AP42 Section:	11.3
Background Chapter	4
Reference:	29
Title:	*Emissions Survey Conducted at Interstate Brick Company, Located in West Jordan, Utah*, American Environmental Testing, Inc., Spanish Fork, UT, December 22, 1994.

AP-42 Section 11.3
Reference 29
Report Sect. 4
Reference 29

EMISSION TEST REPORT
DECEMBER 5-7, 1994

INTERSTATE BRICK

WEST JORDAN, UTAH

"EMISSIONS SURVEY CONDUCTED AT INTERSTATE BRICK COMPANY, LOCATED IN WEST JORDAN UTAH"

CEM Supervisor:

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Test Dates:

December 5-7, 1994

Submittal Date:

December 22, 1994

Prepared for: Mr. Jim Keck

Interstate Brick Company
9780 South 5200 West
West Jordan, Utah 84088-5689

Prepared by: Mr. V. Brent Benson, Technical Director

American Environmental Testing, Inc.
565 South Birch Drive
Spanish Fork, Utah 84660

CERTIFICATION OF REPORT INTEGRITY

AMERICAN ENVIRONMENTAL TESTING COMPANY, INC. (AET) certifies:

1. That every effort was made to obtain accurate and representative data within the guidelines established by:

   A. The U.S. Environmental Protection Agency Code of Federal Regulations (CFR) Title 40, Chapter I, Part 60, Appendix "A", Methods 1-5 inclusive, Method 6C, Method 7E, Method 13B and Method 201A/202.

   B. The U.S. Environmental Protection Agency "Quality Assurance Handbook for Air Pollution Measurement Systems".

2. All of sampling and analysis performed for the compliance test reported herein were carried out by myself or under my supervision.

3. The results obtained are accurate and authentic.

Greg E. Johnson
Method 201A Crew Supervisor

J. Paul Benson
Crew Supervisor

I have reviewed all testing details and methods on which the results of this test are based. I find them to be accurate within the limits of the applicable methods.

V. Brent Benson
Technical Director

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APPENDICES

"EMISSIONS SURVEY CONDUCTED AT INTERSTATE BRICK COMPANY, LOCATED IN WEST JORDAN UTAH"

1.0 Introduction

1.1 Test Purpose

At the request of Interstate Brick Company's, Mr. Jim Keck, American Environmental Testing, Inc., (AET) conducted a series of Emissions Testing for PM_{10}, sulfur dioxide (SO_2), nitrogen oxides (NO_x) and Hydrofluoric Acid (HF) at Interstate Brick Company's West Jordan Facility. These tests were accomplished during the period of December 5-7, 1994. The individual sources and the emissions that were quantified are listed below:

Source	Emissions to be Tested
Tunnel Kiln No . 3 Inlet	SO_2 and NO_x
Tunnel Kiln No. 4 Inlet	SO_2 and NO_x
Tunnel Kiln No. 4 Outlet	PM_{10}, SO_2, NO_x & HF
Primary Crusher Baghouse	PM_{10}
Line 3 Baghouse	PM_{10}
Line 4 Baghouse	PM_{10}

On October 27, 1994, The Utah Department of Environmental Quality (UDEQ) issued the Interstate Brick Company an "Approval Order" for their West Jordan Facility. A copy of the permit is attached as Appendix "A". In the permit, conditions were established for various pollutants emission levels and criteria were set for testing to verify compliance with these limitations.

The UDEQ set the following emission limits from the "Approval Order" for each source:

Source	Pollutant	Emission Limitation
Tunnel Kiln No. 3 (Inlet)	SO_2	17.0 lbs/hr
	NO_x	1.8 lbs/hr
Tunnel Kiln No. 4 (Inlet)	SO_2	17.0 lbs/hr
	NO_x	1.8 lbs/hr
Tunnel Kiln No. 4 (Outlet)	PM_{10}	12.3 lbs/hr
	SO_2	51.0 lbs/hr
	NO_x	2.6 lbs/hr
	HF	5.7 lbs/hr
Primary Crusher Baghouse	PM_{10}	0.49 lbs/hr 0.016 gr/dscf
Line 3 Baghouse	PM_{10}	0.37 lbs/hr 0.016 gr/dscf
Line 4 Baghouse	PM_{10}	0.67 lbs/hr 0.016 gr/dscf

On the Tunnel Kiln No. 4 Outlet, AET found liquid droplets in the gas stream at the sample port location. Because of these conditions, AET tested using EPA Method 5 and 202 to quantify Particulate emissions (considering all particulate captured to be PM_{10}).

