Commonwealth of Kentucky
Division for Air Quality

STATEMENT OF BASIS / SUMMARY

Title V, Construction/Operating
Permit: V-20-015 R3

4831 US Highway 42 West
Ghent, KY 41045-9704

December 2, 2024
Babak Fakharpour, Reviewer

SOURCE ID: 21-077-00018
AGENCY INTEREST: 1449
ACTIVITY: APE20240003

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SECTION 1 – SOURCE DESCRIPTION

SIC Code and description: 3316, Cold-Rolled Steel Sheet, Strip, and Bars

Single Source Det. ☐ Yes ☒ No If Yes, Affiliated Source AI:

Source-wide Limit ☐ Yes ☒ No If Yes, See Section 4, Table A

28 Source Category ☒ Yes ☐ No If Yes, Category:

County: Gallatin
Nonattainment Area ☒ N/A ☐ PM_{10} ☐ $PM_{2.5}$ ☐ CO ☐ NO_X ☐ SO_2 ☐ Ozone ☐ Lead

PTE* greater than 100 tpy for any criteria air pollutant ☒ Yes ☐ No
If yes, for what pollutant(s)?
☒ PM_{10} ☒ $PM_{2.5}$ ☒ CO ☒ NO_X ☒ SO_2 ☒ VOC

PTE* greater than 250 tpy for any criteria air pollutant ☒ Yes ☐ No
If yes, for what pollutant(s)?
☒ PM_{10} ☒ $PM_{2.5}$ ☒ CO ☒ NO_X ☒ SO_2 ☐ VOC

PTE* greater than 10 tpy for any single hazardous air pollutant (HAP) ☐ Yes ☒ No
If yes, list which pollutant(s):N/A

PTE* greater than 25 tpy for combined HAP ☒ Yes ☐ No

*PTE does not include self-imposed emission limitations.

Description of Facility:
Nucor Steel Gallatin (NSG) is a steel recycling mini-mill located in Ghent, KY, along the Ohio River, and northeast of Louisville, KY. The NSG mill recycles scrap steel and scrap substitutes using the electric arc furnace (EAF) process. Scrap steel and scrap substitutes are brought to the facility by barge, rail, and truck. Scrap steel, scrap substitutes, and flux are charged to the EAF and melted by applying electric current through the feed mixture. Molten metal is tapped to a ladle and is transferred to LMF, where the chemistry of the steel is adjusted. From the LMF, the molten metal is transferred to a continuous caster, which cast steel slabs. To produce steel coils, the steel slabs proceed through a tunnel furnace to the rolling mill, where it is rolled and shaped to its final form. The hot rolled steel coils may be further processed through the pickle galvanizing line (PGL) to produce pickled and oiled or galvanized coils.

The Nucor Tubular Products (NTP) which produces structural steel tubing is part of NSG. NTP is capable of sourcing raw material (steel) from the market and is considered a separate division of Nucor Corporation. It is for this reason that the NTP emission sources are separated in Section B of the permit, however, this facility is a single source with NSG and the emissions are considered together for permitting purposes. The NTP group produces hollow structural sections tubing, mechanical steel tubing and galvanized solar torque tubing.

NTP's emission sources are listed below.
1. NTP Coolant System – coolant used throughout the small and medium tube mills
2. NTP Rust Preventative – a rust preventative coating applied due to weather conditions
3. NTP Emergency generator – natural gas powered emergency generator
4. NTP Roads – one main haul road around facility
5. NTP Parts Cleaning Tanks – three parts cleaning tanks

Insignificant Sources at NTP include:
1. NTP Cooling Tower 1 – 360 gpm cooling tower for small tube mill
2. NTP Cooling Tower 2 – 360 gpm cooling tower for medium tube mill
3. NTP Remetalization (two)
4. NTP Welder-Small Mill
5. NTP Welder-Medium Mill
6. NTP Building Heaters

NSG purchased Steel Technologies (Steel Tech) Building 1 on July 11, 2022. All of Steel Tech's permitted air emission sources have been added to NSG's Title V Air Permit. The facility is a carbon steel pickling and processing facility and had been considered a single source with NSG. The operation includes hot-rolled steel coils using hydrochloric acid (HCl), slits steel coil to specific widths and coats some steel coils with oil or dry lubricant coating. The pickle line process begins by passing the steel through a scale breaker to remove mill scale (iron oxide) on the steel to be pickled. Steel is then moved through of a series of four acid tanks that contain HCl at varying concentrations (2-4%, 6-8%, 8-12%, and 11-14%) and at an elevated temperature (175^{o}F to 195^{o}F), maintained by a steam-generating boiler. After the steel coil has been pickled, the finished steel may be processed through a slitter. The slitter is a shearing operation that cuts large rolls of steel into narrower rolls. The finished steel may be oil coated by electrostatic oil coating process and a backup oiler. As an alternative to oiling, the finished steel may be coated with dry lubricant.

The permit contains an alternate operating scenario: the operation of a batch concrete plant on site to provide concrete for construction activities and will be removed from the Nucor property once foundation activities are complete.

For the permit and statement of basis, equipment is gathered into Emission Units (EUs) based on common function and area of the facility, such as Melt Shop #1 – 0E1 (EU 01), Melt Shop #2 (EU 20), Hot Rolling Mill (EU 02), etc. Individual equipment within each unit receives an Emission Point (EP) number that identifies the unit first and then identifies the specific piece of equipment. For example, the Single Shell DC Electric EAF in Melt Shop #2 is EP 20-01, i.e., this specific emission point is from unit 20 (Melt Shop #2) and designated as the first point identified within the unit.

Under this system, the Emission Units (EUs) are as follows:
EU 01 – Melt Shop #1 – 0E1
EU 02 – Hot Rolling Mill
EU 03 – Cooling Towers – 0T1
EU 04 – Existing Roads – 0RP
EU 05 – Barge Terminal – 0BL
EU 06 – LMF Alloy Handling & Storage – 0P1
EU 07 – Cleaning Tanks – 0D1

EU 08 – Emergency Generators > 500 HP – 0EG1
EU 09 – Emergency Generators < 500 HP
EU 10 – Miscellaneous Dust Sources – 0B1 & 0S1
EU 11 – Flux (Lime) Handling System
EU 12 – Carbon Handling System (formerly Recycling & Coal Drying) – 0RC
EU 13 – Direct Reduced Iron (DRI) Handling System
EU 15 – Pickle Galv Line (PGL)
EU 16 – PGL Finishing Operations
EU 19 – Slag Processing
EU 20 – Melt Shop #2
EU 23 – Air Separation Plant
EU 24 – Batch Concrete Plant
EU 25 – Nucor Tubular Products
EU 26 – Nucor Steel Technologies

The permit and statement of basis also gathers emission points into **Groups** based on common applicable requirements and compliance demonstrations. Refer to the permit and the tables in Section 3 below for additional information regarding the groups, units, specific equipment/emission points contained within each group and unit, applicable regulations, and specific limitations and requirements. Maximum short term capacities are based on a 30-day rolling average unless specified otherwise.

SECTION 2 – CURRENT APPLICATION AND EMISSION SUMMARY FORM

Permit Number: V-20-015 R3 Activities: APE20240003

Received Date(s): 9/30/2024

Application Complete Date(s): 11/21/2024

Permit Action: ☐ Initial ☐ Renewal ☐ Significant Rev ☒ Minor Rev ☐ Administrative

Construction/Modification Requested? ☒Yes ☐No NSR Applicable? ☐Yes ☒No

Previous 502(b)(10) or Off-Permit Changes incorporated with this permit action ☐Yes ☒No

Description of Action:
On September 30, 2024, NSG submitted a Minor Revision application for the addition of two direct reduced iron (DRI) conveyor bin vents (EPs 13-12 & 13-13) to the existing, previously unvented conveyors, one 150 gallon tank parts washer to EP 25-05, one remetalization unit (added to Insignificant Activities list as EP 25-12)), removed EP 02-09 coil sampling plasma cutter, and updated the maximum short term capacity of the slag processing equipment (EP 19-03) from 65.64 ton/hr to 400 ton/hr. This change in maximum hourly process rate is not associated with any physical or operational changes associated with the amount of steel that can be produced. The total amount of slag that can be processed remains the same therefore, the total production amount of 575,000 tpy has not changed. This application was deemed complete on November 21, 2024.

The Project Emissions Increase for this project is included in the following table:

Pollutant	Project Emission Increase (tpy)	Significant Emission Rate (SER) (tpy)	PSD Significant Emissions Increase
PM (filterable only)	0.061	25	No
PM_{10}	0.107	15	No
$PM_{2.5}$	0.061	10	No
NOx	0	40	No
CO	0	100	No
VOC	0.061	40	No
Pb	0	0.6	No
SO_2	0	40	No
GHGs (CO_2e)	0	75,000	No

Accordingly, the project does not exceed the significant emission rate (SER) and does not trigger further review under 401 KAR 51:017.

V-20-015 R3 Emission Summary				
Pollutant	2023 Actual (tpy)	Previous PTE V-20-015 R2 (tpy)	Change (tpy)	Revised PTE V-20-015 R3 (tpy)
CO	3770	3702.74	-4.24	3698.5

V-20-015 R3 Emission Summary				
Pollutant	2023 Actual (tpy)	Previous PTE V-20-015 R2 (tpy)	Change (tpy)	Revised PTE V-20-015 R3 (tpy)
NO_X	847	938.59	-11.29	927.3
PT_{filt}	**830	481.18	-0.38	480.8
PM_{10}	731	855.42	-0.42	855.0
$PM_{2.5}$	468	550.53	-0.51	550.2
SO_2	645	615.40	0	615.4
VOC	187	268.82	-0.81	268.1
Lead	0.84	0.91	0	0.91
Greenhouse Gases (GHGs)				
Carbon Dioxide	1,130,103	1,556,868	-1503	1,555,365
Methane	14.14	45.53	-0.08	45.45
Nitrous Oxide	2.64	8.87	-0.01	8.86
CO_2 Equivalent (CO_2e)	1,131,243	1,560,649	-1508	1,559,141
Hazardous Air Pollutants (HAPs)				
Acetaldehyde	0.386	1.10	0	1.1
Acrolein	0.162	0.46	0	0.46
Benzene	0.00084	0.10	-0.01	0.09
Carbon Disulfide	0.198	0.56	0	0.56
Chlorine	1.22	2.41	0	2.41
Chromium	0.097	0.05	0	0.05
Fluoride	7.09	10.13	0	10.13
Formaldehyde	0.0152	0.33	0	0.33
Hexane; N-Hexane	2.54	7.86	0	7.86
Hydrochloric Acid	0.55	5.62	0	5.62
Hydrogen Fluoride	2.37	2.73	0	2.73
Manganese	0.96	0.71	0	0.71
Methanol	0.22	0.62	0	0.62
Methylene Chloride	*	0.87	0	0.87
Mercury	0.1	0.00068	0	0.00068
m-Xylene	0.00013	0.11	0	0.11
Toluene	0.00084	0.23	0	0.23
Combined HAPs:	15.91	25.39	-0.02	25.37

** Not reported*

*** PT Actual is reported as (filterable + condensable)*

SECTION 3 – EMISSIONS, LIMITATIONS AND BASIS

Group 1: EU 01 - Melt Shop #1 - 0E1, EU 10 – Miscellaneous Dust Sources & EU 20 - Melt Shop #2					
Pollutant	**Emission Limit or Standard**		**Regulatory Basis for Emission Limit or Standard**	**Emission Factor Used and Basis**	**Compliance Method**
Opacity	EU 01 & EU 02 baghouse stacks	3%	40 CFR 60.272a(a)(2)	N/A	Daily Method 9, Monitoring, Recordkeeping, Reporting
	Dust Handling System (EP 10-06 & 10-07)	10%	40 CFR 60.272a(b)		
	Any EU 01 & EU 02 Building Opening	6%	40 CFR 60.272a(a)(3); 40 CFR 63.10686(b)(2)		
	Any EU 01 or EU 20 Opening or Stack	20%	401 KAR 59:010, Section 3(1)(a)		
PM	• P<0.5; E = 2.34 • P≤30; E=$3.59P^{0.62}$ • P>30; E= $17.3P^{0.16}$		401 KAR 59:010, Section 3(2)	Refer to the PM BACT Limits Below	Assumed when complying with BACT
PM	EU 01 & EU 02 baghouse stacks	0.0052 gr/dscf	40 CFR 60.272a(a)(1); 40 CFR 63.10686(b)(1)	Refer to the PM BACT Limits Below	Assumed when complying with BACT
PM	Baghouse #1 & #2 Stack	0.0018 gr/dscf; 31.82 lb/hr; 139.4 tons/yr	401 KAR 51:017	0.0018 gr/dscf	Operating Limits, Testing (Baghouse #1 and #2 & #3), Monitoring, Recordkeeping, Reporting, & GCOP/PPP Plan
	Baghouse #3 Stack	0.0018 gr/dscf; 26.20 lb/hr; 115 ton/yr		0.0018 gr/dscf	
	EP 01-14	3.10 lb/hr; 13.59 tons/yr		0.0051 gr/dscf; Nucor Hickman	
	EP 10-06	0.005 gr/dscf; 0.0514 lb/hr; 0.23 ton/yr		0.005 gr/dscf AP-42, Section 13.2.4	
	EP 10-07	0.005 gr/dscf; 0.0043 lb/hr; 0.02 ton/yr		0.005 gr/dscf AP-42, Section 13.2.4	
	EP 20-11	15.17 lb/hr; 66.45 ton/yr		0.0075 gr/dscf; Nucor Berkeley Test	
PM_{10}	Baghouse #1 & #2 Stack	0.0052 gr/dscf; 91.93 lb/hr; 402.7 ton/yr	401 KAR 51:017	0.0052 gr/dscf	Operating Limits, Testing (Baghouse #1 and #2 & #3), Monitoring, Recordkeeping, Reporting, & GCOP/PPP Plan
	Baghouse #3 Stack	0.0052 gr/dscf; 75.67 lb/hr; 331 ton/yr		0.0052 gr/dscf	

Group 1: EU 01 - Melt Shop #1 - 0E1, EU 10 – Miscellaneous Dust Sources & EU 20 - Melt Shop #2					
	EP 01-14	0.70 lb/hr; 3.07 tons/yr		0.001152 gr/dscf; Nucor Hickman (percentage)	
	EP 10-06	0.005 gr/dscf; 0.0514 lb/hr; 0.23 ton/yr		0.005 gr/dscf AP-42, Section 13.2.4	
	EP 10-07	0.005 gr/dscf; 0.0043 lb/hr; 0.02 ton/yr		0.005 gr/dscf AP-42, Section 13.2.4	
	EP 20-11	3.11 lb/hr; 13.61 ton/yr		0.001536 gr/dscf; Reisman & Frisbie Sizing	
$PM_{2.5}$	Baghouse #1 & #2 Stack	0.0034 gr/dscf; 60.11 lb/hr; 263.3 tons/yr	401 KAR 51:017	0.0034 gr/dscf	Operating Limits, Testing (Baghouse #1 and #2 & #3), Monitoring, Recordkeeping, Reporting, & GCOP/PPP Plan
	Baghouse #3 Stack	0.0034 gr/dscf; 49.48 lb/hr; 217 tons/yr		0.0034 gr/dscf	
	EP 01-14	0.09 lb/hr; 0.38 ton/yr		0.000144 gr/dscf;	
	EP 10-06	0.005 gr/dscf; 0.0514 lb/hr; 0.23 ton/yr		0.005 gr/dscf AP-42, Section 13.2.4	
	EP 10-07	0.005 gr/dscf; 0.0043 lb/hr; 0.02 ton/yr		0.005 gr/dscf AP-42, Section 13.2.4	
	EP 20-11	0.39 lb/hr; 1.70 ton/yr		0.000192 gr/dscf; Reisman & Frisbie Sizing	
CO	Baghouse #1, #2, & #3 Stack	Production Days: 1.98 lb/ton	401 KAR 51:017	Design Spec.	Operating Limits, CEMs (Baghouses #1, #2 & #3), Monitoring, Recordkeeping, Reporting, & GCOP/PPP Plan
		Non-Prod. Days: 42.6 lb/hr			
		3,465 ton/yr			
NO_x	Baghouse #1, #2, & #3 Stack	Production Days: 0.42 lb/ton	401 KAR 51:017	Design Spec.	Operating Limits, CEMs (Baghouses #1, #2 & #3), Monitoring, Recordkeeping, Reporting, & GCOP/PPP Plan
		Non-Prod. Days: 44.9 lb/hr			
		728 ton/yr			

Group 1: EU 01 - Melt Shop #1 - 0E1, EU 10 – Miscellaneous Dust Sources & EU 20 - Melt Shop #2					
SO_2	Baghouse #1, #2, & #3 Stack	Production Days: 0.35 lb/ton; 175 lb/hr; Non-Prod. Days: 0.30 lb/hr 606 ton/yr	401 KAR 51:017	Design Spec.	Operating Limits, CEMs (Baghouses #1, #2 & #3), Monitoring, Recordkeeping, Reporting, & GCOP/PPP Plan
GHG	Baghouse #1 & #2 Stack	535,000 ton/yr	401 KAR 51:017	IISI	Operating Limits, Testing (Baghouses #1, #2 & #3), Monitoring, Recordkeeping, Reporting, & GCOP/PPP Plan
	Baghouse #3 Stack	535,000 ton/yr		IISI	
VOC	Baghouse #1 & #2 Stack	0.09 lb/ton; 89.1 tons/yr	401 KAR 51:017	Design Spec.	Operating Limits, Testing (Baghouses #1, #2 & #3), Monitoring, Recordkeeping, Reporting, & GCOP/PPP Plan
	Baghouse #3 Stack	0.09 lb/ton; 89.1 tons/yr		Design Spec.	
	EP 01-14	0.40 lb/hr; 1.75 tons/yr		Nucor Berkley Test	
	EP 20-11	0.80 lb/hr; 3.50 tons/yr		Nucor Berkley Test	
Lead	Baghouse #1 & #2 Stack	0.00045 lb/ton; 0.45 ton/yr	401 KAR 51:017	BACT Limit	Operating Limits, Testing (Baghouses #1, #2 & #3), Monitoring, Recordkeeping, Reporting, & GCOP/PPP Plan
	Baghouse #3 Stack	0.00045 lb/ton; 0.45 ton/yr			
	EP 10-06	2.59×10^{-6} lb/hr; 1.14×10^{-5} ton/yr		6.49E-5 lb/ton; Eng calc and dust analysis	
	EP 10-07	2.16×10^{-7} lb/hr; 9.46×10^{-7} ton/yr		5.41E-9 lb/ton; Eng calc and dust analysis	
Fluorides	Baghouse #1 & #2 Stack	0.0035 lb/ton; 3.52 tons/yr	401 KAR 51:017	Nucor Berkley Test	Operating Limits, Testing (Baghouses #1, #2 & #3), Monitoring, Recordkeeping, Reporting, & GCOP/PPP Plan
	Baghouse #3 Stack	0.0035 lb/ton; 3.52 tons/yr			
	EP 01-14	0.0011 lb/ton; 1.10 ton/yr			
	EP 20-11	0.0011 lb/ton; 1.92 ton/yr			

Group 1: EU 01 - Melt Shop #1 - 0E1, EU 10 – Miscellaneous Dust Sources & EU 20 - Melt Shop #2

Initial Construction/Modification Dates: EP 10-06 (1993); EU 01 (1995); EU 20 and EP 10-07 (2019)

Process Description:

Emission Unit 01 (EU 01) – Melt Shop #1:

Controls: Two Positive Pressure Baghouses (Baghouse #1 and #2). Baghouse #1 was installed in April 1993; Baghouse #2 was installed in April 2005. Emissions that escape the direct capture systems are captured by canopy hoods located on the ceiling of the melt shop and ducted to the existing baghouse 1 or baghouse 2. The emissions from baghouse #1 & # 2 are ducted together and combined into a single stack before release into the atmosphere.

EP 01-01 – Twin Shell DC Electric Arc Furnace (EAF)

A twin-shell EAF includes two furnace vessels with a common arc and power supply system (i.e., power can be supplied to only one furnace vessel at a time for melting operations). Once charged, the roof is placed over the furnace and the electrode is lowered to the feed mixture. The scrap is melted by an electric arc that is struck between the top and bottom electrodes. Oxy-fuel burners are mounted at strategic locations around the furnace shell in order to supply additional energy. The EAF initially uses lower voltages to melt shredded metal and protect the roof and walls from excessive heat. Later in the process, higher voltage is used to lengthen the electric arcs and melt the heavier scrap and scrap substitutes.

In the EAF, oxygen, natural gas, and carbon are injected into the scrap, which further accelerates scrap melting. When needed, carbon may be added to the initial charge prior to melting. At specific temperatures, the heated raw materials chemically react. These reactions are very complex and primarily involve the combustion of carbon, which releases heat to further accelerate the melting process. However, not all carbon is combusted fully to carbon dioxide (CO_2); a portion remains in the steel and a portion is removed through the furnace direct evacuation control (DEC) system in the form of carbon monoxide (CO). Elevated temperatures and proper design of the DEC system promote optimal downstream combustion of CO to CO_2. In other reactions, impurities in the steel react with the lime to form slag, which separates from the liquid steel and forms a foam-like layer on top of the liquid steel. The slag layer is decanted from the molten steel, removing the phosphorus and silica contained therein. When all conditions and steel specifications are achieved, the batch of molten steel or "heat" is tapped into a preheated ladle by opening the EAF tap hole and tilting the EAF. Steel is tapped from the EAF sump near the bottom and to one side of the furnace hearth. The hot metal is tapped into the ladle, which is transported by ladle car to the LMF. A small quantity of liquid steel may be left in the furnace bottom known as a "heel". The remaining slag in the furnace is drained out the slag door, located on the front of the furnace, into a slag pot that is transported to a separate slag processor via Kress carrier.

The EAF is equipped with a DEC system that captures and vents emissions generated during the melting and refining processes to two positive pressure baghouses (#1 & #2). Emissions that escape the DEC system or are generated during charging and tapping are captured by canopy hoods strategically located on the ceiling of the melt shop. The canopy hoods vent emissions to the Melt Shop Baghouse for control of particle-phase pollutants. Small quantities of emissions escape the melt shop (1%), primarily through the scrap charge bay door, as melt shop fugitives.

Six (6) oxy-fuel fired burners are mounted at strategic locations around the EAF shell to supply additional energy to the heat. These include four (4) sidewall burners each with a heat capacity of 18 MMBtu/hr, one (1) door burner with a heat capacity of 15 MMBtu/hr, and one (1) sump burner with a heat capacity of 10 MMBtu/hr.

Group 1: EU 01 - Melt Shop #1 - 0E1, EU 10 – Miscellaneous Dust Sources & EU 20 - Melt Shop #2

Maximum Capacity: 250* ton steel/hr; 500 lb fluorspar/heat; 2,000,000 ton/yr
Burner Maximum Capacity: 97 MMBtu/hr
Control Device: Baghouse #1

EP 01-02 – Continuous Caster (A-Line)
In the casting unit, liquid steel is poured from the ladle into a tundish, which meters the molten steel into a vertical, water-cooled, copper mold that is the desired width and thickness of the resulting slab. The tundish is a refractory-lined, elongated trough that has a drain sized for the slab caster. From the mold, the steel then moves down through the water-spray cooling chamber via rollers and begins solidifying on the outside. Emissions generated during the casting process are captured by canopy hoods and vented to the Melt Shop Baghouse #1
Maximum Capacity: 250 ton steel/hr; 2,000,000 ton/yr
Control Device: Baghouse #1

EP 01-03 A - Ladle Metallurgical Furnace (LMF)
From the EAF, the ladles of molten steel are transferred to the LMF where final steel refining takes place. At the LMF, the molten bath is first sampled to determine the existing chemistry. The chemistry is then adjusted by additions of various materials such as carbon, lime, and alloys. After reaching the appropriate chemistry, the bath temperature is elevated above the melting point of steel to prevent the steel from solidifying prior to reaching the caster.

