



west virginia department of environmental protection

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ENGINEERING EVALUATION / FACT SHEET

BACKGROUND INFORMATION

Application No.:	R13-2988
Plant ID No.:	033-00015
Applicant:	Allegheny energy Supply Company, LLC
Facility Name:	Harrison Power Station
Location:	Harrison County
NAICS Code:	221112
Application Type:	Modification
Received Date:	April 09, 2012
Engineer Assigned:	Steven R. Pursley, PE
Fee Amount:	\$2,000.00
Date Received:	April 12, 2012
Complete Date:	September 26, 2012
Due Date:	December 24, 2012
Applicant Ad Date:	April 23, 2012
Newspaper:	<i>The Exponent-Telegram</i>
UTM's:	Easting: 557.392 km Northing: 4,359.489 km Zone: 17
Description:	Installation of a new Rapid Discharge Rail Unloading system.

DESCRIPTION OF PROCESS

The Harrison Power Station plans to install a Rapid Discharge Railcar Unloading (RDRU) system capable of unloading a maximum of 3,000 tons of coal per hour and 5,000,000 tons of coal per year. The existing rotary rail car dump is being upgraded to a bottom dump RDRU. The railcars will enter the enclosure where the coal will be discharged through the bottom of each railcar, while the train continues to travel at a minimal speed to allow full unloading.

This upgrade will increase the rate of unloading from 1,500 tons per hour to 3,000 tons

per hour. A belt feeder will regulate the feed rate from the train to the conveying system at a maximum 3,000 tons per hour. The conveying system will be able to load out to either an existing stacking tube, to a new stacking tube, or split the material so that up to 1,500 tons per hour is fed into the existing conveyor system. The material at the new stacking tube will then be reclaimed through the existing stacking tubes reclaim system. Currently, there are two existing stacking tubes located in the coal pile that will remain in place.

Once the coal is discharged through the new radial stacking tube within the existing coal pile, a bulldozer will be used to push the coal where it can be blended and reclaimed into the existing crusher prior to being introduced into the boilers. The system will be used concurrently with the existing mine conveying system and truck deliveries. As mentioned above, the existing rotary dumper will be removed. Once complete, the RDRU will have the capability to deliver Powder River Basin coal and Illinois Basin bituminous coal to the plant. The system will incorporate a fogging system and enclosed conveyors to control particulate matter emissions.

SITE INSPECTION

No site inspection was performed by the writer. The facility is an existing well known source to DAQ. Mike Rowe of DAQs Enforcement section performed a full, on site inspection on September 2, 2011. The facility was found to be in compliance.

To get to the facility take I79 north to exit 121. At the end of the off ramp turn left on Johnson Rd/Meadowbrook Rd./County Route 24 and go approximately 4.8 miles. Then turn right on State Route 20/US Route 19 and go approximately 1.8 miles until State Route 20 and US Route 19 diverge. At the split turn left on State Route 20. Go approximately 1.3 miles and the facility is on the right.

ESTIMATE OF EMISSIONS BY REVIEWING ENGINEER

As indicated above, the RDRU may unload either PRB or Illinois Basin coal. Because these coals have different physical properties (mainly silt and moisture content) their emission profiles differ when estimating emissions from material handling. Therefore, Allegheny estimated emissions that would result from using each coal exclusively. The permit will limit emissions according to the type of coal used with the caveat in no case shall maximum annual emissions exceed the amount estimated by the over all worst case scenario (PRB). All emissions were estimated using AP-42, 5th edition, Chapter 13. Control efficiencies were then applied for railcar unloading (80% for a fogging system based on Ohio RACM) and conveyor transfer points (90% for a fogging system based on Ohio RACM).

Emissions when handling PRB coal should be as follows:

	PM		PM ₁₀		PM _{2.5}	
	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy
Railcar Unloading	0.66	0.45	0.31	0.22	0.05	0.04
Coal Load-in	3.27	2.25	1.55	1.07	0.24	0.17
Coal Storage Pile	0.43	0.06	0.22	0.03	0.09	0.01
Coal Load-out	9.14	6.28	2.12	1.46	0.21	0.14
Conv. Transfer Points	1.31	1.35	0.62	0.64	0.10	0.10
Total	14.81	10.39	4.82	3.42	0.69	0.46

Emissions when handling Illinois Basin coal should be as follows:

	PM		PM ₁₀		PM _{2.5}	
	lb/hr	tpy	lb/hr	tpy	lb/hr	tpy
Railcar Unloading	0.80	0.55	0.38	0.26	0.06	0.04
Coal Load-in	3.97	2.74	1.88	1.30	0.29	0.20
Coal Storage Pile	0.21	0.06	0.11	0.03	0.05	0.01
Coal Load-out	4.52	3.11	0.86	0.59	0.10	0.07
Conv. Transfer Points	1.59	1.64	0.76	0.78	0.12	0.12
Total	11.09	8.1	3.99	2.96	0.62	0.44

REGULATORY APPLICABILITY

The modification proposed to be permitted under this application R13-2988 is subject to the following state and federal regulations:

STATE RULES

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

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The facility is subject to the requirements of §45-2-5 “Control of Fugitive Particulate Matter.” The only requirement under this section is the proscription of any source of fugitive particulate matter “that is not equipped with a fugitive particulate matter control system.” Allegheny Energy Supply Company proposes to meet this requirement through the installation and utilization of enclosures, and wet suppression

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

The facility is subject to the requirements of 45CSR13 because Uncontrolled PM emissions from the modification exceed 6 pounds per hour and 10 tons per year.

