

west virginia department of environmental protection

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ENGINEERING EVALUATION / FACT SHEET

BACKGROUND INFORMATION

Application No.:	R13-3198
Plant ID No.:	081-00263
Applicant:	Beckley Steel Inc. (Beckley Steel)
Facility Name:	Piney View Facility
Location:	Raleigh County
NAICS Code:	333131 - Mining Machinery and Equipment Manufacturing
Application Type:	Construction
Received Date:	June 23, 2014
Engineer Assigned:	John Legg
Fee Amount:	\$1,000.00
Date Received:	June 24, 2014
Complete Date:	July 01, 2014 (Affidavit of Publication received)
Due Date:	October 01, 2014
Applicant Ad Date:	June 26, 2014
Newspaper:	The Register-Herald
UTM's:	Easting: 487.58 km Northing: 4,186.99 km Zone: 17
Description:	Installing/constructing a paint/coating and abrasive blast operation at a newly purchased facility.

Beckley Steel just recently purchased a facility located in/near Piney View, Raleigh County, WV. On June 23, 2014 the company submitted permit application R13-3198 to construct a paint/coating and abrasive blast operation at the Piney View facility. Gene Coccari of the DAQ's Small Business Group helped in the preparation of the application. According to the company's NAICS code (333131), Beckley Steel manufacturers mining machinery and equipment. On June 24, 2014, the \$1,000.00 application fee was paid by the company and the writer was assigned to review the application and write the air permit. On June 26, 2014, the company's Class I legal advertisement ran in *The Register-Herald*, an Independent newspaper published by Beckley Newspapers. On July 1, 2014, the legal advertisement's Affidavit of Publication was received at the DAQ and the application was deemed to be complete.

DESCRIPTION OF PROCESS

- 1) Raw material enters the fabrication shop and is processed.
- 2) Depending on size and shape of fabricated item, it is sent to either:
 - the abrasive wheel blast machine (for long structural items such as Ibeams, etc.) or
 - the abrasive blast room

to be abrasive blasted.

- 3) Once basted, the material/item is taken from either the abrasive wheel blast machine or the abrasive blast room into the paint area to be primed and/or painted.
- 4) Material/item is loaded on a truck, taken out of the shop, and delivered to the customer.

Emission Unit ID	Emission Point ID	Emission Unit Description	Year Installed	Design Capacity	Control Device
1S	1E	Paint/Coating Area	2014	Charging Weight 10 TPH	1C Filter
28	2E	Abrasive Blast Area	2014	Charging Weight 10 TPH	2C Cartridge Dust Collector
38	3E	Wheel Blast Machine	2015	Charging Weight 1Ton	3C Cartridge Dust Collector

Table 1: Emission Units

Table 2: 1S - Paint/Coating Area			
Name	Paint/Coating Area		
Maximum Hourly Process Material Charged	10 ton/hr		
Maximum Hourly Material Produced	10 ton/hr		
Projected Operating Schedule	24 hours/day; 7 days/week; 52 weeks/yr		
Record Keeping	Records of Coating Usage and Paint Filter Changes are to be kept.		

Table 3: 1C - Paint/Coating Area - Filter		
Manufacturer	Viledon Fiberglass Exhaust Filters/ Freudenberg Filtration Technologies	
Filter Size	20" X 20" Pads	
PM Control Efficiency	98%	
General Information	Viledon 200 Series; Fiberglass Point Arrestor - Exhaust Rolls; Viledon offers paint overspray arrestor composed of a single layer of resin bonded glass fibers for use in exhaust floor applications requiring quick efficiency at a low cost. Available in heavy duty (15 gram) and extra heavy duty (22 gram) rolls, the glass fiber media provides excellent holding capacity. In addition, for more demanding applications, extra heavy duty glass fiber (32 gram) rolls with polybacking.	