The LMF is equipped with a direct capture system (e.g., side draft hoods) that captures and vents emissions to the Melt Shop Baghouse #2. Emissions that escape the LMF capture system are captured by canopy hoods and ducted to the Melt Shop Baghouse (#1 or #2) for control of particle-phase pollutants. Oxygen will be removed from the steel in the LMF through addition of aluminum and silicon. This deoxidation process removes dissolved oxygen in the melt.
Maximum Capacity: 250 ton steel/hr; 2,000,000 ton/yr
Control Device: Baghouse #2

EP 01-04 A, B, C, & D – Ladle Pre-Heaters-(4)
Four (4) ladle preheaters. Emissions from natural gas combustion are discharged into the melt shop and captures by the canopy hoods that are ducted to the Melt Shop Baghouse for PM control.
Burner Maximum Capacity: 01-04A at 10 MMBtu/hr; 01-04B, C & D at 27.3 MMBtu/hr each
Control Device: Baghouse #2

EP 01-05 – Ladle Dryer
One (1) ladle dryer. The ladle drying station is equipped with a direct capture system to capture and duct the natural gas combustion emissions and any nuisance odors generated from drying the ladle refractory to the Melt Shop Baghouse.
Burner Maximum Capacity: 10 MMBtu/hr
Control Device: Baghouse #1

EP 01-06 A & B – Tundish Preheaters (2)
Two (2) tundish preheaters. Emissions from natural gas combustion are discharged into the melt shop and captured by the canopy hoods that are ducted to the Melt Shop Baghouse for PM control.
Burner Maximum Capacity: 8 MMBtu/hr, each
Control Device: Baghouse #1

Group 1: EU 01 - Melt Shop #1 - 0E1, EU 10 – Miscellaneous Dust Sources & EU 20 - Melt Shop #2

EP 01-07 A & B – Tundish Side Preheaters (2) & SEN Preheaters (2)
Two (2) tundish side preheaters and two (2) submerged entry nozzle (SEN) preheaters. Emissions from natural gas combustion are discharged into the melt shop and captured by canopy hoods that are ducted to the Melt Shop Baghouse for PM control.
Burner Maximum Capacity: 1.1 MMBtu/hr, each
Control Device: Baghouse #1

EP 01-08 – Tundish Dryers (2) & Mandrel Preheaters (2)
two (2) tundish dryers, and two (2) mandrel preheaters. Emissions from natural gas combustion are discharged into the melt shop and captured by the canopy hoods that are ducted to the Melt Shop Baghouse for PM control.
Burner Maximum Capacity: 1.0 MMBtu/hr, each
Control Device: Baghouse #1

EP 01-09 – Tundish Preparation
Tundish preparation activities occur in the melt shop and are conducted as needed. These operations include removal of used refractory in the tundish dump station, repair of the tundish refractory by rebricking with new refractory, and deskulling the tundishes of accumulated residual metal. The tundish dump station has a dedicated hood to capture emissions generated during the removal of used refractory, which is vented to the Melt Shop Baghouse. Tundish repair results in both particulate emissions and VOC emissions from the refractory resin. Tundish deskull uses nine natural gas fueled torches to cut up the skulls from the tundish.
Maximum Capacity: 7.1 tons/hr; 62,196 tons/yr
Control Device: Baghouses #1 & #2

EP 01-10 – Ladle Preparation
Ladle preparation activities, including ladle dump and ladle repair, occur in the melt shop where potential particulate emissions generated during refractory preparation and repair are captured by the local canopy hoods for control at the Melt Shop Baghouse.
Maximum Capacity: 42 tons/hr; 367,920 tons/yr
Control Device: Baghouses #1 & #2

EP 01-11 – Used Refractory Cleanout
Furnace refractory cleanout, using pneumatic and manual tools, occurs in the melt shop where potential particulate emissions released within the melt shop are captured by the local canopy hoods for control at the Melt Shop Baghouse.
Maximum Capacity: 72 tons refractory/hr; 630,720 tons/yr
Control Device: Baghouses #1 & #2

EP 01-12 A & B – Stirring Stations (4)
Raw materials are added and mixed by argon gas bubbling practices at the Stirring Stations and then moved to the LMF for refining; emissions from the stirring stations are captured by the ladle car capture system and vented to the Melt Shop Baghouse for PM control
Maximum Capacity: 250 tons/hr; 2,000,000 tons/yr
Control Device: Baghouse #2

Group 1: EU 01 - Melt Shop #1 - 0E1, EU 10 – Miscellaneous Dust Sources & EU 20 - Melt Shop #2

EP 01-13 – Scrap Cutting from Slag Pot
Scrap cutting activities occur in the melt shop and are conducted as needed. The capture emissions generated during the removal of scrap is vented to the Melt Shop Baghouse.
Maximum Capacity: 2.0 tons/hr; 3,822 tons/yr
Control Device: Baghouses #1 & #2

EP 01-14 – A-Line Caster Spray Vent
Steam formed from the contact of cooling water with the hot steel is captured and vented through caster spray vents that discharge above the roof of the Melt Shop.
Maximum Capacity: 250 tons steel/hr; 2,000,000 tons/yr
Control Device: None

EP 10–06 – Melt Shop #1 Baghouse #1 & #2 Dust Silo & Railcar Loading
Dust collected in the Melt Shop Baghouses is conveyed via an enclosed conveyor system to a silo for temporary storage. The baghouse dust is pneumatically loaded from the silo to the rail car.
Maximum Capacity: 5 ton dust/hr; 35,000 ton/yr
Bin Vent flow rate: 1200 dscfm
Control Device: Dust Collector/Enclosure

EP 10–07 – Melt Shop #2 Baghouse #3 Dust Silo & Railcar Loading
Dust collected in the Melt Shop Baghouse is conveyed via an enclosed conveyor system to a silo for temporary storage. The baghouse dust is pneumatically loaded from the silo to the rail car.
Maximum Capacity: 5 ton dust/hr; 35,000 ton/yr
Bin Vent flow rate: 100 dscfm
Control Device: Dust Collector/Passive Bin Vent Filter

Emission Unit 20 (EU 20) – Melt Shop #2:
Process Description:
Emission Unit 20 (EU 20) – Melt Shop #2:
Controls: Negative Pressure Baghouse #3. The Melt Shop is equipped with canopy hoods to capture and vent emissions that are not captured by the direct shell evacuation system (DEC or DSE). The melt shop has an overall capture efficiency of 99% of emissions generated within the melt shop.

EP 20-01 – Single Shell DC Electric Arc Furnace (EAF)
Single-shell DC Electric Arc Furnace (EAF) that has a larger melting capacity than the existing duel shell EAFs combined (EP 01-01). Operation of the single shell DC EAF is similar to the twin shell DC EAF in that feed material drops from an overhead scrap bucket into the shell, the furnace roof swings back into place, and an electrode lowers into the scrap to start the melting process. As with the duel-shell EAF, the single-shell EAF is equipped with a DEC system to capture and vent emissions, generated by melting and refining, to Baghouse # 3.

Five (5) oxy-fuel fired burners are mounted at strategic locations around the EAF shell to supply additional energy to the heat. These include four (4) sidewall burners each with a heat capacity of 17.1 MMBtu/hr, and one (1) sump burner with a heat capacity of 17.1 MMBtu/hr.
Maximum Capacity: 250* ton steel/hr; 500 lb fluorspar/heat; 2,000,000 ton/yr
Burner Maximum Capacity: 85.5 MMBtu/hr
Control Device: Baghouse #3

Group 1: EU 01 - Melt Shop #1 - 0E1, EU 10 – Miscellaneous Dust Sources & EU 20 - Melt Shop #2

EP 20-02 A & B - Ladle Metallurgical Furnaces (LMF)-(2)

From the EAF, the ladles of molten steel are transferred to the LMF where final steel refining takes place. At the LMF, the molten bath is first sampled to determine the existing chemistry. The chemistry is then adjusted by additions of various materials such as carbon, lime, and alloys. After reaching the appropriate chemistry, the bath temperature is elevated above the melting point of steel to prevent the steel from solidifying prior to reaching the caster.

The LMF is equipped with a direct capture system (e.g., side draft hoods) that captures and vents emissions to the Melt Shop Baghouse #3. Canopy hoods, located overhead at the roofline, catch emissions not captured by the DEC system, venting these emissions to Baghouse #3 for control of particle-phase pollutants. Oxygen will be removed from the steel in the LMF through addition of aluminum and silicon. This deoxidation process removes dissolved oxygen in the melt.
Maximum Capacity: 250 ton steel/hr; 2,000,000 ton/yr
Control Device: Baghouse #3

EP 20-03 – Continuous Caster B-Line

In the casting unit, liquid steel is poured from the ladle into a tundish, which meters the molten steel into a vertical, water-cooled, copper mold that is the desired width and thickness of the resulting slab. The tundish is a refractory-lined, elongated trough that has a drain sized for the slab caster. From the mold, the steel then moves down through the water-spray cooling chamber via rollers and begins solidifying on the outside.

In order to maintain a continuous casting process, ladles of molten steel are staged to provide enough buffer for the desired period of continuous casting. This staging process results in a greater short-term maximum capacity of the continuous caster (500 ton/hr) than the EAF & LMF (250 ton/hr). However, the increased capacity cannot be maintained for extended periods, and the continuous caster must be idled until sufficient molten steel buffer capacity is achieved again. While each melt shop will have a dedicated caster, only one caster will be able to cast steel slabs at a time. However, each caster will be able to receive ladles of molten steel from either melt shop. To provide the operational flexibility needed to achieve the desired 3.5 million tpy production rate using only one caster at a time.
Emissions generated during the casting process are captured by canopy hoods and vented to the Melt Shop Baghouse.
Maximum Capacity: 500 ton steel/hr; 3,500,000 ton/yr
Control Device: Baghouses #1 & #2

EP 20-04 – Ladle Dryer

One (1) ladle dryer equipped with low-NO_X burner. The ladle drying station is equipped with a direct capture system to capture and duct the natural gas combustion emissions and any nuisance odors generated from drying the ladle refractory to the Melt Shop Baghouse.
Burner Maximum Capacity: 20 MMBtu/hr
Control Device: Baghouse #1 & #2

EP 20-05 A, B, & C – Horizontal Ladle Pre-Heaters-(3)

Three (3) ladle preheaters, all equipped with low-NOx burners. Emissions from natural gas combustion are discharged into the melt shop and captures by the canopy hoods that are ducted to the Melt Shop Baghouse for PM control.
Burner Maximum Capacity: Three at 27.3 MMBtu/hr, each
Control Device: Baghouse #1 & #2

Group 1: EU 01 - Melt Shop #1 - 0E1, EU 10 – Miscellaneous Dust Sources & EU 20 - Melt Shop #2

EP 20-06 A & B – Tundish Preheaters (2)
Two (2) tundish preheaters, all equipped with low-NOx burners. Emissions from natural gas combustion are discharged into the melt shop and captured by the canopy hoods that are ducted to the Melt Shop Baghouse for PM control.
Burner Maximum Capacity: 12.2 MMBtu/hr, each
Control Device: Baghouse #1 & #2

EP 20-07 A, B, & C – Mandrel Preheater (4) & Tundish SEN Preheaters (2)
Four (4) tundish mandrel preheater and two (2) tundish submerged entry nozzle (SEN) preheaters, all equipped with low-NOx burners. Emissions from natural gas combustion are discharged into the melt shop and captured by canopy hoods that are ducted to the Melt Shop Baghouse for PM control.
Burner Maximum Capacity: 1.3 MMBtu/hr, each Mandrel, and 0.34 MMBtu/hr for each SEN
Control Device: Baghouse #1 & #2

EP 20-08– Melt Shop #2 Tundish Preparation
Tundish preparation activities occur in the melt shop and are conducted as needed. These operations include removal of used refractory in the tundish dump station, repair of the tundish refractory by rebricking with new refractory, and deskulling the tundishes of accumulated residual metal. The tundish dump station has a dedicated hood to capture emissions generated during the removal of used refractory, which is vented to the Melt Shop Baghouse. Tundish repair results in both particulate emissions and VOC emissions from the refractory resin. Tundish deskull uses nine natural gas fueled torches to cut up the skulls from the tundish.
Maximum Capacity: 2.82 ton/hr; 24,703 ton/yr for dump station, 7.05 ton/hr; 61,758 ton/yr for relining station
Burner Maximum Capacity: 0.013 MMBtu/hr (9 deskulling torches combined)
Control Device: Baghouse #3

EP 20-09– Melt Shop #2 Ladle Preparation
Ladle preparation activities, including ladle dump and ladle repair, occur in the melt shop where potential particulate emissions generated during refractory preparation and repair are captured by the local canopy hoods for control at the Melt Shop Baghouse.
Maximum Capacity: 33.7 ton/hr; 295,387 ton/yr for dump station, 42.2 tons/hr; 369,234 ton/yr for relining station
Control Device: Baghouse #3

EP 20-10 – Melt Shop #2 Used Refractory Cleanout
Furnace refractory cleanout, using pneumatic and manual tools, occurs in the melt shop where potential particulate emissions released within the melt shop are captured by the local canopy hoods for control at the Melt Shop Baghouse.
Maximum Capacity: 72 tons refractory/hr; 630,720 tons/yr
Control Device: Baghouse #3

EP 20-11 – B-Line Caster Spray Vent
Steam formed from the contact of cooling water with the hot steel is captured and vented through caster spray vents that discharge above the roof of the Melt Shop.
Maximum Capacity: 500 tons steel/hr; 3,500,000 tons/yr
Control Device: None

Group 1: EU 01 - Melt Shop #1 - 0E1, EU 10 – Miscellaneous Dust Sources & EU 20 - Melt Shop #2

EP 20-15 – Melt Shop #2 Scrap Bucket Charge

Scrap is loaded from the stockpiles into Euclid trucks to transport the specific scrap mix for the charge (charge bucket loading occurs inside the Melt Shop). The Euclid trucks unload the scrap into the charge bucket that will be located below ground level such that the Euclid trucks can drop the charge directly into the scrap bucket. The scrap bucket will then be picked up by a crane to load the scrap directly into the EAF. Because the potential emissions from the scrap bucket charging occur within Melt Shop #2, the emissions are combined with other emission sources located in the Melt Shop #2, with PM emissions being controlled by Baghouse.

Maximum Capacity: 250 ton/hr; 2,161,105 ton/yr

Control Device: Baghouse #3

EP 20-16 – Melt Shop #2 Safety Lining Dryer for Tundishes

Three (3) Safety Lining Dryers, all equipped with low-NOx burners. Emissions from natural gas combustion are discharged into the melt shop and captured by canopy hoods that are ducted to the Melt Shop Baghouse for PM control.

Burner Maximum Capacity: 1.3 MMBtu/hr each

Control Device: Baghouse #3

EP 20-17 – Melt Shop #2 vertical Ladle Pre-Heater at LMF

One (1) Vertical Ladle Pre-heater equipped with low-NOx burner. Emissions from natural gas combustion are discharged into the melt shop and captured by canopy hoods that are ducted to the Melt Shop Baghouse for PM control.

Burner Maximum Capacity: 27.3 MMBtu/hr

Control Device: Baghouse #3

Applicable Regulations:

401 KAR 51:017, *Prevention of significant deterioration of air quality*

401 KAR 59:010, *New process operations,* applies to each affected facility or source, associated with a process operation, which is not subject to another emission standard with respect to particulates in 401 KAR 59, commenced on or after July 2, 1975.

401 KAR 60:005, Section 2(1), **40 C.F.R. 60.1 to 60.19, Table 1 (Subpart A),** *General Provisions,* specifically, the requirement to develop and implement a written startup, shutdown, and malfunction (SSM) plan that describes, in detail, procedures for operating and maintaining the source during periods of startup, shutdown, and malfunction; and a program of corrective action for malfunctioning process, air pollution control, and monitoring equipment used to comply with the relevant standard. The startup, shutdown, and malfunction plan does not need to address any scenario that would not cause the source to exceed an applicable emission limitation in the relevant standard. The SSM plan shall meet the requirements in 40 CFR 63.6(e)(3). This plan must be developed by the owner or operator before startup of the EAF.

401 KAR 60:005, Section 2(2)(jj), **40 C.F.R. 60.270a to 60.276a (Subpart AAa),** *Standards of Performance for Steel Plants: Electric Arc Furnaces and Argon-Oxygen Decarburization Vessels Constructed After August 17, 1983 and on or before May 16, 2022,* applies to the following affected facilities in steel plants that produce carbon, alloy, or specialty steels: electric arc furnaces, argon-oxygen decarburization vessels, and dust-handling systems that commences construction, modification, or reconstruction after August 17, 1983 and on or before May 16, 2023.

401 KAR 63:002, Section 2(4)(aaaaa), 40 C.F.R. 63.10680 to 63.10692, Table 1 (Subpart YYYYY), *National Emission Standards for Hazardous Air Pollutants for Area Sources: Electric Arc Furnace*

Group 1: EU 01 - Melt Shop #1 - 0E1, EU 10 – Miscellaneous Dust Sources & EU 20 - Melt Shop #2

Steelmaking Facilities, applies to each electric arc furnace (EAF) steelmaking facility that is an area source of hazardous air pollutant (HAP) emissions.

401 KAR 63:010, *Fugitive emissions,* applies to each apparatus, operation, or road which emits or could emit fugitive emissions not elsewhere subject to an opacity standard within 401 KAR Chapter 50 through 68.

40 CFR 64, *Compliance Assurance Monitoring,* applies to the capture system and PM control device required by 40 CFR 63, Subpart YYYYY. The exemption in 40 CFR 64.2(b)(1)(i) for emissions limitations or standards proposed after November 15, 1990 under section 111 or 112 of the CAA does not apply.

Comments: Emissions are calculated using factors from AP-42, Section 1.4, MSDS information, RBLC data, design specifications for control devices, test data from Nucor Gallatin, Crawfordsville, Darlington, Berkley, Hickman data from Steel Production: Consensus of Experts and IISI Environmental Performance Indicators, International Iron and Steel Institute (IISI), 2004, a paper by Reisman and Frisbie. (*"Calculating Realistic PM_{10} Emissions From Cooling Towers."* Reisman-Frisbie. Environmental Progress 21 (July 2002)), and a paper entitled: Fumes & Gases in the Welding Environment, the American Welding Society (AWS), 01/90.
For EP 10-06 and 10-07, metal HAP dust concentrations are based on analyses of Nucor Gallatin baghouse dust from 2014-2016.

NSG performs shop opacity observations as described in 40 CFR 60.274a(d) in lieu of installing a furnace static pressure gauge according to 40 CFR 60.274a(f), and therefore is not required to perform the once-per-shift static pressure checks required by 40 CFR 60.274a(b) for the furnace static pressure.

The modification of NSG to combine Melt Shop #1 and Melt Shop #2 emissions limits into a single emission limit for gaseous pollutants monitored by CEMS (CO, NO_x, SO_2) did not result in an emission increase or change the amount of steel produced. NSG determined during the initial design phase and permitting of V-14-013 R5 that the melt shops were intended to be more isolated and independent. However, after selecting the vendors, completing detailed design, and optimizing process flows, the melt shops are significantly intertwined. In the final design, liquid steel can flow from any furnace to any LMF and then cast initially in either caster. Also, operational issues could cause liquid steel to move directly from the Single Shell direct current (DC) Furnace (EP 20-01) to the Twin Shell DC Furnace (EP 01-01) to be reprocessed without ever being cast. Due to the unique design of Nucor's facility, not being able to install a single emissions control device, and the interconnectivity of the Melt Shop units, combined gaseous pollutant limits should be used for the pollutants that are continuously monitored by CEMS. However, since multiple baghouses are used to control lead, fluoride, PM, PM10, and PM2.5 emissions, separate stack limits are still appropriate for each pollutant for which compliance will be determined using testing and is not equipped with CEMS.

*Note: The short term capacity of 250 tons/hr is based on a 30-day average. NSG can achieve a short term production rate (hourly average) of 370 tons/hr for EP 01-01 & EP 20-01. All of the modeling reflects the short term hourly rate of 370 tons/hr.

Control Device (Stack)	Emission Units Generally Controlled
Baghouse #1 & #2 Stack	01-01, 01-02, 01-03A, 01-04A, B, C, & D, 01-05; 01-06A & B; 01-07A & B; 01-08; 01-09; 01-10; 01-11; 01-12A & B; 01-13, 20-03, 20-04, 20-05A, B, & C; 20-06A & B, 20-07A, B, & C
Baghouse #3 Stack	20-01, 20-02A & B, 20-08, 20-09, 20-10, 20-15, 20-16, 20-17

Group 2: EU 02 - Hot Rolling Mill					
Pollutant	**Emission Limit or Standard**		**Regulatory Basis for Emission Limit or Standard**	**Emission Factor Used and Basis**	**Compliance Method**
Opacity	20%		401 KAR 59:010, Section 3(1)(a)	N/A	Weekly Qualitative Monitoring, Recordkeeping
PM	• P<0.5; E = 2.34 • P≤30; E=$3.59P^{0.62}$ • P>30; $E = 17.3P^{0.16}$		401 KAR 59:010, Section 3(2)	Refer to the PM BACT Limits Below	Assumed when complying with BACT.
PM	EP 02-01	1.9 lb/MMscf; 0.85 ton/yr	401 KAR 51:017	AP-42, Table 1.4-2	Operating Limits, Monitoring, Recordkeeping, Reporting, & GCOP/GWP Plan
	EP 02-02	1.9 lb/MMscf; 1.33 ton/yr		AP-42, Table 1.4-2	
	EP 02-03	1.9 lb/MMscf; 0.53 ton/yr		AP-42, Table 1.4-2	
	EP 02-04	1.98×10^{-4} gr/dscf; 0.13 lb/hr; 0.55 ton/yr		0.003422 lb/ton; Tests at Nucor Facilities	
	EP 02-05	1.94×10^{-4} gr/dscf; 0.99 lb/hr; 4.42 ton/yr		0.002525 lb/ton; Tests at Nucor Facilities	
	EP 02-06	0.04 lb/hr; 0.19 ton/yr		0.01092 lb/ton; SIPER	
	EP 02-07	0.04 lb/hr; 0.19 ton/yr		0.01092 lb/ton; SIPER	
PM_{10}	EP 02-01	7.6 lb/MMscf; 3.40 ton/yr	401 KAR 51:017	AP-42, Table 1.4-2	Operating Limits, Monitoring, Recordkeeping, Reporting, & GCOP/GWP Plan
	EP 02-02	7.6 lb/MMscf; 5.32 ton/yr		AP-42, Table 1.4-2	
	EP 02-03	7.6 lb/MMscf; 2.14 ton/yr		AP-42, Table 1.4-2	
	EP 02-04	2.26×10^{-4} gr/dscf; 0.14 lb/hr; 0.63 ton/yr		0.003246 lb/ton; Tests at Nucor Facilities	
	EP 02-05	2.22×10^{-4} gr/dscf; 1.13 lb/hr; 5.04 ton/yr		0.002882 lb/ton; Tests at Nucor Facilities	
	EP 02-06	0.04 lb/hr; 0.19 ton/yr		0.01092 lb/ton; SIPER	
	EP 02-07	0.04 lb/hr; 0.19 ton/yr		0.01092 lb/ton; SIPER	
$PM_{2.5}$	EP 02-01	7.6 lb/MMscf; 3.40 ton/yr	401 KAR 51:017	AP-42, Table 1.4-2	Operating Limits, Monitoring, Recordkeeping, Reporting, & GCOP/GWP Plan
	EP 02-02	7.6 lb/MMscf; 5.32 ton/yr		AP-42, Table 1.4-2	
	EP 02-03	7.6 lb/MMscf; 2.14 ton/yr		AP-42, Table 1.4-2	
	EP 02-04	8.80×10^{-5} gr/dscf; 0.06 lb/hr; 0.24 ton/yr		0.001265 lb/ton; Tests at Nucor Facilities	
	EP 02-05	8.65×10^{-5} gr/dscf; 0.44 lb/hr; 1.96 ton/yr		0.001122 lb/ton; Tests at Nucor Facilities	
	EP 02-06	0.04 lb/hr; 0.19 ton/yr		0.01092 lb/ton; SIPER	

