



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION 2  
290 BROADWAY  
NEW YORK, NY 10007-1866

JUN 22 2004

Certified Mail - Return Receipt Requested

Mr. David R. Smith, General Manager  
Nucor Steel Auburn, Inc.  
P.O. Box 2008  
25 Quarry Road  
Auburn, New York 13021

Re: Final Prevention of Significant Deterioration of Air Quality (PSD) Permit Modification for the Proposed Replacement of the Reheat Furnace, and the Proposed Increase in the Melt Shop Production Limit at the Nucor Steel Facility in Auburn, New York

Dear Mr. Smith:

On April 29, 2004, the Region 2 Office of the U.S. Environmental Protection Agency (EPA) issued a draft Prevention of Significant Deterioration of Air Quality (PSD) permit modification to the Nucor Steel Auburn, Inc. for its facility in Auburn, NY. EPA proposed revisions to Nucor Steel's existing PSD permit to increase Nucor Steel's melt shop production limit from 600,000 tons per year to 665,000 tons per year and to install a new 179 MMBTU/hour heat input reheat furnace with superior burner technology which will replace the existing reheat furnace which is used with the rolling mill. Because of these proposed changes, the facility is now subject to PSD for carbon monoxide (CO), nitrogen dioxide (NO<sub>x</sub>), and sulfur dioxide (SO<sub>2</sub>).

No comments were submitted to EPA during the 30-day public review period, which commenced upon publication of EPA's preliminary determination in The Citizen on May 9, 2004, and expired on June 8, 2004. As such, no changes have been made from the draft PSD permit modification issued to Nucor Steel on April 29, 2004, to the final PSD permit modification that is being issued today.

The EPA concludes that this final permit modification meets all applicable requirements of the PSD regulations codified at 40 CFR §52.21, and the Clean Air Act (the Act). Accordingly, I hereby approve Nucor Steel's PSD permit modification for its Auburn, NY facility. This letter and its attachments represent EPA's final permit decision, and is effective immediately.

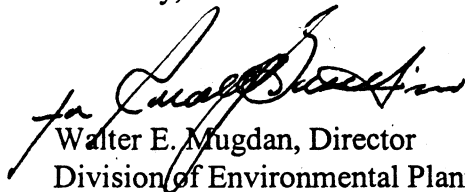
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A description of the facility is provided in Attachment I. The permit conditions are in Attachment II. Attachment III contains a summary of the air quality impacts for CO, NO<sub>x</sub> and SO<sub>2</sub>. This final permit decision will be published in the Federal Register as a final Agency action.

If you have any questions regarding this letter, please call Mr. Steven C. Riva, Chief, Permitting Section, Air Programs Branch, at (212) 637-4074.

Sincerely,



Walter E. Mugdan, Director  
Division of Environmental Planning and Protection

Attachments

cc: David Shaw, Director  
Division of Air Resources  
New York State Department  
of Environmental Conservation (w/attachments)

Reginald Parker  
Regional Air Pollution Control Engineer  
New York State Department  
of Environmental Conservation  
Region 7 (w/attachments)

Attachment I

Nucor's Auburn Mill  
Project Description

General Project Description:

The Auburn Steel Company, completed construction and began operation of its Auburn Plant in New York in 1975. Since that time there have been a number of facility upgrades. In 1983, a Prevention of Significant Deterioration of Air Quality (PSD) permit was required for an expansion project. At that time, carbon monoxide (CO) was the only PSD-affected pollutant. Nucor Corporation acquired the facility in April 2001. Nucor Steel Auburn Inc. (Nucor), as the plant is presently known, receives scrap metal and, using an electric arc furnace (EAF), produces billets of steel that are sold or manufactured into bar stock and reinforcement rod for various types of products. The scrap is received by rail or truck, sorted by type and used to make specification steel. Coal, coke, coke breeze, coke products and/or rubber tires are used for a source of carbon in producing various steel products. A large baghouse collects and filters all EAF exhausts. Because the facility recycles or otherwise uses a variety of material feedstocks in the process, the quantities of any one material will vary as different grades of steel are made.

Type of Equipment and Operations:

The plant consists of an electric arc furnace (EAF) melt shop, billet continuous caster, a reheat furnace, and a hot steel rolling mill. The charges of scrap steel are melted by the heat from electric current passing through three electrodes. Molten steel is tapped into a heated ladle, refined by stirring with an inert gas and adding alloys to achieve the desired metallurgy and continuously cast into billets. Billets are cut to length as they emerge from the caster and are cooled with water sprays. Additional equipment that may or may not be used on or with the EAF melt shop are various lances, ladle preheaters, oxyfuel burners, fast acting hydraulic cylinders, alloy feed systems and material holding devices. Some billets are sent directly to the rolling mill for processing into bars and round stock. Other billets are sold directly or stored until a product is required to be manufactured. When these billets are to be rolled, they are reheated in a reheat furnace before they are rolled.

