



---

**west virginia** department of environmental protection

---

Division of Air Quality  
601 57<sup>th</sup> Street SE  
Charleston, WV 25304  
Phone (304) 926-0475 • FAX: (304) 926-0479

Earl Ray Tomblin, Governor  
Randy C. Huffman, Cabinet Secretary  
www.dep.wv.gov

## **ENGINEERING EVALUATION / FACT SHEET**

### BACKGROUND INFORMATION

Application No.: R13-2824A  
Plant ID No.: 033-00026  
Applicant: Louis A. Johnson VA Medical Center  
Facility Name: Clarksburg Facility  
Location: Clarksburg, Harrison County  
SIC Code: 8062  
Application Type: Modification  
Received Date: September 7, 2010  
Engineer Assigned: David Keatley  
Fee Amount: \$2,000 (\$1,000 for modification + \$1,000 for NSPS)  
Date Fee Received: September 15, 2010  
Complete Date: January 21, 2011  
Due Date: April 21, 2011  
Applicant Ad Date: September 10, 2010  
Newspaper: *The Exponent-Telegram*  
UTM's: Easting: 555.154 km Northing: 4,347.106 km Zone: 17  
Description: This facility currently has three (3) natural gas (has ability for #2 FO use) boilers and two (2) emergency generators and proposes to install one (1) new emergency generator.

### DESCRIPTION OF PROCESS

Three boilers are fed from one natural gas line. The natural gas enters the Morrison Tube and makes three passes through Boiler #3, and four passes through Boilers #1 and #2 where water is heated to produce steam. The steam generated is used for heat, laundry operations, and sterilization purposes. After completing the appropriate number of passes, the gas enters the stack at a temperature of approximately 350 °F prior to passing through an economizer. The economizer is used to heat feed water before it enters the boilers to increase efficiency. The gas then exits the stack at an approximate temperature of 315 °F. The same process occurs if #2 fuel oil is utilized.

There are two existing unpermitted emergency generators and one new emergency generator for a total of three (3) emergency generators. When operating diesel is

mixed with air then compressed and combusted by the engine. The generator turns the mechanical energy of the engine into emergency electrical power. Diesel fuel is held in T01 a 395 gallon tank.

## SITE INSPECTION

The permit writer performed a site inspection on September 17, 2010. The three boilers were in the basement of the Boiler House, Laundry & Engineering Building separate from the main building of the hospital. The three stacks of the boilers were visible from the basement. The two (2) existing emergency generators and the one (1) new emergency generator are/will be located in the Generator Building also separate from the main hospital building. An additional site inspection was conducted on November 17, 2010. This site inspection was to see the location of the three engines.

Directions: From Charleston take I-79 N to Clarksburg take exit 119. Turn left onto WV-20 then turn left onto WV-98. Then turn right onto Med Center Drive, parking was available just past the hospital on the right at the time of the site visit.

## ESTIMATE OF EMISSIONS BY REVIEWING ENGINEER

Source ID	Emission Source	Pollutant	Maximum Hourly Emissions (lb/hr)	Maximum Annual Emissions (tpy)
STBOIL1	Boiler #1 14.7 MMBTU/hr	Nitrogen Oxides	2.1	9.2
		Carbon Monoxide	1.24	5.4
		Volatile Organic Compounds	0.09	0.4
		Sulfur Dioxide	0.75	3.3
		Total Particulate Matter	0.12	0.5
STBOIL2	Boiler #2 14.7 MMBTU/hr	Nitrogen Oxides	2.1	9.2
		Carbon Monoxide	1.24	5.4
		Volatile Organic Compounds	0.09	0.4
		Sulfur Dioxide	0.75	3.3
		Total Particulate Matter	0.12	0.5
STBOIL3	Boiler #3 15 MMBTU/hr	Nitrogen Oxides	2.1	9.2
		Carbon Monoxide	1.26	5.5
		Volatile Organic Compounds	0.09	0.4
		Sulfur Dioxide	0.75	3.3
		Total Particulate Matter	0.12	0.5
EG1	Diesel Generator #1 1,474 hp	Nitrogen Oxides	16.03	4.0
		Carbon Monoxide	1.49	0.04
		Volatile Organic Compounds	0.18	0.045

		Sulfur Dioxide	0.2	0.1
		PM <sub>10</sub>	0.12	0.03
EG2	Diesel Generator #2 670 hp	Nitrogen Oxides	16.10	4.0
		Carbon Monoxide	3.69	0.9
		Volatile Organic Compounds	0.032	0.008
		Sulfur Dioxide	0.271	0.1
		Total Particulate Matter	0.287	0.072
		PM <sub>10</sub>	0.204	0.05
EG3	Diesel Generator #3 1,072 hp	Nitrogen Oxides	25.75	6.4
		Carbon Monoxide	5.90	1.5
		Volatile Organic Compounds	0.052	0.013
		Sulfur Dioxide	0.434	0.2
		Total Particulate Matter	0.287	0.072
		PM <sub>10</sub>	0.204	0.05

## REGULATORY APPLICABILITY

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

The three boilers at this facility meet the definition for fuel burning unit (section 2.10). These three boiler exceed the exemption threshold of 10 mmBTU and are subject to the following limitations.

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 (section 3.1). Compliance with the visible emission requirements will not have to be done using Method 9 (Section 8.4.c), but will require Method 22 readings (45CSR13.5.11). These visible emission standards apply at all times except in periods of start-ups, shutdowns, and malfunctions (section 9.1). If the director believes that start-ups and shutdowns are excessive in duration and/or frequency, the director may require an owner or operator to provide a written report demonstrating that these frequent start-ups and shutdowns are necessary (section 9.1).

