



west virginia department of environmental protection

Division of Air Quality
601 57th 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

Evaluation Memo

Application Number: PD16-023
Facility ID Number: 049-00019
Name of Applicant: Marion County Coal Company
Name of Facility: Marion County Preparation Plant (formerly Loveridge)
Location of Facility: Fairview, Marion County
Latitude/Longitude: 39.60600/-80.28100
Application Type: Permit Determination
Submission Date: March 30, 2016
Complete Date: March 30, 2016
Due Date: **May 11, 2016**
Engineer: Joe Kessler

Background Information

On March 30, 2016, the Marion County Coal Company (MCCC), submitted a Permit Determination Form (PDF) for proposed changes at the Marion County Preparation Plant (previously know as Consolidation Coal Company's Loveridge Coal Preparation Plant) located in Fairview, Marion County, WV. MCCC is requesting concurrence that a project to improve the thermal dryer's burner is not defined as a "modification" or as a "major modification" under 45CSR13 and 45CSR14, respectively.

Description of Proposed Changes

MCCC's Marion County Preparation Plant is a typical coal preparation plant unitizing a primarily coal-fired thermal dryer. 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 maximum permitted heat input of 182 mmBtu/hr (using a combination of coal and coal bed methane).

To address flame stability issues (to improve the burner's performance and efficiency, MCCC is now proposing to modify the thermal dryer's burner by making the following physical changes to the unit:

- Installation of a new SA nozzle;
- Installation of a new coal nozzle with flame holder and air diffuser;
- ;
- Shortening of the gas spuds;
- Retracting/re-adjusting depth of the igniter; and
- Adjustment of the flame scanner.

MCCCC states that these proposed updates will improve the overall functionality of the burner and will result in increased flame stability. The also state while there may be an improvement in the emission rate of CO and NO_x due to burner performance, there will be no increase in burner emission rates due to the improvement project.

Air Emissions and Calculation Methodologies

MCCC states in the PDF that they do “not believe that any increase in allowable emissions of any pollutant is required for the burner rebuild. . .” and are not requesting any increase in the permitted emission limits of the thermal dryer as a result of the modifications described herein.

Determination of Permit Applicability

As the Marion County Preparation Plant is defined under 45CSR14 as a “major stationary source” (see below), the following will evaluate the potential permit applicability of the proposed changes under both 45CSR13 and 45CSR14.

45CSR13

Pursuant to §45-13-5.1, “[n]o person shall cause, suffer, allow or permit the . . . modification . . . and operation of any stationary source to be commenced without . . . obtaining a permit to . . . modify.” The definition of “modify” is given under Section 2.17 of 45CSR13 and primarily defines various emission levels that would define any proposed changes as a modification and require MCCC to get a permit prior to beginning construction. Based on the MCCC statement that this burner improvement project will not increase emissions from the dryer as discussed above, the proposed changes do not exceed any of the modification thresholds under §45-13-2.17.

Additionally, the definition of “stationary source” under Section 2.24 of 45CSR13 includes in the definition any facility that “is subject to any substantive requirement of an emission control rule promulgated by the Secretary.” Based on long-standing DAQ policy and the “dual-definition” of a source, this test is also applied to proposed changes to determine if they meet the definition of modification. However, in the case of the determining if proposed changes are defined as a “modification,” the changes to the equipment must *trigger* an emission control rule.

With respect to the existing thermal dryer, it is already subject to both 45CSR5 and 40 CFR 60, Subpart Y. Additionally, information submitted by MCCC in Permit Application R13-0760F indicates that the cost of the burner re-build is expected to be \$66,000, which is far below 50% of what the fixed capital cost of a new thermal dryer would be. Therefore, the existing thermal dryer will not be defined as “reconstructed” for the purposes of 40 CFR 60, Subpart Y and will not be subject to the post-2008 Subpart Y standards for thermal dryers. As the thermal dryer is already subject to the pre-2008 standards, and will remain so after the proposed improvement project (there will also be no change to 45CSR5 applicability), the proposed changes are not considered to trigger any emission control rules.

45CSR14

The Marion County Preparation Plant is an existing major stationary source under 45CSR14 and the proposed burner improvement project is considered, pursuant to §45-14-2.40, a “*physical change* or a change in the method of operation.” Therefore, to determine if the project is defined as a “major modification,” pursuant to §45-14-3.4(a), the project is examined under a two-step applicability test: “[A] project is a major modification for a regulated NSR pollutant if it causes two types of emissions increases -- a significant emissions increase (as defined in subsection [§45-14-2.75]), and a significant net emissions increase (as defined in subsections [§45-14-2.46] and [§45-14-2.74]). The proposed project is not a major modification if it does not cause a significant emissions increase. If the proposed project causes a significant emissions increase, then the project is a major modification only if it also results in a significant net emissions increase.”

