

STATEMENT OF BASIS

For the issuance of Draft Air Permit # 2305-AOP-R6 AFIN: 47-00991

1. PERMITTING AUTHORITY:

Arkansas Department of Environmental Quality
5301 Northshore Drive
North Little Rock, Arkansas 72118-5317

2. APPLICANT:

Big River Steel LLC
2027 E. State Hwy 198
Osceola, Arkansas 72370

3. PERMIT WRITER:

Jesse Smith

4. NAICS DESCRIPTION AND CODE:

NAICS Description: Iron and Steel Mills and Ferroalloy Manufacturing
NAICS Code: 33111

5. ALL SUBMITTALS:

The following is a list of ALL permit applications included in this permit revision.

Date of Application	Type of Application (New, Renewal, Modification, Deminimis/Minor Mod, or Administrative Amendment)	Short Description of Any Changes That Would Be Considered New or Modified Emissions
8/20/2019	Modification	New sources, updated BACT limits, increased throughput in some sources

6. REVIEWER'S NOTES:

Big River Steel, LLC owns and operates a steel mill located at 2027 E. State Hwy 198 in Osceola, AR. This permitting modification makes the following changes to the existing permit:

- Adds the following new sources to the permit: Lime Injector Burner I and II (SN-01A and SN-02A), Caster #1 and #2 (SN-14 and SN-15), Tunnel Furnace Shuttle Zone (SN-21C), Emergency Generator 10 and 11 (SN-67D and SN-67E), four emergency water pumps (SN-104A through SN-104D), and an EAF I/II Lime Injection System (SN-103).

- Updated BACT for some existing sources and included BACT analysis for new sources.
- Increased throughput for EAF II and LMF II (SN-02) to match the rates of EAF I and LMF I (SN-01).
- Increased PM/PM₁₀/PM_{2.5} emissions from the tunnel furnaces (SN-20 and SN-21) due to an emission factor change.
- Increased the power rating of Emergency Generators 5 through 9 (SN-66, SN-67, SN-67A, SN-67B, and SN-67C) from 2000 kW each to 2700 kW each.
- Increased TDS limits for all permitted cooling tower sources by four times. The cooling towers require four passes, but the permit was currently limiting the TDS to the amount required in one pass. Emissions of cooling tower sources updated as well with this change.
- Increased throughput for the Carbon Injection Receiving system (SN-84) from 49,210 tons/year to 79,204 tons/year.
- Increased throughput to the slag handling operations (SN-95, SN-96, and SN-99B) from 488,980 tons/year to 650,000 tons/year.
- Added Air Products Cooling Towers #1 and #2 to the insignificant activities list.
- Some other miscellaneous changes to permit condition wording and error corrections.

The permitted emission changes for this permitting action are as follows: Increase of 29.7 tpy PM, increase of 29.0 tpy PM₁₀, increase of 28.6 tpy PM_{2.5}, increase of 31.2 tpy SO₂, increase of 17.4 tpy VOC, increase of 381.6 tpy CO, increase of 102.9 tpy NO_x, increase of 0.100079 tpy Lead, increase of 113,771 tpy CO_{2e}, and an increase of 0.7 tpy H₂SO₄.

7. COMPLIANCE STATUS:

The following summarizes the current compliance of the facility including active/pending enforcement actions and recent compliance activities and issues.

The facility has a currently open Consent Administrative order.

8. PSD/GHG APPLICABILITY:

a) Did the facility undergo PSD review in this permit (i.e., BACT, Modeling, etc.)? Y
If yes, were GHG emission increases significant? N

b) Is the facility categorized as a major source for PSD? Y

- *Single pollutant ≥ 100 tpy and on the list of 28 or single pollutant ≥ 250 tpy and not on list*

9. SOURCE AND POLLUTANT SPECIFIC REGULATORY APPLICABILITY:

Source	Pollutant	Regulation (NSPS, NESHAP or PSD)
01 and 02	Particulate	NSPS AAa
01 and 02	HAPs	MACT YYYYYY
All Boilers	None	NSPS Dc
SN 53	VOC	NSPS TT
All	NO _x , CO, PM, PM ₁₀ , PM _{2.5} , SO ₂ , VOC, lead, and greenhouse gasses.	PSD
Generators	Criteria and HAPs	NSPS IIII, and MACT ZZZZ
100	HAP	NESHAP CCCCCC

10. PERMIT SHIELD – TITLE V PERMITS ONLY:

Did the facility request a permit shield in this application? N

11. EMISSION CHANGES AND FEE CALCULATION:

See emission change and fee calculation spreadsheet in Appendix A.

