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ENGINEERING EVALUATION / FACT SHEET

BACKGROUND INFORMATION

Application No.:	R13-0760F
Plant ID No.:	049-00019
Applicant:	The Marion County Coal Company
Facility Name:	Marion County Preparation Plant
Location:	Marion County
SIC Code:	1222 (Bituminous Coal & Lignite - Underground)
NAICS Code:	212112 (Bituminous Coal Underground Mining)
Application Type:	Class I Administrative Update
Received Date:	September 6, 2016
Engineer Assigned:	Dan Roberts
Fee Amount:	N/A
Date Received:	N/A
Applicant Ad Date:	N/A
Newspaper:	N/A
UTM Coordinates:	Easting: 561.6 km • Northing: 4,383.9 km • NAD83 Zone 17N
Lat/Lon Coordinates:	Latiutude: 39.60263 • Longitude: -80.28249 • NAD83
Description:	Class I administrative update to delete permit conditions from permit R13-0760F which were not applicable to the facility.

BACKGROUND

On September 6, 2016, The Marion County Coal Company (MCCC) submitted a permit application to modify the Marion County Preparation Plant. The facility was originally constructed in 1957 by the Consolidation Coal Company (CCC) and called the Loveridge Preparation Plant until purchased by MCCC and renamed in 2013. The facility has been the subject of many permitting actions since construction as described below:

- On December 16, 1977, Permit Number R13-0345 was issued to CCC for the installation of a thermal dryer at the Loveridge Plant;

- On August 1, 1985, Permit Number R13-0760 (this permit superceded and replaced R13-0345) was issued to CCC for the replacement of the three (3) existing thermal dryers with one (1) fluidized-bed dryer;

- On November 3, 2003, a "no-permit needed" decision was issued (PD03-108) to CCC for the installation of new equipment to allow for methane co-firing of the thermal dryer;

- On November 20, 2003, a "no-permit needed" decision was issued (PD03-112) to CCC for the installation of three (3) gas fired compressors;

- On September 15, 2006, Permit Number R13-0760A was issued to CCC as a Class II Administrative Update for the addition of raw coal Conveyor 21, a second stacking tube at raw coal Stockpile 1, raw coal reclaim Conveyor 22, and an increase in the capacity of raw coal Stockpile 1 from 300,000 tons to 450,000 tons;

- On September 20, 2006, Permit Number R13-0760B was issued to CCC as a Class II Administrative Update for the addition of clean coal Conveyor 7A, the 10,500 ton Clean Coal Silo 3, and reclaim Conveyor 13A;

- On December 8, 2006, Permit Number R13-0760C was issued to CCC to revise the thermal dryer's emission limits in accordance with consent order CO-R13, 14-96-22;

- On May 12, 2008, Permit Number R13-0760D was issued to CCC to increase in the maximum sulfur content of the coal combusted in the thermal dryer furnace from 2.5% to 3.4%;

- On March 5, 2015, Permit Number R13-0760E was issued to MCCC to add conveyor belt CB8A and batch weigh loadout bin BWL;

- On June 20, 2015, MCCC entered into a Consent Order (CO-R30-E-2015-1) that led to permitting action R13-0760F below. Substantively, the DAQ determined that, based on the currently permitted maximum heat input of 182 mmBtu/hr and the emission rates of NOx and VOCs measured in the most recent approved stack test in 2011 (0.48 lb-NOx /mmBtu and 0.95 lb-VOC/mmBtu), the thermal dryer would not be in compliance with the NOx and VOCs emission limits in the permit.

- On April 5, 2016, a "no-permit needed" decision was issued (PD16-023) to MCCC for a thermal dryer burner improvement project; and

- On August 2, 2016, Permit Number R13-0760F was issued to MCCC to (1) increase allowable short-term sulfur content of coal combusted in the thermal dryer, (2) lower the hourly heat input of the dryer to 130 mmBtu, and correct several miscellaneous errors in the permit. No increase in annual emissions as a result of this permitting action. Only request increase in hourly SO_2 emissions from dryer of 40 lbs/hr.

- On September 7, 2016, the DAQ received application R13-0760G for a Class I administrative update to delete permit conditions from permit R13-0760F which were not applicable to the facility. The Marion County Coal Company has proposed to delete the following permit conditions from permit R13-0760F as follows for these reasons taken directly from the application:

4.3.4 - includes requirements for Method 9 opacity tests from 40 CFR Part 60, Subpart A (i.e., the General Provisions). However, NSPS Y includes specific Method 9 procedures with minor changes from those in the General Provisions. These rule-specific procedures are found at 40 CFR 60.257(a) and are included in term 4.3.13 of R13-0760F.

