

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 *JN*
Environmental Engineer

SUBJECT: United Medical Center – Permit (#7031) to Construct and Operate One Dual Fuel-Fired (Natural Gas and No. 2 Fuel Oil) Boiler

DATE: September 10, 2015

BACKGROUND

On July 1, 2015 the Air Quality Division (AQD), received a permit application from Not for Profit Hospital Corporation / United Medical Center (UMC) to construct and operate a new dual fuel (natural gas and No. 2 fuel oil/diesel fuel) boiler. The proposed boiler is a Cleaver Brooks model ICB-LN (4-PASS) unit with a heat input capacity of 24.382 MMBtu/hr (HHV basis) using No. 2 fuel oil and 24.323 MMBtu/hr using natural gas. The unit is equipped with low NO_x burners and flue gas recirculation (FGR).

Publication of the permit action is planned for September 18, 2015 in the D.C. Register. Public comment for the permit action will be solicited through October 19, 2015.

ISSUES

UMC indicated that the boiler would serve primarily as a heating boiler for the hospital. The facility hopes to commission the boiler on or around October 15, 2015. Realizing that the anticipated commission date might not be achieved, the facility is exploring the use of a temporary boiler until a permit is issued for this proposed boiler.

The facility also stated that it intends to apply for a Title V operating permit to cover other equipment in the facility, including emergency generators and existing boilers. It should be noted that a permit was issued on November 25, 2008 for one boiler at the site, but that permit has since expired. Other equipment at the site has not been permitted at all.

REGULATORY REVIEW

Both federal and District of Columbia regulations and applicable requirements apply to this project. Of particular note are the following regulations:

40 CFR 60, Subpart Dc – Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units: The boiler is subject to 40 CFR 60, Subpart Dc because of its size and age (more than 10 MMBtu/hr of heat input, and will be constructed after June 9,

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1989). Pursuant to 40 CFR 60.42c(d), the equipment must combust oil that does not exceed 0.5% sulfur by weight. Permit condition III(c) contains a more stringent 0.05% by weight sulfur limit requested by the facility. These two limits, along with the 1% sulfur limit of 20 DCMR 801, have been streamlined in the permit such that compliance with the 0.05% limit stated in the permit will ensure compliance with the other limits. The visible emission standards of this regulation are not applicable as the unit burns only oil and natural gas and has a heat input rating less than 30 MMBtu/hr.

40 CFR 63, Subpart JJJJJJ – National Emission Standards for Hazardous Air Pollutants (NESHAP) for Industrial, Commercial, and Institutional Boilers Area Sources: The boiler primarily operates on natural gas. No. 2 fuel oil will only be used for periodic testing (not to exceed 48 hours per calendar year), startups, or during natural gas curtailment or supply emergencies. Because UMC has elected to operate the boiler only during these situations, the unit is exempted from 40 CFR 63, Subpart JJJJJJ, pursuant to 40 CFR 63.111195, and is considered a gas fired boiler. Appropriate conditions have been placed in the permit to reflect the exemption. The facility also requested that a limitation be placed on the fuel oil consumption. This request was honored in Condition III(e) of the permit.

20 DCMR 209 – Permit Requirements for Non-Major Stationary Sources (Minor New Source Review) (MNSR): The facility submitted an MNSR evaluation as part of the application. It showed that the project has a potential to exceed the threshold of applicability of 20 DCMR 209, specifically, the 5 ton per year potential to emit (PTE) threshold for oxides of nitrogen (NO_x). As such, 20 DCMR 209 was triggered.

In a revised application submitted July 26, 2015, the applicant proposed that their use of low NO_x burners with flue gas recirculation was a technology previously approved by the Department for minor NSR purposes, which it was not. They also reviewed the RACT/BACT/LAER Clearinghouse (RBLC) and found several comparable determinations over the last few years. However, upon review, AQD responded that there were many lower limit determinations, so a case-by-case determination was required pursuant to 20 DCMR 209.3(e) and 209.4.

On September 9, 2015, James B. Dyer of IC Thomasson Associates, Inc., the applicant's consultant, submitted a revised application to include the required case-by-case analysis. The analysis concluded that 30 ppm NO_x emissions, achieved through the use of low NO_x burners and flue gas recirculation (FGR), consistent with the proposed design of the equipment, met the requirements of this regulation. The applicant also evaluated the possibility of a selective catalytic reduction (SCR) system on the unit. The applicant estimated at least a \$50,000 cost per ton of NO_x reduced on an annualized basis. AQD agrees that this is excessive for purposes of MNSR, and is therefore proposing not to require SCR on the equipment, but rather to accept the proposed low NO_x burners and FGR technology.

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Other 20 DCMR Regulations: The boiler is required to comply with the following requirements of 20 DCMR and these requirements have been incorporated as permit conditions:

20 DCMR 200.4, 20 DCMR 202.2, 20 DCMR 502, 20 DCMR 500.8, 20 DCMR 606.1, 20 DCMR 903.1, 20 DCMR 801.1, 20 DCMR 805.8 and 20 DCMR 201.

CONCLUSIONS

Subject to receiving no adverse public comments with regard to a segment of this project or all of it, I recommend based on all the aforementioned regulatory review that the permit be issued to UMC following completion of the public review period. If comments are received during the public review period, they will be addressed before issuance of any permit.

JCN

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