Table 4: 2S - Abrasive Blast Area				
Name	Abrasive Blast A	Abrasive Blast Area		
Blast Room Inside Dimensions	25' W X 25'H X	80' L		
Maximum Process Material Charged per hour	10 ton/hr			
Maximum Material Produced per hour	10 ton/hr			
Scope of Project: To supply a single metered cross screw (22'L) shaped partial floor reclaim system for a customer-supplied blast room facility.	10 ton/hr Equipment: Screws; motors; drives; belt and bucket elevator; air-wash separator with perforated plate rotary scalping drum; metering shed plates; control panel; quantity-1 blast pot assembly; CO-moni with calibration kit; 100 cu. ft. "free standing abrasive storage hopper with caged ladder and access platform; floor grating; two (2) "free" standing exhaust plenums, and a dust collection system v a designed room air-flow of 60 FPM including exhaust silencer.			
Projected Operating Schedule	24 hours/day; 7 days/week; 52 weeks/yr			
Recordkeeping	Monthly opacity checks and keeping track of abrasive bas material usage.			

Table 5: 2C - Abrasive Blast Area - Cartridge Dust Collector			
Manufacturer	Abrasive Blast Systems, LLC		
Model No.	ADFT 4-64		

Table 5: 2C - Abrasive Blast Area - Cartridge Dust Collector			
Dust Collection	 Two (2) "free standing" baffled air exhaust plenums including structural steel support legs; 		
Related Equipment	 One (1) 38,000 CFM cartridge dust collector, Model Number ADFT 4-64. 		
	The unit includes abrasive inlet plenum, fan and "premium efficiency" motor (100 HP). (Note: The room air-flow is 60 FPM end-to-end ventilation.)		
	 One exhaust fan silencer assembly, including transitional ductwork and structural support frame. 		
Filter Efficiency	99.999% down to a particle size of 0.5 micron; MERV-15 rating.		

Table 6: 3S - Wheel Blast Machine			
Manufacturer	LS Industries Inc.		
Model No.	LS STRB3636		
Maximum Process Material Charged per hour	1 ton/hr		
Maximum Material Produced per hour	1 ton/hr		
Equipment	Summaried in pages 355 and 356 of application.		
Projected Operating Schedule	24 hours/day; 7 days/week; 52 weeks/yr		
Record Keeping	Monthly opacity reading and keeping track of Abrasive Blast Material usage.		

Table 6: 3C - Wheel Blast Machine - Cartridge Dust Collector				
Manufacturer LS Industries Inc.				
Model No.		DCC-20A Dust Collector		
Equipment	Fan Motor	20 HP (15 kW); 6,000 cfm (170 cubic meters)		
(pg 356 in application)	Cartridges	8 Cartridges; 2,480 sq. ft. (230 sq. meters) filter media		

Table 6: 3C - Wheel Blast Machine - Cartridge Dust Collector				
Dust Collector Equipment (pg 339 of	Dust Removal Efficiency	<= 97% on 0.8 micron particulate <=100% on 2 micron particlate		
application)	How is dust removed from collector?	Extended legs are provided which accommodate the use of a 55-gallon drum for dust containment.		
	General Information	All LS blasters include a dust collector system as standard equipment. The dust collector filters air pulled from the blast cabinet through a series of 8 cartridges to remove particulate of contamination and spent shot. Following a successful test run at LS Industries' facility, Beckley Steel is responsible for dust control after accepting the machine.		

SITE INSPECTION

On July 31, 2014, the writer inspected the facility with Gene Coccari of the DAQ's Small Business Group. The facility is a pre-existing steel fabricated building recently purchased by Beckley Steel. The former owner's home/residence is located southwest of the property within 300 feet of the building. Two or three other residential homes are also located (north/northeast of the property) within sight of the facility.

Based on the building's appearance/large size, the writer concluded that the former business had probably been a fabricating shop similar to what Beckley Steel was now proposing to construct. The building still contains an exhaust stack and a bank of filters probably used for spraying painting activities. The new owner, Mr. Arnold Maynard, stated that the neighbors were glad that the facility was reopening and had offered to help in any way they could. Mr. Maynard seemed very environmentally friendly/conscious and said he would cooperated/make any needed changes if the need should arrive to maintain the support/backing of his neighbors. The writer concluded, given the type of facility (machine shop) and the new environmentally-friendly owner, that the coupling was a good match, and that the site was acceptable to the DAQ.

