

**TECHNICAL REVIEW AND EVALUATION
OF APPLICATION FOR
AIR QUALITY PERMIT NO. 44141**

I. INTRODUCTION

This Class II Synthetic Minor Air Quality Permit is issued to Nucor Steel Kingman, LLC., to construct and operate a steel reshaping facility outside of Kingman, Arizona.

A. Company Information

Facility Name: Nucor Steel Kingman
Mailing Address: PO Box 3249
Kingman, AZ 86402
Facility Address: Mohave County
Latitude: N 35 deg, 8 min, 38 sec
Longitude: W 114 deg, 5 min, 12.9998 sec

B. Attainment Classification

The source is located in an area that is either in attainment or unclassifiable with respect to all the criteria pollutants

II. FACILITY DESCRIPTION

A. Process Description

The facility will take steel bars (billets) from steel mills at other locations and shape them in a rolling mill which is part of a hot rolling process. Heating of steel to sufficient temperatures for hot rolling will be accomplished in an 85 million British thermal unit per hour (MMBTU/hr) natural gas-fired reheat furnace. The steel is then drawn down to the desired shape and size of the product that it will become. This is accomplished with a number of processing stations. The exact number and configuration of each will be determined by the product being produced.

B. Air Pollution Control Equipment

Low NO_x burners on the re-heat furnace, high efficiency drift eliminators on the wet cooling towers, washing and vacuuming of the paved roads and the use of water or chemical dust suppressants on the unpaved roads are some the pollution control measures used at the facility.

III. EMISSIONS

The facility is classified as a synthetic minor source pursuant to Arizona Administration Code (A.A.C.) R18-2-301.20. Table #1 quantifies the total controlled emissions from the entire facility.

Table 1: Facility Wide Controlled Emissions for non-fugitive sources at the entire facility

Pollutant	Emissions
	Tons/year
PM	4.61
PM ₁₀	4.61
SO ₂	0.95
NO _x	78.01
CO	62.40
VOC	2.96
HAPs*	0.22

* Hazardous Air Pollutant (HAP) Emissions - The HAP emissions listed above are from fuel burning equipment.

IV. APPLICABLE REGULATIONS

Table 2 identifies the applicable regulations corresponding to every process unit and also provides verification as to why that standard applies

Table 2: Verification of Applicable Regulations

Unit	Control Device	Rule	Verification
Reheat Furnace	Low NOx Burners	A.A.C. R18-2-730	This Standard is applicable to any unclassified source. A.A.C. R18-2-724 does not apply as this standard applies to industrial installations in which fuel is burned for the primary purpose of producing steam, hot water, hot air or other liquids, gases or solids and in the course of doing so the products of combustion do not come into direct contact with process materials. There are no applicable NSPS requirements for the reheat furnace.
Internal Combustion Engines	N/A	A.A.C. R18-2-719	This standard is applicable to all internal combustion engines.
Internal Combustion Engines	N/A	40 Code of Federal Regulations 60, subpart III	This standard is applicable to internal combustion engines (ICEs) that commence construction after July 11, 2005, and where the ICE is manufactured after April 1, 2006.
Internal Combustion Engines	N/A	40 CFR 63 Subpart ZZZZ	This standard is applicable to all internal combustion engines that are area source of HAPs. However, currently there are no applicable requirements to any engine at this facility.
Heaters	N/A	A.A.C. R18-2-724	The standards of performance for fossil-fuel fired industrial and commercial equipment are applicable to all heaters.
Hot Rolling, Solvent Cleaning Activities (Parts Washer), Wastewater Treatment Operations	N/A	A.A.C. R18-2-730	Standards of Performance for Unclassified Sources.
Fugitive dust	Water and other reasonable precautions	Article 6, A.A.C. R18-2-702	These are applicable to any fugitive dust source.
Spray painting operations	N/A	A.A.C. R-18-2-727	This standard is applicable to any spray painting operation.

Unit	Control Device	Rule	Verification
Demolition/renovation operations	N/A	A.A.C. R18-2-1101.A.8	This standard is applicable to any asbestos related demolition or renovation operations.
Mobile Sources	N/A	A.A.C. R-18-2-801 A.A.C. R-18-2-802 A.A.C. R-18-2-804	These regulations are applicable to all mobile sources

V. NATIONAL EMISSION STANDARDS FOR HAZARDOUS AIR POLLUTANTS (NESHAP) REQUIREMENTS

The diesel-fired engine is an affected facility under the 40 CFR 63 Subpart ZZZZ, NESHAP for Stationary Reciprocating Internal Combustion Engines (RICE). According to 40 CFR 63.6590.b.3, an existing compression ignition (CI) stationary RICE located at an area source does not have to meet the requirements of the Subpart.

