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ENGINEERING EVALUATION / FACT SHEET

BACKGROUND INFORMATION

Application No.: R13-2858
Plant ID No.: 077-00070
Applicant: Federal Bureau of Prisons
Facility Name: Hazelton Facility
Location: Preston County
SIC Code: N/A
Application Type: Construction
Received Date: September 24, 2010
Engineer Assigned: John Legg
Fee Amount: \$1,000.00
Date Received: September 27, 2010
Complete Date: January 26, 2011
Due Date: April 25, 2011
Applicant Ad Date: December 11 and 18, 2010; and December 15 and 22, 2010
Newspaper: *The Dominion Post*; and *The Preston County Journal*
UTM's: Easting: km Northing: km Zone:
Description: Construction of: 1) three (3) flexible water-tube boilers (5.51 MM Btu/hr per boiler) dual-fueled primarily by natural gas with fuel oil backup; 2) one (1) steam boiler (1.51 MM Btu/hr) fueled on natural gas; 3) twenty-six (26) domestic water heaters fueled by natural gas, and 4) two (2) back up 2,554 HP (16.78 MM Btu/hr) electric power generators fueled by #2 fuel oil.

SUMMARY

This evaluation is for the construction of an entirely new Federal Prison facility adjacent to the United States Penitentiary/Federal Prison Camp and the Secure Women's Facility located near Hazelton, Preston County, WV. It is for the construction of the equipment listed in the "Description" section above. Total emissions are estimated at:

Nitrogen Oxides (NOx)	+28.2 ton/yr	Particulate Matter (PM)	+0.5 ton/yr
Carbon Monoxide (CO)	+15.2 ton/yr	Sulfur Dioxide (SO ₂)	+0.4 ton/yr
Volatile Organic Compounds (VOC)	+ 0.9 ton/yr		

DESCRIPTION OF PROCESS

Three (3) Hydronic/Steam Boilers (Emission Unit ID's 1S, 2S, and 3S)

The three (3) flexible water-tube boilers will be located in the Central Utility Plant (CUP) building and will be used to heat the hydronic hot water loop, which will provide heat for the Federal Correction Institute's (FCI's) Buildings. The boilers are dual-fueled and will normally be operated on natural gas. If there is a natural gas outage, then the boilers will be operated on #2 fuel oil. The system is designed for only two (2) of these boilers to be operated concurrently. Combustion gases pass through the boilers and exit at the tops of the boilers to the flue which passes out the roof of the building.

Emission Point ID	Number of Units	Designation	Emission Unit ID	Heat Input per each Hot Water Boiler	Heat Input to Sources Emitting to Emission Point (1E)
1E	3	Hot Water Boilers	1S; 2S; 3S	5.5 MM Btu/hr	16.5 MM Btu/hr

Food Services Steam Boiler (Emission Unit ID 4S)

This boiler will be located in the Food Services (FS) building to provide steam for cooking equipment and dishwasher. The boiler design input rating is 440 kW (1.51 MM Btu/hr). The boiler will be natural-gas fueled. Combustion gases pass through the boiler and exit at the top of the boiler to the flue which passes out the roof of the building.

Emission Point ID	Number of Units	Designation	Emission Unit ID	Heat Input per each Water Heater	Heat Input to Sources Emitting to Emission Point (2E)
2E	1	FS-B-1	4S	44 kW (1.5 MM Btu/hr)	0.15 MM Btu/hr

26 Domestic Water Heaters: (Emission Unit ID's 5S through 30S)

The natural gas-fired water heaters (GWH) will be located throughout the FCI. The input size of these heaters are describe in below:

