Background Report Reference

AP-42 Section Number: 12.11

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Title: Report on Compliance Testing, Performed for RSR Corporation, Dallas, TX, Conducted at Quemetco, Inc., Indianapolis, IN

Clean Air Engineering

May 1991

Clean Air Engineering

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INDIANA AIR PULL

REPORT ON COMPLIANCE TESTING

Performed for:
RSR CORPORATION
DALLAS, TEXAS

Conducted at:
QUEMETCO, INC.
INDIANAPOLIS, INDIANA

CAE Project No: 5633
May 6, 1991

Revised: January 7, 1992

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SUMMARY

INTRODUCTION

Clean Air Engineering was contracted by RSR Corporation to determine the levels of particulate and lead emissions at their Quemetco, Inc. facility in Indianapolis, Indiana for compliance purposes.

The testing took place at the Busch Baghouse and Baghouses 039 and 040 on April 10 and 11, 1991. Coordinating the field testing were:

R. Ward - RSR Corporation
D. Pace - RSR Corporation
D. Foster - City of Indianapolis
W.C. James - Clean Air Engineering

SUMMARY OF TEST RESULTS

Collection Efficiency

The Baghouse 039 demonstrated a particulate removal efficiency of 98.4 percent over three runs on April 10 and 11, 1991 based on lb/hr.

The Baghouse 039 demonstrated a lead removal efficiency of 99.7 percent over three runs on April 10 and 11, 1991 based on lb/hr.

The Baghouse 040 demonstrated a particulate removal efficiency of 99.5 percent over three runs on April 10 and 11, 1991 based on lb/hr.

The Baghouse 040 demonstrated a lead removal efficiency of 99.7 percent over three runs on April 10 and 11, 1991 based on lb/hr.

The Baghouse System (including the Busch Baghouse) demonstrated a particulate removal efficiency of 98.6 percent over three runs on April 10 and 11, 1991 based on lb/hr.

The Baghouse System (including the Busch Baghouse) demonstrated a lead removal efficiency of 99.9 percent over three runs on April 10 and 11, 1991 based on lb/hr.

SUMMARY (CONTINUED)

The test conditions and results of analysis are presented in Tables 1 through 5 on pages 1-3 through 1-7.

To the best of our knowledge, the data presented in this report are accurate and complete.

Respectfully submitted,

CLEAN AIR ENGINEERING

Jack Demkovich
Manager, Central Region

Kimberly Kempf
Manager, Technical Communications

TABLE 1 - Summary of Test Results

EPA Methods 5 and 12
Baghouse 039 Inlet
April 10 and 11, 1991

Run No.	1	2	3	Average
Date (1991)	April 10	April 10	April 11	
Start Time (approx.)	9:10 AM	3:38 PM	8:45 AM	
Stop Time (approx.)	11:17 AM	5:47 PM	10:50 AM	
Gas Conditions				
Temperature (°F)	130	130	119	126
Moisture (volume %)	0.8	1.4	1.2	1.1
O_2 (dry volume %)	20.9	20.9	20.9	20.9
CO_2 (dry volume %)	0.0	0.0	0.0	0.0
Volumetric Flow Rate				
acfm	24,749	26,621	24,295	25,222
dscfm	21,355	22,786	21,387	21,843
Particulate				
gr/dscf	0.0409	0.1379	0.1476	0.1095
lb/hr	7.5	26.9	27.1	20.5
Lead				
gr/dscf	2.02E-02	1.30E-02	4.91E-02	2.71E-02
lb/hr	3.7	2.5	9.0	5.1

TABLE 2 - Summary of Test Results

EPA Methods 5 and 12
Baghouse 039 Outlet
April 10 and 11, 1991

Run No.	1	2	3	Average
Date (1991)	April 10	April 10	April 11	
Start Time (approx.)	9:10 AM	3:35 PM	8:45 AM	
Stop Time (approx.)	11:35 AM	5:50 PM	10:55 AM	
Gas Conditions				
Temperature (°F)	114	100	104	106
Moisture (volume %)	1.1	0.9	1.0	1.0
O_2 (dry volume %)	20.9	20.9	20.9	20.9
CO_2(dry volume %)	0.0	0.0	0.0	0.0
Volumetric Flow Rate				
acfm	25,702	25,095	23,667	24,821
dscfm	22,874	23,026	21,690	22,530
Particulate				
gr/dscf	0.0014	0.0006	0.0011	0.0010
lb/hr	0.27	0.12	0.20	0.20
Lead				
gr/dscf	9.70E-05	2.90E-05	13.2E-05	8.50E-05
lb/hr	1.90E-02	0.57E-02	2.45E-02	1.64E-02
Removal Efficiency				
Particulate	96.3	99.6	99.2	98.4
Lead	99.5	99.8	99.7	99.7

TABLE 3 - Summary of Test Results

EPA Methods 5 and 12
Baghouse 040 Inlet
April 10 and 11, 1991

Run No.	1	2	3	Average
Date (1991)	April 10	April 10	April 11	
Start Time (approx.)	9:10 AM	3:40 PM	8:45 AM	
Stop Time (approx.)	11:20 AM	5:50 PM	10:55 AM	
Gas Conditions				
Temperature (°F)	150	128	118	132
Moisture (volume %)	1.3	3.5	1.9	2.2
O_2 (dry volume %)	20.9	20.9	20.9	20.9
CO_2 (dry volume %)	0.0	0.0	0.0	0.0
Volumetric Flow Rate				
acfm	18,313	19,349	21,289	19,650
dscfm	15,206	16,207	18,601	16,671
Particulate				
gr/dscf	0.4810	0.2347	0.1412	0.2748
lb/hr	63	33	23	39
Lead				
gr/dscf	4.73E-02	5.72E-02	4.23E-02	4.87E-02
lb/hr	6.2	7.9	6.7	7.0

TABLE 4 - Summary of Test Results

EPA Methods 5 and 12
Baghouse 040 Outlet
April 10 and 11, 1991

Run No.	1	2	3	Average
Date (1991)	April 10	April 10	April 11	
Start Time (approx.)	9:10 AM	3:39 PM	8:45 AM	
Stop Time (approx.)	11:20 AM	5:49 PM	10:50 AM	
Gas Conditions				
Temperature (°F)	126	118	111	118
Moisture (volume %)	1.2	1.8	1.4	1.5
O_2 (dry volume %)	20.9	20.9	20.9	20.9
CO_2 (dry volume %)	0.0	0.0	0.0	0.0
Volumetric Flow Rate				
acfm	21,681	20,902	22,406	21,663
dscfm	18,752	18,414	20,199	19,122
Particulate				
gr/dscf	0.0017	0.0007	0.0009	0.0009
lb/hr	0.3	0.1	0.2	0.2
Lead				
gr/dscf	2.05E-04	0.88E-04	1.31E-04	1.41E-04
lb/hr	3.30E-02	1.39E-02	2.26E-02	2.32E-02
Removal Efficiency (%)				
Particulate	99.6	99.7	99.3	99.5
Lead	99.5	99.8	99.7	99.7

TABLE 5 - Summary of Test Results

EPA Methods 5 and 12
Busch Baghouse Outlet
April 10 and 11, 1991

Run No.	1	2	3	CONSTANT	Average [1]
Date (1991)	April 10	April 10	April 11	April 10	
Start Time (approx.)	9:10 AM	3:38 PM	8:45 AM	9:20 AM	
Stop Time (approx.)	11:20 AM	5:49 PM	10:50 AM	5:20 PM	
Gas Conditions					
Temperature (°F)	117	110	108	116	112
Moisture (volume %)	1.4	1.8	1.2	1.2	1.5
O_2 (dry volume %)	20.9	20.9	20.9	20.9	20.9
CO_2 (dry volume %)	0.0	0.0	0.0	0.0	0.0
Volumetric Flow Rate					
acfm	46,092	45,131	45,400	44,707	45,541
dscfm	41,148	40,550	41,458	40,003	41,052
Particulate					
gr/dscf	0.0030	0.0018	0.0040	0.0009	0.0029
lb/hr	1.1	0.6	1.4	0.3	1.0
Lead					
gr/dscf	0.00E+00	8.06E-05	0.00E+00	1.43E-06	2.65E-05
lb/hr	0.00E+00	2.80E-02	0.00E+00	4.89E-04	9.33E-03
Removal Efficiency [2]					
Particulate	99.0	99.2	97.7		98.6
Lead	100.0	99.8	100.0		99.9

[1] Note: The average is taken from Runs 1 through 3.

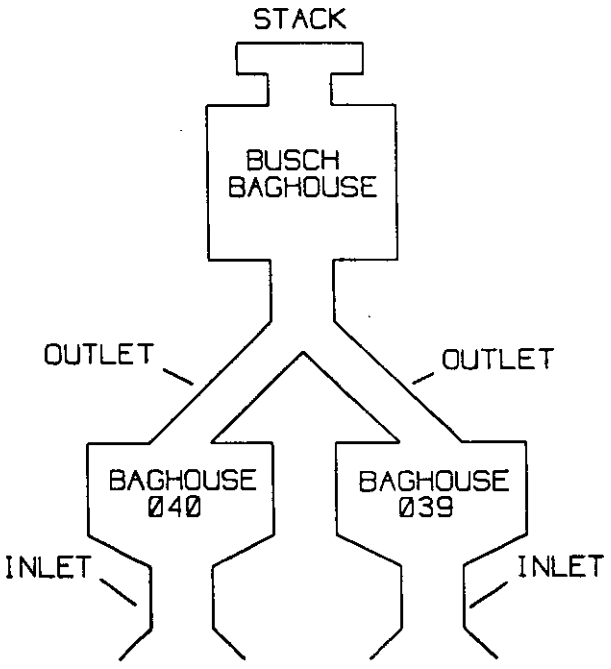
[2] Note: Total System Removal Efficiency

DESCRIPTION OF INSTALLATION

Quemetco, Inc. processes used automobile batteries for lead reclaimation. Plastic components from the batteries are sold to a plastic recycler. A secondary lead smelter recycles lead into ingots for industry.

The testing reported in this document was performed at the Busch Baghouse, Baghouse 039, and Baghouse 040.

A schematic of the particulate process is shown below. The test locations are marked numerically.



SUMMARY OF PROCEDURES

SAMPLING PROCEDURES

The sampling followed procedures as detailed in U.S. Environmental Protection Agency (EPA) Methods 1, 2, 3, 4, 5 and 12. These methods are titled:

- Method 1 — "Sample and Velocity Traverses for Stationary Sources;"
- Method 2 — "Determination of Stack Gas Velocity and Volumetric Flow Rate (Type S Pitot Tube);"
- Method 3 — "Gas Analysis for Carbon Dioxide, Oxygen, Excess Air and Dry Molecular Weight;"
- Method 4 — "Determination of Moisture Content in Stack Gases;"
- Method 5 — "Determination of Particulate Emissions from Stationary Sources;"
- Method 12 — "Determination of Inorganic Lead Emissions from Stationary Sources."

The Method 5 and 12 samples were obtained simultaneously in a single sample train using procedures described in Method 12.

These methods appear in detail in Title 40 of the Code of Federal Regulations (CFR), Part 60, Appendix A.

The sampling apparatus is shown in Fig 1 on page 3-2. The sampling equipment was designed and manufactured by the Research Appliance Co. and Clean Air Engineering to meet U.S. EPA standards. All equipment was calibrated at the Clean Air Engineering laboratory prior to shipment to the job site.

SUMMARY OF PROCEDURES

Sampling Locations

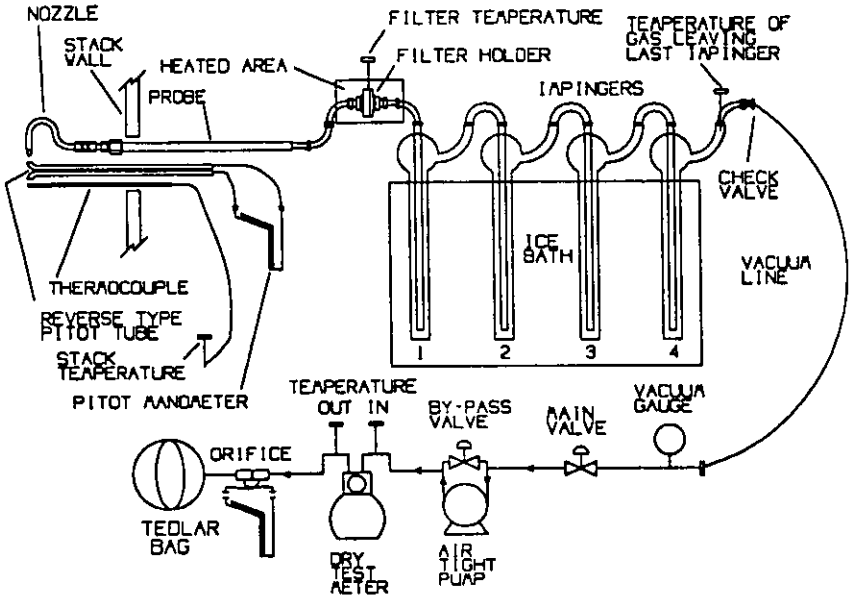
The Baghouse 039 Inlet and Outlet each have two ports. For particulate and lead testing, six points were sampled per port. The sampling time per point was ten minutes for a total sampling time of 120 minutes. The sampling locations are shown in Figs 2 and 4 on pages 3-4 and 3-6, respectively.

The Baghouse 040 Inlet and Outlet each have two ports. For particulate and lead testing, six points were sampled per port. The sampling time per point was ten minutes for a total sampling time of 120 minutes. The sampling locations are shown in Figs 3 and 5 on pages 3-5 and 3-7, respectively.

The Busch Baghouse has five ports. For particulate and lead testing, six points were sampled per port. The sampling time per point was four minutes for a total sampling time of 120 minutes. The sampling locations are shown in Fig 6 on page 3-8.

Figure 1

The EPA Methods 5 and 12 sampling apparatus is shown.

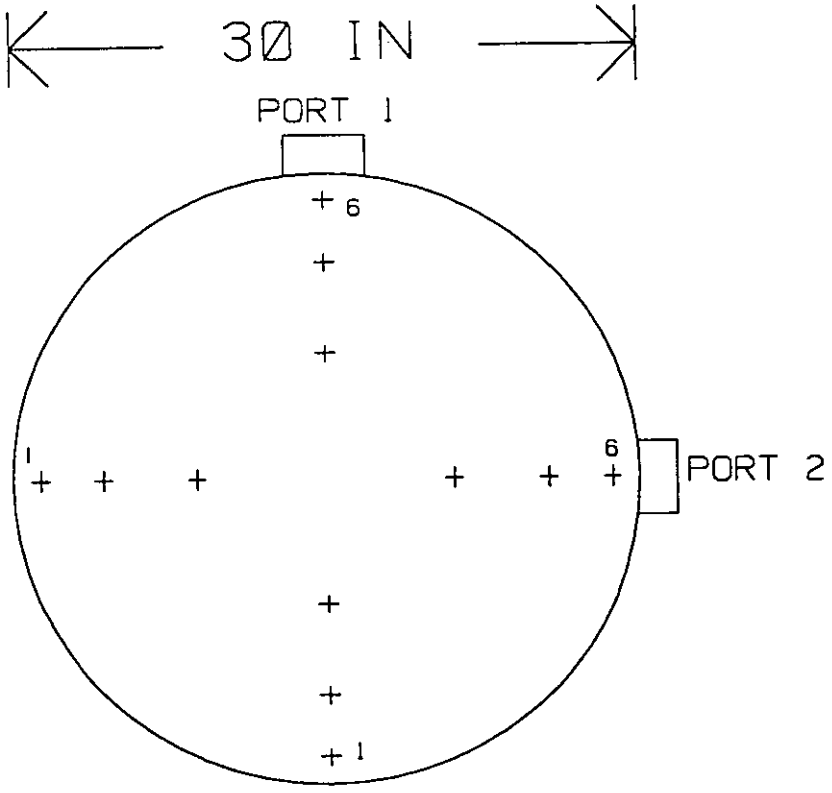


Impinger Contents

1) 100 ml 0.1N Nitric Acid
2) 100 ml 0.1N Nitric Acid
3) empty
4) 300 g silica gel

Figure 2

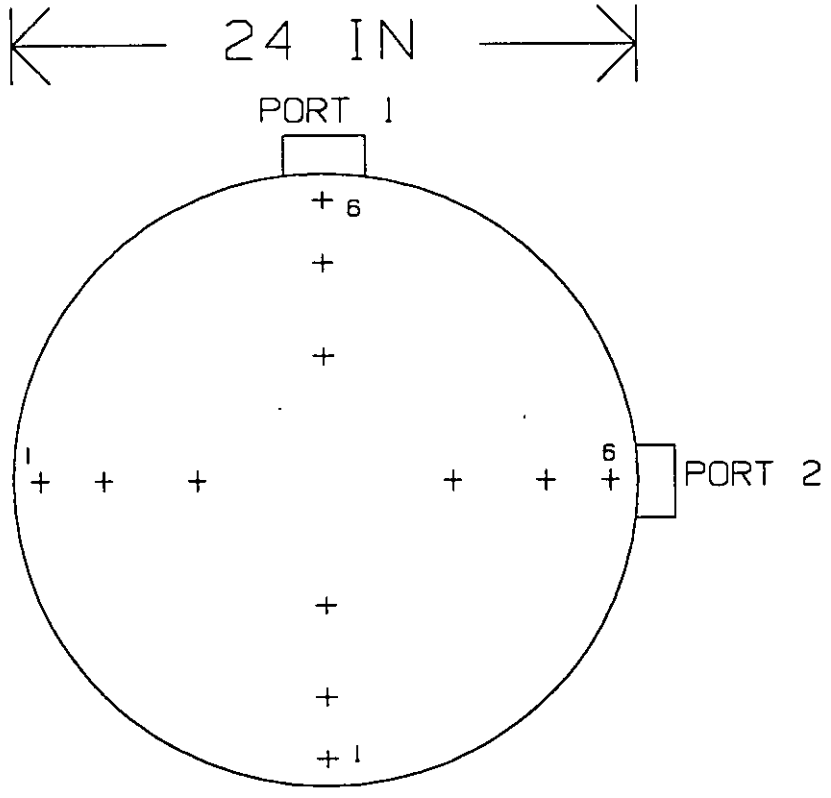
The cross section of the Baghouse 039 Inlet shows traverse point locations.



TRAVERSE POINT	PORT TO POINT DISTANCE (IN)
1	28.7
2	25.6
3	21.1
4	8.9
5	4.4
6	1.3

Figure 3

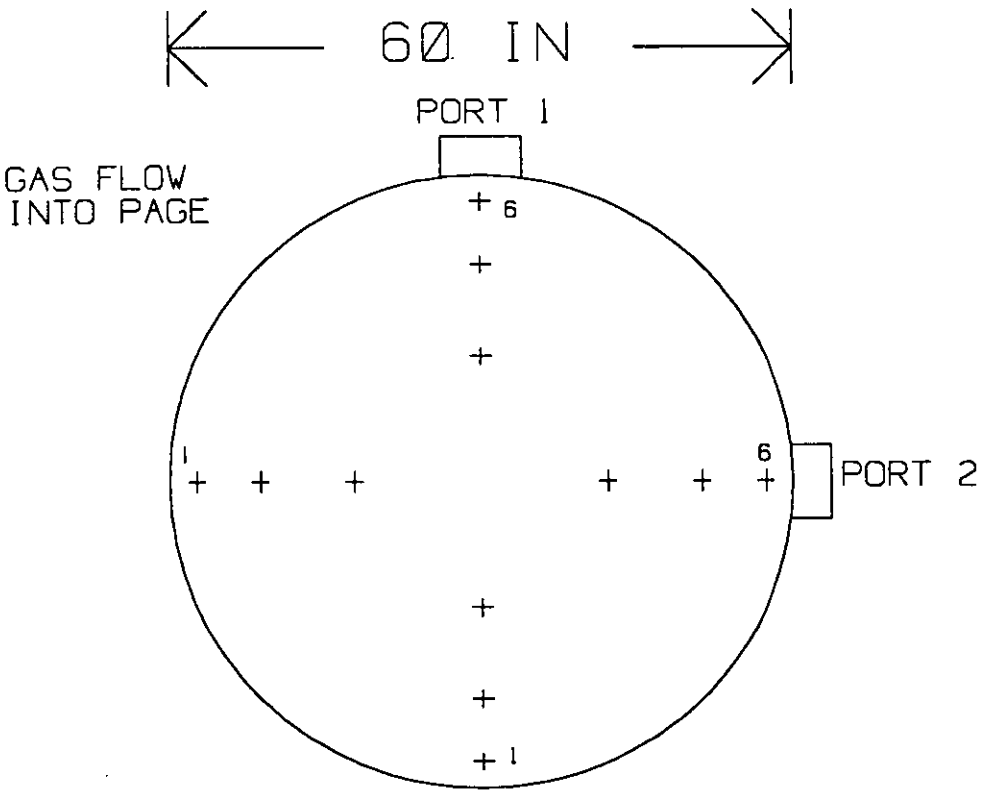
The cross section of the Baghouse 040 Inlet shows traverse point locations.



TRAVERSE POINT	PORT TO POINT DISTANCE (IN)
1	22.9
2	20.5
3	16.9
4	7.1
5	3.5
6	1.1

Figure 4

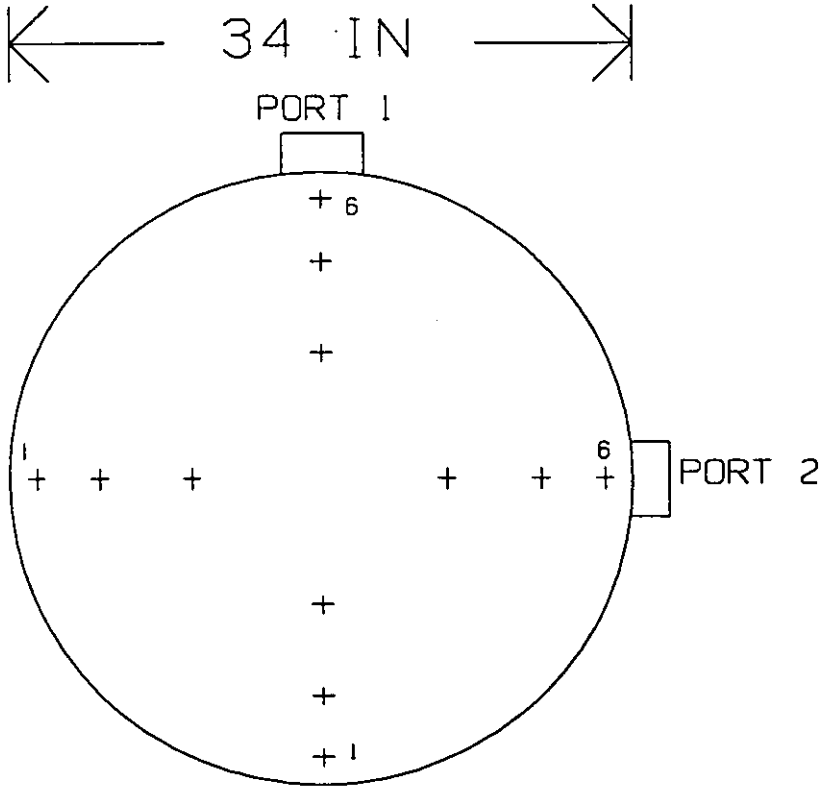
The cross section of the Baghouse 039 Outlet shows traverse point locations.



TRAVERSE POINT	PORT TO POINT DISTANCE (IN)
1	57.4
2	51.2
3	42.2
4	17.8
5	8.8
6	2.6

Figure 5

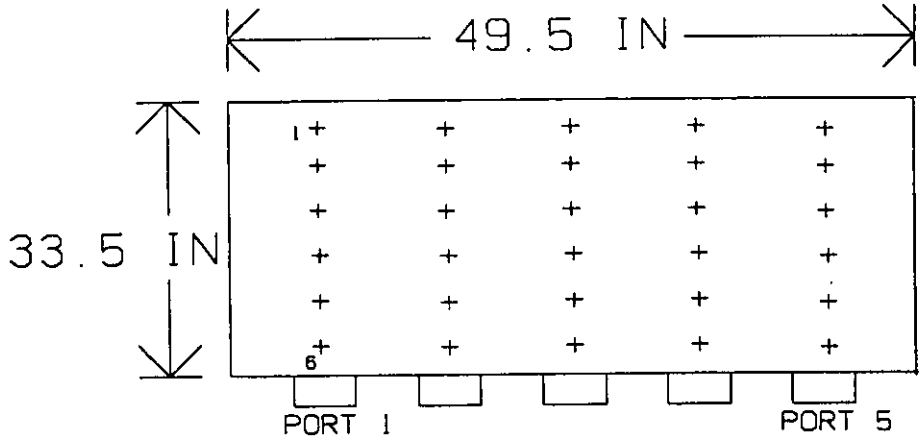
The cross section of the Baghouse 040 Outlet shows traverse point locations.



TRAVERSE POINT	PORT TO POINT DISTANCE (IN)
1	32.5
2	29.0
3	23.9
4	10.1
5	5.0
6	1.5

Figure 6

The cross section of the Busch Baghouse Outlet shows traverse point locations.



TRAVERSE POINT	PORT TO POINT DISTANCE (IN)
1	30.7
2	25.1
3	19.5
4	14.0
5	8.4
6	2.8

SUMMARY OF PROCEDURES (Continued)

ANALYTICAL PROCEDURES

Particulate

The particulate emissions were determined following procedures detailed in EPA Method 5. Particulate samples collected on Whatman 934 AH glass fiber filters were analyzed gravimetrically. The probe and nozzles were washed with acetone. The wash was transferred to tared beakers and evaporated to dryness. These weight differentials were combined to determine total particulate matter.

Lead

The lead emissions were determined using laboratory procedures detailed in EPA Method 12. The filter and impinger catches of the sampling train were analyzed by atomic absorption spectrophotometry.

The probe wash and impinger solutions were evaporated to dryness. The residue and the matter on the filter were each digested with 50% nitric acid followed by 3% hydrogen peroxide. The digested material was resolubilized, filtrated and the volume taken to 100 ml rather than 250 ml as specified by Method 12. Aliquots of the resultants were each diluted as necessary and analyzed for lead.

QUALITY CONTROL PROCEDURES

Quality control procedures for all aspects of field sampling; sample preservation and holding time; reagent quality; analytical method; analyst training and safety; and instrument cleaning, calibration and safety were followed. These procedures are generally consistent with EPA guidelines documented in "Quality Assurance Manuals for Air Pollution Measurement Systems," Vol 3, "Stationary Source Specific Methods" (EPA-600/4-77-027b).

COMMENTS

An additional test run was performed at the Busch Baghouse Unit Stack. This run is not included in report averages.

The RSR Corporation representative on site reported noting condensation inside the Busch Baghouse Unit during Runs 1 and 3. It was his feeling that the filter discoloration was a direct result of this condensation.

The particulate test runs 1 and 3 showed an increase in grain loading across the Busch Baghouse Unit.

The stack area for Runs 1 through 3 at the Baghouse 039 Inlet written on the field data sheets in the Field Data Section of the Appendix is incorrect. The correct stack area is 4.91 square feet.

No other deviations from standard U.S.EPA testing procedures were noted.