Group 2: EU 02 - Hot Rolling Mill					
	EP 02-07	0.04 lb/hr; 0.19 ton/yr		0.01092 lb/ton; SIPER	
Lead	EP 02-01	0.0005 lb/MMscf 2.2×10^{-4} ton/yr	401 KAR 51:017	AP-42, Table 1.4-2	Operating Limits, Monitoring, Recordkeeping, Reporting, & GCOP/GWP Plan
	EP 02-02	0.0005 lb/MMscf 3.5×10^{-4} ton/yr		AP-42, Table 1.4-2	
	EP 02-03	0.0005 lb/MMscf 1.4×10^{-4} ton/yr		AP-42, Table 1.4-2	
CO	EP 02-01	84 lb/MMscf; 37.62 ton/yr	401 KAR 51:017	AP-42, Table 1.4-1	Operating Limits, Monitoring, Recordkeeping, Reporting, & GCOP/GWP Plan
	EP 02-02	84 lb/MMscf; 58.83 ton/yr		AP-42, Table 1.4-1	
	EP 02-03	84 lb/MMscf; 23.63 ton/yr		AP-42, Table 1.4-1	
NO_x	EP 02-01	70 lb/MMscf; 31.35 ton/yr	401 KAR 51:017	Low-NOx Burner Design	Operating Limits, Monitoring, Recordkeeping, Reporting, & GCOP/GWP Plan
	EP 02-02	70 lb/MMscf; 49.03 ton/yr		Low-NOx Burner Design	
	EP 02-03	70 lb/MMscf; 19.69 ton/yr		Low-NOx Burner Design	
	EP 02-06	0.81 lb/hr; 3.56 ton/yr		0.00203 lb/ton; SIPER	
	EP 02-07	0.81 lb/hr; 3.56 ton/yr		0.00203 lb/ton; SIPER	
SO_2	EP 02-01	0.6 lb/MMscf; 0.27 ton/yr	401 KAR 51:017	AP-42, Table 1.4-2	Operating Limits, Monitoring, Recordkeeping, Reporting, & GCOP/GWP Plan
	EP 02-02	0.6 lb/MMscf; 0.42 ton/yr		AP-42, Table 1.4-2	
	EP 02-03	0.6 lb/MMscf 0.17 ton/yr		AP-42, Table 1.4-2	
GHG	EP 02-01	54,065 ton/yr	401 KAR 51:017	AP-42, Table 1.4-2; 40 CFR 98, Table A-1	Operating Limits, Monitoring, Recordkeeping, Reporting, & GCOP/GWP Plan
	EP 02-02	84,544 ton/yr		AP-42, Table 1.4-2; 40 CFR 98, Table A-1	
	EP 02-03	33,952 ton/yr		AP-42, Table 1.4-2; 40 CFR 98, Table A-1	
	EP 02-04	301 ton/yr		AP-42, Table 1.4-2; 40 CFR 98, Table A-1	
	EP 02-05	904 ton/yr		AP-42, Table 1.4-2; 40 CFR 98, Table A-1	
VOC	EP 02-01	5.5 lb/MMscf; 2.46 ton/yr	401 KAR 51:017	AP-42, Table 1.4-2	Operating Limits, Monitoring,
	EP 02-02	5.5 lb/MMscf 3.85 ton/yr		AP-42, Table 1.4-2	

Group 2: EU 02 - Hot Rolling Mill					
	EP 02-03	5.5 lb/MMscf 1.56 ton/yr		AP-42, Table 1.4-2	Recordkeeping, Reporting, & GCOP/GWP Plan
	EP 02-04	1.81 lb/hr 7.90 ton/yr		0.004516 lb/ton; Mackus & Joshi, 1980	
	EP 02-05	6.78 lb/hr 23.71 ton/yr		0.01355 lb/ton; Mackus & Joshi, 1980	

Initial Construction/Modification Dates: EP 02-01 (4/1995; Modified 2020); EPs 02-02, 02-03, 02-04, & 02-07 (2020); EP 02-05 (1995; Modified 2019)

Process Description:

Emission Unit 02 (EU 02) – Hot Rolling Mill

EP 02-01 – A-Line Tunnel Furnace &
EP 02-02 – B-Line Tunnel Furnace

The A-Line Tunnel Furnace and B-Line Tunnel Furnace will maintain and equalize the temperature of slabs after the caster and before the 2-stand roughing mill. The A-Line Tunnel Furnace include a swivel furnace section to allow transfer of steel slabs from the B-Line Tunnel Furnace (EP 02-02), through the 2-Stand Roughing Mill and Heated Transfer Table Furnace, to the 6-Stand Finishing Mill. The A-line tunnel furnace has a maximum design heat input rate of 104.3 MMBtu/hr, and the total rated heat capacity of the B-Line Tunnel Furnace section will be 163.1 MMBtu/hr. The furnaces are equipped with low-NOx burners designed to maintain 0.07 pound (lb)/MMBtu of NOx. Combustion gases from the furnaces will be routed through the enclosed furnace to a single stack (South A-Line Stack) for discharge to the atmosphere
Maximum Capacity: 500 ton/hr each; 3,500,000 ton/yr each
Burner Maximum Capacity: A-Line 104.3 MMBtu/hr & B-Line 163.1 MMBtu/hr
Control Device: Low-NOx Burners (inherent)

EP 02-03 – Heat Transfer Table Furnace

Additional temperature control of the steel slabs/sheet will be conducted after the roughing mill by the Heated Transfer Table Furnace, which feeds the existing hot rolling mill. The Heated Transfer Table Furnace will have a maximum heat input capacity of 65.1 MMBtu/hr and will be equipped with low-NOx burners designed to maintain 0.07 lb/MMBtu of NOx. Combustion gases from this Furnace will be routed through the enclosed furnace to a single stack (North A-Line Stack) for discharge to the atmosphere.
Maximum Capacity: 500 ton/hr; 3,500,000 ton/yr
Burner Maximum Capacity: 65.1 MMBtu/hr
Control Device: Low-NOx Burners (inherent)

EP 02-04 – 2-Stand Roughing Mill &
EP 02-05 – 6-Stand Finishing Mill

EP 02-04, the 2-stand roughing mill is located between the A-Line Tunnel Furnace and the Heated Transfer Table Furnace within the reconstructed Tunnel Furnace Building. The Roughing Mill is used to provide initial size reduction of the thicker slabs such that they can be processed through the existing finishing mill stands. The slabs then move through the six-stand hot rolling mill (finishing mill), which will reduce slab thickness into sheet steel material. EP 02-05 process wider coils as a result of the thicker slabs casted by the B-Line Caster. Emissions will be released via a monovent along the length of the tunnel furnace building to provide better ventilation of the heat generated within the building by the tunnel furnaces and Roughing Mill

Group 2: EU 02 - Hot Rolling Mill

EP 02-06 – Material Handling Sample Line Plasma Cutter &
EP 02-07 – Rolling Mill Inspection Line Plasma Cutter

The hot band coils produced at the hot rolling mill must be sampled for quality assurance/quality control validation. EP 02-06 is installed in a new inspection line building located adjacent to the coil yard. The inspection line plasma cutter will make approximately 96 cuts per 24-hour shift. This plasma cutter is equipped with a built in RoboVent air filtration unit that will exhaust within the new Inspection Line building. EP 02-07 is installed within the Rolling Mill Building in order to cut samples of product for inspection and quality assurance testing. The plasma torch cutting is equipped with down draft burn table to capture fume generated during the cutting process and is vented to a dust collector for PM control. The dust collector will discharge within the building with a final egress point to atmosphere through the building roof monovent.

Maximum Capacity: 500 ton/hr each; 3,500,000 ton/yr each
Control Device: EP 02-06 Baghouse & EP 02-07 Baghouse

Applicable Regulation:
401 KAR 51:017, *Prevention of significant deterioration of air quality*
401 KAR 59:010, *New process operations*

State-Origin Requirements:
401 KAR 63:020, *Potentially hazardous matter or toxic substances*

Comments:
Emissions are calculated using factors from AP-42, Section 12.5.1, Section 1.4, MSDS information, test data from Nucor Berkeley, Volatized Lubricant Emissions from Steel Rolling Operations by Mackus and Joshi, 1980, data from the Swedish Institute of Production Engineering Research (SIPER). As a result of revisions to the final design of the heat zones associated with each tunnel furnace section, A-Line Tunnel Furnace (EP 02-01), B-Line Tunnel Furnace (EP 02-02) and Heated Transfer Table Furnace (EP 02-03) rated capacity changed. The total maximum heat capacity for the three furnaces is decreasing from 335 MMBtu/hr to 310 MMBtu/hr.

Group 3: EU 03 – Cooling Towers – 0T1

Pollutant	Emission Limit or Standard		Regulatory Basis for Emission Limit or Standard	Emission Factor Used and Basis	Compliance Method
Opacity	20%		401 KAR 59:010, Section 3(1)(a)	N/A	Weekly Qualitative Monitoring, Recordkeeping
PM	• P<0.5; E = 2.34 • P≤30; E=$3.59P^{0.62}$ • P>30; E= $17.3P^{0.16}$		401 KAR 59:010, Section 3(2)	All PM EFs based on TDS & total drift	Assumed when complying with BACT.
PM	EP 03-02	3.75 lb/hr	401 KAR 51:017	1.111 lb/MMgal; TDS = 1309 ppm; Drift = 0.01%	Operating Limits, Monitoring, Recordkeeping
	EP 03-03	0.81 lb/hr		0.087lb/MMgal; TDS = 1050 ppm; Drift = 0.01%	
	EP 03-09	0.27 lb/hr; 1.18 ton/yr		0.144 lb/MMgal; TDS = 1729 ppm; Drift = 0.001%	
	EP 03-10	0.17 lb/hr; 0.75 ton/yr		0.125 lb/MMgal; TDS = 1309 ppm; Drift = 0.001%	

Group 3: EU 03 – Cooling Towers – 0T1					
	EP 03-11	0.39 lb/hr; 1.71 ton/yr		0.114 lb/MMgal; TDS = 1365 ppm; Drift = 0.001%	
	EP 03-13	0.08 lb/hr; 0.37 ton/yr		0.152 lb/MMgal; TDS = 1125 ppm; Drift = 0.001%	
	EP 03-14	0.06 lb/hr; 0.27 ton/yr		0.246 lb/MMgal; TDS = 1309 ppm; Drift = 0.001%	
PM_{10}	EP 03-09	0.19 lb/hr; 0.87 ton/yr	401 KAR 51:017	68.81 % of PM; Reisman-Frisbie	Operating Limits, Monitoring, Recordkeeping
	EP 03-10	0.14 lb/hr; 0.60 ton/yr		79.71 % of PM; Reisman-Frisbie	
	EP 03-11	0.29 lb/hr; 1.27 ton/yr		74.68 % of PM; Reisman-Frisbie	
	EP 03-13	0.07 lb/hr; 0.32 ton/yr		74.68 % of PM; Reisman-Frisbie	
	EP 03-14	0.05 lb/hr; 0.21 ton/yr		74.68 % of PM; Reisman-Frisbie	
$PM_{2.5}$	EP 03-09	0.0006 lb/hr; 0.0026 ton/yr	401 KAR 51:017	0.22 % of PM; Reisman-Frisbie	Operating Limits, Monitoring, Recordkeeping
	EP 03-10	0.0004 lb/hr; 0.0017 ton/yr		0.23 % of PM; Reisman-Frisbie	
	EP 03-11	0.0008 lb/hr; 0.0030 ton/yr		0.22 % of PM; Reisman-Frisbie	
	EP 03-13	0.0002 lb/hr; 0.0008 ton/yr		0.22 % of PM; Reisman-Frisbie	
	EP 03-14	0.0001 lb/hr; 0.0006 ton/yr		0.22 % of PM; Reisman-Frisbie	

Initial Construction Dates:
EP 03-01 thru EP 03-03 (1995); EP 03-04 (2005); EP 03-06 (2001); EP 03-08 (2017); EP 03-09 thru EP 03-11 (2020), EP 03-13 & EP 03-14 (2020)

Process Description:
EU 03 - Cooling Towers:
Cooling tower systems are used to provide the required cooling capacity for the facility's direct cooling water (DCW) and indirect cooling water (ICW) systems. The following two (2) cooling towers will be physically removed upon construction of the replacement units.

EP 03-01 – Cooling Tower #1 (1 Cell)
Maximum Capacity: 12,000 gal/min

EP 03-06 – Support Cooling Tower
Maximum Capacity: 9,533 gal/min

Note: Emission Point 01 (EP 03-01) Cooling Tower #1 (Laminar), Emission Point 06 (EP 03-06) Support Cooling Tower, may be operated according to the alternative operating scenarios in Section H of Permit V-20-15 until EP 03-09 Laminar Cooling Tower Cells is constructed and operating.

Group 3: EU 03 – Cooling Towers – 0T1

The cooling tower systems include the following:

EP 03-02 – Cooling Tower #2 (2 Cell)
A 2-cell cooling tower to support cooling water demand for the melt shop processes.
Maximum Capacity: 56,000 gal/min
Control Device: Mist Eliminator, 0.01% drift loss

EP 03-03 – Cooling Tower #3 (indirect) (3 Cell)
A 3-cell cooling cell cooling tower to provide cooling water demand for the melt shop processes
Maximum Capacity: 154,684 gal/min
Control Device: Mist Eliminator, 0.01% drift loss

EP 03-04 – Cooling Tower #4 (indirect) (5 Cell)
A 5-cell cooling tower to support cooling water demand for the melt shop processes
Maximum Capacity: 12,000 gal/min
Control Device: Mist Eliminator, 0.001% drift loss

EP 03-08 – PGL Cooling Tower (6 Cell)
A 6-cell cooling tower for the ACC cooling water system in the PGL Line.
Maximum Capacity: 8,000 gal/min
Control Device: Mist Eliminator, 0.001% drift loss

EP 03-09 – Laminar Cooling Tower Hot Mill Cells (2 Cells)
A 2-cell cooling tower to support the support the additional cooling water demand for the hot rolling mill.
Maximum Capacity: 35,000 gal/min
Control Device: Mist Eliminator, 0.001% drift loss

EP 03-10 – Direct Cooling Tower-Caster & Roughing Mill Cells (7 Cells)
A 7-cell cooling tower to support the additional direct cooling water demand for the new caster and new roughing mill.
Maximum Capacity: 26,300 gal/min
Control Device: Mist Eliminator, 0.001% drift loss

EP 03-11 – Melt Shop #2 Cooling Tower (indirect) (3 Cells)
A 3-cell cooling tower to support the cooling water demand from the new Melt Shop 2.
Maximum Capacity: 59,500 gal/min
Control Device: Mist Eliminator, 0.001% drift loss

EP 03-13 – Air Separation Plant Cooling Tower (3 Cells)
A 3-cell cooling tower to support the cooling water demand from the Air Separation Plant.
Maximum Capacity: 15,000 gal/min
Control Device: Mist Eliminator, 0.001% drift loss

EP 03-14 – DCW Auxiliary Cooling Tower (2 Cells)
A 2-cell cooling tower to support auxiliary cells to support Cooling Tower #2 (EP 03-02)..
Maximum Capacity: 9,250 gal/min
Control Device: Mist Eliminator, 0.001% drift loss

Group 3: EU 03 – Cooling Towers – 0T1

Applicable Regulations:

401 KAR 51:017, *Prevention of significant deterioration of air quality*, applies to EP 03-02, 03-03, 03-09, 03-10, 03-11, 03-13, and 03-14

401 KAR 59:010, *New process operations*

Precluded Regulations:

401 KAR 63:002, Section 2(4)(j), 40 C.F.R. 63.400 to 63.407, Table 1 (Subpart Q), *National Emission Standards for Hazardous Air Pollutants for Industrial Process Cooling Towers*, precluded by prohibiting the use of chromium-based water treatment chemicals in the cooling towers.

Comments:

All cooling towers are equipped with mist eliminators designed to minimize drift losses and emission calculations are based on a technical paper about calculating particulates from cooling towers by Reisman and Frisbie. (*"Calculating Realistic PM_{10} Emissions From Cooling Towers."* Reisman-Frisbie. Environmental Progress 21 (July 2002)).

Note: NSG requested an adjustment to the Total Dissolved Solids (TDS) limits for Direct Contact Water (DCW) System cooling tower (EP 03-02 and EP 03-10). These cooling towers share the same water from the same cooling system with EP 03-14, therefore, NSG requested a single lower TDS limit of 1309 ppm for these units. The proposed change would decrease the BACT emission limit due to decreasing the TDS limit for EP 03-10, since these emissions are function of the drift rate, circulating water flow rate of the cooling tower and the TDS in the circulating water. However, these units have not been modified as part of the current PSD project.

Group 4: EU 04 - Existing Roads – 0RP

Initial Construction/Modification Dates: 7/1975; Modified 2022

Process Description:

Emission Unit 04 (EU 04) – Existing Roads:

EP 04-05 – Unpaved Roadways

EP 04-06 – Paved Roadways

Various paved and unpaved roads within the PSD-prescribed source boundary.

Unpaved Roads for transporting material between the melt shop and slag processing.

Maximum Capacity:

For EP 04-05: 24.07 VMT/day; 210,853 VMT/yr

For EP 04-06: 53.32 VMT/day; 467,083 VMT/yr

Controls: Wetting/Sweeping (90%)

Applicable Regulations:

401 KAR 51:017, *Prevention of significant deterioration of air quality*, applies to EP 04-05 & 04-06

401 KAR 63:010, *Fugitive emissions*

Comments:

Potential emissions for the roads were calculated using AP-42, Section 13.2.1. 5.01 miles paved, and 2.34 miles unpaved roadway. Control efficiency of 90% is based on EPA document: Control of Open Fugitive Dust Sources, published September 1988.

Note: EP 04-01 Paved Roads, EP 04-02 Unpaved Roads, EP 04-03 Paved Roads Segment #24 & #25, EP 04-04 Satellite Coil Yard (paved), & EP 19-01 Unpaved Roadways were removed from permit and have

Group 4: EU 04 - Existing Roads – 0RP

been consolidated into a single paved (EP 04-06) and unpaved roadways (EP 04-05).

Group 5: EU 05 - Barge Terminal – 0BL, & EU 06 - LMF Alloy Handling & Storage – 0P1

Initial Construction/Modification Dates: EP 05-01 thru EP 05-05 (7/1975; 4/1986), EP 06-01 (4/1993)

Emission Unit 05 (EU 05) – Barge Terminal – 0BL:

EP 05–01 – Barge loading

The barge terminal will be used to load coal, coke, silicon, gypsum, bark mulch, slag, steel coils will be unloaded from the barge via a clamshell or magnetic crane located on the dock and loaded into Euclid trucks for transport to scrap stockpiles.

Maximum Capacity: 2000 ton/hr; 3,500,000 ton/yr

Controls: Dust Suppression

EP 05–02 – Barge unloading

Steel scrap, coke, bark mulch, silicon metal, coal, alloys, scrap substitutes will be unloaded to trucks at the port.

Maximum Capacity: 600 ton/hr; 2,764,840 ton/yr

Controls: Dust Suppression

EP 05–03 – River and Plant Scrap Yard Stockpile Unloading,
EP 05–04 – River and Plant Scrap Yard Stockpile Loading, &
EP 05–05 – River and Plant Scrap Yard Stockpiles

Trucks delivering scrap to river\plant scrap yard stockpiles. Potential emissions from scrap unloading to stockpiles from on-site Euclid trucks or off-site transport trucks, as well as from loading the scrap trucks from the stockpiles are included in the stockpile loading and unloading emission point.

Maximum Capacity:

EP 05-03: 250 ton/hr; 2,161,105 ton/yr

EP 05-04: 600 ton/hr; 2,161,105 ton/yr

EP 05-05: 600 ton/hr; 2,161,105 ton/yr

Controls: Dust Suppression

Emission Unit 06 (EU 06) – LMF Alloy Handling & Storage – 0P1:

EP 06-01 – Alloy Storage Piles

LMF alloy storage pile, 3-sided containment and loading system to provide alloys to the existing Melt Shop #1 LMF.

Maximum Capacity: 8 tons/hr; 70,000 tons/yr

Controls: 3-sided containment

Applicable Regulations:

401 KAR 51:017, *Prevention of significant deterioration of air quality*

401 KAR 63:010, *Fugitive emissions,* applies to each apparatus, operation, or road which emits or could emit fugitive emissions not elsewhere subject to an opacity standard within 401 KAR Chapter 50 through 68.

Comments:

Potential emissions from the slag piles include material transfer onto the piles and loading material from the piles into trucks, as well as potential emissions from wind erosion. Calculation of these emissions were

Group 5: EU 05 - Barge Terminal – 0BL, & EU 06 - LMF Alloy Handling & Storage – 0P1

completed based on AP-42 emission calculation methodologies for Aggregate Handling and Storage Piles (Section 13.2.4), AP-42, Table 12.5-4, and Industrial Wind Erosion (Section 13.2.5).

Group 7: EU 07 – Parts Cleaning Tanks - 0D1, & EU 19 - Slag Processing

Initial Construction Dates: EU 07 (1995), & EP 19-06 (2001)

Process Description:

Cleaning tanks equipped with a cover, drainage facility and using Crystal Clean 142 Mineral Spirits, which has a vapor pressure of less than 1 mm Hg at 100°F.

Emission Unit 07 (EU 07) – Parts Cleaning Tanks – 0D1

Fourteen (14) parts cleaning tanks
Parts Washer Capacity: 80 Gal
Control Device: None

Emission Unit 19 (EU 19) – Slag Processing

EP 19-06 – Slag Processing Part Cleaner (former IA-49)
Agitation unit
Parts Washer Capacity: 80 Gal
Control Device: None

Applicable Regulations:

401 KAR 59:185, *New solvent metal cleaning equipment,* applies, except for Section 4(3) and (4), to each cold cleaner commenced on or after June 29, 1979 that is part of a major source located in a county or portion of a county designated attainment or marginal nonattainment for ozone in 401 KAR 51:010.

Comments:

Emissions calculated using information provided in the MSDS for the solvent, Crystal Clean 142 Mineral Spirits. No HAP or TAP was identified in the MSDS.

Group 8: EU 08 – Emergency Generators > 500 HP - 0EG1

Initial Construction Date: 1997

Process Description:

Emission Unit 08 (EU 08) – Emergency Generators > 500 HP – 0EG1:

EP 08-01 – Caster A Melt Shop #1 Emergency Generator
Model: Cummins DTA50-G2
Maximum Rating: 1341 HP
Construction Commenced: 1997
Primary Fuel: Diesel
Hours of Operation: 60 hours/yr

Applicable Regulations:

401 KAR 51:017, *Prevention of significant deterioration of air quality*

Group 8: EU 08 – Emergency Generators > 500 HP - 0EG1

401 KAR 63:002, Section 2(4)(eeee), 40 C.F.R. 63.6580 to 63.6675, Tables 1a to 8, and Appendix A (Subpart ZZZZ), *National Emissions Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines*

Non-Applicable Regulations:

401 KAR 60:005, Section 2(2)(dddd), 40 C.F.R. 60.4200 to 60.4219, Tables 1 to 8 (Subpart IIII), *Standards of Performance for Stationary Compression Ignition (CI) Internal Combustion Engines* (Note: This regulation will become applicable should any of the emission points listed under EU08 be modified or reconstructed in the future as defined under the Federal Regulation)

Comments:

Emissions calculated using AP-42, Section 3.2. Hours of non-emergency operation are limited to 60 hours per year by a previous PSD permitting action.

Group 9: EU 08 – Emergency Generators > 500 HP - 0EG1, & EU 09 - Emergency Generators < 500 HP

Pollutant	Emission Limit or Standard		Regulatory Basis for Emission Limit or Standard	Emission Factor Used and Basis	Compliance Method
NMHC + NO_x	EPs 09-06	3.0 g/HP-hr	40 CFR 60.4205; 401 KAR 51:017	40 CFR 89.112, Table 1	Certified Engine, Monitoring, Recordkeeping, Reporting, GCOP Plan
	EPs 08-05, 08-07, 08-08	4.8 g/HP-hr			
PM, PM_{10}, $PM_{2.5}$	EPs 08-05, 08-07, 08-08, 09-06	0.15 g/HP-hr	40 CFR 60.4205; 401 KAR 51:017	40 CFR 89.112, Table 1	
CO	EPs 08-05, 08-07, 08-08, 09-06	2.6 g/HP-hr	40 CFR 60.4205; 401 KAR 51:017	40 CFR 89.112, Table 1	

Process Description:

Diesel emergency generators and a fire water pump used to provide emergency power/fire water supply for critical operations should the facility power supply be interrupted. These generators have a displacement of less than 30 liters per cylinder.

Emission Point #	Unit Name	Maximum Rated Capacity	Fuel Used	Control Device	Construction Commenced
Emission Unit 08 (EU 08) – Emergency Generators > 500 HP – 0EG1					
08-03	PGL Emergency Generator	1676 HP	Diesel	None	2017
08-04	Original Pumphouse (XB11) Emergency Generator	2922 HP	Diesel	None	2017
08-05	New Pumphouse (XB13) Emergency Generator #1	2922 HP	Diesel	None	2021
08-07	Caster B Emergency Generator	2937 HP	Diesel	None	2024
08-08	Air Separation Unit Emergency Generator	700 HP	Diesel	None	2019
Emission Unit 09 (EU 09) – Emergency Generators < 500 HP					
09-06	New Emergency Fire Pump #2	305 HP	Diesel	None	2020
09-07	Radio Tower Emergency Generator	36 HP	Diesel	None	2020

Group 9: EU 08 – Emergency Generators > 500 HP - 0EG1, & EU 09 - Emergency Generators < 500 HP

09-08	Scalehouse Emergency Generator	80 HP	Diesel	None	2022
09-09	Truck Staging Emergency Generator	32 HP	Diesel	None	2022

Applicable Regulations:

401 KAR 51:017, *Prevention of significant deterioration of air quality,* applies to EPs 08-05, , 08-07, 08-08.

401 KAR 60:005, Section 2(2)(dddd), **40 C.F.R. 60.4200 to 60.4219, Tables 1 to 8 (Subpart IIII)**, *Standards of Performance for Stationary Compression Ignition Internal Combustion Engines*

401 KAR 63:002, Section 2(4)(eeee), 40 C.F.R. 63.6580 to 63.6675, Tables 1a to 8, and Appendix A (Subpart ZZZZ), *National Emissions Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines*

Comments:

The emergency engines may be operated for a maximum of 100 hours per calendar year for the purposes of maintenance checks and readiness testing in accordance with 40 CFR 60, Subpart IIII. However, because these regulations do not limit the number of hours the emergency generators may operate during an emergency, annual emissions calculations are based on 500 hours per year of operation. Emissions based on AP-42, Section 3.4, 40 CFR 98, Subpart A, Table A-1, 40 CFR 98, Subpart C, C-2, and emission standards from 40 CFR 60, Subpart IIII.

