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west virginia department of environmental protection

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## ENGINEERING EVALUATION/FACT SHEET

### B BACKGROUND INFORMATION

Application No.:	R13-0656A
Plant ID No.:	023-00003
Applicant:	Virginia Electric & Power Company (VEPCO)
Facility Name:	Mt. Storm Power Station
Location:	Mt. Storm
NAICS Code:	221112
Application Type:	Modification
Received Date:	July 31, 2015
Engineer Assigned:	Edward S. Andrews, P.E.
Fee Amount:	\$3,500.00
Date Received:	July 31, 2015
Complete Date:	August 31, 2015
Due Date:	November 29, 2015
Applicant Ad Date:	August 18, 2015
Newspaper:	<i>Grant County Press</i>
UTM's:	Easting: 649.85 km      Northing: 4,340.00 km      Zone: 17
Description:	The application request is to limit the annual heat input of the auxiliary boiler to 10% capacity factor.

### DESCRIPTION OF PROCESS

The Mt. Storm Power Station is located in Grant County at 436 Dominion Blvd., Mt. Storm, WV.

The facility is served by a fuel oil fired auxiliary boiler this is used to provide steam for start-up operating and building heating services. The auxiliary boiler is rated at 150 MMBtu/hr and was constructed in 1984 under Permit R13-0656.

This application is not seeking a physical modification, instead, VEPCO is requesting a federally enforceable capacity factor of 10% on an annual basis to meet the definition of a limited use boiler in accordance with 40 CFR Part 63, Subpart DDDDD.

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## SITE INSPECTION

On July 24, 2014, Mr. Karl Dettinger, an inspector assigned to the Eastern Panhandle Regional Office, conducted a regular compliance inspection of Mt. Storm Power Station. During this inspection, Mr. Dettinger concluded that the facility was operating in compliance with all applicable rules and regulations. Thus, no site inspection of the facility was required for this review.

## ESTIMATE OF EMISSION BY REVIEWING ENGINEER

The applicant supplied emissions estimates for the auxiliary boiler. The proposed annual emissions from the auxiliary boiler are based on a 10% heat input capacity limit. Permit R13-0656 limited the unit to 1,542,520 gallons of fuel per year, which equates to a 15.8% capacity limit. The emissions listed in the following tables are estimates using the emission factors from AP-42, Chapter 1.3 and the EPA's FIRE database:

<b>Table #1 – Potential Emissions from the Auxiliary Boiler</b>				
Pollutant	Hourly Rate (lb/hr)	Annual Rate @ 10% Capacity (TPY)	Annual Rate at Current Permitted Limit (TPY)	Net Change in Annual Emission (TPY)
Particulate Matter (PM)	2.22	0.97	1.538	-0.57
Particulate Matter Less Than 10 microns (PM <sub>10</sub> )	1.11	0.49	0.77	-0.28
Particulate Matter less than 2.5 microns (PM <sub>2.5</sub> )	0.28	0.12	0.19	-0.07
Sulfur Dioxide (SO <sub>2</sub> )	47.33	20.73	32.76	-12.03
Oxides of Nitrogen (NO <sub>x</sub> )	26.67	11.68	18.45	-6.77
Carbon Monoxide (CO)	5.56	2.43	3.84	-1.41
Volatile Organic Compounds (VOCs)	0.22	0.1	0.15	-0.05
Total Hazardous Air Pollutants (HAPs)	0.05	0.02	0.032	-0.01
Carbon Dioxide Equivalent (CO <sub>2e</sub> )	25,233.45	11,052.25	17,462.56	-6,410.31

## REGULATORY APPLICABILITY

The Mt. Storm Power Station is classified as a major source under Rule 14 (Prevention of Significant Deterioration Program) and Rule 30 (Title V Operating Permit Program). In addition, the station is classified as a major source of hazardous air pollutants (HAPs). This additional restriction in annual heat input capacity does not affect or change the station status or classification.

This restriction request is not classified as a major modification or physical change of operation under Rule 14 (45 CSR §14-2.40). Thus, a PSD review is not required for this particular application.

The Industrial Boiler MACT for Major Sources was published in the Federal Register on January 31, 2013. Boilers and process heaters at major Sources of Hazardous Air Pollutants (HAPS) are affected by this regulation. The auxiliary boiler located at the Mt Storm power station is regulated by this subpart as a light liquid fuel unit.

The Industrial Boiler MACT regulation includes a limited use boiler and process heater subcategory. In accordance with 63.7500(c), units in the limited use subcategory must obtain a federally enforceable permit that limits the annual capacity factor to less than or equal to 10 percent and fuel use records for the days the boiler or process heater was operating. 40 CFR Part 63.7575 of Subpart DDDD defines a Limited-use boiler or process heater as any boiler or process heater that burns any amount of solid, liquid, or gaseous fuels and has a federally enforceable annual capacity factor of not more than 10 percent.

This same section defines annual capacity factor to mean the ratio between the actual heat input to a boiler or process heater from the fuels burned during a calendar year and the potential heat input to the boiler or process heater had it been operated for 8,760 hours during a year at the maximum steady state design heat input capacity. Once a boiler or process heater has been established as limited use, there are limited compliance requirements under the Boiler MACT. Units in this subcategory are not subject to a numerical emissions limit or energy assessment. Additionally there are no testing requirements for limited use boilers and process heaters. An initial tune up is required to be conducted by January 31, 2016. If the unit is not operating on the required date for a tune-up, the tune-up must be conducted within 30 calendar days of startup. In accordance with §63.7540 subsequent tune-ups are required every five years to demonstrate continuous compliance.