12. AMBIENT AIR EVALUATIONS:

The following are results for ambient air evaluations or modeling.

a) NAAQS

Based upon the information submitted with the application for this permitting action, all regulated air pollutants for this project are below EPA’s Significant Impact Levels and result in what is considered an insignificant change except for PM_{2.5} and NO_x. Further screening shows that both the PM_{2.5} and NO_x modeling results in insignificant changes. Therefore, previous modeling performed for this facility is still representative.

b) Non-Criteria Pollutants:

Non-Criteria Pollutant evaluation is based on permit 2305-AOP-R0 results as all HAP emission rates have either remained the same or not increased to a level that would significantly impact previous modelling results.

1st Tier Screening (PAER)

Estimated hourly emissions from the following sources were compared to the Presumptively Acceptable Emission Rate (PAER) for each compound. The Department has deemed the PAER to be the product, in lb/hr, of 0.11 and the Threshold Limit Value

(mg/m³), as listed by the American Conference of Governmental Industrial Hygienists (ACGIH).

Pollutant	TLV (mg/m ³)	PAER (lb/hr) = 0.11 × TLV	Proposed lb/hr	Pass?
Formaldehyde	15	1.65	0.1236	Yes
Arsenic	0.01	0.0011	0.0043	No
Cadmium	0.01	0.0011	0.00583	No
HCl	3	0.33	1.0	No
Manganese	0.2	0.022	0.161	No
Mercury	0.01	0.0011	0.061	No

2nd Tier Screening (PAIL)

AERMOD air dispersion modeling was performed on the estimated hourly emissions from the following sources, in order to predict ambient concentrations beyond the property boundary. The Presumptively Acceptable Impact Level (PAIL) for each compound has been deemed by the Department to be one one-hundredth of the Threshold Limit Value as listed by the ACGIH.

Pollutant	PAIL (µg/m ³) = 1/100 of Threshold Limit Value	Modeled Concentration (µg/m ³)	Pass?
Arsenic	0.1	0.049	Yes
Cadmium	0.1	0.0003	Yes
HCl	30	0.0007	Yes
Manganese	2	0.012	Yes
Mercury	0.1	0.0043	Yes

c) H₂S Modeling:

A.C.A. §8-3-103 requires hydrogen sulfide emissions to meet specific ambient standards. Many sources are exempt from this regulation, refer to the Arkansas Code for details.

Is the facility exempt from the H₂S Standards Y
 If exempt, explain: No H₂S emissions

Pollutant	Threshold value	Modeled Concentration (ppb)	Pass?
H ₂ S	20 parts per million (5-minute average*)	0	Y
	80 parts per billion (8-hour average) residential area	0	Y
	100 parts per billion (8-hour average) nonresidential area	0	Y

*To determine the 5-minute average use the following equation

$$C_p = C_m (t_m/t_p)^{0.2} \text{ where}$$

C_p = 5-minute average concentration

C_m = 1-hour average concentration

t_m = 60 minutes

t_p = 5 minutes

13. CALCULATIONS:

SN	Emission Factor Source (AP-42, testing, etc.)	Emission Factor (lb/ton, lb/hr, etc.)	Control Equipment	Control Equipment Efficiency	Comments
All	All criteria pollutants based on BACT limits				
01 and 02 HAPs	AP-42	Varied	Baghouse	99%+	
Natural Gas HAPs	AP-42	Varied	None		
Pickling Lines HCl	Manufacturer Estimates	Varied	Scrubbers		
100	TANKS 4.0 software				

14. TESTING REQUIREMENTS:

The permit requires testing of the following sources.