Group 10: EU 09 – Emergency Generators < 500 HP

Initial Construction Dates: EP 09-01 (1995) & EP 09-03 (1997)

Process Description:

Emission Unit 09 (EU 09) – Emergency Generators < 500 HP:

EP 09-01 – Emergency Fire Pump #1 (300 HP)
Model: Clark Detroit
Fuel: Diesel
Maximum Rating: 300 HP
Control Device: None

EP 09-03 – Make-up Water Pump #1 (166 HP)
Model: John Deere
Fuel: Diesel
Maximum Rating: 166 HP
Control Device: None

Applicable Regulations:

401 KAR 63:002, Section 2(4)(eeee), 40 C.F.R. 63.6580 to 63.6675, Tables 1a to 8, and Appendix A (Subpart ZZZZ), *National Emissions Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines*

Non-Applicable Regulations:

401 KAR 60:005, Section 2(2)(dddd), 40 C.F.R. 60.4200 to 60.4219, Tables 1 to 8 (Subpart IIII), *Standards of Performance for Stationary Compression Ignition (CI) Internal Combustion Engines* (Note: This regulation will become applicable should any of the emission points listed under EU08 be modified

Group 10: EU 09 – Emergency Generators < 500 HP

or reconstructed in the future as defined under the Federal Regulation)

Comments:
Emissions calculated using AP-42, Section 3.2 and an assumption of 500 hrs/yr to be conservative and account for emergency operation.

Group 11: EU 06 - LMF Alloy Handling & Storage – 0P1, EU 10 - Miscellaneous Dust Sources – 0B1 and 0S1, & EU 11 - Flux (Lime) Handling System

Pollutant	Emission Limit or Standard		Regulatory Basis for Emission Limit or Standard	Emission Factor Used and Basis	Compliance Method
Opacity	EPs 06-04, 10-01, 11-02, 11-03, 11-04 & 11-11	20%	401 KAR 59:010, Section 3(1)(a)	N/A	Weekly Qualitative Monitoring, Recordkeeping
PM	• P<0.5; E = 2.34 • P≤30; E=$3.59P^{0.62}$ • P>30; E = $17.3P^{0.16}$		401 KAR 59:010, Section 3(2)	EP 06-04: refer to the PM BACT Limits Below	Assumed when complying with BACT
				EPs 10-01, 11-02, 11-03, 11-04 & 11-11, 0.01 gr/dscf filter rating	Assumed when the bin vent filters & dust collectors are installed & operated
PM	EP 06-04	0.005 gr/dscf; 3.56 lb/hr; 15.57 ton/yr	401 KAR 51:017	0.005 gr/dscf; AP-42, Section 13.2.4	Operating Limitations, Monitoring, Recordkeeping, Control Device Design
PM_{10}	EP 06-04	0.005 gr/dscf; 3.56 lb/hr; 15.57 ton/yr	401 KAR 51:017	0.005 gr/dscf; AP-42, Section 13.2.4	Operating Limitations, Monitoring, Recordkeeping, Control Device Design
$PM_{2.5}$	EP 06-04	0.005 gr/dscf; 3.56 lb/hr; 15.57 ton/yr	401 KAR 51:017	0.005 gr/dscf; AP-42, Section 13.2.4	Operating Limitations, Monitoring, Recordkeeping, Control Device Design

Initial Construction Dates: EPs 10-01, 11-02, 11-03, 11-04 (1993); EP 11-11 (1997); EP 06-04 (2021)

Process Description:
Emission Unit 06 (EU 06) – LMF Alloy Handling & Storage – 0P1
EP 06-04 – Melt Shop #2 Lime & Alloy System
A baghouse controls emissions for all the drop points and silos/bins contained within the entire Melt Shop #2 Lime and Alloy System.
Maximum Capacity: 20 ton/hr; 140,000 ton/yr
Control Device: Baghouse

Emission Unit 10 (EU 10) – Miscellaneous Dust Sources– 0B1 and 0S1
EP 10–01 – Rail & Truck Unloading Station (for Melt Shop #1, formerly 0B1)
Scrap unloading station.

Group 11: EU 06 - LMF Alloy Handling & Storage – 0P1, EU 10 - Miscellaneous Dust Sources – 0B1 and 0S1, & EU 11 - Flux (Lime) Handling System

Maximum Capacity: 20 ton/hr; 70,000 ton/yr
Control Device: Dust Collector

Emission Unit 11 (EU 11) – Flux (Lime) Handling System
EP 11-02 – Lime Silo #1 (formerly EP 10-02),
EP 11-03 – Lime Silos #2 & #3 (formerly EP 1003), &
EP 11-04 – Lime Silo #4 (formerly EP 10-04)
The lime storage silos have the capability of being loaded pneumatically directly from a truck. The lime silos are equipped with 900-scfm bin vents to control PM emissions during silo loading.
Maximum Capacity: 20 ton/hr, each; 17,500 ton/yr, each
Control Device: Bin Vent Filter

EP 11–11 – Flux Handling System (includes two (2) screw augers, a vertical belt conveyor for Melt Shop #1, formerly EU 11)
The Lime Handling System includes a dump station and enclosed conveyor system that transfers lime to the four lime storage silos. PM emissions from the lime dump station are captured by a partially enclosed building and a 2,000-scfm dust collector. Lime from this dump station is transferred to the silos using an enclosed conveyor system. Transfer points located along the conveyor belt are enclosed and equipped with dust capture points tied to the system dust collector for PM control.
Maximum Capacity: 20 ton/hr; 70,000 ton/yr
Control Device: Dust Collector

Applicable Regulations:
401 KAR 51:017, *Prevention of significant deterioration of air quality*
401 KAR 59:010, *New process operations,* applies to each affected facility or source, associated with a process operation, which is not subject to another emission standard with respect to particulates in 401 KAR 59, commenced on or after July 2, 1975.
401 KAR 63:010, *Fugitive emissions,* applies to each apparatus, operation, or road which emits or could emit fugitive emissions not elsewhere subject to an opacity standard within 401 KAR Chapter 50 through 68.

Comments:
For most EPs listed above, emissions were calculated using the grain loading value for the required control device. For uncaptured or otherwise uncontrolled emissions, emissions were calculated using AP-42, Section 13.2.4 and AP-42, Table 12.5-4

Group 12: EU 12 – Carbon Handling System (formerly Recycling & Coal Drying) – 0RC

Pollutant	Emission Limit or Standard		Regulatory Basis for Emission Limit or Standard	Emission Factor Used and Basis	Compliance Method
PM	• P<0.5; E = 2.34 • P≤30; E=3.59$P^{0.62}$ • P>30; E = 17.3$P^{0.16}$		401 KAR 59:010, Section 3(2)	For EP 12-51 & EP 12-52: 0.01 gr/dscf; For EP 12-53: Refer to the PM BACT Limits Below	For EP 12-53, Assumed when complying with BACT; For EP 12-51 & EP 12-52, Monthly calculations; monitoring; recordkeeping
PM	EP 12-53	0.005 gr/dscf; 0.0643 lb/hr;	401 KAR 51:017	0.005 gr/dscf;	Monitoring, Recordkeeping, Control Device Design
PM_{10}	EP 12-53				

Group 12: EU 12 – Carbon Handling System (formerly Recycling & Coal Drying) – 0RC					
$PM_{2.5}$	EP 12-53	0.045 ton/yr			
Opacity	20% opacity		401 KAR 59:010, Section 3(1)(a)	N/A	Weekly Qualitative Monitoring, Recordkeeping, Reporting

Initial Construction Dates: EP 12-51 & EP 12-52 (1993); EP 12-53 (2020)

Process Description:
Emission Unit 12 (EU 12) – Carbon Handling System (formerly Recycling & Coal Drying) – 0RC
EP 12-51 – Carbon Silo #1(formerly EP 10-07A), and EP 12-52 – Carbon Silo #2(formerly EP 10-07C)
The carbon storage silos has the capability of being loaded pneumatically directly from a truck. The carbon silo #1 is equipped with a 1500-scfm bin vent and carbon silo #2 is equipped with a 650-scfm bin vent to control PM emissions during silo loading.
Maximum Capacity: 25 ton/hr each; 17,500 ton/yr each
Control Device: Passive Bin Vent Filter

EP 12-53 – Carbon Silo #3
The Melt Shop #2 carbon storage silo has the capability of being loaded pneumatically directly from a truck. The carbon silo is equipped with a 1500 dscfm bin vent to control PM emissions during silo loading.
Maximum Capacity: 25 ton/hr; 35,000 ton/yr
Control Device: Passive Bin Vent Filter

Applicable Regulation:
401 KAR 51:017, *Prevention of significant deterioration of air quality*, applies to EP 12-51, 12-52, and 12-53.
401 KAR 59:010, *New process operations*, applies to each affected facility or source, associated with a process operation, which is not subject to another emission standard with respect to particulates in 401 KAR 59, commenced on or after July 2, 1975.
401 KAR 63:010, *Fugitive emissions*, applies to each apparatus, operation, or road which emits or may emit fugitive emissions provided that the fugitive emissions from such facility are not elsewhere subject to an opacity standard within the administrative regulations of the Division for Air Quality.

Comments:
For most EPs listed above, emissions were calculated using the grain loading value for the required control device. For uncaptured or otherwise uncontrolled emissions, emissions were calculated using AP-42, Section 11.19.2-2

Group 13: EU 02 - Hot Rolling Mill, EU 13 - Direct Reduced Iron (DRI) Handling System, & EU 19 - Slag Processing				
Pollutant	**Emission Limit or Standard**	**Regulatory Basis for Emission Limit or Standard**	**Emission Factor Used and Basis**	**Compliance Method**
Opacity	20%	401 KAR 59:010, Section 3(1)(a)	N/A	Weekly Qualitative Monitoring, Recordkeeping
PM	• P<0.5; E = 2.34 • P≤30; $E=3.59P^{0.62}$	401 KAR 59:010, Section 3(2)	For EP 13-11, Refer to the PM BACT Limits Below	Assumed when complying with BACT.

Group 13: EU 02 - Hot Rolling Mill, EU 13 - Direct Reduced Iron (DRI) Handling System, & EU 19 - Slag Processing					
	• P>30; $E = 17.3P^{0.16}$			EP 02-08, 0.00634 lb/lb Welding Reference; EPs 13-01 thru 13-10 AP-42, Section 13.2.4 and/or 0.001 gr/dscf	For EP 02-08: assumed with baghouse; For EPs 13-01 thru 13-10: monthly calculations; monitoring, recordkeeping
PM	EP 13-11	0.001 gr/dscf; 0.02 lb/hr; 0.09 ton/yr	401 KAR 51:017	0.001 gr/dscf Vendor Spec	Operating Limitations, Monitoring, Recordkeeping, Control Device Design
	EP 19-02	2.07 ton/yr		AP-42, Section 13.2.4 and 13.2.5	
	EP 19-03	0.90 lb/hr; 3.94 ton/yr		AP-42, Section 11.19.2-2	
PM_{10}	EP 13-11	0.001 gr/dscf; 0.02 lb/hr; 0.09 ton/yr	401 KAR 51:017	0.001 gr/dscf Vendor Spec	Operating Limitations, Monitoring, Recordkeeping, Control Device Design
	EP 19-02	0.98 ton/yr		AP-42, Section 13.2.4 and 13.2.5	
	EP 19-03	0.38 lb/hr; 1.66 ton/yr		AP-42, Section 11.19.2-2	
$PM_{2.5}$	EP 13-11	0.001 gr/dscf; 0.02 lb/hr; 0.09 ton/yr	401 KAR 51:017	0.001 gr/dscf Vendor Spec	Operating Limitations, Monitoring, Recordkeeping, Control Device Design
	EP 19-02	0.17 ton/yr		AP-42, Section 13.2.4 and 13.2.5	
	EP 19-03	0.22 lb/hr; 0.96 ton/yr		AP-42, Section 11.19.2-2	

Initial Construction Dates: EP 02-08 & EP 13-11 (2020); EPs 13-01 through 13-10 (2015); EPs 19-02 through 19-04 (2016; Modified 2022); EP 13-12 & EP 13-13 (2015; Modified 2024)

Process Description:

Emission Unit 02 (EU 02) – Hot Rolling Mill

EP 02-08 – Material Handling Coil Torch Cutting

The plasma torch cutting employs a dedicated hood system that is designed to capture emissions from the coil cutting operation. The hood is designed to be lowered over the coil during coil cutting operation, such that the top 3rd of the coil is directly covered by the hood. Once coil has been cut the hood can be lifted off for scrap collection. The hood is connected to a 4,500 cfm pulse-jet baghouse for PM control.
Maximum Capacity: 60 ton/hr; 420,000 ton/yr
Control Device: Baghouse

Emission Unit 13 (EU 13) – Direct Reduced Iron (DRI) Handling System

EP 13-01 – Unloading Dock

DRI will be delivered to NSG by barge for use as iron feedstock. The DRI will be unloaded from the barge via a clamshell crane located on the dock and transferred to a receiving hopper. The hopper will be equipped with side ventilation to capture potential PM emissions for control by dust collectors.
Maximum Capacity: 500 ton/hr; 1,322,760 ton/yr
Control Device: Dust Collection System

Group 13: EU 02 - Hot Rolling Mill, EU 13 - Direct Reduced Iron (DRI) Handling System, & EU 19 - Slag Processing

EP 13-02 – DRI Storage Silo #1, EP 13-03 – DRI Storage Silo #2, and EP 13-04 – DRI Storage Silo #3
From the bottom of the hopper, the DRI will be conveyed to two main storage silos that provide sufficient storage capacity to minimize the period of time the barge must remain at the dock. The DRI storage silos are equipped with bin vents to control potential PM emissions generated during the filling process.
Maximum Capacity: 500 ton/hr each; 1,322,760 ton/yr each
Control Device: Passive Bin Vent Filter

EP 13-05 – DRI Storage Silo Loadout
The DRI is conveyed from the bottom of the silos and dropped into a 4-sided container.
Maximum Capacity: 500 ton/hr; 1,322,760 ton/yr
Control Device: None

EP 13–06 – DRI Day Bin #1 & EP 13–07 – DRI Day Bin #2
The DRI is conveyed from the bottom of the silos to a Day Bins located near the melt shop. The Day Bins share a bin vent to control potential PM emissions generated during the filling process.
Maximum Capacity: 500 ton/hr each; 1,322,760 ton/yr each
Control Device: Bin Vent Filter

EP 13–08 – DRI Transfer Conveyor #4 & #7 & EP 13–09 – DRI Transfer Conveyor #5 & #8
From the Day Bin, the DRI is transferred to the melt shop via conveyors where it is added to the EAF charge through the roof of the EAF. Bin vent filters are used at each conveyor transfer point to provide PM control.
Maximum Capacity: 500 ton/hr each; 1,322,760 ton/yr each
Control Device: Bin Vent Filters (4)

EP 13-10 – DRI Rail Loading
From the Storage silo, the DRI is transferred/dropped via conveyors into a railcar (4-sided container). NSG may use all DRI unloaded at the facility, however, NSG can use rail loading operations that would allow the facility to distribute an annual maximum of 600,000 metric tons to Nucor Steel Indiana.
Maximum Capacity: 500 ton/hr; 661,380 ton/yr
Control Device: None

EP 13-11 – DRI Handling System for Melt Shop #2
The DRI Handling System includes enclosed conveyor system that transfers DRI from the existing DRI Day Bins directly into a feed hopper located inside Melt Shop #2. Two powered bin vents (1,200-scfm) will control emissions at conveyor transfer points.
Maximum Capacity: 500 ton/hr; 1,322,760 ton/yr
Control Device: Bin Vent Filters (2)

EP 13-12 – DRI Conveyor #1a & EP 13-13– DRI Conveyor #6
The DRI Handling System includes enclosed conveyor system that transfers DRI. New powered bin vents (1,200-scfm) will control emissions at conveyor transfer points.
Maximum Capacity: 500 ton/hr; 1,322,760 ton/yr
Control Device: Bin Vent Filter (two)

Group 13: EU 02 - Hot Rolling Mill, EU 13 - Direct Reduced Iron (DRI) Handling System, & EU 19 - Slag Processing

Emission Unit 19 (EU 19) – Slag Processing:
EP 19-02 – Slag Processing Piles
Slag processing piles are required to temporarily store in process material and final size-specific products prior to transport off site.
Maximum Capacity: 59.93 tons/hr; 525,000 tons/yr
Controls: Dust Suppression/Wetting

EP 19-03 – Slag Processing Equipment
Slag processing equipment will be required to handle, quench, crush, and screen the slag that is generated as part of the molten steel production in the melt shop.
Maximum Capacity: 400 tons/hr; 575,000 tons/yr
Control Device: Dust Suppression/Wetting

EP 19-04 – Scrap Cutting
Slag cutting activities are conducted as needed. The captured emissions generated are vented to the Mobile Baghouse.
Maximum Capacity: 60 tons/hr; 420,000 tons/yr
Control Device: Baghouse

Applicable Regulations:
401 KAR 51:017, *Prevention of significant deterioration of air quality*, applies to EP 13-11, 19-02, and 19-03.
401 KAR 59:010, *New process operations*, applies to each affected facility or source, associated with a process operation, which is not subject to another emission standard with respect to particulates in 401 KAR 59, commenced on or after July 2, 1975.
401 KAR 63:010, *Fugitive emissions*, applies to each apparatus, operation, or road which emits or may emit fugitive emissions provided that the fugitive emissions from such facility are not elsewhere subject to an opacity standard within the administrative regulations of the Division for Air Quality.

State-Origin Requirements:
401 KAR 63:020, *Potentially hazardous matter or toxic substances*

Precluded Regulations:
401 KAR 51:017, *Prevention of significant deterioration of air quality*, for EP 13-01 through 13-10, and 19-04.
Comments:
For most EPs listed above, emissions were calculated using the grain loading value for the required control device. For uncaptured or otherwise uncontrolled emissions, emissions were calculated using AP-42, Section 13.2.4, AP-42 1.4, and AP-42, Table 12.5-4, the MSDS for DRI, and DRI particle size distribution from Nucor Steel Louisiana on 5/12/14.

Group 14: EU 15 – Pickle Galv Line (PGL)				
Pollutant	**Emission Limit or Standard**	**Regulatory Basis for Emission Limit or Standard**	**Emission Factor Used and Basis**	**Compliance Method**

Group 14: EU 15 – Pickle Galv Line (PGL)					
Opacity	20%		401 KAR 59:010, Section 3(1)(a)	N/A	Weekly Qualitative Monitoring, Recordkeeping
PM	• P<0.5; E = 2.34 • P≤30; E = $3.59P^{0.62}$ • P>30;E = $17.3P^{0.16}$		401 KAR 59:010, Section 3(2)	Based on comparable Nucor Facility stack test	Assumed based on PTE and CAM compliance
HCl	EP 15-02 EP 15-05 EP 15-06	6 ppmv; Or collection efficiency > 99%	40 CFR 63.1157(a)(1)(i) & (ii)	Vendor guarantee of 6 ppm; 0.0037 lb/ton Based on comparable Nucor Facility	Testing, Specific Control Equipment Conditions

Initial Construction Dates: EP 15-01, EP 15-02, & EP 15-05 (2017), & EP 15-06 (2018)

Process Description:

Emission Unit 15 (EU 15) – Pickle Galv Line (PGL)

EP 15-01 – PGL Scale Breaker

Hot-rolled steel coils that are pickled will first be processed through a Scale Breaker to remove mill scale prior to pickling. The Scale Breaker is equipped with a capture system to collect and transport emissions to a baghouse for particulate control.
Maximum Capacity: 300 ton/hr; 2,628,000 ton/yr
Control Device: Baghouse

EP 15-02 – PGL HCl Pickling Line

Coils will be conveyed through a series of equipment and tanks containing HCl at an elevated temperature to remove mill scale oxides from the coil surface. A mist eliminator is employed downstream of the scrubber to reduce emissions of aerosols and droplets formed by the scrubber.
Maximum Capacity: 300 ton/hr; 2,628,000 ton/yr
Control Device: Wet Scrubber #1

EP 15-05 – PGL Pickling Building Roof Monitor

Fugitive HCl fume not captured by the hood is emitted from the Pickle Line roof vents.
Maximum Capacity: 300 ton/hr; 2,628,000 ton/yr
Control Device: None

EP 15-06 – PGL Storage Tanks

The pickling tanks are equipped with hoods to capture any HCl fume generated during the process and transfer the fume to a scrubber system
Maximum Capacity: 300 ton/hr; 2,628,000 ton/yr
Control Device: ATF Wet Scrubber

Applicable Regulations:

401 KAR 59:010, *New process operations*

401 KAR 63:002, Section 2(4)(pp), 40 C.F.R. 63.1155 to 63.1166, Tables 1 (Subpart CCC), *National Emission Standards for Hazardous Air Pollutants for Steel Pickling – HCl Process Facilities and Hydrochloric Acid Regeneration Plants,* applies to steel pickling facilities that pickle carbon steel using

Group 14: EU 15 – Pickle Galv Line (PGL)
hydrochloric acid solution that contains 6 percent or more by weight HCl and is at a temperature of 100 °F or higher **40 CFR 64,** *Compliance Assurance Monitoring*, applies to EPs 15-01 and 15-02 for PM. **Comments:** For most EPs listed above, emissions were calculated using the grain loading value for the required control device. For uncaptured or otherwise uncontrolled emissions, emissions were calculated using test data from similar facility, and/or MSDS.

Group 15: EU 15 - Pickle Galv Line (PGL) & EU 23 - Air Separation Plant					
Pollutant	**Emission Limit or Standard**		**Regulatory Basis for Emission Limit or Standard**	**Emission Factor Used and Basis**	**Compliance Method**
PM	EP 15-03	0.34 lb/MMBtu	401 KAR 59:015, Section 4(1)(c)	AP-42 Chapter 1.4	Assumed based upon natural gas combustion
	EP 15-04				
	EP 23-01	0.31 lb/MMBtu			
Opacity	20% opacity		401 KAR 59:015, Section 4(2)	N/A	Assumed based upon natural gas combustion
SO_2	EP 15-03	1.2 lb/MMBtu	401 KAR 59:015, Section 5(1)	AP-42 Chapter 1.4	Assumed based upon natural gas combustion
	EP 15-04				
	EP 23-01	1.1 lb/MMBtu			
PM	EP 23-01	1.9 lbs/MMscf; 0.24 ton/yr	401 KAR 51:017	AP-42 Chapter 1.4	Operating Limits, GCOP, Monitoring, Recordkeeping, Reporting
PM_{10}	EP 23-01	7.6 lbs/MMscf; 0.95 ton/yr	401 KAR 51:017	AP-42 Chapter 1.4	Operating Limits, GCOP, Monitoring, Recordkeeping, Reporting
$PM_{2.5}$	EP 23-01	7.6 lbs/MMscf; 0.95 ton/yr	401 KAR 51:017	AP-42 Chapter 1.4	Operating Limits, GCOP, Monitoring, Recordkeeping, Reporting
Lead	EP 23-01	0.0005 lb/MMscf; 6.23×10^{-5} ton/yr	401 KAR 51:017	AP-42 Chapter 1.4	Operating Limits, GCOP, Monitoring, Recordkeeping, Reporting
CO	EP 23-01	84 lb/MMscf; 10.46 ton/yr	401 KAR 51:017	AP-42 Chapter 1.4	Operating Limits, GCOP, Monitoring, Recordkeeping, Reporting
NOx	EP 23-01	50 lb/MMscf; 6.23 ton/yr	401 KAR 51:017	AP-42 Chapter 1.4	Operating Limits, GCOP, Monitoring, Recordkeeping, Reporting
SO_2	EP 23-01	0.6 lb/MMscf; 0.075 ton/yr	401 KAR 51:017	AP-42 Chapter 1.4	Operating Limits, GCOP, Monitoring, Recordkeeping, Reporting

Group 15: EU 15 - Pickle Galv Line (PGL) & EU 23 - Air Separation Plant					
Pollutant	**Emission Limit or Standard**		**Regulatory Basis for Emission Limit or Standard**	**Emission Factor Used and Basis**	**Compliance Method**
GHG	EP 23-01	15,032 ton/yr	401 KAR 51:017	AP-42 Chapter 1.4	Operating Limits, GCOP, Monitoring, Recordkeeping, Reporting
VOC	EP 23-01	5.5 lb/MMscf; 0.68 ton/yr	401 KAR 51:017	AP-42 Chapter 1.4	Operating Limits, GCOP, Monitoring, Recordkeeping, Reporting

Process Description:
Various indirect heat exchangers.

