



west virginia department of environmental protection

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ENGINEERING EVALUATION / FACT SHEET

BACKGROUND INFORMATION

Application No.: R13-2719A
Plant ID No.: 083-00121
Applicant: WV Division of Corrections
Facility Name: Huttonsville Correctional Center
Location: Huttonsville, Randolph County
SIC Code: 9223
Application Type: Modification
Received Date: May 25, 2012
Engineer Assigned: Roy F. Kees, P.E.
Fee Amount: \$2,000
Date Received: May 25, 2012
Complete Date: June 19, 2012
Due Date: September 19, 2012
Applicant Ad Date: June 1, 2012
Newspaper: *The Inter-Mountain*
UTM's: Easting: 588.72 km Northing: 4,283.16 km Zone: 17
Description: Application to change primary boiler fuel to natural gas while leaving diesel as a backup, and adding two emergency generators.

DESCRIPTION OF PROCESS

The application is to change the primary fuel for the two existing boilers to natural gas while allowing diesel to be used as a backup fuel source. The boilers supply steam to the prison for heat, hot water, cooking and laundry operations.

Also, two emergency generators, one Cummins, 535 horsepower (3S) installed in 2007 and one Caterpillar, 94.5 horsepower (4S) installed in 2012 will be added to this permit.

SITE INSPECTION

Due to the standard nature and small size of these boilers no site inspection was deemed necessary. The facility is, however, easily seen on Google Earth. To get to the facility take I-79 north from Charleston to Exit 99. Proceed east on US 33 for approximately 30 miles. Take US 219/250 south at Elkins. Continue south for approximately 20 miles to Huttonsville. The facility is approximately 1 mile south of Huttonsville on US Route 219. The facility is on the right.

ESTIMATE OF EMISSIONS BY REVIEWING ENGINEER

Maximum emissions from the two boilers burning natural gas as fuel and based on 8,760 hours of operation per year are listed below. The emissions for the two diesel-fired emergency generators are based on 500 hours of operation per year. Emissions for the boilers were provided by the manufacturer and the generators were calculated using manufacturer data and AP-42.

	CO		NO _x		SO _x		VOCs		PM ₁₀	
	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy
Boiler 1	1.07	4.69	1.04	4.53	0.05	0.22	0.16	0.71	0.19	0.84
Boiler 2	1.07	4.69	1.04	4.53	0.05	0.22	0.16	0.71	0.19	0.84
3S	2.65	0.66	10.91	2.73	2.16	0.54	0.35	0.09	1.16	0.29
4S	1.15	0.29	3.67	0.92	1.25	0.31	0.22	0.06	0.19	0.05
Total	5.94	10.33	16.66	12.71	3.51	1.29	0.89	1.57	1.73	2.02

Currently permitted emissions for the boilers burning diesel as fuel and based on 8,760 hours of operation per year are listed below:

	CO		NO _x		SO _x		VOCs		PM ₁₀	
	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy
Boiler 1	1.14	4.98	3.52	15.41	3.52	15.41	0.06	0.26	0.52	2.24
Boiler 2	1.14	4.98	3.52	15.41	3.52	15.41	0.06	0.26	0.52	2.24
Total	2.28	9.96	7.04	30.82	7.04	30.82	0.12	0.52	1.04	4.48

REGULATORY APPLICABILITY

The facility proposed to be permitted under this application No. R13-2719A is subject to the following state and federal regulations:

45CSR2 To Prevent and Control Particulate Air Pollution from Combustion of Fuel in Indirect Heat Exchangers.

§45-2-4.1(a)(2) limits particulate emissions from each boiler to 2.259 lbs/hr. Maximum particulate emissions from each of these boilers will be 0.19 lbs/hr for natural gas and 0.52 lbs/hr for diesel. Therefore the boilers will comply with 45CSR2

45CSR10 To Prevent and Control Air Pollution from the Emission of Sulfur Oxides.

§45-10-3.3(f) limits sulfur dioxide emissions from each boiler to 80.32 lbs/hr. Maximum sulfur dioxide emissions from each boiler will be 0.05 lbs/hr for natural gas and 3.52 lbs/hr for diesel. Therefore the boilers will comply with 45CSR10.