Mr. Keck, requested that American Environmental Testing Company, Inc. prepare a "Pretest Protocol" to submit to the UDEQ outlining the required tests. The protocol, without the calibration data is presented in Appendix "B".

AET performed Compliance Emissions Testing as set forth in the Code of Federal Regulations (CFR), Title 40, Chapter I, Part 60, Appendix "A". The following methods were used to conduct the emissions testing:

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 and Back-half Condensibles from Stationary Sources"

Method 6C - "Determination of Sulfur Dioxide Emissions from Stationary Sources" (Instrumental Analyzer Procedures)

Method 7E - "Determination of Nitrogen Oxides Emissions from Stationary Sources" (*Instrumental Analyzer Procedures*)

Method 13B - "Determination of Hydrofluoric Acid from Stationary Sources"

Method 201A - "Determination of PM_{10} Emissions from Stationary Sources"

Method 202 - "Determination of Condensible Particulate Emissions from Stationary Sources"

2.0 Summary of Results

2.1 PM_{10} Emissions (EPA 201A)

The emissions data accumulated for PM_{10} emissions during the December 5-7 1994 Compliance Testing is summarized in the following tables for each source:

Table 2.1.1	Tunnel Kiln No. 4 - Outlet
Table 2.1.2	Primary Crusher Baghouse
Table 2.1.3	Line 3 Baghouse
Table 2.1.4	Line 4 Baghouse

Table 2.1.1

(PM_{10} Emissions Summary)

Tunnel Kiln No. 4 - Outlet

Test Run	DSCF Collected	Emissions Rates	
		lbs/hr	gr/dscf
1	36.5016	6.0273	0.0188
2	39.4402	8.7407	0.0258
3	40.3321	11.4822	0.0330
Average =	38.7580	8.7501	0.0259

The average measured PM_{10} emission concentration for the Tunnel Kiln No. 4 Outlet was 8.7501 lbs/hr, which is 71.14% of the UDEQ permitted allowable ceiling of 12.3 lbs/hr.

Table 2.1.2

(PM_{10} Emissions Summary)

Primary Crusher Baghouse

Test Run	DSCF Collected	Emissions Rates	
		Lbs/hr	gr/dscf
1	23.48	0.06	0.0033
2	22.86	0.06	0.0032
3	23.10	0.06	0.0035
Average =	23.15	0.06	0.0033

The average measured PM_{10} emission concentration for the Primary Crusher Baghouse was 0.06 lbs/hr, which is 12.24% of the UDEQ permitted allowable ceiling of 0.49 lbs/hr and 0.0033 gr/dscf, which is 20.63% of the UDEQ permitted allowable ceiling of 0.016 gr/dscf.

Table 2.1.3

(PM_{10} Emissions Summary)

Line 3 Baghouse

Test Run	DSCF Collected	Emissions Rates	
		Lbs/hr	gr/dscf
1	20.53	0.11	0.0039
2	20.80	0.07	0.0026
3	20.53	0.05	0.0020
Average =	20.62	0.08	0.0028

The average measured PM_{10} emission concentration for the Line 3 Baghouse was 0.08 lbs/hr, which is 21.62% of the UDEQ permitted allowable ceiling of 0.37 lbs/hr and 0.0028 gr/dscf, which is 17.5% of the UDEQ permitted allowable ceiling of 0.016 gr/dscf.