Emission Point #	Unit Name	Burner Maximum Capacity (MMBtu/hr)	Fuel Used	Control Device	Construction Commenced
Emission Unit 15 (EU 15) – Pickle Galv Line (PGL)					
15-03	Pickling Boiler #1	25.2 MMBtu/hr	Natural Gas	None	2017
15-04	Pickling Boiler #2	25.2 MMBtu/hr	Natural Gas	None	2017
Emission Unit 23 (EU 23) – Air Separation Plant					
23-01	Air Separation Unit Water Bath Vaporizer (2 indirect burners)	14.5 MMBtu/hr, each	Natural Gas	None	2020

Applicable Regulations:
401 KAR 51:017, *Prevention of significant deterioration of air quality*, applies to EU 23
401 KAR 59:015, *New indirect heat exchangers*
401 KAR 60:005, Section 2(2)(d), 40 C.F.R. 60.40c to 60.48c (Subpart Dc), *Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units,*
401 KAR 63:002, Section 2(4)(iiii), **40 C.F.R. 63.7480 to 63.7575, Tables 1 to 13 (Subpart DDDDD)**, *National Emission Standards for Hazardous Air Pollutants for Major Sources: Industrial, Commercial, and Institutional Boilers and Process Heaters*

Comments:
Emissions calculated using AP-42, Chapter 1.4 and 40 CFR 98. Allowable emissions for the units are calculated using 401 KAR 59:015, Section 3(1) using the total rated heat input capacity of all affected facilities (**See Table 4. Indirect Heat Exchanger Summary, above**).
*On March 11, 2022 NSG requested removal of EP 20-13 and heat exchangers in Cold Mill Complex EU 21 (never built).

Group 17: EU 16 - PGL Finishing Operations				
Pollutant	**Emission Limit or Standard**	**Regulatory Basis for Emission Limit or Standard**	**Emission Factor Used and Basis**	**Compliance Method**
Opacity	20%	401 KAR 59:010, Section 3(1)(a)	N/A	Weekly Qualitative Monitoring, Recordkeeping
PM	• P<0.5; E = 2.34 • P≤30; E=$3.59P^{0.62}$ • P>30; E= $17.3P^{0.16}$	401 KAR 59:010, Section 3(2)	AP-42 Chapter 1.4	Assumed based on the PTE for the EPs.

Group 17: EU 16 - PGL Finishing Operations					
VOC	EP 16-04	0.28 kg/l	40 CFR 60.462(a)(1)	0.00838 lb/ton MSDS & AP-42 Chapter 1.4	40 CFR 60.463(c)(1)
Organic HAP	EP 16-04 EP 16-05	0.046 kg/l	40 CFR 63.5120(a)(2); 40 CFR 63.5140(a)	Assuming 50 % of VOC is organic HAP	40 CFR 63.5170

Initial Construction Dates: EP 16-04 & EP 16-05 (2017)

Process Description:
Emission Unit 16 (EU 16) – PGL Finishing Operation
EP 16-04 – Chromate Roll Coater & Dryer
Coil coating with ROH, acrylic, or chromate via roll coater and cured via a natural gas fired dryer.
Maximum Capacity: 180 ton/hr; 1,576,800 ton/yr
Burner Maximum Capacity: 9 MMBtu/hr
Control Device: None

EP 16-05 – Stenciling
Ink-jet stenciling station to apply identification marking to coils.
Maximum Capacity: 180 ton/hr; 1,576,800 ton/yr
Control Device**:** None

Applicable Regulation:
401 KAR 59:010, *New process operations***,** applies to each affected facility or source, associated with a process operation, which is not subject to another emission standard with respect to particulates in 401 KAR 59, commenced on or after July 2, 1975.
401 KAR 60:005, Section 2(2)(zz), 40 C.F.R. 60.460 to 60.466 (Subpart TT), *Standards of Performance for Metal Coil Surface Coating,* applies to prime coating operations, finish coating operations, and certain combined prime and finish coat operations at metal coil surface coating operations constructed, modified, or reconstructed after January 5, 1981.
401 KAR 63:002, Section 2(4)(xxx), 40 C.F.R. 63.5080 to 63.5200, Tables 1 to 2 (Subpart SSSS), *National Emission Standards for Hazardous Air Pollutants for Surface Coating of Metal Coil*, applies to each facility that is a major source of HAP at which a coil coating line is operated, except the application of incidental markings (including letters, numbers, or symbols) that are added to bare metal coils and that are used for only product identification or for product inventory control. The application of letters, numbers, or symbols to a coated metal coil is considered a coil coating process and part of the coil coating affected source.

Comments:
Emissions calculated using AP-42, Chapter 1.4 & MSDS.

Group 18: EP 16-06 - Pickle Galv Line Makeup Air Units

Initial Construction Date: 2017

Process Description:
Natural Gas Direct-Fired Space Heaters for the PGL and indoor coil storage area.
Maximum Heat Capacity: 37 MMBtu/hr, combined

Group 18: EP 16-06 - Pickle Galv Line Makeup Air Units

Fuel: Natural Gas
Controls: None

Applicable Regulation:
State-Origin Requirements:
401 KAR 63:020, *Potentially hazardous matter or toxic substances*

Comments:
Emissions calculated using AP-42, Chapter 1.4.

Group 19: EU 25 – Nucor Tubular Products

Initial Construction Date: June 2021

Process Description:
EP 25–01 – NTP Coolant System coolant used throughout the small and medium tube mills (non-petroleum based)
Max Capacity: 45,000 gal/yr
Control Device: None

EP 25–02 – NTP Rust Preventive, rust preventative coating applied due to weather conditions (petroleum based)
Max Capacity: 10,000 gal/yr
Control Device: None

EP 25–04 – NTP Roads
Maximum Capacity: 15.6 VMT/day
Controls: Wetting

Applicable Regulation:
401 KAR 63:010, *Fugitive emissions,* applies to each apparatus, operation, or road which emits or could emit fugitive emissions not elsewhere subject to an opacity standard within 401 KAR Chapter 50 through 68.

Comments:
Emissions for EP 25-01 and EP 25-02 calculated using information provided in the MSDS. Emissions from EP 25-04 calculated using AP-42 Section 13.2.1.

Group 20: EU 25 – Nucor Tubular Products

Pollutant		Emission Limit or Standard	Regulatory Basis for Emission Limit or Standard	Emission Factor Used and Basis	Compliance Method
NO_x	EP25-03	2.0 g/hp-hr	40 CFR 60.4233(e)	2,315.4 lb/mmscf AP-42 Table 3.2-3	Refer to Comments section
CO		4.0 g/hp-hr		3,794.4 lb/mmscf AP-42 Table 3.2-3	
VOC		1.0 g/hp-hr		30.19 lb/mmscf	

Group 20: EU 25 – Nucor Tubular Products					
				AP-42 Table 3.2-3	

Initial Construction Date: June 2021

Process Description:
EP 25–03 – Emergency engine to provide electrical power when necessary.
Equipment: Generac SG400
Specs: 636 bhp, Spark Ignition, 4SRB
Fuel Capacity: 4,620 scf/hr

Applicable Regulation:
401 KAR 60:005, Section 2(2)(eeee), 40 C.F.R. 60.4230 to 60.4248, Tables 1 to 4 (Subpart JJJJ), *Standards of Performance for Stationary Spark Ignition Internal Combustion Engines* is applicable to stationary spark ignition (SI) emergency generator engines greater than 25 hp for which construction is commenced after June 12, 2006 and which are manufactured after January 1, 2009.

401 KAR 63:002, Section 2(4)(eeee), 40 C.F.R. 63.6580 to 63.6675, Tables 1a to 8, and Appendix A (Subpart ZZZZ), *National Emission Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines*, is applicable, however, pursuant to 40 CFR 63.6590 (c) new stationary RICE located at area source may comply with requirements of Subpart ZZZZ by meeting the requirements of 40 CFR 60, Subpart JJJJ. No further requirements apply to these under 40 CFR 63.

Comments:
Compliance may be demonstrated by purchasing an engine certified according to procedures in 40 CFR 60, Subpart JJJJ and demonstrating compliance according to one of the methods specified in 40 CFR 60.4243(b).

Group 21: EU 25 – Nucor Tubular Products

Initial Construction Date: Unit A (June 2021); Unit B (2024)

Process Description:
EP 25–05 – NTP Parts Cleaning Tanks (A & B) (Three)
Unit A Parts Washer Capacity: 80 Gal each (two)
Unit B Part Washer Capacity: 150 Gal
Control Device: None

Applicable Regulation:
401 KAR 59:185, *New solvent metal cleaning equipment,* applies, except for Section 4(3) and (4), to each cold cleaner commenced on or after June 29, 1979 that is part of a major source located in a county or portion of a county designated attainment or marginal nonattainment for ozone in 401 KAR 51:010.

Comments:
Emissions for EP 25-05 calculated using information provided in the MSDS.

Group 22: EU 26 – Pickle Line (formerly Steel Technologies)				
Pollutant	**Emission Limit or Standard**	**Regulatory Basis for Emission Limit or Standard**	**Emission Factor Used and Basis**	**Compliance Method**

Group 22: EU 26 – Pickle Line (formerly Steel Technologies)					
Opacity	20%		401 KAR 59:010, Section 3(1)(a)	N/A	Weekly Qualitative Monitoring, Recordkeeping
PM	• P<0.5; E = 2.34 • P≤30; E = $3.59P^{0.62}$ • P>30;E = $17.3P^{0.16}$		401 KAR 59:010, Section 3(2)	Stack test, Vendor guarantee	Assumed when controls are operating and properly maintained
HCl	EP 26-01	6 ppmv; Or collection efficiency > 99%	40 CFR 63.1157(a)(1)(i) & (ii)	Vendor guarantee of 6 ppm; 2.63E-1 lb/ton;	Testing, Specific Control Equipment Conditions
	EP 26-17			4.49E-3 lb/ton	

Initial Construction Dates: EP 26-01 (1995, modified 2019), EP 26-02 (2006), & EP 26-17 (1995)

Process Description:
***Emission Unit 26 (EU 26)* – Pickle Line (formerly Steel Technologies)**
EP 26-01 – HCl Pickling Line & Acid Storage Tanks
Coils will be conveyed through a series of equipment and tanks containing HCl to remove mill scale oxides from the coil surface. 4-stage wet scrubber is used to reduce emissions from the pickle process tanks, recirculation (process) tanks, ferrous chloride (storage) tanks, and raw hydrochloric acid (storage) tanks.
Maximum Capacity: 68.5 ton/hr; 599,972 ton/yr
Control Device: Wet Scrubber #2

EP 26-02 –Scale Breaker
Hot-rolled steel coils that are pickled are first processed through a Scale Breaker to remove mill scale prior to pickling. The Scale Breaker is equipped with a capture system to collect and transport emissions to a baghouse for particulate control.
C Maximum Capacity: 68.5 ton/hr; 599,972 ton/yr
Control Device: Baghouse

EP 26-17 –Pickle Bay Vents
Fugitive HCl fume not captured by the hood is emitted from the Pickle Bay vents.
Maximum Capacity: 68.5 ton/hr; 599,972 ton/yr
Control Device: None

Applicable Regulations:
401 KAR 59:010, *New process operations*
401 KAR 63:002, Section 2(4)(pp), 40 C.F.R. 63.1155 to 63.1166, Tables 1 (Subpart CCC), *National Emission Standards for Hazardous Air Pollutants for Steel Pickling - HCl Process Facilities and Hydrochloric Acid Regeneration Plants,* applies to steel pickling facilities that pickle carbon steel using hydrochloric acid solution that contains 6 percent or more by weight HCl and is at a temperature of 100 °F or higher
40 CFR 64, Compliance Assurance Monitoring, applies to each unit subject to an emission limitation or standard that uses a control device to achieve compliance with any such limitation; without which, the emissions of the regulated air pollutant would be equal to or greater than 100% of the amount required for the source to be classified as a major source., applies to EP 26-01 and EP 26-02 for PM.

Comments:

Group 22: EU 26 – Pickle Line (formerly Steel Technologies)
For most EPs listed above, emissions were calculated using the grain loading value for the required control device. For uncaptured or otherwise uncontrolled emissions, emissions were calculated using test data from similar facility, and/or MSDS.

Group 23: EU 26 - Pickle Line (formerly Steel Technologies)					
Pollutant	**Emission Limit or Standard**		**Regulatory Basis for Emission Limit or Standard**	**Emission Factor Used and Basis**	**Compliance Method**
PM	EP 26-04	0.31 lb/MMBtu	401 KAR 59:015, Section 4(1)(b)	AP-42 Chapter 1.4	Assumed based upon natural gas combustion
	EP 26-06	0.47 lb/MMBtu	401 KAR 59:015, Section 4(1)(c)		
	EP 26-07				
	EP 26-08				
	EP 26-05	0.41 lb/MMBtu			
	EP 26-09	0.33 lb/MMBtu			
	EP 26-10				
Opacity	20% opacity		401 KAR 59:015, Section 4(2)	N/A	Assumed based upon natural gas combustion
SO_2	EP 26-04	1.1 lb/MMBtu	401 KAR 59:015, Section 5(1)(b)(1)	AP-42 Chapter 1.4	Assumed based upon natural gas combustion
	EP 26-06	2.2 lb/MMBtu	401 KAR 59:015, Section 5(1)(c)(2)(b)		
	EP 26-07				
	EP 26-08				
	EP 26-05	1.7 lb/MMBtu			
	EP 26-09	1.2 lb/MMBtu			
	EP 26-10				

Process Description: Various indirect heat exchangers.

Emission Point #	Unit Name	Burner Maximum Capacity (MMBtu/hr)	Fuel Used	Control Device	Construction Commenced
Emission Unit 26 (EU 26) – Pickle Line (formerly Steel Technologies)					
26-04	Vapar Boiler	11.725 MMBtu/hr	Natural Gas	None	2021
26-05	Thermogenics Boiler	15.5 MMBtu/hr	Natural Gas	None	2004
26-06	Air Rotation Furnace #1	3.3 MMBtu/hr	Natural Gas	None	1995
26-07	Air Rotation Furnace #2	3.3 MMBtu/hr	Natural Gas	None	1995
26-08	Air Rotation Furnace #3	3.3 MMBtu/hr	Natural Gas	None	1995
26-09	Air Rotation Furnace #4	2.19 MMBtu/hr	Natural Gas	None	2018
26-10	Air Rotation Furnace #5	2.19 MMBtu/hr	Natural Gas	None	2018

Applicable Regulations:

401 KAR 59:015, *New indirect heat exchangers*

401 KAR 60:005, Section 2(2)(d), 40 C.F.R. 60.40c to 60.48c (Subpart Dc), *Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units*, applies to EP 26-04 & 26-05

Group 23: EU 26 - Pickle Line (formerly Steel Technologies)

401 KAR 63:002, Section 2(4)(iiii), **40 C.F.R. 63.7480 to 63.7575, Tables 1 to 13 (Subpart DDDDD)**, *National Emission Standards for Hazardous Air Pollutants for Major Sources: Industrial, Commercial, and Institutional Boilers and Process Heaters,* applies to EP 26-04 & 26-05

401 KAR 63:020, *Potentially hazardous matter or toxic substances,* applies to EPs 26-06, 26-07, 26-08, 26-09, and 26-10

Comments:
Emissions calculated using AP-42, Chapter 1.4 and 40 CFR 98. Allowable emissions for the units are calculated using 401 KAR 59:015, Section 3(1) using the total rated heat input capacity of all affected facilities. Allowable emissions for the units are calculated using 401 KAR 59:015, Section 3(1) using the total rated heat input capacity of all affected facilities including those in Group 15 (**See Table 4. Indirect Heat Exchanger Summary, above**).

Group 24: EU 26 – Pickle Line (formerly Steel Technologies)

Initial Construction Date: EP 26-11 (1995)

Process Description:
Emission Unit 26 (EU 26) – Emergency Generators < 500 HP:
EP 26-11 – Emergency Engine
Fuel: Diesel
Maximum Rating: 380 HP
Control Device: None

Applicable Regulations:
401 KAR 63:002, Section 2(4)(eeee), 40 C.F.R. 63.6580 to 63.6675, Tables 1a to 8, and Appendix A (Subpart ZZZZ), *National Emissions Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines*

Comments:
Emissions calculated using AP-42, Section 3.2 and an assumption of 500 hrs/yr to be conservative and account for emergency operation.

Group 25: EU 26 – Pickle Line (formerly Steel Technologies)

Initial Construction Date: EP 26-12 (1994)

Process Description:
Emission Unit 26 (EU 26) – Pickle Line Paved Roads:
EP 26-12 – Paved Roads
Maximum Capacity: 1.83 VMT/day; 16,060 VMT/yr
Controls: Wetting/Sweeping (90%)

Applicable Regulations:
401 KAR 63:010, *Fugitive emissions*

Comments:
Potential emissions for the roads were calculated using AP-42, Section 13.2.1. Control efficiency of 90% is

Group 25: EU 26 – Pickle Line (formerly Steel Technologies)
based on EPA document: Control of Open Fugitive Dust Sources, published September 1988.

Group 26: EU 26– Pickle Line (formerly Steel Technologies)

Initial Construction Dates: 1994

Process Description:
***Emission Unit 26 (EU 26)* – Pickle Line (formerly Steel Technologies)*:**
EP 26-13 – Rust Preventive Tank
6000 Gallon Storage Tanks
Control Device**:** None

Applicable Regulations:
401 KAR 59:050, *New storage vessels for petroleum liquids*, applies to each affected facility with a storage capacity less than 40,000 liters (10,567 gallons) commenced on or after July 24, 1984, which is located in any other county (other than an urban county designated nonattainment for ozone under 401 KAR 51:010) and is a part of a major source of volatile organic compounds. Applies to EP 26-13.

State-Origin Requirements:
401 KAR 63:020, *Potentially hazardous matter or toxic substances*

Comments:
Emissions were calculated using Tanks 4.0.9d, and/or MSDS.

SECTION 3 – EMISSIONS, LIMITATIONS AND BASIS (CONTINUED)

Testing Requirements\Results

Emission Unit(s)	Control Device	Parameter	Regulatory Basis	Frequency	Test Method	Permit Limit	Test Result	Thruput and Operating Parameter(s) Established During Test	Activity Graybar	Date of last Compliance Testing
EAF/LMF /Caster	Baghouse	VOC	401 KAR 51:017	Annual*	Method 25A	0.13 lb/ton 26 lb/hr	0.017 lb/ton 3.5 lb/hr	216 ton/hr	CMN20060004	5/2/2006
EAF/LMF /Caster	Baghouse 1 & 2	PM	401 KAR 51:017; 40 CFR 60.272a	Annual*	Method 5	0.0018 gr/dscf	0.0001 gr/dscf	231 ton/hr	CMN20060006	11/14/2006-11/16/2006
		Gas flow			Method 1 & 2	NA	2031963 dscfm			
		Lead			Method 12	8.1E-4 lb/ton 0.162 lb/hr	8.2E-5 lb/ton 0.019 lb/hr	231 ton/hr		
		SO_2			Method 6C	0.2 lb/ton 40 lb/hr	0.16 lb/ton 35 lb/hr	224.2 ton/hr		
		NO_x			Method 7E	0.51 lb/ton 102 lb/hr	0.28 lb/ton 66 lb/hr	231 ton/hr		
		CO			Method 10	2.0 lb/ton 400 lb/hr	0.7 lb/ton 154 lb/hr	231 ton/hr		
		VOC			Method 25A	0.13 lb/ton 26 lb/hr	0.09 lb/ton 21 lb/hr	231 ton/hr		
Melt Shop 1	Baghouse 1 & 2	PM	401 KAR 51:017; 40 CFR 60.272a	Annual*	Method 5	0.0018 gr/dscf	0.0003 gr/dscf	240 ton/hr	CMN20070003	4/2/2007-4/3/2007
		Lead			Method 12	0.162 lb/hr	0.014 lb/hr	240 ton/hr		
		SO_2			Method 6C	98 lb/hr	63 lb/hr	240 ton/hr		
		NO_x			Method 7E	102 lb/hr	85 lb/hr	240 ton/hr		
		CO			Method 10	400 lb/hr	26.1 lb/hr	240 ton/hr		
		VOC			Method 18	26 lb/hr	18 lb/hr	240 ton/hr		

Emission Unit(s)	Control Device	Parameter	Regulatory Basis	Frequency	Test Method	Permit Limit	Test Result	Thruput and Operating Parameter(s) Established During Test	Activity Graybar	Date of last Compliance Testing
OE1 & OE2 EAF/LMF	Baghouse 1 & 2	PM	401 KAR 51:017; 40 CFR 60.272a; 40 CFR 63.10686	Initial and every 5 years	Method 5	0.0018 gr/dscf	0.0004 gr/dscf	252 ton/hr	CMN20080002	4/1/2008-4/2/2008
		Lead			Method 12	0.162 lb/hr	0.019 lb/hr	252 ton/hr		
		SO_2			Method 6C	98 lb/hr	35 lb/hr	234.6 ton/hr		
		NO_x			Method 7E	102 lb/hr	53 lb/hr	234.6 ton/hr		
		CO			Method 10	400 lb/hr	220 lb/hr	234.6 ton/hr		
		VOC			Method 25A	26 lb/hr	5 lb/hr	234.6 ton/hr		
OE1 & OE2 EAF/LMF	Baghouse 1 & 2	PM	401 KAR 51:017; 40 CFR 60.272a; 40 CFR 63.10686	Initial and every 5 years	Method 5	0.0018 gr/dscf	0.0003 gr/dscf	211.7 ton/hr	CMN20090002	4/17/2009
		Lead			Method 12	8.1E-4 lb/ton	1.3E-4 lb/ton	211.7 ton/hr		
		SO_2			Method 6C	0.49 lb/ton	0.20 lb/ton	233.6 ton/hr		
		NO_x			Method 7E	0.51 lb/ton	0.29 lb/ton	233.6 ton/hr		
		CO			Method 10	2.0 lb/ton	1.1 lb/ton	233.6 ton/hr		
		VOC			Method 25A	0.13 lb/ton	0.01 lb/ton	233.6 ton/hr		
EU 01 (01-01, 01-02, 01-03A & B, 01-04A, B, C, &D, 01-05; 01-06A & B; 01-07A & B; 01-08; 01-09; 01-10; 01-11; 01-12A & B; 01-13)	Baghouse 1 & 2	PM	401 KAR 51:017; 40 CFR 60.272a; 40 CFR 63.10686	Annual*	Method 5D	0.0018 gr/dscf	0.0003 gr/dscf	247.2 ton/hr	CMN20180002	10/1/2018-10/2/2018 & 11/5/2018-11/6/2018
		Lead			Method 12	8.1E-4 lb/ton	4.9E-5 lb/ton			
						0.162 lb/hr	0.024 lb/hr			
		VOC			Method 25A	0.13 lb/ton	0.01 lb/ton			
						26 lb/hr	4 lb/hr			
EU 01 (see above)	Baghouse 1 & 2	PM	401 KAR 51:017	Annual*	Method 5D	31.49 lb/hr	6.244 lb/hr	245.9 ton/hr	CMN20190001	7/23/2019-7/24/2019

Emission Unit(s)	Control Device	Parameter	Regulatory Basis	Frequency	Test Method	Permit Limit	Test Result	Thruput and Operating Parameter(s) Established During Test	Activity Graybar	Date of last Compliance Testing
Melt Shop #1 (01-01, 01-02, 01-03A, 01-04A, B, C, &D, 01-05; 01-06A & B; 01-07A & B; 01-08; 01-09; 01-10; 01-11; 01-12A & B; 01-13, 20-03, 20-04, 20-05A, B, & C; 20-06A & B, 20-07 A, B, & C)	Baghouse 1 & 2	Lead	401 KAR 51:017; 40 CFR 60.272a; 40 CFR 63.10686	Initial & Annual*	Method 12	0.00045 lb/ton; 0.45 ton/yr	Not tested		CMN20210002	11/9/2021-11/10/2021
		Fluoride			Method 13A or 13B	0.0035 lb/ton; 3.52 ton/yr	Not tested			
		VOC			Method 25	0.09 lb/ton; 89.1 ton/yr	Not tested			
		PM			Method 5	0.0018 gr/dscf; 31.82 lb/hr; 139.4 ton/yr	0.0008 gr/dscf; 12.11 lb/hr	257.52 ton/hr		
		PM_{10}			Methods 201A/202	0.0052 gr/dscf; 91.93 lb/hr; 402.7 tons/yr	0.0033 gr/dscf; *45.36 lb/hr			
		$PM_{2.5}$			Methods 201A/202	0.0034 gr/dscf; 60.11 lb/hr; 263.3 tons/yr	0.0033 gr/dscf; *45.36 lb/hr			
15-02	Wet	HCl PPM	40 CFR	Initial &	Method 26A	6 PPM	3.6 PPM	300 ton/hr	CMN20220001	2/9/2022

