

Report of a...

Compliance Emission Study

performed for...

Plastic Plate, LLC. Kraft Avenue Plant Kentwood, Michigan

on the

Chrome Plater Exhaust

April 16, 2019

021.31

Network Environmental, Inc.
Grand Rapids, MI

RECEIVED

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AIR QUALITY DIVISION

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I. INTRODUCTION

Network Environmental, Inc. was retained by Lacks Enterprises to perform Total Chromium (Cr) emission sampling on the Chrome Plater (SVK-8) exhaust located at their Plastic Plate facility in Kentwood, Michigan. The purpose of the study was to quantify the Cr emissions from the exhaust of the scrubber to demonstrate compliance with MI-ROP-N7374-2015a.

The sampling was performed by R. Scott Cargill and Richard D. Eerdmans of Network Environmental, Inc. on April 16, 2019 by employing U.S. EPA Method 306. Assisting in the study was Ms. Karen Baweja of Lacks Enterprises and the operating staff of the facility. Mr. David Patterson and Ms. April Lazzaro of the Michigan Department of Environmental Quality – Air Quality Division (MDEQ/AQD) were present to observe the testing and source operation.

II. PRESENTATION OF RESULTS

**II.1 TABLE 1
CHROMIUM (Cr) EMISSION RESULTS
CHROME PLATER EXHAUST
PLASIC PLATE, LLC
KENTWOOD, MICHIGAN
APRIL 16, 2019**

Sample	Time	Air Flow Rate DSCFM ⁽¹⁾	Concentration Mg/M ³⁽²⁾	Mass Emission Rate Lbs/Hr ⁽³⁾
1	8:16-10:19	39,026	0.00071	0.00010
2	10:46-12:50	39,032	0.00077	0.00011
3	13:10-15:14	38,670	0.00072	0.00010
Average		38,909	0.00073	0.00010

(1) DSCFM = Dry Standard Cubic Feet Per Minute (STP = 68°F & 29.92 in. Hg)

(2) Mg/M³ = Milligrams Per Dry Standard Cubic Meter

(3) Lbs/Hr = Pounds Per Hour

III. DISCUSSION OF RESULTS

The Cr emission results are presented in Table 1 (Section II.1).

The Total Chromium emission limits for the exhaust are:
Chrome Plate = 0.003 Lbs/Hr and 0.006 Mg/DSCM

IV. SAMPLING AND ANALYTICAL PROTOCOL

The sampling location for the Chrome Plater was on the fifty-two (52) inch I.D. exhaust at a location which met the test location requirements of U.S. EPA Reference Method 1. Twelve (12) sampling points total were used for the testing (6 points per port). The points are as follows:

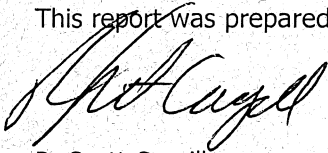
Point #	Exhaust Point Location (Inches)
1	2.29
2	7.59
3	15.39
4	36.61
5	44.41
6	49.71

IV.1 Chromium (Cr) - 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 exhaust. 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 Exhaust Gas Parameters - In addition to the Cr sampling, 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
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This report was reviewed by:



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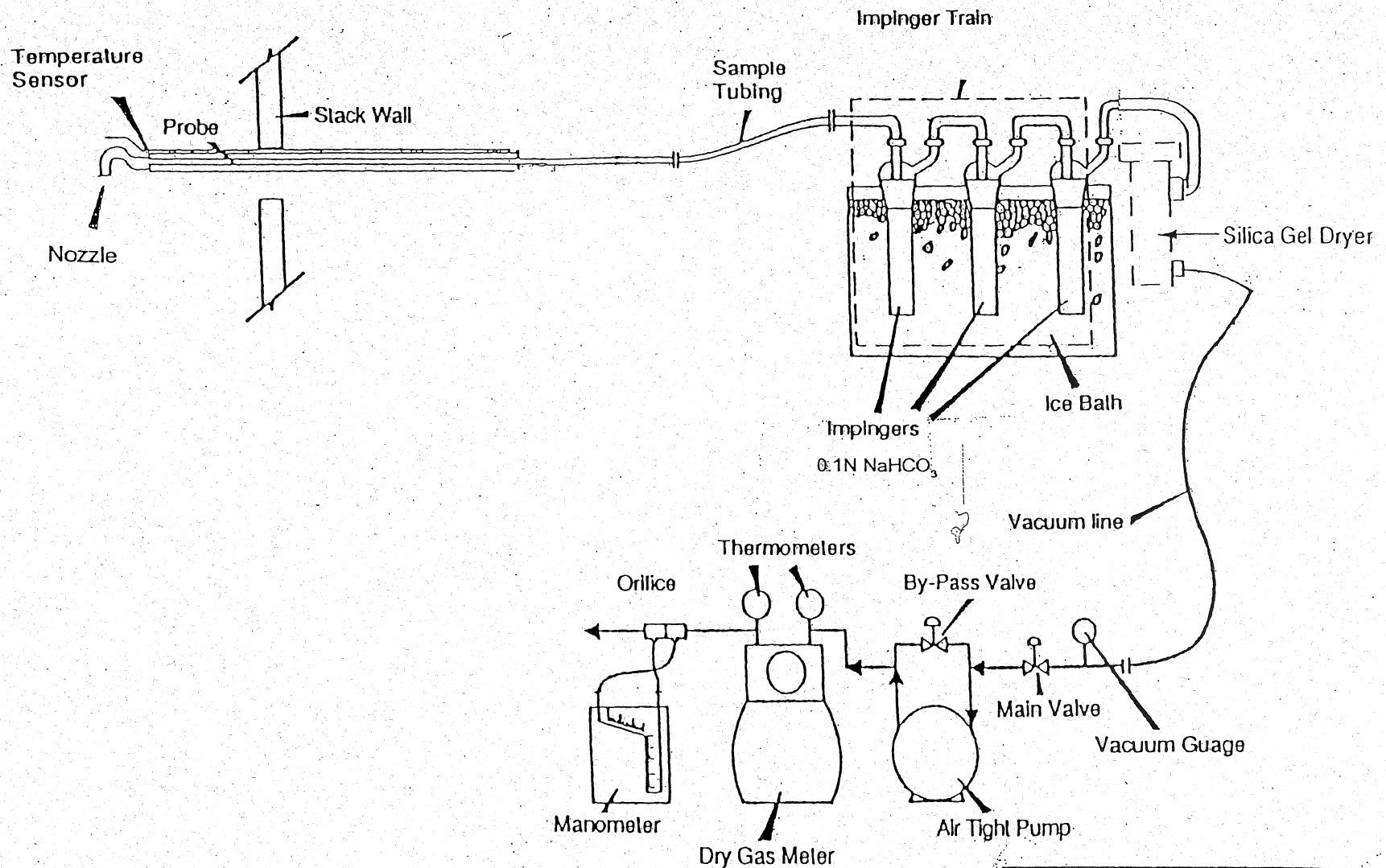


