

GOVERNMENT OF THE DISTRICT OF COLUMBIA

District Department of the Environment



CHAPTER 2 OPERATION PERMIT MEMORANDUM

TO: File

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

FROM: Abraham T. Hagos *ATH*
Environmental Engineer

SUBJECT: **The Architect of the Capitol
Capitol Power Plant
Permit (#6576) to Operate Boiler #3**

DATE: November 15, 2012

BACKGROUND INFORMATION

A permit application to operate one (1) 203 MMBtu/hr natural gas and ultra low sulfur fired boiler #3 at the Capitol Power Plant facility, located at 25 E Street, SE was received by the Air Quality Division (AQD) on February 10, 2012 with additional supplemental information subsequently submitted dated March 14, 2012, March 28, 2012, September 28, 2012, October 23, 2012, November 3, 2012, and November 5, 2012.

This boiler was originally installed in 1953. In the early years of operation of the boiler, it operated on coal. In the late 1980s a consent agreement was issued to require the facility to meet emission standards. In 1989 the boiler was physically modified to add burners to fire natural gas and fuel oil. In a permit dated December 21, 1989, Capitol Power was permitted to install and operate gas-fired burners, but no mention was made of oil. In 1994, AQD identified that the equipment had been modified to burn oil, but was not permitted to do so. The Title V permit, issued April 14, 2000 maintained the natural gas only fuel limitation.

On September 20, 2000, permit #4926 was issued to allow the boiler to burn natural gas and No. 2 fuel oil. Among other requirements of this permit, NOx emissions were limited to 10 tons or less per 12-month rolling period. This limit was based on the two-year average emissions from 1994 and 1995 and was used in a netting analysis to avoid New



TECHNICAL SUPPORT MEMORANDUM

The Architect of the Capitol - Capitol Power Plant

Permit (#6576) to Operate Boiler #3

November 15, 2012

Page 2

Source Review applicability. This permit did not contain an explicit expiration date but, pursuant to 20 DCMR 200.4, was only valid for three years. The requirements of this permit were never placed in the Title V permit.

Since there was no expiration date in the September 20, 2000 permit, Capitol Power had believed that it was still in effect. Additionally, they believed that they had been in compliance with the 10 ton per year NO_x limit. However in late January 2011, Capitol Power reported that they had identified issues with their fuel meter and had actually regularly been exceeding the 10 ton per year NO_x limit, probably since issuance of the permit.

AQD intends to issue a Chapter 2 operating permit (#6576). The permit action will be published in the DC Register on November 16, 2012. Public comments for the permit action will be solicited through December 17, 2012.

The Capitol Power Plant has not requested that any of the materials submitted with this application be held confidential.

REGULATORY REVIEW

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

The Capitol Power Plant facility is an air pollution source for criteria and other air pollutants. The applicant is requesting a permit to operate fuel burning equipment greater than 5 MMBTU/hr heat input. Thus a Chapter 2 permit is required.

It should be noted that this permit will replace previously expired permit number 4926. The previously established 10 tons per 12-month rolling period NO_x limitation will not be included in this permit, but will be used to establish a plantwide applicability limit (PAL) in a separate permit to be issued simultaneously with this permit.

The specific 10 ton NO_x limitation on Boiler 3 will be able to be removed pursuant to 20 DCMR 208.4 as a result of establishment of the PAL for NO_x in a separate permit.

CPP requested to burn up to 748.80 MMSCF per year of natural gas and 1,069,730 gallons per year of #2 oil, including heating oil and distillate oil. These limits have been established in Condition III(b).

20 DCMR Chapter 3, Section 301: Operating Permit Requirements:

The Capitol Power Plant facility is a major source subject to Chapter 3 and continues to need an operating permit in accordance with 20 DCMR 300.1. This permit will need to be modified to include the new sources related to the cogeneration project, as well as the updates to the Chapter 2 requirements for Boiler 3 contained in this proposed Chapter 2 permit. The Capitol Power Plant will be required to apply for such a Chapter 3 permit

TECHNICAL SUPPORT MEMORANDUM

The Architect of the Capitol - Capitol Power Plant

Permit (#6576) to Operate Boiler #3

November 15, 2012

Page 3

amendment within 12 months of the issuance of this permit to operate boiler #3. This requirement is contained in Condition I(h) of the permit.

20 DCMR Chapter 5: Source Monitoring and Testing Requirements:

The Capitol Power Plant will maintain and operate a CEMS and COMS for NO_x and opacity in accordance with 20 DCMR 500.2 and submit the information to the District in accordance with 20 DCMR 500.9. These requirements have been established in Conditions IV(a) of the permit.

The CPP will sample and test the fuel oil at least once each calendar quarter or otherwise obtain necessary information from their fuel supplier. This requirement has been established in Condition IV(b) of the permit.

The CPP shall monitor records of the amount of fuel #2 oil and natural gas used each month in Boiler #3. These data shall be maintained in a rolling twelve month sum format. This requirement has been established in Condition V(g) of the permit.

Emissions testing is also required in the permit pursuant to this chapter.

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

The requirements of Section 600.1 were placed in Condition II(e) of the permit and testing requirements to determine compliance were placed in Condition IV(d).