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NOMENCLATURE

Nomenclature

A	-	absorbance
A_n	-	cross sectional area of nozzle (ft^2)
A_s	-	cross sectional area of stack (ft^2)
B_{wo}	-	proportion of water vapor in the gas stream by volume (%)
B_{ws}	-	proportion of water vapor in the gas stream by volume (%) at saturated conditions
C_p	-	pitot tube coefficient (dimensionless)
D_f	-	dilution factor
F_d	-	ratio of dry gas generated to gross calories (dscf/MBtu)
F_c	-	ratio of gas generated
GCV	-	gross calorific value of fuel (Btu/lb)
$\overline{DH}$	-	average pressure drop across meter box orifice (in. H_2O)
$\overline{\sqrt{DP}}$	-	average square roots of velocity heads of stack gas ($\sqrt{\text{in. } H_2O}$)
DH@	-	meter orifice calibration coefficient (in. H_2O)
%I	-	percent of isokinetic sampling (acceptable: $90 \leq \%I \leq 110\%$)
K_p	-	pitot tube constant: 85.49 (ft/sec) $\frac{\sqrt{(lb/lb\text{-}mole)(in.\ Hg)}}{\sqrt{(^\circ R)(in.\ H_2O)}}$
K_c	-	spectrophotometer calibration factor
M_d	-	dry molecular weight of stack gas (lb/lb-mole)
M_s	-	molecular weight of stack gas, wet basis (lb/lb-mole)
M_n	-	total amount of particulate matter collected (gm)
N	-	normality of titrant (meq/ml)
P_b	-	barometric pressure (in. Hg)
P_f	-	final absolute pressure of flask (in. Hg)
P_i	-	initial absolute pressure of flask (in. Hg)
P_s	-	absolute stack gas pressure (in. Hg)
Q_a	-	volumetric flow rate, actual conditions
Q_{std}	-	volumetric flow rate, standard conditions, dry basis
std	-	standard conditions, 29.92 in. Hg, 68 ° F
T_f	-	final absolute temperature of flask (° R)
T_i	-	initial temperature of flask (° R)
T_m	-	average dry gas meter temperature (° F)

T_s	-	average stack temperature (° F)
T_{std}	-	absolute temperature, standard conditions (528 ° R)
Θ	-	total sampling time (min)
V_a	-	volume of aliquot (ml)
V_f	-	volume of flask (ml)
V_{lc}	-	total volume of liquid collected in impingers and silica gel (ml)
V_m	-	volume of gas sample through the dry gas meter at meter conditions (ft^3)
V_{mstd}	-	volume of gas sample through the dry gas meter, standard conditions (ft^3)
V_{sc}	-	volume of flask sample, standard conditions (ml)
V_{soln}	-	total volume of solution (ml)
V_t	-	volume of titrant used to titrate aliquot (ml)
V_{tb}	-	volume of titrant used to titrate blank (ml)
V_{wstd}	-	volume of water collected, standard conditions (ft^3)
V_s	-	stack gas velocity (ft/sec)
Y_d	-	gas meter correction factor (dimensionless)

SAMPLE CALCULATIONS

RSR CORPORATION
CAE Project No : 5633

SAMPLE CALCULATIONS - RUN 1, BAGHOUSE 039 OUTLET

(Note : results are taken from computer analysis)

1. Volume of water collected

$$V_{wstd} = (0.04707)\,(Vlc)$$
$$= (0.04707)\,(18)$$
$$= 0.847 \text{ wscf}$$

2. Volume of gas metered, standard conditions

$$V_{mstd} = \frac{(17.64)\,(V_m)\left[P_b + \frac{\overline{DH}}{13.6}\right]}{(460 + T_m)}(Y_d)$$
$$= \frac{(17.64)\,(76.69)\left[29.53 + \frac{1.4}{13.6}\right]}{(460 + 74)}(0.9955)$$
$$= 74.81 \text{ dscf}$$

3. Moisture content

$$B_{wo} = \frac{V_{wstd}}{V_{mstd} + V_{wstd}}$$
$$= \frac{0.847}{74.73 + 0.847}$$
$$= 0.0112$$
$$= 1.1\ \%$$

4. Molecular weight of dry gas stream

$$M_d = 0.44(\%CO_2) + 0.32(\%O_2) + 0.28(\%CO + \%N_2)$$
$$= 0.44(0.0) + 0.32(20.9) + 0.28(79.1)$$
$$= 28.84$$

SAMPLE CALCULATIONS (Continued)

5. Molecular weight of stack gas

$$M_s = M_d\,(1 - B_{wo}) + 18(B_{wo})$$
$$= 28.84\,(1 - 0.0112) + 18(0.0112)$$
$$= 28.71$$

6. Stack pressure (in. Hg)

$$P_s = P_b + \left(\frac{\text{STATIC P}}{13.6}\right)$$
$$= 29.53 + \left(\frac{-4.0}{13.6}\right)$$
$$= 29.27$$

7. Velocity of stack gas

$$V_s = K_p\,C_p\,\overline{(DP)^{\frac{1}{2}}}\,\frac{[\overline{T_s} + 460]^{\frac{1}{2}}}{[(M_s)\,(P_s)]^{\frac{1}{2}}}$$
$$= 85.49\,(0.84)\,(0.368)\,\frac{[114 + 460]^{\frac{1}{2}}}{[(28.71)\,(29.24)]^{\frac{1}{2}}}$$
$$= 21.82 \text{ ft/sec}$$

8. Total flow of stack gas

$$Q_a = (60)\,(A_s)\,(V_s)$$
$$= (60)\,(19.63)\,(21.83)$$
$$= 25{,}702 \text{ acfm}$$

$$Q_{std} = \frac{Q_a\,P_s\,(17.64)\,(1 - B_{wo})}{\overline{T_s} + 460}$$
$$= \frac{(25{,}716)\,(29.24)\,(17.64)\,(1 - 0.0112)}{114 + 460}$$
$$= 22{,}874 \text{ dscfm}$$

SAMPLE CALCULATIONS (Continued)

9. Particulate

$$\text{gr/dscf} = \frac{(15.43)\,(M_n)}{V_{mstd}}$$
$$= \frac{(15.43)\,(0.0066)}{74.73}$$
$$= 0.0014$$

$$\text{lb/hr} = \frac{(\text{gr/dscf})\,(Q_{std})\,(60)}{7000}$$
$$= \frac{(0.0014)\,(22{,}862)\,(60)}{7000}$$
$$= 0.27$$

10. Lead

$$\text{lb/dscf} = \frac{mg_{net}}{(V_{mstd})\,(453{,}590)}$$
$$= \frac{(0.470)}{(74.73)\,(453{,}590)}$$
$$= 1.39 \times 10^{-8}$$

$$\text{g/sec} = (\text{lb/dscf})\,(\text{dscfm})\,(1\text{ min}/60\text{ sec})\,(453.6\text{ g/lb})$$
$$= (1.39 \times 10^{-8})(22{,}862)(1/60)\,(453.6)$$
$$= 2.40 \times 10^{-3}$$

$$\text{lb/hr} = (\text{lb/dscf})\,(\text{dscfm})\,(60)$$
$$= (1.39 \times 10^{-8})(22{,}862)(60)$$
$$= 1.90 \times 10^{-2}$$

SAMPLE CALCULATIONS (Continued)

10. Lead (continued)

$$\text{gr/dscf} = \frac{(\text{lb/hr})(7000)}{(\text{dscfm})(60)}$$

$$= \frac{(1.90 \times 10^{-2})(7000)}{(22{,}862)(60)}$$

$$= 9.71 \times 10^{-5}$$

11. Removal Efficiency (Particulate)

$$\% = \frac{(\text{Inlet, lb/hr}) - (\text{Outlet, lb/hr})}{(\text{Inlet, lb/hr})}$$

$$= \frac{(7.5) - (.27)}{(7.5)} \times 100\%$$

$$= 96.3\ \%$$

The removal efficiency for lead was calculated in a similar manner.

PARAMETERS

RSR CORPORATION
CAE Project No: 5633
BAGHOUSE 039 INLET

RUN NO.	1	2	3
Date (1991)	April 10	April 10	April 11
Start Time (approx.)	9:10 AM	3:38 PM	8:45 AM
Stop Time (approx.)	11:17 AM	5:47 PM	10:50 AM
%CO2	0.0	0.0	0.0
%O2	20.9	20.9	20.9
Pb	29.56	29.56	29.77
STATIC P	-6.5	-7.5	-7.5
Cp	0.84	0.84	0.84
As	4.91	4.91	4.91
Vlc	21	30	25
Vm	125.33	110.99	99.51
DH	3.8	2.9	2.6
Yd	1.0077	1.0077	1.0077
Tm	103	109	84

CALCULATED RESULTS

Vwstd	0.988	1.412	1.177
Vmstd	118.08	103.24	97.41
Bwo	0.0083	0.0135	0.0119
AVG VEL ROOT	1.393	1.495	1.383
AVG TEMP	130	130	119
Md	28.84	28.84	28.84
Ms	28.75	28.69	28.71
Ps	29.08	29.01	29.22
Vs	84.01	90.36	82.47
Qa (acfm)	24,749	26,621	24,295
Qstd (dscfm)	21,355	22,786	21,387

RSR CORPORATION
CAE Project No: 5633
BAGHOUSE 040 INLET

RUN NO.	1	2	3
Date (1991)	April 10	April 10	April 11
Start Time (approx.)	9:10 AM	3:40 PM	8:45 AM
Stop Time (approx.)	11:20 AM	5:50 PM	10:55 AM
%CO2	0.0	0.0	0.0
%O2	20.9	20.9	20.9
Pb	29.56	29.56	29.77
STATIC P	-6.6	-8.5	-8.2
Cp	0.84	0.84	0.84
As	3.14	3.14	3.14
Vlc	26	36	48
Vm	94.70	48.42	120.66
DH	2.9	0.7	4.0
Yd	1.0031	1.0031	1.0031
Tm	68	85	82

CALCULATED RESULTS

Vwstd	1.224	1.695	2.259
Vmstd	94.49	46.56	118.43
Bwo	0.0128	0.0351	0.0187
AVG VEL ROOT	1.583	1.692	1.892
AVG TEMP	150	128	118
Md	28.84	28.84	28.84
Ms	28.70	28.46	28.63
Ps	29.07	28.94	29.17
Vs	97.20	102.70	113.00
Qa (acfm)	18,313	19,349	21,289
Qstd (dscfm)	15,206	16,207	18,601

RSR CORPORATION
CAE Project No: 5633
BAGHOUSE 039 OUTLET

RUN NO.	1	2	3
Date (1991)	April 10	April 10	April 11
Start Time (approx.)	9:10 AM	3:35 PM	8:45 AM
Stop Time (approx.)	11:35 AM	5:50 PM	10:55 AM
%CO2	0.0	0.0	0.0
%O2	20.9	20.9	20.9
Pb	29.56	29.56	29.77
STATIC P	-4.0	-2.6	-2.6
Cp	0.84	0.84	0.84
As	19.63	19.63	19.63
Vlc	18	14	15
Vm	76.69	76.03	69.56
DH	1.4	1.3	1.2
Yd	0.9955	0.9955	0.9955
Tm	74	72	59

CALCULATED RESULTS

Vwstd	0.847	0.659	0.706
Vmstd	74.81	74.43	70.27
Bwo	0.0112	0.0088	0.0099
AVG VEL ROOT	0.368	0.364	0.344
AVG TEMP	114	100	104
Md	28.84	28.84	28.84
Ms	28.71	28.74	28.73
Ps	29.27	29.37	29.58
Vs	21.82	21.31	20.09
Qa (acfm)	25,702	25,095	23,667
Qstd (dscfm)	22,874	23,026	21,690

RSR CORPORATION
CAE Project No: 5633
BAGHOUSE 040 OUTLET

RUN NO.	1	2	3
Date (1991)	April 10	April 10	April 11
Start Time (approx.)	9:10 AM	3:39 PM	8:45 AM
Stop Time (approx.)	11:25 AM	5:49 PM	10:54 AM
%CO2	0.0	0.0	0.0
%O2	20.9	20.9	20.9
Pb	29.56	29.56	29.77
STATIC P	-6.5	-2.5	-2.5
Cp	0.84	0.84	0.84
As	6.31	6.31	6.31
Vlc	18	25	22
Vm	68.40	65.60	71.48
DH	1.1	1.1	1.3
Yd	0.9950	0.9950	0.9950
Tm	54	68	69

CALCULATED RESULTS

Vwstd	0.847	1.177	1.036
Vmstd	69.23	64.63	70.83
Bwo	0.0121	0.0179	0.0144
AVG VEL ROOT	0.952	0.928	1.005
AVG TEMP	126	118	111
Md	28.84	28.84	28.84
Ms	28.70	28.64	28.68
Ps	29.08	29.38	29.59
Vs	57.27	55.21	59.18
Qa (acfm)	21,681	20,902	22,406
Qstd (dscfm)	18,752	18,414	20,199

RSR CORPORATION
CAE Project No: 5633
BUSCH BAGHOUSE OUTLET

RUN NO.	1	2	3
DATE (1991)	April 10	April 10	April 11
Start Time (approx.)	9:15 AM	3:38 PM	8:45 AM
Stop Time (approx.)	11:31 AM	5:49 PM	10:55 AM
%CO2	0.0	0	0
%O2	20.9	20.9	20.9
Pb	29.56	29.56	29.77
STATIC P	0.3	0.3	0.3
Cp	0.84	0.84	0.84
As	11.5	11.5	11.5
Vlc	24	32	22
Vm	83.43	83.25	83.32
DH	1.3	1.5	1.5
Yd	1.0063	1.0063	1.0063
Tm	72	85	78

CALCULATED RESULTS

Vwstd	1.130	1.506	1.036
Vmstd	82.55	80.45	82.14
Bwo	0.0135	0.0184	0.0124
AVG VEL ROOT	1.129	1.110	1.124
AVG TEMP	117	110	108
Md	28.84	28.84	28.84
Ms	28.69	28.64	28.70
Ps	29.58	29.58	29.79
Vs	66.85	65.41	65.80
Qa (acfm)	46,092	45,131	45,400
Qstd (dscfm)	41,148	40,550	41,458

RSR CORPORATION
CAE Project No: 5633
BUSCH BAGHOUSE OUTLET

RUN NO.	1
DATE	
Start Time (approx.)	9:20 AM
Stop Time (approx.)	5:20 PM

%CO2	0.0
%O2	20.9
Pb	29.56
STATIC P	0.3
Cp	0.84
As	11.5
Vlc	86
Vm	331.42
DH	1.4
Yd	1.0035
Tm	76

CALCULATED RESULTS

Vwstd	4.048
Vmstd	324.67
Bwo	0.0123
AVG VEL ROOT	1.095
AVG TEMP	116
Md	28.84
Ms	28.70
Ps	29.58
Vs	64.79
Qa (acfm)	44,707
Qstd (dscfm)	40,003

RSR CORPORATION
CAE Project No: 5633
039 Inlet

Lead

Run No.	**1**	**2**	**3**
Vmstd	118.08	103.24	97.41
Bwo	0.0083	0.0135	0.0119
Md	28.84	28.84	28.84
Ms	28.75	28.69	28.71
Ps	29.08	29.01	29.22
Vs (ft/sec)	84.01	90.36	82.47
acfm	24,749	26,621	24,295
dscfm	21,355	22,786	21,387

Lead	**BLANK =**	**0.15**		**MW =**	**207.2**
mg (gross)	154.600		87.200	309.900	
mg (net)	154.450		87.050	309.750	
lb/dscf	2.88E-06		1.86E-06	7.01E-06	
g/sec	4.66E-01		3.20E-01	1.13E+00	
lb/hr	3.69		2.54	9.00	
gr/dscf	2.02E-02		1.30E-02	4.91E-02	

RSR CORPORATION
CAE Project No: 5633
040 Inlet

Lead

Run No.	1	2	3
Vmstd	94.49	46.56	118.43
Bwo	0.0128	0.0351	0.0187
Md	28.84	28.84	28.84
Ms	28.70	28.46	28.63
Ps	29.07	28.94	29.17
Vs (ft/sec)	97.20	102.70	113.00
acfm	18,313	19,349	21,289
dscfm	15,206	16,207	18,601

Lead	BLANK =	0.15		MW =	207.2
mg (gross)	289.900		172.800	324.500	
mg (net)	289.750		172.650	324.350	
lb/dscf	6.76E-06		8.18E-06	6.04E-06	
g/sec	7.77E-01		1.00E+00	8.49E-01	
lb/hr	6.17		7.95	6.74	
gr/dscf	4.73E-02		5.72E-02	4.23E-02	

RSR CORPORATION
CAE Project No: 5633
039 Outlet

Lead

Run No.	**1**	**2**	**3**
Vmstd	74.81	74.43	70.27
Bwo	0.0112	0.0088	0.0099
Md	28.84	28.84	28.84
Ms	28.71	28.74	28.73
Ps	29.27	29.37	29.58
Vs (ft/sec)	21.82	21.31	20.09
acfm	25,702	25,095	23,667
dscfm	22,874	23,026	21,690

Lead	**BLANK =**	**0.15**		**MW =**	**207.2**
mg (gross)	0.620		0.290	0.750	
mg (net)	0.470		0.140	0.600	
lb/dscf	1.39E-08		4.15E-09	1.88E-08	
g/sec	2.40E-03		7.22E-04	3.09E-03	
lb/hr	1.90E-02		5.73E-03	2.45E-02	
gr/dscf	9.70E-05		2.90E-05	1.32E-04	

RSR CORPORATION
CAE Project No: 5633
040 Outlet

Lead

Run No.	**1**	**2**	**3**
Vmstd	69.23	64.63	70.83
Bwo	0.0121	0.0179	0.0144
Md	28.84	28.84	28.84
Ms	28.70	28.64	28.68
Ps	29.08	29.38	29.59
Vs (ft/sec)	57.27	55.21	59.18
acfm	21,681	20,902	22,406
dscfm	18,752	18,414	20,199

Lead	**BLANK =**	**0.15**		**MW =**	**207.2**
mg (gross)	1.070		0.520	0.750	
mg (net)	0.920		0.370	0.600	
lb/dscf	2.93E-08		1.26E-08	1.87E-08	
g/sec	4.15E-03		1.76E-03	2.85E-03	
lb/hr	3.30E-02		1.39E-02	2.26E-02	
gr/dscf	2.05E-04		8.83E-05	1.31E-04	

RSR CORPORATION
CAE Project No: 5633
Busch Outlet

Lead

Run No.	1	2	3	Constant
Vmstd	82.55	80.45	82.14	324.67
Bwo	0.0135	0.0184	0.0124	0.0123
Md	28.84	28.84	28.84	28.84
Ms	28.69	28.64	28.70	28.70
Ps	29.58	29.58	29.79	29.58
Vs (ft/sec)	66.85	65.41	65.80	64.79
acfm	46,092	45,131	45,400	44,707
dscfm	41,148	40,550	41,458	40,003

Lead	**BLANK =**	**0.15**		**MW =**	**207.2**
mg (gross)	0.150		0.570	0.150	0.180
mg (net)	0.000		0.420	0.000	0.030
lb/dscf	0.00E+00		1.15E-08	0.00E+00	2.04E-10
g/sec	0.00E+00		3.53E-03	0.00E+00	6.16E-05
lb/hr	0.00E+00		2.80E-02	0.00E+00	4.89E-04
gr/dscf	0.00E+00		8.06E-05	0.00E+00	1.43E-06

CALIBRATION DATA

POST TEST CALIBRATION CHECK

Client/Owner: RSR

Project Number: 5633

Operator: J. WARD

Date: 4/13/91

Meter Box No.: 2	Meter Box Vacuum: 12	Meter Box Yd: 1.0063	Barometric Press.: 29.41

				Standard Meter Gas Volume ft^3			Meter Box Gas Volume ft^3			Std. Meter Temperature °F			Meter Box Temperature °F					
Q	ΔH	ΔP	Yds	Initial	Final	Vds Net	Initial	Final	Vd Net	In	Out	Tds Avg	In	Out	Td Avg	Time 0	Yd	
.69	1.5	-1.9	1.0000	-0-	10.005	10.005	984.255	994.825	10.570	64	64	64	114	93	98.5	14.42	1.0003	
.68	1.5	-1.9	1.0000	-0-	11.991	11.991	994.825	1007.460	12.635	64	64	64	116	88	102	17.55	1.0092	
.67	1.5	-1.9	1.0000	-0-	10.110	10.110	1007.460	1018.208	10.748	64	64	64	118	93	105.5	14.98	1.0005	

Nomenclature

Pb	Barometric Pressure
Q	Flow Rate (cfm)
ΔH	Orifice Pressure Differential ("H_2O)
ΔP	Inlet Pressure Differential ("H_2O)
Vd	Volume Dry Gas Meter (ft^3)
Vds	Volume Dry Standard (ft^3)
Yd	Meter Correction Factor (unitless)
Yds	Standard Meter Correction Factor (unitless)
ΔH@	Orifice Pressure Differential that gave 0.75 cfm of air at 70° F and 29.92 "Hg ("H_2O)

Calculations

$$Yd = (Yds)\left[\frac{Vds}{Vd}\right]\left[\frac{Td + 460}{Tds + 460}\right]\left[\frac{Pb + \Delta P/13.}{Pb + \Delta H/13}\right]$$

$$\Delta H@ = \frac{0.0317\,\Delta H}{Pb\,(Td + 460)}\left[\frac{(Tds + 460)\,0}{(Vds)\,(Yds)}\right]^2$$

$$Q = \frac{17.64\,(Vds)\,(Pb)}{(Tds + 460)\,0}$$

POST TEST CALIBRATION CHECK

Client/Owner: RSR

Project Number: 5633

Operator: T. WARD

Date: 4/12/91

Meter Box No.: D	Meter Box Vacuum: 6	Meter Box Yd: .9955	Barometric Press.: 29.75

				Standard Meter Gas Volume ft^3			Meter Box Gas Volume ft^3			Std. Meter Temperature °F			Meter Box Temperature °F					
Q	ΔH	ΔP	Yds	Initial	Final	Vds Net	Initial	Final	Vd Net	In	Out	Tds Avg	In	Out	Td Avg	Time θ	Yd	ΔH@
.66	1.4	-23	1.0000	-0-	10.005	10.005	703.247	713.514	10.267	66	66	66	98	91	94.5	15.50	1.0179	1.78
.66	1.4	-23	1.0000	-0-	14.824	14.824	713.514	728.784	15.270	66	66	66	102	91	96.5	22.26	1.0174	1.67
.66	1.4	-23	1.0000	-0-	10.257	10.257	728.784	739.367	10.587	66	66	66	103	93	98	15.49	1.0187	1.67

Nomenclature

Pb	Barometric Pressure
Q	Flow Rate (cfm)
ΔH	Orifice Pressure Differential ("H_2O)
ΔP	Inlet Pressure Differential ("H_2O)
Vd	Volume Dry Gas Meter (ft^3)
Vds	Volume Dry Standard (ft^3)
Yd	Meter Correction Factor (unitless)
Yds	Standard Meter Correction Factor (unitless)
ΔH@	Orifice Pressure Differential that gave 0.75 cfm of air at 70° F and 29.92 "Hg ("H_2O)

Calculations

$$Yd = (Yds)\left[\frac{Vds}{Vd}\right]\left[\frac{Td + 460}{Tds + 460}\right]\left[\frac{Pb + \Delta P/13.6}{Pb + \Delta H/13.6}\right]$$

$$\Delta H@ = \frac{0.0317\ \Delta H}{Pb\ (Td + 460)}\left[\frac{(Tds + 460)\ \theta}{(Vds)\ (Yds)}\right]^2$$

$$Q = \frac{17.64\ (Vds)\ (Pb)}{(Tds + 460)\ \theta}$$

POST TEST CALIBRATION CHECK

Client/Owner: _____

Project Number: 5657

Operator: T. WARD

Date: 4/23/91

Meter Box No.: P	Meter Box Vacuum: 13	Meter Box Yd: 1.0086	Barometric Press.: 28.92

				Standard Meter Gas Volume ft^3			Meter Box Gas Volume ft^3			Std. Meter Temperature °F			Meter Box Temperature °F					
Q	ΔH	ΔP	Yds	Initial	Final	Vds Net	Initial	Final	Vd Net	In	Out	Tds Avg	In	Out	Td Avg	Time θ	Yd	ΔH@
.57	1.1	-2.1	1.0000	-0-	11.374	11.374	87.211	99.254	12.043	65	65	65	110	92	101	19.54	1.0010	1.74
.56	1.1	-2.1	1.0000	-0-	14.230	14.230	99.258	114.324	15.066	65	65	65	110	96	103	24.52	1.0046	1.75
.56	1.1	-2.1	1.0000	-0-	11.492	11.492	114.324	126.494	12.170	65	65	65	110	96	103	19.84	1.0044	1.75

Nomenclature

Pb	Barometric Pressure
Q	Flow Rate (cfm)
ΔH	Orifice Pressure Differential ("H_2O)
ΔP	Inlet Pressure Differential ("H_2O)
Vd	Volume Dry Gas Meter (ft^3)
Vds	Volume Dry Standard (ft^3)
Yd	Meter Correction Factor (unitless)
Yds	Standard Meter Correction Factor (unitless)
ΔH@	Orifice Pressure Differential that gave 0.75 cfm of air at 70° F and 29.92 "Hg ("H_2O)

Calculations

$$Yd = (Yds)\left[\frac{Vds}{Vd}\right]\left[\frac{Td + 460}{Tds + 460}\right]\left[\frac{Pb + \Delta P/13.6}{Pb + \Delta H/13.6}\right]$$

$$\Delta H@ = \frac{0.0317\,\Delta H}{Pb\,(Td + 460)}\left[\frac{(Tds + 460)\,\theta}{(Vds)\,(Yds)}\right]^2$$

$$Q = \frac{17.64\,(Vds)\,(Pb)}{(Tds + 460)\,\theta}$$

POST TEST CALIBRATION CHECK

Client/Owner: RSR

Project Number: 5633

Operator: T. WARD

Date: 4/19/91

Meter Box No.: FF	Meter Box Vacuum: 12	Meter Box Yd: 1.0077	Barometric Press.: 29.29

				Standard Meter Gas Volume ft^3			Meter Box Gas Volume ft^3			Std. Meter Temperature °F			Meter Box Temperature °F					
Q	ΔH	ΔP	Yds	Initial	Final	Vds Net	Initial	Final	Vd Net	In	Out	Tds Avg	In	Out	Td Avg	Time 0	Yd	ΔH
.78	2.3	-1.2	1.0000	-0-	10.440	10.440	965.871	977.215	11.341	63	63	63	126	100	113	13.25	.9997	1.9
.77	2.3	-1.2	1.0000	-0-	10.006	10.006	977.215	988.108	10.893	63	63	63	126	100	113	12.79	.9976	1.9
.77	2.3	-1.2	1.0000	-0-	10.193	10.193	988.108	999.195	11.087	63	63	63	126	100	113	13.04	.9985	1.9

Nomenclature

Pb	Barometric Pressure
Q	Flow Rate (cfm)
ΔH	Orifice Pressure Differential ("H_2O)
ΔP	Inlet Pressure Differential ("H_2O)
Vd	Volume Dry Gas Meter (ft^3)
Vds	Volume Dry Standard (ft^3)
Yd	Meter Correction Factor (unitless)
Yds	Standard Meter Correction Factor (unitless)
ΔH@	Orifice Pressure Differential that gave 0.75 cfm of air at 70° F and 29.92 "Hg ("H_2O)

Calculations

$$Yd = (Yds)\left[\frac{Vds}{Vd}\right]\left[\frac{Td + 460}{Tds + 460}\right]\left[\frac{Pb + \Delta P/13.6}{Pb + \Delta H/13.6}\right]$$

$$\Delta H@ = \frac{0.0317\,\Delta H}{Pb\,(Td + 460)}\left[\frac{(Tds + 460)\,0}{(Vds)\,(Yds)}\right]^2$$

$$Q = \frac{17.64\,(Vds)\,(Pb)}{(Tds + 460)\,0}$$

POST TEST CALIBRATION CHECK

Client/Owner: RSR

Project Number: 5633

Operator: T. WARD

Date: 5/2/91

Meter Box No.:	Meter Box Vacuum:	Meter Box Yd:	Barometric Press.:
Y	7	1.0035	29.33