Emission Point ID	Number of Units	Designation		Emission Unit ID	Heat Input	Total Heat Input to Emission Points from GWH
1E	1	GWH-1	CUP	6S	44 kW (0.15 MM Btu/hr)	0.15 MM Btu/hr
2E	2	GWH-1 GWH-1	FS-A FS-B	13S 14S	147 kW (0.50 MM Btu/hr) 147 kW (0.50 MM Btu/hr)	1.00 MM Btu/hr
3E	2	GWH-1 GWH-1	AO RE	5S 7S	44 kW (0.15 MM Btu/hr) 44 kW (0.15 MM Btu/hr)	0.70 MM Btu/hr
	2	GWH-2 GWH-2	AI HS	8S 9S	58 kW (0.20 MM Btu/hr) 58 kW (0.20 MM Btu/hr)	
4E	3	GWH-3 GWH-5 GWH-6	PS UF UF	10S 11S 12S	58 kW (0.20 MM Btu/hr) 58 kW (0.20 MM Btu/hr) 58 kW (0.20 MM Btu/hr)	0.60 MM Btu/hr
	2	GWH-1 GWH-1	PS-A PS-B	15S 16S	147 kW (0.50 MM Btu/hr) 147 kW (0.50 MM Btu/hr)	1.0 MM Btu/hr
5E	12	GWH-1 GWH-1 GWH-1 GWH-1 GWH-1 GWH-1 GWH-1 GWH-1 GWH-1 GWH-1 GWH-1 GWH-1	H1-A H1-B H1-C H1-D H2-A H2-B H2-C H2-D H3-A H3-B H3-C H3-D	17S 18S 19S 20S 21S 22S 23S 24S 25S 26S 27S 28S	147 kW (0.50 MM Btu/hr) 147 kW (0.50 MM Btu/hr)	6.0 MM Btu/hr
6E	2	GWH-1 GWH-1	SH-A SH-B	29S 30S	147 kW (0.50 MM Btu/hr) 147 kW (0.50 MM Btu/hr)	1.0 MM Btu/hr
Total Heat Input from Gas Water Heaters						10.45 MM Btu/hr

Combustion gases pass through the water heaters and exit out each heater to the flue which passes out the wall or roof of the building.

Two (2) Emergency Generators (Emission Unit ID's 31S and 32S)

The two (2), No. 2 fuel oil-fired emergency generators will be located in the Central Utility Plant (CUP). Combustion gases exit each generator to exhaust system piping, pass through a muffler and exit out the side of the building.

Emission Point ID	Number of Units	Designation	Emission Unit ID	Heat Input per each Water Heater	Total Heat Input to Emission Point 7E
7E	2	Emergency Generators	31S 32S	1,750 kW (16.78 MM Btu/hr) 1,750 kW (16.78 MM Btu/hr)	33.56 MM Btu/hr

**Federal Bureau of Prisons' Two (2) New Emergency Generators,
Hazelton, Preston County, WV.**

Source ID No.	31S	32S
Emission Point ID	7E	7E
Manufacturer	Cummins Inc.	Cummins Inc.
Model	DQKAA	DQKAA
Is this a Certified Stationary Compression Ignition Engine according to 40 CFR 60 Subpart IIII? (Yes or No)	No 40CFR89	No 40CFR89
Engine Type	Lean Burn Four Stroke	Lean Burn Four Stroke
Aspiration	Turbocharged with Charge Air Cooled (CAC)	Turbocharged with Charge Air Cooled (CAC)
Fuel Type	#2 Diesel Fuel	#2 Diesel Fuel
H2S (gr/100 scf)	---	---
Operating bhp/rpm	2554 hp @ 1800 rpm	2554 hp @ 1800 rpm
BSFC (Btu/bhp-hr)	---	---
Fuel throughput	16.18 ft ³ /hr 121 gal/hr	16.18 ft ³ /hr 121 gal/hr
Operation (hr/yr)	500	500

SITE INSPECTION

It is the writer's understanding that this permit is for a new facility to be constructed adjacent to existing facilities already constructed by the Federal Bureau of Prisons at the Hazelton Facility.

A site inspection was not conducted for this review. The site was previously inspected before the construction of the Secure Women's Facility on August 14, 2002 by permit writer Ben Hunley (for permit R13-2485).

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The permit (13-2485) Hunley worked on was later modified by permit writer Jill Harris. (The resulting permit (R13-2485A) was issued on September 16, 2004.) The site was not re-inspected at that time.

During the course of this review, the writer discovered that the facility had been omitted from DAQ Enforcement's facility inspection schedule. It has since been added. However, because emission sources for the new facility are primarily natural gas-fired boilers used to produce steam for comfort heating and hot water for food preparation, and hot water heaters used to provide hot water for showering, etc., or # 2 fuel oil-fired emergency generators used to provide electrical backup during power outages, the frequency for such inspections is not as great as for industrial emission sources.