Table 2.1.4

(PM_{10} Emissions Summary)

Line 4 Baghouse

Test Run	DSCF Collected	Emissions Rates	
		Lbs/hr	gr/dscf
1	23.33	0.08	0.0060
2	21.81	0.04	0.0029
3	22.05	0.06	0.0041
Average =	22.40	0.06	0.0043

The average measured PM_{10} emission concentration for the Line 4 Baghouse was 0.06 lbs/hr, which is 8.96% of the UDEQ permitted allowable ceiling of 0.67 lbs/hr and 0.0043 gr/dscf, which is 26.88% of the UDEQ permitted allowable ceiling of 0.016 gr/dscf.

2.2 SO_2 Emissions (EPA 6C)

The emissions data accumulated for SO_2 emissions during the December 7, 1994 Compliance Emissions Testing is summarized in Table 2.2.1 for the Tunnel Kiln No. 3 Inlet, Table 2.2.2 for the Tunnel Kiln No. 4 Inlet and Table 2.2.3 for the Tunnel Kiln No. 4 Outlet.

Table 2.2.1

(SO_2 Emissions Summary)

Tunnel Kiln No. 3 Inlet

Test Run	Emissions Rates	
	ppm	lbs/hr
1	600.39	385.42
2	593.00	276.69
3	547.71	258.90
Average =	580.37	306.94

Table 2.2.2

(SO_2 Emissions Summary)

Tunnel Kiln No. 4 Inlet

Test Run	Emissions Rates	
	ppm	lbs/hr
1	211.33	78.096
2	137.62	54.205
3	181.92	73.744
Average =	176.96	68.682

Table 2.2.3

(SO_2 Emissions Summary)

Tunnel Kiln No. 4 Outlet

Test Run	Emissions Rates	
	ppm	lbs/hr
1	35.56	13.156
2	25.52	10.290
3	29.36	12.018
Average =	30.15	11.821

The average measured SO_2 emission concentration for the Tunnel Kiln No. 4 Outlet was 11.821 lbs/hr, which is 23.18% of the UDEQ permitted allowable ceiling of 51.0 lbs/hr.

2.3 NO_x Emissions (EPA 7E)

The emissions data accumulated for NO_x emissions during the December 7, 1994 Compliance Emissions Testing is summarized in Table 2.3.1 for the Tunnel Kiln No. 3 Inlet, Table 2.3.2 for the Tunnel Kiln No. 4 Inlet and Table 2.3.3 for the Tunnel Kiln No. 4 Outlet.

Table 2.3.1

(NO_x Emissions Summary)

Tunnel Kiln No. 3 Inlet

Test Run	Emissions Rates	
	ppm	lbs/hr
1	31.30	14.75
2	32.44	15.36
3	39.84	19.08
Average =	34.53	16.40

Table 2.3.2

(NO_x Emissions Summary)

Tunnel Kiln No. 4 Inlet

Test Run	Emissions Rates	
	ppm	lbs/hr
1	13.32	3.318
2	10.52	2.851
3	8.45	2.402
Average =	10.76	2.857

Table 2.3.3

(NO_x Emissions Summary)

Tunnel Kiln No. 4 Outlet

Test Run	Emissions Rates	
	ppm	lbs/hr
1	12.07	3.069
2	10.52	2.851
3	8.45	2.402
Average =	10.35	2.774

The average measured NO_x emission concentration for the Tunnel Kiln No. 4 Outlet was 2.77 lbs/hr, which is 106.7% of the UDEQ permitted allowable ceiling of 2.6 lbs/hr.

2.4 Visible Emission Opacity (VEO)

VEO's were taken simultaneously with each of the EPA Method 201A runs on the Primary Crusher & Line 3 & 4 Baghouses and each of the EPA Method 6C & 7E runs on the Tunnel Kilns 3 & 4. Averages for the three (3) runs are listed in the following tables for each source:

Table 2.4.1 - Tunnel Kiln No. 4 Outlet
Table 2.4.2 - Primary Crusher Baghouse
Table 2.4.3 - Line 3 Baghouse
Table 2.4.4 - Line 4 Baghouse

Table 2.4.1

(Visible Emissions Opacity Summary)

Tunnel Kiln No. 4 Outlet

Test Number	%VEO
1	4.58
2	5.83
3	1.88
Average =	4.10%

The average VEO reading of 4.10% for this source was well below the allowable UDEQ ceiling level of ≤ 20%.

