

N.M.ACES

Report of...

Emission Testing

N2787

performed for...

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SEP 14 2015
AIR QUALITY DIVISION

Electro Chemical Finishing

Wyoming, Michigan

on

Multiple Sources

August 18 and 19, 2015

194.02

Network Environmental, Inc.
Grand Rapids, MI

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AIR QUALITY DIVISION

I. INTRODUCTION

Network Environmental, Inc. was retained by Electro Chemical Finishing to perform compliance emission sampling on multiple sources located at their Wyoming, Michigan. The purpose of the study was to perform the following testing.

EUALINE	Total Chrome (Cr)
EUBLINE	Hexavalent Chromium (Cr ₆), Ammonia, Hydrochloric Acid
EUCLINE	Hexavalent Chromium (Cr ₆)

The testing was to document compliance with Michigan Department of Environmental Quality, Air Quality Division, Permit To Install 584-91C. Assisting in the study was Mr. Steve Hulst and the operating staff of the facility. Ms. April Lazzaro and Mr. David Patterson of the Michigan Department of Environmental Quality, Air Quality Division, were present to observe the testing and source operation.

The sampling was performed by Stephan K. Byrd, R. Scott Cargill, David D. Engelhardt and Richard D. Eerdmans of Network Environmental, Inc. over the period of August 18 and 19, 2015 by employing the following test methods:

Total Chrome – U.S. EPA Reference Method 306

Hexavalent Chromium - U.S. EPA Reference Method 306

Hydrochloric Acid – U.S. EPA Reference Method 26A

Ammonia - U.S. EPA Reference Method CTM 027

II. PRESENTATION OF RESULTS

**II.1 TABLE 1
CHROMIUM EMISSION RESULTS
ELECTRO CHEMICAL FINISHING
WYOMING, MICHIGAN
AUGUST 18 AND 19, 2015**

Source	Sample	Time	Air Flow Rate DSCFM ⁽¹⁾	Concentration Mg/M ³⁽²⁾	Mass Emission Rate Lbs/Hr ⁽³⁾	Mass Emission Rate Lbs/Year ⁽⁴⁾
EUALINE	1	9:05-11:08	13,359	0.00039	1.978E ⁻⁵	NA
	2	11:35-13:38	13,246	0.00108	5.354E ⁻⁵	
	3	13:59-16:01	13,429	0.00042	2.110E ⁻⁵	
Average			13,345	0.00063	3.147E⁻⁵	
EUBLINE	1	8:53-10:57	16,160	0.00107	6.478E ⁻⁵	0.204
	2	11:19-13:22	16,018	0.00080	4.819E ⁻⁵	0.152
	3	13:43-15:45	16,052	0.00218	0.00013	0.410
Average			16,077	0.00135	8.099E⁻⁵	0.255
EUCLINE	1	8:53-10:57	23,517	0.00056	4.962E ⁻⁵	0.151
	2	11:19-13:13	23,461	0.00041	3.615E ⁻⁵	0.110
	3	13:43-15:46	22,914	0.00040	3.442E ⁻⁵	0.104
Average			23,297	0.00046	4.006E⁻⁵	0.122

(1) = Dry Standard Cubic Feet Per Minute

(2) = Milligrams Per Cubic Meter

(3) = Pound Per Hour

(4) = Calculated based on 3,156 hours per year for the B Line and 3,035 hours per year for the C Line.

Data provided by Electro Chemical Finishing.

**II.2 TABLE 2
 HYDROCHLORIC ACID EMISSION RESULTS
 EUBLINE EXHAUST
 ELECTRO CHEMICAL FINISHING
 WYOMING, MICHIGAN
 AUGUST 19, 2015**

Sample	Time	Air Flow Rate DSCFM	Concentration Mg/M ³	Mass Emission Rate Lbs/Hr
1	8:13-9:15	16,367	8.611	0.528
2	9:36-10:38	16,197	5.726	0.347
3	10:54-11:56	16,109	0.815	0.049
Average		16,224	5.051	0.308

**II.3 TABLE 3
AMMONIA EMISSION RESULTS
EUBLINE EXHAUST
ELECTRO CHEMICAL FINISHING
WYOMING, MICHIGAN
AUGUST 19, 2015**

Sample	Time	Air Flow Rate DSCFM	Concentration Mg/M ³	Mass Emission Rate Lbs/Hr
1	8:13-9:15	16,367	15.708	0.963
2	9:36-10:38	16,197	14.731	0.893
3	10:54-11:56	16,109	14.775	0.891
Average		16,224	15.071	0.916

III. DISCUSSION OF RESULTS

The emission results are presented in Tables 1 through 3 (Section II.1 through II.3).

The emission limits for these sources are:

EUALINE = 0.0008 Lbs/Hr Total Chrome

EUBLINE = 0.00014 Lbs/Hr Hexavalent Chromium and 0.6 Lbs/year Hexavalent Chromium

EUCLINE = 0.000334 Lbs/Hr Hexavalent Chromium and 1.34 Lbs/year Hexavalent Chromium

IV. SAMPLING AND ANALYTICAL PROTOCOL

The sampling location was on the twenty-seven (27) inch I.D. exhaust for the A Line, the thirty-two (32) inch I.D. exhaust for the B Line and on the forty-two (42) inch I.D. exhaust of the C Line. Locations met the minimum test location requirements of U.S. EPA Reference Method 1. Twelve (12) sampling points per port (24 points total) were used for all of the testing. The point dimensions can be seen in Appendix F.