VI. MONITORING, RECORD KEEPING, AND REPORTING REQUIREMENTS

1. Reheat Furnace Requirements

a. Monitoring Requirements

The permit requires monthly surveys of visual emissions from the furnace stack to be performed by a certified EPA Reference Method 9 observer. If the opacity of the emissions observed appears to exceed the standard, the observer is required to conduct a certified EPA Reference Method 9 observation.

b. Recordkeeping Requirements

i. The Permittee is required to record the emission point being observed, location of observer, date, time and the results of all visible emission surveys or Method 9 observation made monthly, as well as the name of the observer who conducted the test. In the event of opacity going beyond the limit, the Permittee must keep a record of the corrective action taken to bring the opacity below the standard.

ii. The Permittee is required to keep records of fuel supplier certifications that contain information regarding the name of fuel supplier and heating value of the fuel.

iii. The Permittee is required to keep hourly and daily throughput records for equipment subject to reheat furnace requirements. The Permittee must calculate the annual records based on rolling 12 month totals.

2. Hot water and Fixed Space Heater requirements

a. Monitoring Requirements

The permit requires monthly surveys of visual emissions from the stacks of each water and space heater to be performed by a certified EPA Reference Method 9 observer. If the opacity of the emissions observed appears to exceed the standard, the observer is required to conduct a certified EPA Reference Method 9 observation.

b. Recordkeeping Requirements

- i. The Permittee is required to record the emission point being observed, location of observer, date, time and the results of all visible emission surveys or Method 9 observation made monthly, as well as the name of the observer who conducted the test. In the event of opacity going beyond the limit, the Permittee will keep a record of the corrective action taken to bring the opacity below the standard.
- ii. The Permittee is required to keep records of fuel supplier certifications that contain information regarding the name of fuel supplier and heating value of the fuel.

3. Cooling Towers

a. Monitoring Requirements

- i. The permit requires monthly surveys of visual emissions from the cooling towers in operation to be performed by a certified EPA Reference Method 9 observer. If the opacity of the emissions observed appears to exceed the standard, the observer is required to conduct a certified EPA Reference Method 9 observation.
- ii. The Permittee is required to install non re-settable hour meters for the continuous measurement of hours of operation of the cooling towers.
- iii. The Permittee is required to install flow meters for the continuous measurement of circulating water flow rate on each of the cooling towers.
- iv. The Permittee is required to record and maintain a log of the actual hours of operation of fans per cooling tower and calculate a rolling twelve-month total at the end of each month.

b. Recordkeeping Requirements

- i. The Permittee is required to record the emission point being observed, location of observer, date, time and the results of all visible emission surveys or Method 9 observation made monthly, as well as the name of the observer who conducted the test. In the event of opacity going beyond the limit, the Permittee will keep a record of the corrective action taken to bring the opacity below the standard.
- ii. The Permittee is required to perform monthly inspections of the drift eliminators to verify performance. The Permittee must keep records of the results of the inspections and any repairs performed in a written facility log.
- iii. The Permittee is required to perform monthly analysis and keep records of the total dissolved solids in the chiller system circulation water.

- iv. The Permittee is required to maintain a log of the actual hours of operation of each cooling tower and calculate a twelve month rolling total at the end of each month.

4. Internal Combustion Engines – Non-NSPS Requirements

a. Monitoring Requirements

The permit requires monthly surveys of visual emissions from the internal combustion engines stacks to be performed by a certified EPA Reference Method 9 observer. If the opacity of the emissions observed appears to exceed the standard, the observer is required to conduct a certified EPA Reference Method 9 observation.

b. Recordkeeping Requirements

- i. The Permittee is required to record and maintain a log of the actual hours of operation and calculate a rolling twelve-month total of hours of operation of the internal combustion engines at the end of each month.
- ii. The Permittee is required to record the emission point being observed, location of observer, date, time and the results of all visible emission surveys or Method 9 observations made, as well as the name of the observer who conducted the test. In the event of opacity going beyond the limit, the Permittee will keep a record of the corrective action taken to bring the opacity below the standard.
- iii. The Permittee is required to keep records of fuel supplier certifications that contain information regarding the name of fuel supplier, sulfur content in the fuel, and the heating value of the fuel.