Therefore, for the proposed changes to meet the definition of a major modification, the changes themselves must result in a significant emissions increase. The methodology for calculating the emissions increase under the first step is given under Sections §45-14-3.4(b), 3.4(c), 3.4(d) and 3.4(f). The substantive language relevant to the changes evaluated herein is given below:

[§45-14-3.4(b)]

The procedure for calculating (before beginning actual construction) whether a significant emissions increase (i.e., the first step of the process) will occur depends upon the type of emissions units being modified, according to subdivisions 3.4.c through 3.4.f.

[§45-14-3.4(c)]

Actual-to-projected-actual applicability test for projects that only involve existing emissions units. -- A significant emissions increase of a regulated NSR pollutant is projected to occur if the sum of the difference between the projected actual emissions (as defined in subsection 2.63) and the baseline actual emissions (as defined in subdivisions 2.8.a and 2.8.b), for each existing emissions unit, equals or exceeds the significant amount for that pollutant (as defined in subsection 2.74).

Baseline actual emissions for existing non-Electric Generating Units (EGUs) are, as noted above, defined under §45-14-2.8(b):

[§45-14-2.8(b)]

For an existing emissions unit (other than an electric utility steam generating unit), baseline actual emissions means the average rate, in tons per year, at which the emissions unit actually emitted the pollutant during any consecutive 24-month period selected by the owner or operator within the 10-year period immediately preceding either the date the owner or operator begins actual construction of the project, or the date a complete permit application is received by the Secretary for a permit required under this rule, whichever is earlier, except that the 10-year period shall not include any period earlier than November 15, 1990.

Projected actual emissions are defined extensively under §45-14-2.63 - the relevant portions below:

[§45-14-2.63]

"Projected actual emissions" means the maximum annual rate, in tons per year, at which an existing emissions unit is projected to emit a regulated NSR pollutant in any one of the 5 years (12-month period) following the date the unit resumes regular operation after the project, or in any one of the 10 years following that date, if the project involves increasing the emissions unit's design capacity or its potential to emit that regulated NSR pollutant and full utilization of the unit would result in a significant emissions increase or a significant net emissions increase at the major stationary source.

[§45-14-2.63(a)(1)]

Shall consider all relevant information, including but not limited to, historical operational data, the company's own representations, the company's expected business activity and the company's highest projections of business activity, the company's filings with the State or Federal regulatory authorities, and compliance plans under the approved State Implementation Plan; and

[§45-14-2.63(a)(3)]

Shall exclude, in calculating any increase in emissions that results from the particular project, that portion of the unit's emissions following the project that an existing unit could have accommodated during the consecutive 24-month period used to establish the baseline actual emissions under subsection 2.8 and that are also unrelated to the particular project, including any increased utilization due to product demand growth; or

Based on the above requirements under 45CSR14, MCCC submitted with the PDF an actual-to-projected actual 45CSR14 applicability analysis for the proposed burner improvement project. Baseline actual emissions were based on annualized coal throughput and furnace heat input data recorded from the 24-month period of December 2010 to November 2012. The emission factors used to calculate the baseline actual emissions were taken from a 2011 compliance test. This 2011 compliance test was conducted according to a DAQ approved protocol and showed compliance with all permitted emission limits at the tested heat input of approximately (average) 117 mmBtu/hr. Scaled up linearly to the permitted heat input limit of 182 mmBtu/hr, however, some calculated emission rates would not be within permitted emission limits. MCCC has stated, however, that the thermal dryer is physically limited to a heat input of only approximately 130 mmBtu/hr (and is applying under Permit Application R13-0760F to lower the heat input to this level). Therefore, use of this stack test as the basis for the emission factors was accepted (no notice of violation was issued for this stack test).

Projected actual emissions are also based on the emission factors from the 2011 compliance test (therefore, providing for consistency on both sides of the calculation). Projected annual actual heat input rates were based on the 2015 heat input rate with a 10% safety factor. Using the above

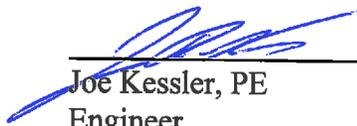
methodology, MCCC calculated the project projected actual emission increases as given in Attachment A (Table E-1 included with the PDF). As shown in Attachment A, the calculated increases associated with the this project are less than those thresholds that would define the burner improvement project as a “major modification” and require PSD review under 45CSR14.

