

STATEMENT OF BASIS

For the issuance of Draft Air Permit # 2305-AOP-R5 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
1/29/2019	Modification	Increase of steel throughput at SN-01

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 is to increase the allowable production of steel from EAF I (SN-01) from 1,700,000 tons of steel per rolling twelve months to 2,050,000 tons of steel per rolling twelve months due to a higher demand for production. This modification resulted in the following permitted emission changes: increase of 14.5 tpy SO₂, increase of 11.1 tpy VOC, increase of 333 tpy CO, increase of 10 tpy NO_x, increase of 0.1 tpy of Lead, and increase of 53,130 tpy of CO₂e.

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.

The facility also has an active variance in regards to the production increase that is included in this permit modification.

8. PSD/GHG APPLICABILITY:

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

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.

The facility submitted a demand growth analysis showing that the actual increase of emissions due to this project is below PSD thresholds. As such, the facility has had applicable conditions relating to reasonable possibility placed upon SN-01 to ensure that this project was not, in fact, a PSD change.

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

A NAAQS evaluation is not required under the Arkansas State Implementation Plan, National Ambient Air Quality Standards, Infrastructure SIPs and NAAQS SIP per Ark. Code Ann. § 8-4-318, dated March 2017 and the ADEQ Air Permit Screening Modeling Instructions.

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 ($\mu\text{g}/\text{m}^3$) = 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
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 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

SN	Pollutants	Test Method	Test Interval	Justification
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	Steel Throughput	2.05 million	Monthly	Y
02	Steel Throughput	1.7 million	Monthly	Y
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	Materials received	175,830 49,210	Monthly	Y

SN	Recorded Item	Permit Limit	Frequency	Report (Y/N)
		175,830 680,000 680,000		
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
83	Condition was a duplicate of the requirements of Specific Condition #77 and only served to cause confusion on the hourly limit for each emergency engine.

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)							Lead
		PM/PM ₁₀	SO ₂	VOC	CO	NO _x	HAPs		
							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	-

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-R4

APPENDIX A – EMISSION CHANGES AND FEE CALCULATION