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

Determination of Existing Major Source Status

The plant is located in an area - Harrison County- classified as “in attainment” with all National Ambient Air Quality Standards (NAAQS). Therefore, the major source standard for PM, PM₁₀ and PM_{2.5}, and its precursors (NO_x and SO₂) determined by 45CSR14.

The existing plant is a fossil fuel fired steam electric with a capacity of greater than 250 mmbtu/hr. Therefore, the facility is a listed 100 tpy source. The existing unmodified source has a PTE -based on calculations provided by the applicant in their Title V permit application - of well over 250 tons per year of CO, TSP, SO₂, VOCs and NO_x. This PTE defines the source as an existing major stationary source under 45CSR14.

Determination of Major Modification

A “major modification” is defined under section 2.40 of 45CSR14 as a:

. . . physical change in or change in the method of operation of a major stationary source which results in: a significant emissions increase (as defined in subsection 2.75) of any regulated NSR pollutant (as defined in subsection 2.66); and a significant net emissions increase of that pollutant from the major stationary source. [. . .]

The first step in determining whether a change is a “major modification” is determining whether a “physical change in or change in the method of operation of a major stationary source,” is occurring.

The emission increases from this application are due to the addition of an entirely new emission unit composed of a rapid discharge rail unloader, several conveyor belts, a stacking tube and open stock pile.

Section 3.4 of 45CSR14 provides guidance on the process of determining if proposed changes are a major modification. §45-14-3.4(a) states that:

. . . consistent with the definition of major modification contained in subsection 2.40, 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 2.75), and a significant net emissions increase (as defined in subsections 2.46 and 2.74). The proposed project is not a major modification if it does not cause a significant 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 3.4(b), 3.4(c), 3.4(d) and 3.4(f). The substantive language of each 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).

[§45-14-3.4(d)]

Actual-to-potential test for projects that only involve construction of a new emissions unit(s). -- A significant emissions increase of a regulated NSR pollutant is projected to occur if the sum of the difference between the potential to emit (as defined in subsection 2.58) from each new emissions unit following completion of the project and the baseline actual emissions (as defined in subdivision 2.8.c) of these units before the project equals or exceeds the significant amount for that pollutant (as defined in subsection 2.74).

[§45-14-3.4(f)]

Hybrid test for projects that involve multiple types of emissions units. -- A significant emissions increase of a regulated NSR pollutant is projected to occur if the sum of the emissions increases for each emissions unit, using the method specified in subdivisions 3.4.c through 3.4.d as applicable with respect to each emissions unit, for each type of emissions unit equals or exceeds the significant amount for that pollutant (as defined in subsection 2.74).

<i>Pollutant</i>	<i>Proposed Emissions (tpy)</i>	<i>Significant Level (tpy)</i>	<i>Significant?</i>
<i>PM</i>	10.39	25.00	No
<i>PM₁₀</i>	3.42	15.00	No
<i>PM_{2.5}</i>	0.46	10.00	No

45CSR16 *Standards of Performance for New Stationary Sources*

The new equipment is subject to 45CSR16 because it is subject to 40 CFR 60 Subpart Y (see below).

45CSR30 *Requirements for Operating Permits*

The facility is subject to the requirements of 45CSR30 because the existing power plant is a major source as defined in 45CSR30 with an existing Title V permit.

FEDERAL RULES

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

This new equipment will be subject to 40 CFR 60 Subpart Y because it will have been constructed after October 24, 1974 and will process more than 200 tons of coal per day. The proposed modification will include, four (4) belt conveyors, and one (1) stockpile. The facility should be in compliance with Section 254(b) (less than 10% opacity for coal processing and conveying equipment, coal storage system, or coal transfer and loading system processing coal) when the particulate matter control methods and devices proposed are in operation. The facility must submit a fugitive coal dust emissions control plan as required by 40CFR§60.254(c)(2) after permit issuance.

The proposed modification is **not** subject to the following state and federal rules:

45CSR5 *To Prevent and Control Air Pollution From the Operation of Coal Preparation Plants and Coal Handling Operations.*

The facility is not subject to 45CSR5 because it is located at a power plant and therefore is regulated by 45CSR2.

TOXICITY OF NON-CRITERIA REGULATED POLLUTANTS

No non-criteria regulated pollutants will be emitted as a result of this modification.

AIR QUALITY IMPACT ANALYSIS

Since this is a minor source as defined in 45CSR14, no modeling was performed.

MONITORING OF OPERATIONS

In order to determine compliance with the requirements of R13-2988, the permittee will retain monthly records of the following:

- * The amount and type (Illinois Basin or PRB) of coal unloaded
- * Monthly visual emission checks

RECOMMENDATION TO DIRECTOR

Information supplied in the application indicates that compliance with all applicable regulations will be achieved. Therefore it is the recommendation of the writer that permit R13-2988 for the installation of a rapid discharge rail unloading system located at the Harrison Power Station, be granted to Allegheny Energy Supply Company, LLC.

Steven R. Pursley, PE
Engineer

September 26, 2012

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