				Standard Meter Gas Volume ft^3			Meter Box Gas Volume ft^3			Std. Meter Temperature °F			Meter Box Temperature °F					
Q	ΔH	ΔP	Yds	Initial	Final	Vds Net	Initial	Final	Vd Net	In	Out	Tds Avg	In	Out	Td Avg	Time θ	Yd	ΔH@
.65	1.4	-2.2	1.0000	-0-	12.624	12.624	14.764	27.825	13.061	64	64	64	107	90	98.5	19.13	1.0209	1.70
.65	1.4	-2.2	1.0000	-0-	10.006	10.006	27.825	38.201	10.376	64	64	64	109	93	101	15.2	1.0231	1.701
.65	1.4	-2.2	1.0000	-0-	10.456	10.456	38.201	49.049	10.848	64	64	64	110	94	102	15.89	1.0245	1.701

Nomenclature

Pb	Barometric Pressure
Q	Flow Rate (cfm)
ΔH	Orifice Pressure Differential ("H_2O)
ΔP	Inlet Pressure Differential ("H_2O)
Vd	Volume Dry Gas Meter (ft^3)
Vds	Volume Dry Standard (ft^3)
Yd	Meter Correction Factor (unitless)
Yds	Standard Meter Correction Factor (unitless)
ΔH@	Orifice Pressure Differential that gave 0.75 cfm of air at 70° F and 29.92 "Hg ("H_2O)

Calculations

$$Yd = (Yds)\left[\frac{Vds}{Vd}\right]\left[\frac{Td + 460}{Tds + 460}\right]\left[\frac{Pb + \Delta P/13.6}{Pb + \Delta H/13.6}\right]$$

$$\Delta H@ = \frac{0.0317\,\Delta H}{Pb\,(Td + 460)}\left[\frac{(Tds + 460)\,\theta}{(Vds)\,(Yds)}\right]^2$$

$$Q = \frac{17.64\,(Vds)\,(Pb)}{(Tds + 460)\,\theta}$$

POST TEST CALIBRATION CHECK

Client/Owner: RSR

Operator: T. WARD

Project Number: 5633

Date: 4/24/91

Meter Box No.: 66-2	Meter Box Vacuum: 1	Meter Box Yd: .9950	Barometric Press.: 29.41

				Standard Meter Gas Volume ft^3			Meter Box Gas Volume ft^3			Std. Meter Temperature °F			Meter Box Temperature °F					
Q	ΔH	ΔP	Yds	Initial	Final	Vds Net	Initial	Final	Vd Net	In	Out	Tds Avg	In	Out	Td Avg	Time 0	Yd	ΔH@
.52	1.1	1.5	1.0000	0	10.003	10.002	56.243	66.914	10.671	64	64	64	97	86	91.5	18.58	.9802	2.16
.54	1.1	1.5	1.0000	0	13.079	13.079	66.914	80.714	13.800	64	64	64	98	91	94.5	24.16	.9964	1.77
.54	1.1	1.5	1.0000	0	11.591	11.591	80.714	92.761	12.047	64	64	64	100	89	94.5	20.83	.9853	1.93

Nomenclature

Pb	Barometric Pressure
Q	Flow Rate (cfm)
ΔH	Orifice Pressure Differential ("H_2O)
ΔP	Inlet Pressure Differential ("H_2O)
Vd	Volume Dry Gas Meter (ft^3)
Vds	Volume Dry Standard (ft^3)
Yd	Meter Correction Factor (unitless)
Yds	Standard Meter Correction Factor (unitless)
ΔH@	Orifice Pressure Differential that gave 0.75 cfm of air at 70° F and 29.92 "Hg ("H_2O)

Calculations

$$Yd = (Yds)\left[\frac{Vds}{Vd}\right]\left[\frac{Td + 460}{Tds + 460}\right]\left[\frac{Pb + \Delta P/13.6}{Pb + \Delta H/13.6}\right]$$

$$\Delta H@ = \frac{0.0317\,\Delta H}{Pb\,(Td + 460)}\left[\frac{(Tds + 460)\,0}{(Vds)\,(Yds)}\right]^2$$

$$Q = \frac{17.64\,(Vds)\,(Pb)}{(Tds + 460)\,0}$$

METER BOX FULL TEST CALIBRATION

Date: 4/5/22 NEW BUSH REG main Operator: C/Fox

Meter Box No.: L Meter Box ΔH@: 1.754 Meter Box Yd: 1.0063 Barometric Pressure: 28.96

				Standard Meter Gas Volume ft³			Meter Box Gas Volume ft³			Std. Meter Temperature °F			Meter Box Temperature °F					
Q	ΔH	ΔP	Yds	Initial	Final	Vds Net	Initial	Final	Vds Net	In	Out	Tds Avg	In	Out	Tds Avg	Time 0	Yd	ΔH@
.39	.5	-4.2	1.0000	0.000	5.750	5.750	360.857	366.828	5.977	65.5	65.5	65.5	111.5	90.5	101	19.50	1.0148	1.702
.39	.5	-4.2	1.0000	0.000	5.750	5.750	366.828	372.794	5.966	66	66	66	111	90	100.5	14.43	1.0148	1.690
.67	1.5	-4.6	1.0000	0.000	13.250	13.250	372.794	386.663	13.869	66	66	66	116	91	103.5	19.34	1.0078	1.706
.67	1.5	-4.6	1.0000	0.000	12.001	12.001	386.663	399.255	12.592	66	66	66	118	92	105	17.50	1.0080	1.699
.91	3.0	-5.4	1.0000	0.000	10.001	10.001	399.255	409.763	10.508	65.5	65.5	65.5	114	90	102	10.78	.9965	1.863
.91	3.0	-5.3	1.0000	0.000	12.000	12.000	409.763	422.403	12.640	65.5	65.5	65.5	116	90	103	12.94	.9960	1.861

Nomenclature

Pb	Barometric Pressure
Q	Flow Rate (cfm)
ΔH	Orifice Pressure Differential ("H_2O)
ΔP	Inlet Pressure Differential ("H_2O)
Vd	Volume Dry Gas Meter (ft³)
Vds	Volume Dry Standard (ft³)
Yd	Meter Correction Factor (unitless)
Yds	Standard Meter Correction Factor (unitless)
ΔH@	Orifice Pressure Differential that gave 0.75 cfm of air at 70°F and 29.92 "Hg ("H_2O)

Calculations

$$Yd = (Yds)\left[\frac{Vds}{Vd}\right]\left[\frac{Td + 460}{Tds + 460}\right]\left[\frac{Pb + \Delta P/13.6}{Pb + \Delta H/13.6}\right]$$

$$\Delta H@ = \frac{0.0317\,\Delta H}{Pb(Td + 460)}\left[\frac{(Tds + 460)0^2}{(Vds)(Yds)}\right]$$

$$Q = \frac{17.64\,(Vds)(Pb)}{(Tds + 460)0}$$

Vacuum Gauge Calibration

Standard (Hg)	Vacuum Gauge
4.2	5.0
9.6	10.0
14.9	15.0
20.5	20.0
23.3	MAX.

Thermometer Calibration

Standard	Inlet	Outlet
80	80	80
100	100	100
120	120	121
140	140	142

METER BOX FULL TEST CALIBRATION

Date: 7-30-90 Operator: Matt Wickham

Meter Box No.: II | Meter Box ΔH@: 1.801 | Meter Box Yd: .9975 | Barometric Pressure: 29.13

				Standard Meter Gas Volume ft³			Meter Box Gas Volume ft³			Std. Meter Temperature °F			Meter Box Temperature °F					
Q	ΔH	ΔP	Yds	Initial	Final	Vds Net	Initial	Final	Vd Net	In	Out	Tds Avg	In	Out	Tds Avg	Time 0	Yd	ΔH@
.39	.5	-5.1	1.0000	0.000	5.002	5.002	141.796	146.905	5.112	75	75	75	107	102	104.5	12.46	1.0179	1.712
.37	.5	-5.0	1.0000	0.000	5.003	5.003	146.908	152.019	5.111	77	77	77	108	104	106	12.77	1.0174	1.806
.67	1.5	-5.6	1.0000	0.000	10.003	10.003	152.019	162.512	10.493	75	75	75	110	101	105.5	14.38	.9897	1.705
.67	1.5	-5.5	1.0000	0.000	10.002	10.002	162.512	173.027	10.515	76	76	76	111	102	106.5	14.39	.9896	1.714
.89	3.0	-6.0	1.0000	0.000	10.004	10.004	173.027	183.568	10.541	76	76	76	115	105	110	10.82	.9865	1.92
.88	3.0	-6.0	1.0000	0.000	10.005	10.005	183.568	194.120	10.552	76	76	76	115	105	110	10.87	.9856	1.94

Nomenclature

Pb	Barometric Pressure
Q	Flow Rate (cfm)
ΔH	Orifice Pressure Differential ("H_2O)
ΔP	Inlet Pressure Differential ("H_2O)
Vd	Volume Dry Gas Meter (ft^3)
Vds	Volume Dry Standard (ft^3)
Yd	Meter Correction Factor (unitless)
Yds	Standard Meter Correction Factor (unitless)
ΔH@	Orifice Pressure Differential that gave 0.75 cfm of air at 70°F and 29.92 "Hg ("H_2O)

Calculations

$$Yd = (Yds)\left[\frac{Vds}{Vd}\right]\left[\frac{Td + 460}{Tds + 460}\right]\left[\frac{Pb + \Delta P/13.6}{Pb + \Delta H/13.6}\right]$$

$$\Delta H@ = \frac{0.0317\,\Delta H}{Pb(Td + 460)}\left[\frac{(Tds + 460)0^2}{(Vds)(Yds)}\right]$$

$$Q = \frac{17.64\,(Vds)(Pb)}{(Tds + 460)0}$$

Vacuum Gauge Calibration

Standard (Hg)	Vacuum Gauge
4.6	5.0
10.2	10.0
15.6	15.0
21.7	20.0
25.0	max

Thermometer Calibration

Standard	Inlet	Outlet
80	80	80
100	100	100
120	120	120
140	140	140

METER BOX FULL TEST CALIBRATION

~~INLET~~ OUTLET 40 DRUM + 10 HI'S

Date: 2-22-91 Operator: Matt Wickham

Meter Box No.: D	Meter Box ΔH@: 1.897	Meter Box Yd: .9955	Barometric Pressure: 29.38

				Standard Meter Gas Volume ft³			Meter Box Gas Volume ft³			Std. Meter Temperature °F			Meter Box Temperature °F					
Q	ΔH	ΔP	Yds	Initial	Final	Vds Net	Initial	Final	Vds Net	In	Out	Tds Avg	In	Out	Tds Avg	Time 0	Yd	ΔH@
.37	.5	-4.3	1.0000	0.000	6.033	6.033	578.772	584.934	6.162	69	68	69	80	93	86.5	15.78	.9993	1.890
.38	.5	-4.3	1.0000	0.000	6.005	6.005	584.934	591.085	6.151	69	69	69	86	93	86.5	15.52	.9965	1.845
.67	1.5	-4.5	1.0000	0.000	10.005	10.005	591.085	601.377	10.292	69	69	69	84	97	91.5	14.65	.9983	1.761
.67	1.5	-4.5	1.0000	0.000	10.015	10.015	601.377	611.683	10.306	69	69	69	86	97	91.5	14.71	.9979	1.772
.87	3.0	-4.7	1.0000	0.000	10.007	10.007	611.683	622.053	10.370	69	69	69	89	98	93.5	11.24	.9904	2.065
.88	3.0	-4.7			10.005	10.005	622.053	632.421	10.368	69	69	69	89	98	93.5	11.20	.9904	2.051

Nomenclature

Pb	Barometric Pressure
Q	Flow Rate (cfm)
ΔH	Orifice Pressure Differential ("H_2O)
ΔP	Inlet Pressure Differential ("H_2O)
Vd	Volume Dry Gas Meter (ft^3)
Vds	Volume Dry Standard (ft^3)
Yd	Meter Correction Factor (unitless)
Yds	Standard Meter Correction Factor (unitless)
ΔH@	Orifice Pressure Differential that gave 0.75 cfm of air at 70°F and 29.92 "Hg ("H_2O)

Calculations

$$Yd = (Yds)\left[\frac{Vds}{Vd}\right]\left[\frac{Td + 460}{Tds + 460}\right]\left[\frac{Pb + \Delta P/13.6}{Pb + \Delta H/13.6}\right]$$

$$\Delta H@ = \frac{0.0317\,\Delta H}{Pb(Td + 460)}\left[\frac{(Tds + 460)0^2}{(Vds)(Yds)}\right]$$

$$Q = \frac{17.64\,(Vds)(Pb)}{(Tds + 460)0}$$

Vacuum Gauge Calibration

Standard (Hg)	Vacuum Gauge
5.6	5.0
10.9	10.0
15.9	15.0
19.9	20.0
21.8	max

Thermometer Calibration

Standard	Inlet	Outlet
80	80	79
100	100	99
120	120	120
140	140	140

...ER BOX FULL TEST CAL...

Date: 10-22-96 Operator: matt ...arometric Pressure: 29...

Meter Box No.: P ...eter Box ΔH@: 1.822 Meter Box Yd: 1.0086

[illegible]

Q	ΔH	ΔP	Yds	Standard Meter Gas Volume ft³ Initial	Final	Vds Net	Meter Box Gas Volume ft³ Initial	Final	Vd Net	Std. Meter Temperature °F In	Out	Tds Avg	Meter Box Temperature °F In	Out	Tds Avg	Time θ	Yd
.34	.5	-5.5	1.0000	0.000	5.604	5.604	164.576	169.745	5.169	65	65	65	110	90	100	12.69	1.0171
.34	.5	-5.5	1.0000	0.000	5.007	5.007	169.745	174.918	5.173	65	65	65	110	90	100	12.72	1.0169
.65	1.5	-6.0	1.0000	0.000	10.011	10.011	174.918	185.359	10.441	65	65	65	112	90	101	15.08	1.0054
.66	1.5	-6.6	1.0000	0.000	10.005	10.005	185.359	195.797	10.438	65	65	65	112	90	101	14.99	1.0050
.84	3.0	-6.6	1.0000	0.000	10.256	10.256	195.797	206.471	10.674	64	64	64	112	89	100.5	11.35	1.0032
.84	3.0	-6.6	1.0000	0.000	10.019	10.019	206.471	216.861	10.390	64	64	64	111	88	99	11.09	1.0041

Nomenclature

- Pb Barometric Pressure
- Q Flow Rate (cfm)
- ΔH Orifice Pressure Differential ("H_2O)
- ΔP Inlet Pressure Differential ("H_2O)
- Vd Volume Dry Gas Meter (ft³)
- Vds Volume Dry Standard (ft³)
- Yd Meter Correction Factor (unitless)
- Yds Standard Meter Correction Factor (unitless)
- ΔH@ Orifice Pressure Differential that gave 0.75 cfm of air at 70°F and 29.92 "Hg ("H_2O)

Calculations

$$Yd = (Yds)\left[\frac{Vds}{Vd}\right]\left[\frac{Td + 460}{Tds + 460}\right]\left[\frac{Pb + \Delta P/13.6}{Pb + \Delta H/13.6}\right]$$

$$\Delta H@ = \frac{0.0317\,\Delta H}{Pb(Td + 460)}\left[\frac{(Tds + 460)\theta}{(Vds)(Yds)}\right]^2$$

$$Q = \frac{17.64\,(Vds)(Pb)}{(Tds + 460)\theta}$$

Vacuum Gauge Calibration

Standard ("Hg)	Vacuum Gauge
5.5	5.0
10.6	10.0
16.0	15.0
20.6	20.0
23.4	max

Thermometer Cal...

Standard	Inlet
80	80
100	100
120	120
140	140

METER BOX FULL TEST CALIBRATION

Date: 4-3-91 Operator: Matt Wickham

Meter Box No.: FF | Meter Box ΔH@: 1.834 | Meter Box Yd: 1.0077 | Barometric Pressure: 29.49

				Standard Meter Gas Volume ft³			Meter Box Gas Volume ft³			Std. Meter Temperature °F			Meter Box Temperature °F					
Q	ΔH	ΔP	Yds	Initial	Final	Vds Net	Initial	Final	Vds Net	In	Out	Tds Avg	In	Out	Tds Avg	Time θ	Yd	ΔH@
.38	.5	-3.0	1.0000	0.000	5.006	5.006	422.309	427.571	5.262	69	69	69	111	103	107	12.82	1.0108	1.740
.38	.5	-3.0	1.0000	0.000	5.003	5.003	427.571	432.831	5.260	69	69	69	111	103	107	12.83	1.0106	1.745
.65	1.5	-3.3	1.0000	0.000	10.008	10.008	432.831	443.441	10.610	69	69	69	111	108	109.5	15.09	1.0034	1.801
.66	1.5	-3.3	1.0000	0.000	10.005	10.005	443.441	454.056	10.615	69	69	69	112	108	110	15.02	1.0035	1.784
.89	3.0	-3.9	1.0000	0.000	10.009	10.009	454.056	464.428	10.372	68	68	68	111	92	101.5	11.11	1.0087	1.973
.89	3.0	-3.4	1.0000	0.000	10.018	10.018	464.428	474.805	10.377	68	68	68	111	92	101.5	11.08	1.0091	1.954

Nomenclature

Pb	Barometric Pressure
Q	Flow Rate (cfm)
ΔH	Orifice Pressure Differential ("H_2O)
ΔP	Inlet Pressure Differential ("H_2O)
Vd	Volume Dry Gas Meter (ft^3)
Vds	Volume Dry Standard (ft^3)
Yd	Meter Correction Factor (unitless)
Yds	Standard Meter Correction Factor (unitless)
ΔH@	Orifice Pressure Differential that gave 0.75 cfm of air at 70°F and 29.92 "Hg ("H_2O)

Calculations

$$Yd = (Yds)\left[\frac{Vds}{Vd}\right]\left[\frac{Td + 460}{Tds + 460}\right]\left[\frac{Pb + \Delta P/13.6}{Pb + \Delta H/13.6}\right]$$

$$\Delta H@ = \frac{0.0317\,\Delta H}{Pb(Td + 460)}\left[\frac{(Tds + 460)0^2}{(Vds)(Yds)}\right]$$

$$Q = \frac{17.64\,(Vds)(Pb)}{(Tds + 460)0}$$

Vacuum Gauge Calibration

Standard (Hg)	Vacuum Gauge
4.4	5.0
9.3	10.0
14.2	15.0
19.1	20.0
22.8	max

Thermometer Calibration

Standard	Inlet	Outlet
80	79	80
100	99	99
120	120	120
140	140	140

METER BOX FULL TEST CALIBRATION

Date: 4-1-91 — Operator: Matt Wickham

Meter Box No.: Y	Meter Box ΔH@: 1.650	Meter Box Yd: 1.0035	Barometric Pressure: 29.45

				Standard Meter Gas Volume ft³			Meter Box Gas Volume ft³			Std. Meter Temperature °F			Meter Box Temperature °F					
Q	ΔH	ΔP	Yds	Initial	Final	Vds Net	Initial	Final	Vds Net	In	Out	Tds Avg	In	Out	Tds Avg	Time 0	Yd	ΔH@
.41	.5	-3.8	1.0000	0.000	5.012	5.012	505977	511.095	5.118	67	67	67	94	87	90.5	11.93	1.0120	1.538
.41	.5	-3.8	1.0000	0.000	5.258	5.258	511.095	516.481	5.386	67	67	67	95	90	92.5	12.59	1.0125	1.551
.69	1.5	-4.1	1.0000	0.000	11.005	11.005	516.481	527.891	11.410	67	67	67	100	93	96.5	15.71	1.0043	1.642
.69	1.5	-4.1	1.0000	0.000	11.015	11.015	527.891	539.296	11.405	67	67	67	100	93	96.5	15.70	1.0057	1.637
.94	3.0	-4.6	1.0000	0.000	10.005	10.005	539.296	549.786	10.490	67	67	67	104	95	99.5	10.52	.9935	1.772
.94	3.0	-4.6	1.0000	0.000	10.008	10.008	549.786	560.285	10.499	67	67	67	104	95	99.5	10.49	.9930	1.761

Nomenclature

Pb	Barometric Pressure
Q	Flow Rate (cfm)
ΔH	Orifice Pressure Differential ("H_2O)
ΔP	Inlet Pressure Differential ("H_2O)
Vd	Volume Dry Gas Meter (ft^3)
Vds	Volume Dry Standard (ft^3)
Yd	Meter Correction Factor (unitless)
Yds	Standard Meter Correction Factor (unitless)
ΔH@	Orifice Pressure Differential that gave 0.75 cfm of air at 70°F and 29.92 "Hg ("H_2O)

Calculations

$$Yd = (Yds)\left[\frac{Vds}{Vd}\right]\left[\frac{Td + 460}{Tds + 460}\right]\left[\frac{Pb + \Delta P/13.6}{Pb + \Delta H/13.6}\right]$$

$$\Delta H@ = \frac{0.0317\,\Delta H}{Pb(Td + 460)}\left[\frac{(Tds + 460)0^2}{(Vds)(Yds)}\right]$$

$$Q = \frac{17.64\,(Vds)(Pb)}{(Tds + 460)0}$$

Vacuum Gauge Calibration

Standard (Hg)	Vacuum Gauge
4.2	5.0
9.6	10.0
14.7	15.0
20.4	20.0
23.0	max

Thermometer Calibration

Standard	Inlet	Outlet
80	80	81
100	100	101
120	120	120
140	140	140

METER BOX FIELD CALIBR OF

Date: 4-5-91 OUTLET 5% KENT 1 RCM Operator: Matt Wickham

Meter Box No.: 66-2 | Meter Box ΔH@: 1.962 | Meter Box Yd: .9950 | Barometric Pressure: 29.38

				Standard Meter Gas Volume ft³			Meter Box Gas Volume ft³			Std. Meter Temperature °F			Meter Box Temperature °F					
Q	ΔH	ΔP	Yds	Initial	Final	Vds Net	Initial	Final	Vds Net	In	Out	Tds Avg	In	Out	Tds Avg	Time θ	Yd	ΔH@
.38	.5	-4.2	1.0000	0.000	6.755	6.755	720.763	727.802	7.039	64	64	64	94	89	91.5	17.81	.9982	1.867
.37	.5	-4.2	1.0000	0.000	5.004	5.004	727.802	733.023	5.221	64	64	64	95	90	92.5	13.27	.9987	1.885
.64	1.5	-4.6	1.0000	0.000	10.504	10.504	733.023	744.033	11.010	64	64	64	101	92	96.5	16.23	.9978	1.964
.63	1.5	-4.6	1.0000	0.000	10.013	10.013	744.033	754.543	10.510	64	64	64	101	93	97	15.69	.9973	1.959
.87	3.0	-5.0	1.0000	0.000	10.507	10.507	754.543	765.645	11.102	65	65	65	105	94	99.5	11.98	.9886	2.073
.86	3.0	-5.0	1.0000	0.000	10.258	10.258	765.645	776.484	10.839	65	65	65	106	94	100	11.72	.9894	2.080

Nomenclature

- Pb — Barometric Pressure
- Q — Flow Rate (cfm)
- ΔH — Orifice Pressure Differential ("H_2O)
- ΔP — Inlet Pressure Differential ("H_2O)
- [illegible] — Volume Dry Gas Meter (ft^3)
- [illegible] — Volume Dry Standard (ft^3)
- Yd — Meter Correction Factor (unitless)
- Yds — Standard Meter Correction Factor (unitless)
- ΔH@ — Orifice Pressure Differential that gave 0.75 cfm of air at 70°F and 29.92 "Hg ("H_2O)

Calculations

$$Yd = (Yds)\left[\frac{Vds}{Vd}\right]\left[\frac{Td + 460}{Tds + 460}\right]\left[\frac{Pb + \Delta P/13.6}{Pb + \Delta H/13.6}\right]$$

$$\Delta H@ = \frac{0.0317\,\Delta H}{Pb(Td + 460)}\left[\frac{(Tds + 460)0^2}{(Vds)(Yds)}\right]$$

$$Q = \frac{17.64\,(Vds)(Pb)}{(Tds + 460)0}$$

Vacuum Gauge Calibration

Standard (Hg)	Vacuum Gauge
5.0	5.0
10.2	10.0
15.3	15.0
20.0	20.0
25.4	25.0
max	27.0

Thermometer Calibration

Standard	Inlet	Outlet
80	80	80
100	98	98
120	118	118
140	136	136

WEIGHT SHEETS

CAE Project # 55441

WEIGH SHEET # 1 AS ENTERED

RDS	RUN	WT #	IDENTIFIER	FB T	WASH ML	CORR.	GROSS	TARE	NET
		1	BLANK *	B	64	0.0000	111.0076	111.0070	0.0005
		2	AA08	B	60	0.0005	107.9508	107.9447	0.0056
		3	AA09	B	62	0.0005	110.7959	110.7893	0.0061
		4	AA10	B	81	0.0006	109.4542	109.4483	0.0053
		5	AA11	B	88	0.0007	111.3394	111.2762	0.0625
		6	AA12	B	132	0.0011	110.7949	110.7103	0.0835
		7	AA13	B	179	0.0014	113.0632	112.9465	0.1153
		8	AA14	B	33	0.0003	115.5843	115.5804	0.0036
		9	AA15	B	57	0.0005	114.2258	114.2241	0.0012
		10	AA16	B	93	0.0007	111.5490	111.5451	0.0032
		11	AA17	B	104	0.0008	119.7227	118.7697	0.9522
		12	AA18	B	58	0.0005	113.0376	112.6613	0.3758
		13	AA34	B	306	0.0024	114.0614	113.6301	0.4289
		14	AA35	B	47	0.0004	112.0526	112.0477	0.0045
		15	AA36	B	43	0.0003	114.3425	114.3394	0.0028
		16	AA01	B	53	0.0004	117.9393	117.9374	0.0015

* NOTE: MAXIMUM ALLOWABLE CORRECTION IS .0008 GR/100ML

CAE Project # 55441

WEIGH SHEET # 2 AS ENTERED

R D S	R U N	W T #	IDENTIFIER	F B T	WASH ML	CORR.	GROSS	TARE	NET
			BLANK	-	----	------	-------	-------	------
		2	10355	F	----	------	0.6658	0.6555	0.0103
		3	10349	F	----	------	0.6481	0.6448	0.0033
		4	10352	F	----	------	0.6898	0.6737	0.0161
		5	10353	F	----	------	0.6651	0.6463	0.0188
		6	4-102	F	----	------	0.5984	0.3476	0.2508
		7	4-98	F	----	------	1.2121	0.3756	0.8365
		8	4-93	F	----	------	1.1825	0.3659	0.8166
		9	4-101	F	----	------	0.3765	0.3735	0.0030
		10	4-99	F	----	------	0.3649	0.3630	0.0019
		11	4-112	F	----	------	0.3929	0.3912	0.0017
		12	4-95	F	----	------	2.3797	0.3864	1.9933
		13	4-97	F	----	------	0.6614	0.3289	0.3325
		14	4-110	F	----	------	1.0077	0.3532	0.6545
		15	4-100	F	----	------	0.3643	0.3612	0.0031
		16	4-96	F	----	------	0.3601	0.3601	0.0000
		17	4-111	F	----	------	0.3949	0.3924	0.0025

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Particulate Testing Weight Sheet

Report #25579

Client RSR	Project Number 5633	Analyst AM
Plant Muncie	Unit	Balance LAB
Test Date		

Description	Wt. No.	I.D. and Sample Description[1]	Sample volume (ml)[2]	Date/ Time	Gross Weight (g)	Tare Weight (g)	Date/ Time	Net Weight (g)
Type	1	AA05				109.2139	4-17-91	
Run						109.2138	4-18-91	Y
Location			T F B					
Type Acetone	2	Case #25579-23 AA06 Very small amount of dust oil	64	4-23	111.0077	111.0071	4-17-91	
Run Blank				4-24	111.0075	111.0069	4-18-91	
Location			T F (B)					0.0006
Type Acetone	3	Case #25579-19 AA07 Clean Oil	64	4-23	110.4443	110.4389	4-17-91	
Run Constant Blank				4-24	110.4440	110.4388	4-18-91	
Location Bench			T F (B)					
Type Acetone	4	Case #25579-20 AA08 Clean Oil	60	4-23	107.9509	107.9445	4-17-91	
Run 1				4-24	107.9506	107.9446	4-18-91	
Location Bench			T F (B)					0.0052
Type Acetone	5	Case #25579-21 AA09 Clean Oil	62	4-23	110.7960	110.7894	4-17-91	
Run 2				4-24	110.7958	110.7897	4-18-91	
Location Bench			T F (B)					0.0061
Type Acetone	6	Case #25579-22 AA10 Clean Oil	81	4-23	109.4543	109.4483	4-17-91	
Run 3				4-24	109.4541	109.4493	4-18-91	
Location Bench			T F (B)					0.0053
Type Acetone	7	Case #25579-24 AA11 Bottom covered with dark gray dust.	88	4-23	111.3395	111.2763	4-17-91	
Run 1				4-24	111.3392	111.2760	4-18-91	
Location 039 Inlet			T F (B)					0.0625
Type Acetone	8	Case #25579-25 AA10 Bottom covered with light beach sand.	132	4-23	110.7950	110.7103	4-17-91	
Run 2				4-24	110.7947	110.7102	4-18-91	
Location 039 Inlet			T F (B)					0.0835
Type Acetone	9	Case #25579-26 AA13 Bottom covered with wet gray dust	179	4-23	113.0633	112.9466	4-17-91	
Run 3				4-24	113.0630	112.9464	4-18-91	
Location 039 Inlet			T F (B)					0.1153
Type Acetone	10	Case #25579-27 AA14 Spec dust	33	4-23	115.5844	115.5805	4-17-91	
Run 1				4-24	115.5847	115.5803	4-18-91	
Location 039 Inlet			T F (B)					0.0036

[1] Note appearance of particulate

[2] Two volumes (e.g. 500/100) indicate an aliquot was taken. Indicate (T)himble, (F)ilter, or (B)eaker in box below.

