STATEMENT OF BASIS

For the issuance of Draft Air Permit # 2445-AOP-R3 AFIN: 47-01073

1. PERMITTING AUTHORITY:

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

2. APPLICANT:

Exploratory Ventures, LLC
2027 E State Highway 198
Osceola, Arkansas 72370-0248

3. PERMIT WRITER:

Jesse Smith

4. NAICS DESCRIPTION AND CODE:

NAICS Description: Iron and Steel Mills and Ferroalloy Manufacturing
NAICS Code: 331110

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
8/14/2023	Modification	Revised particulate emission factors for boilers and cooling towers, updated flow rate of cold mill sources, new natural gas fired sources, removal of four cooling towers, addition of SMAC air cleaner units and chrome plating line

6. REVIEWER'S NOTES:

Exploratory Ventures, LLC (EV) owns and operates a steel mill located at 1000 East County Road 860 in Osceola, AR. This steel mill is contiguous to an existing Big River Steel (BRS) steel mill, AFIN: 47-00991, and both belong to the same industrial grouping (2-digit "Major Group" Standard Industrial Classification (SIC) code), are located on one or more contiguous or

adjacent properties, and are under common ownership. . Thus the BRS and EV steel mills constitute a single stationary source under the Clean Air Act. At the request of BRS and EV for administrative convenience, this permit is issued specific to the equipment located at the EV facility.

This permit modification makes the following changes to the permit:

- Revised the PM, PM_{10}, and $PM_{2.5}$ emission factor for SN-24, SN-27, SN-28, and SN-37.
- Added new natural gas fired combustion sources SN-143 through SN-145.
- Renamed and updated PM, PM_{10}, and $PM_{2.5}$ emission factors and flow rate for multiple sources in the Cold Mill
- Added a new Batch Annealing Skin Pass Mill, SN-146.
- Updated gallon per hour rates, TDS rates, and names for the cooling towers. Removed four cooling towers, SN-65 through SN-68, from the permit.
- Revised emission factors for PM_{10} and $PM_{2.5}$ from cooling tower sources.
- Installed a Diesel Fuel Storage Tank, SN-115a.
- Set an allowed yearly throughput of 500,000 gallons of gasoline through SN-115 per rolling twelve-month period.
- Addition of material handling units with self-maintaining air cleaner units, SN-147a, SN-147b, and SN-147c.
- Addition of a new Chrome Plating Line, SN-148.

The permitted emission changes to this permit as a result of this modification are as follows: Increase of 25.0 tpy PM, increase of 16.4 tpy PM_{10}, decrease of 6.6 tpy $PM_{2.5}$, increase of 0.7 tpy SO_2, increase of 4.5 tpy VOC, increase of 59.2 tpy CO, increase of 31.0 tpy NO_X, increase of 0.000158 tpy Lead, increase of 4.65 tpy HCl, and increase of 82,041 tpy CO_2e.

The PSD regulations mandate that a Best Available Control Technology (BACT) analysis be performed on all new or modified affected sources at which a net emissions increase will occur. The following table is a summary of the BACT determinations made in this permit.

For more detailed discussion of BACT see the BACT analysis section of the permit application. The following summarizes the BACT analysis.

BACT Analysis Summary				
Source	Description	Pollutant	Control Technology	BACT Limit
SN-24	Continuous Pickle Line Boiler	PM	Combustion of Natural gas and Good Combustion Practice	0.0075 lb/MMBTU
		PM_{10}		0.0075 lb/MMBTU
		$PM_{2.5}$		0.0075 lb/MMBTU
		Opacity		5%

BACT Analysis Summary				
Source	Description	Pollutant	Control Technology	BACT Limit
		SO_2		0.0006 lb/MMBTU
		VOC		0.0054 lb/MMBTU
		CO		0.0824 lb/MMBTU
		NO_X	Low NOx burners Combustion of clean fuel Good Combustion Practices	0.035 lb/MMBTU
		GHG	Good operating practices Boiler Efficiency	117 lb CO_2e/MMBtu
SN-27 and SN-28	AHSS Continuous Galvanizing Line Boilers #1 and #2	PM	Combustion of Natural gas and Good Combustion Practice	0.0075 lb/MMBTU
		PM_{10}		0.0075 lb/MMBTU
		$PM_{2.5}$		0.0075 lb/MMBTU
		Opacity		5%
		SO_2		0.0006 lb/MMBTU
		VOC		0.0054 lb/MMBTU
		CO		0.0824 lb/MMBTU
		NO_X	Low NOx burners Combustion of clean fuel Good Combustion Practices	0.035 lb/MMBTU
		GHG	Good operating practices Boiler Efficiency	117 lb CO_2e/MMBtu
SN-37	Pickle	PM	Combustion of	0.0075 lb/MMBtu