4.3.8 - provides exemptions from 40 CFR 60.255(b)(1)(I) and (ii) for affected facilities (other than thermal dryers) that commenced construction, reconstruction, or modification after April 28, 2008, is subject to a PM emission standard, and uses a control device with a designed controlled potenitla PM emisions rate of 1.0 Mg per year or less. This term is inapplicable to MCCC since MCCC operates no such affected facilities.

4.3.9 - provides that groups of up to five of the same type of affected facilities that commenced construction, reconstruction, or modification after April 28, 2008, that are subject to PM emissions standards and use identical control devices may use a single PM performance test for one of the affected facilities to demonstrate compliance for the group. This term is inapplicable to MCCC since MCCC operates no such group of affected facilities.

4.5.5 (1), (4)-(10) - 4.5.5 requires MCCC to maintain a logbook recording certain information for affeected facilities that commenced construction, reconstruction, or modification after April 28, 2008 are Conveyor belts 8A and 9 and the Batch Weigh Loadout Bin (BWL). Accordingly, 4.5.5 (1) and (4)-(1) are not applicable given that they contain information specific to other types of affected facilities regulated by NSPS Y commenced construction, reconstruction, or modification after April 28, 2008 and which MCCC does not operate.

4.5.6 (1)-(2) - 4.5.6 requires semiannual excess emissions reports. Specifically, 4.5.6 (1) requires affected facilities with a wet scrubber to submit semiannual reports of occurances when the measurements of the scrubber pressure loss, water supply flow rate, or pH of the wet scrubber liquid vary more than 10 percent from the average determined during the most recent performance test. Although MCCC operates a thermal dryer with a wet scrubber, 40 CFR 60.258 applies only to thermal dryers that commenced construction, reconstruction, or modification after April 28, 2008. The thermal dryer at MCCC's Marion County Preparation Plant was not constructed, reconstructed, or modified after April 28, 2008, and 4.5.6(1) therefore does not apply. 4.5.6(2) requires semiannual reports for affected facilities with control equipment other than a wet scrubber. MCCC does not operate any affected facility with control equipment other than a wet scrubber, and 4.5.6(2) therefore does not apply.

DESCRIPTION OF PROCESS

Existing Facility Description

MCCC's Marion County Preparation Plant is a typical large coal preparation plant utilizing a primarily coal-fired thermal dryer. The facility is permitted to process up to 3,000 tons per hour (TPH) and 26,280,00 tons per year (TPY) of raw coal. Raw coal is delivered from an existing mine portal and then sized, cleaned, dried, and processed for delivery to customers. The existing thermal

dryer is a fluidized bed thermal dryer, manufactured by ENI Engineering Company, that utilizes a Bigelow-Liptak forced draft burner and has a currently maximum permitted heat input of 182 mmBtu/hr (using a combination of coal and coal bed methane).

Thermal Dryer Description

The fluidized bed thermal dryer, manufactured by ENI Engineering Company, utilizes a Bigelow-Liptak forced draft burner and has a currently allowable maximum heat input of 182 mmBtu/hr based on the combustion of 4.35 TPH of coal (limited to providing up to 120 mmBtu/hr) and methane (providing an additional 62 mmBtu/hr). However, the furnace is not capable of achieving a heat input of 182 mmBtu and the permitted heat input limit shall be lowered to a proposed 130 mmBtu.

Directly heated air from the furnace is used to dry the wet coal in the following way: combustion gas from the pulverized coal fired furnace is mixed with ambient air. The resulting hot gas is at a temperature of 900-1050° F and contains roughly 85% air and 15% combustion products (~90,000 dscfm). The hot gas fluidizes the coal in a chamber containing a restriction deck. The fluidized coal travels on and across the bed which promotes evaporation of moisture from the coal. Most of the coal then falls over a weir and into air-lock hoppers, which discharge onto a transfer belt that conveys the dried coal to the dryer product belt. Some of the smaller sized coal is carried by the gas to a bank of four cyclones, which remove all but the finest material. Most of the fines collected by the cyclones discharge (via screw feeders) to the dried coal transfer belt. Some of the fines (~3.6 TPH) are used to fire the dryer furnace. Dryer feed rates range from a normal of 450 dry TPH to a maximum of 600 dry TPH, depending on the slack content of the raw coal feed to the plant. Coal processing rates are dependent on a number of parameters including coal quality, coal size, and contract specifications.