Particulate Testing
Weight Sheet

(28)

Report #25579

Client RSR	Project Number 5633	Analyst AM
Plant Quentico	Unit	Balance LAB
Test Date		

Description	Wt. No.	I.D. and Sample Description[1]	Sample volume (ml)[2]	Date/ Time	Gross Weight (g)	Tare Weight (g)	Date/ Time	Net Weight (g)
Type Acetone	1	Cas #25579-28	57	4-23	114.2259	114.2248	4-19	
Run 2		AA15		4-24	114.2257	114.2240	4-22	
Location MB Outlet		Clear Oil	T F (B)					0.0012
Type Acetone	2	Cas #25579-29	93	4-23	111.5491	111.5457	4-19	
Run 3		AA16		4-24	111.5488	111.5450	4-22	
Location MB Outlet		Clear Oil	T F (B)					0.0032
Type Acetone	3	Cas #25579-30	104	4-23	119.7228	118.7698	4-19	
Run 1		AA19 Bottom heavily covered with dark gray part		4-24	119.7226	118.7696	4-22	
Location MB Inlet			T F (B)					0.9522
Type Acetone	4	Cas #25579-31	58	4-23	113.6377	112.6614	4-19	
Run 2		AA18 Bottom covered with light gray part		4-24	113.0374	112.6611	4-22	
Location MB Inlet			T F (B)					0.3758
Type Acetone	5	Cas #25579-32	306	4-23	114.0616	113.6301	4-19	
Run 3		AA34 Bottom covered with light gray/tan part		4-24	114.0612	113.6300	4-22	
Location MB Inlet			T F (B)					0.4289
Type Acetone	6	Cas #25579-33	47	4-23	112.0526	112.0478	4-19	
Run 1		AA35 Lightly covered with light gray part		4-24	112.0525	112.0476	4-22	
Location MB Outlet			T F (B)					0.0045
Type Acetone	7	Cas #25579-34	43	4-23	114.3426	114.3394	4-19	
Run 2		AA36 Lightly covered opaque part		4-24	114.3424	114.3393	4-22	
Location MB Inlet			T F (B)					0.0028
Type Acetone	8	Cas #25579-35	53	4-23	117.9394	117.9378	4-19	
Run 3		AA01 lightly covered opaque part		4-24	117.9391	117.9370	4-22	
Location MB Outlet			T F (B)					0.0015
Type	9	AA02				110.0194	4-19	
Run						110.0193	4-22	
Location			T F B					
Type	10	AA03				109.0728	4-19	
Run						109.0726	4-22	
Location			T F B					

[1] Note appearance of particulate
[2] Two volumes (e.g. 500/100) indicate an aliquot was taken.
Indicate (T)himble, (F)ilter, or (B)eaker in box below.

11 CM CLEARLY

Particulate Testing Weight Sheet

Client RSR	Project Number 5633	Analyst AM
Plant Quemetco	Unit	Balance TCE4
Test Date 1991		

Description	Wt. No.	I.D. and Sample Description[1]	Sample volume (ml)[2]	Date/ Time	Gross Weight (g)	Tare Weight (g)	Date/ Time	Net Weight (g)
Type	1	10345		4/4		.6594	4/4	
Run						.6593	4/5	
Location			T F B					
Type Field	2	(Cas#25579-01) 10346 Clean		4-23	0.5900	.5897	4/4	
Run Blank				4-24	0.5901	.5894	4/5	
Location			T (F) B					
Type	3	10347				.6135	4/4	
Run						.6134	4/5	
Location			T F B					
Type	4	10348				.6251	4/4	
Run						.6253	4/5	
Location			T F B					
Type Filter	5	(Cas # 25579-04) 10349 Clean		4-23	0.6480	.6449	4/4	
Run 2				4-24	0.6482	.6446	4/5	
Location Back Stack			T (F) B					0.0033
Type	6	10350				.6202	4/4	
Run						.6201	4/5	
Location			T F B					
Type	7	10351				.6760	4/4	
Run						.6757	4/5	
Location			T F B					
Type Filter	8	(Cas # 25579-05) 10352 Clean yellow line covers inner filter		4-23	0.6897	.6736	4/4	
Run 3				4-24	0.6899	.6737	4/5	
Location Back Stack			T (F) B					0.0161
Type	9	(Cas # 25579-06) 10353 FILTER SHAVINGS		4-23	0.6650	.6464	4/4	
Run Blk Constituent				4-24	0.6652	.6462	4/5	
Location			T (F) B					0.0188
Type	10	10354				.6379	4/4	
Run						.6377	4/5	
Location			T F B					

[1] Note appearance of particulate
[2] Two volumes (e.g. 500/100) indicate an aliquot was taken.
Indicate (T)himble, (F)ilter, or (B)eaker in box below.

Particulate Testing Weight Sheet

Client RSR	Project Number 5633	Analyst AM
Plant Quemetco	Unit	Balance TCET
Test Date 1/29/91		

Description	Wt. No.	I.D. and Sample Description[1]	Sample volume (ml)[2]	Date/ Time	Gross Weight (g)	Tare Weight (g)	Date/ Time	Net Weight (g)
Type Filter	1	Lab # 25579-03		4-23	0.6657	.6556	4/4	
Run 1		10355		4-24	0.6658	.6554	4/5	
Location Bosch Stack		Dan Yellow Line	T F B					0.0103
Type	2	10356				.6581	4/4	
Run						.6578	4/5	
Location			T F B					
Type	3	10357				.6715	4/4	
Run						.6712	4/5	
Location			T F B					
Type	4	10358				.6428	4/4	
Run						.6429	4/5	
Location			T F B					
Type	5	10359				.6441	4/4	
Run						.6445	4/5	
Location			T F B					
Type	6	10360				.6509	4/4	
Run						.6512	4/5	
Location			T F B					
Type	7	10361				.6547	4/4	
Run						.6542	4/5	
Location			T F B					
Type	8	10362				.6512	4/4	
Run						.6506	4/5	
Location			T F B					
Type	9	10363				.6583	4/4	
Run						.6580	4/5	
Location			T F B					
Type	10	10364				.6445	4/4	
Run						.6442	4/5	
Location			T F B					

[1] Note appearance of particulate
[2] Two volumes (e.g. 500/100) indicate an aliquot was taken.
Indicate (T)himble, (F)ilter, or (B)eaker in box below.

Particulate Testing Weight Sheet

Client RSR	Project Number 5633	Analyst AM	
Plant Clemetco	Unit	Balance + CE4	
Test Date 1991			

Description	Wt. No.	I.D. and Sample Description[1]	Sample volume (ml)[2]	Date/ Time	Gross Weight (g)	Tare Weight (g)	Date/ Time	Net Weight (g)
Type Filter	1	(Case # 25579-09) 4-93 All covered med. gray + small amt. loose part.	T (F) B	4-23	1.1823	.3657	4/4	
Run 3				4-24	1.1826	.3660	4/5	
Location Inlet 039								0.8166
Type	2	4-94	T F B			.3625	4/4	
Run						.3626	4/5	
Location								
Type Filter	3	(Case # 25579-13) 4-95 All covered blade + med. amt. loose part.	T (F) B	4-23	2.0077	.3861	4/4	
Run 1				4-23	2.3795	.3866	4/5	
Location Inlet 040				4-24	2.3798			1.9933
Type Filter	4	(Case # 25579-17) 4-96 Very small amt. spotted yellow fine / pieces	T (F) B	4-23	0.3599	.3603	4/4	
Run 2				4-24	0.3602	.3606	4/5	
Location Outlet 040								0.0000
Type Filter	5	(Case # 25579-14) 4-97 All covered med. gray pieces / small amt. paint	T (F) B	4-23	0.8152	.3289	4/4	
Run 2				4-23	0.6613	.3288	4/5	
Location Outlet 040				4-24	0.6615			1.9933 0.33
Type Filter	6	(Case # 25579-08) 4-98 All covered blade	T (F) B	4-23	1.2120	.3756	4/4	
Run 2				4-24	1.2121	.3756	4/5	
Location Inlet 039								0.8365
Type Filter	7	(Case # 25579-11) 4-99 Clean	T (F) B	4-23	0.3648	.3632	4/4	
Run 2				4-24	0.3650	.3627	4/5	
Location Outlet 039								0.0019
Type Filter	8	(Case # 25579-16) 4-100 Spotted yellow fine	T (F) B	4-23	0.3692	.3615	4/4	
Run 1				4-24	0.3644	.3609	4/5	
Location Outlet 040 #8								0.0031
Type Filter	9	(Case # 25579-10) 4-101 1/8" round yellow fine	T (F) B	4-23	0.3763	.3737	4/4	
Run 1				4-24	0.3766	.3732	4/5	
Location 039 Outlet								0.0030
Type Filter	10	(Case # 25579-07) 4-102 All covered Dk gray / pieces	T (F) B	4-23	0.3980	.3475	4/4	
Run 1				4-24	0.5987	.3477	4/5	
Location 039 Inlet								0.2509

[1] Note appearance of particulate
[2] Two volumes (e.g. 500/100) indicate an aliquot was taken.
Indicate (T)himble, (F)ilter, or (B)eaker in box below.

CAE P4 ver 1.0
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* Dropped filters. Reweighed after dropping. (MM)

Particulate Testing Weight Sheet

Client RSR	Project Number 5633	Analyst AM
Plant	Unit	Balance TCE4
Test Date 1991		

Description	Wt. No.	I.D. and Sample Description[1]	Sample volume (ml)[2]	Date/ Time	Gross Weight (g)	Tare Weight (g)	Date/ Time	Net Weight (g)
Type	1	4-103	T F B			.3929	4/4	
Run						.3931	4/5	
Location								
Type	2	4-104	T F B			.3433	4/4	
Run						.3437	4/5	
Location								
Type	3	4-105	T F B			.3928	4/4	
Run						.3929	4/5	
Location								
Type Filter	4	(Cae #2557-06) 4-106 Clean	T (F) B	4-23	0.4019	.4005	4/4	
Run Blank				4-24	0.4022	.4003	4/5	
Location Field								
Type	5	4-107	T F B			.3507	4/4	
Run						.3508	4/5	
Location								
Type	6	4-108	T F B			.3657	4/4	
Run						.3658	4/5	
Location								
Type	7	4-109	T F B			.3349	4/4	
Run						.3352	4/5	
Location								
Type Filter	8	(Cae #2557-15) 4-[illegible] All covered lt. gray foam sealant, paint,	T (F) B	4-23	1.2567	.3531	4/4	
Run 3				4-23*	1.0076	.3533	4/5	
Location Outlet 040				4-24	1.0079			0.6545
Type Filter	9	(Cae #2557-18) 4-111 Couple spots (yellow dust)	T (F) B	4-23	0.3948	.3923	4/4	
Run 3				4-24	0.3950	.3925	4/5	
Location Outlet 040								0.0025
Type Filter	10	(Cae #2557-12) 4-112	T (F) B	4-23	0.3928	.3910	4/4	
Run 3				4-23	0.3930	.3913	4/5	
Location Outlet 039								0.0017

[1] Note appearance of particulate
[2] Two volumes (e.g. 500/100) indicate an aliquot was taken.
Indicate (T)himble, (F)ilter, or (B)eaker in box below.

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*Dropped filters. Reweighed after dropping (AM)

FIELD DATA

Orsat Readings

Client RSR	Project Number 5633
Plant QUEMETCO	Units 039, 040, BUSCH
Date 4-10, 11-91	Fuel Type —
Orsat ID BURRELL	Leak Check? ✓

$F_o = \frac{20.9 - \%O_2}{\%CO_2}$

F_o = 1.083 to 1.230 (for bituminous coal)

Run Number	Location	Bag ID	Trial	Percent CO_2	Percent $CO_2 + O_2$	Percent O_2	Fo	Sample Time	Analysis Time	Analyst
1	INLET 040	R-1	1	0.0	20.9	20.9		0910-11:15	13:00	WCJ
			2	0.0	20.9	20.9				
			3	0.0	20.9	20.9				
			Avg.	0.0		20.9				
1	OUTLET 040	R-1	1	0.0	20.9	20.9		0910-1145	13:00	WCJ
			2	0.0	20.9	20.9				
			3	0.0	20.9	20.9				
			Avg.	0.0		20.9				
1	INLET 039	R-1	1	0.0	20.9	20.9		0910-1145	13:00	WCJ
			2	0.0	20.9	20.9				
			3	0.0	20.9	20.9				
			Avg.	0.0		20.9				
1	OUTLET 039	R-1	1	0.0	20.9	20.9		0910-1115	1300	WCJ
			2	0.0	20.9	20.9				
			3	0.0	20.9	20.9				
			Avg.	0.0		20.9				
1	BUSCH OUT	R-1	1	0.0	20.9	20.9		0910-1115	1300	WCJ
			2	0.0	20.9	20.9				
			3	0.0	20.9	20.9				
			Avg.	0.0		20.9				
2	INLET 040	R-2	1	0.0	20.9	20.9		1535-1748	1845	WCJ
			2	0.0	20.9	20.9				
			3	0.0	20.9	20.9				
			Avg.	0.0		20.9				
2	OUTLET 040	R-2	1	0.0	20.9	20.9		1535-1748	1845	WCJ
			2	0.0	20.9	20.9				
			3	0.0	20.9	20.9				
			Avg.	0.0		20.9				
3	BUSCH OUTLET	R-2	1	0.0	20.9	20.9		1535-1748	1845	WCJ
			2	0.0	20.9	20.9				
			3	0.0	20.9	20.9				
			Avg.	0.0		20.9				

Orsat Readings

Client RSR	Project Number 5633
Plant QUENTICO	Unit 039, 040, BUSCH
Date 4-10,11-91	Fuel Type —
Orsat ID BURRELL	Leak Check? ✓

$F_o = \frac{20.9 - \%O_2}{\%CO_2}$

F_o = 1.083 to 1.230 (for bituminous coal)

Run Number	Location	Bag ID	Trial	Percent CO_2	Percent $CO_2 + O_2$	Percent O_2	Fo	Sample Time	Analysis Time	Analyst
2	039 INLET	R-2	1	0.0	20.9	20.9		1535 ~~1840~~ 1745	1848	WCJ
			2	0.0	20.9	20.9				
			3	0.0	20.9	20.9				
			Avg.	(0.0)		(20.9)				
2	039 OUTLET	R-2	1	0.0	20.9	20.9		15-35 ~~1848~~ 1745	1848	WCJ
			2	0.0	20.9	20.9				
			3	0.0	20.9	~~20.9~~				
			Avg.	(0.0)		(20.9)				
3	040 INLET	R3	1	0.0	20.9	20.9				WCJ
	4-11-91		2	0.0	20.9	20.9				
			3	0.0	20.9	20.9				
			Avg.	(0.0)		(20.9)				
3	040 OUTLET	R3	1	0.0	20.9	20.9				WCJ
	4-11-91		2	0.0	20.9	20.9				
			3	0.0	20.9	20.9				
			Avg.	(0.0)		(20.9)				
3	039 INLET	R3	1	(0.0)	20.9	20.9				WCJ
	4-11-91		2	0.0	20.9	20.9				
			3	0.0	20.9	20.9				
			Avg.	(0.0)		(20.9)				
3	039 OUTLET	R3	1	0.0	20.9	20.9				WCJ
	4-11-91		2	0.0	20.9	20.9				
			3	0.0	20.9	20.9				
			Avg.	(0.0)		(20.9)				
3	BUSCH OUTLET	R-3	1	0.0	20.9	20.9				WCJ
	4-11-91		2	0.0	20.9	20.9				
			3	0.0	20.9	20.9				
1			Avg.	(0.0)		(20.9)				
AND	BUSCH		1	0.0	20.9	20.9		0920-1720	1845	WCJ
ONLY 8 hour TEST ON 4-10			2	0.0	20.9	20.9				
			3	0.0	20.9	20.9				
			Avg.	(0.0)		(20.9)				

CAE P3 ver 1.0
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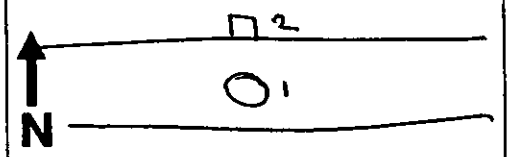
Particulate Testing Field Data Sheet

45 Page 1 of 2

Location: INLET 39 **Run:** 1

Client	RSR	Project Number	5633
Plant	INDY	Unit	39
Date	4/18/91	(Inlet)/outlet/stack	
Meter Operator	TA		
Probe Operator	TA		

Schematic of Testing Location



First point all the way (IN) OUT		Method	1-5
Area (ft^2) 3.142	Port Len. (in.) 6½	Gas Flow IN OUT	

Ambient Temp. (°F) 68		Bar. Press. (in. Hg)	29.86
Assumed Moisture (%)	5%		

Heater Box Setting	248±25	Probe Heater Setting	248±25
Probe Length	4'	Probe Number	
Probe Material	QUARTZ	Acetone Number	17
Nozzle Diameter (in.)	0.187	Nozzle Number	

Sample Box Number		Pyrometer Number	F-70
Meter Box Number	FF		
Meter ΔH@	1.834	Meter Yd	1.00077
K Factor	.87	Pitot C_p	.84
Pitot Leak Check: Before	✓	After	
Leak Rate Before	.001 CFM @	15	"Hg
Leak Rate After	CFM @		"Hg
Static Pressure (inches H_2O) (+)	6.5		

Filter Number	4-102		
Thimble Number			
Beaker Number			

IGS Bag ID Number	39R-1		
% O_2		% CO_2	
H_2O (ml)	3	Silica Gel (gm)	18
Total Vlc	21		

Start Time	9:10 (AM)/PM	Stop Time	(AM)/PM

Traverse Point Number	Min/pt 5 / Clock time	Pump Vacuum (in. Hg)	Stack Temp. T_s (°F)	Velocity Head ΔP_s	Orifice Setting ΔH ($in.H_2O$)	Initial Volume 445.43 / Gas Sample Volume V_m (ft^3)	Gas Sample Temperature at Dry Gas Meter: Inlet $T_{m\,in}$ (°F)	Outlet $T_{m\,out}$ (°F)	Cond. Temp. T_c (°F)	Filter Temp. T_f (°F)	Probe Temp. (°F)	Notes
1-1	5	12	155	3.1	5.8	451.63	92	80	40	251	249	
1	10	12	140	3.1	5.8	457.99	106	82	41	254	250	
2	15	12	142	2.9	5.4	464.29	108	82	41	260	253	
2	20	12	151	2.8	5.2	470.38	108	82	42	259	255	
3	25	12	153	2.8	5.2	476.53	110	84	43	257	255	
3	30	12	142	2.8	5.2	482.62	110	86	43	256	253	
4	35	9	132	2.1	3.9	488.01	110	90	44	259	243	
4	40	9	123	2.1	3.9	493.37	115	92	44	257	242	
5	45	6	109	1.2	2.2	497.52	118	92	45	256	243	
5	50	6	107	1.1	2.1	501.34	120	92	45	258	244	
6	55	6	100	.90	1.7	505.17	120	92	44	259	250	
6	60	6	98	.90	1.7	508.75	120	92	44	257	251	
Total							2383					
Average			125	1.393	3.8	125.33		103				

CAE P2 ver. 1.0
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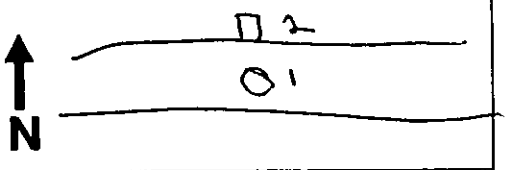
Particulate Testing Field Data Sheet

Location: INLET 39 **Run:** 1

Client	RSR	Project Number	5633
Plant	INDY	Unit	39
Date	4/9/91	Inlet/outlet/stack	
Meter Operator	JA		
Probe Operator	JA		

Sample Box Number		Pyrometer Number	F-70
Meter Box Number	FF		
Meter ΔH@	1.834	Meter Yd	1.0077
K Factor	1.697	Pitot C_p	.84
Pitot Leak Check:	Before ✓	After	
Leak Rate Before	.001	CFM @ 15	"Hg
Leak Rate After		CFM @	"Hg
Static Pressure (inches H_2O) (+) (-)	6.5		

Schematic of Testing Location



First point all the way IN	OUT	Method

Area (ft^2)	Port Len. (in.)	Gas Flow IN	OUT
3.142			

Filter Number	4-102	
Thimble Number		
Beaker Number		

Ambient Temp. (°F)	45	Bar. Press. (in. Hg)	29.56
Assumed Moisture (%)	5%		

Heater Box Setting	248±25	Probe Heater Setting	248±25
Probe Length	4'	Probe Number	
Probe Material	QUARTZ	Acetone Number	17
Nozzle Diameter (in.)	0.187	Nozzle Number	

IGS Bag ID Number	391-1		
% O_2		% CO_2	
H_2O (ml)	3	Silica Gel (gm)	18
Total Vlc	21		

Start Time	9:10 (AM) / PM	Stop Time	11:17 (AM) / PM

Traverse Point Number	Min/pt 5 / Clock time	Pump Vacuum (in. Hg)	Stack Temp. Ts (°F)	Velocity Head ΔPs	Orifice Setting ΔH (in.H_2O)	Initial Volume 445.43 / Gas Sample Volume Vm (ft^3)	Gas Sample Temperature at Dry Gas Meter: Inlet Tm in (°F)	Outlet Tm out (°F)	Cond. Temp. Tc (°F)	Filter Temp. Tf (°F)	Probe Temp. (°F)	Notes
2-1	65	12	119	3.0	5.6	514.74	120	88	43	251	260	
1	70	12	131	2.5	4.7	520.78	120	90	44	252	258	
3	75	12	135	2.5	4.7	526.83	120	90	44	254	255	
2	80	12	133	2.4	4.5	532.82	121	91	43	253	253	
3	85	12	161	2.5	4.7	538.93	121	92	44	249	243	
3	90	12	157	2.5	4.7	544.56	121	94	45	248	244	
4	95	11	166	2.1	3.9	550.29	121	96	46	247	243	
4	100	11	140	1.2	2.2	555.07	121	98	46	246	244	
5	105	11	110	1.1	2.1	559.13	122	98	46	245	241	
5	110	11	108	1.1	2.1	563.27	123	98	47	251	244	
6	115	6	100	1.0	1.9	566.89	123	97	48	250	243	
6	120	6	98	1.0	1.9	570.76	124	97	48	249	244	
Total												
Average												

Particulate Testing Field Data Sheet

Location: 39 INLET Run: 2

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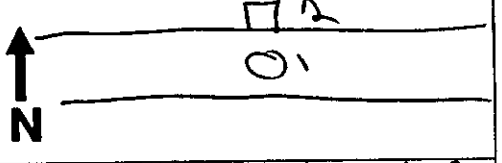
Client RSR	Project Number 5637
Plant INDY	Unit 39
Date 4/10/91	(Inlet)/outlet/stack
Meter Operator TA	
Probe Operator TA	

Schematic of Testing Location



Ambient Temp. (°F) 57	Bar. Press. (in. Hg)
Assumed Moisture (%)	

Heater Box Setting 248±25	Probe Heater Setting 248±25
Probe Length 4'	Probe Number
Probe Material QUARTZ	Acetone Number 17
Nozzle Diameter (in.) 0.187	Nozzle Number

Sample Box Number	Pyrometer Number F-70
Meter Box Number FF	
Meter ΔH@ 1.834	Meter Yd 1.0077
K Factor [redacted] 1.26	Pitot C_p .84
Pitot Leak Check: Before ✓	After
Leak Rate Before .002	CFM @ 15 "Hg
Leak Rate After	CFM @ "Hg
Static Pressure (inches H_2O) (+/-) 7.5	

First point all the way IN OUT	Method 1 - 5	
Area (ft^2) 3.142	Port Len. (in.) 6½	Gas Flow IN OUT

Filter Number	4-98	
Thimble Number		
Beaker Number		

IGS Bag ID Number	39 IN R2
% O_2	% CO_2
H_2O (ml) 6	Silica Gel (gm) 24
Total Vlc	30

Start Time 3:38 AM (PM) Stop Time 5:47 AM (PM)

Traverse Point Number	Min/pt 10 / 5 Clock time	Pump Vacuum (in. Hg)	Stack Temp. Ts (°F)	Velocity Head ΔPs	Orifice Setting ΔH (in.H_2O)	Initial Volume 572.73 Gas Sample Volume Vm (ft^3)	Gas Sample Temperature at Dry Gas Meter Inlet Tm in (°F)	Outlet Tm out (°F)	Cond. Temp. Tc (°F)	Filter Temp. Tf (°F)	Probe Temp. (°F)	Notes
1- 1	5	5	160	3.0	3.8	577.93	100	84	40	252	246	
1	10	5	158	3.0	3.8	583.19	120	89	42	256	249	
2	15	6	148	3.2	4.0	588.42	121	91	43	260	258	
2	20	6	140	3.2	4.0	594.14	122	94	44	256	253	
3	25	6	153	3.1	3.9	599.56	122	96	46	255	248	
3	30	6	160	3.1	3.9	604.96	122	100	48	253	244	
4	35	5	145	2.3	2.9	609.65	121	100	49	252	248	
4	40	5	121	2.3	2.9	614.33	122	101	50	253	249	
5	45	3	100	1.1	1.4	617.68	122	102	51	253	251	
5	50	3	115	1.1	1.4	621.16	122	101	49	252	254	
6	55	3	153	.91	1.1	624.05	122	101	47	251	250	
6	60	3	147	.91	1.1	627.18	122	102	48	253	249	
Total			1700	19.60	34.2		2599					
Average												

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Particulate Testing Field Data Sheet

Location: 39 INLET **Run:** 2

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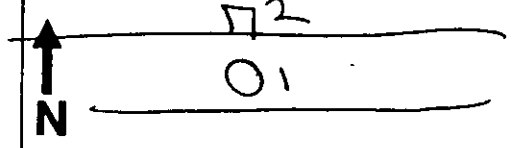
Client RSR	Project Number 5633
Plant INDY	Unit 39
Date 4/10/91	(Inlet)/outlet/stack
Meter Operator TA	
Probe Operator TA	