Upon issuance of this permit, the facility will be added to the Airtrax Database and DAQ's Enforcement inspection list. Directions as given in the application:

From I77/64 take exit 48 (North Beckley) onto Route 19 north. Take first exit and turn right onto Route 16 towards Beckley. Go to the 7th red light and turn left onto Ragland Road. Go to the end of Ragland Road. Turn left onto Rout 41. Go approximately 2 miles and you will see the facility on the left.

ESTIMATE OF EMISSIONS BY REVIEWING ENGINEER

Beckley Steel's emissions were estimated by Gene Coccari of DAQ's Small Business Group and are found in Attachment N to the permit application. The writer reviewed the emissions and found them to be reasonable.

Potential emissions (PM emissions controlled; VOC emissions uncontrolled) for the facility, as advertised in company's June 26, 2014 legal advertisement (*The Register-Herald*), are given below in Table 5.

Table 5: Potential Emissions from Beckley Steel's Proposed
Construction of a Paint/Coating and Abrasive Blast Operation
at their Recently Purchased Piney View, Raleigh County WV
Facility as Advertised in their June 26, 2014 Legal
Advertisement in The Register-Herald.

Pollutant			Maximum Emissions (ton/yr)
Control by Filters	PM		3 ^{(1) (2)}
	PM ₁₀	1.5 ^{(1) (2)}	
	Total VOCs		17
Uncontrolled	HAPs	⁽³⁾ Xylene	8.4
		⁽³⁾ Ethyl Benzene	2.5
		⁽⁴⁾ Total	11

(1) See Table 6 below for further explanation.

(2) $PM_{10} = PM / 2.1 \approx 1 \text{ ton/yr}.$

(3) In R13-3198, individual speciated HAPs must not exceed 10 TPY for the facility to remain a non-major source.

(4) Aggregated HAP emissions must not exceed 25 TPY or the facility will become a major source of HAPs. Because VOC emissions are limited to 17 TPY or less, the facility can not become major without exceeding the 17 TPY VOC limit in the permit.

Emission	Emission Unit Description	Control Device	Controlled Emission Rate	
Unit ID			(lb/hr)	(ton/yr)
1S	Paint/Coating Area	1C - Filters (+98% PM Control) ⁽¹⁾	1.13 ⁽²⁾	0.12 ⁽³⁾
28	Abrasive Blast Area	2C - Cartridge Dust Collector (+99% PM Control) ⁽¹⁾	0.25 ⁽⁴⁾	0.26 ⁽⁶⁾
38	Wheel Blast Machine (4 wheels)	3C - Cartridge Dust Collector (Approaching 97% PM Control) ⁽¹⁾	0.10 ⁽⁵⁾	0.10 ⁽⁶⁾
	Total		1.48	0.48 (over-estimated in Legal Ad at 1.5 TPY)

 Table 6: Beckley Steel's Estimated PM₁₀ Emissions.

(1) The manufacturers of the paint/coating pads/filters and the aggregate blast PM filter cartridges claim (in the writer's opinion) an unrealistic removal efficiencies of +98%. The permittee used more realistic removal efficiencies, documented below in this table to calculate controlled emissions which in turn were used as permit limits.

(2) Controlled emissions were calculated using: a paint/coating transfer efficiency of 30%; a settling chamber efficiency of 80%; a filter system control efficiency of 90%; and a PM to PM₁₀ ratio of 2.1.

- (3) Based on spray painting/coating a maximum of 1,248 hours per year.
- (4) Controlled emissions were calculated using: 96 lb/hr of abrasive; an AP-42 emission factor of 27 lb/1,000 lb of abrasive (Chapter 13.2.6 Abrasive Blasting, Table 13.2.6-1., Sand blasting of mild steel panels); an 80% removal efficiency for abrasive blasting inside a building. The filters located at the end of the process will further reduce emissions. A PM to PM₁₀ ratio of 2.1 was also used in the calculations.
- (5) Controlled emissions were calculated based on using: 35 lb/hr of abrasive (8 lb/each wheel; 4 wheels; and plus 2 lb for PM/rust from metal); an AP-42 emission factor of 27 lb/1,000 lb of abrasive (Chapter 13.2.6 Abrasive Blasting, Table 13.2.6-1., Sand blasting of mild steel panels); an 80% removal efficiency for abrasive blasting inside a building. The filters located at the end of process will further reduce emissions. A PM to PM₁₀ ratio of 2.1 was also used in the calculations.