BACT Analysis Summary				
Source	Description	Pollutant	Control Technology	BACT Limit
	Galvanizing Line Boiler	PM_{10}	Natural gas and Good Combustion Practice	0.0075 lb/MMBtu
		$PM_{2.5}$		0.0075 lb/MMBtu
		Opacity		5%
		SO_2		0.0006 lb/MMBtu
		VOC		0.0054 lb/MMBtu
		CO		0.0824 lb/MMBtu
		NO_X	Low NOx burners Combustion of clean fuel Good Combustion Practices	0.035 lb/MMBtu
		GHG	Good operating practices	117 lb CO_2e/MMBtu
SN-52 through SN-64 SN-133	Cooling Towers	PM	Drift Eliminators Low TDS	0.0005% drift loss
		PM_{10}		
		$PM_{2.5}$		
		Opacity		5%
SN-143	AHSS Continuous Galvanizing Line Preheat Furnace #2	PM	Good combustion practices Energy efficient burners Combustion of natural gas	0.0012 lb/MMBtu
		PM_{10}		0.0012 lb/MMBtu
		$PM_{2.5}$		0.0012 lb/MMBtu
		Opacity		5%
		CO		0.0824 lb/MMBtu
		NO_X	SCR Low NO_X burners Combustion of clean fuel Good combustion practices	0.035 lb/MMBtu

BACT Analysis Summary				
Source	Description	Pollutant	Control Technology	BACT Limit
		GHG	Good operating practices	117 lb CO_2e/MMBtu
SN-144	Pickle Galvanizing Line Post Treatment Chem Dryer	PM	Good combustion practices Energy efficient burners Combustion of natural gas	0.0075 lb/MMBtu
		PM_{10}		0.0075 lb/MMBtu
		$PM_{2.5}$		0.0075 lb/MMBtu
		Opacity		5%
		CO		0.0824 lb/MMBtu
		NO_X		0.10 lb/MMBtu
		GHG	Good operating practices	117 lb CO_2e/MMBtu
SN-145	Pickle Galvanizing Line Zinc Pot	PM	Good combustion practices Energy efficient burners Combustion of natural gas	0.0075 lb/MMBtu
		PM_{10}		0.0075 lb/MMBtu
		$PM_{2.5}$		0.0075 lb/MMBtu
		Opacity		5%
		CO		0.0824 lb/MMBtu
		NO_X		0.10 lb/MMBtu
		GHG	Good operating practices	117 lb CO_2e/MMBtu
SN-146	Batch Annealing Skin Pass Mill	PM	Mist Eliminator	0.0025 gr/dscf (filterable only)
		PM_{10}		0.0066 gr/dscf
		$PM_{2.5}$		0.0066 gr/dscf
		Opacity		5%
SN-147a SN-147b SN-147c	SMAC Dust Collectors	PM	Good operating practices	0.002 gr/dscf
		PM_{10}		0.002 gr/dscf
		$PM_{2.5}$		0.002 gr/dscf
		Opacity		5%
SN-148	Chrome Plating Line	PM	Composite mesh pad scrubber exhaust system	0.006 mg/m^3
		PM_{10}		0.006 mg/m^3

BACT Analysis Summary				
Source	Description	Pollutant	Control Technology	BACT Limit
		$PM_{2.5}$	with HEPA filter	0.006 mg/m^3
		Opacity		5%

7. COMPLIANCE STATUS:

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

There are no current compliance issues noted for the facility for E&E or through 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? Y

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	Case by Case, 42 USC § 7412
All Boilers	None	NSPS Dc
SN 40 through SN-46	VOC	NSPS TT
SN 40 through SN-46	HAP	NESHAP SSSS
SN-23b, SN-26, and SN-38	HAP	NESHAP CCC
SN-24, SN-27, SN-28, and SN-37	HAP	NESHAP DDDDD
SN-01 through SN-136	NO_X, CO, PM, PM_{10}, $PM_{2.5}$, SO_2, VOC, lead, and greenhouse gasses.	PSD
SN-143 through SN-149	NO_X, CO, PM_{10}, $PM_{2.5}$, and greenhouse gases	
Generators	Criteria and HAPs	NSPS IIII, NSPS JJJJ, and NESHAP ZZZZ
SN-148	HAPs	NESHAP N

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
SN-01 through SN-136	1/31/2022	-	-	-
SN-137a through SN-141b	11/9/2022	-	-	-

The permittee has begun construction of the sources listed above but none are operational at this time.

