STATEMENT OF BASIS

For the issuance of Draft Air Permit # 2305-AOP-R9 AFIN: 47-00991

1. PERMITTING AUTHORITY:

Division 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
4/29/2024	Modification	Updated kilowatt rating on an engine and adds a new water pup and two new engines
6/07/2024	Modification	

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 steel mill is contiguous to the newer Exploratory Ventures, LLC (EV) steel mill, AFIN: 47-01073, and both are under common control of BRS or its parent company. Thus the EV and BRS steel mills constitute a single stationary source under the Clean Air Act. At the request of BRS and for administrative convenience, each facility has been issued its own air permit. This permitting action is to renew and modify the facility's Title V air permit. This permitting modification removes the $PM_{2.5}$ testing

requirement from natural gas fired boilers due to a previous change of emission factor, addresses change of required control technology for NO_X emissions from SN-51, updates the kilowatt rating of SN-67B, and adds a new emergency water pump and two new emergency generators. The permitted emission increases to the permit as a result of this modification are as follows: 0.4 tpy PM/PM_{10}/$PM_{2.5}$, 0.4 tpy SO_2, 0.4 tpy VOC, 1.4 tpy CO, 3.1 tpy NO_X, 1,394 tpy CO_2e, 8.41 tpy Ammonia, and 0.3 tpy H_2SO_4.

BACT Analysis Summary				
Source	Description	Pollutant	Control Technology	BACT Limit
SN-51	Annealing and Coating Line - Annealing Furnace	PM	Combustion of Natural gas and Good Combustion Practices (Periodic Equipment Maintenance)	0.013 lb/MMBTU
		PM_{10}		0.013 lb/MMBTU
		$PM_{2.5}$		0.013 lb/MMBTU
		Opacity		5%
		SO_2		0.000588 lb/MMBTU
		VOC		0.0054 lb/MMBTU
		CO		0.0824 lb/MMBTU
		NO_X	Low NOx burners Combustion of clean fuel Good Combustion Practices (Periodic Equipment Maintenance)	0.1 lb/MMBTU
		GHG	Good operating Practices (Periodic Equipment Maintenance)	CO_2 117 lb/MMBTU CH_4 0.0022 lb/MMBTU N_2O 0.0002 lb/MMBTU

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 was last inspected on July 19, 2023. There were no areas of concern noted at this time nor any current significant violations noted on EPA's ECHO database.

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	NESHAP EEEEE
All Boilers	None	NSPS Dc
All Boilers	HAPs	NESHAP DDDDD
SN 53 and SN-105 through SN-108D	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 NESHAP ZZZZ
100 and 100a	HAP	NESHAP CCCCCC
SN-105 through SN-108D	HAP	NESHAP SSSS
SN-24, SN-24A, SN-50, SN-59, SN-61, and SN-128	HAP	NESHAP CCC

10. UNCONSTRUCTED SOURCES:

Unconstructed Source	Permit Approval Date	Extension Requested Date	Extension Approval Date	If Greater than 18 Months without Approval, List Reason for Continued Inclusion in Permit
N/A				

11. PERMIT SHIELD – TITLE V PERMITS ONLY:

Did the facility request a permit shield in this application? N
(Note - permit shields are not allowed to be added, but existing ones can remain, for minor modification applications or any Rule 18 requirement.)

12. COMPLIANCE ASSURANCE MONITORING (CAM) – TITLE V PERMITS ONLY:

List sources potentially subject to CAM because they use a control device to achieve compliance and have pre-control emissions of at least 100 percent of the major source level. List the pollutant of concern and a brief summary of the CAM plan (temperature monitoring, CEMs, opacity monitoring, etc.) and frequency requirements of § 64.

Source	Pollutant Controlled	Cite Exemption or CAM Plan Monitoring and Frequency
N/A		

13. EMISSION CHANGES AND FEE CALCULATION:

See emission change and fee calculation spreadsheet in Appendix A.

14. 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 DEQ 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 except for those of Isophorone added in 2305-AOP-R7.

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 × TLV	Proposed lb/hr	Pass?
Formaldehyde	15	1.65	0.18548	Yes
Arsenic	0.01	0.0011	0.0045084	No

Pollutant	TLV (mg/m^3)	PAER (lb/hr) = 0.11 × TLV	Proposed lb/hr	Pass?
Cadmium	0.01	0.0011	0.006587	No
HCl	3	0.33	1.0	No
Manganese	0.2	0.022	0.161	No
Mercury	0.01	0.0011	0.061	No
Isophorone	28	3.08	7.0	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 ($\mu g/m^3$) = 1/100 of Threshold Limit Value	Modeled Concentration ($\mu g/m^3$)	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
Isophorone	280	3.16	Yes

c) H_2S 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 H_2S Standards Y
If exempt, explain: No H_2S emissions