5. Hot Rolling, Solvent Cleaning Activities and Wastewater Treatment Plant

a. Monitoring Requirements

The Permittee is required to perform monthly survey of visible emissions from the hot rolling process. If the opacity appears to exceed the standard, the Permittee is required to conduct EPA Method 9 observation by a certified EPA Reference Method 9 observer.

b. Recordkeeping Requirements

- i. The Permittee is required to record the emission point being observed, location of observer, date, time and the results of all observations made, as well as the name of the observer who conducted the test. In the event of opacity going beyond the limit, the Permittee must keep a record of the corrective action taken to bring the opacity below the standard.
- ii. The Permittee is required to keep records of fuel supplier certifications that contain information regarding the name of fuel supplier, and the heating value of the fuel.

6. Fugitive Dust Requirements

a. Monitoring Requirements

The permit requires monthly visual surveys or EPA Reference Method 9 observations of fugitive emissions by a certified Method 9 observer.

b. Recordkeeping Requirements

The Permittee is required to record the emission point being observed, location of observer, date, time and the results of all observations made, as well as the name of the observer who conducted the test. In the event of opacity going beyond the limit, the Permittee must keep a record of the corrective action taken to bring the opacity below the standard.

VII. TESTING REQUIREMENTS

A. Reheat Furnace

1. No later than 90 days after initial start-up of the operations and once thereafter during the permit term, the Permittee is required to conduct a performance test for PM₁₀ on the reheat furnace stack using EPA Reference Method 201A and Method 202. Alternatively, the Permittee may use the front half and back half of an EPA Reference Method 5 test to represent PM₁₀.
2. No later than 90 days after initial start-up of the operations and once thereafter during the permit term, the Permittee is required to conduct a performance test for NO_x on the reheat furnace stack using EPA Reference Method 7E.
3. No later than 90 days after initial start-up of the operations and once thereafter during the permit term, the Permittee is required to conduct a performance test for CO on the reheat furnace stack using EPA Reference Method 10.

B. Internal Combustion Engines – Non-NSPS Requirements

1. Monitoring Requirements

The permit requires monthly surveys of visual emissions from the internal combustion engine stacks to be performed by a certified EPA Reference Method 9 observer. If the opacity of the emissions observed appears to exceed the standard, the observer is required to conduct a certified EPA Reference Method 9 observation.

2. Recordkeeping Requirements

- a. The Permittee is required to record the emission point being observed, location of observer, date, time and the results of all visible emission surveys or Method 9 observations made, as well as the name of the observer who conducted the test. In the event of opacity going beyond the limit, the Permittee will keep a record of the corrective action taken to bring the opacity below the standard.
- b. The Permittee is required to maintain a log of the actual hours of operation of the internal combustion engine and calculate a twelve month rolling total at the end of each month.

VIII. LEARNING SITES POLICY

In accordance with ADEQ’s Environmental Permits and Approvals Near Learning Sites Policy, the Department conducted an evaluation to determine if any nearby learning sites would be adversely impacted by Nucor Steel Kingman, LLC. Learning sites consist of all existing public schools, charter schools and private schools at the K-12 level, and all planned sites for schools approved by the Arizona School Facilities Board. The learning sites policy was established to ensure that the protection of children at learning sites is considered before a permit approval is issued by ADEQ.

There are no learning sites within two miles of the facility. The Department has determined that the operation of the facility will not adversely affect learning sites.

IX. IMPACTS TO AMBIENT AIR QUALITY

A. Introduction

As part of the Nucor Steel Kingman, LLC. Class II permit, an air quality impact analysis (i.e. modeling analysis, AERMOD) was conducted.

The purpose of the modeling analysis is to determine whether air quality impacts from proposed criteria pollutant emissions will cause or contribute to a violation of any air quality standard, or worsen an existing air quality problem. Applicable standards include the National Ambient Air Quality Standards (NAAQS).

B. Modeling Analysis Overview

NAAQS Analysis

Table 3 below shows the AERMOD results of NAAQS analysis for CO, NO₂, SO₂, PM₁₀. Background concentrations for CO, NO₂, SO₂, PM₁₀ were used towards accounting for the final concentrations presented in the Table 3 below. Below is the background concentration information for various pollutants.