Proposed Modification:

The facility has proposed that the steel production limit at the existing electric arc furnace (EAF) be increased from 600,000 to 665,000 tons of steel per rolling 12-month. Nucor is also proposing to replace its existing natural gas-fired reheat furnace with a new, modern natural gas-fired one with a capacity of 179 MMBTU/hour heat input. The maximum steel throughput at the rolling

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mill connected to the reheat furnace will remain at 575,000 tons per rolling 12-month period. Nucor had recently requested and received from the NYSDEC approval to increase steel production to 600,000 tons/year from 500,000 tons/year. The 600,000 tons/year limit was codified in the PSD permit by the NYSDEC on June 25, 2002. This latest proposed modification is being combined with the previous steel production increase. Also, the same applies to the existing rolling mill since it was recently permitted for an increase in production to 575,000 tons/year. The 575,000 tons/year limit was also codified in the PSD permit by the NYSDEC on June 25, 2002. The June 25, 2002 permit modification triggered PSD review for CO and NO<sub>x</sub>. The emission increases associated by combining these changes into one review will be 377.8 tpy for carbon monoxide (CO), 57.9 tpy for nitrogen oxides (NO<sub>x</sub>), 41.85 tpy for sulfur dioxide (SO<sub>2</sub>), 23.9 tpy for volatile organic compounds (VOC), 2.32 tpy for particulate matter (PM), and 2.32 tpy of particulate matter under 10 microns (PM<sub>10</sub>). Based on the emission increases associated by combining these changes, this project is now subject to the Prevention of Significant Deterioration of Air Quality (PSD) review for CO, NO<sub>x</sub> and SO<sub>2</sub> and nonattainment 6NYCRR Part 231 review for NO<sub>x</sub>. The NO<sub>x</sub> nonattainment review will be addressed by the NYSDEC in a separate permit proceeding.

Nature of Business conducted at the facility including applicable Standard Industrial Classification (SIC) Codes: Secondary steel scrap mill -- SIC Code 3312 and North American Industry Classification System (NAICS) Code 331111.

PSD-Affected Pollutants Emitted at the Nucor Steel Auburn Inc. (Nucor) and Their Potential to Emit:

The Nucor Auburn steel plant will have as constituents in the combustion by-products, the PSD-affected pollutants listed below which are formed in the following ways:

**Carbon Monoxide (CO)** - CO will be emitted as a byproduct of incomplete combustion from the following potential sources

*Electric Arc Furnace (EAF)* – charged and injected carbon, scrap steel, electrodes, and “foaming slag” operating practice and natural gas combustion. EAFs generate CO as a result of oxidation of carbon introduced into the furnace charge to refine the steel and as a result of the sublimation/oxidation of the carbon electrode. The potential to emit for CO from the EAF is 665.0 tons/year.

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*Reheat Furnace* - formed as a result of incomplete combustion of the carbon contained in the fuel. Incomplete combustion can be caused mainly by fuel-rich conditions, insufficient combustion oxygen, and/or low combustion temperatures, all of which are not normal operating conditions. Normal operations will still generate CO at levels considered to be normal for natural gas combustion in an industrial-type furnace as defined in AP-42. The potential to emit for CO from the reheat furnace is 39.51 tons/year.

**Nitrogen Oxides (NO<sub>x</sub>)** - NO<sub>x</sub> is formed from the chemical reaction between nitrogen and oxygen at high temperatures. NO<sub>x</sub> formation occurs by different mechanisms.

*Electric Arc Furnace (EAF)* – In the case of EAFs, NO<sub>x</sub> predominantly forms from thermal dissociation and subsequent reaction of nitrogen and oxygen molecules in the combustion air. This mechanism of NO<sub>x</sub> formation is referred to as thermal NO<sub>x</sub>. The other mechanism of NO<sub>x</sub> formation such as fuel NO<sub>x</sub> are thought to have lesser contributions to NO<sub>x</sub> emissions from EAFs. The potential to emit for NO<sub>x</sub> from the EAF is 89.78 tons/year.

*Reheat Furnace* - formed from the high-temperature oxidation of nitrogen contained in the combustion air (thermal NO<sub>x</sub>) and from the oxidation of nitrogen that is bound in the fuel (fuel NO<sub>x</sub>). The relative amounts of thermal and fuel NO<sub>x</sub> formed depend primarily on the flame temperature and the fuel nitrogen content, respectively. The potential to emit for NO<sub>x</sub> from the reheat furnace is 35.3 tons/year.