SN	Pollutants	Test Method	Test Interval	Justification
01 and 02	PM, PM ₁₀ , PM _{2.5} ,	5D and 201 or 201A	Initial and annual	NSPS and PSD limit verification
01 and 02	AAa required	None specified	Initial and annual	NSPS

SN	Pollutants	Test Method	Test Interval	Justification
	information (fan motor amps, etc.)			requirement
01 and 02	NO _x , SO ₂ , CO, CO ₂ , VOC	7E, 6C, 3A, 10, 25A	Semi annually	To verify compliance with BACT emission rates
01 and 032	Lead	12	Annually	To verify BACT limits
04, 22, 26, 27, 101	PM _{2.5} , CO, NO _x	202, 10, 7E	Initial and 5 years	Verification of BACT emission limits
03	Flare design	40 CFR 60.18(b) through (f)	Initial only	To verify flare is design is capable of achieving BACT limits
03	CO ₂	Material analysis	Semi Annually	To show compliance with BACT limits
39 51, 58, 60 53 54-56	PM _{2.5} and PM ₁₀	202, 10, and 7E	Initial	To show compliance with BACT limits
53	VOC	25A	Initial	NSPS TT Requirement
Cooling Towers	TDS	TDS testing	6 months	Verification of BACT limits
Pickling Line Scrubbers	HCl	26	Initial	Verification of permit limits and ensure facility is not a Major Source of HAPs

15. MONITORING OR CEMS:

The permittee must monitor the following parameters with CEMS or other monitoring equipment (temperature, pressure differential, etc.)

SN	Parameter or Pollutant to be Monitored	Method (CEM, Pressure Gauge, etc.)	Frequency	Report (Y/N)
01 and 02	AAa required monitoring	Fan amps, damper positions, etc.	Vary according to reading	Y
52	RTO temperature	Thermocouple	Continuous (3hr averages)	Y

16. RECORDKEEPING REQUIREMENTS:

The following are items (such as throughput, fuel usage, VOC content, etc.) that must be tracked and recorded.

SN	Recorded Item	Permit Limit	Frequency	Report (Y/N)
01 and 02	AAa Records	None	Vary	Y
01 and 02	YYYYY Records	None	Vary	Y
03	Degasser steel throughput	1,500,000 tons per 12 months	Monthly	Y
52	Subpart TT Records	None	Vary	Y
Emergency Engines	Hours of operation	100	Monthly	Y
Cooling Towers	TDS readings	Vary per tower	Semi annually	Y
82, 84, 86, 88, 90, 103	Materials received	175,830 79,204 175,830 680,000 680,000 210,240	Monthly	Y
Slag Handling	Tons of slag	650,000	Monthly	Y
100	Gasoline Throughput	Less than 10,000 gallons per month	Monthly	Y

17. OPACITY:

SN	Opacity	Justification for limit	Compliance Mechanism
01 and 02	3%	NSPS/BACT	Daily observations
01 and 02 Meltshop	6%	NSPS/BACT	Daily observations
All natural gas burners	5%	BACT/Department Guidance	Combustion of natural gas only
91	5%	BACT/Department Guidance	Weekly Observation
Rolling Mill sources	5%	BACT/Department Guidance	Weekly Observation on building

18. DELETED CONDITIONS:

Former SC	Justification for removal

Former SC	Justification for removal
#4 and #5	The permittee already must calculate actual emissions using throughput, and therefore the throughput limit is unnecessary.
58	Testing condition unneeded as facility has increased those limits being tested to AP-42 emissions factors

19. GROUP A INSIGNIFICANT ACTIVITIES:

The following is a list of Insignificant Activities including revisions by this permit.

