

6. The O2 concentration, in percent (%) by volume dry basis, after the adjustments were made; and

7. Any other information that the Department may require; and

h. The Permittee shall keep records of all maintenance performed on the boilers so as to document compliance with Condition III(d) and (e). These records shall be initialed to attest to their accuracy.

i. Based on fuel usage data and emission factors developed from emission testing or other emission factors approved by the Department, the Permittee shall, by March 1 of each year, calculate total emissions of the pollutants listed below from the boilers during the previous calendar year for each fuel used:

1. Oxides of nitrogen (NOx);

2. Sulfur dioxide (SO2);

3. Carbon monoxide (CO);

4. Volatile organic compounds (VOCs);

5. Lead (Pb) and lead compounds, as defined in 40 CFR 50.12;

6. Ammonia (NH3);

7. Particulate matter in each of the following categories:

A. Total particulate matter (total filterable plus condensable),

B. Total particulate matter less than 10 microns in aerodynamic diameter (PM10, also known as PM10-PRI), equivalent to PM10-FIL plus PM-CON,

C. Condensable particulate matter (PM-CON),

D. Filterable particulate matter less than 10 microns in aerodynamic diameter (PM10-FIL),

E. Total particulate matter less than 2.5 microns in aerodynamic diameter (PM2.5, also known as PM2.5-PRI), equivalent to PM2.5-FIL plus PM-CON, and

F. Filterable particulate matter less than 2.5 microns in aerodynamic diameter (PM2.5-FIL); and

8. All hazardous air pollutants (HAPs) as defined in §112(b) of the Clean Air Act, as revised.

h. A report of the calculations performed pursuant to Condition V(i) shall be submitted to the Department with the Annual Title V compliance certification report due each year for the previous calendar year. [20 DCMR 500.1

If you have any questions, please call me at (202) 535-1747 or John C. Nwoke at (202) 724-7778.

Sincerely,

Stephen S. Ours, P.E.

Chief, Permitting Branch

SSO:JCN