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

The results of dispersion modeling are summarized below.

Pollutant	Emission Rate (lb/hr)	NAAQS Standard ($\mu g/m^3$)	Averaging Time	Highest Concentration ($\mu g/m^3$)	% of NAAQS
PM_{10}	125.2	150	24-Hour	51.36	34.3
$PM_{2.5}$	116.3	12.0	Annual	9.94	82.9
		35	24-Hour	19.34	55.3
CO	1322.8	10,000	8-Hour	408.8	4.1
		40,000	1-Hour	1181.2	3.0
NO_x	724.2	188	1-Hour	177.90	94.7
		100	Annual	16.40	16.4

b) Non-Criteria Pollutants:

The non-criteria pollutants listed below were evaluated during Revision 1 of the permit. HAP emissions remain largely unchanged and so this evaluation is still representative. Based on Division of Environmental Quality procedures for review of non-criteria pollutants, emissions of all other non-criteria pollutants are below thresholds of concern.

1st Tier Screening (PAER)

Estimated hourly emissions from the following sources were compared to the Presumptively Acceptable Emission Rate (PAER) for each compound. The Division of Environmental Quality 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	0.12	1.32E-02	8.30E-02	N
Arsenic	0.01	1.10E-03	3.12E-03	N
Beryllium	0.00005	5.5E-06	1.44E-04	N
Cadmium	0.01	1.10E-03	4.24E-03	N
Chlorine	0.29	0.0319	1.36	N
Chromium	0.50	5.50E-02	7.30E-02	N
Cobalt	0.02	2.20E-03	9.20E-05	Y
Hydrogen Chloride	2.99	0.3289	3.14	N

Pollutant	TLV (mg/m^3)	PAER (lb/hr) = 0.11 × TLV	Proposed lb/hr	Pass?
Manganese	0.10	1.10E-02	8.81E-01	N
Mercury	0.01	1.10E-03	5.19E-02	N
Nickel	0.10	1.10E-02	4.24E-01	N
Selenium	0.20	2.20E-02	2.63E-05	Y
Toluene	75.37	8.29	2.7	Y
MIBK	81.93	9.01	2.69	Y
Isophorone	43.8	4.82	6.98	Y

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 Division of Environmental Quality 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?
Formaldehyde	1.20E-03	1.59E-04	Y
Arsenic	1.00E-04	5.97E-06	Y
Beryllium	5.00E-07	2.76E-07	Y
Cadmium	1.00E-04	8.12E-06	Y
Chlorine	2.9	1.07	Y
Chromium	5.00E-03	1.40E-04	Y
Hydrogen Chloride	29.9	2.14	Y
Manganese	1.00E-03	1.66E-04	Y
Mercury	1.00E-04	9.94E-05	Y
Nickel	1.00E-03	8.01E-05	Y

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
SN-01 through SN-136, SN-142	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	-	-
SN-137a, b, and c	AP-42 13.2.4	0.03 gr/scf $PM/PM_{10}/PM_{2.5}$	Baghouse	99%	-
SN-138	AP-42 13.2.4	0.03 gr/scf $PM/PM_{10}/PM_{2.5}$	Venturi, Cyclone, Absorber, Scrubber per each Roaster system	99%	-
SN-138 SN-140	NESHAP CCC	12 ppmv HCl 6 ppmv Cl_2			

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 verify compliance with BACT emission rates
01 and 02	Lead	12	Annually	To verify BACT limits