45CSR13 Permits for Construction, Modification, Relocation and Operation of Stationary Sources of Air Pollutants, Notification Requirements, Temporary Permits, General Permits, and Procedures for Evaluation.

The facility is subject to 45CSR13 because potential emissions from boilers exceed 6 pounds per hour and 10 tons per year when using diesel as fuel. Also, the boilers are subject to a substantive requirement of 40CFR60 Subpart Dc and the generators are subject to 40CFR60 Subpart IIII. Huttonsville Correctional paid the required \$1000 application fee and the \$1000 NSPS fee on May 25, 2012. Huttonsville Correctional placed a legal ad in *The Inter-Mountain* on June 1, 2012. The affidavit of publication was received on June 18, 2012.

45CSR16 Standards of Performance for New Stationary Sources.

45CSR30 Requirements for Operating Permits.

In accordance with 45CSR30 Major Source Determination, the boilers will be a non-major source which is subject to 40CFR60 Subpart Dc. The facility's potential to emit for any regulated air pollutant will be far less than the 45CSR30 threshold of 100 TPY. Therefore, the facility will be subject to 45CSR30 and classified as a Title V deferred non-major source.

FEDERAL REGULATIONS:

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

The new boiler is rated at a maximum of 25.1 MMBTU/hr. Since the boiler is between 10 and 100 MMBTU/hr it is subject to 40 CFR 60 Subpart Dc. However, when the boiler fires natural gas it is exempt from all emission standards. When firing diesel the boiler is subject to a fuel sulfur limit of not more than 0.5% Sulfur by weight (§60.42c)d).

40 CFR 60, Subpart IIII: Standards of Performance for Stationary Compression Ignition Internal Combustion Engines

Huttonsville is subject to 40CFR60 Subpart IIII, due to the years of manufacture of the engines (3S - 2005 & 4S - 2011). Both engines are certified by the manufacturer and therefore not subject to the testing requirements of Subpart IIII.

NONAPPLICABILITY DETERMINATIONS

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

It should be noted that Subpart JJJJJJ is triggered based on what fuel is actually fired, not what fuel(s) is permitted. The applicant has indicated in the permit application that they expect to fire only natural gas in the boiler. Therefore, the facility will not be subject to Subpart JJJJJJ so long as they don't actually fire fuel oil with the exceptions noted in §63.11237. Specifically §63.11237 states "Gas-fired boiler includes any boiler that burns gaseous fuels not combined with any solid fuels, burns liquid fuel only during periods of gas curtailment, gas supply emergencies, or periodic testing on liquid fuel. Periodic testing of liquid fuel shall not exceed a combined total of 48 hours during any calendar year).

TOXICITY OF NON-CRITERIA REGULATED POLLUTANTS

The only non-criteria regulated pollutants that will be emitted from this facility are those normally associated with the combustion of fuel oil and natural gas. The largest HAP constituent based on AP-42 is Formaldehyde. Emissions of formaldehyde from the two boilers combined will emit less than 192 pounds of formaldehyde per year. This is far below any threshold which would trigger the application of additional regulations.

AIR QUALITY IMPACT ANALYSIS

Since this is not a major source as defined in 45CSR14, no modeling was performed.

MONITORING OF OPERATIONS

The permittee will maintain the following records:

- * Monthly fuel oil and/or natural gas consumption by the boilers
- * Monthly fuel oil consumption and hours of operation of the emergency generators.
- * Written documentation from the fuel vendor that ash, fuel bound nitrogen, and sulfur content is below the levels specified in the permit. If the above documentation is unavailable from the vendor, the permittee will be required to perform annual fuel testing.

RECOMMENDATION TO DIRECTOR

Information supplied in the application indicates that compliance with all applicable regulations will be achieved. Therefore it is the recommendation of the writer that permit R13-2719A for the change to natural gas as a fuel, while keeping diesel fuel as a backup for the two boilers, and the addition of two diesel-fired emergency generators at the Huttonsville Correctional Center be granted to The WV Division of Corrections.

Roy F. Kees, P.E.
Engineer - NSR Permitting

Date