Directions to the facility (according to permit R13-2485A) are:

Located off I-68 East; from the Hazelton Road Exit #29, turn left off the exit to Casteel Road, make a right turn on Castell Road to the site entrance road which is on the left approximately 1/4mile.

ESTIMATE OF EMISSIONS BY REVIEWING ENGINEER

Total Hourly Emissions (lb/hr)

Pollutant	⁽¹⁾ Hourly Emission Rate (lb/hr)				
	Three (3) Hydronic Boilers (1S,2S, and 3S)	One (1) Food Services Boiler ⁽²⁾ (4S)	Two (2) Emergency Generators ⁽³⁾ (31S and 32 S)	Twenty-six (26) Water Heaters ⁽²⁾ (5S - 30S)	Total
Carbon Monoxide	3 X 0.84 ⁽³⁾	0.11	2 X 0.45	0.88	4.41
Nitrogen Oxide	3 X 0.79 ⁽³⁾	0.14	2 X 16.33	1.05	36.22
Particulate Matter	--	--	2 X 0.06	0.08	0.2
Sulfur Dioxide	--	--	2 X 0.31	0.01	0.63
VOC	3 X 0.05 ⁽²⁾	0.01	--	0.06	0.22

- (1) From equipment manufacturer data (lb/hr).
- (2) From burning natural gas.
- (3) From burning #2 fuel oil.

Total Yearly Emissions (lb/yr)

Pollutant	⁽¹⁾ Annual Emission Rate (Ton/yr)				
	Three (3) Hydronic Boilers (1S,2S, and 3S)	One (1) Food Services Boiler ⁽¹⁾ (4S)	Two (2) Emergency Generators ⁽²⁾ (31S and 32 S)	Twenty-six (26) Water Heaters ⁽¹⁾ (5S - 30S)	Total
Carbon Monoxide	10.36 ⁽²⁾	0.48	0.45	3.85	15.14
Nitrogen Oxide	6.62 ⁽²⁾	0.60	16.33	4.58	28.13
Particulate Matter	--	--	0.06	0.35	0.41
Sulfur Dioxide	--	--	0.31	0.03	0.34
VOC	0.56 ⁽¹⁾	0.04	--	0.26	0.86

(1) From burning natural gas.

(2) From burning #2 fuel oil.

Three (3), 5.5 MM Btu/hr, Dual-Fired Hydronic Boilers (Emission Unit ID's 1S, 2S, and 3S)

Although the permit application states that the boiler system will be designed to operate with only two of the three boilers online at any time, the permittee did not request DAQ to add a statement to the permit to limit potential boiler emissions, i.e., emissions were calculated based on three boilers operating 8,760 hrs per year.

Pollutant	⁽¹⁾ Hourly Emission Rate (per Boiler)		⁽²⁾ Annual Emission Rate (Three Boilers)
	(burning Natural Gas)	(burning #2 Fuel Oil)	(burning NG and #2 Fuel Oil)
	(lb/hr)	(lb/hr)	(ton/yr)
Carbon Monoxide	0.79	0.84	10.36
Nitrogen Oxide	0.49	0.79	6.62
VOC	0.05	0.010	0.56

(1) From equipment manufacturer data (lb/hr).

(2) Annual Emission Rate (Three Boilers) = $3 \times ((\text{Hourly Pollutant Emission Rate while burning Natural Gas (lb/hr)} \times (8760 - 500) \text{ (hr/yr)} + \text{Hourly Pollutant Emission Rate while burning \#2 Fuel Oil (lb/hr)} \times 500 \text{ (hr/yr)}) \times 1 \text{ ton/2000 lb}$

Food Services 1.51 MM Btu/hr, Natural Gas-fired, Steam Boiler (Emission Unit ID 4S)

Emission for the Food Services Steam Boiler are tabulated below:

Pollutant	⁽¹⁾ ⁽²⁾ Emission Rate	
	(lb/hr)	(ton/yr)
Carbon Monoxide	0.11	0.48
Nitrogen Oxide	0.14	0.60
VOC	0.01	0.04

- (1) Hourly emission rate from equipment Manufacturer data (lb/hr).
 (2) Annual Emission Rate based on running 8,760 hr/yr.

