Title V Air Operation Permit Renewal
Permit No. 0570089-016-AV

APPLICANT

The applicant for this project is St. Joseph's Hospital. The applicant's responsible official and mailing address are: Isaac Mallah, St. Joseph's Hospital, 3001 W. Martin Luther King, Jr. Blvd., Tampa, FL 33607.

FACILITY DESCRIPTION

The applicant operates a group of medical facilities that includes several combustion sources to support the hospitals, which are located in Hillsborough County at 3001 W. Martin Luther King, Jr. Blvd., Tampa, FL 33607.

St. Joseph's Hospital is a group of medical facilities including St. Joseph's Hospital, St. Joseph's Children Hospital, and St. Joseph's Women's Hospital that all operate at or adjacent to the address above. The hospital includes multiple fuel combustion sources including boilers, generators, hot water heaters, a fire pump, a chiller unit, and a cogenerator.

St. Joseph's Hospital operates three large boilers. Boiler No. 2 is a Cleaver-Brooks, Model No. CB200-300, with a maximum heat input rate of 12.55 MMBTU/hr. Boiler Nos. 3 and 4 are Kewanee, Model No. Classic III Scotch Firetube, with a maximum heat input rate of 12.55 MMBTU/hr each. The boilers are fired primarily on natural gas with No. 2 fuel oil as a backup fuel. Emissions from the boilers are controlled by limits on the fuel usage and sulfur content. These boilers are subject to the requirements from 40 CFR 60 – Subpart Dc. However, these boilers are not subject to 40 CFR 63 Subpart JJJJJJ, since they meet the definition of gas-fired boiler in the subpart.

The cogeneration plant consists of a single 16.6 MMBtu/hr Fairbanks-Morse, Model No. 38ETDS8 1/8, Serial No. 38E892003TS1S8, spark ignited, natural gas fired two-stroke internal combustion engine, rated at approximately 2,200 HP. The engine is coupled to a Kato 1,710 KW generator. The exhaust gas and engine jacket water pass through heat exchangers to provide steam to supplement boilers and provide hot water for the hospital domestic use. Emissions from the cogeneration unit are controlled by limiting the type of fuel usage to natural gas. The existing cogenerator is subject to the requirements of 40 CFR 63 – Subpart ZZZZ, reflected under Subsection A of the Title V Operating Permit.

The chiller system at the main hospital includes four engines that power four different chiller units. Three of the engines are electrically powered, but the fourth engine is fired on natural gas. It is a 4.8 MMBtu/hr Caterpillar Model G3412C spark-ignited four-stroke internal combustion engine that is lean burn and rated at approximately 675 HP. Emissions are controlled by limiting the type of fuel usage to natural gas and the addition of an oxidation catalyst on the engine exhaust. The natural gas-fired chiller engine is subject to the applicable requirements of 40 CFR 63 – Subpart ZZZZ, reflected under Subsection C of the Title V Operating Permit.

There are multiple diesel-fired engines around the facility including multiple compression ignition (CI) emergency generators to provide power in emergencies where the primary power is unavailable, along with a fire pump to provide for emergency fire protection. These engines are categorically exempt from permitting pursuant to Rule 62-210.300(3)(a)35, F.A.C.; however, three of these generators are considered "new" generators subject to 40 CFR 60 – Subpart IIII, and are included in the permit as an emission unit under Subsection D of the Title V Operating Permit..

Also located at the facility is a medical waste processing/sanitation system known as the Vanish System. This system operates by grinding the medical waste in an internal chamber and thereby exposing the waste to temperatures between 275°F - 325°F. The waste material's volume is significantly reduced during the process. The shredded material exits the system and is considered sanitized per the Florida Department of Health guidelines and is no longer required to be handled as a medical waste. There is no combustion occurring as part of the waste processing system,

and the unit is electrically-powered. The finished product is hauled off-site as needed for disposal. The system was determined to be exempt from air permitting on April 3, 2008 and is included in the permit as part of Appendix I (List of Insignificant Emission Units).

Several smaller natural gas-fired boilers and hot water heaters are located throughout the medical complexes. These units are categorically exempt from permitting pursuant to Rule 62-210.300(3)(a)33., F.A.C. and are identified as part of Appendix I.

Also included in this permit are other miscellaneous unregulated/exempt emissions units and/or activities.

PROJECT DESCRIPTION

The purpose of this permitting project is to renew the existing Title V permit for the above referenced facility.