IV.1 Total Chrome and Hexavalent Chromium - The sampling was performed in accordance with U.S. EPA Reference Method 306. Three (3) samples, each 120 minutes in duration, were collected from the exhausts. The samples were collected isokinetically in a 0.1N Sodium Bicarbonate solution as outlined in the method. The samples were analyzed for total chromium (Cr) by ICP - MS. All the quality assurance and quality control procedures listed in the method were incorporated in the sampling and analysis.

A diagram of the sampling train can be seen in Figure 1.

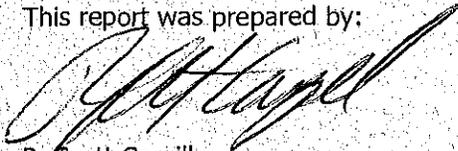
IV.2 Hydrochloric Acid and Ammonia - The hydrochloric acid and ammonia determinations were performed in accordance with EPA Method 26A and CTM-027. A Teflon lined probe was used to extract the exhaust gas from the exhausts. The sampling was performed isokinetically in accordance with the methods.

The HCl and Ammonia were collected from the same sampling train. The HCl and Ammonia were collected in impingers, which contained 100 mls of 0.1 N H₂SO₄. The samples were collected isokinetically. Three (3) samples were collected from the source. Each sample was sixty (60) minutes in duration. The samples were recovered and refrigerated until analyzed. The samples were analyzed by ion chromatography for HCl and by HPLC for Ammonia. All the quality assurance and quality control requirements specified in the methods were incorporated in the sampling and analysis.

A diagram of the sampling train is shown in Figure 2.

IV.4 Exhaust Gas Parameters - The exhaust gas parameters (air flow rate, temperature, moisture, and density) were determined by employing U.S. EPA Reference Methods 1 through 4. All the quality control and quality assurance requirements listed in the methods were incorporated in the sampling and analysis.

This report was prepared by:



R. Scott Cargill
Project Manager

This report was reviewed by:



Stephan K. Byrd
President

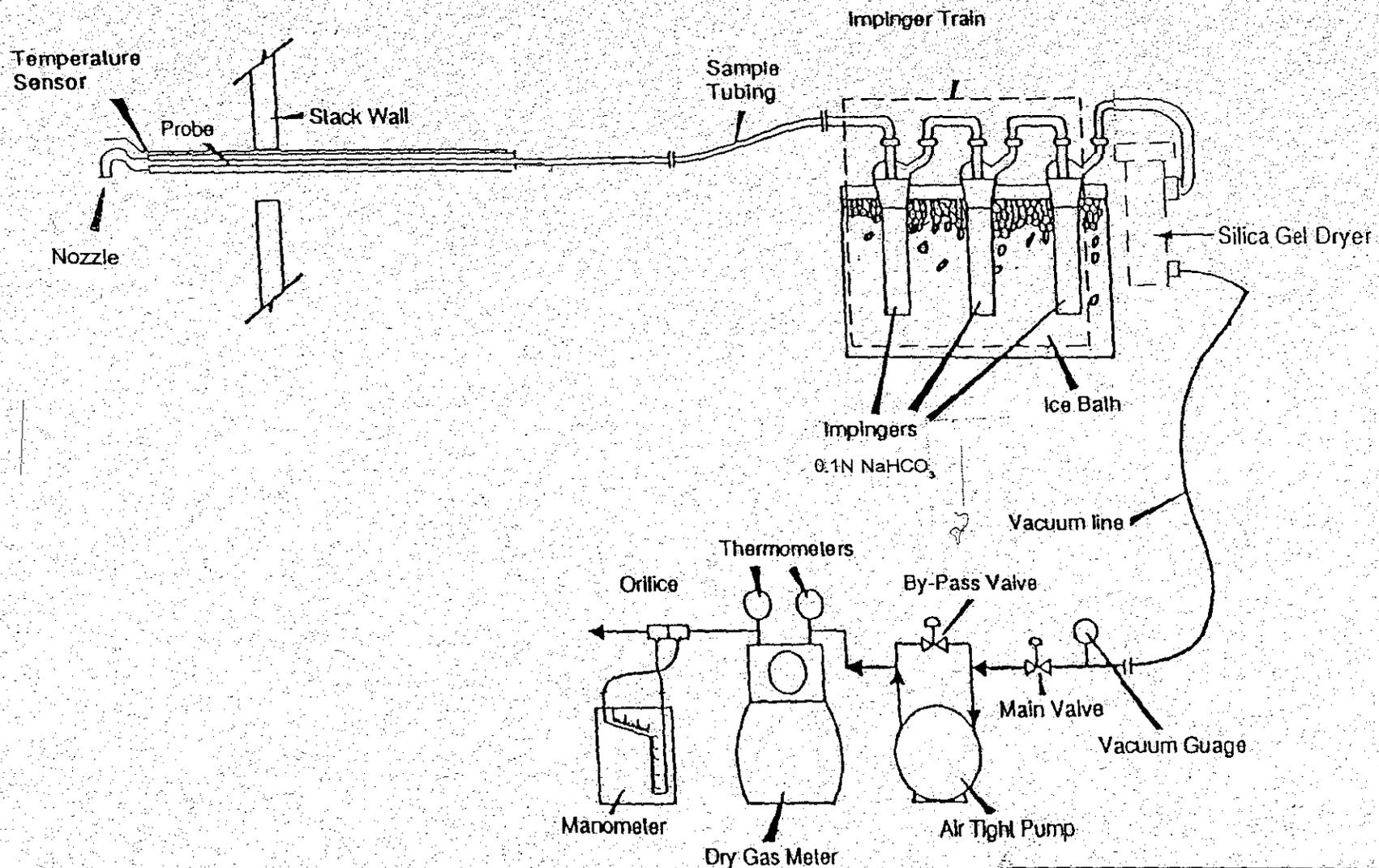


FIGURE 1

TOTAL CHROME SAMPLING TRAIN

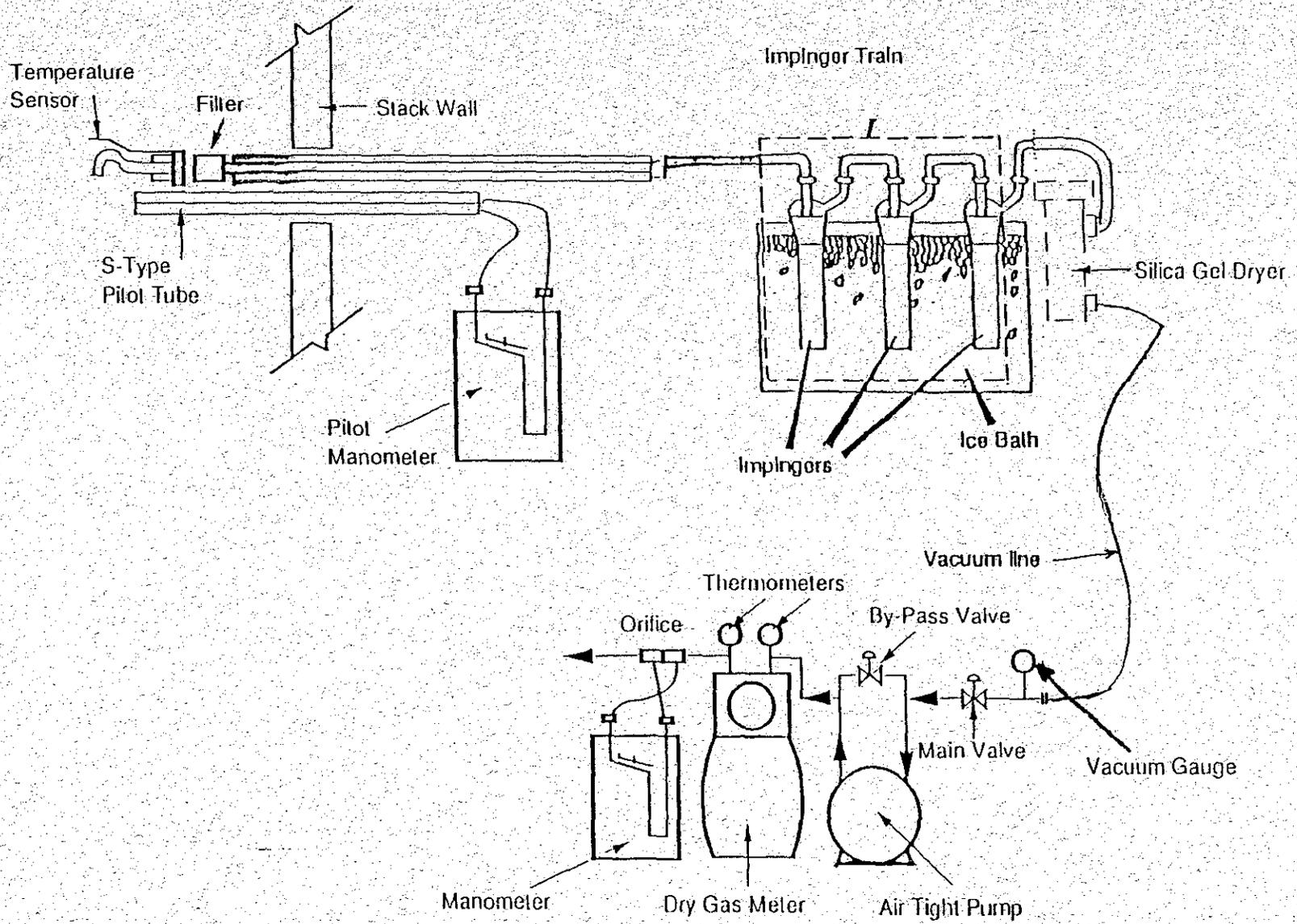


Figure 2

HCL and Ammonia Sampling Train