Emission Unit(s)	Control Device	Parameter	Regulatory Basis	Frequency	Test Method	Permit Limit	Test Result	Thruput and Operating Parameter(s) Established During Test	Activity Graybar	Date of last Compliance Testing
15-06	Scrubber		63.1157(a)(1)	Annual	Method 26		0.53 PPM			
Melt Shop #2 (20-01, 20-02A & B, 20-08, 20-09, 20-10, 20-15, 20-16, 20-17)	Baghouse 3	Lead	401 KAR 51:017; 40 CFR 60.272a; 40 CFR 63.10686	Initial & Annual*	Method 12	0.00045 lb/ton; 0.45 ton/yr	0.00010 lb/ton; 0.08 ton/yr	176.63 ton/hr	CMN20220005	7/13/2022-7/15/2022
		Fluoride			Method 13A or 13B	0.0035 lb/ton; 3.52 tons/yr	**0.0014 lb/ton; 0.85 ton/yr	***146.215 ton/hr		
		VOC			Method 25	0.09 lb/ton; 89.1 ton/yr	0.004 lb/ton; 3.02 ton/yr	176.63 ton/hr		
		PM			Method 5	0.0018 gr/dscf; 26.20 lb/hr; 115 tons/yr	0.0005 gr/dscf; 4.04 lb/hr; 17.7 ton/yr	176.63 ton/hr		
		PM_{10}			Methods 201A/202	0.0052 gr/dscf; 75.67 lb/hr; 331 tons/yr	0.0008 gr/dscf; 6.42 lb/hr; 28.14 ton/yr	176.63 ton/hr		
		$PM_{2.5}$			Methods 201A/202	0.0034 gr/dscf; 49.48 lb/hr; 217	0.0007 gr/dscf; 5.87 lb/hr; 25.71 ton/yr	176.63 ton/hr		

Emission Unit(s)	Control Device	Parameter	Regulatory Basis	Frequency	Test Method	Permit Limit	Test Result	Thruput and Operating Parameter(s) Established During Test	Activity Graybar	Date of last Compliance Testing
						tons/yr				
Melt Shop #1 (01-01, 01-02, 01-03A, 01-04A, B, C, &D, 01-05; 01-06A & B; 01-07A & B; 01-08; 01-09; 01-10; 01-11; 01-12A & B; 01-13, 20-03, 20-04, 20-05A, B, & C; 20-06A & B, 20-07 A, B, & C)	Baghouse 1 & 2	Lead	401 KAR 51:017; 40 CFR 60.272a; 40 CFR 63.10686	Initial & Annual*	Method 12	0.00045 lb/ton; 0.45 ton/yr	0.000375 lb/ton; 0.29 ton/yr	176.63 ton/hr		
		Fluoride			Method 13A or 13B	0.0035 lb/ton; 3.52 ton/yr	**0.0061 lb/ton; 3.50 ton/yr	**146.215		
		VOC			Method 25	0.09 lb/ton; 89.1 ton/yr	***0.00 lb/ton; 0.00 ton/yr	176.63 ton/hr		
		PM			Method 5	0.0018 gr/dscf; 31.82 lb/hr; 139.4 ton/yr	0.0003 gr/dscf; 3.24 lb/hr; 14.2 ton/yr	176.63 ton/hr		
		PM_{10}			Methods 201A/202	0.0052 gr/dscf; 91.93 lb/hr; 402.7 tons/yr	0.0008 gr/dscf; 7.90 lb/hr; 34.58 ton/yr	176.63 ton/hr		

Emission Unit(s)	Control Device	Parameter	Regulatory Basis	Frequency	Test Method	Permit Limit	Test Result	Thruput and Operating Parameter(s) Established During Test	Activity Graybar	Date of last Compliance Testing
		$PM_{2.5}$			Methods 201A/202	0.0034 gr/dscf; 60.11 lb/hr; 263.3 tons/yr	0.0008 gr/dscf; 7.44 lb/hr; 32.57 ton/yr	176.63 ton/hr		
Melt Shop #1 (01-01, 01-02, 01-03A, 01-04A, B, C, &D, 01-05; 01-06A & B; 01-07A & B; 01-08; 01-09; 01-10; 01-11; 01-12A & B; 01-13, 20-03, 20-04, 20-05A, B, & C; 20-06A & B, 20-07 A, B, & C);	Baghouse 1 & 2 and Baghouse 3 Simultaneously	Lead	401 KAR 51:017; 40 CFR 60.272a; 40 CFR 63.10686	Initial & Annual*	Method 12	0.00045 lb/ton; 0.45 ton/yr	0.00009 lb/ton; 0.13 ton/yr	****337.8 ton/hr	CMN20220009	2/27/2023-3/2/2023
						0.00045 lb/ton; 0.45 ton/yr	0.00012 lb/ton; 0.18 ton/yr			
		Fluoride			Method 13A or 13B	0.0035 lb/ton; 3.52 ton/yr	0.0010 lb/ton; 1.29 ton/yr			
						0.0035 lb/ton; 3.52 ton/yr	0.0006 lb/ton; 0.71 ton/yr			
		VOC			Method 25	0.09 lb/ton; 89.1 ton/yr	0.02 lb/ton; 23.72 ton/yr			

Emission Unit(s)	Control Device	Parameter	Regulatory Basis	Frequency	Test Method	Permit Limit	Test Result	Thruput and Operating Parameter(s) Established During Test	Activity Graybar	Date of last Compliance Testing
and Melt Shop #2 (20-01, 20-02A & B, 20-08, 20-09, 20-10, 20-15, 20-16, 20-17)						0.09 lb/ton; 89.1 ton/yr	0.01 lb/ton; 1.47 ton/yr			
		PM			Method 5	0.0018 gr/dscf; 31.82 lb/hr; 139.4 tons/yr	0.0007 gr/dscf; 8.837 lb/hr; 38.71 ton/yr			
						0.0018 gr/dscf; 26.20 lb/hr; 115 tons/yr	0.00007 gr/dscf; 0.79 lb/hr; 3.5 ton/yr			
		PM_{10}			Methods 201A/202	0.0052 gr/dscf; 91.93 lb/hr; 402.7 tons/yr	0.0020 gr/dscf; 17.62 lb/hr; 77.19 ton/yr			
						0.0052 gr/dscf; 75.67 lb/hr; 331 tons/yr	0.0012 gr/dscf; 13.13 lb/hr; 57.50 ton/yr			

Emission Unit(s)	Control Device	Parameter	Regulatory Basis	Frequency	Test Method	Permit Limit	Test Result	Thruput and Operating Parameter(s) Established During Test	Activity Graybar	Date of last Compliance Testing
		$PM_{2.5}$			Methods 201A/202	0.0034 gr/dscf; 60.11 lb/hr; 263.3 tons/yr	0.0017 gr/dscf; 14.93 lb/hr; 63.39 ton/yr			
						0.0034 gr/dscf; 49.48 lb/hr; 217 tons/yr	0.0010 gr/dscf; 11.61 lb/hr; 50.85 ton/yr			
01-14	None	VOC	401 KAR 51:017	Initial & Annual*	Method 25	0.40 lb/hr; 1.75 ton/yr	0.0 lb/hr; 0.0 ton/yr	227 ton/hr	CMN20230003	2/14/2023
		PM			Method 5	3.10 lb/hr; 13.59 ton/yr	2.25 lb/hr; 9.7 ton/yr			
		PM_{10}			Method 201A/202	0.70 lb/hr; 3.07 ton/yr	0.36 lb/hr; 1.56 ton/yr			
		$PM_{2.5}$			Method 201A/202	0.009 b/hr; 0.38 ton/yr	0.0449 lb/hr; 0.19 ton/yr			
01-14	None	VOC	401 KAR 51:017	Initial & Annual*	Method 25	0.40 lb/hr; 1.75 ton/yr	0.0	227 ton/hr	CMN20230004	6/27/2023
		PM			Method 5	3.10 lb/hr; 13.59	2.10 lb/hr; 9.20 ton/yr			

Emission Unit(s)	Control Device	Parameter	Regulatory Basis	Frequency	Test Method	Permit Limit	Test Result	Thruput and Operating Parameter(s) Established During Test	Activity Graybar	Date of last Compliance Testing
						ton/yr				
		PM_{10}			Method 201A/202	0.70 lb/hr; 3.07 ton/yr	0.36 lb/hr; 1.58 ton/yr			
		$PM_{2.5}$			Method 201A/202	0.009 b/hr; 0.38 ton/yr	0.05 lb/hr; 0.20 ton/yr			
20-11	None	VOC	401 KAR 51:017	Initial & Annual*	Method 25	0.80 lb/hr; 3.5 ton/hr	0.0	227 ton/hr	CMN20230004	6/27/2023
		PM			Method 5	15.17 lb/hr; 66.45 ton/yr	11.66 lb/hr; 51.09 ton/yr			
		PM_{10}			Method 201A/202	3.11 lb/hr; 13.61 ton/yr	2.47 lb/hr; 10.81 ton/yr			
		$PM_{2.5}$			Method 201A/202	0.39 lb/hr; 1.70 ton/yr	0.31 lb/hr; 1.35 ton/yr			
15-02	Wet Scrubber	HCl PPM	40 CFR 63.1157(a)(1)	Initial & Annual	Method 26A	6 PPM	3.0 PPM	300 ton/hr	CMN20200002	2/12/2020 & 2/14/2020
15-06					Method 26		1.1 PPM			
15-02	Wet Scrubber	HCl PPM	40 CFR 63.1157(a)(1)	Initial & Annual	Method 26A	6 PPM	2.6 PPM	300 ton/hr	CMN20200006	2/17/2021
15-06							1.0 PPM			
15-02	Wet Scrubber	HCl PPM	40 CFR 63.1157(a)(1)	Initial & Annual	Method 26A	6 PPM	2.49 PPM	300 ton/hr (line Speed: 94.08 m/min)	CMN20230001	2/14/2023
15-06							0.81 PPM			
15-05	None	HCl PPM	40 CFR 63.1157(a)(1)	Initial	Method 26A	6 PPM	TBD	TBD	TBD	TBD

Emission Unit(s)	Control Device	Parameter	Regulatory Basis	Frequency	Test Method	Permit Limit	Test Result	Thruput and Operating Parameter(s) Established During Test	Activity Graybar	Date of last Compliance Testing
26-01	Wet Scrubber	HCl PPM	40 CFR 63.1157(a)(1)	Initial & Annual	Method 26A	6 PPM or Collection Efficiency ≥ 99%	99.7%	428 ft/min	CMN20220008	11/8/2022
26-17	None	HCl PPM	40 CFR 63.1157(a)(1)	Initial	Method 26A	6 PPM	TBD	TBD	TBD	TBD

Footnotes:
*Testers claim that PM2.5 and PM10 cannot be separated due to baghouses' positive pressure design (CMN20210002).
** Because of operational problems, only 2 out of 3 test runs was completed.
***NMHC results for all runs returned a slightly negative result after methane subtraction. Corrected to 0.0 ppmvd for emission calculations.
**** Fluoride test results was based on process rate of 295.2 ton/hr and only 2 out of 3 runs was completed due to delays from process issues.

SECTION 4 – SOURCE INFORMATION AND REQUIREMENTS

Table A - Group Requirements:

Emission and Operating Limit	Regulation	Emission Unit
3,500,000 tons of steel cast/yr; rolling 12-month	401 KAR 51:017	EP 01-01 & EP 20-01
3% Opacity	40 CFR 60.272a(a)(2)	EU 01 & EU 20 (Baghouse #1, #2, & #3)
6% Opacity	40 CFR 60.272a(a)(3); 40 CFR 63.10686(b)(2)	EU 01 & EU 20 Building Openings
0.0052 gr/dscf	40 CFR 63.10686(b)(1)	EU 01 & EU 20 (Baghouse #1, #2, & #3)
0.0018 gr/dscf; 31.82 lb/hr; 139.4 tons/yr of PM	401 KAR 51:017	Baghouse #1 and #2 stack
0.0052 gr/dscf; 91.93 lb/hr; 402.7 tons/yr of PM_{10}		
0.0034 gr/dscf; 60.11 lb/hr; 263.3 tons/yr of $PM_{2.5}$		
0.00045 lb/ton; 0.45 ton/yr of Lead		
0.0035 lb/ton; 3.52 tons/yr of Fluorides		
0.09 lb/ton; 89.1 tons/yr of VOC		
535,000 ton/yr of GHGs		
Production Days: 1.98 lb/ton; Non-Production Days: 42.6 lb/hr; 3465 ton/yr for CO	401 KAR 51:017	Baghouse #1, #2, and #3 stack
Production Days: 0.42 lb/ton; Non-Production Days: 44.9 lb/hr; 728 ton/yr for NO_x		
Production Days: 0.35 lb/ton; 175 lb/hr (30-day rolling avg.); Non-Production Days: 0.30 lb/hr; 606 ton/yr for SO_2		
0.0018 gr/dscf; 26.20 lb/hr; 115 tons/yr of PM	401 KAR 51:017	Baghouse #3 stack
0.0052 gr/dscf; 75.67 lb/hr; 331 tons/yr of PM_{10}		
0.0034 gr/dscf; 49.48 lb/hr; 217 tons/yr of $PM_{2.5}$		
0.00045 lb/ton; 0.45 ton/yr of Lead		
0.0035 lb/ton; 3.52 tons/yr of Fluorides		
0.09 lb/ton; 89.1 tons/yr of VOC		
535,000 ton/yr of GHGs		
Less than 6 ppmv HCl;	40 CFR 63.1158(a)(1)	EPs 15-02, 15-05, 15-06, 26-01, and 26-17
HCl at a mass emission rate that corresponds to a collection efficiency of less than 99 percent.		

Table B - Summary of Applicable Regulations:

Applicable Regulations	Emission Unit
401 KAR 51:017, *Prevention of significant deterioration of air quality*, applies to the construction of a new major stationary source that commences construction after September 22, 1982, and located in an area designated attainment.	EU 01, EU 02, EU 20, EPs 03-02, 03-03, 03-09, 03-10, 03-11, 03-13, 03-14, 04-05, 04-06, 05-01, 05-02, 06-01, 06-03, 06-04, 08-01, 08-05, 08-07, 08-08, 10-06, 10-07, 11-11, 12-51, 12-52, 12-53, 13-11, 19-02, 19-03, 23-01
401 KAR 59:010, *New process operations*, applies to each affected facility or source, associated with a process operation, which is not subject to another emission standard with respect to particulates in 401 KAR 59, commenced on or after July 2, 1975.	EPs 01-01, 01-02, 01-03 A, 01-04 A, B, C, & D, 01-05, 01-06 A, & B, 01-07 A, & B, 01-08, 01-09, 01-10, 01-11, 01-12 A, & B, 01-13, 01-14, 02-01, 02-02, 02-03, 02-04, 02-05, 02-06, 02-07, 02-08, 03-02, 03-03, 03-04, 03-08, 03-09, 03-10, 03-11, 03-13, 03-14, 06-03, 06-04, 10-01, 10-06, 10-07, 11-02, 11-03, 11-04, 11-11, 12-51, 12-52, 12-53, 13-01, 13-02, 13-03, 13-04, 13-06, 13-07, 13-08, 13-09, 13-11, 13-12, 13-13, 15-01, 15-02, 15-05, 15-06, 16-04, 16-05, 19-04, 20-01, 20-02A & B, 20-03, 20-04, 20-05 A, B, & C, 20-06A & B, 20-07A, B, & C 20-08, 20-09, 20-10, 20-15, 20-16, 20-17, 26-02
401 KAR 59:050, *New storage vessels for petroleum liquids*, applies to each affected facility with a storage capacity less than 40,000 liters (10,567 gallons) commenced on or after July 24, 1984, which is located: In an urban county designated nonattainment for ozone under 401 KAR 51:010; or in any other county and is a part of a major source of volatile organic compounds.	EP 26-13
401 KAR 59:015, *New indirect heat exchangers*, applies to each indirect heat exchanger having a heat input capacity greater than one (1) million BTU per hour (MMBTU/hr) commenced on or after April 9, 1972.	EPs 15-03, 15-04, 23-01, 26-04, 26-05, 26-06, 26-07, 26-08, 26-09, 26-10
401 KAR 59:185, *New solvent metal cleaning equipment*, applies, except for Section 4(3) and (4), to each affected facility commenced on or after June 29, 1979 that is part of a major source located in a county or portion of a county designated attainment or marginal nonattainment for ozone in 401 KAR 51:010.	EU 07, EPs 19-06, 25-05

Applicable Regulations	Emission Unit
401 KAR 60:005, Section 2(1), 40 C.F.R. 60.1 to 60.19, Table 1 (Subpart A), *General Provisions,* specifically, the requirement to develop and implement a written startup, shutdown, and malfunction (SSM) plan that describes, in detail, procedures for operating and maintaining the source during periods of startup, shutdown, and malfunction; and a program of corrective action for malfunctioning process, air pollution control, and monitoring equipment used to comply with the relevant standard. The startup, shutdown, and malfunction plan does not need to address any scenario that would not cause the source to exceed an applicable emission limitation in the relevant standard. The SSM plan shall meet the requirements in 40 CFR 63.6(e)(3). This plan must be developed by the permittee before startup of the EAF.	EU 01, EU 20
401 KAR 60:005, Section 2(2)(d), 40 C.F.R. 60.40c to 60.48c (Subpart Dc), *Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units,* applies to each steam generating unit for which construction is commenced after June 9, 1989 and that has a maximum design heat input capacity of 29 megawatts (MW) (100 million British thermal units per hour (MMBtu/h)) or less, but greater than or equal to 2.9 MW (10 MMBtu/h).	EPs 15-03, 15-04, 23-01, 26-04, 26-05
401 KAR 60:005, Section 2(2)(jj), 40 C.F.R. 60.270a to 60.276a (Subpart AAa), *Standards of Performance for Steel Plants: Electric Arc Furnaces and Argon-Oxygen Decarburization Vessels Constructed After August 17, 1983 and on or before May 16, 2023*, applies to the following affected facilities in steel plants that produce carbon, alloy, or specialty steels: electric arc furnaces, argon-oxygen decarburization vessels, and dust-handling systems that commence construction, modification, or reconstruction after August 17, 1983 and on or before May 16, 2023.	EP 01-01, 10-06, 10-07, & 20-01
401 KAR 60:005, Section 2(2)(zz), **40 C.F.R. 60.460 to 60.466 (Subpart TT)**, *Standards of Performance for Metal Coil Surface Coating*, applies to the following affected facilities in a metal coil surface coating operation: each prime coat operation, each finish coat operation, and each prime and finish coat operation combined when the finish coat is applied wet on wet over the prime coat and both coatings are cured simultaneously that commences construction, modification, or reconstruction after January 5, 1981.	EPs 16-04, 16-05

Applicable Regulations	Emission Unit
401 KAR 60:005, Section 2(2)(dddd), **40 C.F.R. 60.4200 to 60.4219, Tables 1 to 8 (Subpart IIII)**, *Standards of Performance for Stationary Compression Ignition Internal Combustion Engines,* applies to owners and operators of stationary compression ignition (CI) internal combustion engines (ICE) and other persons as specified in 40 CFR 60.4200(a)(1) through (4). For the purposes of 40 CFR 60, Subpart IIII, the date that construction commences is the date the engine is ordered by the owner or operator.	EPs 08-03, 08-04, 08-05, 08-07, 08-08, 09-06, 09-07, 09-08, & 09-09
401 KAR 60:005, Section 2(2)(eeee), 40 C.F.R. 60.4230 to 60.4248, Tables 1 to 4 (Subpart JJJJ), *Standards of Performance for Stationary Spark Ignition Internal Combustion Engines,* applies to owners and operators of stationary SI ICE that commence construction after June 12, 2006, where the stationary SI ICE are manufactured	EP 25-03
401 KAR 63:002, Section 2(4)(pp), **40 C.F.R. 63.1155 to 63.1166, Tables 1 (Subpart CCC)**, *National Emission Standards for Hazardous Air Pollutants for Steel Pickling - HCl Process Facilities and Hydrochloric Acid Regeneration Plants,* applies to all new and existing steel pickling facilities, located at a major source of HAP, that pickle carbon steel using hydrochloric acid solution that contains 6 % or more by weight HCl and is at a temperature of 100 °F or higher.	EPs 15-02, 15-05, 15-06, 26-01, 26-17
401 KAR 63:002, Section 2(4)(xxx), **40 C.F.R. 63.5080 to 63.5200, Tables 1 to 2 (Subpart SSSS),** *National Emission Standards for Hazardous Air Pollutants: Surface Coating of Metal Coil* applies to each facility that is a major source of HAP at which a coil coating line is operated, except the application of incidental markings (including letters, numbers, or symbols) that are added to bare metal coils and that are used for only product identification or for product inventory control. The application of letters, numbers, or symbols to a coated metal coil is considered a coil coating process and part of the coil coating affected source.	EPs 16-04, 16-05
401 KAR 63:002, Section 2(4)(eeee), 40 C.F.R. 63.6580 to 63.6675, Tables 1a to 8, and Appendix A (Subpart ZZZZ), *National Emissions Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines,* applies to each new stationary RICE located at a major or area source of HAP emissions.	EU 08, EU 09, EPs 25-03, 26-11

Applicable Regulations	Emission Unit
401 KAR 63:002, Section 2(4)(iiii), **40 C.F.R. 63.7480 to 63.7575, Tables 1 to 13 (Subpart DDDDD)**, *National Emission Standards for Hazardous Air Pollutants for Major Sources: Industrial, Commercial, and Institutional Boilers and Process Heaters*, applies to each industrial, commercial, or institutional boiler or process heater as defined in 40 CFR 63.7575 that is located at, or is part of, a major source of HAP, except as specified in 40 CFR 63.7491.	EPs 15-03, 15-04, 23-01, 26-04, 26-05
401 KAR 63:002, Section 2(4)(aaaaa), 40 C.F.R. 63.10680 to 63.10692, Table 1 (**Subpart YYYYY**), *National Emission Standards for Hazardous Air Pollutants for Area Sources: Electric Arc Furnace Steelmaking Facilities*, applies to each EAF steelmaking facility.	EU 01, EU 20
401 KAR 63:010, *Fugitive emissions*, applies to each apparatus, operation, or road which emits or may emit fugitive emissions provided that the fugitive emissions from such facility are not elsewhere subject to an opacity standard within the administrative regulations of the Division for Air Quality. Because NSG is such a large facility, there are several "internal" lot lines on the property. For clarity, the visible emission requirements applicable to the "lot line" only apply to the **external** lot line of the property.	EU 04, EU 05, EPs 06-01, 06-03, 10-01, 10-06, 10-07, 11-11, 20-10, 25-01, 25-02, 25-04, 26-12
401 KAR 63:020, *Potentially hazardous matter or toxic substances*, applies to each affected facility which emits or may emit potentially hazardous matter or toxic substances, provided such emissions are not elsewhere subject to the provisions of the administrative regulations of the Division for Air Quality.	EU 02, EU 13, EU 19, EPs 16-06, 26-06, 26-07, 26-08, 26-09, 26-10
40 CFR 64, *Compliance Assurance Monitoring*, applies to the capture system and PM control device for EU01 and EU20 required by 40 CFR 63, Subpart YYYYY. The exemption in 40 CFR 64.2(b)(1)(i) for emissions limitations or standards proposed after November 15, 1990 under section 111 or 112 of the CAA does not apply. Also applies to other EPs based on the following: 1. The unit is subject to an emission limitation or standard for the applicable regulated air pollutant (or a surrogate thereof), other than an emission limitation or standard that is exempt under 40 CFR 64.2(b)(1); 2. The unit uses a control device to achieve compliance with any such emission limitation or standard; and 3. The unit has potential pre-control device emissions of the applicable regulated air pollutant that are equal to or greater than 100 percent of the amount, in tons per year, required for a source to be classified as a major source.	EU 01, EU 20, EPs 15-01, 15-02, 26-01, 26-02

Table C - Summary of Precluded Regulations:

Precluded Regulations	Emission Unit
401 KAR 51:017, *Prevention of significant deterioration of air quality*, precluded by operational limitations on the original DRI project.	EPs 13-01, 13-02, 13-03, 13-04, 13-05, 13-06, 13-07, 13-08, 13-09, 13-10, 19-04
401 KAR 63:002, Section 2(4)(j), 40 C.F.R. 63.400 to 63.407, Table 1 (Subpart Q), *National Emission Standards for Hazardous Air Pollutants for Industrial Process Cooling Towers*, precluded by prohibiting the use of chromium-based water treatment chemicals in the cooling towers.	EU 03

Table D - Summary of Non Applicable Regulations:

Non Applicable Regulations	Emission Unit
401 KAR 60:005, Section 2(2)(dddd), **40 C.F.R. 60.4200 to 60.4219, Tables 1 to 8 (Subpart IIII)**, *Standards of Performance for Stationary Compression Ignition Internal Combustion Engines*, this regulation will become applicable should this emission point be modified or reconstructed in the future as defined under the Federal Regulation.	EPs 08-01, 09-01, 09-03

Air Toxic Analysis

401 KAR 63:020, *Potentially Hazardous Matter or Toxic Substances*

The Division for Air Quality (Division) has determined based upon the use of natural gas and other pertinent information provided by the applicant that the conditions outlined in this permit will assure compliance with the requirements of 401 KAR 63:020.