A reasonable qualitative analysis also indicates that proposed burner improvement project will not result in an increase in actual emissions at the facility. While the burner improvement project will, according to MCCC, improve the functionality and efficiency of the burner, no information has been submitted to indicate it will allow the burner to regain lost capacity. Historical operating data provided by MCCC indicates that the existing burner has been able to maintain relatively consistent capacity the last ten years. It is therefore reasonably determined that with the existing burner capacity in the years chosen for the baseline actual emissions, the burner as currently configured could continue to accommodate operating at current levels or higher, even if more inefficiently than if improved. Further, with the long-term trends in the coal industry negative, it is also reasonable to conclude that using 2015 throughputs with a 10% safety factor to project actual emissions is a conservative approach.

Summary and Recommendation

Based on the information provided in the PDF, I recommend the issuance of a “no permit needed” letter to Marion County Coal Company for the proposed burner improvement project at their Marion County Preparation Plant based on the following:

- The burner improvement rule will not trigger a substantive requirement of an emission control rule promulgated by the Secretary;
- There is no increase in the potential-to-emit (PTE) of the facility as a result of the burner improvement rule; and
- The burner improvement rule is not defined as “major modification” under 45CSR14.



Joe Kessler, PE
Engineer



Date

Table E-1. Thermal Dryer Baseline to Projected Actual Analysis

HISTORIC PROCESS DATA

Baseline Annual Heat Input	571,761	mmBtu/yr
Baseline Period	12/2010 - 11/2012	
Projected Coal Throughput	18,207	tpy
Projected Gas Throughput	148.62	mmscf/yr
Coal Bed Methane Heating Value	607	mmBtu/mmscf
Coal Heating Value	27.29	MMBtu/ton
Projected Annual Heat Input	587,132	MMBtu/yr

Average annual heat input during the baseline period
 Period during which highest 24-mo rolling heat input to furnace occurred
 Projected based on 2015 operations including 10% safety factor
 Projected based on 2015 operations including 10% safety factor
 Based on analysis from 2011 compliance test
 Based on analysis from 2011 compliance test
 = Projected Coal Throughput (tpy) * Coal HHV (MMBtu/ton) + Projected Gas Throughput (mmscf/yr) * Gas HHV (mmBtu/mmscf)

EMISSION FACTORS

SO ₂	1.2	lb/MMBtu coal
NO _x	0.44	lb/MMBtu
CO	0.21	lb/MMBtu
PM	0.15	lb/MMBtu
VOC	0.4	lb/MMBtu

From 2011 compliance test
 From 2011 compliance test
 From 2011 compliance test
 From 2011 compliance test
 From 2011 compliance test

BASELINE ACTUAL EMISSIONS (BAE)

SO ₂	353.9	tpy
NO _x	124.64	tpy
CO	60.00	tpy
PM	44.16	tpy
VOC	109.2	tpy

= Baseline Annual Heat Input (MMBtu/yr) * SO₂ Emission Factor (lb/MMBtu)
 = Baseline Annual Heat Input (MMBtu/yr) * NO_x Emission Factor (lb/MMBtu)
 = Baseline Annual Heat Input (MMBtu/yr) * CO Emission Factor (lb/MMBtu)
 = Baseline Annual Heat Input (MMBtu/yr) * PM Emission Factor (lb/MMBtu)
 = Baseline Annual Heat Input (MMBtu/yr) * VOC Emission Factor (lb/MMBtu)

PROJECTED ACTUAL EMISSIONS (PAE)

SO ₂	363.4	tpy
NO _x	127.99	tpy
CO	61.61	tpy
PM	45.35	tpy
VOC	112.1	tpy

= Projected Annual Heat Input (MMBtu/yr) * SO₂ Emission Factor (lb/MMBtu)
 = Projected Annual Heat Input (MMBtu/yr) * NO_x Emission Factor (lb/MMBtu)
 = Projected Annual Heat Input (MMBtu/yr) * CO Emission Factor (lb/MMBtu)
 = Projected Annual Heat Input (MMBtu/yr) * PM Emission Factor (lb/MMBtu)
 = Projected Annual Heat Input (MMBtu/yr) * VOC Emission Factor (lb/MMBtu)

PROJECTED EMISSIONS INCREASES

Pollutant	PAE ^a (tpy)	BAE (tpy)	SEI (tpy)
SO ₂	9.5	40	40
NO _x	3.35	40	40
CO	1.61	100	100
PM	1.19	15 PM ₁₀	15 PM ₁₀
VOC	2.9	10 PM _{2.5}	10 PM _{2.5}

^a Projected Emissions Increase (SEI) = Pollutant PAE - Pollutant BAE