**Sulfur Dioxide (SO<sub>2</sub>)** - formed from the oxidation of sulfur contained in the fuel.

*Electric Arc Furnace (EAF)* - The source of SO<sub>2</sub> emissions from the EAF is attributable to the sulfur content of the raw materials charged in the EAF, materials which are blown into the foaming slag process, and to a much lesser extent, the sulfur content of the scrap steel. Based on the maximum steel production of 665,000 tons/year, the potential to emit for SO<sub>2</sub> emissions is 83.12 tons/year.

*Reheat Furnace* - formed from the oxidation of sulfur contained in the fuel. The potential to emit for SO<sub>2</sub> is 0.28 ton/year.

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Attachment II

Nucor's Auburn Mill  
PSD Permit Conditions

The Nucor Auburn facility as described in Attachment I is subject to the following conditions:

I. Permit Expiration

This PSD Permit shall become invalid if construction for the new modification:

- a. has not commenced (as defined in 40 CFR Part 52.21(b)(9)) within 18 months after the approval takes effect;
- b. is discontinued for a period of 18 months or more; or
- c. is not completed within a reasonable time.

II. Notification of Commencement of Construction and Startup

- a. The EPA Regional Administrator (RA) shall be notified in writing of the anticipated date of initial startup (as defined in 40 CFR Part 60.2) of each new/modified facility at the source not more than sixty (60) days nor less than thirty (30) days prior to such date.
- b. The RA shall be notified in writing of the actual date of commencement of construction and startup within fifteen (15) days after such date.

III. Plant Operations

- a. All equipment, facilities, and systems installed or used to achieve compliance with the terms and conditions of this PSD Permit shall at all times be maintained in good working order and be operated as efficiently as possible so as to minimize air pollutant emissions.
- b. The continuous emission monitoring systems required by this permit shall be on-line and in operation 95% of the time during each reporting period when the electric arc furnace is operating and 95% of the time during each reporting period when the reheat furnace is operating.

IV. Right to Entry

The Regional Administrator and/or her authorized representatives, upon the presentation of credentials shall be permitted:

Attachment II (cont'd)

Nucor's Auburn Mill  
PSD Permit Conditions

- a. to enter at any time upon the premises where the source is located or in which any records are required to be kept under the terms and conditions of this PSD Permit;
- b. at reasonable times to have access to and copy any records required to be kept under the terms and conditions of this PSD Permit;
- c. to inspect any equipment, operation, or method required in this PSD Permit; and
- d. to sample emissions from the source.

V. Transfer of Ownership

In the event of any changes in control or ownership of facilities to be constructed or modified, this PSD Permit shall be binding on all subsequent owners and operators. The applicant shall notify the succeeding owner and operator of the existence of this PSD Permit and its conditions by letter, a copy of which shall be forwarded to the Regional Administrator.

VI. Types of Fuel

- a. The Electric Arc Furnace (EAF) shall only burn natural gas and oxygen in the oxygen lances. Nucor may request EPA to allow the burning of alternatively available gas sources (e.g., propane, landfill gas) at the EAF and must obtain EPA approval before burning alternatively available gas. Prior to allowing the burning of alternatively available gas on a permanent basis, EPA/NYSDEC may require additional stack testing. If the results of the stack tests or any other data show that emissions will not increase beyond the permitted levels, EPA may amend this permit administratively to allow such burning.
- b. The 179 MMBTU/hour heat input reheat furnace shall only combust natural gas. Nucor may request EPA to allow the burning of alternatively available gas sources (e.g., propane, landfill gas) at the reheat furnace and must obtain EPA approval before burning alternatively available gas. Prior to allowing the burning of alternatively available gas on a permanent basis, EPA/NYSDEC may require additional stack testing. If the results of the stack tests or any other data show that emissions will not increase beyond the permitted levels, EPA may amend this permit administratively to allow such burning.

Attachment II (cont'd)Nucor's Auburn Mill  
PSD Permit ConditionsVII. Pollution Control Equipment

- a. The Electric Arc Furnace (EAF) shall include and shall continuously operate the following air pollution control:

*Direct Shell Evacuation (DSE) controls to limit CO emissions.* A DSE system consists of a water-cooled duct connected to the EAF through the furnace roof's fourth-hole. This duct is then connected to the melt shop canopy collector system which further directs exhaust gases to the EAF baghouse.

- b. The 179 MMBTU/hr heat input reheat furnace shall include and shall continuously operate the following air pollution control:

*Ultra Low-NOx Burners to control NOx emissions.* The 179 MMBTU/hr heat input reheat furnace shall be designed to meet a NOx emission rate of 0.055 lb NOx/MMBTU at 100 percent firing natural gas. However, the average overall emission limit will be 0.075 lb NOx/MMBTU because the reheat furnace on average will be operated at lower firing rates.