FIGURE 1
TOTAL CHROME SAMPLING TRAIN

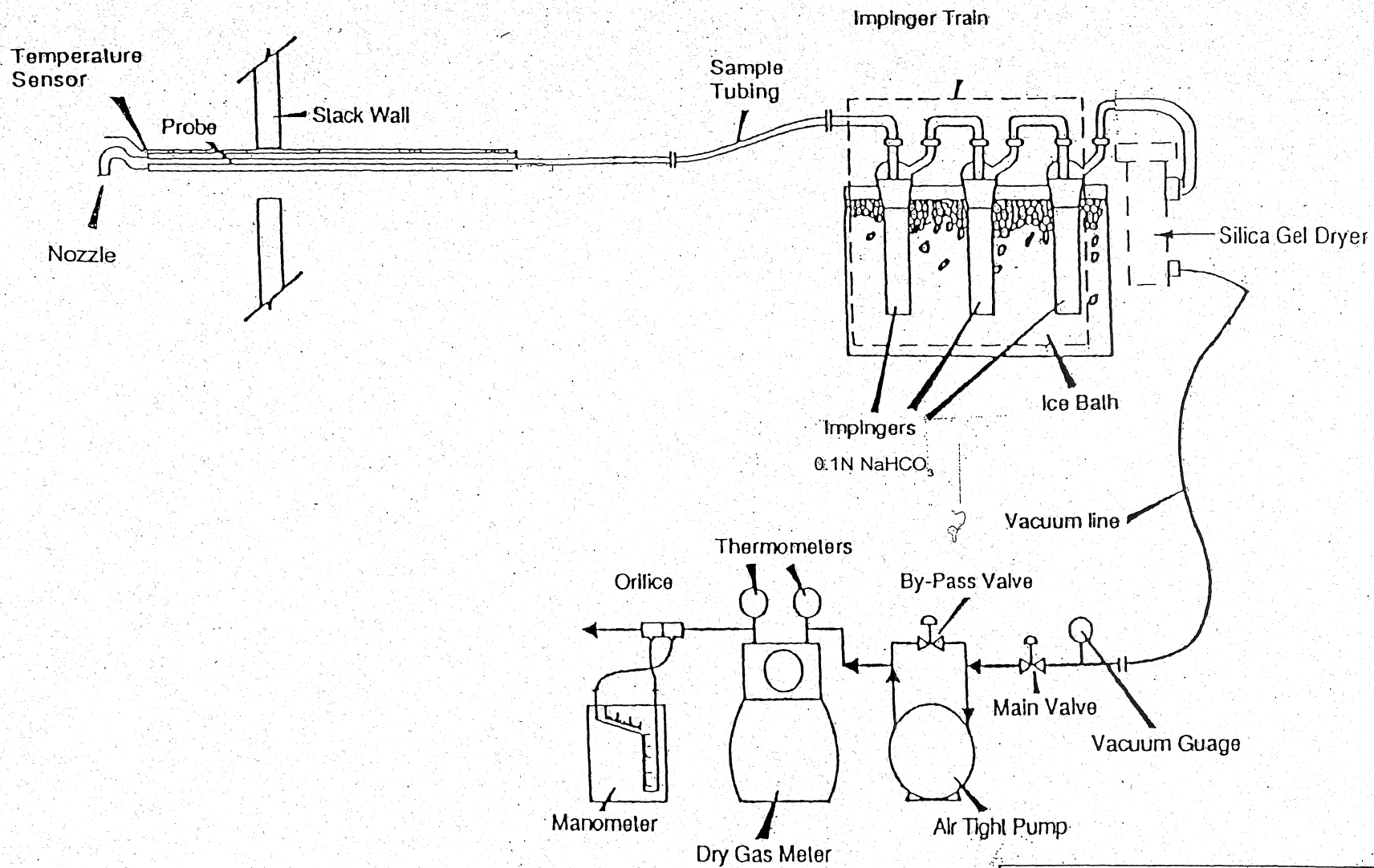


FIGURE 1
TOTAL CHROME SAMPLING TRAIN

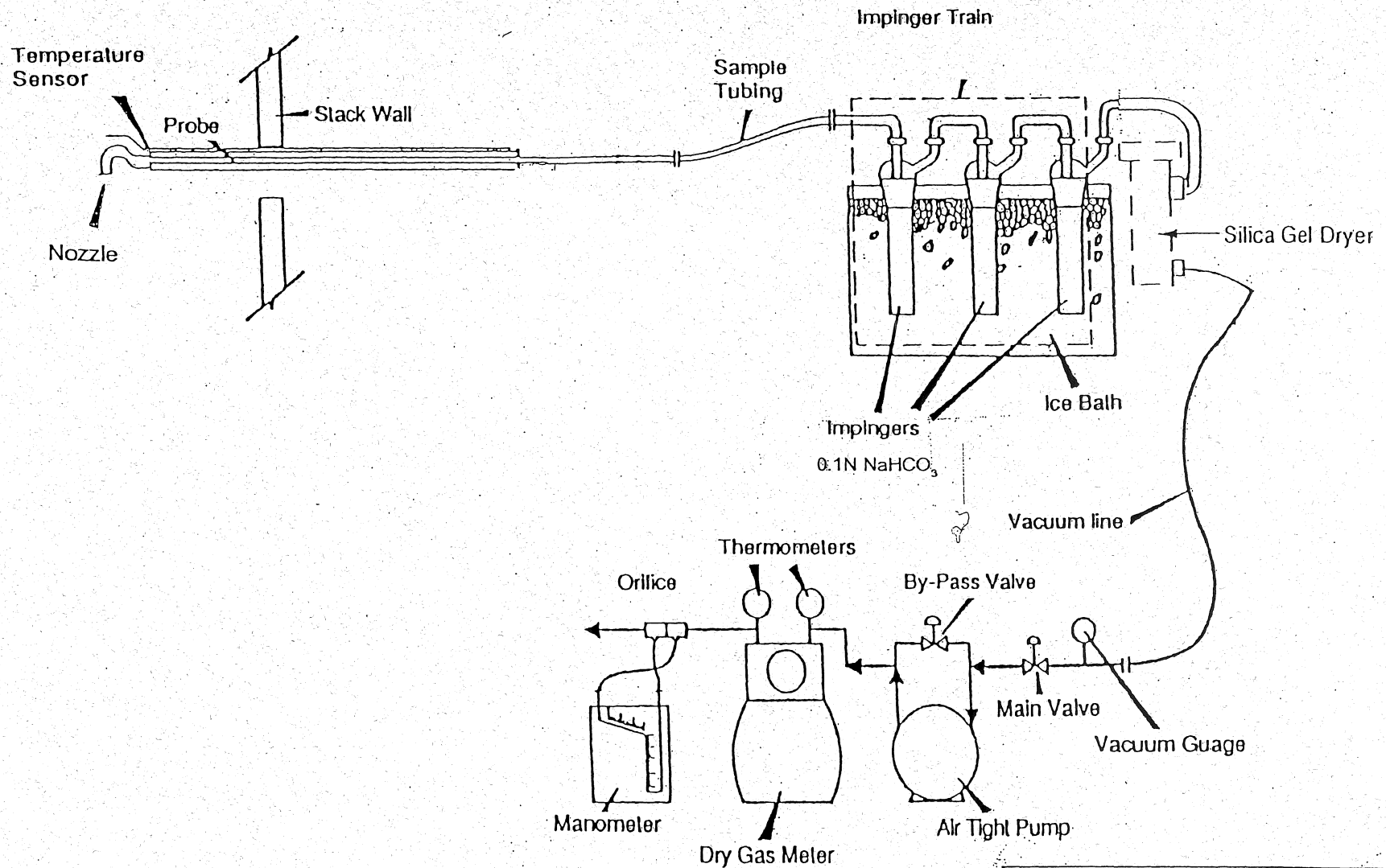


FIGURE 1
TOTAL CHROME SAMPLING TRAIN

Company Name: Plastic-Plate, LLC

Company Location: Kentwood, Michigan

Source Name: SVK-8 Chrome Plate Exhaust

Sampling Staff: Cargill/Eerdmans

Date: 4/16/19

Number of Samples: 3

Number of Points: 12

Excess Air Calc. (Y?N) N

Stack Diameter, In. 52.0

(If Round Stack)

Stack Dimension, In. x

(If Rectangular)

% Moisture Before Collector:

Network Environmental, Inc.