Two (2) No. 2 fuel oil-fired Emergency Generators (Emission Unit ID's 31S and 32S)

Pollutant	⁽¹⁾ Hourly Emission Rate (per Generator)	⁽²⁾ Annual Emission Rate (Two Generators)
	(lb/hr)	(ton/yr)
Carbon Monoxide	0.90	0.45
Nitrogen Oxide	32.66	16.33
Particulate Matter (PM)	0.12	0.06
Sulfur Dioxide	0.62	0.31

- (1) From equipment manufacturer data (lb/hr).
 (2) Annual Emission Rate (Two Generators) = 2 X Hourly Pollutant Emission Rate (lb/hr) X 500 (hr/yr) X 1 ton/2000 lb

26 Domestic Water Heaters: (Emission Unit ID's 5S through 30S)

The total heat input to the 26 hot water heaters is 10.45 MM Btu/hr (see Process Description, above). Assuming 1000 Btu/csf of natural gas, the hourly natural gas consumption rate for the 26 hot water heaters is 0.01045 MM scf/hr.

Pollutant	EPA AP-42 Emission Factor (lb/10 ⁶ scf)	Emission Rate	
		(lb/hr) ⁽¹⁾	(ton/yr)
Carbon Monoxide (CO)	84	0.88	3.85
Nitrogen Oxide (NOx)	100	1.05	4.58
Particulate Matter (Total)	7.6	0.08	0.35

Pollutant	EPA AP-42 Emission Factor (lb/10 ⁶ scf)	Emission Rate	
		(lb/hr) ⁽¹⁾	(ton/yr)
Sulfur Dioxide	0.6	0.01	0.03
Volatile Organic Compounds (VOC)	5.5	0.06	0.26

(1) Hourly Emission Rate (Twenty-six Water Heaters) =
(2) Annual Emission Rate (ton/yr) =

Emission Factor (lb/10⁶ scf) X 0.01045 MM scf/hr
lb/hr X 8760 (hr/yr) x 1 ton/2000 lb

OTHER CALCULATIONS

Natural Gas Consumption

Max. Heat Input	=	Three (3), 5.5 MM Btu/hr, Dual-Fired Hydronic Boilers (Emission Unit ID's 1S, 2S, and 3S)	+	Food Services 1.51 MM Btu/hr, Natural Gas-fired, Steam Boiler (Emission Unit ID 4S)	+	26 Domestic Water Heaters: (Emission Unit ID's 5S through 30S)
	=	16.5 MM Btu/hr		1.5 MM Btu/hr		10.45 MM Btu/hr
	=	28.45 MM Btu/hr				
Hourly Natural Gas Consumption	=	28.45 MM Btu/hr	x	1 scf / 1,000 Btu		
	=	0.02845 MM scf /hr				
Annual Natural Gas Consumption	=	0.02845 MM scf /hr	x	8,760 hr / yr	-	0.0165 MM scf/hr x 500 hr/yr (Boilers fueled by #2 fuel oil)
	=	249.3 MM scf/yr			-	8.25 scf/yr
	=	241.05 MM scf/yr				

Fuel Oil Consumption

Heat Input from #2 Fuel Oil =	Three (3), 5.5 MM Btu/hr, Dual-Fired Hydronic Boilers (Emission Unit ID's 1S, 2S, and 3S) X 500 hr / boiler / yr	+	Two (2) Emergency Generators (Emission Unit ID's 31S and 32S) X 500 hr / generator / yr
Heat Input from #2 Fuel Oil =	3 boilers X 5.5 MM Btu/hr X 500 hr /boiler /yr	+	2 generators X 16.78 MM Btu/hr X 500 hr/ generator/ yr
Heat Input from #2 Fuel Oil =	8,250 MM Btu/yr	+	16,780 MM Btu/yr
=	25,030 MM Btu/yr		
Annual Gallons of #2 Fuel Oil Consumed =	25,030 MM Btu/yr	X	1 gal #2 fuel oil/0.1385 MM Btu
=	180,722 gal/yr		

REGULATORY APPLICABILITY

The following state regulations apply:

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

This rule establishes emission limitations for smoke and particulate matter which are discharged from fuel burning units. This rule applies because the Federal Bureau of Prisons is proposing to construct the following fuel burning units:

Count	Emission Point ID	Equipment	Fuel Burned	Total MM Btu/hr
3	1E	Hydronic Boilers	Duel fueled Natural Gas & #2 Fuel Oil	16.5
1	2E	Food Services Steam Boiler	Natural Gas	1.5

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Count	Emission Point ID	Equipment	Fuel Burned	Total MM Btu/hr
26	1E thru 6E	Water Heaters	Natural Gas	10.45
2	7E	Emergency Generators	#2 Fuel Oil	16.78
Total (MM Btu/hr)				45.23

The fuel burning units to be constructed are type 'b' fuel burning units as defined in 45CSR2.10.