Schematic of Testing Location



Ambient Temp. (°F) 57	Bar. Press. (in. Hg) 29.98
Assumed Moisture (%) 5 est	

Sample Box Number	Pyrometer Number F-70
Meter Box Number F F	
Meter ΔH@ 1.834	Meter Yd 1.0077
K Factor 1.26	Pitot C_p .84
Pitot Leak Check: Before ✓	After
Leak Rate Before .002	CFM @ 15 "Hg
Leak Rate After	CFM @ "Hg
Static Pressure (inches H_2O) (+/-) 9.5	

First point all the way IN OUT | Method 1-S

Area (ft^2)	Port Len. (in.)	Gas Flow IN OUT
3.142	6 1/2	

Filter Number	4-98	
Thimble Number		
Beaker Number		

Heater Box Setting 248±25	Probe Heater Setting 248±25
Probe Length 4'	Probe Number
Probe Material QUARTZ	Acetone Number 17
Nozzle Diameter (in.) 0.187	Nozzle Number

IGS Bag ID Number 39 IN R2	
% O_2	% CO_2
H_2O (ml) 6	Silica Gel (gm) 24
Total V_{lc} 30	

Start Time AM (PM) Stop Time AM (PM)

Traverse Point Number	Min/pt 5 → 10 Clock time	Pump Vacuum (in. Hg)	Stack Temp. T_s (°F)	Velocity Head ΔP_s	Orifice Setting ΔH ($in.H_2O$)	Initial Volume 532.73 Gas Sample Volume V_m (ft^3)	Gas Sample Temperature at Dry Gas Meter: Inlet $T_{m\,in}$ (°F)	Outlet $T_{m\,out}$ (°F)	Cond. Temp. T_c (°F)	Filter Temp. T_f (°F)	Probe Temp. (°F)	Notes
2-1	65	6	125	2.9	3.7	632.25	120	94	43	253	249	
1	70	6	129	2.9	3.7	637.53	120	96	44	251	255	
2	75	6	118	3.0	3.8	642.87	121	98	45	254	259	
2	80	6	109	3.0	3.8	648.23	121	100	46	251	249	
3	85	6	111	3.1	3.9	653.64	121	100	46	250	247	
3	90	6	119	3.1	3.9	659.06	121	101	47	251	249	
4	95	6	122	2.5	3.2	663.95	121	102	48	252	249	
4	100	6	121	2.5	3.2	668.82	121	102	49	251	250	
5	105	6	117	1.9	2.4	673.20	121	102	50	250	247	
5	110	6	115	1.8	2.2	677.54	121	101	51	251	248	
6	115	3	110	1.0	1.26	680.62	120	101	48	250	247	
6	120	3	118	1.0	1.26	683.72	121	101	49	249	246	
Total			1414	18.27	36.32		2647	5246				
Average			129.8	1.495	2.938	110.991	109.3					

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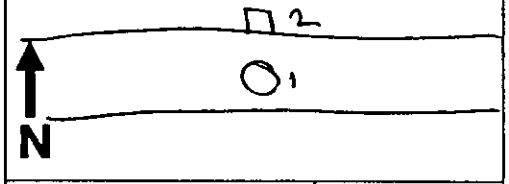
Particulate Testing Field Data Sheet

Location: #39 INLET **Run:** 3

Client RSR	Project Number 5633
Plant INDY	Unit 39
Date 4/11/91	(Inlet)/outlet/stack
Meter Operator TA	
Probe Operator TA	

Sample Box Number	Pyrometer Number F-90
Meter Box Number F F	
Meter ΔH@ 1.834	Meter Yd 1.0077
K Factor 1.26	Pitot C_p .84
Pitot Leak Check: Before ✓	After
Leak Rate Before .003	CFM @ 15 "Hg
Leak Rate After	CFM @ 11 "Hg
Static Pressure (inches H_2O) (+/-)	7.5

Schematic of Testing Location



First point all the way IN OUT	Method	
Area (ft^2) 3.142	Port Len. (in.) 6 1/2	Gas Flow IN OUT

Filter Number	4-93	
Thimble Number		
Beaker Number		

Ambient Temp. (°F) 43	Bar. Press. (in. Hg) 29.77
Assumed Moisture (%) 5%	

Heater Box Setting 248 ± 25	Probe Heater Setting 248 ± 25
Probe Length 4'	Probe Number
Probe Material QUARTZ	Acetone Number 17
Nozzle Diameter (in.) 0.187	Nozzle Number

IGS Bag ID Number 39 IN R3	
% O_2	% CO_2
H_2O (ml) 5	Silica Gel (gm) 20
Total Vlc 25	

Start Time 8:45 AM / PM Stop Time 10:50 AM / PM

Traverse Point Number	Min/pt 5 Clock time	Pump Vacuum (in. Hg)	Stack Temp. T_s (°F)	Velocity Head ΔP_s	Orifice Setting ΔH (in.H_2O)	Initial Volume 684.07 Gas Sample Volume V_m (ft^3)	Gas Sample Temperature at Dry Gas Meter Inlet T_m in (°F)	Outlet T_m out (°F)	Cond. Temp. T_c (°F)	Filter Temp. T_f (°F)	Probe Temp. (°F)	Notes
2-1	65	8	118	3.1	3.9	737.66	98	70	47	251	249	
1	70	8	120	3.1	3.9	742.84	98	70	45	250	247	
2	75	9	121	2.8	3.5	747.85	100	71	46	249	253	
2	80	9	126	2.8	3.5	752.86	100	72	47	253	251	
3	85	9	124	2.7	3.4	757.80	100	74	49	255	250	
3	90	9	122	2.7	3.4	762.53	100	74	50	254	252	
4	95	8	126	2.4	3.0	767.19	100	76	51	252	249	
4	100	8	126	2.4	3.0	771.81	100	78	52	251	246	
5	105	5	125	1.0	1.3	775.07	100	78	42	250	249	
5	110	5	127	1.0	1.3	778.10	100	78	42	251	247	
6	115	4	126	.78	.98	780.84	100	79	43	250	249	
6	120	4	128	.78	.98	783.58	102	80	44	252	247	
Total			1489	17.02	32.16		2048					
Average			118.5	1.38	2.552	99.51	84.02					

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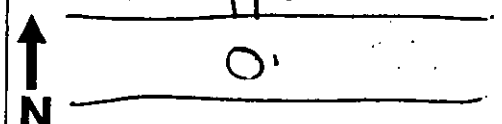
Particulate Testing Field Data Sheet

Location: 439 INLET **Run:** 3

Client RSR	Project Number 5633
Plant INDY	Unit 39
Date 4/11/91	(Inlet)/outlet/stack
Meter Operator TA	
Probe Operator TA	

Sample Box Number	Pyrometer Number T-70
Meter Box Number F F	
Meter ΔH@ 1.834	Meter Yd 1.007
K Factor 1.26	Pitot Cp .84
Pitot Leak Check: Before ✓	After
Leak Rate Before .003	CFM @ 15 "Hg
Leak Rate After	CFM @ "Hg
Static Pressure (inches H_2O) (+/-)	1.5

Schematic of Testing Location



First point all the way IN OUT	Method 1-5	
Area (ft^2) 3.142	Port Len. (in.) 6 1/2	Gas Flow IN OUT

Filter Number	4-93	
Thimble Number		
Beaker Number		

Ambient Temp. (°F) 43	Bar. Press. (in. Hg) 29.77 PSSAMB
Assumed Moisture (%) 5%	

Heater Box Setting 248±25	Probe Heater Setting 248±25
Probe Length 4'	Probe Number
Probe Material QUARTZ	Acetone Number 17
Nozzle Diameter (in.) 0.187	Nozzle Number

IGS Bag ID Number 39 IN R3	
% O_2	% CO_2
H_2O (ml) 5	Silica Gel (gm) 20
Total V_{lc} 25	

Start Time 845 AM / PM Stop Time 1050 AM / PM

Traverse Point Number	Min/pt 5 / Clock time	Pump Vacuum (in. Hg)	Stack Temp. T_s (°F)	Velocity Head ΔP_s	Orifice Setting ΔH (in.H_2O)	Initial Volume 684.07 / Gas Sample Volume V_m (ft^3)	Gas Sample Temperature at Dry Gas Meter: Inlet $T_{m\,in}$ (°F)	Outlet $T_{m\,out}$ (°F)	Cond. Temp. T_c (°F)	Filter Temp. T_f (°F)	Probe Temp. (°F)	Notes
1-1	5	7	128	2.7	3.4	688.87	78	60	39	255	259	
1	10	7	121	2.7	3.4	693.73	90	62	39	254	255	
2	15	7	117	2.9	3.6	698.74	92	64	40	253	252	
2	20	7	110	2.9	3.6	703.73	92	66	41	252	251	
3	25	7	108	2.8	3.5	708.71	92	68	42	258	253	
3	30	7	100	2.8	3.5	713.67	92	70	43	250	249	
4	35	5	98	1.7	2.1	717.62	96	70	44	240	250	
4	40	5	101	1.7	2.1	721.50	98	70	45	243	251	
5	45	3	115	.75	.94	724.25	100	70	45	245	250	
5	50	3	120	.75	.94	726.96	100	70	46	248	252	
6	55	3	118	.80	1.0	729.68	98	69	47	249	250	
6	60	3	119	.80	1.0	732.43	98	70	48	250	248	
Total			1355	16.16	29.08		1935					
Average												

Particulate Testing Field Data Sheet

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Location: 039 OUT **Run:** 1

Client	SSR/Quemetco	Project Number	5633
Plant	Industries	Unit	039
Date	4/10/01	Inlet/outlet/stack	
Meter Operator	J. Shuff		
Probe Operator	D. Nassella		

Sample Box Number	18-18	Pyrometer Number	
Meter Box Number	0		
Meter ΔH@	1.097	Meter Yd	.9955
K Factor	9.8	Pitot Cp	
Pitot Leak Check:	Before ✓	After	
Leak Rate Before		CFM @	"Hg
Leak Rate After		CFM @	"Hg
Static Pressure (inches H_2O) (+/-)	-4.0		

Schematic of Testing Location

First point all the way IN OUT	Method	1/2
Area (ft^2)	Port Len. (in.)	Gas Flow IN/OUT

Filter Number		
Thimble Number		
Beaker Number		

Ambient Temp. (°F)	42	Bar. Press. (in. Hg)	29.06
Assumed Moisture (%)	~5% ASSUMED		

Heater Box Setting	250	Probe Heater Setting	250
Probe Length	6	Probe Number	
Probe Material	316 ss	Acetone Number	
Nozzle Diameter (in.)	0.312	Nozzle Number	

IGS Bag ID Number			
% O_2		% CO_2	
H_2O (ml)		Silica Gel (gm)	
Total Vlc	18		

Start Time	10:02 AM / PM	Stop Time	AM / PM

Traverse Point Number	Min/pt 10 / Clock time	Pump Vacuum (in. Hg)	Stack Temp. Ts (°F)	Velocity Head ΔPs	Orifice Setting ΔH (in.H_2O)	Initial Volume 406.04 / Gas Sample Volume Vm (ft^3)	Gas Sample Temperature at Dry Gas Meter: Inlet Tm in (°F)	Outlet Tm out (°F)	Cond. Temp. Tc (°F)	Filter Temp. Tf (°F)	Probe Temp. (°F)	Notes
1-1	5	1	115	.13	1.3	409.30	58	61	40	224	246	
X 1	10	1	115	.13	1.3	412.34	64	60	46	225	250	
X 2	15	1	116	.14	1.4	415.70	70	66	42	225	250	
X 2	20	1	117	.14	1.4	419.18	70	72	42	221	251	
X 3	25	1	118	.15	1.5	422.33	72	72	42	221	250	
X 3	30	1	115	.15	1.5	425.60	74	73	46	224	250	
X 4	35	1	113	.14	1.4	428.75	74	75	46	224	249	
X 4	40	1	111	.15	1.5	432.15	74	74	45	226	235	
B 5	45	1	103	.14	1.4	435.50	75	75	45	221	230	
5	50	1	111	.13	1.3	438.85	78	76	46	222	240	
6	55	1	111	.09	.88	441.25	72	76	46	222	250	Stop pump 10:12 am
6	60	1	110	.09	.93	443.70	68	76	45	222	250	
Total												
Average			113	0.369	1.40	76.69		74				

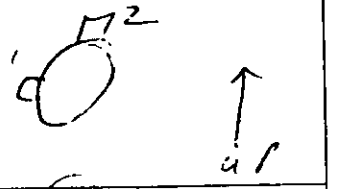
Particulate Testing Field Data Sheet

Location: Boiler 7 **Run:**

Client	DSC/Dynamotive	Project Number	5637
Plant	Lebanon	Unit	029
Date	4/7/06	Inlet/outlet/stack	
Meter Operator	D. Nagle		
Probe Operator	J. Shirp		

Sample Box Number		Pyrometer Number	
Meter Box Number	Dog		
Meter ΔH@	1.917	Meter Yd	.9955
K Factor	.95	Pitot Cp	.84
Pitot Leak Check:	Before ✓	After	
Leak Rate Before	.015	CFM @	15 "Hg
Leak Rate After	.02	CFM @	2 "Hg
Static Pressure (inches H_2O) (+/-)	2.3		

Schematic of Testing Location



First point all the way	IN OUT	Method 12
Area (ft^2)	Port Len. (in.)	Gas Flow IN OUT

Filter Number	4101	
Thimble Number		
Beaker Number		

Ambient Temp. (°F)	62	Bar. Press. (in. Hg)	~~29.44~~ 29.56
Assumed Moisture (%)			

Heater Box Setting	360	Probe Heater Setting	360
Probe Length	6'	Probe Number	
Probe Material	Glass	Acetone Number	
Nozzle Diameter (in.)		Nozzle Number	

IGS Bag ID Number			
% O_2		% CO_2	
H_2O (ml)	20 ml	Silica Gel (gm)	16
Total Vlc	18 ml		

Start Time	AM / PM	Stop Time	11:35 AM / PM

Traverse Point Number	Min/pt Clock time	Pump Vacuum (in. Hg)	Stack Temp. Ts (°F)	Velocity Head ΔPs	Orifice Setting ΔH ($in.H_2O$)	Initial Volume 406.04 / Gas Sample Volume Vm (ft^3)	Gas Sample Temperature at Dry Gas Meter: Inlet Tm in (°F)	Outlet Tm out (°F)	Cond. Temp. Tc (°F)	Filter Temp. Tf (°F)	Probe Temp. (°F)	Notes: Point 1037
2-1	65	1	110	.14	1.4	446.97	66	76	45	246	246	Port change Dog
1	70	1	115	.14	1.4	450.24	70	76	45	222	250	Teflon line leak.
2	75	1	116	.14	1.4	453.92	75	78	46	222	250	
2	80	1	117	.14	1.4	456.80	75	80	46	222	250	
3	85	1	117	.14	1.4	460.10	75	79	46	222	250	
3	90	1	117	.14	1.4	463.46	74	79	46	222	250	
4	95	1	115	.15	1.5	466.63	74	79	46	222	250	
4	100	1	114	.16	1.6	470.10	76	80	46	222	250	
5	105	1	113	.14	1.4	473.38	77	80	48	222	250	
5	110	1	111	.14	1.4	476.64	75	80	49	222	250	
6	115	1	110	.13	1.3	479.73	75	80	44	222	250	
6	120	1	109	.12	1.2	482.73	76	80	49	222	250	
Total												
Average												

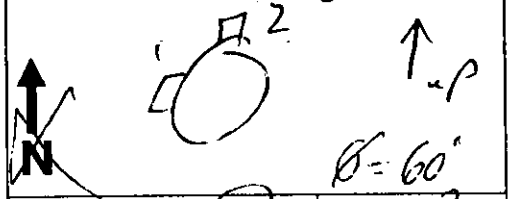
Particulate Testing Field Data Sheet

Location: 039 out **Run:** 2

Client	RSR/Rupmetco	Project Number	5633
Plant	Indianapolis	Unit	039
Date	4/10/01	Inlet/Outlet/Stack	
Meter Operator	D. Nasiatka		
Probe Operator	J. Stamp		

Sample Box Number		Pyrometer Number	
Meter Box Number	D		
Meter ΔH@	1.587	Meter Yd	.9955
K Factor	9.8	Pitot Cp	.84
Pitot Leak Check:	Before	After	
Leak Rate Before	.01	CFM @ 15	"Hg
Leak Rate After		CFM @	"Hg
Static Pressure (inches H_2O) (+/-)			

Schematic of Testing Location



First point all the way IN OUT	Method 1 2	
Area (ft^2) 19.63	Port Len. (in.) 6"	Gas Flow IN OUT

Filter Number	4-44	
Thimble Number		
Beaker Number		

Ambient Temp. (°F)	55	Bar. Press. (in. Hg)	992 mb
Assumed Moisture (%)			

Heater Box Setting	240	Probe Heater Setting	
Probe Length	6'	Probe Number	
Probe Material		Acetone Number	
Nozzle Diameter (in.)	.3125	Nozzle Number	

IGS Bag ID Number			
% O_2		% CO_2	
H_2O (ml)	4	Silica Gel (gm)	18
Total Vlc	14		

Start Time 3:35 AM / PM Stop Time 5:30 AM / PM

Traverse Point Number	Min/pt 10 / Clock time	Pump Vacuum (in. Hg)	Stack Temp. T_s (°F)	Velocity Head ΔP_s	Orifice Setting ΔH (in.H_2O)	Initial Volume 487.10 / Gas Sample Volume V_m (ft^3)	Gas Sample Temperature at Dry Gas Meter: Inlet $T_{m\,in}$ (°F)	Gas Sample Temperature at Dry Gas Meter: Outlet $T_{m\,out}$ (°F)	Cond. Temp. T_c (°F)	Filter Temp. T_f (°F)	Probe Temp. (°F)	Notes
1-1	5	7	108	.12	1.2	490.20	60	73	42	222	250	
1	10	5	101	.12	1.2	493.41	66	75	44	222	250	
2	15	5	101	.13	1.3	496.40	65	76	45	222	250	
2	20	5	102	.13	1.3	499.58	66	76	48	228	250	
3	25	6	101	.14	1.4	503.01	66	78	49	235	250	
3	30	6	101	.14	1.4	506.10	64	78	50	239	250	
4	35	6	101	.14	1.4	509.24	65	78	50	242	251	
4	40	7	102	.141	1.4	512.55	66	78	50	245	250	
5	45	6	101	.13	1.3	515.75	69	79	50	246	250	
5	50	6	99	.13	1.3	518.77	62	78	50	248	250	
6	55	5	99	.10	1.0	521.65	63	76	50	246	250	STOP 4:35 pm
6	60	4	95	.09	.88	524.14	60	77	50	251	250	
Total			1601	1.3540	1.256		63.92	77	—	—	—	
Average			100	.3644	1.33	76.03		72				

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Particulate Testing Field Data Sheet

Location: 039 out **Run:** 2

Client	RSR/Quapaw Co	Project Number	6373
Plant	Ft Oglethorpe, TN	Unit	039
Date	4/10/12	Inlet/outlet/stack	
Meter Operator	D. Nunley		
Probe Operator	S. Stamp		

Schematic of Testing Location

Ambient Temp. (°F)	53	Bar. Press. (in. Hg)	29.92
Assumed Moisture (%)			

Heater Box Setting		Probe Heater Setting	
Probe Length	6'	Probe Number	
Probe Material	Glass	Acetone Number	
Nozzle Diameter (in.)	.325	Nozzle Number	

Sample Box Number		Pyrometer Number	
Meter Box Number	D		
Meter ΔH@	1.97	Meter Yd	.9955
K Factor	9.6	Pitot Cp	.84
Pitot Leak Check:	Before	After	
Leak Rate Before		CFM @	"Hg
Leak Rate After	.005	CFM @ 6	"Hg
Static Pressure (inches H_2O) (+/-)	-2.6		

First point all the way IN OUT Method 12

Area (ft^2)	Port Len. (in.)	Gas Flow
19.63	6	IN OUT

Filter Number	4-99	
Thimble Number		
Beaker Number		

IGS Bag ID Number			
% O_2		% CO_2	
H_2O (ml)	-4	Silica Gel (gm)	18
Total Vlc	14		

Start Time	3:55 AM / PM	Stop Time	5:50 AM / PM

Traverse Point Number	Min/pt Clock time	Pump Vacuum (in. Hg)	Stack Temp. T_s (°F)	Velocity Head ΔP_s	Orifice Setting ΔH ($in.H_2O$)	Initial Volume 487.10 / Gas Sample Volume Vm (ft^3) 524.14	Gas Sample Temperature at Dry Gas Meter: Inlet Tm in (°F)	Outlet Tm out (°F)	Cond. Temp. Tc (°F)	Filter Temp. Tf (°F)	Probe Temp. (°F)	Notes
2-1	1:05	6	100	.13	1.3	527.30	58	76	50	222	253	Restart 4:50 pm
1	1:10	6	100	.13	1.3	530.55	68	77	46	222	250	
2	1:15	6	100	.14	1.4	533.60	69	79	50	222	250	
2	1:20	6	100	.14	1.5	536.95	64	79	50	222	250	
3	1:25	6	101	.15	1.5	540.33	71	79	50	222	250	
3	1:30	6	101	.15	1.5	543.70	70	80	50	222	250	
4	1:35	6	100	.15	1.5	547.10	69	80	50	222	250	
4	1:40	6	99	.16	1.6	550.57	64	80	51	222	250	
5	1:45	6	98	.14	1.5	553.95	70	80	50	222	250	
5	1:50	6	99	.15	1.5	557.27	70	80	51	222	250	
6	1:55	5	95	.11	1.1	560.20	70	80	51	222	250	
6	1:60	5	95	.12	1.2	563.13	70	80	51	222	250	
Total			99	0.3748	1.468		69.58	78.16 / 73.87				
Average			100	.3744	.33	76.03	72					

Particulate Testing Field Data Sheet

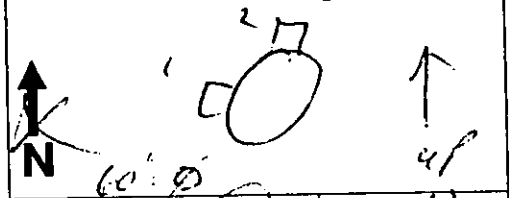
Location: Roof Cigarette Run: 3

Page 1 of 2

Client	RJR / Brunlee	Project Number	5653
Plant	Indianapolis, IN	Unit	C39
Date	4/11/91	Inlet/outlet/stack	
Meter Operator	D. Nassille		
Probe Operator	J. Stapp		

Sample Box Number		Pyrometer Number	
Meter Box Number	0		
Meter ΔH@	1.697	Meter Yd	.9955
K Factor	9.6	Pitot Cp	.84
Pitot Leak Check:	Before	After	
Leak Rate Before	.02	CFM @ 7	"Hg
Leak Rate After		CFM @	"Hg
Static Pressure (inches H_2O) (+/-)			

Schematic of Testing Location



First point all the way	IN / OUT	Method	12
Area (ft^2) 19.63	Port Len. (in.) 6	Gas Flow	IN / OUT

Filter Number	4-112	
Thimble Number		
Beaker Number		

Ambient Temp. (°F)	45	Bar. Press. (in. Hg)	29.96
Assumed Moisture (%)			

Heater Box Setting	250	Probe Heater Setting	
Probe Length	6'	Probe Number	
Probe Material	glass	Acetone Number	
Nozzle Diameter (in.)	.527	Nozzle Number	

IGS Bag ID Number	C39 out #3		
% O_2		% CO_2	
H_2O (ml)	0	Silica Gel (gm)	15
Total Vlc			

Start Time	8:45 AM / PM	Stop Time	AM / PM

Traverse Point Number	Min/pt Clock time	Pump Vacuum (in. Hg)	Stack Temp. Ts (°F)	Velocity Head ΔPs	Orifice Setting ΔH (in.H_2O)	Initial Volume 564.46 / Gas Sample Volume Vm (ft^3)	Gas Sample Temperature at Dry Gas Meter: Inlet Tm in (°F)	Outlet Tm out (°F)	Cond. Temp. Tc (°F)	Filter Temp. Tf (°F)	Probe Temp. (°F)	Notes
1-1	5	2	107	.12	1.2	567.35	50	57	44	222	250	
1	10	2	107	.12	1.2	570.71	55	63	44	222	240	
2	15	2	108	.14	1.4	574.16	57	64	44	222	240	
2	20	2	109	.14	1.4	577.01	58	64	46	228	270	
3	25	2	109	.13	1.3	580.19	56	64	48	231	272	
3	30	2	109	.13	1.3	583.23	55	64	49	234	268	
4	35	2	102	.13	1.3	586.26	52	64	50	236	249	
4	40	2	101	.13	1.3	589.30	52	63	51	237	250	
5	45	2	102	.11	1.1	592.10	53	64	52	240	250	
5	50	2	102	.11	1.1	594.97	53	63	51	243	251	
6	55	2	102	.11	1.1	597.80	54	63	52	242	250	
6	60	2	102	.10	1.0	600.36	51	65	52	245	250	
Total				0.313								
Average			104	0.3	1.23	69.57	54					

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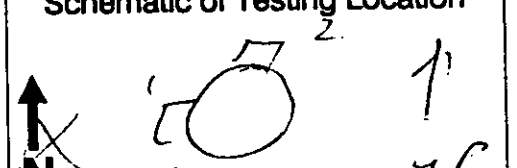
Particulate Testing Field Data Sheet

Location: 039 OUT **Run:** 3

Client	ASR Quarter Co	Project Number	5633
Plant	Lawrenceburg, TN	Unit	C39
Date	4/11/91	Inlet/outlet/stack	
Meter Operator	J. Skaggs		
Probe Operator	D. Nuckles		

Sample Box Number	—	Pyrometer Number	
Meter Box Number	D		
Meter ΔH@	1.597	Meter Yd	.9955
K Factor	9.8	Pitot Cp	.84
Pitot Leak Check:	Before	After	
Leak Rate Before	.020	CFM @ 7	"Hg
Leak Rate After	.020	CFM @ 3	"Hg
Static Pressure (inches H_2O) (+/-)			

Schematic of Testing Location



First point all the way	IN OUT	Method	12G
Area (ft^2) 19.63	Port Len. (in.) 6"	Gas Flow IN OUT	

Filter Number	4-112		
Thimble Number			
Beaker Number			

Ambient Temp. (°F)		Bar. Press. (in. Hg)	29.96
Assumed Moisture (%)			

Heater Box Setting		Probe Heater Setting	
Probe Length		Probe Number	
Probe Material		Acetone Number	
Nozzle Diameter (in.)		Nozzle Number	

IGS Bag ID Number			
% O_2		% CO_2	
H_2O (ml)	0	Silica Gel (gm)	19
Total Vlc	15		

Start Time	AM / PM	Stop Time	10:55 AM / PM

Traverse Point Number	Min/pt 10 / Clock time	Pump Vacuum (in. Hg)	Stack Temp. Ts (°F)	Velocity Head ΔPs	Orifice Setting ΔH (in.H_2O)	Initial Volume 564.46 / Gas Sample Volume Vm (ft^3)	Gas Sample Temperature at Dry Gas Meter: Inlet Tm in (°F)	Outlet Tm out (°F)	Cond. Temp. Tc (°F)	Filter Temp. Tf (°F)	Probe Temp. (°F)	Notes
						600.36						Restart 9:55am Pt 2
2-1	1:05	2	102	.12	1.2	603.38	49	62	50	230	265	
-1	1:10	2	102	.11	1.1	606.19	51	64	50	230	260	
-2	1:15	2	~~225~~ 103	.11	1.1	608.95	54	67	53	224	265	
-2	1:20	2	103	.11	1.1	611.92	55	67	55	221	276	
-3	1:25	2	104	.11	1.1	614.38	55	68	55	222	272	
-3	1:30	2	103	.11	1.1	617.09	56	68	54	223	271	
-4	1:35	2	103	.13	1.3	619.36	56	68	55	220	259	
-4	1:40	2	103	.12	1.2	622.74	55	67	55	222	250	
-4	1:45	2	102	.12	1.2	625.80	55	67	54	221	250	
-5	1:50	2	103	.13	1.3	628.95	55	67	53	221	250	
-6	1:55	2	100	.10	9.8	631.45	55	67	56	221	250	
-6	1:60	2	100	.10	9.8	634.02	55	67	56	213	250	
Total				1.367				150				
Average												