Compliance with the particulate matter emissions from the dryer stack is achieved with a venturi scrubber operating at a pressure drop of 30 to 40" wc. The pressure drop occurs across an annular passage created by a restrictive cone centered in the venturi duct. Clarified overflow water from the preparation plant thickener is injected into the venturi at a rate of about 1,300 gpm. The water is atomized across the annular passage and the droplets come into contact with the particulate matter in the gas. The resulting fines-laden water is then removed from the gas by cyclonic separator located at the base of the stack. The relatively particulate matter free gas leaves the stack saturated, at about 120°F, and containing some mist.

The high-energy gas-liquid contact in the venturi scrubber is designed to remove particulate matter, but it also absorbs SO_2. The amount of SO_2 removed by the venturi scrubber depends partly on the inlet water alkalinity. The natural alkalinity of the plant water does not provide enough removal to comply with the SO_2 limits at furnace fuel feed rates greater than 110 pounds per hour. Therefore, an SO_2 control system was installed to decrease the SO_2 emission from the unit. This is accomplished by spraying a small amount (up to 3 gpm) of caustic solution (20% NaOH) onto the dryer feed coal just before it enters the drying chamber. The caustic solution reacts with the SO_2 in the coal drying chamber, forming the salt Na_2SO_4, which leaves the drying chamber as a solid with the product coal. A metering pump delivers caustic solution to a spray header at the end of the conveyor belt that delivers feed coal to the dryer.

The thermal dryer is not equipped with equipment to control NO_X, VOC, or CO emissions from the stack. NO_X and CO emissions are minimized by controlling the pulverized coal combustion conditions. VOC emission are minimized by controlling the furnace and dryer chamber temperatures.

SITE INSPECTION

Due to the nature of the proposed Class I administrative update, the author did not perform a site inspection of the facility for this permitting action. The facility was last inspected by DAQ Compliance/ Enforcement (C/E) Inspector Karl Dettinger on August 10, 2016. Mr. Dettinger's notes from the inspection were as follows: "F.C.E. inspection of Marion County Coal Company's Fairview facility was done on 8-10-16. V.E. readings were taken from the exhaust stack of the thermal dryer, photos were taken of the equipment operating, and process data was reviewed relating to the operation of the thermal dryer. Records were requested (some have not been submitted as of the date of this report). Records that were submitted revealed excursions/deviations from specified operating parameters. However, my opinion is that the process operating parameters should be revisited when the report for the most recent stack test (done in September 2016) is received." This inspection found the facility be "Status 10 - Out of Compliance."

REGULATORY APPLICABILITY

The following will discuss each rule applicable or potentially applicable to only the modifications evaluated herein.

45CSR5: To Prevent and Control Air Pollution from Coal Preparation Plants, Coal Handling Operations, and Coal Refuse Disposal Operations

The purpose of 45CSR5 is to prevent and control air pollution from the operation of coal preparation plants, coal handling operations and coal refuse disposal areas. Pursuant to the definition given in §45-5-2.4, thermal drying is defined as a part of a "Coal Preparation Plant." Section 4.1(a) of 45CSR5 requires that a thermal dryer built after 1974 meet the requirements of 45CSR16 - which in turn adopts the New Source Performance Standards (NSPS). The applicability and compliance with 40 CFR 60, Subpart Y are discussed below.

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

45CSR10 has requirements limiting in-stack SO_2 concentrations of "manufacturing processes." Previously, the DAQ has regulated thermal dryers as "manufacturing processes" subject to section 4.1 of 45CSR10.

Section 4.1 of Rule 10 requires that no in-stack SO_2 concentration exceed 2,000 parts per million by volume (ppm_v) from any manufacturing process source operation. As noted, the thermal dryer furnace is defined as a "manufacturing process." Based on the estimated maximum revised

SO_2 emission rate of the furnace (235 lb-SO_2/hr) and the stack parameters given in the application, the estimated worst-case in-stack SO_2 concentration was calculated to be 137.08 ppm_v or 6.85% of the limit.

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

The proposed changes to the permit for the Marion County Preparation Plant will result in no change to the PTE of the facility and will be processed as a Class I administrative update. Therefore, no fee or Class I legal advertisement is required.