These boilers are also subject to the weight rate limitations of section 4.1.b This section limits the particulate matter emissions from each of the boilers. Unit 1 and Unit 2 has a individual limitation of  $0.09 \times 14.7 = 1.32$  lb/hr of PM. Unit 3 has a limitation of  $0.09 \times 15 = 1.35$  lb/hr of PM. The calculated PTE of PM for these boilers is 0.11 lb/hr which is well below the limitation provided in this rule.

Under section 5.1 there shall be a fugitive particulate matter control system that is operated to minimize the emission of fugitive particulate matter associated with the stockpiling of fuel or fuel handling systems.

At all times, including periods of start-ups, shutdowns, and malfunctions, owners and operators shall, to the extent practicable, maintain consistent with good air pollution control practice for minimizing emissions (section 9.2).

The Louis A. Johnson VA Medical Center shall document start-ups, shut-downs, and malfunctions. Excess opacity periods meeting the requirements in section 9.3.a may be reported quarterly, unless otherwise required by the director. If the requirements in section 9.3.a are not met, then 9.3.b is followed.

When burning pipeline quality natural gas, such records shall include, but not be limited to, the date and time of start-up and shutdown, and the quantity of fuel consumed on a monthly basis.

When burning #2 fuel oil, such records shall include, but not be limited to, the date and time of start-up and shutdown, the quantity of fuel consumed on a monthly basis and a BTU analysis for each shipment.

**45CSR2A** - *Testing, Monitoring, Recordkeeping and Reporting Requirements Under 45CSR2*

When combusting natural gas this facility shall record date and time of start-up and shutdown, and quantity of fuel consumed on a daily basis (section 7.1.a.1). When combusting #2 Fuel Oil this facility will record everything that is required for natural gas and a BTU analysis for each shipment (section 7.1.a.2).

**45CSR4** - *To Prevent an Control the Discharge of Air Pollutants into the Open Air which Causes or Contributes to the Objectionable Odor or Odors*

The Louis A. Johnson VA Medical Center shall not cause the discharge of air pollutants which cause or contribute to an objectionable odor at any location occupied by the public.

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

45CSR13 applies to this source because this source exceeds the regulatory emission threshold for regulated air pollutants of 6 lb/hr and 10 ton/year.

**45CSR16** - *Standards of Performance for New Stationary Sources*

Since this source is subject to 40CFR60 Subpart Dc it is subject to this rule.

### **45CSR30 - Requirements for Operating Permits**

The Louis A. Johnson VA Medical Center's boilers are subject to 40CFR60 Subpart Dc, and are therefore subject to 45CSR30 as a deferred source. The Louis A. Johnson VA Medical Center will be required to keep their Certificate to Operate current.

### **40CFR60 Subpart Dc - Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units**

For a boiler to be subject to this regulation it has to be constructed, modified, or reconstructed after June 9, 1989 and has a maximum design capacity of less than 100 MMBTU/hr and more than 10 MMBTU/hr. All three boilers at this facility meet these criteria, making them subject to Subpart Dc. Subpart Dc has requirements for both #2 fuel oil (referred in Subpart Dc as Distillate Oil) and natural gas, and has requirements for SO<sub>2</sub> and particulate matter. For #2 fuel oil (FO) Subpart Dc has a recordkeeping requirements for amount and recordkeeping and reporting requirement for sulfur content. For #2 FO the opacity requirement under 60.43c(c) is 20 percent opacity (6-minute average). For natural gas Subpart Dc has a amount recordkeeping requirement.

### **40CFR60 Subpart IIII - Standards of Performance for Stationary Compression Ignition Internal Combustion Engines**

Emergency generator EG 1 is subject to Subpart IIII because it was built in 2010 and an owner or operator is subject to this subpart when the engine is not a fire pump engine manufactured after April 1, 2006. 40CFR89.112 Table 1 provides the allowable emission standards from nonroad engines. ENG-1 is a 1474 hp engine manufactured in 2010 which is a Tier 2 engine and has allowable emissions standards (g/kW-hr) are: NMHC + NO<sub>x</sub> = 6.4, CO = 3.5, and PM = 0.20. The emission factors from the EPA Certificate of Conformity for EG 1 are: NMHC + NO<sub>x</sub> = 4.94, CO = 0.13, and PM = 0.018. The estimated air emissions for Louis A. Johnson VA Medical Center's EG 1 engine is below these allowable emission thresholds.

### TOXICITY OF NON-CRITERIA REGULATED POLLUTANTS

No HAPs or TAPs were estimated to be more than two significant digits past the decimal point.

### AIR QUALITY IMPACT ANALYSIS

Based on the annual emissions rates this facility will not be a major source as defined by 45CSR14, so no air quality impact analysis was performed.

CHANGES TO PERMIT R13-2824

Addition of emissions for two (2) existing emergency generators and one (1) new emergency generator.

RECOMMENDATION TO DIRECTOR

The information provided in the permit application indicates that the Louis A. Johnson VA Medical Center's boilers and emergency generators meets all the requirements of applicable rules and regulations. Therefore, impact on the surrounding area should be minimized and it is recommended that the Harrison County location should be granted a 45CSR13 construction permit for their Clarksburg facility.

\_\_\_\_\_  
David Keatley  
Engineer

\_\_\_\_\_  
Date