VIII. Best Available Control Technology (BACT) and Emission Limitations for the Electric Arc Furnace (EAF)

- 1-EAF. Nucor shall operate the EAF in a manner that ensures compliance with the conditions in this permit.
- 2-EAF. Nucor shall only operate the EAF to produce molten steel at a scrap recycle rate not to exceed 110 tons per hour.
- 3-EAF. The maximum steel production from the EAF shall not exceed 665,000 tons of steel per 12-month rolling average, calculated on a monthly basis.
- 4-EAF. **Carbon Monoxide (CO)**
- a. Emissions of CO shall not exceed 202.4 lb/hour on an eight-hour average basis, calculated hourly and 2.0 lb CO per ton of steel produced on a 30-day rolling average basis, calculated daily.



Attachment II (cont'd)

Nucor's Auburn Mill  
PSD Permit Conditions

- b. The following formula shall be used to convert CO ppm CEM values from the EAF into lb/hour values:

$$CO_{EAF} \text{ (lb/hr)} = (CO \text{ ppm})(Flow \text{ scfm}_d) (60 \text{ minutes/hr})(28)/385.1 \times 10^6$$

where:

CO ppm = from CEM as volume/volume basis.

Flow scfm<sub>d</sub> = volumetric flow rate in standard cubic feet per minute dry

28 = molecular weight for CO.

385.1 = conversion from ppm volume basis to ppm weight basis

10<sup>6</sup> = conversion of ppm

5-EAF. **Nitrogen Oxides (NO<sub>x</sub>)**

- a. Emissions of nitrogen oxides shall not exceed 27.32 lb/hour on a 24-hour rolling average basis, calculated hourly and 0.27 lb NO<sub>x</sub> per ton of steel produced on a 30-day rolling average basis, calculated daily.
- b. The following formula shall be used to convert NO<sub>x</sub> ppm CEM values from the EAF into lb/hour values:

$$NOx_{EAF} \text{ (lb/hr)} = (NOx \text{ ppm})(Flow \text{ scfm}_d) (60 \text{ minutes/hr})(46)/385.1 \times 10^6$$

where:

NO<sub>x</sub> ppm = from CEM as volume/volume basis.

Flow scfm<sub>d</sub> = volumetric flow rate in standard cubic feet per minute dry

46 = molecular weight for NO<sub>x</sub>.

385.1 = conversion from ppm volume basis to ppm weight basis

10<sup>6</sup> = conversion of ppm

6-EAF. **Sulfur Dioxide (SO<sub>2</sub>)**

- a. Emissions of sulfur dioxide shall not exceed 25.3 lb/hr on a 24-hour average basis, calculated hourly and 0.25 lb SO<sub>2</sub> per ton of steel produced on a 30-day rolling average basis, calculated daily.

Attachment II (cont'd)Nucor's Auburn Mill  
PSD Permit Conditions

- b. The following formula shall be used to convert SO<sub>2</sub> ppm CEM values from the EAF into lb/hour values:

$$SO_{2EAF} \text{ (lb/hr)} = (SO_2 \text{ ppm})(Flow \text{ scfm}_d) (60 \text{ minutes/hr})(64)/385.1 \times 10^6$$

where:

SO<sub>2</sub> ppm = from CEM as volume/volume basis.

Flow scfm<sub>d</sub> = volumetric flow rate in standard cubic feet per minute dry

64 = molecular weight for SO<sub>2</sub>.

385.1 = conversion from ppm volume basis to ppm weight basis

10<sup>6</sup> = conversion of ppm

- c. The sulfur content of raw material inputs shall be controlled through existing scrap management practices, e.g., not accepting scrap with excessive free oil, thereby limiting the sulfur content of the scrap. Certain other raw material inputs, such as alloys and some carbon bearing materials used shall have maximum sulfur specifications. These shall vary depending upon the material.
- d. The resulting sulfur residual in the steel melt shall be measured in every batch and the scrap charge shall be adjusted, if required, to meet finished product sulfur requirements.

IX. Best Available Control Technology (BACT) and Emission Limitations for the New 179 MMBTU/hr Heat Input Reheat Furnace (RHF)

- 1-RHF. The reheat furnace shall only burn natural gas or, if approved by EPA, alternatively available gas.
- 2-RHF. The reheat furnace shall utilize combustion controls to minimize air emissions and shall be maintained and operated following manufacturers' recommendations.
- 3-RHF. The maximum steel throughput at the rolling mill connected to the reheat furnace shall not exceed 575,000 tons of steel per 12-month rolling average, calculated on a monthly basis.