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

In accordance with 45CSR14 Major Source Determination, this wet wash coal preparation plant with a thermal dryer is one of the 100 TPY stationary sources listed under the definition of "Major Stationary Source" in subsection 2.43.a. At the end of subsection 2.4.3, this facility is listed in Table 1 - Source Categories Which Must Include Fugitive Emissions. Therefore, fugitive emissions (from open storage piles and haulroads) are included when determining major stationary source applicability. The facility's potential to emit for PM, VOC, SO_2, NO_X and CO are greater than the 45CSR14 threshold of 100 TPY for a regulated air pollutant to be defined as a major stationary source.

In accordance with Section 2.75, the definition of "significant emission increase" is defined in Section 2.74 as equal to or greater than 25 TPY for PM, 15 TPY for PM_{10} and 10 TPY for $PM_{2.5}$. The proposed changes to the permit conditions result in no change in the facility's potential to discharge for PM, PM_{10} and $PM_{2.5}$.

45CSR30: Requirements for Operating Permits

45CSR30 provides for the establishment of a comprehensive air quality permitting system consistent with the requirements of Title V of the Clean Air Act. The Marion County Preparation Plant, defined under Title V as a "major source," was last issued a Title V permit on January 24, 2014. Proposed changes evaluated herein must also be incorporated into the facility's Title V operating permit. Commencement of the operations authorized by this permit shall be determined by the appropriate timing limitations associated with Title V permit revisions per 45CSR30.

40 CFR 60, Subpart Y: Standards of Performance for Coal Preparation Plants

40 CFR 60, Subpart Y applies to the affected facilities identified in §60.250 which are located at coal preparation plants that process more than 200 tons per day where construction, reconstruction, or modification occurred after October 27, 1974. The thermal dryer at the Marion County Preparation Plant is subject to the requirements established in Subpart Y for dryers constructed, reconstructed, or modified on or before April 28, 2008.

TOXICITY ANALYSIS OF NON-CRITERIA REGULATED POLLUTANTS

This section provides an analysis for those regulated pollutants that may be emitted from the proposed modification and that are not classified as "criteria pollutants." Criteria pollutants are defined as Carbon Monoxide (CO), Lead (Pb), Oxides of Nitrogen (NO_x), Ozone, Particulate Matter (PM), Particulate Matter less than 10 microns (PM_{10}), Particulate Matter less than 2.5 microns ($PM_{2.5}$), and Sulfur Dioxide (SO_2). These pollutants have National Ambient Air Quality Standards (NAAQS) set for each that are designed to protect the public health and welfare. Other pollutants of concern, although designated as non-criteria and without national concentration standards, are regulated through various federal and programs designed to limit their emissions and public exposure. These programs include federal source-specific Hazardous Air Pollutants (HAPs) limits promulgated under 40 CFR 61 (NESHAPS) and 40 CFR 63 (MACT). Any potential applicability to these programs were discussed above under REGULATORY APPLICABILITY.

There is no increases in, or changes of, non-criteria regulated pollutants as a result of the proposed modifications.

AIR QUALITY IMPACT ANALYSIS

The proposed modification does not meet the definition of a "major modification" pursuant to 45CSR14 and, therefore, an air quality impact (computer modeling) analysis was not required. Additionally, based on the nature of the proposed modification, modeling was not required under 45CSR13, Section 7.

CHANGES TO PERMIT R13-0760F

The substantive changes made to R13-0760F were limited to the deletion of the following permit conditions:

- 4.3.4. Compliance with opacity standards in this part shall be determined by conducting observations in accordance with Method 9 in appendix A of this part. For purposes of determining initial compliance, the minimum total time of observations shall be 3 hours (30 6-minute averages) for the performance test or other set of observations (meaning those fugitive-type emission sources subject only to an opacity standard). **[40CFR§60.11(b)]**

- 4.3.8. An owner or operator of an affected facility (other than a thermal dryer) that commenced construction, reconstruction, or modification after April 28, 2008, is subject to a PM emission standard and uses a control device with a design controlled potential PM emissions rate of 1.0 Mg (1.1 tons) per year or less is exempted from the requirements of paragraphs (b)(1)(i) and (ii) of this section provided that the owner or operator meets all of the conditions specified in paragraphs (d)(1) through (3) of this section. This exemption does not apply to thermal dryers. **[40CFR§60.255(d)]**

(1) PM emissions, as determined by the most recent performance test, are less than or equal to the applicable limit,
[40CFR§60.255(d)(1)]

(2) The control device manufacturer's recommended maintenance procedures are followed, and
[40CFR§60.255(d)(2)]

(3) All 6-minute average opacity readings from the most recent performance test are equal to or less than half the applicable opacity limit or the monitoring requirements in paragraphs (e) or (f) of this section are followed.
[40CFR§60.255(d)(3)]