Single Source Determination

N/A

SECTION 5 – PERMITTING HISTORY

Permit	Permit Type	Activity#	Complete Date	Issuance Date	Summary of Action	PSD/ Syn Minor
C-93-054	Const.	----	Unknown	4/12/1993		N/A
C-93-123	Const.	----	Unknown	8/9/1993	Initial Construction Permit	N/A
F-96-009	Initial Cond. Major	----	2/8/1996	8/1/1997	Construction of new melt shop/baghouse	PSD
F-96-009 R1	Revision	----	2/8/1996	12/16/1997	CEMs installation	N/A
V-99-003	Initial/ Significant Rev	----	6/23/1998	*Draft issued 6/22/2000	Changed the permit format for the Title V permitting program	PSD
V-99-003 R1	Minor Rev	----	5/21/2001	*Draft issued 8/27/2001	Installation of material recycling facilities	N/A
V-99-003 R2	Minor Rev	----	11/26/2001	*Draft issued 12/10/2001	replacement of the existing 14 mmBTU/hr ladle dryer with an 8 mmBTU/hr dryer	N/A
V-03-031	Initial	APE20050002	Unknown	10/29/2003	Increase production rate	PSD
V-03-031 R1	Significant Rev	----	7/13/2004	11/5/2004	New equipment and alternate operating scenarios	PSD
V-03-031 R2	Significant Rev	APE20070002	7/13/2007	1/3/2008	Increase production rate	PSD
V-08-027	Renewal	APE20080001	7/9/2008	1/15/2009	Renewal	N/A
V-08-027 R1	Minor Rev	APE20090002	5/5/2009	6/1/2009	Administrative corrections	N/A
V-08-027 R2	Minor Rev	APE20100001	5/3/2010	8/3/2010	Inst. New Ladle Dryer	N/A
V-08-027 R3	Significant Rev	APE20110006	9/21/2011	8/6/2012	Transformer replacements & removal of second melt shop (never installed)	N/A
V-14-013	Renewal	APE20130002	7/11/2014	3/25/2015	Renewal	N/A
V-14-013 R1	Minor Rev	APE20150006	7/27/2015	1/12/2016	Addition of DRI handling processes and 0RC processes (EUs 12 & 13)	Syn Minor
V-14-013 R2	Minor Rev	APE20150009	12/15/2015	3/4/2016	Addition of slag processing processes (EU 19)	N/A
V-14-013 R3	Minor Rev	APE20170001	5/1/2017	7/10/2017	Installation of enclosure system and various changes to permit language	N/A
V-14-013 R4	Significant Rev	APE20170002	7/18/2007	11/8/2007	Installation of Pickle Galv Line (EU 15) & ancillary equipment	PSD
V-14-013 R5	Significant Rev	APE20180004	11/7/2018	5/29/2019	Addition of Melt Shop #2 & associated equipment	PSD

Permit	Permit Type	Activity#	Complete Date	Issuance Date	Summary of Action	PSD/ Syn Minor
V-20-015	Significant Rev, Minor Revs & Renewal	APE20190014	9/16/2019	4/19/2021	Addition of baghouse for coil cutting,	PSD
		APE20190016	1/8/2020		Renewal	
		APE20200001	2/11/2020		Alt. monitoring for 40 CFR 63, Subpart CCC	
		APE20200002	3/12/2020		Replacement of EP 09-06 & 09-07	
		APE20200008	12/14/2020		Changes to PGL Line Project	
		APE20200009	12/15/2020		Changes to PSD Melt Shop #2 Project	
V-20-015 R1	Minor Rev	APE20210006	8/2/2021	3/13/2022	Add Nucor Tubular Products	N/A
	Significant Rev	APE20210008			Combining Melt Shops emission limits & changes to PSD Melt Shop #2 Project	PSD
V-20-015 R2	Significant Revision	APE20220001	3/9/2022	2/16/2024	Incorporation of alternative monitoring req (EP15-02)	PSD
	Significant Revision	APE20220007	5/3/2022		Consolidating paved & unpaved roads, modifying slag handling, removal of EPs.	
	Minor Revision	APE20220010	4/26/2022		Addition of 2 emerg. generators	
	Minor Revision	APE20220017	10/20/2022		Incorporation of Steel Tech units (EU 26) into NSG permit	
	Significant Revision	APE20220020	10/20/2022		Changes to Scrap Cutting & Coil Sampling Plasma Cutter	
	Significant Revision	APE20220021	11/1/2022		Revising emission rates for the A-Line & B-Line Caster Steam Vents	

SECTION 6 – PERMIT APPLICATION HISTORY

Permit Number: V-20-015 R2 Activities: APE20220001; APE20220007; APE20220010; APE20220017; APE20220020; APE20220021

Received Date(s): 1/12/2022; 3/11/2022; 4/19/2022; 7/28/2022; 8/30/2022; 8/30/2022

Application Complete Date(s): 3/9/2022; 5/3/2022; 4/26/2022; 10/20/2022; 10/20/2022; 11/1/2022

Permit Action: ☐ Initial ☐ Renewal ☒ Significant Rev ☒ Minor Rev ☐ Administrative

Construction/Modification Requested? ☒Yes ☐No NSR Applicable? ☒Yes ☐No

Previous 502(b)(10) or Off-Permit Changes incorporated with this permit action ☐Yes ☒No

Description of Action:
The following bullets capture the requested changes in each application. Following those is a summary of all changes made and a revisitation of BACT/PSD/Modeling analysis as necessary for changes made to previous PSD projects.

- *APE20220001* – On January 12, 2022, NSG submitted a Significant Revision application requesting incorporation of an EPA alternative monitoring procedure approval letter dated October 21, 2021, detailing the approved alternative monitoring requirements for the HCl Pickling Line Scrubber (EP 15-02) to be used for meeting the requirements of 40 CFR 63, Subpart CCC. Nucor requested to establish the conductivity parameter as the maximum value observed during a single run of a passing stack test instead of the average parameter value over the course of a passing stack test. This application was deemed complete on March 9, 2022, and the requirements outlined in the EPA approval have been added to the permit in Section B. None of the established set points can be changed without first being utilized in a stack test that demonstrates compliance with the emissions limit and with the written approval of the Division. The Division requested additional information on September 16, 2022, and NSG provided the requested information on September 30, 2022.

- *APE20220007* – On March 11, 2022, NSG submitted a PSD Significant Revision application requesting to consolidate the different listed emission points for various roads into a single paved and unpaved road source (EPs 04-01, 04-02, 04-03, 04-04, and EP 19-01 have been consolidated into EP 04-05 Unpaved Roads and EP 04-06 Paved Roads as appropriate), increase the size of the existing Melt Shop #1 ladle preheaters (EP 01-04b,c,d), and modify the existing slag handling operations (EP 19-02 and EP 19-03). NSG also requested removal of the following EPs from the facility and scope of the project: EPs 20-12, 20-13, 20-14, 03-12, 09-05, and all of EU 21 – Cold Mill Complex (including EPs 21-01, 21-02, 21-03, 21-04, 21-05, 21-06, 21-07, 21-08, 21-09, 21-10, 21-11, 21-12, 21-13, 21-14, 21-15, 21-16, 21-17, 21-18, 21-19 & EP 21-20). The Division requested additional information regarding the application on September 16, 2022, and NSG provided additional information on October 7, 2022 and October 12, 2022.

  See below for revised or added BACT analysis based on these changes to the originally permitted project.

The Project Emissions Increase from the original expansion project permitted in V-14-013 R5 and the revised project emissions increase from this application is included in the following table:

Pollutant	Original October 2018 Project Emissions (tpy)	Current Project Emissions (tpy)	Significant Emission Rate (SER) (tpy)	PSD Significant Emissions Increase
PM (filterable only)	417.62	371.46	25	Yes
PM_{10}	582.72	540.37	15	Yes
$PM_{2.5}$	416.82	381.46	10	Yes
Pb	0.70	0.74	0.6	Yes
NOx	677.04	664.02	40	Yes
CO	2,887.48	2,953.31	100	Yes
VOC	223.04	202.11	40	Yes
SO_2	450.77	494.34	40	Yes
Fluorides	4.95	5.39	3	Yes
GHGs (CO_2e)	942,170	778,417	75,000	Yes

- *APE20220010* – On April 19, 2022, NSG submitted a Minor Revision application for the addition of two emergency generators to the facility as a separate project: Scalehouse and Truck Staging Emergency Generators (EP 09-08 and EP 09-09). This application was deemed complete on April 26, 2022.

  The Project Emissions Increase for this separate project is included in the following table:

Pollutant	Project Emission Increase (tpy)	Significant Emission Rate (SER) (tpy)	PSD Significant Emissions Increase
PM (filterable only)	0.01	25	No
PM_{10}	0.01	15	No
$PM_{2.5}$	0.01	10	No
NOx	0.28	40	No
CO	0.056	100	No
VOC	0.021	40	No
Pb	0	0.6	No
SO_2	0.06	40	No
GHGs (CO_2e)	32.32	75,000	No

- *APE20220017* – On July 28, 2022, NSG submitted a Minor Revision application requesting the addition of all of Steel Technologies' (Steel Tech) permitted air emission sources to NSG's Title V permit due to acquisition of Steel Tech. NSG and Steel tech were already classified as a single stationary source before the acquisition, so this action is simply combining the two permits into one. NSG also requested removal of Steel Tech's EU 009-2 Unpaved Roads (all roads are paved now), 2 Diesel Tanks from the Insignificant Activities List, and EU 13 (Pickling Line Back-up-boiler, never installed), updates to EPs 26-01, 26-04, 26-11, 26-12 to correct historic discrepancies, moving EP 26-14, Pickle Line Electrostatic Oiler from Section B of the permit to Section C- Insignificant Activities, and the addition of the Pickle Bay Vents

(EP 26-17), which were existing but previously unaccounted for, as a new emission source in this revision. The Division requested additional information regarding the application on September 16, 2022 and NSG provided the additional information on October 5, 2022. This application was deemed complete on October 20, 2022. Additionally, CAM was determined to be applicable to EP 26-01 for PM, and Nucor submitted an updated CAM plan including this unit to the Division on November 8, 2023.

- *APE20220020* – On August 30, 2022, NSG submitted a Minor Revision application to modify the existing Scrap cutting operation (EP 19-04) and add a new Coil Sampling Plasma Cutter (EP 02-09). The scrap cutting operation (EP 19-04) uses torch cutting and lancing. The existing torching operation will be modified to use propane instead of natural gas due to the location of scrap cutting area. NSG is adding a plasma cutter (EP 02-09) to the current coil sampling area inside of the roll mill. The new plasma cutter emissions will be controlled by a baghouse and exhausted to the atmosphere. The emissions from this unit are small, but it has been included in Section B of the permit due to taking an operational limit (use of control device) to preclude 401 KAR 51:017. Accordingly, it must be considered a Significant Revision. The Division requested additional information regarding the application on September 16, 2022 and NSG provided the additional information on October 14, 2022. This application was deemed complete on October 20, 2022.

The Project Emissions Increase for this change is included in the following table:

Pollutant	**Project Emission Increase** (tpy)	**Significant Emission Rate (SER)** (tpy)	**PSD Significant Emissions Increases**
PM (filterable only)	1.87	25	No
PM_{10}	1.87	15	No
$PM_{2.5}$	1.87	10	No
NOx	3.56	40	No
CO	0	100	No
Pb	3.23E-7	0.6	No
VOC	0	40	No
SO_2	0	40	No
GHGs (CO_2e)	0	75,000	No

- *APE20220021* – On August 30, 2022, NSG submitted a PSD Significant Revision application for the A-Line (01-14) and B-Line (20-11) Caster Steam Vents. This application is to update the emission factors and emission rates for Particulate Matter (PM), PM_{10}, and $PM_{2.5}$ including condensable PM to reflect final design. Emission factors for fluoride have also been updated. VOC and HAP emission factors did not change due to design differences (their emissions are directly influenced by the amount of oil and grease used on the equipment and the amounts of oil and grease in the process water, neither of which have change from initial permitting). This application was deemed complete on November 1, 2022.

On October 20, 2023, NSG requested removal of Tunnel Furnace Emergency Generator (EP 08-06) as it is no longer planned to be constructed.

The Project Emissions Increase from the original expansion project permitted in V-14-013 R5 including all changes submitted in these revision applications is included in table II-1 of the **II. Revised PSD Project Emissions**.

The Division transmitted all PSD related applications to the U.S. EPA and Federal Agencies during the review.

Overall, this permit revision includes the following changes:

- Permit language, such as compliance demonstration methods, precluded regulations, etc, has been updated or added to be consistent and clear.
- Steel Tech emission sources have been fully incorporated into the NSG permit and accordingly will no longer have a valid individual Title V permit.
- A review of 40 CFR 63, Subpart CCC during this revision process revealed that EP 15-05 (Pickling Building Roof Monitor) and EP 26-17 (Pickle Bay Vents) are subject to the NESHAP because they conduct emissions from affected sources to the atmosphere, and are therefore subject to 40 CFR 63.1158(a) and 40 CFR 63.1159. The limits/requirements are incorporated in the current permit (V-20-015 R2) and NSG is required to test these vents for comparison to the standard.
- Table 1, below, summarizes the emission points that have been removed from the permit as a result of these revisions:

Table 1 – Removed Emission Points

EP#	Title	Max. Cap.	Control Equipment
03-12	Cold Mill Cooling Tower	20,000 gal/min	Mist Eliminator
04-01	Paved Roadways	6 Miles	NA
04-02	Unaved Roadways	1 Mile	NA
04-03	Unaved Road Segment #24 and #25	0.51 Mile	NA
04-04	Satellite Coil Yard	10 Acres	NA
08-06	Tunnel Furnace Emergency Generator	2937 HP	None
09-05	Cold Mill Emergency Generator	350 HP	None
19-01	Unaved Roadways	0.5 Mile	NA
20-12	Vacuum Degasser	370 Tons/hr	Flare
20-13	Vacuum Degasser Boiler	50.4 MMBtu/hr	None
20-14	Vacuum Degasser Alloy Handling System	20 Tons/hr	Dust Collectors & Bin Vent
21-01	Pickle Line No. 2 Scale Breaker	150 Tons/hr	Baghouse
21-02	Pickle Line #2 (including storage tanks)	150 Tons/hr	Wet Scrubber & Mist Eliminator
21-03	Pickle Line No. 2 Roof Monitor	150 Tons/hr	None
21-04	Pickle Line #2- Boiler #1	18 MMBtu/hr	None
21-05	Pickle Line #2- Boiler #2	18 MMBtu/hr	None
21-06	Pickle Line #2 Electrostatic Oiler	150 Tons/hr	Enclosure
21-07A	Galv Line #2 Alkali Wash Station	100 Tons/hr	Mist Eliminator
21-07B	Galv Line #2 Alkali Cleaning Section Heater	23 MMBtu/hr	None
21-08 A	Galv Line #2 Preheat Furnace	94 MMBtu/hr	SCR/SNCR
21-08 B	Galv Line #2 Radiant Tube Furnace	36 MMBtu/hr	SCR/SNCR

EP#	Title	Max. Cap.	Control Equipment
21-09	Galvanizing Line No. 2 Zinc Pot Preheater	3 MMBtu/hr	None
21-10	Galvanizing Line No. 2 Zinc Dip	100 Tons/hr	None
21-11	Galvanizing Line No. 2 Chemical Treatment & Dryer	100 Tons/hr & 3 MMBtu/hr	None
21-12	Galv Line #2 Temper Mill	100 Tons/hr	None
21-13	Galv Line #2 Stenciling	100 Tons/hr	None
21-14	Galv Line #2 Electrostatic Oiler	100 Tons/hr	None
21-15	Galv Line #2 Annealing Furnaces (15)	4.8 MMBtu/hr each	None
21-16	Cold Reduction Mill	150 Tons/hr	Mist Eliminator
21-17	Cold Reduction Mill Roof Vents	150 Tons/hr	None
21-18	Skin Pass Mill #2	150 Tons/hr	Mist Eliminator
21-19	Cold Mill Complex Makeup Air Units	40 MMBtu/hr	None
21-20	Cold Mill Complex Cleaning Tank	80 gallons	None

Note: The following Steel tech emission points have been removed from the permitted facility but are not listed in the table:

1. *EU 009-2 (EP 04-02) Unpaved roads*
2. *EU 13 (EP 01-06) Pickling Line Back-up Oiler*
3. *EU 14 Acid Storage Tanks. The emissions from these tanks are vented through EP 26-01 scrubber therefore, EP 26-01 will include the HCl Pickling Line & Acid Storage Tanks*
4. *A 575 gallons Diesel Tank (Section C-Insignificant Activities)*

- Table 2, below, summarizes the proposed additional emission points to be added to the permit as a result of these revisions:

Table 2 – Added Emission Points

EP#	Title	Max. Cap.	Control Equipment
09-08	Scalehouse Emergency Generator	80 HP	None
09-09	Truck Staging Emergency Generator	60 tons/hr	Baghouse
02-09	Coil Sampling Plasma Cutter	500 tons/hr	Baghouse
26-01	HCl Pickling Line & Acid Storage Tanks	68.5 tons/hr	Wet Scrubber
26-02	Scale Breaker	68.5 tons/hr	Baghouse
26-04	Vapar Boiler	11.725 MMbtu/hr	None
26-05	Thermogenics Boiler	15.5 MMbtu/hr	None
26-06	Air Rotation Furnace #1	3.3 MMBty/hr	None
26-07	Air Rotation Furnace #2	3.3 MMbtu/hr	None
26-08	Air Rotation Furnace #3	3.3 MMbtu/hr	None
26-09	Air Rotation Furnace #4	2.19 MMbtu/hr	None
26-10	Air Rotation Furnace #5	2.19 MMbtu/hr	None
26-11	Emergency Engine	380 HP	None
26-12	Paved Roads	16,060 VMT/yr	Water Spray
26-13	Rust preventive Tank	6,000 gallons	None
IA (26-14)	Electrostatic Coating Oiler	68.49 tons/hr	Process Enclosed
IA (26-15)	Three (3) Coil Slitter	85 tons/hr	Process Enclosed
IA (26-16)	Space Heaters (8)	<1 MMBtu/hr each	None
26-17	Pickle Bay Vents	68.49 tons/hr	None

- Table 3, below, summarizes changes to previously permitted maximum rated heat input capacity/engine size/process rates for the following emission points:

Table 3 – Changes to Emission Points

EP#	Original Max Capacity	Revised Max Capacity
01-04 A, B, C, D	10 MMBtu/hr each	Preheater A: 10 MMBtu/hr; Preheaters B, C, and D: 27.3 MMBtu/hr each
04-05	1.5 miles	2.34 miles
04-06	6.51 miles	5.1 miles
19-02	47.95 tons/hr	59.93 tons/hr
19-03	47.95 tons/hr	65.64 tons/hr

- Updated CAM plans have been added to the permit as Appendix A. Emission calculations were updated to reflect more recent emission data where it was available and appropriate.
- Table 4, below, reflects the updated limits under 401 KAR 59:015 due to removal of units from the scope of the project. Limits were redetermined because the removed units were never constructed.

Table 4 – Indirect Heat Exchanger Summary

Summary of All Affected Facilities Used to Determine 401 KAR 59:015 Emission Limits								
EU/EP	Fuel	Capacity (MMBtu/hr)	Constructed	Basis for PM & SO_2 Limits	Total Heat Input Capacity for PM & SO_2 Limits (MMBtu/hr)	Notes	PM limit (lb/MMBtu)	SO2 limit (lb/MMBtu)
01-03*	NG	11.725	1995	401 KAR 59:015, Section 4(1)(c) and 5(1)(c)	21.625	Removed in 2022	0.47	2.2
26-06	NG	3.3	1995			None		
26-07	NG	3.3	1995					
26-08	NG	3.3	1995					
26-05	NG	15.5	2004	401 KAR 59:015, Section 4(1)(c) and 5(1)(c)	37.125	None	0.41	1.7
15-03	NG	25.2	2017	401 KAR 59:015, Section 4(1)(c) and 5(1)(c)	87.525	None	0.34	1.2
15-04	NG	25.2	2017					
26-09	NG	2.187	2018	401 KAR 59:015, Section 4 (1)(c) and 5 (1)(c)	91.899		0.33	1.2
26-10	NG	2.187	2018					
23-01	NG	29	2019	401 KAR 59:015, Section 4 (1)(c) and 5 (1)(c)	120.899		0.31	1.1
26-04	NG	11.725	2022		120.899	Replaced EP 01-03	0.31	1.1

* On February 1, 2022 Steel Tech removed this EP and replaced it with a similar unit. The replacement unit met the definition of a "replacement unit" in 401 KAR 51:001, Section 1(208)(b).

- On August 8, 2023, the Division met with Nucor representatives regarding some additional changes requested for the permit. Specifically, Nucor requested the following changes which were implemented by the Division:
  - *A change to the timing for the smoke tube testing for the melt shops.* Previously, the permit required the smoke tube testing to occur during the PM tests for the melt shop, however, this created an unsafe condition for the person conducting the test that could result in that person getting struck by a scrap car. The Division has revised the testing requirement to provide an alternative for conducting the test non-simultaneously with the PM tests. This alternative allows Nucor to conduct the smoke tube tests while the baghouse is operating with the same fan RPM/Amps and volumetric flow rate achieved during the PM tests in order to replicate capture conditions.
  - *A change to the definition of "Production Day" for the melt shops.* There are legitimate scenarios where emissions are created in the melting process prior to midnight and the subsequent tons are not cast until after midnight. The day the emissions are created are classified as a non-production day if no tons are cast. The emissions created can cause an exceedance with the non-production day limits, while the associated cast tons fall on the following day and are pulled into the 30 day rolling average. The intent of the pair of definitions is to provide a compliance alternative during periods in which there are no tons of steel cast, since the limit is in pound per ton of steel cast. The definition has been revised to include days in which steel is melted but ultimately cast the after 12:00 AM the following day. Non-production days are days in which no steel is melted or cast.
  - *A change to the volumetric flow rate monitoring range for the melt shop baghouses.* Previously, the Division set the requirement for volumetric flow rate for the melt shop baghouses to be within +/- 10% of the volumetric flow rate measured during the smoke tube testing. However, as the smoke tube testing is designed to ensure the required capture efficiency is achieved, the Division has revised this requirement to require the volumetric flow rate to be maintained above the minimum level (minus 10%) measured during the smoke tube tests.

- On August 25, 2023, the Environmental Protection Agency (EPA) finalized amendments to the new source performance standards (NSPS) for electric arc furnaces (EAF) and argon-oxygen decarburization (AOD) vessels in the steel industry. These amendments to 40 CFR 60, Subpart AAa have been incorporated in the permit with this revision.