15. 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				
105 and 106	Vendor Specification	Varied	Mist Eliminator	75%	
108a, 108b, 108c, 111a, and 111b	AP-42 1.4	Lb/MMBtu: 0.0075 $PM/PM_{10}/PM_{2.5}$ 0.000588 SO_2 0.10 NO_X 0.0054 VOC 0.0824 CO 4.90E-07 Lead			
108d	Modified AP-42 to account for natural gas and additional formation from RTO destruction	Lb/MMBtu: 0.009 $PM/PM_{10}/PM_{2.5}$ 0.000588 SO_2 0.85 NO_X 0.0054 VOC 0.45 CO 4.90E-07 Lead			
SN-110a through SN-110e	AP-42 Table 3.4-1	Lb/hp-hr: 0.00023 $PM/PM_{10}/PM_{2.5}$ 0.00001 SO_2 0.0087 NO_X 0.0003 VOC 0.0020 CO 0.000001 H_2SO_4			

16. 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 annually	To verify compliance with BACT emission rates
01 and 02	Lead	12	Annually	To verify BACT limits
04, 22, 26, 27, 101, 125, 126	$PM_{2.5}$, 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}	5D and 201 or 201A	Initial	To show compliance with BACT limits
53 105 – 108D	VOC	25A	Initial	NSPS TT Requirement
Cooling Towers	TDS	TDS testing	6 months	Verification of BACT limits
Pickling Line Scrubbers	HCl	26	Initial	Demonstration of Compliance with Applicable provisions of NESHAP Subpart CCC

17. 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
53 108D	RTO temperature	Thermocouple	Continuous (3hr averages)	Y

18. 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
03	Degasser steel throughput	1,500,000 tons per 12 months	Monthly	Y
53 105-108D	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 500,000 gallons per rolling twelve-month	Monthly	Y
105-108D	Subpart SSSS Records	None	Vary	Y
04, 22, 26, 27, 101, 125, 126	Subpart DDDDD Records	None	Vary	Y

19. OPACITY:

SN	Opacity	Justification for limit	Compliance Mechanism
01 and 02 Exhaust Stacks	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

20. DELETED CONDITIONS:

Former SC	Justification for removal
46	Testing condition that referred to a previously removed limit.

21. 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
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	-	-	0.003	-	-	-	-	-
Engine Oil Tank	A-3	-	-	1.3 E-05	-	-	-	-	-
Steel Cutting	A-7	0.4	-	-	-	-	0.001	0.002	-
Railcar Cutting Operation	A-7	0.4	-	-	-	-	0.001	0.002	-
Tundish	A-7	0.4	-	-	-	-	0.001	0.002	-

Source Name	Group A Category	Emissions (tpy)							
		PM/PM_{10}	SO_2	VOC	CO	NO_x	HAPs		Lead
							Single	Total	
Cutting Tool									
Slag Yard Shredder	A-7	1.4	-	-	-	-	0.004	0.008	-
Induced Draft Mechanical Cooling Tower	A-13	0.56	-	-	-	-	-	-	-
Air Products Cooling Towers #1 and #2	A-13	1.48	-	-	-	-	-	-	-
Diesel Exhaust Fluid Storage Tank	A-13	-	-	0.004	-	-	0.001	0.001	-

22. 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-R8

APPENDIX A – EMISSION CHANGES AND FEE CALCULATION

Fee Calculation for Major Source

Revised 03-11-16

Big River Steel LLC
Permit #: 2305-AOP-R9
AFIN: 47-00991

$/ton factor	28.14	Annual Chargeable Emissions (tpy)	2730.9288
Permit Type	Modification	Permit Fee $	1000

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	☐
If Hold Active Permit, Amt of Last Annual Air Permit Invoice $	0
Total Permit Fee Chargeable Emissions (tpy)	13.01
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 condensible 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		371	371.4	0.4		
PM_{10}		464.4	464.8	0.4	0.4	464.8
$PM_{2.5}$		428.1	428.5	0.4		
SO_2		404	404.4	0.4	0.4	404.4
VOC		397.8	398.2	0.4	0.4	398.2
CO		4992.7	4994.1	1.4		
NO_X		1446.1	1449.2	3.1	3.1	1449.2
Lead	☐	1.16505013	1.16505571	5.58E-06		

Pollutant (tpy)	Check if Chargeable Emission	Old Permit	New Permit	Change in Emissions	Permit Fee Chargeable Emissions	Annual Chargeable Emissions
Arsenic	☑	0.0161139	0.0161139	0	0	0.0161139
Cadmium	☐	0.02385	0.02385	0		
Formaldehyde	☐	0.7001	0.7001	0		
HCl	☑	3.2	3.2	0	0	3.2
Manganese	☐	0.804128	0.804128	0		
Mercury	☑	0.402652	0.402652	0	0	0.402652
H_2SO_4	☑	2	2.3	0.3	0.3	2.3
Isophorone	☐	30.6	30.6	0		
MIBK	☐	11.8	11.8	0		
Toluene	☐	11.8	11.8	0		
Ammonia	☑	0	8.41	8.41	8.41	8.41