(6) Based on operating 2,080 hr/yr (8 hr/day x 5 day/wk x 52 wk/yr).

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Pollutant		Emission Rate		
		(lb/hr)	(ton/yr)	
Total VOCs		77	16.7	
HAPs	Xylene	61	8.32	
	Ethylbenzene	18	2.1	
	Total	79	10.42	
Non- HAP VOCs			6.28	

Table 7: VOC/HAP Emissions from Beckley Steel's Paint/Coating Area.

Table 8:Page 357 of Beckley Steel's Permit Application R13-3198 Detailing Sources of VOCs/HAPs in the Paint/Coating Operation.				
Type of Paint/Coating	VOC (ton/yr)	Total HAPs (ton/yr)	Xylene (ton/yr)	Ethylbenzene (ton/yr)
Enamels	7.301	7.1614	5.661	1.41
Epoxies	0.775	0.7143	0.385	0.232
Solvents	7.91	2.741	2.27	0.452
Urethanes	0.71	0.093	0	0.008
Totals	16.696	10.7097	8.316	2.102

VOC emissions from the facility are limited to 16.7 ton/yr by the proposed permit, i.e., aggregated total HAP emissions can not exceed 25 ton/yr without exceeding the facility VOC limit. Single HAP emissions from the facility can not exceed 10 ton/yr. Record keeping requirements in the permit track individual HAP emissions and do not allow emissions to exceed 10 ton/yr without being in violation of the permit.

REGULATORY APPLICABILITY

Beckley Steel's Piney View, WV facility is a non-major stationary source, not subject to Title V (45SCR30) because it is not subject to a standard or other requirement under § 112 of the Clean Air Act.

Applicable State Rules:

45CSR7 - **To Prevent and Control Particulate Matter Air Pollution from** Manufacturing Processes and Associated Operations

The purpose of Rule 7 is to prevent and control particulate matter air pollution from manufacturing processes and associated operations.

The Paint/Coating Area (1S), the abrasive blast area (2S), and the abrasive wheel machine (3S) are subject to the emissions standards of 45CSR7.

- 45CSR§7-3.1. Opacity can not exceed 20%.
- 45CSR§7-5.1. Must be equipped with control system(s) to minimize fugitive PM. The Paint/Coating Area has exhaust pad filters, and the abrasive blast area and the abrasive wheel machine each have a cartridge dust collector.
- 45CSR§7-8.1. Director may required PM stack testing.
- 45CSR§7-8.2. Director or his representative may conduct tests to evaluate emissions.
- 45CSR§7-9.1.- Continued operation allowances for unavoidable malfunction of equipment.
- 45CSR13- Permits for Construction, Modification, Relocation and Operation of Stationary Sources of Air Pollutants, Notification Requirements, Administrative Updates, Temporary Permits, General Permits, Permission to Commence Construction, and Procedures for Evaluation

Beckley Steel's Piney View Facility has the potential to discharge more than six (6) pounds per hour and ton (10) tons per year of PM and VOC.

Beckley Steel is subject to substantive requirements of emission control rules promulgated by the Secretary:

- The Paint/Coating Area (1S), the abrasive blast area (2S) and the abrasive wheel machine (3S) are subject to the PM emission standards of 45CSR7.

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TOXICITY OF NON-CRITERIA REGULATED POLLUTANTS

Twenty-seven (27) MSDSs containing eight (8) unique Hazardous Air Pollutants (HAPs) were submitted in Attachment H to the application. HAPs are listed after the name of the MSDS. To showcase the names of the eight (8) unique HAPs, the 1st time a unique HAP appears in the table, the surrounding box and HAP name are bolded.