SN	Pollutants	Test Method	Test Interval	Justification
03 and 04	Flare design	40 CFR 60.18(b) through (f)	Initial only	To verify flare is design is capable of achieving BACT limits
24, 27, 28, and 37	$PM_{2.5}$, CO, and NO_x	Method 202, 10, and 7E	Initial and every 5 years	To show compliance with BACT limits
23b, 26, and 38	HCl	Method 26	Initial	Demonstration of Compliance with Applicable provisions of NESHAP Subpart CCC
40 through 46	VOC	40 C.F.R. § 60.463	Monthly	40 C.F.R. § 60 Subpart TT
Cooling Towers	TDS	TDS Testing	Initial and every 6 months	Verification of BACT Limits
125	Flare design	40 CFR 60.18(b) through (f)	Initial only	To verify flare is design is capable of achieving BACT limits
138 and 140	HCl and Cl_2	40 CFR § 63.1161(d)	Initial Only	Demonstration of Compliance with Applicable provisions of NESHAP Subpart CCC
142 and 143	NO_X	Method 7E	Initial and annual	To verify compliance with BACT emission rates

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
46	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 and 04	Steel Throughput	2,050,000 tons/rolling twelve months	Monthly	Y
40 through 46	TT Records	None	Vary	Y
40 through 46	SSSS Records	None	Vary	Y
23b, 26, 38, 138, and 140	CCC Records	None	Vary	Y
24, 27, 28, and 37	DDDDD Records	None	Vary	Y
Emergency Generators and Water Pumps	Hours of Operation	100 hours/year	Monthly	Y
93, 95, 97, 99, 103, 116, 130, 131	Materials Received per Rolling Twelve Months	175,830 79,204 175,830 680,00 210,240 9,591,750 2,830,033 273,014	Monthly	Y
115	Gasoline Throughput	500,000 gallons per rolling twelve months	Monthly	Y
139	Throughput of Natural Gas	752.24 MMcf/yr	Monthly	Y
148	N 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
03 and 04	5%	BACT/Division	Weekly observations

SN	Opacity	Justification for limit	Compliance Mechanism
		Guidance	
Natural Gas Burners	5%	BACT/Division Guidance	Combustion of natural gas only
Cold Mill Operations	5%	BACT/Division Guidance	Weekly observations
Cooling Towers	5%	BACT/Division Guidance	Proper Maintenance
93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103, 113, 114, 115, SN-115a, SN-147a, SN-147b, SN-147c, SN-148	5%	BACT/Division Guidance	Weekly observations
91, 92, 104, 105, 106, 107, 108, 109, 110	20%	BACT/Division Guidance	Weekly observations
117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129	5%	BACT/Division Guidance	Weekly observations
116, 130, 131	20%	BACT/Division Guidance	Weekly observations
137a-c 139	5%	Rule 19.705 *et seq.* and 40 C.F.R. § 52 Subpart E	Weekly observations
138 140	20%	Rule 19.705 *et seq.* and 40 C.F.R. § 52 Subpart E	Weekly observations
141a, 141b	20%	Rule 19.705 *et seq.* and 40 C.F.R. § 52 Subpart E	Combustion of natural gas only

20. DELETED CONDITIONS:

Former SC	Justification for removal
N/A	

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	
							Single	Total
N/A								

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 #
2445-AOP-R2

APPENDIX A – EMISSION CHANGES AND FEE CALCULATION

Fee Calculation for Major Source

Revised 03-11-16

Exploratory Ventures, LLC
Permit #: 2445-AOP-R3
AFIN: 47-01073

$/ton factor	28.14	Annual Chargeable Emissions (tpy)	2906.17
Permit Type	Modification	Permit Fee $	1611.015

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)	57.25
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		367.9	392.9	25		
PM_{10}		434.4	450.8	16.4	16.4	450.8
$PM_{2.5}$		425.6	419	-6.6		
SO_2		452.6	453.3	0.7	0.7	453.3
VOC		412.4	416.9	4.5	4.5	416.9
CO		5339.4	5398.6	59.2		
NO_X		1529.9	1560.9	31	31	1560.9
Lead	☐	1.455794	1.455952	0.000158		

Pollutant (tpy)	Check if Chargeable Emission	Old Permit	New Permit	Change in Emissions	Permit Fee Chargeable Emissions	Annual Chargeable Emissions
CO2e	☐	3100972	3183013	82041		
Single HAP	☐	28.49	28.62	0.13		
Total Other HAPs	☐	60.38	60.52	0.14		
Cl_2	☑	5.93	5.93	0	0	5.93
HCl	☑	13.69	18.34	4.65	4.65	18.34