Particulate Testing Field Data Sheet

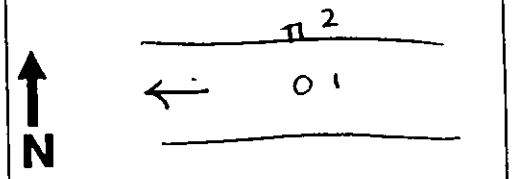
Page 1 of 2

Location: Inlet 40 **Run:** 1

Client RSR	Project Number 5633
Plant Quemetco	Unit 40
Date 4/18/91	(Inlet)/Outlet/stack
Meter Operator DL	
Probe Operator KS	

Sample Box Number	Pyrometer Number T-84	
Meter Box Number F		
Meter ΔH@ 1.823	Meter Yd 1.0031	
K Factor 1.11	Pitot Cp .84	
Pitot Leak Check: Before	✓ After	
Leak Rate Before .012	CFM @ 15	"Hg
Leak Rate After .018	CFM @ 15	"Hg
Static Pressure (inches H_2O) (+)(-) 6.6		

Schematic of Testing Location



First point all the way (IN) OUT	Method 12	
Area (ft^2) 3.14	Port Len. (in.) 6.0	Gas Flow IN OUT

Filter Number	4-95	
Thimble Number	—	
Beaker Number		

Ambient Temp. (°F) 50	Bar. Press. (in. Hg) 29.96
Assumed Moisture (%)	

Heater Box Setting	Probe Heater Setting
Probe Length 61	Probe Number
Probe Material glass	Acetone Number
Nozzle Diameter (in.) .189	Nozzle Number

IGS Bag ID Number	
% O_2	% CO_2
H_2O (ml) 14	Silica Gel (gm) 12
Total V_{lc}	

Start Time 9:10 (AM) PM Stop Time 11:20 (AM) / PM

Traverse Point Number	Min/pt 10 / Clock time	Pump Vacuum (in. Hg)	Stack Temp. Ts (°F)	Velocity Head ΔPs	Orifice Setting ΔH ($in.H_2O$)	Initial Volume 702.68 / Gas Sample Volume V_m (ft^3)	Gas Sample Temperature at Dry Gas Meter: Inlet $T_{m\,in}$ (°F)	Outlet $T_{m\,out}$ (°F)	Cond. Temp. Tc (°F)	Filter Temp. Tf (°F)	Probe Temp. (°F)	Notes
1-1	5	6	146	3.10	3.4	707.89	70	58	68	242	265	
1	10	6	146	3.10	3.4	711.50	74	58	↓	249	259	
2	15	7	150	3.30	3.6	716.16	76	59		248	268	
2	20	7	156	3.30	3.6	720.79	77	60		249	268	
3	25	8	160	3.40	3.8	724.82	78	60		248	262	
3	30	8	158	3.30	3.6	729.04	77	60		247	256	
4	35	8	157	2.80	3.0	733.34	77	60		246	248	
4	40	8	156	2.80	3.0	737.71	77	60		246	242	
5	45	7	154	2.00	2.2	741.58	77	60		245	246	
5	50	7	156	2.00	2.2	745.27	77	60		241	247	
6	55	2	158	.38	.42	747.04	71	60		244	240	
6	6	2	156	.38	.42	748.55	69	60		246	248	
Total			3595	37.999	68.94	94.7	3269					
Average			148	1.583	2.87		68					

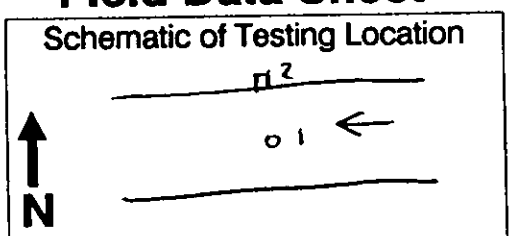
Particulate Testing Field Data Sheet

Location: Inlet 40 **Run:** 1

Client RSR	Project Number 5633
Plant Quemeico	Unit
Date 4/19/91	(inlet)/outlet/stack
Meter Operator DL	
Probe Operator KS	

Sample Box Number	Pyrometer Number F-84	
Meter Box Number F		
Meter ΔH@ 1.823	Meter Yd 1.0031	
K Factor 1.11	Pitot Cp .84	
Pitot Leak Check: Before	After	
Leak Rate Before	CFM @	"Hg
Leak Rate After	CFM @	"Hg
Static Pressure (inches H_2O) (+/-)		

Schematic of Testing Location



First point all the way (IN) OUT	Method 1 2		
Area (ft^2) 3.14	Port Len. (in.) 6.0	Gas Flow IN OUT	

Filter Number	4-95	
Thimble Number	—	
Beaker Number		

Ambient Temp. (°F)	Bar. Press. (in. Hg)
Assumed Moisture (%)	

Heater Box Setting	Probe Heater Setting
Probe Length 6'	Probe Number
Probe Material glass	Acetone Number
Nozzle Diameter (in.) .180	Nozzle Number

IGS Bag ID Number	
% O_2	% CO_2
H_2O (ml)	Silica Gel (gm)
Total Vlc	

Start Time AM / PM	Stop Time AM / PM

Traverse Point Number	Min/pt 10 / Clock time	Pump Vacuum (in. Hg)	Stack Temp. Ts (°F)	Velocity Head ΔPs	Orifice Setting ΔH (in.H_2O)	Initial Volume: Gas Sample Volume Vm (ft^3)	Gas Sample Temperature at Dry Gas Meter: Inlet Tm in (°F)	Gas Sample Temperature at Dry Gas Meter: Outlet Tm out (°F)	Cond. Temp. Tc (°F)	Filter Temp. Tf (°F)	Probe Temp. (°F)	Notes
2-1	65	8	144	2.7	3.0	752.82	67	60	68	248	247	
1	70	8	143	2.5	2.8	757.02	73	60		243	259	
2	75	9	144	2.9	3.2	761.31	77	62		243	263	
2	80	9	147	3.0	3.3	765.56	77	62		246	255	
3	85	90	146	3.1	3.4	769.92	78	63		258	248	
3	90	10	148	3.1	3.4	774.50	78	64		263	243	
4	95	10	146	3.2	3.5	778.95	77	64		266	249	
4	100	10	149	3.2	3.5	783.26	77	64		268	250	
5	105	10	144	3.0	3.3	787.11	74	63		266	250	
5	110	11	143	3.0	3.3	791.56	74	64		263	259	
6	115	8	144	2.0	2.2	794.55	74	64		268	250	
6	120	6	144	1.3	1.4	797.38	74	64	↓	265	251	
Total												
Average												

Particulate Testing Field Data Sheet

Location: Inlet 40 Run: 2

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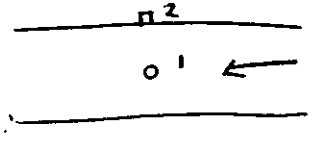
Client RSR	Project Number 5633
Plant Quemetco	Unit 40
Date 4/10/91	Inlet/outlet/stack
Meter Operator DLloyd	
Probe Operator KJohnson	

Sample Box Number		Pyrometer Number	F-89
Meter Box Number	F		
Meter ΔH@	1.823	Meter Yd	1.00 [illegible]31
K Factor	.25	Pitot Cp	.84
Pitot Leak Check:	Before ✓	After ✓	
Leak Rate Before	.010	CFM @ 15	"Hg
Leak Rate After	.014	CFM @ 15	"Hg
Static Pressure (inches H_2O) (+/-)	8.5		

Schematic of Testing Location



First point all the way IN OUT	Method 12	
Area (ft^2) 3.14	Port Len. (in.) 6.0	Gas Flow IN OUT

Filter Number	4-97	
Thimble Number	—	
Beaker Number		

Ambient Temp. (°F) 70	Bar. Press. (in. Hg)
Assumed Moisture (%)	

Heater Box Setting	Probe Heater Setting
Probe Length 6'	Probe Number
Probe Material glass	Acetone Number
Nozzle Diameter (in.) .120	Nozzle Number

IGS Bag ID Number	
% O_2 20.9	% CO_2 0.0
H_2O (ml) 14	Silica Gel (gm) 12
Total Vlc 36	

Start Time 3:40 AM / PM Stop Time 5:50 AM / PM

Traverse Point Number	Min/pt 10 Clock time	Pump Vacuum (in. Hg)	Stack Temp. T_s (°F)	Velocity Head ΔP_s	Orifice Setting ΔH ($in.H_2O$)	Initial Volume 801.43 Gas Sample Volume V_m (ft^3)	Gas Sample Temperature at Dry Gas Meter: Inlet T_m in (°F)	Outlet T_m out (°F)	Cond. Temp. T_c (°F)	Filter Temp. T_f (°F)	Probe Temp. (°F)	Notes
1-1	5	2	127	2.70	.68	803.32	80	80	68	255	240	
1	10	2	126	2.50	.62	805.17	82	80		257	238	
2	15	2	128	3.20	.80	807.27	84	80		247	240	
2	20	2	128	3.20	.80	809.40	87	80		236	244	
3	25	2	127	3.40	.85	811.61	88	80		258	234	
3	30	2	127	3.40	.85	813.84	88	80		266	260	
4	35	3	126	3.60	.90	816.11	90	81		266	267	
4	40	3	126	3.60	.90	818.41	89	81		262	255	
5	45	2	127	3.15	.79	820.58	88	81		250	263	
5	50	3	127	3.15	.79	822.70	87	81		246	265	
6	55	2	127	1.70	.42	824.30	86	80		247	245	
6	60	2	126	1.60	.40	825.75	86	80		249	241	
Total			1522	~~28.28~~ 20.03	8.80	48.42	1999					
Average			128	~~1.692~~ 1.687 DL	.736		85					

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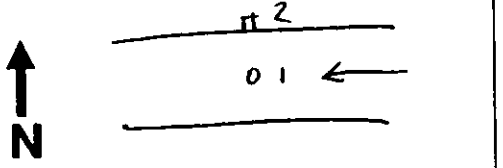
Particulate Testing Field Data Sheet

Location: Inlet 40 **Run:** 2

Client RSR	Project Number 5633
Plant Quemetro	Unit 40
Date 4/10/91	(Inlet)/outlet/stack
Meter Operator DLloyd	
Probe Operator KJohnson	

Sample Box Number	Pyrometer Number F-89
Meter Box Number F	
Meter ΔH@ 1.823	Meter Yd 1.0091
K Factor .25	Pitot Cp .84
Pitot Leak Check: Before	After
Leak Rate Before	CFM @ "Hg
Leak Rate After	CFM @ "Hg
Static Pressure (inches H_2O) (+/-)	

Schematic of Testing Location



First point all the way (IN) OUT	Method 12	
Area (ft^2) 3.14	Port Len. (in.) 6.0	Gas Flow IN OUT

Filter Number	F-97	
Thimble Number	—	
Beaker Number		

Ambient Temp. (°F)	Bar. Press. (in. Hg)
Assumed Moisture (%)	

Heater Box Setting	Probe Heater Setting
Probe Length 6'	Probe Number
Probe Material glass	Acetone Number
Nozzle Diameter (in.) .120	Nozzle Number

IGS Bag ID Number	
% O_2	% CO_2
H_2O (ml)	Silica Gel (gm)
Total Vlc	

Start Time 450 AM / PM Stop Time 5:50 AM / PM

Traverse Point Number	Min/pt 10 / Clock time	Pump Vacuum (in. Hg)	Stack Temp. T_s (°F)	Velocity Head ΔP_s	Orifice Setting ΔH (in.H_2O)	Initial Volume: Gas Sample Volume V_m (ft^3)	Gas Sample Temperature at Dry Gas Meter: Inlet $T_{m\,in}$ (°F)	Gas Sample Temperature at Dry Gas Meter: Outlet $T_{m\,out}$ (°F)	Cond. Temp. T_c (°F)	Filter Temp. T_f (°F)	Probe Temp. (°F)	Notes
2-1	65	2	120	3.20	.80	827.87	82	80	68	268	258	
1	70	2	119	3.20	.80	829.99	84	80		267	263	
2	75	2	119	3.25	.81	832.14	88	81		269	267	
2	80	2	129	3.25	.81	834.27	91	82		268	269	
3	85	3	131	3.70	.92	836.54	92	82		264	265	
3	90	3	124	3.70	.92	838.85	93	83		267	259	
4	95	3	123	3.35	.84	841.05	94	84		262	247	
4	100	3	136	3.35	.84	843.25	93	84		258	241	
5	105	3	136	3.25	.81	845.41	93	84		256	240	
5	110	3	138	3.50	.88	847.69	93	84		254	257	
6	115	1	137	1.05	.26	848.99	93	84		258	265	
6	120	1	137	0.68	.17	849.85	93	84		259	268	
Total			1549	20.214	8.86		2081					
Average												

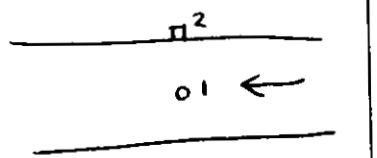
Particulate Testing Field Data Sheet

Location: Inlet 40 **Run:** 3

Client RSR	Project Number 5633
Plant Quemefco	Unit 40
Date 4/11/91	(Inlet)/outlet/stack
Meter Operator D. Lloyd	
Probe Operator K. Johnson	

Sample Box Number		Pyrometer Number	F-89
Meter Box Number	F		
Meter ΔH@	1.823	Meter Yd	1.0031
K Factor	1.11	Pitot Cp	.84
Pitot Leak Check:	Before ✓		After ✓
Leak Rate Before	.014	CFM @ 15	"Hg
Leak Rate After	.010	CFM @ 15	"Hg
Static Pressure (inches H_2O)	(+) 8.2		

Schematic of Testing Location



First point all the way (IN) OUT	Method 12	
Area (ft^2) 3.14	Port Len. (in.) 6.0	Gas Flow IN OUT

Filter Number	4-110	
Thimble Number		
Beaker Number		

Ambient Temp. (°F)		Bar. Press. (in. Hg)	
Assumed Moisture (%)			

Heater Box Setting		Probe Heater Setting	
Probe Length	6'	Probe Number	
Probe Material	glass	Acetone Number	
Nozzle Diameter (in.)	.180	Nozzle Number	

IGS Bag ID Number			
% O_2	20.9	% CO_2	0.0
H_2O (ml)	34	Silica Gel (gm)	14
Total V_{lc}	48		

Start Time 8:45 (AM)/PM Stop Time 10:55 (AM) PM

Traverse Point Number	Min/pt 10 / Clock time	Pump Vacuum (in. Hg)	Stack Temp. T_s (°F)	Velocity Head ΔP_s	Orifice Setting ΔH (in.H_2O)	Initial Volume 853.69 / Gas Sample Volume V_m (ft^3)	Gas Sample Temperature at Dry Gas Meter: Inlet $T_{m\,in}$ (°F)	Outlet $T_{m\,out}$ (°F)	Cond. Temp. T_c (°F)	Filter Temp. T_f (°F)	Probe Temp. (°F)	Notes
1-1	5	7	122	3.40	3.74	858.21	77	70	68	248	243	
1	10	8	118	3.50	3.85	863.08	89	70		251	251	
2	15	9	117	3.80	4.18	867.99	94	72		261	252	
2	20	9	117	3.75	4.12	872.90	93	73		265	247	
3	25	10	116	4.10	4.51	878.05	91	73		268	242	
3	30	9	115	3.80	4.18	882.81	92	73		266	244	
4	35	10	112	4.30	4.73	888.29	91	74		265	246	
4	40	10	112	4.30	4.73	893.45	90	74		264	241	
5	45	9	114	3.70	4.07	898.36	88	74		261	238	
5	50	9	114	3.70	4.07	903.31	91	74		262	257	
6	55	6	113	2.00	2.20	907.39	88	74		267	261	
6	60	6	113	2.00	2.20	911.43	91	74	↓	268	267	
Total			1383	22.398	46.56	120.66	1950					
Average			118	1.892	3.999		82					

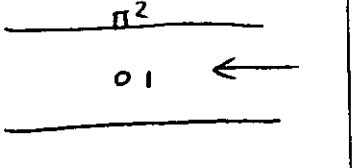
Particulate Testing Field Data Sheet

Location: Inlet 40 **Run:** 3

Client RSR	Project Number 5633
Plant Quemetco	Unit 40
Date 4/11/91	Inlet/outlet/stack
Meter Operator D. Lloyd	
Probe Operator K. Johnson	

Sample Box Number	Pyrometer Number F-89
Meter Box Number F	
Meter ΔH@ 1.823	Meter Yd 1.0031
K Factor	Pitot Cp .84
Pitot Leak Check: Before	After
Leak Rate Before	CFM @ "Hg
Leak Rate After	CFM @ "Hg
Static Pressure (inches H_2O) (+/-)	

Schematic of Testing Location



First point all the way IN OUT	Method 12	
Area (ft^2) 3.14	Port Len. (in.) 6.0	Gas Flow IN OUT

Filter Number	4-110	
Thimble Number	—	
Beaker Number		

Ambient Temp. (°F)	Bar. Press. (in. Hg)
Assumed Moisture (%)	

Heater Box Setting	Probe Heater Setting
Probe Length 6'	Probe Number
Probe Material glass	Acetone Number
Nozzle Diameter (in.) .180	Nozzle Number

IGS Bag ID Number	
% O_2	% CO_2
H_2O (ml)	Silica Gel (gm)
Total V_{lc}	

Start Time 9:55 AM / PM Stop Time 10:55 AM / PM

Traverse Point Number	Min/pt 10 / Clock time	Pump Vacuum (in. Hg)	Stack Temp. T_s (°F)	Velocity Head ΔP_s	Orifice Setting ΔH (in.H_2O)	Initial Volume: Gas Sample Volume V_m (ft^3)	Gas Sample Temperature at Dry Gas Meter: Inlet T_m in (°F)	Gas Sample Temperature at Dry Gas Meter: Outlet T_m out (°F)	Cond. Temp. T_c (°F)	Filter Temp. T_f (°F)	Probe Temp. (°F)	Notes
2-1	65	6	117	3.40	3.74	916.22	80	74	68	267	257	
1	70	6	117	3.40	3.74	920.90	84	73		265	264	
2	75	11	115	4.40	4.84	925.92	89	74		265	271	
2	80	11	116	4.40	4.84	931.66	93	74		265	262	
3	85	11	117	4.50	4.95	938.20	94	76		255	263	
3	90	11	125	4.40	4.84	944.65	92	77		261	245	
4	95	11	123	4.40	4.84	950.65	91	76		259	245	
4	100	11	124	4.40	4.84	956.11	89	78		259	239	
5	105	11	124	3.90	4.29	961.40	89	76		259	245	
5	110	11	121	3.90	4.29	966.85	91	76		263	253	
6	115	7	123	1.90	2.09	970.41	90	77		259	249	
6	120	7	123	1.90	2.09	974.35	90	77		256	247	
Total			1445	23.004	49.39		1980					
Average												

Particulate Testing Field Data Sheet

Page 1 of 2

Location: OUTLET **Run:** 1

Client RSR	Project Number
Plant	Unit 40
Date 4-10-91	Inlet/Outlet/Stack B.H.
Meter Operator RON	
Probe Operator KEN D	

Sample Box Number 66	Pyrometer Number
Meter Box Number 66-2	
Meter ΔH@ 1.99501	Meter Yd 1.9962
K Factor ~~1.15~~ 1.24	Pitot Cp 1.84
Pitot Leak Check: Before .00	After
Leak Rate Before .008	CFM @ 12 "Hg
Leak Rate After	CFM @ "Hg
Static Pressure (inches H_2O) (+/-) -6.5	

Schematic of Testing Location

N

First point all the way IN / OUT		Method M-5 MISCO
Area (ft^2)	Port Len. (in.)	Gas Flow IN OUT

Filter Number	4-106
Thimble Number	N/A
Beaker Number	

Ambient Temp. (°F) 41	Bar. Press. (in. Hg) 29.86
Assumed Moisture (%)	

Heater Box Setting 248 ± 25	Probe Heater Setting 248 ± 25
Probe Length 6'	Probe Number #4
Probe Material GLASS	Acetone Number
Nozzle Diameter (in.) 0.187	Nozzle Number 66

IGS Bag ID Number 40-1 OUT	
% O_2	% CO_2
H_2O (ml)	Silica Gel (gm)
Total V_{lc}	

Start Time 9:10 AM / PM Stop Time 11:25 AM / PM

Traverse Point Number	Min/pt 10 / Clock time	Pump Vacuum (in. Hg)	Stack Temp. T_s (°F)	Velocity Head ΔP_s	Orifice Setting ΔH (in.H_2O)	Initial Volume 805.44 / Gas Sample Volume V_m (ft^3)	Gas Sample Temperature at Dry Gas Meter: Inlet $T_{m\,in}$ (°F)	Outlet $T_{m\,out}$ (°F)	Cond. Temp. T_c (°F)	Filter Temp. T_f (°F)	Probe Temp. (°F)	Notes
1 - 1	5	1	125	.81	1.0	808.15	48	46	42	220	261	
	10	1	124	.81	1.0	810.80	53	52	42	222	268	
2	15	1	125	.83	1.0	813.43	53	52	42	222	269	
	20	1	127	.83	1.0	816.09	53	52	42	221	272	
3	25	1	130	.89	1.1	819.01	54	52	42	220	260	
	30	1	130	.89	1.1	821.95	56	52	42	221	267	
4	35	1	128	.93	1.2	824.78	55	53	44	222	267	
	40	1	127	.93	1.2	827.72	55	53	44	223	265	
5	45	1	126	1.0	1.2	830.75	56	52	44	224	264	
	50	1	[illegible]	1.0	1.2	833.66	55	51	44	224	270	
6	55	1	125	.93	1.2	836.52	54	51	44	224	272	
	60	1	125	.95	1.2	839.47	53	50	44	224	272	
Total			1519	11.377	13.4		646	616				
Average			126.58	.948	1.1							

(125.96) (.952) (1.14) 38.40 (54.69)

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Particulate Testing Field Data Sheet

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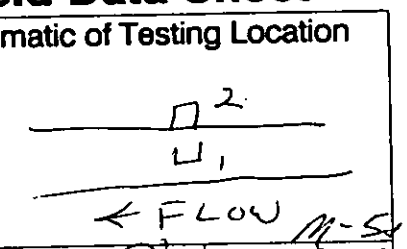
Location: #4/0 Outlet **Run:** 1

Client	RSR	Project Number	
Plant		Unit	40
Date	4-10-96	Inlet/Outlet/Stack	B.H.
Meter Operator	KH		
Probe Operator	KEN		

Sample Box Number	66	Pyrometer Number	
Meter Box Number	66-2		
Meter ΔH@	1.962	Meter Yd	.9950
K Factor	.24	Pitot Cp	.84
Pitot Leak Check:	Before OK	After	
Leak Rate Before	.008	CFM @ 12	"Hg
Leak Rate After	.004	CFM @ 5	"Hg
Static Pressure (inches H_2O) (+/-)			

Schematic of Testing Location



First point all the way IN OUT		Method M-5
Area (ft^2)	Port Len. (in.)	Gas Flow IN OUT

Filter Number	4-106	
Thimble Number		
Beaker Number		

Ambient Temp. (°F)	41	Bar. Press. (in. Hg)	29.80
Assumed Moisture (%)			

Heater Box Setting	248-25	Probe Heater Setting	248-25
Probe Length	6'	Probe Number	#4
Probe Material	GLASS	Acetone Number	
Nozzle Diameter (in.)	.187	Nozzle Number	66

IGS Bag ID Number	40-1 OUT		
% O_2		% CO_2	
H_2O (ml)	6	Silica Gel (gm)	12
Total Vlc	18		

Start Time 9:10 AM / PM Stop Time 11:25 AM PM

Traverse Point Number	Min/pt 10 / Clock time	Pump Vacuum (in. Hg)	Stack Temp. Ts (°F)	Velocity Head ΔPs	Orifice Setting ΔH (in.H_2O)	Initial Volume: Gas Sample Volume Vm (ft^3)	Gas Sample Temperature at Dry Gas Meter: Inlet Tm in (°F)	Outlet Tm out (°F)	Cond. Temp. Tc (°F)	Filter Temp. Tf (°F)	Probe Temp. (°F)	Notes
2-1	5	1	125	1.0	1.2	842.45	52	52	46	224	271	
2	10	1	125	.93	1.2	845.36	52	52	46	222	272	
2	15	1	126	.94	1.2	848.24	55	53	44	225	272	
	20	1	126	.94	1.2	851.16	57	54	46	225	266	
3	25	1	125	.93	1.2	854.04	56	53	46	226	266	
	30	1	125	.93	1.2	856.95	57	53	46	227	268	
4	35	1	125	.93	1.2	859.85	57	53	46	226	270	
	40	1	125	.93	1.2	862.82	56	52	48	227	272	
5	45	1	125	.93	1.2	865.76	56	52	48	227	272	
	50	1	126	.93	1.2	868.57	58	53	48	228	267	
6	55	1	125	.79	.98	871.22	58	54	48	230	270	
	60	1	126	.79	.98	873.84	58	54	48	228	260	
Total			~~1504~~ 1505	~~11.467~~ 9.51	13.96		726	1585				
Average			126.3	11.467 .951 .952	1.163		60.5	52.9				

(1.196) (1.14) (68.40) (54.69)

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Particulate Testing Field Data Sheet

Location: #40 OUTLET Run: 2

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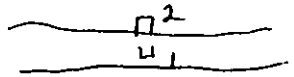
Client	RSR	Project Number	5633
Plant	IN.	Unit	40
Date	4-10-91	Inlet/Outlet/stack	B.H.
Meter Operator	RON		
Probe Operator	KEN		

Schematic of Testing Location



Ambient Temp. (°F)	58	Bar. Press. (in. Hg)	
Assumed Moisture (%)			

Heater Box Setting	248±25	Probe Heater Setting	248±25
Probe Length	6'	Probe Number	4
Probe Material	GLASS	Acetone Number	
Nozzle Diameter (in.)	.187	Nozzle Number	66

Sample Box Number		Pyrometer Number	
Meter Box Number	66-2		
Meter ΔH@	1.962	Meter Yd	.9950
K Factor	1.24	Pitot Cp	.84
Pitot Leak Check:	Before .00	After	.00
Leak Rate Before	.008	CFM @ 10	"Hg
Leak Rate After	.006	CFM @ 5	"Hg
Static Pressure (inches H_2O) (+/-)	−2.5		

First point all the way	IN OUT	Method	M1/SCD
Area (ft^2)	Port Len. (in.) 6	Gas Flow IN OUT	

Filter Number	4-96	
Thimble Number	N/A	
Beaker Number		

IGS Bag ID Number	2-40-OUT		
% O_2		% CO_2	
H_2O (ml)		Silica Gel (gm)	
Total Vlc			

Start Time 9:30 AM / PM Stop Time 5:49 AM / PM

Traverse Point Number	Min/pt 10 / Clock time	Pump Vacuum (in. Hg)	Stack Temp. T_s (°F)	Velocity Head ΔP_s	Orifice Setting ΔH (in.H_2O)	Initial Volume 875.52 / Gas Sample Volume V_m (ft^3)	Gas Sample Temperature at Dry Gas Meter: Inlet $T_{m\,in}$ (°F)	Outlet $T_{m\,out}$ (°F)	Cond. Temp. T_c (°F)	Filter Temp. T_f (°F)	Probe Temp. (°F)	Notes
2-1	5	1	122	.88	.91	878.07	62	65	48	258	230	* ΔH should have been 1.1.
	10	1	121	.88	.91	880.72	64	64	48	247	231	
2	15	1	120	.91	1.1	883.40	66	65	48	250	260	
	20	1	120	.91	1.1	886.20	66	65	48	254	250	
3	25	1	120	.90	1.1	888.96	67	66	48	246	250	
	30	1	119	.90	1.1	891.73	68	66	50	252	249	
4	35	1	119	.88	1.1	894.46	69	67	50	252	242	
	40	1	119	.89	1.1	897.26	69	67	52	246	245	
5	45	1	118	.88	1.1	900.07	67	66	52	232	241	
	50	1	117	.88	1.1	902.88	67	65	50	247	246	
6	55	1	116	.87	1.1	905.65	67	65	50	247	240	
	60	1	116	.87	1.1	908.56	67	65	50	254	260	
Total												
Average												