PROCESSING SCHEDULE AND RELATED DOCUMENTS

Title V Air Operation Permit No. 0570089-014-AV issued January 29, 2008
Application for a Title V Air Operation Permit Renewal received July 30, 2012
Request for Additional Information dated August 29, 2012
Additional Information Response received October 25, 2012
DRAFT/PROPOSED Title V Air Operation Permit No. 0570089-016-AV issued January 18, 2013
Comments on DRAFT/PROPOSED Title V Air Operation Permit dated March 12, 2013

PRIMARY REGULATORY REQUIREMENTS

Title III: Based on the Title V permit renewal application received on July 30, 2012, this facility is not a major source of hazardous air pollutants (HAPs).

Title V: The facility is a Title V major source of air pollution in accordance with Chapter 62-213, Florida Administrative Code (F.A.C.).

PSD: The facility is not a Prevention of Significant Deterioration (PSD)-major source of air pollution in accordance with Rule 62-212.400, F.A.C.

NSPS: The facility does operate units subject to the New Source Performance Standards (NSPS) of 40 Code of Federal Regulations (CFR) 60. The boilers are subject to 40 CFR 60 Subpart Dc - Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units. Three of the emergency generators are subject to 40 CFR 60 Subpart IIII - Standards of Performance for Stationary Compression Ignition Internal Combustion Engines.

NESHAP: The facility does operate units subject to the National Emissions Standards for Hazardous Air Pollutants (NESHAP) of 40 CFR 63. The cogenerator and natural gas-fired chiller engine are subject to 40 CFR 63 Subpart ZZZZ - Stationary Reciprocating Internal Combustion Engines.

CAIR: The facility is not subject to the Clean Air Interstate Rule (CAIR) set forth in Rule 62-296.470, F.A.C.

CAM: Compliance Assurance Monitoring (CAM) no longer applies to any of the units at the facility since the medical waste incinerator has been deactivated and removed from the permit.

PROJECT REVIEW

The renewal permit updated several portions of the permit as follows:

1) The permit was reformatted using latest version of the preferred Title V permit format. Appendix TV-6 was replaced with new Appendix TV, and Appendices RR and TR were added to document reporting and testing requirements.

2) The Process Description was updated to add a reference to the emergency generators, remove the medical waste incinerator and associated waste heat boiler, add the natural gas-fired chiller unit, and add a reference to the medical waste processing/sanitation system known as the Vanish System (see discussion below).

3) The hospital previously operated a medical waste incinerator (MWI); however, the incinerator was shut down in March 2012 and is no longer going to be operated as a MWI. The MWI, along with the corresponding waste heat boiler (Boiler #1) that operated in conjunction with the MWI, have been removed from the permit with this renewal permit. Any future operation of either unit would require processing through a construction permit prior to initiating operation. Since the MWI has been deactivated and removed from the permit, a CAM Plan is no longer required and has been removed from the permit. In addition, other appendices related to the former MWI's operation (i.e. Table OP-1 and Continuous Monitoring Device Failure Plan) have been removed from the permit.

4) A stack test was performed on the cogenerator on July 31, 2012. Although the annual emission limits from the permit were not exceeded, the results indicated that the lb/hr of emissions for carbon monoxide (CO) were greater than the equivalent lb/hr value used in calculating the annual emission limit. However, the applicant requested that the annual emission limit for CO remain unchanged in the new renewal permit. Therefore, the limit on hours of operation was reduced to 7,670 hrs/yr so the annual CO limit remains at 63.7 ton/yr. Based on the new hour limit, the NOx and VOC limits were reduced to 27.9 ton/yr and 24.2 ton/yr, respectively.

5) Since three of the emergency generators are subject to 40 CFR 60 – Subpart IIII, they have been added to the permit as an emission unit under Subsection D. Conditions of operation related to Subpart IIII, which establishes emission limits, fuel specifications, and requires the addition of an hour meter along with tracking of hours in maintenance and emergency modes, were added to the permit as part of the Specific Conditions. All of the emergency generators and the emergency fire pump are exempted from 40 CFR 63 – Subpart ZZZZ pursuant to 40 CFR 63.6590 since they are either existing institutional emergency generators or are new engines subject to 40 CFR 60 – Subpart IIII. (Note: Based on updated DEP guidance on the permitting of reciprocating internal combustion engines (RICE), the three emergency generators subject to 40 CFR 60 – Subpart IIII previously listed under Appendix ICE in the DRAFT/PROPOSED Title V Renewal Permit are now included under Subsection D. of the permit.)