No.	Name of Coating/	Reference	НАР		
	Thinner/EQPT Cleaner	No.	CAS	Name	Max %
1	Bar-Rust 231 High Hide White	DC231K2500_A1	100-41-4	Ethylbenzene	1
	Part A		1330-20-7	Xylenes	10
2	Bar-Rust 231 Part B	DC231C0910_A0	108-10-1	Methylisobutyl Ketone (Hexone)	25
3	Bar-Rust 235 Haze Grey Kit	DC235K290_0	100-41-4	Ethylbenzene	1
			1330-20-7	Xylenes	10
4	Devlac 1431 Safety Yellow	DC1431S9400_A0	100-41-4	Ethylbenzene	1
5	Devlac 1423 Safety Yellow	DC1433S9400_A0	1330-20-7	Xylenes	25
			100-41-4	Ethylbenzene	10
			106-42-3	1,4-Dimethyl-Benzene (p-Xylene)	10
6	Devran 224HS (N Products)		100-41-4	Ethylbenzene	1
			108-10-1	Methylisobutyl Ketone (Hexone)	5
			1330-20-7	Xylenes	5
			98-82-8	1-Methylethylbenzene (Cumene)	1
7	Devran 261 Haze Grey Part A	DC261B2904_A1	100-41-4	Ethylbenzene	10
			1330-20-7	Xylenes	10
8	Devran 261 Part B	DC261C0910_A0	1330-20-7	Xylenes	25
9	Devthane 349 Enhanced Part B	DC349C0910E_A0	100-41-4	Ethylbenzene	1
10	Devthane 389 White Kit	DC389K1000_A0	100-41-4	Ethylbenzene	1
11	Devthane 389 Part B	DC389C0910_A0	822-06-0	Hexamethylene Diisocyanate	1
11	Interlac 393 Grey Primer	3938_A6	1330-20-7	Xylenes	25
			100-41-4	Ethylbenzene	10
12	Interlac 665FD Ultra Deep Base	66544_B3	1330-20-7	Xylenes	50
			100-41-4	Ethylbenzene	10
			106-42-3	1,4-Dimethyl-Benzene (p-Xylene)	10

No.	Name of Coating/ Thinner/EQPT Cleaner	Reference No.	НАР		
			CAS	Name	Max %
13	Interlac 665FD Yellow Base	66555_B9	100-41-4	Ethylbenzene	10
			1330-20-7	Xylenes	25
14	Fast-Cladl DTM Urethane -	B65W851	100-41-4	Ethylbenzene	0.1
	Base		91-20-3	Naphthalene	0.3
			108-10-1	Methyl Isobutyl Ketone	3
15	Fast-Cladl DTM Urethane - Closs (Part B), Hardner	B65V850	822-06-0	Hexamethylene Diisocynanate	0.8
16	Industrial Enamel, Ultradeep Base	B54T104	100-41-4	Ethylbenzene	0.1
17	Kem Kromik Universal Metal	B50WZ1	108-88-3	Toluene	3
	Primer (VOC Comp.), Oπ White		100-41-4	Ethylbenzene	2
			1330-20-7	Xylenes	11
18	Macropoxy 646 SE Shop Epoxy	B58W630	100-41-4	Ethylbenzene	2
	(Part A), White		1330-20-7	Xylenes	15
19	Macropoxy 646Fast Cure	B58V600	100-41-4	Ethylbenzene	0.3
	Epoxy Coating (Part B), Hardner		1330-20-7	Xylenes	2
			108-10-1	Methyl Isobutyl Ketone	10
20	Quick Dry Enamel, Gloss White	F77W8	108-88-3	Toluene	17
			100-41-4	Ethylbenzene	4
			1330-20-7	Xylenes	22
21	Sher-Kem High Gloss Finishing	F75CC2	108-88-3	Toluene	1
Enamel, Ultra Deep Base		100-41-4	Ethylbenzene	0.3	
			1330-20-7	Xylenes	2
22	Steel Spec Fast Dry Alkyd	B55W811	100-41-4	Ethylbenzene	1
Finish Coat, Extra White	Finish Coat, Extra White		1330-20-7	Xylenes	6
23	Tar Guard Coal Tar Epoxy (Part	t B69B60	100-41-4	Ethylbenzene	3
	А), Віаск		1330-20-7	Xylenes	17
24	Xylene (Xylol)	Xylene/SW	100-41-4	Ethylbenzene	15
			1330-20-7	Xylenes	85
25	Devoe T5 Thinner	DC005T0000	100-41-4	Ethylbenzene	25
			1330-20-7	Xylenes	100
26	Devoe T9 Thinner	DC009T0000	1330-20-7	Xylenes	10
27	Devoe T10 Thinner	DC010T0000_A0	100-41-4	Ethylbenzene	25
			108-10-1	Methyl Isobutyl Ketone	25