Attachment II (cont'd)Nucor's Auburn Mill  
PSD Permit Conditions4-RHF. **Carbon Monoxide (CO)**

- a. Emissions of CO shall not exceed 15.0 lb/hour on an eight-hour average basis, calculated hourly and 0.084 lb/MMBTU on a 24-hour average basis.
- b. The following formula shall be used to convert CO ppm CEM values from the reheat furnace into lb/hour values:

$$CO_{RHF} \text{ ( lb/hr )} = (KCF * 20.9 / (20.9 - O_2)) \text{ ( NG consumption )} (1020)$$

where:

$(KCF * 20.9 / (20.9 - O_2))$  = mass emissions of CO (lb/MMBTU).

K = conversion factor for CO =  $7.2678 \times 10^{-8}$  ( [lb/scf] / ppm)

C = concentration of CO (ppm by volume, dry basis).

F = F-factor for natural gas (dscf/MMBTU)

O<sub>2</sub> = exhaust gas oxygen concentration (percent by volume, dry basis).

NG consumption = standard cubic feet of natural gas consumed per hour.

1020 = Btu per cubic foot of natural gas (AP-42).

5-RHF. **Nitrogen Oxides (NO<sub>x</sub>)**

- a. Emissions of nitrogen oxides shall not exceed 9.85 lb/hour on a 24-hour rolling average basis, calculated hourly and 0.075 lb/MMBTU on a 24-hour average basis.
- b. The following formula shall be used to convert NO<sub>x</sub> ppm CEM values from the reheat furnace into lb/hour values:

$$NOx_{RHF} \text{ ( lb/hr )} = (KCF * 20.9 / (20.9 - O_2)) \text{ ( NG consumption )} (1020)$$

Attachment II (cont'd)Nucor's Auburn Mill  
PSD Permit Conditions

where:

$(KCF * 20.9 / (20.9 - O_2))$  = mass emissions of nitrogen oxides (lb/MMBTU).

K = conversion factor for nitrogen oxides =  $1.194 \times 10^{-7}$  ( [lb/scf] / ppm)

C = concentration of nitrogen oxides (NOx) (ppm by volume, dry basis).

F = F-factor for natural gas (dscf/MMBTU)

O<sub>2</sub> = exhaust gas oxygen concentration (percent by volume, dry basis).

NG consumption = standard cubic feet of natural gas consumed per hour.

1020 = Btu per cubic foot of natural gas (AP-42).

6-RHF. **Sulfur Dioxide (SO<sub>2</sub>)**

- a. Emissions of sulfur dioxide shall not exceed 0.11 lb/hr on a 24-hour average basis, calculated hourly and 0.0006 lb/MMBTU on a 24-hour average basis.

X. Continuous Emission Monitoring (CEM) Requirements

1. Within 180 days from the effective date of this PSD permit, Nucor Steel shall install, calibrate, maintain, and operate the following monitoring systems in the electric arc furnace (EAF):
  - a. A continuous emission monitoring (CEM) system to measure CO. This system, at a minimum, shall meet EPA monitoring performance specifications of 40 CFR Part 60, Appendix B, Performance Specification 4, and 40 CFR Part 60, Appendix F.
  - b. A CEM system to measure exhaust gas NO<sub>x</sub> (reported as NO<sub>2</sub>). This system, at a minimum, shall meet EPA monitoring performance specifications of 40 CFR Part 60.13 and 40 CFR Part 60, Appendix B, Performance Specification 2, and 40 CFR Part 60, Appendix F.
  - c. A CEM system to measure SO<sub>2</sub> concentrations. This system, at a minimum, shall meet EPA monitoring performance specifications of 40 CFR Part 60.13 and 40 CFR Part 60, Appendix B, Performance Specification 2, and Appendix F.

Attachment II (cont'd)Nucor's Auburn Mill  
PSD Permit Conditions

- d. A system to calculate and record exhaust gas volumetric flow rates shall be implemented based on fan wheel manufacturer's system curves, fan motor current, fan damper positions, and temperature sensing. These parametrics shall be utilized through a programmable logic controller (PLC) algorithm with input from the CEM for calculating hourly rates of CO, NO<sub>x</sub> and SO<sub>2</sub>. External QA shall be verification of the volumetric calculation and shall be conducted during initial startup, and on a yearly basis thereafter, employing EPA standard flow traverse methodology. Internal QA shall include calibration and accuracy check of monitoring equipment taking into account the manufacturer's specifications and recommended internals. Nucor must submit a detailed proposed methodology to EPA and obtain EPA approval prior to the date of the performance test.
2. Prior to the date of startup and thereafter, Nucor Steel shall install, calibrate, maintain, and operate the following continuous monitoring systems in the 179 MMBTU/hr heat input reheat furnace:
    - a. A continuous emission monitoring (CEM) system to measure CO and a continuous monitoring system to measure carbon dioxide or oxygen. These systems, at a minimum, shall meet EPA monitoring performance specifications of 40 CFR Part 60, Appendix B, Performance Specifications 3 and 4, and 40 CFR Part 60, Appendix F.
    - b. A CEM system to measure stack gas NO<sub>x</sub> (reported as NO<sub>2</sub>). The system, at a minimum, shall meet EPA monitoring performance specifications of 40 CFR Part 60.13 and 40 CFR Part 60, Appendix B, Performance Specification 2, and Appendix F.
    - c. Gas consumption by the reheat furnace shall be used to determine mass loadings.
  3. Not less than 60 days prior to the date of startup of the new re-heat furnace, Nucor Steel shall submit to the EPA a Quality Assurance Project Plan for the certification of the CEM systems. CEM performance testing may not begin until the Quality Assurance Project Plan has been approved by EPA.