SUMMARY OF EXHAUST GAS PARAMETERS

Company Name: Plastic-Plate, LLC Date: 04/16/19

Company Location: Kentwood, Michigan

Source Name: SVK-8 Chrome Plate Exhaust

Sampling Staff: Cargill/Eerdmans

Sample Number	1	2	3
G1. Stack Diameter, inches	52.0	52.0	52.0
G2. Area of Stack, sq ft.	14.748	14.748	14.748
G3. Barometric Pressure, in. Hg	29.13	29.13	29.13
G4. Static Pressure in Stack, in. H ₂ O	-0.44	-0.44	-0.44
G5. Stack Gas Temperature, deg. F	73	75	75
G6. Average Sqrt. Velocity Pressure of Points Sampled	0.8420	0.8449	0.8364
G7. Percent Moisture At Test Location	1.87	2.06	1.91
G8. Percent Moisture Before Collector	0.0	0.0	0.0
G9. Dry Gas Composition:			
% Oxygen	20.90	20.90	20.90
% Carbon Dioxide	0.00	0.00	0.00
% Carbon Monoxide	0.00	0.00	0.00
% Nitrogen	79.10	79.10	79.10
G10. Percent Excess Air At Test Location			
Density And Molecular Weight Of Stack Gas:			
G11. Dry, @ STP, lbs./cu. ft.	0.07455	0.07455	0.07455
G12. Wet, @ STP, lbs./cu. ft.	0.07403	0.07397	0.07402
G13. Wet, @ Stack Conditions, lbs./cu. ft.	0.07132	0.07103	0.07101
G14. Molecular Weight, Dry, @ STP, lbs/mole	28.844	28.844	28.844
G15. Average Gas Velocity, feet/min	2,799	2,814	2,786
Stack Gas Flow Rate:			
G16. Stack Conditions, ACFM	41,280	41,505	41,094
G17. Standard Conditions, SCFM	39,769	39,854	39,423
G18. Standard Conditions, Dry SCFM	39,026	39,032	38,670

Standard Temperature and Pressure (STP) = 29.92 inches Hg, 68 deg. F

Network Environmental, Inc.

SUMMARY OF PARTICULATE TRAIN PARAMETERS

Company Name: Plastic-Plate, LLC Date: 04/16/19
 Company Location: Kentwood, Michigan
 Source Name: SVK-8 Chrome Plate Exhaust
 Sampling Staff: Cargill/Eerdmans

Sample Number	1	2	3
P1. Number of Points Sampled	12	12	12
P2. Duration of Sample, minutes	120	120	120
P3. Nozzle Diameter, inches	0.25	0.25	0.25
P4. Nozzle Area, sq. ft.	0.000341	0.000341	0.000341
P5. Pitot Calibration Factor	0.81	0.81	0.81
P6. Meter Calibration Factor	1.0046	1.0046	1.0046
P7. Average Filter Temperature, deg. F			
P8. Average Meter Temperature, deg. F	84.6	87.3	86.6
P9. Average Meter Pressure, inches of water	2.957	2.982	2.920
P10. Meter Volume, Actual Reading, cu. ft.	113.859	115.107	114.214
P11. Meter Volume, @ STP, cu. ft.	108.769	109.424	108.707
P12. Liquid Volume of Water Condensed, mls.	44	49	45
P13. Vapor Volume of Water Condensed, @ STP, cu.ft.	2.071	2.306	2.118
P14. Total Gas Sampled, @ STP, cu. ft.	110.840	111.731	110.826
P15. Weight of Gas Sampled, Dry, lbs.	8.109	8.158	8.104
P16. Weight of Gas Sampled, Wet, lbs.	8.205	8.265	8.203
P17. Percent Isokinetics	100.5	101.1	101.4
Concentration Conversion Factors:			
P18. 50% Excess Air, After Collector			
P19. 50% Excess Air, Before Collector			
P20. Moisture Conditions Before Collector	1.012	1.013	1.012

Standard Temperature and Pressure (STP) = 29.92 inches Hg, 68 deg. F

