AP32 Section:	12.5.1
Background Chapter	3
Reference:	18
Title:	Source Sampling for Particulate, HCl, CO and Visible Emissions, Acid Regenerator, EAF Baghouse and Pickle Line. Permit No. CP-107-5235. Nucor Steel, Crawfordsville, IN. March 3-4, 1997.

State Form 4336

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DEPARTMENT OF ENVIRONMENTAL MANAGEMENT

INDIANAPOLIS

OFFICE MEMORANDUM

Date: May 2, 1997

To: Phil Perry

Thru: Ed Surla

From: Stephen L. Friend SLF

Subject: Nucor Steel
Rural Route #2 ,Box 311
Crawfordsville, IN.
Source ID No. 107 00038

The subject company has submitted a report concerning particulate sampling of the Pickle Line and Acid Regeneration Line. Sampling of the Electric Arc Furnace Baghouse for CO was also conducted. The test protocol was reviewed by Scott Stacy and the tests were observed by Steve Friend. Methods 26A and 10 were used to conduct the tests. The tests were conducted on March 4,5,6, 1997 by Ramcon Environmental Corporation. The purpose of the testing was to fulfill the obligation of Cause No. A-1635. I have reviewed this report and found the sampling procedures used and results to be acceptable to this office. A copy of this report is filed in the Compliance Data Section. The following is a summary of the test results:

Pickle Line-Particulate	
Maximum Permitted Rate:	150 tons/hr
Average Rate During Test:	125 tons/hr
Average Measured PM Emissions:	.21 lb/hr
Allowable Emissions:	0.8 lb/hr
HCL Emissions:	.12 lb/hr
Highest 6-Minute Opacity:	0%
Average Opacity:	0%

Status: IN COMPLIANCE

Acid Regeneration-Particulate	
Maximum Permitted Rate:	7.3 MMBtu/hr
Average Rate During Test:	7.3 MMBtu/hr
Average Measured PM Emissions:	4.3 lbs/hr
Allowable Emissions:	2 lbs/hr
HCL Emissions:	9.18 lbs/hr
Highest 6-Minute Opacity:	0%
Average Opacity:	0%

Status: OUT OF COMPLIANCE

Electric Arc Furnace Baghouse

Maximum Permitted Rate:	502 tons/hr
CO	
Average Rate During Test:	255 tons/hr
Average Measured Emissions CO:	139 lbs/hr
Allowable Emissions CO:	510 lbs/hr

Status: IN COMPLIANCE

cc: S. Friend
L. Donahue
W. Stanfield/General Files-Montgomery County

RAMCON
Environmental Corporation

Regional Offices:
Philadelphia, Pennsylvania
Houston, Texas

Source Sampling for Particulate, HCl,
CO and Visible Emissions
Acid Regenerator, EAF Baghouse and Pickle Line
Permit No. CP-107-5235

NUCOR STEEL
CRAWFORDSVILLE, INDIANA
March 3-4, 1997

Dave Sulc, Engineer
Nucor Steel

Raymond R. Jenkins
Vice President-Operations
RAMCON Environmental Corporation

1. INTRODUCTION

On March 3-4, 1997, personnel from RAMCON Environmental Corporation conducted a source emissions test for Nucor Steel on the Acid Regeneration, Baghouse and Pickle Line at your facility located in Crawfordsville, Indiana. RAMCON personnel conducting the test were Billy Wren, Team Leader, Peter J. Colburn, Michael I. Nasrallah, and Bobby Sanders. The testing was performed for particulate matter, hydrogen chloride (HCl), carbon monoxide (CO), and visible emissions.

The particulate matter and hydrogen chloride emissions were sampled according to US EPA Reference Method 26A. The stack gas moisture, velocity, and volumetric flow rates were also determined during this isokinetic sampling procedure. This data enabled conversion of flue gas pollutant concentrations to emission data values in pounds per hour (lb/hr).

In conjunction with the gaseous analysis for pollutant concentration, a velocity traverse was performed to determine the volumetric flow rate. A velocity determination was conducted before and after the gaseous analysis determination(s) for the first and second test period. This determination provided data that would support the conversion of pollutant concentration in parts per million (ppm) to emission values in pounds per hour (lb/hr).

The gaseous compounds were collected and analyzed by test methods that utilize "real-time" continuous emission monitor (CEM) instrumentation. This technology provides data with a high degree of reliability on-site. Reference Methods 3A and 10 were employed for the analysis of oxygen and carbon dioxide and CO, respectively.

These testing procedures set forth a sampling strategy to continuously extract sample gas from the source. This sample stream is routed to individual CEMs for analysis of the various targeted pollutants and diluent gases. The test results are based on the average value of one-minute averages generated by the CEM instrument data acquisition during the test periods. Three (3) sampling periods were performed in which the gaseous concentrations were continuously monitored for the listed target compounds.

EAF ?

Table B – Baghouse
CO Concentration Summary
March 5, 1997

Run	Time	O2, %	CO2, %	CO, ppm	CO, lb/hr	CO, lb/ton*
1	10:01 - 11:01	20.5	0.3	13.23	63.76	0.25
2	12:19 - 13:18	20.2	0.7	31.07	159.23	0.62
3	14:22 - 15:22	20.0	0.8	40.02	188.50	0.74
	Average:	20.2	0.6	28.11	137.16	0.54

*based on 255.2 tons/hr average.

The particulate and HCl emissions results for the Pickle Line are reported in Table C below in terms of concentration, grains per dry standard cubic foot (gr/dscf), and emissions, pounds per hour (lb/hr), values.

Table C – Pickle Line
Particulate and HCl Emissions Test Results
March 6, 1997

Test Run	Time	Particulate			HCl	
		gr/dscf	lb/hr	Isokinetics, %	gr/dscf	lb/hr
1	10:48 - 12:18	0.0019	0.15	96.7	0.0017	0.13
2	14:15 - 15:28	0.0037	0.28	97.8	0.0019	0.14
3	16:45 - 17:58	0.0024	0.19	96.8	0.0011	0.09
	Average:	0.0027	0.21		0.0016	0.12