6) A 675 HP natural gas-fired engine is used to power one of the four chiller units at the main hospital. This chiller engine and the cogenerator engine are both subject to 40 CFR 63 – Subpart ZZZZ. Since these engines operate on a regular basis as part of the facility's normal operations, they are considered "non-emergency" engines and are subject to multiple requirements from Subpart ZZZZ including emission limitations, testing requirements, reporting/recordkeeping, etc. Therefore, the natural gas-fired chiller engine has been added to the Title V permit as an emission unit under Subsection C and the rules related to monitoring, testing, etc., that are required by Subpart ZZZZ, have been added to this permit for both engines along with the compliance date of October 19, 2013.

   Following issuance of the DRAFT/PROPOSED permit on January 18, 2013, the EPA promulgated changes to 40 CFR 63 – Subpart ZZZZ and 40 CFR 60 Subpart IIII, which were published in the Federal Register on January 30, 2013. The new rule changes took effect on April 1, 2013. The revised rules include changes in testing and monitoring requirements, a requirement to install, operate, and maintain an oxidation catalyst on large 4SLB engines (> 500 hp) at area sources of HAP, revising the provisions for emergency demand-response, alternative requirements for engines located in remote areas, additional fuel requirements for existing emergency CI RICE, recordkeeping and reporting requirements, etc. The amended rules also corrected minor technical and editing errors in the current regulations. The revised Federal rules have been incorporated into the REVISED DRAFT/PROPOSED Title V Permit, as applicable.

7) A medical waste processing/sanitation system known as the Vanish System was added at the facility since the issuance of the last Title V permit. The system was determined to be exempt from air permitting on April

3, 2008 pursuant to Rule 62-4.070(1)(b), F.A.C., and has been added to the permit as part of Appendix I (List of Insignificant Emission Units). Details of its operation were also added to the Process Description.

8) Several smaller natural gas-fired boilers and hot water heaters are located throughout the medical complexes. These units are categorically exempt from permitting pursuant to Rule 62-210.300(3)(a)33, F.A.C. and were added as part of Appendix I (List of Insignificant Emission Units).

9) Two new natural gas generators along with four new diesel-fired generators are currently under construction. The two natural gas units are peaking units and were identified as emission units in Construction Permit No. 0570089-017-AC. The four diesel units were also included by reference in the permit, but were considered exempt from permitting since they are emergency generators. Upon completion of construction, the generators will be added to the Title V permit as part of a future permit revision.

10) Ken Given from Air Testing & Consulting, Inc. provided comments on March 12, 2013 on behalf of the applicant, regarding the DRAFT/PROPOSED Title V Permit. In his comments, he requested an alternative VOC test method for the Cogeneration Plant (EU 003). Specifically, he requested to use EPA Method 18 in lieu of EPA Method 25A in order to measure non-methane organic compounds. The current test method, EPA Method 25A, measures both methane and non-methane organics. The revised test method would allow the facility to exclude emissions of methane from the VOC compliance test.

    EPA Method 18 allows for four different sampling options: direct interface, dilution interface, adsorption tube, and Tedlar bag sampling. According to the EPA, there is a potential for errors with the adsorption tube and Tedlar bag methods. Furthermore, according to the EPA, the direct interface procedure can be used provided that the moisture content of the gas does not interfere with the analysis procedure, the physical requirements of the equipment can be met at the site, and the source gas concentration falls within the linear range of the detector. In addition, a pre-survey sample analysis is recommended in order to ensure that the target compounds are identified and the calibration and sampling is conducted within the range of the actual stack gas pollutant concentrations. As in Method 25A, Method 18 requires pre-and post-test equipment calibration procedures. Furthermore, the calibration gases for Method 18 must contain the target compounds being analyzed at three different concentrations.

    Therefore, since there is not an emission limiting standard for the cogenerator, and based on EPC staff review of EPA Method 18, EPC staff does not object to the facility using EPA Method 18, in lieu of the EPA Method 25A, provided that it uses the direct interface or dilution interface method.

CONCLUSION

This project renews Title V air operation permit No. 0570089-014-AV, which was issued on January 29, 2008. This Title V Air Operation Permit renewal is issued under the provisions of Chapter 403, Florida Statues (F.S.), and Chapters 62-4, 62-210 and 62-213, F.A.C.