Particulate Testing Field Data Sheet

Location: #4U Outlet Run: 2

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Client	RSR	Project Number	
Plant		Unit	4U
Date	4-10-91	Inlet/outlet/stack	B.H.
Meter Operator	Ron		
Probe Operator	KEN		

Schematic of Testing Location

N ↑

Ambient Temp. (°F)	56	Bar. Press. (in. Hg)	
Assumed Moisture (%)			

Heater Box Setting	248±25	Probe Heater Setting	248±25
Probe Length	6'	Probe Number	
Probe Material	GLASS	Acetone Number	
Nozzle Diameter (in.)	.187	Nozzle Number	

Sample Box Number	66	Pyrometer Number	
Meter Box Number	66-2		
Meter ΔH@	1.962	Meter Yd	.9950
K Factor	1.24	Pitot Cp	.84
Pitot Leak Check:	Before .00	After .00	
Leak Rate Before		CFM @	"Hg
Leak Rate After		CFM @	"Hg
Static Pressure (inches H_2O) (+/-)	−2.5		

First point all the way	IN OUT	Method	M-5 ISCO
Area (ft^2)	Port Len. (in.) 6	Gas Flow IN OUT	

Filter Number	4-96	
Thimble Number	N/A	
Beaker Number		

IGS Bag ID Number	[illegible]10-02T		
% O_2		% CO_2	
H_2O (ml)	10	Silica Gel (gm)	15
Total Vlc	25		

Start Time 3:39 AM (PM) Stop Time 5:49 AM (PM)

Traverse Point Number	Min/pt 10 / Clock time	Pump Vacuum (in. Hg)	Stack Temp. T_s (°F)	Velocity Head ΔP_s	Orifice Setting ΔH (in.H_2O)	Initial Volume: Gas Sample Volume V_m (ft^3)	Gas Sample Temperature at Dry Gas Meter: Inlet $T_{m\,in}$ (°F)	Gas Sample Temperature at Dry Gas Meter: Outlet $T_{m\,out}$ (°F)	Cond. Temp. T_c (°F)	Filter Temp. T_f (°F)	Probe Temp. (°F)	Notes
1-1	5	1	115	.83	1.0	911.16	65	65	46	262	243	
	10	1	115	.83	1.0	913.80	69	67	48	252	259	
2	15	1	114	.83	1.0	916.46	71	68	50	246	249	
	20	1	114	.83	1.0	919.15	72	69	50	255	258	
3	25	2	117	.85	1.1	921.90	75	70	52	255	242	
	30	3	116	.85	1.1	924.72	75	70	52	244	243	
4	35	1	116	.91	1.1	927.49	74	70	52	259	253	
	40	1	117	.95	1.2	930.47	74	70	52	250	247	
5	45	1	119	.85	1.1	933.25	73	70	52	257	252	
	50	1	121	.85	1.1	936.02	74	70	52	245	248	
6	55	1	117	.70	.87	938.53	74	71	50	246	256	
	60	1	117	.75	.93	941.12	74	71	50	242	250	
Total				(.948)								
Average			(118)		(1.055)	(65.60)	~67					

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Particulate Testing Field Data Sheet

Location: #40 OUTLET Run: 3

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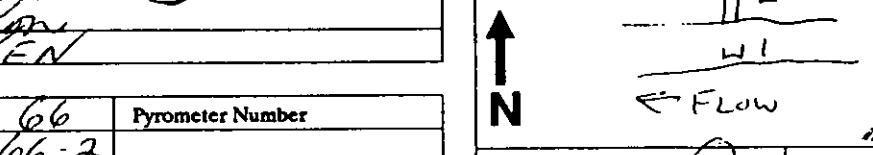
Client	RSR	Project Number	5633
Plant	IN	Unit	40
Date	4-11-91	Inlet/Outlet/Stack	B.H
Meter Operator	[illegible]		
Probe Operator	KEN		

Sample Box Number	66	Pyrometer Number	
Meter Box Number	66-2		
Meter ΔH@	1.962	Meter Yd	.9930
K Factor	1.24	Pitot C_p	.84
Pitot Leak Check:	Before .00	After .00	
Leak Rate Before	.006	CFM @ 10	"Hg
Leak Rate After		CFM @	"Hg
Static Pressure (inches H_2O) (+/-)			

Schematic of Testing Location



#1-5

First point all the way	IN (OUT)	Method	M15 CC
Area (ft^2)	Port Len. (in.) 6	Gas Flow IN OUT	

Filter Number	4-111	
Thimble Number	N/A	
Beaker Number		

Ambient Temp. (°F)	46	Bar. Press. (in. Hg)	
Assumed Moisture (%)			

Heater Box Setting	248 ± 25	Probe Heater Setting	248 ± 25
Probe Length	6'	Probe Number	4
Probe Material	GLASS	Acetone Number	
Nozzle Diameter (in.)	.157	Nozzle Number	66

IGS Bag ID Number	#40-Out-3		
% O_2		% CO_2	
H_2O (ml)	10	Silica Gel (gm)	12
Total Vlc	22		

Start Time 8:45 (AM) / PM Stop Time 10:54 (AM) / PM

Traverse Point Number	Min/pt 10 / Clock time	Pump Vacuum (in. Hg)	Stack Temp. T_s (°F)	Velocity Head ΔP_s	Orifice Setting ΔH (in.H_2O)	Initial Volume 942.75 / Gas Sample Volume V_m (ft^3)	Gas Sample Temperature at Dry Gas Meter: Inlet $T_{m\,in}$ (°F)	Gas Sample Temperature at Dry Gas Meter: Outlet $T_{m\,out}$ (°F)	Cond. Temp. T_c (°F)	Filter Temp. T_f (°F)	Probe Temp. (°F)	Notes
2-1	5	2	118	1.1	1.4	945.84	62	60	44	252	257	
	10	2	114	1.1	1.4	948.85	68	62	44	254	263	
2	15	2	114	1.2	1.5	951.94	70	63	45	251	253	
	20	2	113	1.2	1.5	955.15	72	64	45	244	251	
3	25	2	113	1.1	1.4	958.29	72	64	45	240	241	
	30	2	112	1.1	1.4	961.45	73	65	45	250	249	
4	35	2	111	1.1	1.4	964.56	72	65	48	259	248	
	40	2	110	1.1	1.4	967.70	72	66	48	259	253	
5	45	1	109	1.0	1.2	970.64	73	67	50	260	249	
	50	1	108	1.0	1.2	973.55	72	67	50	249	255	
6	55	1	107	.88	1.1	976.38	72	67	50	247	247	
	60	1	106	.88	1.1	979.22	72	67	52	255	249	
Total								68				
Average												

Particulate Testing Field Data Sheet

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Location: #40 Outlet **Run:** 3

Client	R.S.K.	Project Number	5633
Plant	LN	Unit	40
Date	4-11-91	Inlet/outlet/stack	B.H
Meter Operator	KEN		
Probe Operator	KEN		

Sample Box Number	66	Pyrometer Number	
Meter Box Number			
Meter ΔH@	1.962	Meter Yd	.9950
K Factor	1.24	Pitot Cp	.84
Pitot Leak Check:	Before .00	After	.00
Leak Rate Before	.008	CFM @ 10	"Hg
Leak Rate After	.006	CFM @ 5	"Hg
Static Pressure (inches H_2O) (+/-)	−2.5		

Schematic of Testing Location

N

First point all the way IN OUT	Method	111-5d
Area (ft^2)	Port Len. (in.) 6	Gas Flow IN OUT

Filter Number	4-111	
Thimble Number	N/A	
Beaker Number		

Ambient Temp. (°F) 46	Bar. Press. (in. Hg)
Assumed Moisture (%)	

Heater Box Setting	248 ± 25	Probe Heater Setting	248 ± 25
Probe Length		Probe Number	4
Probe Material	GLASS	Acetone Number	
Nozzle Diameter (in.)	.187	Nozzle Number	66

IGS Bag ID Number	#40-out 3		
% O_2		% CO_2	
H_2O (ml)		Silica Gel (gm)	
Total V_{lc}			

Start Time	8:45 AM / PM	Stop Time	10:54 AM / PM

Traverse Point Number	Min/pt 10 Clock time	Pump Vacuum (in. Hg)	Stack Temp. T_s (°F)	Velocity Head ΔP_s	Orifice Setting ΔH (in.H_2O)	Initial Volume: Gas Sample Volume V_m (ft^3)	Gas Sample Temperature at Dry Gas Meter: Inlet $T_{m\,in}$ (°F)	Outlet $T_{m\,out}$ (°F)	Cond. Temp. T_c (°F)	Filter Temp. T_f (°F)	Probe Temp. (°F)	Notes
1	5	1	107	.88	1.1	981.91	65	66	54	239	257	
	10	1	108	.88	1.1	984.79	67	67	54	250	240	
2	15	1	109	1.0	1.2	987.75	72	67	52	252	242	
	20	1	109	1.0	1.2	990.68	74	68	54	252	249	
3	25	2	110	1.1	1.4	993.84	74	69	54	252	246	
	30	2	110	1.1	1.4	996.98	74	69	54	253	241	
4	35	2	113	1.1	1.4	1000.15	74	69	54	248	239	
	40	2	113	1.1	1.4	1003.30	74	70	54	255	239	
5	45	2	111	.99	1.2	1006.19	74	70	54	255	251	
	50	1	111	.97	1.2	1009.099	74	70	56	253	251	
6	55	1	109	.73	.90	1011.67	74	70	56	250	250	
	60	1	109	.73	.90	1014.23	73	70	56	240	242	
Total												
Average			111	1005	1.28	71.48	69					

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Particulate Testing Field Data Sheet

Location: outlet (stack) **Run:** 1

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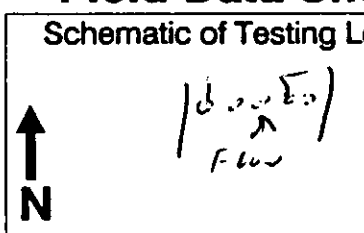
Client	RSR	Project Number	5633
Plant	Quanta, Ind	Unit	Bosch Bashouse
Date	4/10/91	Inlet/outlet/stack	
Meter Operator	J. Burton		
Probe Operator	J.O.		

Sample Box Number	NA	Pyrometer Number	C-4
Meter Box Number	L		
Meter ΔH@	1.754	Meter Yd	1.0063
K Factor	1.150	Pitot Cp	.84
Pitot Leak Check:	Before OK	After OK	
Leak Rate Before	.015	CFM @ 15	"Hg
Leak Rate After	.005	CFM @ 12	"Hg
Static Pressure (inches H_2O) (+)-	+.3		

Schematic of Testing Location



First point all the way IN OUT		Method 5
Area (ft^2) 33.5 x 49.5	Port Len. (in.) 2	Gas Flow IN OUT

Filter Number	10355	10355
Thimble Number	NA	
Beaker Number		

Ambient Temp. (°F)	37	Bar. Press. (in. Hg)	29.58
Assumed Moisture (%)	1		

Heater Box Setting	250	Probe Heater Setting	250
Probe Length	6'	Probe Number	NA
Probe Material	Quartz	Acetone Number	NA
Nozzle Diameter (in.)	.187	Nozzle Number	NA

IGS Bag ID Number	R-1		
% O_2	20.8	% CO_2	.1
H_2O (ml)	2	Silica Gel (gm)	22
Total Vlc	24		

Start Time	9:15 AM / PM	Stop Time	11:31 AM / PM

Traverse Point Number	Min/pt 4 / Clock time	Pump Vacuum (in. Hg)	Stack Temp. Ts (°F)	Velocity Head ΔPs	Orifice Setting ΔH (in.H_2O)	Initial Volume 705.60 / Gas Sample Volume Vm (ft^3)	Gas Sample Temperature at Dry Gas Meter: Inlet Tm in (°F)	Outlet Tm out (°F)	Cond. Temp. Tc (°F)	Filter Temp. Tf (°F)	Probe Temp. (°F)	Notes
1.1	4	8	118	1.50	1.70	708.55	68	50	34	248	225	
2	8	7	118	1.25	1.45	711.30	70	54	36	254	250	
3	12	6	117	1.00	1.15	713.74	72	54	36	256	260	
4	16	5	117	.72	.83	715.03	72	54	36	259	261	
5	20	4	117	.49	.56	717.55	76	56	38	262	267	
6	24	3	118	.40	.46	719.12	74	56	38	267	269	
2-1	4	8	119	1.45	1.65	722.05	72	56	34	276	242	
2	8	7	116	1.30	1.50	724.89	78	58	36	249	252	
3	12	6	115	1.00	1.15	727.88	80	58	38	256	259	
4	16	5	114	.75	.86	729.53	80	60	38	256	264	
5	20	4	112	.53	.61	731.33	78	60	40	266	259	
6	24	4	112	.40	.46	732.91	76	60	42	266	254	
Total												
Average												

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Particulate Testing Field Data Sheet

Location: OUTLET (STACK) **Run:** 1

Client ESR	Project Number 5633
Plant QUEMATCO, IO	Unit Gusset Baghouse
Date 4/10/91	Inlet/outlet/stack
Meter Operator	
Probe Operator	

Sample Box Number	Pyrometer Number
Meter Box Number	
Meter ΔH@	Meter Yd
K Factor	Pitot Cp
Pitot Leak Check: Before	After
Leak Rate Before	CFM @ "Hg
Leak Rate After	CFM @ "Hg
Static Pressure (inches H_2O) (+/-)	

Schematic of Testing Location

N

First point all the way IN OUT	Method	
Area (ft^2)	Port Len. (in.)	Gas Flow IN OUT

Filter Number		
Thimble Number		
Beaker Number		

Ambient Temp. (°F)	Bar. Press. (in. Hg)
Assumed Moisture (%)	

Heater Box Setting	Probe Heater Setting
Probe Length	Probe Number
Probe Material	Acetone Number
Nozzle Diameter (in.)	Nozzle Number

IGS Bag ID Number	
% O_2	% CO_2
H_2O (ml)	Silica Gel (gm)
Total V_{lc}	

Start Time	AM / PM	Stop Time	AM / PM

Traverse Point Number	Min/pt 4 Clock time	Pump Vacuum (in. Hg)	Stack Temp. T_s (°F)	Velocity Head ΔP_s	Orifice Setting ΔH (in.H_2O)	Initial Volume Gas Sample Volume V_m (ft^3)	Gas Sample Temperature at Dry Gas Meter Inlet T_m in (°F)	Outlet T_m out (°F)	Cond. Temp. T_c (°F)	Filter Temp. T_f (°F)	Probe Temp. (°F)	Notes
3-1	4	10	118	1.90	2.20	736.23	92	58	40	254	255	
2	8	10	116	1.75	2.00	739.44	90	60	42	256	262	
3	12	9	115	1.65	1.90	742.59	94	60	42	257	265	
4	16	8	115	1.30	1.50	745.45	96	60	44	253	263	
5	20	7	115	1.10	1.25	748.05	96	62	44	256	265	
6	24	6	115	1.00	1.15	750.56	86	62	46	269	269	
4-1	4	12	120	2.05	2.35	754.12	84	62	46	264	254	
2	8	12	119	2.10	2.40	757.66	90	64	47	266	257	
3	12	12	119	2.00	2.30	761.12	92	64	49	267	257	
4	16	10	118	1.75	2.00	764.37	94	61	49	265	259	
5	20	8	117	1.40	1.60	767.34	92	66	50	254	265	
6	24	7	116	1.25	1.45	770.15	90	66	50	256	266	
Total												
Average												

Particulate Testing Field Data Sheet

Location: Buschl Refinery **Run:** 1

Client RJR	Project Number 5033
Plant Quemaco, Fnd.	Unit Buschl unit
Date 4/10/91	Inlet/outlet/stack
Meter Operator	
Probe Operator	

Sample Box Number	Pyrometer Number
Meter Box Number	
Meter ΔH@	Meter Yd
K Factor	Pitot Cp
Pitot Leak Check: Before	After
Leak Rate Before	CFM @ "Hg
Leak Rate After	CFM @ "Hg
Static Pressure (inches H_2O) (+/-)	

Schematic of Testing Location

N

First point all the way IN OUT	Method	
Area (ft^2)	Port Len. (in.)	Gas Flow IN OUT

Filter Number		
Thimble Number		
Beaker Number		

Ambient Temp. (°F)	Bar. Press. (in. Hg)
Assumed Moisture (%)	

Heater Box Setting	Probe Heater Setting
Probe Length	Probe Number
Probe Material	Acetone Number
Nozzle Diameter (in.)	Nozzle Number

IGS Bag ID Number	
% O_2	% CO_2
H_2O (ml)	Silica Gel (gm)
Total V_{lc}	

Start Time	AM / PM	Stop Time	AM / PM

Traverse Point Number	Min/pt 4 / Clock time	Pump Vacuum (in. Hg)	Stack Temp. T_s (°F)	Velocity Head ΔP_s	Orifice Setting ΔH (in.H_2O)	Initial Volume: Gas Sample Volume V_m (ft^3)	Gas Sample Temperature at Dry Gas Meter: Inlet $T_{m\,in}$ (°F)	Gas Sample Temperature at Dry Gas Meter: Outlet $T_{m\,out}$ (°F)	Cond. Temp. T_c (°F)	Filter Temp. T_f (°F)	Probe Temp. (°F)	Notes
6-1	4	10	118	1.75	2.00	773.37	84	64	50	256	254	
2	8	11	118	1.90	2.20	776.75	90	66	51	262	264	
3	12	10	116	1.75	2.00	779.98	92	66	51	262	263	
4	16	10	117	1.75	2.00	783.22	94	66	51	256	260	
5	20	8	116	1.50	1.70	786.24	94	68	51	255	264	
6	24	7	116	1.20	1.40	789.03	94	69	52	255	263	
Total				33.855894	45.98							
Average			117	1.1285	1.526	83.43		72				

Particulate Testing Field Data Sheet

Location: Bissell Galluzzi **Run:** 2

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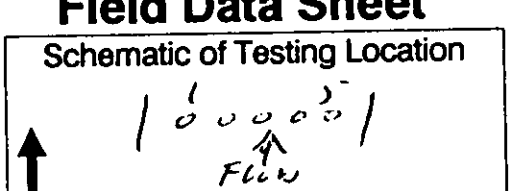
Client RSR	Project Number 5033
Plant Wyoming	Unit Bissell Galluzzi
Date 4/10/91	Inlet/outlet/stack
Meter Operator J. Burton	
Probe Operator	

Ambient Temp. (°F) 55	Bar. Press. (in. Hg) 29.53
Assumed Moisture (%) 1	

Heater Box Setting 250°	Probe Heater Setting 250°
Probe Length 6'	Probe Number n/a
Probe Material Quartz	Acetone Number n/a
Nozzle Diameter (in.) .197	Nozzle Number n/a

Sample Box Number n/a	Pyrometer Number 66-64
Meter Box Number 6	
Meter ΔH@ 1.0063	Meter Yd 1.754
K Factor 1.15	Pitot Cp .84 ✓
Pitot Leak Check: Before ✓	After ✓
Leak Rate Before .007	CFM @ 15 "Hg
Leak Rate After .005	CFM @ 12 "Hg
Static Pressure (inches H_2O) (+/-) .3	

Schematic of Testing Location



First point all the way IN (OUT)	Method 5/12	
Area (ft^2)	Port Len. (in.) 3	Gas Flow IN (OUT)

Filter Number	10354	
Thimble Number		
Beaker Number		

IGS Bag ID Number	R-2 BS.
% O_2	% CO_2
H_2O (ml) 12	Silica Gel (gm) 20
Total Vlc 32	

Start Time 3:38 AM / (PM) Stop Time 5:45 AM (PM)

Traverse Point Number	Min/pt 4 / Clock time	Pump Vacuum (in. Hg)	Stack Temp. T_s (°F)	Velocity Head ΔP_s	Orifice Setting ΔH (in.H_2O)	Initial Volume 709.30 / Gas Sample Volume V_m (ft^3)	Gas Sample Temperature at Dry Gas Meter: Inlet $T_{m\,in}$ (°F)	Gas Sample Temperature at Dry Gas Meter: Outlet $T_{m\,out}$ (°F)	Cond. Temp. T_c (°F)	Filter Temp. T_f (°F)	Probe Temp. (°F)	Notes
5-1	4	9	112	1.75	2.00	792.52	74	62	54	270	266	
2	8	10	113	1.90	2.20	795.89	84	64	54	266	263	
3	12	10	112	1.85	2.15	799.23	90	66	54	268	265	
4	16	9	112	1.75	2.00	802.48	94	68	54	269	270	
5	20	8	111	1.50	1.75	805.55	96	68	54	269	269	
6	24	8	110	1.35	1.55	808.47	98	70	54	265	270	
4-1	4	11	112	2.10	2.40	812.00	96	72	55	262	255	
2	8	11	112	2.10	2.40	815.56	98	74	56	264	253	
3	12	10	111	2.00	2.30	819.05	102	76	56	264	254	
4	16	9	110	1.70	1.95	822.30	102	76	56	259	253	
5	20	7	109	1.35	1.55	825.24	102	76	56	258	250	
6	24	7	109	1.25	1.45	828.08	100	76	56	257	253	
Total												
Average												

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Particulate Testing Field Data Sheet

Location: Bissell Saskatoon **Run:** 2

Client RSR	Project Number 5633
Plant QuanTec	Unit Bissell Saskatoon
Date 4/10/01	Inlet/outlet/stack
Meter Operator	
Probe Operator	

Sample Box Number	Pyrometer Number
Meter Box Number	
Meter ΔH@	Meter Yd
K Factor	Pitot Cp
Pitot Leak Check: Before	After
Leak Rate Before	CFM @ "Hg
Leak Rate After	CFM @ "Hg
Static Pressure (inches H_2O) (+/-)	

Schematic of Testing Location

N

First point all the way IN OUT	Method	
Area (ft^2)	Port Len. (in.)	Gas Flow IN OUT

Filter Number		
Thimble Number		
Beaker Number		

Ambient Temp. (°F)	Bar. Press. (in. Hg)
Assumed Moisture (%)	

Heater Box Setting	Probe Heater Setting
Probe Length	Probe Number
Probe Material	Acetone Number
Nozzle Diameter (in.)	Nozzle Number

IGS Bag ID Number	
% O_2	% CO_2
H_2O (ml)	Silica Gel (gm)
Total Vlc	

Start Time AM / PM	Stop Time AM / PM

Traverse Point Number	Min/pt 4 / Clock time	Pump Vacuum (in. Hg)	Stack Temp. Ts (°F)	Velocity Head ΔPs	Orifice Setting ΔH (in.H_2O)	Initial Volume: Gas Sample Volume Vm (ft^3)	Gas Sample Temperature at Dry Gas Meter: Inlet Tm in (°F)	Gas Sample Temperature at Dry Gas Meter: Outlet Tm out (°F)	Cond. Temp. Tc (°F)	Filter Temp. Tf (°F)	Probe Temp. (°F)	Notes
3-1	4	10	110	2.00	2.30	831.57	92	76	52	255	254	
2	8	9	110	1.80	2.05	834.89	100	78	52	260	258	
3	12	8	109	1.45	1.65	837.88	102	78	54	262	263	
4	16	7	108	1.25	1.45	840.72	100	78	54	259	265	
5	20	6	108	1.05	1.20	843.28	100	78	54	261	265	
6	24	6	108	.90	1.05	845.66	100	80	56	262	269	
2-1	4	8	109	1.45	1.65	848.68	94	80	54	258	259	
2	8	7	109	1.35	1.55	851.62	96	80	54	259	262	
3	12	6	109	.95	1.10	854.12	98	80	54	262	265	
4	16	5	109	.65	.75	856.18	98	80	56	262	267	
5	20	4	109	.47	.54	857.93	98	80	56	263	269	
6	24	3	109	.38	.44	859.52	98	90	56	265	266	
Total												
Average												

Particulate Testing Field Data Sheet

Location: Buscll Bathouse **Run:** 2

Client RSR	Project Number 5633
Plant Quantac	Unit Buscll Bathouse
Date 4/10/91	Inlet/Outlet/Stack
Meter Operator	
Probe Operator	

Schematic of Testing Location

N

Ambient Temp. (°F)	Bar. Press. (in. Hg)
Assumed Moisture (%)	

Heater Box Setting	Probe Heater Setting
Probe Length	Probe Number
Probe Material	Acetone Number
Nozzle Diameter (in.)	Nozzle Number

Sample Box Number	Pyrometer Number
Meter Box Number	
Meter ΔH@	Meter Yd
K Factor	Pitot Cp
Pitot Leak Check: Before	After
Leak Rate Before	CFM @ "Hg
Leak Rate After	CFM @ "Hg
Static Pressure (inches H_2O) (+/-)	

First point all the way IN OUT	Method	
Area (ft^2)	Port Len. (in.)	Gas Flow IN OUT

Filter Number		
Thimble Number		
Beaker Number		

IGS Bag ID Number	
% O_2	% CO_2
H_2O (ml)	Silica Gel (gm)
Total Vlc	

Start Time AM / PM	Stop Time AM / PM

Traverse Point Number	Min/pt 4 Clock time	Pump Vacuum (in. Hg)	Stack Temp. Ts (°F)	Velocity Head ΔPs	Orifice Setting ΔH (in.H_2O)	Initial Volume Gas Sample Volume Vm (ft^3)	Gas Sample Temperature at Dry Gas Meter Inlet Tm in (°F)	Gas Sample Temperature at Dry Gas Meter Outlet Tm out (°F)	Cond. Temp. Tc (°F)	Filter Temp. Tf (°F)	Probe Temp. (°F)	Notes
1	4	7	109	1.20	1.40	862.35	88	76	56	264	263	
2	8	6	110	1.10	1.25	864.95	88	76	56	265	265	
3	12	5	111	.87	1.00	867.30	94	78	56	265	266	
4	16	4	111	.63	.72	869.30	94	78	56	267	269	
5	20	4	111	.46	.53	871.05	94	78	56	266	269	
6	24	3	111	.35	.40	872.55	94	78	56	267	265	
Total				33.30814	4.473	83.25						
Average			110	1.1103	1.491		86					

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Particulate Testing Field Data Sheet

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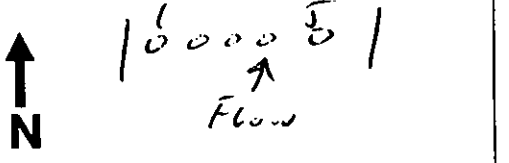
Location: Russell Stover Run: 3 outlet

Client	RSR	Project Number	5633
Plant	Quantec	Unit	Russell Stover
Date	4/11/91	Inlet/Outlet/Stack	
Meter Operator	J. Quatro		
Probe Operator	J. O.		