The fuel burning units are subject to the 10% opacity limit set forth in section 3 of the rule. In order to determine compliance with the opacity limit, the permittee shall conduct an annual visual emission observation for each of the emission points (1E through 7E) in accordance with Method 22 of 40 CFR 60, Appendix A. These observations shall be conducted during periods of normal facility operation for a sufficient time interval to determine if the unit has visible emissions using the procedures outlined in 40CFR60 Appendix A, Method 22. If sources of visible emissions are identified during the survey, the permittee shall conduct an opacity evaluation in accordance with 40CFR60 Appendix A, Method 9, with 24 hours. A 40 CFR60 Appendix A, Method 9 evaluation shall not be required if the visible emission condition is corrected in a timely manner and the units are operated at normal operating conditions with no visible emissions being observed.

In addition, the boiler must comply with the weight emission standards of section 4. From 45CSR2-4.1b, the facility is allowed a maximum of 4.01 lb/hr of particulate matter to be emitted from the fuel burning units (0.09 X total design heat input (45.23 MM Btu/hr)). The proposed fuel burning units have a potential to emit 0.2 lb/hr of particulate matter and is in compliance with the weight emission standards of section 4.

4.1.23. No person shall cause, suffer, allow or permit emission of smoke and/or particulate matter into the open air from any fuel burning unit which is greater than ten (10) percent opacity based on a six minute block average.
[45CSR§2-3.1]

4.1.24. No person shall cause, suffer, allow or permit the discharge of particulate matter into the open air from all fuel burning units located at one plant, measured in terms of pounds per hour in excess of the amount determined as follows:

For Type 'b' fuel burning units, the product of 0.09 and the total design heat inputs for such units in million B.T.U.'s per hour, provided however that no more than six hundred (600) pounds per hour of particulate matter shall be discharged into the open air from all such units; **[45CSR§2-4.1.b]**

[45CSR§2-4.1]

45CSR10 - To Prevent and Control Air Pollution From Emission of Sulfur Oxides.

The purpose of this rule is to prevent and control air pollution from the emission of sulfur oxides.

Since the proposed three (3) Hydronic Boilers, one (1) Food Services Steam Boiler, twenty-six (26) Water Heaters, and two (2) Emergency Generators combust natural gas and distillate oil, per 2-10.3, the facility is exempt from testing, monitoring, recordkeeping, and reporting of section 8.

However, the boiler will be subject to the requirements of section 3.

Section 3 of this rule deals with sulfur dioxide weight emission standards for fuel burning units. According to the rule, the proposed site for installation of the Type 'b' fuel burning unit is located in Priority Region III. The proposed boiler's emission rate on a pounds per hour basis is well below the maximum allowable emission rate set forth in section 3-3.3.f ($3.2 \times (3 \times 5.5 + 1.5 + 10.45 + 2 \times 16.78)$ total design heat input (MM Btu/hr) = 62.01 lb/hr SO₂ (allowed)).

The facility will demonstrate compliance after installation by recording the hours of operation of the three (3) Hydronic Boilers and (2) Emergency Generators and the type and amount of each fuel burned. (the Food Services Steam Boiler and the twenty-six (26) Water Heaters are fired entirely on natural gas and are assumed to be in operation 24 hr each day.)

4.1.25. Maximum Allowable Emission Rates for Similar Units in All Priority III Regions Except Region IV. -- No person shall cause, suffer, allow or permit the discharge of sulfur dioxide into the open air from all stacks located at one plant, measured in terms of pounds per hour, in excess of the amount determined as follows:

For Type 'b' and Type 'c' fuel burning units, the product of 3.2 and the total design heat inputs for such units discharging through those stacks in million BTU's per hour. **[45CSR§10-3.3.f]**

[45CSR§10-3.3]

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

The purpose of this rule is to set forth the procedures for stationary source reporting, and the criteria for obtaining a permit to construct and operate a new stationary source which is not a major stationary source, to modify a non-major stationary source, to make modifications which are not major modification to an existing major stationary source and to relocate non-major stationary sources with the state of West Virginia.