Attachment II (cont'd)Nucor's Auburn Mill  
PSD Permit Conditions

4. Nucor Steel shall notify EPA 15 days in advance of the date upon which demonstration of the CEM system performance will commence (40 CFR Part 60.13(c)). The CEM system performance date shall be no later than the date of the initial performance testing required under Permit Condition XI. of this permit.
5. Nucor Steel shall submit a written report to EPA of the results of all monitor performance specification tests conducted on the monitoring system(s) within 45 days of the completion of the tests. The continuous emission monitors must meet all the requirements of the applicable performance specification test in order for the monitors to be certified.
6. Nucor Steel shall submit a written report of all excess emissions to EPA every six (6) months based on the two reporting periods of January-June and July-December. A partial report may be submitted for the first reporting period from the date the stack tests are completed. All semi-annual reports shall be postmarked by the 30th day following the end of each reporting period and shall include the information specified below:
  - a. The magnitude of excess emissions computed in accordance with 40 CFR Part 60.13(h), any conversion factor(s) used, and the date and time of commencement and completion of each time period of excess emissions.
  - b. Specific identification of each period of excess emissions that occurs during startups, shutdowns, and malfunctions for the EAF and the reheat furnace. The nature and cause of any malfunction (if known) and the corrective action taken or preventive measures adopted shall also be reported.
  - c. The date and time identifying each period during which the continuous monitoring system was inoperative except for zero and span checks and the nature of the system repairs or adjustments.
  - d. When no excess emissions have occurred or the CEM system has not been inoperative, repaired, or adjusted, such information shall be stated in the report.
  - e. Results of quarterly monitor performance audits, as required in 40 CFR Part 60, Appendix F.

Attachment II (cont'd)

Nucor's Auburn Mill  
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- f. Excess emissions shall be defined as:
- i) any consecutive 8-hour, 24-hour, or 30-day period during which the average emission of CO, as measured by the CEM system, exceeds the corresponding mass or concentration emission limit set for CO in Conditions VIII. and IX. above.
  - ii) any consecutive 24-hour or 30-day period during which the average emission of NO<sub>x</sub>, as measured by the CEM system, exceeds the corresponding mass or concentration emission limit set for NO<sub>x</sub> in Conditions VIII. and IX. above.
  - iii) any consecutive 24-hour or 30-day period during which the average emission of SO<sub>2</sub>, as measured by the CEM system, exceeds the corresponding mass or concentration emission limit set for SO<sub>2</sub> in Condition VIII. above.
7. Nucor shall maintain a file of all measurements, including CEM system performance evaluations; all CEM systems or monitoring device calibration checks; adjustments and maintenance performed on these systems or devices; and all other information required by 40 CFR Part 60 recorded in a permanent form suitable for inspection. The file shall be retained for at least ten (10) years following the date of such measurement, maintenance, reports, and records.
8. At all times, including periods of startup, shutdown, and malfunction, Nucor shall, to the extent practicable, maintain and operate the electric arc furnace and reheat furnace including associated air pollution control equipment in a manner consistent with good air pollution control practice for minimizing emissions. Determination of whether acceptable operating and maintenance procedures are being used will be based on information available to EPA and/or NYSDEC which may include, but is not limited to, monitoring results, opacity observations, review of operating and maintenance procedures, and inspection of the facility.