No.	No. Name of Coating/	Reference	НАР		
Thinner/EQPT Cleaner	No.	CAS	Name	Max %	
			1330-20-7	Xylenes	50

AIR QUALITY IMPACT ANALYSIS

Beckley Steel's Piney View, WV facility is considered to be an non-major source. No impact analysis study was conducted for the source.

MONITORING & RECORD KEEPING REQUIREMENTS

Permit

Section 5.2.1. Monthly visible emission checks (and/or opacity monitoring) are to be conducted for the Paint/Coating Area (1S), the Abrasive Blast Area (2S) and the Abrasive Blast Machine (3S). See permit section 5.1.11. [45CSR§7-3.1.]

Permit

Section 5.4.1. **Paint/Coating Area (1S) VOC Emission Rate**. The following records are to be kept on a daily basis: name, identification number, and number of gallons of coating applied; and the mass of VOC per volume of each coating (minus water and exempt compounds, as applied). On a monthly basis, the 12-month rolling VOC emission rate is to be calculated/recorded. An example record is given in Appendix B to the permit. Records are to be kept for three years. See permit section 5.1.3.

Permit

Section 5.4.2. Records of monthly **visible emission checks** (and/or opacity monitoring) of the Paint/Coating Area (1S), the Abrasive Blast Area (2S) and the Abrasive Blast Machine (3S) are to be kept for three years. An example record is given in Appendix A. See permit section 5.1.11. **[45CSR§7-3.1.]**

Permit

Section 5.4.3. Record of **Abrasive Blast Media Usage or Addition Rate** for the Abrasive Blast Area (2S) and Abrasive Wheel Blast Machine (3S). On a daily basis, record: 1) the amount of abrasive used and/or added, and on a monthly basis, record the 12-month rolling total abrasive usage and or addition rate. See permit sections 5.1.7. and 5.1.10.

Permit	
Section 5.4.4.	Cleaning Solvent(s) Usage (Fugitive VOC Emissions) . Daily records of the amount of cleaning sovent(s) used, the VOC content of the cleaning solvent(s) (if less than 100%), and the amount of cleaning solvent(s) emitted [subtracting out any used cleaning solvent(s) captured and not allowed to evaporate], and the 12-month rolling VOC cleaning solvent(s) emission rate for the facility. Records are to be maintained for three years. See permit section 5.1.4.
Permit	
Section 5.4.5.	Daily records are to be kept of all single HAP emission rate(s) for the facility using information collected from the Paint/Coating Area (1S) operation and from cleaning solvent(s) usage for the facility. A 12-month rolling single HAP emission rate total shall also be calculated and recorded on a monthly basis. See permit section 5.1.1.
Permit	
Section 5.4.6.	Permittee to record when the Paint/Coating Area (1S) Exhaust filters are changed out . If not all the pads/filters are changed out at the same time, then the location of the changed out and non-changed out pads/filters are to be noted for the record. See permit section 5.1.3.
Permit	
Section 5.5.1.	Permittee is to notify DAQ/Director in writing of the use of any new surface coating containing any HAP(s) within thirty days of use. An MSDS shall be included with the notice to the DAQ. See permit section 5.1.1.a.

RECOMMENDATION TO DIRECTOR

Beckley Steel's request for a permit to construct an abrasive blasting and coating operation for the manufacture of mining machinery and equipment manufacture at their Piney View, Raleigh County, WV facility meets the requirements of all applicable rules and therefore should be granted said construction permit (R13-3198).

John Legg Permit Writer

August 07, 2014

Fact Sheet R13-3198 Beckley Steel Inc. Piney View, Raleigh County, WV