20 DCMR Chapter 6, Section 606: Visible Emissions

The visible emissions limitations of 20 DCMR 606.2 are applicable to this fuel burning unit because the equipment was initially placed in initial operation before January 1, 1977. Visible emissions whose opacity is in excess of ten percent (10%) (unaveraged) at any time shall not be emitted into the outdoor atmosphere from the operation of the the unit. The visible emissions standard shall apply at all times, except; during periods of start-up, shutdown or malfunction of equipment. This requirement is contained in Condition II(d) of the permit. Compliance monitoring is ensured through the operation of a COMS required by the permit.

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

Because the unit is a fossil-fuel-fired steam-generating unit with a heat input greater than 20 MMBTU/hr, this regulation is applicable. It requires operation of a CEMS for NO_x as well as annual boiler tuning. Both of these requirements have been included in the permit.

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

TECHNICAL SUPPORT MEMORANDUM
The Architect of the Capitol - Capitol Power Plant
Permit (#6576) to Operate Boiler #3
November 15, 2012
Page 4

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(f) of the permit.

40 CFR Part 60, Subpart Db: Standards of Performance for Industrial-Commercial-Institutional Steam Generating Units

Boiler #3 is subject to 40 CFR Part 60, Subpart Db because the equipment has a heat input capacity in excess of 100 MMBTU/hr and it was modified in approximately 1989 to add the capacity to burn new fuels (ultra low sulfur #2 oil and natural gas). Of the pollutants covered by the NSPS, only NO_x emissions potential increased from the old coal burning operations (see the emission calculations submitted by Ian Donaldson of Trinity Consultants, dated October 23, 2012). The #2 fuel oil resulted in an hourly emissions increase in nitrogen oxides (NO_x) but did not result in an hourly emissions increase of PM or SO₂. As a result, AQD determined that the NSPS is triggered for NO_x only.

The requirements of Subpart Db related to NO_x have been included in the permit. See the September 28, 2012 submittal from Ian Donaldson of Trinity Consultants citing an EPA applicability determination, dated 11/15/2000 (Region 4 Control Number 0000124) for the basis for the facility only triggering the requirements of the regulation related to one pollutant.

40 CFR Part 63- National Emission Standards for Hazardous Air Pollutants (NESHAP)

A major source of hazardous air pollutants (HAPs) is defined as a source having potential emissions in excess of 25 tons per year for total HAPs and/or potential emissions in excess of 10 tons per year for any individual HAP. Currently, CPP is a major source of HAPs for hydrogen chloride (HCl). However, CPP expects to become an area source of HAPs after the cogeneration project is implemented and CPP is requesting that the District Department of the Environment (DDOE) include such provisions in the proposed permit for the cogeneration equipment (issued under separate cover). DDOE has included provisions that limit the facility-wide HAP emissions at CPP to below the major threshold limit of HAPs per year in that separately proposed permit. The potentially applicable boiler standards are discussed further below.

40 CFR 63, Subpart DDDDD – National Emission Standards for Hazardous Air Pollutants for Industrial, Commercial, and Institutional Boilers and Process Heaters

The major source boiler maximum achievable control technology (MACT) applies to industrial, commercial, and institutional boilers and process heaters at major sources of HAPs. CPP will not be subject to this requirements of the Major Source Boiler MACT because CPP will not be a Major Source Boiler MACT after the installation of the two cogeneration units, which is expected to occur prior to the applicability date of Subpart DDDDD. To ensure that compliance is not avoided, should the construction not occur as planned, Condition I(j) was included in the permit that requires the Permittee to comply

TECHNICAL SUPPORT MEMORANDUM

The Architect of the Capitol - Capitol Power Plant

Permit (#6576) to Operate Boiler #3

November 15, 2012

Page 5

with Subpart DDDDD if it is still a major source of HAPs at the time the first significant compliance deadline is reached. Because it is not expected to be triggered, this regulation is not detailed throughout the rest of the permit.

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

Because Boiler #3 uses #2 fuel oil and CPP is expected to be an area source for HAPs after the installation of the two (2) cogeneration units, the requirements of this NESHAP have been included in the permit. Specifically, the facility is required to submit an initial notification of applicability to the EPA, perform biennial boiler tune-ups (the requirement for which was changed to annual tune-ups in the permit due to a similar requirement in 20 DCMR 805, but which requires annual tune-ups), and to have performed a one-time energy assessment. All of these requirements have been included in the permit. Due to the technical applicability of Subpart DDDDD and therefore non-applicability of Subpart JJJJJ until the facility becomes an area source for HAPs, authority under 20 DCMR 201 and 20 DCMR 500.1 has also been cited in the permit to establish the Subpart JJJJJ requirements in the permit.

Monitoring, reporting and recordkeeping requirements to comply with these emission limits are contained in the permit.

RECOMMENDATIONS

The proposed project and attached permit comply with all applicable federal and District air pollution control laws and regulations.

Because this permit is superseding an expired permit with a 10 ton per 12-month rolling period NOx limitation that was established to avoid New Source Review applicability, AQD believes that this permit should only be issued in conjunction with a plantwide applicability limit (PAL) permit that only gives the facility a 10 ton per year NOx credit toward establishment of the PAL baseline.

Public comments for the permit action will be solicited from November 16, 2012 through December 17, 2012. AQD will resolve any comments received before issuing the final permit. Once any comments are addressed, and a PAL permit can be issued simultaneously, as discussed above, I recommend that permit (#6576) be issued in accordance with 20 DCMR 200.2.