Tune ups are required to be conducted in accordance with 63. 7540(a)(10)(i) through (vi) and include the following:

- (i) As applicable, inspect the burner, and clean or replace any components of the burner as necessary (you may delay the burner inspection until the next scheduled unit shutdown). At units where entry into a piece of process equipment or into a storage vessel is required to complete the tune-up inspections, inspections are required only during planned entries into the storage vessel or process equipment;

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(ii) Inspect the flame pattern, as applicable, and adjust the burner as necessary to optimize the flame pattern. The adjustment should be consistent with the manufacturer's specifications, if available,

(iii) Inspect the system controlling the air-to-fuel ratio, as applicable. and ensure that it is correctly calibrated and functioning properly (you may delay the inspection until the next scheduled unit shutdown).

(iv) Optimize total emissions of CO. This optimization should be consistent with the manufacturer's specifications, if available, and with any NOx requirement to which the unit is subject;

(v) Measure the concentrations in the effluent stream of CO in parts per million, by volume, and oxygen in volume percent, before and after the adjustments are made (measurements may be either on a dry or wet basis, as long as it is the same basis before and after the adjustments are made). Measurements may be taken using a portable CO analyzer, and

(vi) Maintain on-site and submit, if requested by the Administrator, an annual report containing the information in paragraphs (a)(10)(vi)(A) through (C) of this section.

The applicant proposes to limit the annual usage of distillate oil #2 (diesel) to 974, 112 gallons per year, which is based on 10% annual capacity factor of the auxiliary boiler using the lower heating value of diesel of 135,000 Btu/gal. This limit in the permit will make the auxiliary boiler a limited-use boiler under the Boiler MACT and only subject to the tune-up requirement on a 5 year schedule (§63.7500(c)).

The permittee filed a complete application, paid the filing & NESHAP fees, and published a legal ad in the Grant County Press on August 18, 2015. The applicant also filed a request for a Minor Modification to the Facility's Title V Operating Permit in conjunction with this application.

#### TOXICITY OF NON-CRITERIA REGULATED POLLUTANTS

The potential release of hazardous air pollutants from the auxiliary boiler is less than 1 ton per year, which is significantly below the Rule 13 trigger threshold of 2 pounds per hour or 5 tons per year. Therefore, no information about the toxicity of the HAPs is presented in this evaluation.

## AIR QUALITY IMPACT ANALYSIS

The writer deemed that an air dispersion modeling study or analysis was not necessary, because the proposed modification does not meet the definition of a major modification of a major source as defined in 45CSR14.

## MONITORING OF OPERATIONS

The writer recommends the following monitoring requirements:

- Track the fuel usage (distillate oil each month) consumed by the auxiliary boiler and determined the total 12 month rolling heat input. Fuel usage recordkeeping is required by Rules 2, 10 and Subpart DDDDD.
- Maintain records that each shipment of diesel meets the definition of distillate oil and the maximum sulfur content for the diesel used in the auxiliary boiler does not exceed 0.3 % sulfur by weight (3000 ppm).
- Visible emission checks when the auxiliary boiler has operated continuously for a period of 24 hours at or near full load.
- Perform tune-up in accordance with the Boiler MACT once every five years after the initial tune-up has been completed.

## CHANGES TO PERMIT R13-0656

Permit R13-0656 was issued on June 4, 1982. This permit only restricted the annual fuel usage of the auxiliary boiler to 1,543,520 gallons per year. The writer recommends converting the permit into the agency's current permit format.

The unit is subject to Rules 2 & 10. The applicable PM, and visible emissions limits were incorporated into the permit with the corresponding compliance plan for visible emission monitoring (Rule 2 Monitoring Plan). The unit's potential to emit of PM is not even 17% of the allowable by Rule 2, which is 13.5 pound per hour. The existing plan excluded the unit from periodic testing requirements of the rule. The writer does not see a need for any compliance testing for PM given the unit is designed for and restricted to using distillate oil #2.

The unit is subject to the sulfur dioxide standard of 45 CSR §10-3.1.d., which set the unit's allowable under Rule 10 at 405 pounds of sulfur dioxide per hour. The applicant based the sulfur dioxide on using 0.3% sulfur by wt. distillate oil, which equates to a sulfur dioxide potential of 47.33 pounds per hour. This potential is less than 12% of the allowable. This fuel type and usage restriction, which will be incorporated into the permit, ensures compliance with the allowable under Rule 10. This permit will make the current Rule 2 & 10 Monitoring Plan for

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the auxiliary boiler not need once this permit is in effect since the monitoring will be embodied in the permit in Conditions 5.2.2. and 5.2.3.

#### RECOMMENDATION TO DIRECTOR

The information provided in the permit application indicates the proposed modification of the auxiliary boiler at the Mt. Storm Power Station will meet all the requirements of the applicable rules and regulations when operated in accordance with the permit application. Therefore, the writer recommends granting Virginia Electric & Power Company a Rule 13 modification permit for the proposed changes at the Mt. Storm Power Station, which is located in Mt. Storm, WV.

Edward S. Andrews, P.E.  
Engineer

November 6, 2015  
Date

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