Source Name	Group A Category	Emissions (tpy)							
		PM/PM ₁₀	SO ₂	VOC	CO	NO _x	HAPs		Lead
							Single	Total	
Water Bath Vaporizer	A-1	0.30	0.02	0.22	4.37	2.39	2.90 E-03	0.004	1.93 E-06
Tundish Dryer	A-1	0.30	0.02	0.21	1.46	3.19	2.90 E-03	0.004	1.93 E-05
Continuous Galvanizing Line Dryer	A-1	0.20	0.02	0.15	2.99	4.26	2.00 E-03	0.003	1.33 E-05
Reformer Furnace (PHG830)	A-1	0.34	0.01	0.25	0.14	0.38	0.003	0.003	-
Laboratory Test Furnace	A-1	6.7 E-04	5.2 E-05	4.8 E-04	0.008	0.009	1.60 E-04	1.60 E-04	-
Diesel Fuel Tanks	A-3	-	-	0.004	-	-	-	-	-
Engine Oil Tank	A-3	-	-	1.3 E-05	-	-	-	-	-
Steel Cutting	A-7	0.4	-	-	-	-	0.001	0.002	-
Induced Draft Mechanical Cooling Tower	A-13	0.56	-	-	-	-	-	-	-
HCL Storage Tanks	A-13	-	-	-	-	-	0.02	0.02	-
Air Products Cooling Towers #1	A-13	1.48	-	-	-	-	-	-	-

and #2									
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20. VOIDED, SUPERSEDED, OR SUBSUMED PERMITS:

The following is a list of all active permits voided/superseded/subsumed by the issuance of this permit.

Permit #
2305-AOP-R5

APPENDIX A – EMISSION CHANGES AND FEE CALCULATION

Fee Calculation for Major Source

Revised 03-11-16

Big River Steel LLC
 Permit #: 2305-AOP-R6
 AFIN: 47-00991

\$/ton factor	23.93	Annual Chargeable Emissions (tpy)	<u>2292.8814</u>
Permit Type	Modification	Permit Fee \$	<u>4340.9265</u>

Minor Modification Fee \$	500
Minimum Modification Fee \$	1000
Renewal with Minor Modification \$	500
Check if Facility Holds an Active Minor Source or Minor Source General Permit	<input type="checkbox"/>
If Hold Active Permit, Amt of Last Annual Air Permit Invoice \$	0
Total Permit Fee Chargeable Emissions (tpy)	181.4010254
Initial Title V Permit Fee Chargeable Emissions (tpy)	

HAPs not included in VOC or PM:

Chlorine, Hydrazine, HCl, HF, Methyl Chloroform, Methylene Chloride, Phosphine, Tetrachloroethylene, Titanium Tetrachloride

Air Contaminants:

All air contaminants are chargeable unless they are included in other totals (e.g., H2SO4 in condensable PM, H2S in TRS, etc.)

Pollutant (tpy)	Check if Chargeable Emission	Old Permit	New Permit	Change in Emissions	Permit Fee Chargeable Emissions	Annual Chargeable Emissions
PM		288.5	318.2	29.7		
PM ₁₀		392.2	421.2	29	29	421.2
PM _{2.5}		386.2	414.8	28.6		
SO ₂		369.6	400.8	31.2	31.2	400.8
VOC		212	229.4	17.4	17.4	229.4
CO		4347.3	4728.9	381.6		
NO _x		1131.9	1234.8	102.9	102.9	1234.8
Lead	<input checked="" type="checkbox"/>	1.063778	1.1638574	0.1000794	0.1000794	1.1638574

Pollutant (tpy)	Check if Chargeable Emission	Old Permit	New Permit	Change in Emissions	Permit Fee Chargeable Emissions	Annual Chargeable Emissions
Arsenic	<input checked="" type="checkbox"/>	0.014496	0.015514	0.001018	0.001018	0.015514
Cadmium	<input type="checkbox"/>	0.019614	0.021156	0.001542		
Formaldehyde	<input type="checkbox"/>	0.49846	0.5323	0.03384		
HCl	<input checked="" type="checkbox"/>	3.5	3.5	0	0	3.5
Manganese	<input type="checkbox"/>	0.717005	0.803095	0.08609		
Mercury	<input checked="" type="checkbox"/>	0.302105	0.402033	0.099928	0.099928	0.402033
H ₂ SO ₄	<input checked="" type="checkbox"/>	0.9	1.6	0.7	0.7	1.6