Attachment II (cont'd)Nucor's Auburn Mill  
PSD Permit ConditionsXI. Performance Test Requirements

1. Within 180 days after the effective date of this PSD permit and at such other times as specified in writing by the EPA, Nucor shall conduct performance tests of the EAF for CO, NO<sub>x</sub>, SO<sub>2</sub>, PM, PM<sub>10</sub>, VOCs, opacity, and lead. All performance tests shall be conducted at 95% or more of the maximum achievable operating capacity of the unit(s) being tested and/or other loads specified by EPA.
2. Within 60 days after achieving the maximum production rate of the reheat furnace but no later than 180 days after initial startup as defined in 40 CFR Part 60.2, and at such other times as specified by the EPA, Nucor shall conduct performance tests for CO, NO<sub>x</sub>, and opacity. All performance tests shall be conducted at 95% or more of the maximum achievable operating capacity of the unit(s) being tested and/or other loads specified by EPA.
3. At least 60 days prior to the actual testing, Nucor shall submit to the EPA a Quality Assurance Project Plan detailing methods and procedures to be used during the performance stack testing. A Quality Assurance Project Plan that does not have EPA approval may be grounds to invalidate any test and require a re-test.
4. Nucor shall use the following test methods, or a test method which would be applicable at the time of the test and detailed in a test protocol approved by EPA:
  - a. Performance tests to determine the stack gas velocity, sample area, volumetric flowrate, molecular composition, excess air of flue gases, and moisture content of flue gas shall be conducted using 40 CFR Part 60, Appendix A, Methods 1, 2, 3, and 4.
  - b. Performance tests for the emissions of CO shall be conducted using 40 CFR Part 60, Appendix A, Method 10.
  - c. Performance tests for the emissions of NO<sub>x</sub> shall be conducted using 40 CFR Part 60, Appendix A, Method 7E.
  - d. Performance tests for the emissions of SO<sub>2</sub> shall be conducted using 40 CFR Part 60, Appendix A, Method 6C.



Attachment II (cont'd)

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- e. Performance tests for the emissions and control efficiency of PM shall be conducted using 40 CFR Part 60, Appendix A, Method 5D.
  - f. Performance tests for the emissions of PM<sub>10</sub> shall be conducted using 40 CFR Part 60, Appendix A, Method 5D and 40 CFR Part 51, Appendix M, Method 202.
  - g. Performance tests for the emissions of volatile organic compounds shall be conducted using 40 CFR Part 60, Appendix A, Methods 18, 25 or 25A, as appropriate. Corrections for methane will be allowed.
  - h. Performance tests for the emissions of lead shall be conducted using 40 CFR Part 60, Appendix A, Method 12 or 29.
  - i. Performance tests for the visual determination of the opacity of emissions from the stack shall be conducted using 40 CFR Part 60, Appendix A, Method 9 and the procedures stated in 40 CFR Part 60.11.
  - j. Test results indicating that emissions are below the limits of detection shall be deemed to be in compliance.
5. Additional performance tests may be required at the discretion of the EPA for any or all of the above pollutants.
  6. For performance test purposes, sampling ports, platforms and access shall be provided by Nucor Steel on the combustion exhaust system in accordance with 40 CFR Part 60.8(e).
  7. Results of emission testing must be submitted to EPA within 60 days after completion of the performance tests.
  8. Operations during periods of startup, shutdown, and malfunction shall not constitute representative conditions for the purpose of a performance test.

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Nucor's Auburn Mill  
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XII. Other Requirements

1. **New Source Performance Standards (NSPS) Compliance**

- a. Nucor Steel shall comply with the requirements codified in:  
Standards of Performance for Steel Plants: Electric Arc Furnaces and Argon  
- Oxygen Decarburization Vessels Constructed After August 17, 1983. (40  
CFR Part 60, Subpart AAa.)

2. **PM<sub>10</sub> Condensibles**

- a. Results of the PM<sub>10</sub> condensible performance tests required in this permit shall not be used to demonstrate compliance with the existing NYSDEC PM<sub>10</sub> limit which does not contain condensibles. New PM<sub>10</sub> limits containing condensibles shall be introduced in the NYSDEC permit.

3. **Billet Production**

- a. Billet production shall be recorded daily. Daily production records shall be used to calculate 30-day rolling averages.

4. **Lead (Pb) PSD Non-Applicability Determination**

- a. In order to demonstrate that lead (Pb) emissions are below the PSD threshold of 0.6 ton/year, Nucor has indicated that they needed to increase the permitted removal efficiency of the baghouse. Therefore, the permitted particulate emission rate for the EAF shall not exceed 0.002 grains/dry standard cubic foot (down from the current NSPS limit of 0.0052 gr/dscf).
- b. Nucor shall stack test the emissions from the EAF to demonstrate that emission increases of lead do not exceed the PSD threshold of 0.6 ton/year.
- c. Nucor shall monitor and record the static pressure drop across the baghouse. Nucor shall promptly replace failed or broken bags.