Section 13-5.1 of this rule states no person shall construct, modify, or relocate any stationary source without first obtaining a permit to construct, modify, or relocate the stationary source as required in this rule or any other applicable rule. The facility is proposing to construct several fuel-burning units. This construction is subject to the requirements of 45CSR2, 45CSR10, and 45CSR16. Therefore, the facility is required to obtain a Rule 13 permit. The facility will demonstrate compliance with this rule by following all applicable procedures required by this regulation. Several pertinent sections were quoted in the permit.

- 4.1.27. At the time a stationary source is alleged to be in compliance with an applicable emission standard and at reasonable times to be determined by the Secretary thereafter, appropriate tests consisting of visual determinations or conventional in-stack measurements or other tests the Secretary may specify shall be conducted to determine compliance. **[45CSR§13-6.1]**
- 4.1.28. The Secretary may suspend or revoke a permit or general permit registration if, after (6) months from the date of issuance, the holder of the permit cannot provide the Secretary, at the Secretary's request, with written proof of a good faith effort that construction, modification, or relocation, if applicable, has commenced. Such proof shall be provided not later than thirty (30) days after the Secretary's request. If construction or modification of a stationary source is discontinued for a period of eighteen (18) months or longer, the Secretary may suspend or revoke the permit or general permit registration. **[45CSR§13-10.2]**
- 4.1.29. The Secretary may suspend or revoke a permit or general permit registration if the plans and specifications upon which the approval was based or the conditions established in the permit are not adhered to. Upon notice of the Secretary's intent to suspend, modify or revoke a permit, the permit holder may request a conference with the Secretary in accordance with the provisions of W. Va. Code § 22-5-5 to show cause why the permit or general permit registration should not be suspended, modified or revoked. **[45CSR§13-10.3]**

45CSR16 - Standards of Performance for New Stationary Sources Pursuant to 40 CFR Part 60

This rule adopts standards of performance for new stationary sources promulgated by the USEPA pursuant to section 111(b) of the federal Clean Air Act, as amended (CAA).

The two (2) emergency generators are subject to the requirements of 40 CFR 60 Subpart IIII.

The following federal regulations apply:

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

The facility is subject to 40CFR60 Subpart IIII because the two (2) stationary compression ignition (CI) internal combustion engines (ICEs) (to be installed under this permit) will commence construction after July 11, 2005 and because the engines was manufactured after April 1, 2006 and because the engines are not a fire pump engines [§60.4200 (a)(2)(I)].

Section 60.4205b details the emission standards for emergency engines with a displacement less than 30 liters per cylinder that are not fire pump engines. They must meet the emission standards for new non-road CI engines in Section 60.4202.

Section 60.4202.a.2 states that engines with a maximum engine power greater than or equal to 37 kW (50 hp) must meet the standards in 40 CFR 89.112 and 40 CFR 89.113 for all pollutants beginning in model year 2007. [§60.4202.a.2.].

40 CFR 89.112 Table 1 provides the allowable emission standards from non-road engines. For a model year 2010 > 560 kW rated power engine, the allowable emission standards are 6.4 (g/kw-hr) for NOx + VOC, 3.5 (g/kw-hr) for CO, and 0.20 (g/kw-hr) for PM. The facility's engine meets these requirements.

The facility is subject to 40 CFR 80 because Section 60.4207 states that owners and operators of stationary CI ICE subject to Subpart IIII that use diesel fuel must use diesel fuel that meets the requirements of 40 CFR 80.510(a) beginning October 1, 2007 [§60.4207.a.]

The vender information given in the permit application in Attachment L states that the generator engines' emission levels are "EPA NSPS Stationary Emergency Tier 2."

The following state regulations do not apply:

45CSR7 - To Prevent and Control Particulate Matter Air Pollution From Manufacturing Processes and Associated Operations

The purpose of this rule is to prevent and control particulate matter air pollution from manufacturing processes and associated operations. The facility is not considered to be a manufacturing operation. Therefore, this rule does not apply to the proposed construction.