- 4.3.9. For an owner or operator of a group of up to five of the same type of affected facilities that commenced construction, reconstruction, or modification after April 28, 2008, that are subject to PM emissions standards and use identical control devices, the Administrator or delegated authority may allow the owner or operator to use a single PM performance test for one of the affected control devices to demonstrate that the group of affected facilities is in compliance with the applicable emissions standards provided that the owner or operator meets all of the conditions specified in paragraphs (e)(1) through (3) of this section.
[40CFR§60.255(e)(1)]

(1) PM emissions from the most recent performance test for each individual affected facility are 90 percent or less of the applicable PM standard;
[40CFR§60.255(e)(1)]

(2) The manufacturer's recommended maintenance procedures are followed for each control device; and
[40CFR§60.255(e)(2)]

(3) A performance test is conducted on each affected facility at least once every 5 calendar years.
[40CFR§60.255(e)(3)

- 4.5.5. (1) The manufacturer's recommended maintenance procedures and the date and time of any maintenance and inspection activities and the results of those activities. Any variance from manufacturer recommendation, if any, shall be noted.
[40CFR§60.258(a)(1)]

(4) The amount of chemical stabilizer or water purchased for use in the coal preparation and processing plant.
[40CFR§60.258(a)(4)]

(5) Monthly certification that the dust suppressant systems were operational when any

coal was processed and that manufacturer's recommendations were followed for all control systems. Any variance from the manufacturer's recommendations, if any, shall be noted.
[40CFR§60.258(a)(5)]

(6) Monthly certification that the fugitive coal dust emissions control plan was implemented as described. Any variance from the plan, if any, shall be noted. A copy of the applicable fugitive coal dust emissions control plan and any letters from the Administrator providing approval of any alternative control measures shall be maintained with the logbook. Any actions, e.g. objections, to the plan and any actions relative to the alternative control measures, e.g. approvals, shall be noted in the logbook as well.
[40CFR§60.258(a)(6)]

(7) For each bag leak detection system, the owner or operator must keep the records specified in paragraphs (a)(7)(i) through (iii) of this section.
[40CFR§60.258(a)(7)]

(i) Records of the bag leak detection system output;
[40CFR§60.258(a)(7)(i)]

(ii) Records of bag leak detection system adjustments, including the date and time of the adjustment, the initial bag leak detection system settings, and the final bag leak detection settings; and
[40CFR§60.258(a)(7)(ii)]

(iii) The date and time of all bag leak detection system alarms, the time that procedures to determine the cause of the alarm were initiated, the cause of the alarm, an explanation of the actions taken, the date and time the cause of the alarm was alleviated, and whether the cause of the alarm was alleviated within 3 hours of the alarm.
[40CFR§60.258(a)(7)(iii)]

(8) A copy of any applicable monitoring plan for a digital opacity compliance system and monthly certification that the plan was implemented as described. Any variance from plan, if any, shall be noted.
[40CFR§60.258(a)(8)]

(9) During a performance test of a wet scrubber, and each operating day thereafter, the owner or operator shall record the measurements of the scrubber pressure loss, water supply flow rate, and pH of the wet scrubber liquid.
[40CFR§60.258(a)(9)]

(10) During a performance test of control equipment other than a wet scrubber, and each operating day thereafter, the owner or operator shall record the measurements of the reagent injection flow rate, as applicable.

[40CFR§60.258(a)(10)]

- 4.5.6 (1) The owner or operator of an affected facility with a wet scrubber shall submit semiannual reports to the Administrator or delegated authority of occurrences when the measurements of the scrubber pressure loss, water supply flow rate, or pH of the wet scrubber liquid vary by more than 10 percent from the average determined during the most recent performance test.
[40CFR§60.258(b)(1)]

(2) The owner or operator of an affected facility with control equipment other than a wet scrubber shall submit semiannual reports to the Administrator or delegated authority of occurrences when the measurements of the reagent injection flow rate, as applicable, vary by more than 10 percent from the average determined during the most recent performance test.
[40CFR§60.258(b)(2)]

RECOMMENDATION TO DIRECTOR

The information provided in the request for a Class I administrative update indicates that compliance with all applicable state and federal air quality regulations will be achieved. Therefore, I recommend to the Director the issuance of Permit Number R13-0760G to The Marion County Coal Company for the above discussed changes to the Marion County Preparation Plant located near Fairview, Marion County, WV.

Daniel P. Roberts, Engineer Trainee
NSR Permitting Section

November 4, 2016
Date