Schematic of Testing Location



First point all the way (IN) OUT	Method 5 1 2	
Area (ft^2) 11.52	Port Len. (in.) 3	Gas Flow IN (OUT)

Ambient Temp. (°F)	35	Bar. Press. (in. Hg)	29.77
Assumed Moisture (%)	1		

Heater Box Setting	210°	Probe Heater Setting	250°
Probe Length	6'	Probe Number	NA
Probe Material	Quartz	Acetone Number	NA
Nozzle Diameter (in.)	.197	Nozzle Number	NA

Sample Box Number	NA	Pyrometer Number	NA
Meter Box Number	L		
Meter ΔH@	1.754	Meter Yd	1.0063
K Factor	1.15	Pitot C_p	.84
Pitot Leak Check:	Before OK	After	OK
Leak Rate Before	.006	CFM @ 15	"Hg
Leak Rate After	.005	CFM @ 12	"Hg
Static Pressure (inches H_2O) (+/-)	+.3		

Filter Number	10352	
Thimble Number		
Beaker Number		

IGS Bag ID Number	R-3	BB out	
% O_2		% CO_2	
H_2O (ml)	5	Silica Gel (gm)	17
Total Vlc	22		

Start Time 8:45 (AM) / PM Stop Time 10:55 AM (PM)

Traverse Point Number	Min/pt 4 / Clock time	Pump Vacuum (in. Hg)	Stack Temp. T_s (°F)	Velocity Head ΔP_s	Orifice Setting ΔH (in.H_2O)	Initial Volume 873.00 / Gas Sample Volume V_m (ft^3)	Gas Sample Temperature at Dry Gas Meter: Inlet $T_{m\,in}$ (°F)	Outlet $T_{m\,out}$ (°F)	Cond. Temp. T_c (°F)	Filter Temp. T_f (°F)	Probe Temp. (°F)	Notes
1-1	4	7	112	1.15	1.39	875.68	76	60	45	241	257	
2	8	7	112	1.10	1.25	878.23	82	60	41	258	270	
3	12	6	111	.90	1.05	880.56	86	62	41	259	246	
4	16	5	110	.64	.74	882.55	86	64	42	252	262	
5	20	4	109	.53	.61	884.36	84	64	43	245	249	
6	24	4	109	.42	.48	885.98	82	66	43	242	264	
2-1	4	8	109	1.55	1.80	889.05	80	64	44	261	253	
2	8	8	108	1.35	1.55	891.94	88	66	42	248	246	
3	12	6	107	1.00	1.15	894.43	86	66	43	241	242	
4	16	5	106	.70	.81	896.50	86	66	44	242	244	
5	20	4	105	.55	.63	898.34	84	66	45	251	246	
6	24	4	105	.38	.44	899.90	82	66	46	257	246	
Total												
Average												

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Particulate Testing Field Data Sheet

Location: Buell Baffle Outlet Run: 3

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Client RSR	Project Number 5637
Plant Quemetco	Unit Buell Baghouse
Date 4/11/91	Inlet/outlet/stack
Meter Operator	
Probe Operator	

Schematic of Testing Location

N

Ambient Temp. (°F)	Bar. Press. (in. Hg)
Assumed Moisture (%)	

Heater Box Setting	Probe Heater Setting
Probe Length	Probe Number
Probe Material	Acetone Number
Nozzle Diameter (in.)	Nozzle Number

Sample Box Number	Pyrometer Number
Meter Box Number	
Meter ΔH@	Meter Yd
K Factor	Pitot Cp
Pitot Leak Check: Before	After
Leak Rate Before	CFM @ "Hg
Leak Rate After	CFM @ "Hg
Static Pressure (inches H_2O) (+/-)	

First point all the way IN OUT	Method	
Area (ft^2)	Port Len. (in.)	Gas Flow IN OUT

Filter Number		
Thimble Number		
Beaker Number		

IGS Bag ID Number	
% O_2	% CO_2
H_2O (ml)	Silica Gel (gm)
Total Vlc	

Start Time	AM / PM	Stop Time	AM / PM

Traverse Point Number	Min/pt 4 / Clock time	Pump Vacuum (in. Hg)	Stack Temp. Ts (°F)	Velocity Head ΔPs	Orifice Setting ΔH (in.H_2O)	Initial Volume: Gas Sample Volume Vm (ft^3)	Gas Sample Temperature at Dry Gas Meter: Inlet Tm in (°F)	Gas Sample Temperature at Dry Gas Meter: Outlet Tm out (°F)	Cond. Temp. Tc (°F)	Filter Temp. Tf (°F)	Probe Temp. (°F)	Notes
3- 1	4	11	106	2.10	2.40	903.37	90	66	46	251	242	
2	8	10	105	1.90	2.20	906.76	88	68	44	248	250	
3	12	9	105	1.70	1.95	909.95	90	68	45	243	249	
4	16	8	104	1.30	1.50	912.81	90	66	45	253	253	
5	20	7	104	1.15	1.30	915.47	90	66	46	251	245	
6	24	6	104	.98	1.15	917.96	90	68	46	258	250	
4- 1	4	12	108	2.15	2.50	921.53	96	68	48	251	241	
2	8	12	108	2.15	2.50	925.12	92	70	47	253	254	
3	12	11	108	2.00	2.30	928.58	96	70	48	253	248	
4	16	9	108	1.65	1.90	931.76	96	70	48	255	247	
5	20	8	109	1.30	1.50	934.62	96	70	48	251	241	
6	24	7	109	1.10	1.40	937.39	92	70	48	245	255	
Total												
Average												

CAE P2 ver. 1.0
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Particulate Testing Field Data Sheet

Location: Buell Baghouse Outlet Run: 3

Page 3 of 3

Client RSR	Project Number 5633
Plant Quigmate c	Unit Buell Baghouse
Date 4/11/91	Inlet/Outlet/stack
Meter Operator	
Probe Operator	

Sample Box Number	Pyrometer Number
Meter Box Number	
Meter ΔH@	Meter Yd
K Factor	Pitot Cp
Pitot Leak Check: Before	After
Leak Rate Before	CFM @ "Hg
Leak Rate After	CFM @ "Hg
Static Pressure (inches H_2O) (+/-)	

Schematic of Testing Location

N

First point all the way IN OUT	Method	
Area (ft^2)	Port Len. (in.)	Gas Flow IN OUT

Filter Number		
Thimble Number		
Beaker Number		

Ambient Temp. (°F)	Bar. Press. (in. Hg)
Assumed Moisture (%)	

Heater Box Setting	Probe Heater Setting
Probe Length	Probe Number
Probe Material	Acetone Number
Nozzle Diameter (in.)	Nozzle Number

IGS Bag ID Number	
% O_2	% CO_2
H_2O (ml)	Silica Gel (gm)
Total Vlc	

Start Time	AM / PM	Stop Time	AM / PM

Traverse Point Number	Min/pt 4 / Clock time	Pump Vacuum (in. Hg)	Stack Temp. Ts (°F)	Velocity Head ΔPs	Orifice Setting ΔH (in.H_2O)	Initial Volume: Gas Sample Volume Vm (ft^3)	Gas Sample Temperature at Dry Gas Meter: Inlet Tm in (°F)	Gas Sample Temperature at Dry Gas Meter: Outlet Tm out (°F)	Cond. Temp. Tc (°F)	Filter Temp. Tf (°F)	Probe Temp. (°F)	Notes
T-1	4	10	111	1.75	2.00	940.61	90	70	49	261	246	
2	8	10	111	1.85	2.15	943.95	94	70	47	255	248	
3	12	10	112	1.85	2.15	947.29	96	72	48	250	246	
4	16	10	112	1.75	2.00	950.53	96	72	48	253	247	
5	20	8	112	1.40	1.60	953.49	96	72	49	255	250	
6	24	9	111	1.25	1.45	956.32	96	72	50	258	255	
Total				33.71567	45.76							
Average			108	1.1239	1.525	83.32	78					

CAE P2 ver. 1.0
D:\vpforms\m5data-1

Particulate Testing Field Data Sheet

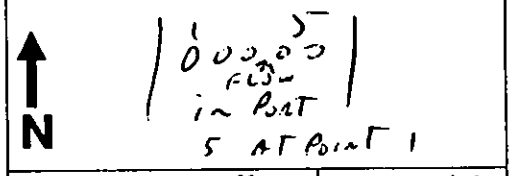
Location: Busch Baseline Run: 1

Page 1 of _____

Client	RSR	Project Number	5633
Plant	Quantec	Unit	Busch Baseline
Date	4/10/91	Inlet/outlet/stack	
Meter Operator	J. Burton		
Probe Operator	T.O.		

Sample Box Number	NA	Pyrometer Number	NA
Meter Box Number	H 14		
Meter ΔH@	1.650	Meter Yd	1.0035
K Factor	1.16	Pitot Cp	.84
Pitot Leak Check:	Before OK	After	OK
Leak Rate Before	.005	CFM @	15 "Hg
Leak Rate After	.003	CFM @	8 "Hg
Static Pressure (inches H2O) (+/-)	+.3		

Schematic of Testing Location



First point all the way (N) OUT	Method 5 1/2	
Area (ft²)	Port Len. (in.) 3	Gas Flow IS OUT

Filter Number	10353	
Thimble Number		
Beaker Number		

Ambient Temp. (°F)	55	Bar. Press. (in. Hg)	27.53
Assumed Moisture (%)	1		

Heater Box Setting	250°	Probe Heater Setting	250
Probe Length	8'	Probe Number	NA
Probe Material	Quartz	Acetone Number	NA
Nozzle Diameter (in.)	.197	Nozzle Number	NA

IGS Bag ID Number			
% O2		% CO2	
H2O (ml)	69	Silica Gel (gm)	17
Total Vlc	86		

Start Time	9:20 (AM) / PM	Stop Time	5:20 AM / (PM)

Traverse Point Number	Min/pt / Clock time	Pump Vacuum (in. Hg)	Stack Temp. Ts (°F)	Velocity Head ΔPs	Orifice Setting ΔH (in.H2O)	Initial Volume 554.93 / Gas Sample Volume Vm (ft³)	Gas Sample Temperature at Dry Gas Meter: Inlet Tm in (°F)	Gas Sample Temperature at Dry Gas Meter: Outlet Tm out (°F)	Cond. Temp. Tc (°F)	Filter Temp. Tf (°F)	Probe Temp. (°F)	Notes
	5	7	118	1.20	1.40	556.31	64	60	41	245	264	
	10	7	118	1.20	1.40		66	64	39	245	241	
	15	7	117	1.20	1.40				41	246	250	
	20	7	118	1.20	1.40		76	64	43	246	252	
	25	7	119	1.20	1.40	571.91	78	66	45	246	259	
	30	7	116	1.20	1.40	575.33	78	66	46	240	266	
	35	7	114	1.20	1.40	578.74	75	66	46	241	244	
	40											
	45											
	50											
	55	7	116	1.20	1.40	592.43	78	66	47	241	261	
	60											
Total												
Average												

Particulate Testing Field Data Sheet

Page 2 of _____

Location: _____ **Run:** _____

Client	Project Number
Plant	Unit
Date	Inlet/outlet/stack
Meter Operator	
Probe Operator	

Sample Box Number	Pyrometer Number
Meter Box Number	
Meter ΔH@	Meter Y_d
K Factor	Pitot C_p
Pitot Leak Check: Before	After
Leak Rate Before	CFM @ "Hg
Leak Rate After	CFM @ "Hg
Static Pressure (inches H_2O) (+/-)	

Schematic of Testing Location

N

First point all the way IN OUT	Method	
Area (ft^2)	Port Len. (in.)	Gas Flow IN OUT

Filter Number		
Thimble Number		
Beaker Number		

Ambient Temp. (°F)	Bar. Press. (in. Hg)
Assumed Moisture (%)	

Heater Box Setting	Probe Heater Setting
Probe Length	Probe Number
Probe Material	Acetone Number
Nozzle Diameter (in.)	Nozzle Number

IGS Bag ID Number	
% O_2	% CO_2
H_2O (ml)	Silica Gel (gm)
Total V_{lc}	

Start Time	AM / PM	Stop Time	AM / PM

Traverse Point Number	Min/pt Clock time	Pump Vacuum (in. Hg)	Stack Temp. T_s (°F)	Velocity Head ΔP_s	Orifice Setting ΔH (in.H_2O)	Initial Volume Gas Sample Volume V_m (ft^3)	Gas Sample Temperature at Dry Gas Meter Inlet $T_{m\,in}$ (°F)	Gas Sample Temperature at Dry Gas Meter Outlet $T_{m\,out}$ (°F)	Cond. Temp. T_c (°F)	Filter Temp. T_f (°F)	Probe Temp. (°F)	Notes
	65											
	70	7	115	1.20	1.40	602.69	80	66	49	247	257	
	75											
	80											
	85	7	119	1.20	1.10	612.95	81	68	50	249	240	
	90											
	95											
	100											
	105											
	110	7	114	1.10	1.40	630.15	82	68	51	247	257	
	115											
	120											
Total												
Average												

Particulate Testing Field Data Sheet

Location: _____ **Run:** _____

Client	Project Number
Plant	Unit
Date	Inlet/outlet/stack
Meter Operator	
Probe Operator	

Sample Box Number	Pyrometer Number
Meter Box Number	
Meter ΔH@	Meter Yd
K Factor	Pitot Cp
Pitot Leak Check: Before	After
Leak Rate Before	CFM @ "Hg
Leak Rate After	CFM @ "Hg
Static Pressure (inches H_2O) (+/-)	

Schematic of Testing Location

N

First point all the way IN OUT	Method	
Area (ft^2)	Port Len. (in.)	Gas Flow IN OUT

Filter Number		
Thimble Number		
Beaker Number		

Ambient Temp. (°F)	Bar. Press. (in. Hg)
Assumed Moisture (%)	

Heater Box Setting	Probe Heater Setting
Probe Length	Probe Number
Probe Material	Acetone Number
Nozzle Diameter (in.)	Nozzle Number

IGS Bag ID Number	
% O_2	% CO_2
H_2O (ml)	Silica Gel (gm)
Total V_{lc}	

Start Time AM / PM	Stop Time AM / PM

Traverse Point Number	Min/pt Clock time	Pump Vacuum (in. Hg)	Stack Temp. T_s (°F)	Velocity Head ΔP_s	Orifice Setting ΔH (in.H_2O)	Initial Volume Gas Sample Volume V_m (ft^3)	Gas Sample Temperature at Dry Gas Meter Inlet $T_{m\,in}$ (°F)	Outlet $T_{m\,out}$ (°F)	Cond. Temp. T_c (°F)	Filter Temp. T_f (°F)	Probe Temp. (°F)	Notes
	12:5	7	117	1.20	1.40	640.47	80	70	52	231	266	
	130	7	117	1.20	1.40	6[illegible]						
	135											
2:35 PM	140	7	118	1.20	1.40	771.34	86	76	62	257	263	
3:20 PM	155	7	118	1.20	1.40	802.73	88	78	52	254	249	[illegible]
4:20 PM	200	7	112	1.20	1.40	844.47	90	80	53	251	258	
4:55 PM	215	7	110	1.20	1.40	868.88	94	87	52	245	266	
	220	7	108	1.20	1.40	886.35	94	82	54	250	258	Leak Test
	225											
	230											
	235											
	240											
Total				1.0954	1.40							
Average			114		[illegible] 99	331.42	79					

LABORATORY DATA

CLIENT: CLEAN AIR ENGINEERING DEP'T. 66 PAGE: 1 OF 1
REPORT #:25579 SAMPLE I.D.: RSR QUEMETCO CAE# 5633
ANALYTE: Pb ANALYSIS:ATOMIC ABSORPTION FLAME
DETECTION LIMIT: 0.200 MG/L

LAB SAMPLE #	CLIENT SAMPLE #	DILUTION FACTOR	FINAL VOLUME (L)	CONC. (MG/L)	TOTAL (MG)
25579	REAGENT BLANK	1	0.05	< 0.20	< 0.01
25579-01/23/40/--	BLANK	1	0.05	3.05	0.15
	BUSCH OUTLET				
25579-02/19/36/53	CONSTANT	1	0.05	3.53	0.18
25579-03/20/37/54	RUN 1	1	0.05	3.04	0.15
25579-04/21/38/55	RUN 2	2	0.05	5.73	0.57
25579-05/22/39/56	RUN 3	1	0.05	3.04	0.15
	039 INLET				
25579-07/24/41/57	RUN 1	500	0.05	6.18	154.6
25579-08/25/42/58	RUN 2	500	0.05	3.49	87.2
25579-09/26/43/59/	RUN 3	1000	0.05	6.20	309.9
	039 OUTLET				
25579-10/27/44/60	RUN 1	2	0.05	6.16	0.62
25579-11/28/45/61	RUN 2	1	0.05	5.89	0.29
25579-12/29/46/62	RUN 3	2	0.05	7.53	0.75
	040 INLET				
25579-13/30/47/63	RUN 1	1000	0.05	5.80	289.9
25579-14/31/48/64	RUN 2	500	0.05	6.91	172.8
25579-15/32/49/65	RUN 3	1000	0.05	6.49	324.5
	040 OUTLET				
25579-16/33/50/66	RUN 1	5	0.05	4.26	1.07
25579-17/34/51/67	RUN 2	5	0.05	2.08	0.52
25579-18/35/52/68	RUN 3	5	0.05	3.02	0.75

BDL: BELOW THE DETECTION LIMIT
N/A: NOT APPLICABLE

FRACTION 1A
TOTAL(MG) = CONC.(MG/L) X FINAL VOLUME(L)

FRACTION 2A
$$\text{TOTAL(MG)} = \text{CONC.(MG/L)} \times \text{FINAL VOLUME(L)} \times \frac{\text{ORIGINAL VOLUME(L)}}{\text{[ORIG. VOLUME(L) - .050(L)]}}$$

DUPLICATE:	25579-02/19/36/53	25579-13/30/47/63
% DEVIATION:	0.28	0.88
SPIKE:	25579-03/20/37/54	25579-14/31/48/64
% RECOVERY:	100.5	99.66

4-25-91

AVERY MILENKOVIC DATE
ANALYST

RICHARD KING DATE
APPROVAL

CHAIN OF CUSTODY

1 of 6

CHAIN OF CUSTODY RECORD

3291

PROJ. NO.	PROJECT NAME
5633	RSR @ QUEMETCO

SAMPLERS: (Signature)

LAB NO.	SAMPLE NO.	DATE	TIME	SAMPLE LOCATION	NO. OF CONTAINERS	PB (EPA METHOD 12)	GRAVIMETRIC	DISTILLED WATER				REMARKS
25579-18	4-111	4-11	2-3	BAGHOUSE D40 OUTLET	1	✓		4				NUTECH FILTER
								5				
					1							ACETONE PRE-TEST PROBE WASH
	—	4/10	—	BH 039	1			✓				
	—	"	—	BH 039	1			✓				NITRIC ACID PRETEST WASH
	—	"	—	BH 040	1			✓				NITRIC " " " "
	—	"	—	BH 040	1			✓				" " " " —

Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
	4/5 1400				
Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Relinquished by: (Signature)	Date / Time	Received for Laboratory by:	Date / Time		

REMARKS:

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Palatine, IL 60067
708/991-3300

3292

CHAIN OF CUSTODY RECORD

PROJ. NO.	PROJECT NAME
5633	RSR@QUEMETCO

SAMPLERS: (Signature) William C. Jones

LAB NO.	SAMPLE NO.	DATE	TIME	SAMPLE LOCATION	NO. OF CONTAINERS	Pb (EPA METHOD 12)	GRAVIMETRIC	OTHER	REMARKS
X579- 03	10355	4-10	R-1	BUSCH BAGHOUSE OUTLET	1	✓	✓		MISCO FILTER
04	10349	4-10	R-2	"	1	✓	✓		"
05	10352	4-11	R-3	"	1	✓	✓		"
06	10353	4-10	COMPOSITE	"	1	✓	✓		" FOR 8 hour TEST.
07	4-102	4-10	R-1	BAGHOUSE 039 INLET	1	✓	✓		NU-TECH FILTER.
08	4-98	4-10	R-2	"	1	✓	✓		"
09	4-93	4-11	R-3	"	1	✓	✓		"
10	4-101	4-10	R-1	BAGHOUSE 039 OUTLET	1	✓	✓		"
11	4-99	4-10	R-2	"	1	✓	✓		"
12	4112	4-11	R-3	"	1	✓	✓		"
13	4-95	4-10	R-1	BAGHOUSE 040 INLET	1	✓	✓		"
14	4-97	4-10	R-2	"	1	✓	✓		"
15	4-110	4-11	R-3	"	1	✓	✓		"
16	4-100	4-10	R-1	BAGHOUSE 040 OUTLET	1	✓	✓		
17	4-96	4-10	R-2	"	1	✓	✓		

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William C. Jones	4-15 1400				
Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Relinquished by: (Signature)	Date / Time	Received for Laboratory by:	Date / Time		

REMARKS:

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500 W. Wood Street
Palatine, IL 60067
708/991-3300

3293

CHAIN OF CUSTODY RECORD

PROJ. NO.	PROJECT NAME
3293	RSR @ QUEMETCO

SAMPLERS (Signature): William C. Jones

LAB NO.	SAMPLE NO.	DATE	TIME	SAMPLE LOCATION	NO. OF CONTAINERS	LEAD (EPA METHOD 12)	GRAVIMETRIC	ANALYSES			REMARKS
	CONSTANT	4-10	R-1 CONST	BUSCH BAGHOUSE OUTLET	1	✓					HNO_3 F½ for CONSTANT 8 hour TEST
	CONSTANT	4-10	"	" " "	1	✓	✓				ACETONE F½ " " " "
	CONSTANT	4-10	"	" " "	1	—					HNO_3 B½ + CONDENSATE " " " "
	~~CONSTANT~~	~~4-10~~			1	—					ACETONE B½ " " " "
	R-1	4-10	R-1	" " "	1	✓					HNO_3 F½
	R-1	4-10	R-1	" " "	1	✓	✓				ACETONE F½
	R-1	4-10	R-1	" " "	1	✓					HNO_3 + CONDENSATE B½
	~~R-1~~	~~4-10~~	R-1		1	✓					~~ACETONE B½~~
	R-2	4-10	R-2	" " "	1	✓					HNO_3 F½
	R-2	4-10	R-2	" " "	1	✓	✓				ACETONE F½
	R-2	4-10	R-2	" " "	1	✓					HNO_3 + CONDENSATE B½
	~~R-2~~	~~4-10~~	R-2		1	✓					~~ACETONE B½~~
	R-3	4-11	R-3	" " "	1	✓					HNO_3 F½
	R-3	4-11	R-3	" " "	1	—	✓				ACETONE F½
	R-3	4-11	R-3	" " "	1	✓					HNO_3 + CONDENSATE B½

Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
William C. Jones	4-15 1400				
Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Relinquished by: (Signature)	Date / Time	Received for Laboratory by:	Date / Time		

REMARKS:

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3294

CHAIN OF CUSTODY RECORD

PROJ. NO.	PROJECT NAME
533	RSR @ QUEMETCO

SAMPLERS: (Signature)

LAB NO.	SAMPLE NO.	DATE	TIME	SAMPLE LOCATION	NO. OF CONTAINERS	LEAD (EPA METHOD 12)	GRAVIMETRIC	ACETONE	REMARKS
3579	~~R-3~~	~~4-11~~	~~R-3~~	~~BUSCH BAGHOUSE OUTLET~~	1	C			~~ACETONE B½~~
41	R-1	4-10	R-1	BAGHOUSE 039 INLET	1	C			0.1N HNO_3 F½
24	R-1	4-10	R-1	"	1	C	✓		ACETONE F½
57	R-1	4-10	R-1	"	1	C			0.1N HNO_3 B½ + CONDENSATE
	~~R-1~~	~~4-10~~	~~R-1~~	~~"~~	1	C			~~ACETONE B½~~
42	R-2	4-10	R-2	"	1	C			0.1D N HNO_3 F½
25	R-2	4-10	R-2	"	1	C	✓		ACETONE F½
58	R-2	4-10	R-2	"	1	C			0.1C HNO_3 B½ + CONDENSATE
	~~R-2~~	~~4-10~~	~~R-2~~	~~"~~	1	C			~~ACETONE B½~~
43	R-3	4-11	R-3	"	1	C			0.1D N HNO_3 F½
26	R-3	4-11	R-3	"	1	C	✓		ACETONE F½
59	R-3	4-11	R-3	"	1	C			0.1D N HNO_3 B½ + CONDENSATE
	~~R-3~~	~~4-11~~	~~R-3~~	~~"~~	1	C			~~ACETONE B½~~
40	Ø	4-10	Ø	BLANK	1	C			0.1N HNO_3 BLANK
23	Ø	4-10	Ø	BLANK	1	C	✓		ACETONE BLANK

Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
	4-15 1400				
Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Relinquished by: (Signature)	Date / Time	Received for Laboratory by:	Date / Time		

REMARKS:

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3295

CHAIN OF CUSTODY RECORD

PROJ. NO. 5033

PROJECT NAME RSR @ QUEMETCO

SAMPLERS: (Signature) [signature]

LAB NO.	SAMPLE NO.	DATE	TIME	SAMPLE LOCATION	NO. OF CONTAINERS	Pb (EPA METHOD 12)	GRAVIMETRIC	ARCHIVES				REMARKS
44	R-1	4-10	R-1	BAGHOUSE 039 OUTLET	1	✓						0.10N HNO3 F½
27	R-1	4-10	R-1	"	1	✓	✓					ACETONE F½
60	R-1	4-10	R-1	"	1	✓						0.10N HNO3 B½
45	R-2	4-10	R-2	"	1	✓						0.10N HNO3 F½
28	R-2	4-10	R-2	"	1	✓	✓					ACETONE F½
61	R-2	4-10	R-2	"	1	✓						0.10N HNO3 B½
46	R-3	4-11	R-3	"	1	✓						0.10N HNO3 F½
29	R-3	4-11	R-3	"	1	✓	✓					ACETONE F½
62	R-3	4-11	R-3	"	1	✓						0.10N HNO3 B½
47	R-1	4-10	R-1	BAGHOUSE 040 INLET	1	✓						0.10N HNO3 F½
30	R-1	4-10	R-1	"	1	✓	✓					ACETONE F½
63	R-1	4-10	R-1	"	1	✓						0.10N HNO3 B½
48	R-2	4-10	R-2	"	1	✓						0.10N HNO3 F½
31	R-2	4-10	R-2	"	1	✓	✓					ACETONE F½
64	R-2	4-10	R-2	"	1	✓		✓				0.10N HNO3 B½

Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
[signature]	4/15 1400	[signature]			
Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Relinquished by: (Signature)	Date / Time	Received for Laboratory by:	Date / Time		

REMARKS:

Clean Air Engineering

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Palatine, IL 60067
708/991-3300

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3296

CHAIN OF CUSTODY RECORD

6 of 6

PROJ. NO.	PROJECT NAME
5633	RSR Quemetco

SAMPLERS: (Signature) [signature]

LAB NO.	SAMPLE NO.	DATE	TIME	SAMPLE LOCATION	NO. OF CONTAINERS	Pb (CEPA Method 12)	Gravimetric	Archived				REMARKS	
	R-3	4-11	R-3	Baghouse 040 ~~Outlet~~ Inlet	1	✓						0.10N HNO3 F½	25579-4
	R-3	4-11	R-3	"	1	✓	✓					Acetone F½	32
	R-3	4-11	R-3	"	1	✓						0.10N HNO3 B½	65
	R-1	4-10	R-1	Baghouse 040 Outlet	1	✓						0.10N HNO3 F½	50
	R-1	4-10	R-1	"	1	✓	✓					Acetone F½	33
	R-1	4-10	R-1	"	1	✓						0.10N HNO3 B½	66
	R-2	4-10	R-2	"	1	✓						0.10N HNO3 F½	51
	R-2	4-10	R-2	"	1	✓	✓					Acetone F½	34
	R-2	4-10	R-2	"	1	✓						0.10N HNO3 B½	67
	R-3	4-11	R-3	"	1	✓						0.10 N HNO3 F½	52
	R-3	4-11	R3	"	1	✓	✓					Acetone F½	35
	R-3	4-11	R3	"	1	✓						0.10N HNO3 B½	68
-H1034	6 ~~0~~	4-10	∅	Field Blank	1	✓	✓					MISCO Filter	-01
4106	~~0~~	4-10	∅	Field Blank	1	✓	✓					Nutech Filter	-06

Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
[signature]	4-15 / 1400	[signature]			
Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Relinquished by: (Signature)	Date / Time	Received for Laboratory by:	Date / Time		

REMARKS:

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