45CSR14- Permits of Construction and Major Modification of Major Stationary Sources of Air Pollution For the Prevention of Significant Deterioration

The purpose of this rule is to quantitatively define significant deterioration of air quality with respect to the desired degree of preservation of air quality for various areas and to set forth procedures for registration and reporting, and the criteria for obtaining a permit to construct or relocate a major stationary source or make a major modification to a stationary source within a designated attainment or unclassified area of the State of West Virginia. A major source defined by this rule is a source that has the potential to emit 100 tons per year of any regulated air pollutant and is listed in Table 1 of this rule or a stationary source that has the potential to emit 250 tons per year of any regulated air pollutant. The facility does not have the potential to emit 100 tons per year of any regulated air pollutant. Therefore, this regulation does not apply to this facility.

45CSR27 - To Prevent and Control the Emissions of Toxic Air Pollutants

The purpose of 45CSR27 is to prevent and control the discharge of toxic air pollutants requiring the application of best available technology. Toxic air pollutants means any of the following chemicals: Acrylonitrile, Allyl Chloride, Benzene, 1,3,-Butadiene, Carbon Tetrachloride, Chloroform, Ethylene Dichloride, Ethylene Oxide, Formaldehyde, Methylene Chloride, Propylene Oxide, Trichloroethylene, Vinyl Chloride, Vinylidene Chloride. The facility does not have the potential to emit any of the above air pollutants in the amounts that exceed the thresholds in Table A. Therefore, this regulation does not apply to the proposed source.

45CSR34 - Emission Standards for Hazardous Air Pollutants for Source Categories Pursuant to 40 CFR Part 63

The rule establishes general provisions for national emission standards for hazardous air pollutants (NESHAPS) or other regulatory requirements pursuant to section 112 of the federal Clean Air Act, as amended (CAA). The facility and the proposed source do not have the potential to emit hazardous air pollutants (HAPs) in the amount

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equal to or greater than 10 tons of an individual HAP per year or 25 tons of aggregated HAPs per year. Therefore, there are no regulations pursuant to 40 CFR Part 63 that apply to his facility.

45CSR30 - Requirements of Operating Permits

Although the two (2) emergency generator engines are subject to 40 CFR 60 Subpart IIII, the facility is an area source and is not considered to be a Title V source.

The following federal regulations do not apply:

45CSR 60 Subpart Dc - Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units

This regulation applies to each steam generating unit for which construction, modification, or reconstruction is commenced after June 9, 1989 and that has a maximum design heat input capacity of 29 megawatts (100 MM Btu/hr) or less, but greater than or equal to 2.9 MW (10 MM Btu/hr). The proposed boilers have maximum design heat inputs of 5.5 MM Btu/hr and 1.5 MM Btu/hr and are therefore not subject to this rule, i.e., the boilers are too small.

TOXICITY OF NON-CRITERIA REGULATED POLLUTANTS

Various non-criteria regulated air pollutants are emitted from the incomplete combustion of natural gas and distillate oil in the fuel burning units to be constructed under this permit. Since only trace amounts of toxic air pollutants are present after the combustion of the fuels, it is this writer's opinion that any emissions of no-criteria regulated air pollutants will not adversely impact the quality of the surround ambient air at the concentrations, discharge rates, and point of introduction into the atmosphere as described in the permit application.

AIR QUALITY IMPACT ANALYSIS

The proposed construction is not a major source as defined by 45CSR14. No modeling study was performed for the proposed construction.