Attachment II (cont'd)

Nucor's Auburn Mill  
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**5. Startup and Shutdown Conditions**

1. Emission limitations set forth in Conditions VIII. and IX. shall be increased by 25% during periods of startup and shutdown of the EAF and the reheat furnace.
  - a. Startup and shutdown periods of one (1) hour each shall be recognized for the EAF (normally once a week).
    - i) Startup shall be defined as those periods beginning with restoration of power to the furnace after any such shutdown or delay.
    - ii) Shutdown shall be defined as those periods beginning with any calls for a shutdown or delay of 60 minutes or more when there is no power to the furnace. The shutdown period of one (1) hour begins with the beginning of the delay or shutdown.
  - b. Startup and shutdown periods of four (4) hours each shall be recognized for the reheat furnace. This allows for a gradual heating/cooling of the refractory.
    - i) Startup shall be defined as those periods following a shutdown when the burners are turned back on.
    - ii) Shutdown shall be defined as those periods preceding times when all burners are eventually turned off.

**XIII. Malfunction**

Any failure of air pollution control equipment, process equipment, or of a process to operate in a normal manner which results in an increase in emissions above any allowable emission limit stated in Conditions VIII. and IX. of this Attachment II and actions taken on any unit must be reported to the EPA Regional Administrator (RA) and to the NYSDEC in writing within (15) days of any such failure. This notification shall include: a description of the malfunctioning equipment or abnormal operation; the date of the initial failure; the period of time over which emissions were increased due to the failure; the cause of the failure; the estimated resultant emissions in excess of those allowed under Conditions VIII. and IX. of

Attachment II (cont'd)

Nucor's Auburn Mill  
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this Attachment II; and the methods utilized to restore normal operations. Compliance with this malfunction notification provision shall not excuse or otherwise constitute a defense to any violations of this permit or of any law or regulations which such malfunction may cause.

XIV. Recordkeeping and Reporting Requirements

1. All records required to be maintained by this permit shall be kept for a period of at least ten (10) years.
2. All reports required by this permit shall be submitted to:

Chief, Air Compliance Branch  
Division of Enforcement and Compliance Assistance  
U.S. Environmental Protection Agency  
Region 2  
290 Broadway - 21st Floor  
New York, New York 10007-1866

Copies of the reports shall also be submitted to:

- a. Region 2 CEM Coordinator  
U.S. Environmental Protection Agency  
Region 2  
Air and Water QA Team  
Monitoring and Assessment Branch  
2890 Woodbridge Avenue - MS-220  
Edison, New Jersey 08837-3679
- b. Regional Air Pollution Control Engineer  
New York State Department  
of Environmental Conservation  
Region 7  
615 Erie Boulevard West  
Syracuse, NY 13208

## Attachment III

## Air Quality Modeling Analyses for Nucor's Auburn Mill Facility

### Air Quality Impacts ( $\mu\text{g}/\text{m}^3$ )

<b>POLLUTANT</b>	<b>AVERAGING TIME</b>	<b>NUCOR Single Source Impact</b>	<b>SIGNIFICANT IMPACT LEVEL</b> (if Nucor's impact is >SIL then Nucor needs to do PSD Increment & NAAQS) (cite 40 CFR Part 51)	<b>PSD Increment<sup>3</sup> Analysis</b> (modeled impacts of Nucor and other PSD increment consuming background sources)	<b>PSD Increment<sup>3</sup> Standard</b> (cite 40 CFR Part 52.21)	<b>NAAQS<sup>4</sup> Analysis</b> (modeled impacts of Nucor, other background sources, and monitored concentration)	<b>NAAQS<sup>4</sup> Standard</b> (cite 40 CFR Part 50)
<b>CO</b>	8-hour	226.9	500	N/A <sup>2</sup>	NA <sup>2</sup>	Not Required <sup>1</sup>	10,000
	1-hour	619.0	2000				40,000
<b>NO<sub>2</sub></b>	Annual	1.33	1	1.33	25	46.3	100
<b>SO<sub>2</sub></b>	Annual	1.54	1	4.1	20	11.0	80
	24-hour	14.3	5	30.2	91	87.9	365
	3-hour	42.3	25	92.6	512	160.7	1300

<sup>1</sup> Since Nucor's carbon monoxide impacts are below the "Significant Impact Level," the facility is not required to perform NAAQS analyses for carbon monoxide.

<sup>2</sup> The Clean Air Act does not define a PSD increment standard for carbon monoxide.

<sup>3</sup> PSD increments measure the growth in air quality concentrations since the baseline date in the vicinity of Nucor. The allowable growth and baseline dates are different for each pollutant and may be found in 40 CFR 52.21(c) and 40 CFR 52.21(b)14, respectively.

<sup>4</sup> National Ambient Air Quality Standard (NAAQS) analysis projects the total air quality concentration (regardless of baseline concentrations) from Nucor and other sources in the vicinity of Nucor. This total concentration is compared to the health-based NAAQS standard found in the Clean Air Act.