

STATEMENT OF BASIS

For the issuance of Draft Air Permit # 2305-AOP-R4 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
8/2/2018	Modification	Modified BACT rates of SN-12, 13, 17-19, 27, 29, 62, 66, and 67 to match similar sources that were updated in the Phase 1 modification. Cooling towers SN-71, 72, and 78 updated to reflect size and TDS changes. New sources SN-19A, 19B, 72B, 74A, 74B, 78B, 101, and 102 added to the permit.

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 action updates emissions and specifications of some Phase II equipment and adds some new sources.

Phase II equipment was originally permitted in the initial permit for this facility and are part of the larger construction project

The Ladle Dryout Stations SN-12 and SN-13 have been updated to match the BACT and emission rates of the Phase I Ladle Dryout Stations SN-10 and SN-11. The same is true for the Tundish Preheaters (SN-17, SN-18, SN-19), Galvanizing Line Boiler 2 (SN-27), and Galvanizing Line Preheater 2 (SN-29) all being updated to match their Phase I counterpart. There has also been two additional Tundish Preheaters added in this modification, SN-19A and SN-19B.

Emergency engines SN-62, SN-66, and SN-67 have had their BACT limits updated to reflect the correct tier engine installed at each source. SN-66 and SN-67 have also had their sizes updated to correctly reflect the installed source. Three new emergency engines, SN-67A, SN-67B, and SN-67C have also been added to the permit during this modification.

Cooling towers SN-71, SN-72 (now SN-72A), and SN-78 (now SN-78A) have been updated to reflect size and TDS limit changes. Four new cooling towers (SN-72B, SN-74A, SN-74B and SN-78B) have been added to the permit.

Two new sources have also been added to the Cold Mill, an Annealing Pickle Line Boiler (SN-101) and 50 natural gas fired space heaters (SN-102).

The total permitted emission changes as a result of this modification are as follows: Increase of 43.8tpy PM, increase of 65.4 tpy of PM₁₀ and PM_{2.5}, increase of 4.4 tpy SO₂, increase of 6.3 tpy VOC, increase of 72.3 tpy CO, increase of 63 tpy NO_x, and an increase of 0.00028 tpy Lead.

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 some active/pending compliance issues for the air permit in regards to testing, reporting, and recordkeeping.

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*

If yes for 8(b), explain why this permit modification is not PSD.

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

The results of dispersion modeling are summarized below.

Pollutant	NAAQS Standard (µg/m ³)	Averaging Time	Highest Concentration (µg/m ³)	% of NAAQS
NO _x	100	Annual	8.5	8.5%
	188	1-Hour	89	47.4%

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/m^3), as listed by the American Conference of Governmental Industrial Hygienists (ACGIH).

Pollutant	TLV (mg/m^3)	PAER (lb/hr) = $0.11 \times \text{TLV}$	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 ($\mu\text{g}/\text{m}^3$) = 1/100 of Threshold Limit Value	Modeled Concentration ($\mu\text{g}/\text{m}^3$)	Pass?
Arsenic	0.1	0.049	Yes
Cadmium	0.1	0.0003	Yes
HCl	30	0.0007	Yes

Pollutant	PAIL ($\mu\text{g}/\text{m}^3$) = 1/100 of Threshold Limit Value	Modeled Concentration ($\mu\text{g}/\text{m}^3$)	Pass?
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	AP-42	Varied	Baghouse	99%+	

SN	Emission Factor Source (AP-42, testing, etc.)	Emission Factor (lb/ton, lb/hr, etc.)	Control Equipment	Control Equipment Efficiency	Comments
HAPs					
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 information (fan motor amps, etc.)	None specified	Initial and annual	NSPS 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
20-21 28, 29, 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

SN	Pollutants	Test Method	Test Interval	Justification
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	Steel Throughput	3.4 million	Monthly	Y
01 and 02	AAa Records	None	Vary	Y
01 and 02	YYYYYY 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	Materials received	175,830 49,210 175,830 680,000 680,000	Monthly	Y

SN	Recorded Item	Permit Limit	Frequency	Report (Y/N)
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
53	Updated emission factors so testing no longer required.
71-73	Permittee updated emission rates to be 8760 instead of 6080 hours per year, so no need for hourly limits and recordkeeping.

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	
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	-

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-R3

APPENDIX A – EMISSION CHANGES AND FEE CALCULATION

Fee Calculation for Major Source

Revised 03-11-16

Big River Steel LLC
 Permit #: 2305-AOP-R2
 AFIN: 47-00991

\$/ton factor	23.93	Annual Chargeable Emissions (tpy)	2070.1
Permit Type	Modification	Permit Fee \$	3328.663

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)	139.1
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		244.7	288.5	43.8		
PM ₁₀		326.8	392.2	65.4	65.4	392.2
PM _{2.5}		320.8	386.2	65.4		
SO ₂		350.7	355.1	4.4	4.4	355.1
VOC		194.6	200.9	6.3	6.3	200.9
CO		3942	4014.3	72.3		
NO _x		1058.9	1121.9	63	63	1121.9
Lead	<input type="checkbox"/>	0.963498	0.963778	0.00028		

Pollutant (tpy)	Check if Chargeable Emission	Old Permit	New Permit	Change in Emissions	Permit Fee Chargeable Emissions	Annual Chargeable Emissions
Arsenic	<input type="checkbox"/>	0.013346	0.013496	0.00015		
Cadmium	<input type="checkbox"/>	0.017696	0.018614	0.000918		
Formaldehyde	<input type="checkbox"/>	0.4383	0.49846	0.06016		
HCl	<input type="checkbox"/>	3.5	3.5	0		
Manganese	<input type="checkbox"/>	0.602715	0.617005	0.01429		
Mercury	<input type="checkbox"/>	0.201755	0.202105	0.00035		
H ₂ SO ₄	<input type="checkbox"/>	0.6	0.9	0.3		