MONITORING AND RECORDKEEPING REQUIREMENTS

4.4.1. Records, Operation and Compliance.

- a. Hours Hydronic Boilers Burned #2 Fuel Oil. To demonstrate compliance with Sections 4.1.1 and 4.1.2 of this permit , a person designated by a Responsible Official or Authorized Representative shall maintain a twelve-month-rolling total of the number of hours #2 fuel oil is burned in the three (3), 5.5 MM Btu/hr Hydronic Boilers.
- b. Total Natural Gas Usage in Hydronic Boilers, Food Services Steam Boiler & Hot Water Heaters. To demonstrate compliance with Sections 4.1.3 and 4.1.4. of this permit, a person designated by a Responsible Official or Authorized Representative shall maintain a twelve-month-rolling total of the amount of natural gas burned in the three (3) Hydronic Boilers (Emission Unit ID's 1S, 2S, and 3S), the one (1) Food Services Steam Boiler (Emission Unit ID 4S) and the twenty-six (26) Water Heaters (Emission Unit ID's 5S through 30S).
- c. Total #2 Fuel Oil Usage in Hydronic Boilers & Emergency Generators. To demonstrate compliance with Sections 4.1.5 and 4.1.6. of this permit, a person designated by a Responsible Official or Authorized Representative shall maintain a twelve-month-rolling total of the amount of #2 fuel oil burned in the three (3) Hydronic Boilers (Emission Unit ID's 1S, 2 S, and 3S) and the two (2) Emergency Generators (Emission Unit ID's 31S and 32S).
- d. Hours of Operation of Emergency Generators. To demonstrate compliance with Section 4.1.8. of this permit, a person designated by a Responsible Official or Authorized Representative shall maintain twelve-month-rolling totals of the number of hours each Emergency Generator (Emission Unit ID's 31S and 32S) operated.
- e. Sulfur Content of #2 Fuel Oil Shipments. To demonstrate compliance with Section 4.1.22 of this permit, a person designated by a Responsible Official or Authorized Representative shall maintain records of all #2 fuel oil supplier certifications showing sulfur content of shipment.
- f. To demonstrate compliance with Section 4.1.23 of this permit, the permittee shall conduct annual visual emission observations in accordance with Method 22 of 40 CFR 60, Appendix A. These observations shall be conducted during periods of normal facility operation for a sufficient time interval to determine if the fuel-burning units have visible emissions using procedures outline in 40CFR60 Appendix A, Method 22. If sources of visible emissions are identified during the survey, the permittee shall conduct an opacity evaluation in accordance with 40CFR60 Appendix A, Method 9, within 24 hours. A 40CFR60 Appendix A, Method 9 evaluation shall not be required if the visible emission condition is corrected in a timely manner and the unit(s) is/are operated at normal operating conditions with no visible emissions being observed.

4.4.2. Record of Monitoring. The permittee shall keep records of monitoring information that include the following:

- a. The date, place as defined in this permit and time of sampling or measurements;
- b. The date(s) analyses were performed;
- c. The company or entity that performed the analyses;
- d. The analytical techniques or methods used;
- e. The results of the analyses; and
- f. The operating conditions existing at the time of sampling or measurement.

- 4.4.3. Equipment Maintenance Records. The permittee shall maintain maintenance records relating to failure and/or repair of emergency generator equipment. In the event of equipment or system failure, these records shall document the permittee's effort to maintain proper and effective operation of such equipment and/or systems.
- 4.4.4. Certification of Information. Any application form, report, or compliance certification required by this permit to be submitted to the Division of Air Quality and/or USEPA shall contain a certification by the responsible official that states that, based on information and belief formed after reasonable inquiry, the statements and information in the document are true, accurate and complete.
- 4.4.5. Emergency Generator Engines. If the stationary CI internal combustion engine is an emergency stationary internal combustion engine, the owner or operator is not required to submit an initial notification. Starting with the model years in table 5 to this subpart, if the emergency engine does not meet the standards applicable to non-emergency engines in the applicable model year, the owner or operator must keep records of the operation of the engine in emergency and non-emergency service that are recorded through the non-resettable hour meter. The owner must record the time of operation of the engine and the reason the engine was in operation during that time. [40CFR§60.4214b]
- 4.4.6. Emergency Generator Engines. If the stationary CI internal combustion engine is equipped with a diesel particulate filter, the owner or operator must keep records of any corrective action taken after the backpressure monitor has notified the owner or operator that the high backpressure limit of the engine is approached. [40CFR§4214c]

4.5. Reporting Requirements

- 4.5.1. Upon observing any visible emissions in excess of ten percent (10%) opacity, the permittee shall submit a written report, certified by a responsible official, to the Director of the Division of Air Quality within five (5) days after taking said opacity reading.

RECOMMENDATION TO DIRECTOR

Permit application R13-2858 submitted by the Federal Bureau of Prisons has been reviewed and determined to meet all applicable requirements. It is therefore recommended that the resulting permit be approved.

John Legg
Permit Writer

Date

Fact Sheet R13-2858
Federal Bureau of Prisons
Hazelton Facility