- NO₂ : Long term average value (0.002ppm) of several monitors located near power plants in rural areas in AZ
- CO: Typical continental ambient CO background value (0.5 ppm) used in most regional models
- PM₁₀: Average maximum value over 3-years period from Kingman – Praxair monitoring station
- SO₂: maximum values over 3-years period from Bullhead City – SCE monitoring station

All pollutants are expected to be within the standards.

Table 3. Modeling Analysis Results

Total Modeled Concentrations Compared to Standards (Including Background Concentrations)										
Pollutant	1-hr		3-hr		8-hr		24-hr		Annual	
	Total Conc. [µg/m ³]	Standard	Total Conc. [µg/m ³]	Standard	Total Conc. [µg/m ³]	Standard	Total Conc. [µg/m ³]	Standard	Total Conc. [µg/m ³]	Standard
CO	1556.42	40000			796.82	10000				
SO _x			591.49	1300			140.2	365	7.82	80
NO _x									17.99	100
PM ₁₀							148.5	150	40.5	50

X. INSIGNIFICANT ACTIVITIES

This table includes a listing of trivial and insignificant activities.

Storage Tanks	Storage Volume (gallons)	Justification
Landscaping, building maintenance, janitorial activities	N/A	Insignificant activity, A.A.C. R18-2-101(57)(a)
Electric building air conditioning units	N/A	Trivial activity, A.A.C. R18-2-101(119)(b)
Sanitary sewer vents	N/A	Trivial activity, A.A.C. R18-2-101(119)(h)
Hand-held or manually operated shop equipment including but not limited to scrap and billet cutting, portable welders, portable torches, and pressure washer	N/A	Trivial activity, A.A.C. R18-2-101(119)(p)
Laboratory equipment	N/A	Insignificant activity, A.A.C. R18-2-101(57)(i)
Aerosol paint cans	N/A	Trivial activity, A.A.C. R18-2-101(119)(l)
Tanks and ancillary outdoor holding reservoirs required by the stormwater retention plan	N/A	Trivial activity, A.A.C. R18-2-101(119)(t)
Diethylene glycol tanks	10,000 gal	Trivial activity, A.A.C. R18-2-101(119)(s)
Diethylene glycol tanks	10,000 gal	Trivial activity, A.A.C. R18-2-101(119)(s)
Diethylene glycol tanks	10,000 gal	Trivial activity, A.A.C. R18-2-101(119)(s)
Diethylene glycol tanks	10,000 gal	Trivial activity, A.A.C. R18-2-101(119)(s)
Lube oil	10,000 gal	Trivial activity, A.A.C. R18-2-101(119)(s)
Lube oil	10,000 gal	Trivial activity, A.A.C. R18-2-101(119)(s)
Diesel tanks	1,000 gal	Insignificant activity, A.A.C. R18-2-101(57)(c)
Diesel tanks	1,000 gal	Insignificant activity, A.A.C. R18-2-101(57)(c)
Diesel tanks	1,000 gal	Insignificant activity, A.A.C. R18-2-101(57)(c)
Diesel tanks	1,000 gal	Insignificant activity, A.A.C. R18-2-101(57)(c)
Diesel tanks	10,000 gal	Insignificant activity, A.A.C. R18-2-101(57)(c)

XI. LIST OF ABBREVIATIONS

A.A.C	Arizona Administrative Code
ADEQ	Arizona Department of Environmental Quality
AQD	Air Quality Division
CFR	Code of Federal Regulations
EPA	Environmental Protection Agency
FERC	Federal Energy Regulatory Commission
HAP	Hazardous Air Pollutant
hr	Hour
lb	Pound
MMBtu	Million British Thermal Unit
NESHAP	National Emission Standards for Hazardous Air Pollutants
µg/m ³	Microgram per cubic Meter
NO _x	Nitrogen Oxide
NSPS	New Source Performance Standard
PM	Particulate Matter
PM ₁₀	Particulate Matter Nominally less than 10 Micrometers
PTE	Potential-to-Emit
RICE	Reciprocating Internal Combustion Engine
s	Seconds
SO ₂	Sulfur Dioxide
TPY	Tons per Year
VOC	Volatile Organic Compound
yr	Year