V-20-015 R2 Emission Summary				
Pollutant	2021 Actual (tpy)	Previous PTE V-20-015 R1 (tpy)	Change (tpy)	Revised PTE V-20-015 R2 (tpy)
CO	585.76	3836.79	-134.05	3702.74
NO_X	145.84	978.60	-40.01	938.59
PT	43.83	595.32	-114.17	481.18
PM_{10}	19.89	898.29	-42.87	855.42
$PM_{2.5}$	8.45	571.54	-21.01	550.53
SO_2	28.50	617.95	-2.55	615.40
VOC	79.91	273.25	-4.43	268.82
Lead	0.0058	0.81	+0.1	0.91
Greenhouse Gases (GHGs)				
Carbon Dioxide	371,293	1,546,041	+10,827	1,556,868
Methane	9.36	48.43	-2.9	45.53

V-20-015 R2 Emission Summary				
Pollutant	2021 Actual (tpy)	Previous PTE V-20-015 R1 (tpy)	Change (tpy)	Revised PTE V-20-015 R2 (tpy)
Nitrous Oxide	0.113	11.09	-2.2	8.87
CO_2 Equivalent (CO_2e)	371,560	1,550,557	+10,092	1,560,649
Hazardous Air Pollutants (HAPs)				
Acetaldehyde	0.319	1.12	-0.02	1.10
Acrolein	0.000029	0.47	-0.01	0.46
Benzene	0.00029	0.10	0	0.10
Carbon Disulfide	0.16	0.57	-0.01	0.56
Chlorine	0.66	2.41	0	2.41
Chromium	0.014	0.08	-0.03	0.05
Fluoride	2.82	8.82	+1.31	10.13
Formaldehyde	0.0004	0.41	-0.08	0.33
Hexane; N-Hexane	0.385	9.67	-1.81	7.86
Hydrochloric Acid	1.50	6.23	-0.61	5.62
Hydrogen Fluoride	0.06	2.73	0	2.73
Manganese	0.25	1.17	-0.46	0.71
Methanol	0	1.51	-0.89	0.62
Methylene Chloride	*	0.89	-0.02	0.87
Mercury	0.075	0.00094	-0.000026	0.00068
m-Xylene	0.00009	0.11	0	0.11
Toluene	0.00013	0.24	-0.01	0.23
Combined HAPs:	6.13	28.77	-3.38	25.39

** Not reported*

Permit Number: V-20-015 R1 **Activities: APE20210006; APE20210008**

Received: 5/19/2021; 6/10/2021 Application Complete Date(s): 8/2/2021; 8/2/2021

Permit Action: ☐ Initial ☐ Renewal ☒ Significant Rev ☒ Minor Rev ☐ Administrative

Construction/Modification Requested? ☒Yes ☐No NSR Applicable? ☒Yes ☐No

Previous 502(b)(10) or Off-Permit Changes incorporated with this permit action ☒Yes ☐No

- *APE20210005 – Off-Permit Change:* Addition of a second set of rolls to the Pickle and Galvanizing Line chromate roll coater

Description of Action:

- *APE20210006* – On May 19, 2021, NSG submitted a Minor Revision application for construction a separate division of Nucor Corporation, Nucor Tubular Products (NTP) which will produce structural steel tubing. This application was deemed complete on August 2, 2021, and is included in this permitting action. This is a separate project from the Melt Shop #2 PSD expansion project, and does not, by itself, have potential emissions that exceed the significant emission rate (SER) for PSD.

The Project Emissions Increase from the NTP project is included in the following table:

Pollutant	**Project Emission Increase*** (tpy)	**Significant Emission Rate (SER)** (tpy)	**PSD Significant Emissions Inc.?**
PM (filterable only)	0.9	25	No
PM_{10}	0.6	15	No
$PM_{2.5}$	0.5	10	No
Pb	2.7E-5	0.6	No
NOx	8.0	40	No
CO	8.9	100	No
VOC	30.3	40	No
SO_2	0.03	40	No
Fluorides+	0	3	No
GHGs (CO_2e)	6616	75,000	No

*Only includes project emission increases
+Fluorides include only the particulate form of fluoride.

- *APE20210008* – On June 10, 2021, NSG submitted a revised PSD Significant Revision application to update process rates and to request changes to the methods used to demonstrate compliance. NSG provided changes to the location of the batch concrete plant on June 15, 2021, and changes to the location of the torch cutting emission point on July 27, 2021.

  NSG also sent additional information regarding this PSD project revision on August 31 and September 2, 2021. The Division requested additional information regarding the BACT analysis on September 15, 2021. NSG submitted the requested information on September 22, 2021.
  The Division sent the application to the U.S. EPA and Federal Agencies on June 25, 2021 and sent the additional information October 29, 2021.

  NSG also provided additional information regarding the requested change to the tunnel furnace GHG BACT on November 12, 2021.

The changes to the project scope and BACT analysis consist of the following (these changes are outlined here, and are discussed in greater details in the relevant sections of this document):

- Re-evaluating BACT to combine Melt Shop #1 and Melt Shop #2 emissions limits into a single emission limit for gaseous pollutants monitored via CEMS [carbon monoxide (CO), nitrogen oxides (NOx), and sulfur dioxide (SO2)].
- Update to Melt Shop #1, Baghouse #1 & #2 exhaust flow rate, a reduction of 2,126,893 scfm to 2,062,568 scfm. The flow rate has been revised to better reflect operating conditions based on stack testing data and has been accounted for in the air dispersion model. The permit does not limit the airflow to the baghouse. Because BACT emission limits were previously set based on grain loading and flowrate, the BACT emission limits has been revised to reflect this change in flow rate. The BACT analysis for particulate emissions was not revisited in this action because the grain loading requirements are unchanged.
- Update to short-term material handling rates (short-term maximum capacity increase) for Stockpile Loading and Stockpiles (EP 05-04 & EP 05-05). The annual maximum throughput will remain unchanged. The names of these emission units were changed to

River & Plant Scrap Yard Stockpile Loading and River & Plant Scrap Yard Stockpile for added clarification, the actual process has not changed. Accordingly, the BACT has not been revisited here.

- Removal of Ladle Metallurgy Furnace (LMF) in EP 01-03 B.
- Change in location of Montgomery Road. Montgomery Road was originally planned on being moved to accommodate the Cold Mill but in the current model Montgomery Road is located in its original and current location. Neither emissions nor permit conditions are affected by this change, but it is reflected in the air dispersion modeling performed.
- Installation of Variable Frequency Drives (VFDs) on Baghouse Fans for Baghouse #3.
- Reduction to Total Dissolved Solids (TDS) limits for Direct Contact Water (DCW) System cooling towers. The cooling towers EP 03-02, EP 03-10, and EP 03-14 all share the same water from the same cooling system and are not individual cooling water systems as originally planned, therefore the TDS limits for EP 03-02 and EP 03-10 have been lowered to 1,309 ppm to coincide with the TDS limit for EP 03-14. BACT is not otherwise affected and is not revisited here.
- Reevaluating BACT for the Melt Shop #1 Baghouse #1 & #2 Dust Silo & Rail Car Loading (EP 10-06). The new bin vent will have a higher flow rate changing from 100 dscf/min to 1,200 dscf/min. The emission limits have also been added to the appropriate tables in Section B of the permit, similar to EP 10-07.
- Reevaluating BACT work practice requirements for GHGs for the Tunnel furnaces (EP 02-01, EP 02-02, and EP 02-03). Emission calculations and limits are unchanged, however, the source requested that the GHG BACT determination be revisited to remove an established efficiency metric for the tunnel furnaces. After NSG provided additional information regarding the tunnel furnace operation and design, the Division concurs with the BACT determination provided by the applicant (removing performance metric of Btu/lb of steel as parametric indicator of furnace efficiency). Steel production and amount of natural gas used in the Tunnel furnaces are not directly linked together. The burners are used to heat the refractory in the furnace in order to keep the refractory at a constant temperature. The furnaces do not shut down during nonproduction days and kept at the operational set points in order to prevent the breakdown of the refractory used in the furnaces. The furnaces are only turned off during long outages when maintenance is required to be performed on the furnace with cool refractory. Therefore, measuring the amount of fuel consumed per unit weight of material produced from the furnace is not a direct method to compute efficiency of the Tunnel furnaces due to their design.
- The Division also corrected the Fluoride, CO and VOC ton/yr BACT limits for Melt Shops #1 & #2, which were inadvertently set at total (captured and uncaptured) emissions, however, the captured (stack) emissions are all that was/is identified in the emission limit table in Section B of the permit, and are what the facility will be testing to confirm compliance. Nucor has capture efficiency requirements, so the BACT limits have been adjusted to only reflect the captured emissions to be measured at the stack. This is only a nominal change and does not affect any previously performed BACT control device analyses on these pollutants.

Nucor also requested a change in flow monitoring location for Baghouse #1 & #2 pursuant to 40 CFR 60.274a(e), however, it was determined that Nucor is complying with one of the other two compliance options in 40 CFR 60.274a(b) and an alternate flow monitoring location was not necessary.

V-20-015 R1 Emission Summary				
Pollutant	2020 Actual (tpy)	Previous PTE V-20-015 (tpy)	Change (tpy)	Revised PTE V-20-015 R1 (tpy)
CO	637.95	3830.39	+6.40	3836.79
NO_X	187.53	971.08	+7.52	978.60
PT	52.94	586.50	+8.82	595.32
PM_{10}	22.56	856.82	+41.47	898.29
$PM_{2.5}$	14.52	548.17	+23.37	571.54
SO_2	28.61	618.13	-0.18	617.95
VOC	76.65	243.07	+30.18	273.25
Lead	0.0032	0.81	0	0.81
Greenhouse Gases (GHGs)				
Carbon Dioxide	48,898	1,539,471	+6,570	1,546,041
Methane	0.94	48.03	+0.40	48.43
Nitrous Oxide	0.89	10.97	+0.12	11.09
CO_2 Equivalent (CO_2e)	49,187	1,543,941	+6,616	1,550,557
Hazardous Air Pollutants (HAPs)				
Acetaldehyde	0.00024	1.11	+0.01	1.12
Acrolein	0.000028	0.46	+0.01	0.47
Benzene	0.00029	0.10	0	0.10
Carbon Disulfide	*	0.57	0	0.57
Chlorine	*	2.31	+0.1	2.41
Chromium	0.014	0.22	-0.14	0.08
Fluoride	*	7.87	+0.95	8.82
Formaldehyde	0.0004	0.38	+0.03	0.41
Hexane; N-Hexane	*	9.57	+0.1	9.67
Hydrochloric Acid	1.09	6.23	0	6.23
Hydrogen Fluoride	*	2.42	+0.31	2.73
Manganese	0.242	2.29	-1.12	1.17
Methanol	*	1.50	+0.1	1.51
Methylene Chloride	*	0.88	+0.1	0.89
Mercury	0.082	0.00093	+0.00001	0.00094
m-Xylene	0.000088	0.11	0	0.11
Toluene	0.00013	0.24	0	0.24
Combined HAPs:	1.45	29.98	-1.21	28.77

Permit Number: V-20-015 **Activity: APE20190014; APE20190016; APE20200001; APE20200002; APE20200008; APE20200009**

Received: 9/10/2019; 9/24/2019; 1/27/2020; 3/10/2020; 9/30/2020; 10/15/2020

Application Complete Date(s): 9/16/2019; 1/8/2020; 2/11/2020; 3/12/2020; 12/14/2020; 12/15/2020

Permit Action: ☐ Initial ☒ Renewal ☒ Significant Rev ☒ Minor Rev ☐ Administrative

Construction/Modification Requested? ☒Yes ☐No NSR Applicable? ☒Yes ☐No

Previous 502(b)(10) or Off-Permit Changes incorporated with this permit action ☒Yes ☐No

- *APE20190006 – Off-Permit Change:* Batch concrete plant (EU24) location changed to accommodate construction activities associated with the expansion project authorized with Title V permit V-14-013 R5.
- *APE20190007 – Off-Permit Change:* Location of the plasma cutter changed from the Rolling Mill Building to a new building located adjacent to the Rolling Mill Building.
- *APE20190008 – Off-Permit Change:* The maximum heat capacities of the Pickling Boilers #1 and #2 (EP 15-03 & EP 15-04) was corrected from 23 MMBtu/hr to 25.2 MMBtu/hr.
- *APE20190009 – Off-Permit Change:* The maximum heat capacity of the Chromate roll coater dryer (EP 16-04) was corrected from 8 MMBtu/hr to 9 MMBtu/hr and corrected a naming error by changing "spent pickle liquor" to "ferrous chloride solution".
- *APE20200003 – 502(b)(10) Change:* Request for an alternate flow monitoring location for Baghouse #3 for the Melt Shop #2 pursuant to 40 CFR 60.274a(e). The Division approves of this request because it is for monitoring flow for only one control device, and the Division expects that it will provide a continuous record of operation of the Melt Shop #2 capture system.

Description of Action:
In this renewal permit, the following changes were made:

- *APE20190014* – On September 10, 2019, NSG submitted a Minor Revision application requesting the use of a dedicated baghouse in lieu of using Phoenix's mobile baghouse to control emissions from the coil cutting operations. The coil cutting operation and slag cutting operation shared Phoenix's mobile baghouse and was identified in the permit V-14-013 R5 as EP 19-04. In this renewal, a new emission point identifies coil cutting operation (EP 02-08) and this process is no longer combined with slag cutting operation. There is no emission change due to this request. This application was deemed complete on September 16, 2019.
- *APE20190016* – On September 24, 2019, NSG submitted the Renewal application updating the Compliance Assurance Monitoring (CAM) plan and Pollution Prevention Plan (PPP) for the affected units. On December 29, 2020, Nucor submitted a letter requesting approval of a combined flow monitoring location for Baghouses #1 & #2 for Melt Shop #1 (an identical request as was made for Baghouse #3). This request is denied by the Division at this time due to the inability of the Division to determine that one flow monitoring location for two control devices and capture systems will accurately and adequately provide a continuous record of operation of each emission capture system. Any request for determination related to this in the future must include a robust data demonstration including simultaneous inlet and outlet monitoring to demonstrate how compliance could be demonstrated. On January 6, 2021, NSG submitted a request to remove EPs 12-04, 12-05, and 12-06 from the permit. These EPs were removed from the site in May 2017.
- *APE20200001* – On January 27, 2020, NSG submitted a Minor Revision application requesting incorporation of a U.S. EPA approved alternate monitoring procedure for the Pickle Line Scrubber into the permit. This application was deemed complete on February 11, 2020.
- *APE20200002* – On March 10, 2020, NSG submitted a Minor Revision application requesting removal of two emergency generators from a PSD revision application submitted on September 13, 2019 (later withdrawn). NSG requested that these replacements be processed

separately as a minor revision since the replacements are not related to the PSD melt shop expansion. This application was deemed complete on March 12, 2020.

- *APE20200008* – On September 30, 2020, NSG submitted a Minor Revision application to incorporate all off-permit changes and other minor modifications previously submitted regarding the Pickle and Galvanizing Line. This application was deemed complete on December 14, 2020.
- *APE20200009* – On October 15, 2020, NSG submitted a revised PSD Significant Revision application to replace the previous significant revision (previously submitted September 13, 2019) related to revising the project. This application incorporates final design specifications that are different from the last expansion project permitted in V-14-013 R5 and requires re-evaluation of the project. NSG has also requested authorization to construct additional support equipment, revised the size of new or modified units, and eliminated units that are no longer needed.

  NSG also sent additional information regarding this PSD project revision on May 19th, November 5th and 24th, December 1st, 11th, and 15th of 2020. On October 29, 2020, NSG provided Volume II of the PSD application which included the air dispersion modeling data and associated discussion. The Division requested additional information regarding this submittal on December 5, 2020, and Nucor provided the requested information on December 11, 2020. A preconstruction monitoring waiver for PM_{10} was granted on December 15, 2020.

  The Division sent Volume I of the application to the U.S. EPA and Federal Agencies on October 20, 2020, and the additional Volume II application submittal including air dispersion modeling files was sent to the U.S. EPA and Federal Agencies on November 18, 2020.

This permit includes the following overall changes:

- Removal of some alternative operating scenarios that were either no longer needed, or would not be implemented as originally proposed.
- Permit language, such as compliance demonstration methods, precluded regulations, etc, has been updated or added to be consistent and clear.
- EP 20-05 A, B, & C, the ladle preheaters, will be discharged to the Melt Shop #1 Baghouse 2 via the capture system. As such, the emissions from the ladle preheaters has been incorporated into the existing emission limits for the combined Melt Shop #1 Baghouses Stack. Accordingly, a separate emission limitation has not been set.
- The following table identifies emission points that have been removed from the permit:

Table 1

EP#	Title	Max. Cap.	Control Equipment
03-05	Direct Contact Cooling Tower	10,000 gal/min	Mist Eliminator
03-07	Laminar Cooling Tower	30,000 gal/min	Mist Eliminator
06-02	Melt Shop #1 LMF Alloy System	20 Tons/hr	Dust Collector
06-03	Melt Shop #2 LMF Alloy System	20 Tons/hr	Dust Collector
09-02	Emergency Fire Pump #2	250 HP	None
11-01	Lime Dump Station (dump house & material transfer)	20 Tons/hr	Bin Vent Filter
11-06	Melt Shop #2 Lime Silo #5	20 Tons/hr	Bin Vent Filter
11-07	Melt Shop #2 Lime Silo #6	20 Tons/hr	Bin Vent Filter
11-08	Melt Shop #2 Lime Silo #7	20 Tons/hr	Bin Vent Filter
11-09	Melt Shop #2 Lime Silo #8	20 Tons/hr	Bin Vent Filter

EP#	Title	Max. Cap.	Control Equipment
12-04	Primary Brick Crusher (Primary 4233 Horizontal shaft Impactor)	20 tons/hr	Wet Suppression
12-05	Crusher Discharge Conveyor (30" with Cross-Belt Magnet)	20 tons/hr	Wet Suppression
12-06	Ferrous Material Stockpile	20 tons/hr	Wet Suppression
12-50	Carbon Dump Station	20 Tons/hr	Bin Vent Filter
16-01	Zinc Pot Pre-Heater	3 MMBtu/hr	None
22-01	Scrap Shredder-Loading/Loadout (6 transfer points)	125 tons/hr, each	None
22-02	Scrap Shredder-Hammer Mill	125 tons/hr	Water Spray
22-03	Scrap Shredder-Conveyor Transfer Points (20)	125 tons/hr	Water Spray
22-04	Scrap Shredder-Magnetic Separation	125 tons/hr	Water Spray
22-05	Scrap Shredder-Torch Cutting (4 torches)	114 lbs of O_2/hr	None

- The following table identifies proposed additional emission points to be added to the permit:

Table 2

EP#	Title	Max. Cap.	Control Equipment
02-07	Rolling Mill Inspection Line Plasma Cutter	500 Tons/hr	Robo Vent Filter
02-08	Material Handling Coil Torch Cutting	60 tons/hr	Baghouse
03-13	Air Separation Plant Cooling Tower	15,000 gal/min	Mist Eliminator
03-14	DCW Auxiliary Cooling Tower	15,000 gal/min	Mist Eliminator
06-04	Melt Shop #2 Lime and Alloy System	20 tons/hr	Baghouse
09-06	Emergency Fire Pump #2	305 HP	None
09-07	Radio Tower Emergency Generator	36 HP	None
20-15	Melt Shop #2 Scrap Bucket Charge	250 tons/hr	Baghouse #3
20-16	Melt Shop #2 Safety Lining Dryer for Tundishes	3.9 MMBty/hr (total)	Baghouse #3
20-17	Melt Shop #2 Vertical Ladle Heater at LMF	27.3 MMbtu/hr	Baghouse #3

- The following table identifies changes to previously permitted maximum rated heat input capacity/engine size/process rates for the following emission points:

Table 3

EP#	Original Max Capacity	Revised Max Capacity
02-01	85 MMBtu/hr	81 MMBtu/hr
02-02	145 MMBtu/hr	163.1 MMBtu/hr
02-03	105 MMBtu/hr	65.1 MMBtu/hr
03-08	10,000 gal/min	8,000 gal/min
03-09	30,000 gal/min	35,000 gal/min
03-10	36,000 gal/min	26,300 gal/min
03-11	81,200 gal/min	59,500 gal/min
08-04	2,220 HP	2,922 HP
08-05	2,220 HP	2,922 HP
08-07	2,922 HP	2,937 HP
12-51	20 tons/hr	25 tons/hr
12-52	20 tons/hr	25 tons/hr
12-53	20 tons/hr	25 tons/hr
15-02	23 MMbtu/hr	25.2 MMBtu/hr
15-03	23 MMbtu/hr	25.2 MMbtu/hr
16-04	8 MMBtu/hr	9 MMBtu/hr
16-06	30 MMbtu/hr	37 MMbtu/hr

EP#	Original Max Capacity	Revised Max Capacity
20-01	4 sidewall burners: 20 MMBtu/hr each 1 door burner: 15.4 MMBtu/hr 2 sump burners: 15.4 MMBtu/hr	4 sidewall burners: 17.1 MMBtu/hr each, No door burner 1 sump burner: 17.1 MMBtu/hr
20-05	20 MMbtu/hr each	27 MMbtu/hr each
20-06	6.6 MMbtu/hr each	12.2 MMbtu/hr each
20-07	2.8 MMBtu/hr for Mandrel (1); 3.1 MMBtu/hr each for SEN	1.3 MMBtu/hr for Mandrel (4); 0.34 MMBtu/hr each for SEN
23-01	12.5 MMbtu/hr each (2)	14.5 MMbtu/hr each (2)
24-01 to 24-05	90 yd^3/hr each	120 yd^3/hr each

- New and updated CAM plans and PPP have been added to the permit as Appendix A and B.
- Emission calculations were updated to reflect more recent emission data where it was available and appropriate.
- The CEMs calculations for the Melt Shop baghouses was modified. Previously, the calculation was an average of averages. The modified calculation requires hourly calculations of emissions instead of daily.

Determination of 401 KAR 59:015 Emission Limits:
Total indirect heat exchanger heat input and limits for Steel Tech (AI 1460) and Nucor (AI 1449)

Summary of All Affected Facilities Used to Determine 401 KAR 59:015 Emission Limits								
EU/EP	Fuel	Capacity (MMBtu/hr)	Constructed	Basis for PM & SO_2 Limits	Total Heat Input Capacity for PM & SO_2 Limits (MMBtu/hr)	Notes	PM limit (lb/MMBtu)	SO2 limit (lb/MMBtu)
02	NG	11.725	1995	401 KAR 59:015, Section 4(1)(c) and 5(1)(c)	21.625	Steel Tech	0.467	2.186
03	NG	3.3	1995		21.625	Steel Tech		
04	NG	3.3	1995		21.625	Steel Tech		
05	NG	3.3	1995		21.625	Steel Tech		
08	NG	15.5	2004	401 KAR 59:015, Section 4(1)(c) and 5(1)(c)	37.125	Steel Tech	0.411	1.751
15-03	NG	25.2	2017	401 KAR 59:015, Section 4(1)(c) and 5(1)(c)	87.525	Nucor	0.336	1.231
15-04	NG	25.2	2017		87.525	Nucor		
15	NG	2.187	2018	401 KAR 59:015, Section 4 (1)(c) and 5 (1)(c)	91.899	Steel Tech	0.332	1.207
16	NG	2.187	2018		91.899	Steel Tech		
20-13	NG	50.4	2019	401 KAR 59:015, Section 4 (1)(c) and 5 (1)(c)(2)	337.899	Nucor	0.1	0.8
21-04	NG	18	2019		337.899	Nucor		
21-05	NG	18	2019		337.899	Nucor		
21-07B	NG	23	2019		337.899	Nucor		
21-08B	NG	36	2019		337.899	Nucor		
21-15 (15 units)	NG	4.8 each	2019		337.899	Nucor		
23-01	NG	29	2019		337.899	Nucor		

V-20-015 Emission Summary**		
Pollutant	2019 Actual (tpy)	PTE V-20-015 (tpy)
CO	660.58	3830.39
NO_X	193.44	971.08
PT	50.56	586.50
PM_{10}	21.44	856.82
$PM_{2.5}$	13.59	548.17
SO_2	29.53	618.13
VOC	78.15	243.07
Lead	0.003	0.81
Greenhouse Gases (GHGs)		
Carbon Dioxide	49,815	1,539,471
Methane	0.95	48.03
Nitrous Oxide	0.91	10.97
CO_2 Equivalent (CO_{2e})	50,110	1,543,941
Hazardous Air Pollutants (HAPs)*		
Acetaldehyde	0.000075	1.11
Acrolein	0.000009	0.46
Benzene	0.000092	0.10
Carbon Disulfide	--	0.57
Chlorine	--	2.31
Chromium	0.0153	0.22
Fluoride	--	7.87
Formaldehyde	0.000122	0.38
Hexane; N-Hexane	--	9.57
Hydrochloric Acid	0.1995	6.23
Hydrogen Fluoride	--	2.42
Manganese	0.26	2.29
Methanol	--	1.50
Methylene Chloride	--	0.88
Mercury	0.0853	0.00093
m-Xylene	0.000028	0.11
Toluene	0.000040	0.24
Combined HAPs:	0.57	29.98

*****HAPs with a PTE of less than 0.1 tpy are not listed here, with the exception of Mercury.

******Includes contributions from NSG only

APPENDIX A – ABBREVIATIONS AND ACRONYMS

AAQS – Ambient Air Quality Standards
BACT – Best Available Control Technology
Btu – British thermal unit
CAM – Compliance Assurance Monitoring
CO – Carbon Monoxide
Division – Kentucky Division for Air Quality
ESP – Electrostatic Precipitator
GHG – Greenhouse Gas
HAP – Hazardous Air Pollutant
HF – Hydrogen Fluoride (Gaseous)
MSDS – Material Safety Data Sheets
mmHg – Millimeter of mercury column height
NAAQS – National Ambient Air Quality Standards
NESHAP – National Emissions Standards for Hazardous Air Pollutants
NO_x – Nitrogen Oxides
NSR – New Source Review
PM – Particulate Matter
PM_{10} – Particulate Matter equal to or smaller than 10 micrometers
$PM_{2.5}$ – Particulate Matter equal to or smaller than 2.5 micrometers
PSD – Prevention of Significant Deterioration
PTE – Potential to Emit
SO_2 – Sulfur Dioxide
TF – Total Fluoride (Particulate & Gaseous)
VOC – Volatile Organic Compounds