Table 2.4.2

(Visible Emissions Opacity Summary)

Primary Crusher Baghouse

Test Number	%VEO
1	0.00
2	0.00
3	0.00
Average =	0.00%

The average VEO reading of 0.00% for this source was well below the allowable UDEQ ceiling level of ≤ 10%.

Table 2.4.3

(Visible Emissions Opacity Summary)

Line 3 Baghouse

Test Number	%VEO
1	0.00
2	0.00
3	0.00
Average =	0.00%

The average VEO reading of 0.00% for this source was well below the allowable UDEQ ceiling level of ≤ 10%.

Table 2.4.4

(Visible Emissions Opacity Summary)

Line 4 Baghouse

Test Number	%VEO
1	0.00
2	0.00
3	0.00
Average =	0.00%

The average VEO reading of 0.00% for this source was well below the allowable UDEQ ceiling level of ≤ 10%.

2.5 HF Emissions (EPA 13B)

The emissions data accumulated for HF emissions during the December 5, 1994 Compliance Emissions Testing on the Tunnel Kiln No. 4 Outlet is summarized in Table 2.5.1.

Table 2.5.1

(HF Emissions Summary)

Tunnel Kiln No. 4 Outlet

Test Run	Emissions Rates	
	lbs/hr	gr/dscf
1	2.4571	0.0077
2	1.8806	0.0056
3	2.0247	0.0058
Average	2.1208	0.0064

The average measured HF emission concentration for the Tunnel Kiln No. 4 Outlet was 2.1208 lbs/hr, which is 37.21% of the UDEQ permitted allowable ceiling of 5.7 lbs/hr.

3.0 Source Operations

3.1 General Plant Operations

The manufacture of brick and related products such as clay pipe, pottery and some types of refractory brick involves the mining, grinding, screening and blending of the raw materials, and the forming, cutting or shaping, drying or curing, and firing of the final product.

Surface clays and shales are mined in open pits. Most fine clays are found underground. After mining, the material is crushed to remove stones and is stirred before it passes onto screens for segregation by particle size.

To start the forming process, clay is mixed with water, usually in a pug mill. The three principal processes for forming brick are stiff mud, soft mud and dry press. In the stiff mud process, sufficient water is added to give the clay plasticity, and bricks are formed by forcing the clay through a die. Wire is used in separating bricks. All structural tile and most and most brick are formed by this process. The soft mud process is usually used with clay too wet for the stiff mud process. The clay is mixed with water to a moisture content of 20 to 30 percent, and the bricks are formed in molds. In the dry press process, clay is mixed with a small amount of water and formed in steel molds by applying pressure of 500 to 1500 pounds per square inch.

Wet clay units that have been formed are almost completely dried before firing, usually with waste heat from kilns. Many types of kilns are used for firing brick, but the most common are the downdraft periodic kiln and the tunnel kiln. The periodic kiln is a permanent brick structure with a number of fireholes where fuel enters the furnace. Hot gases from the fuel are drawn up over the bricks, down through then by underground flues, and out of the oven to the chimney. Although lower heat recovery makes this

type less efficient than the tunnel kiln, the uniform temperature distribution leads to a good quality product.

Production Data during the testing period was given to AET by Interstate Brick Company and is attached as Appendix "C".

4.0 Sampling and Analysis Procedures

4.1 Emissions Testing

A. EPA Method 1; sample and velocity traverses for stationary sources.

Figure 4.1.1 is a diagram of the Tunnel Kiln No. 3 Inlet Stack. This reference method requires the tester, due to stack geometry, to sample for particulate and velocity at twenty (20) separate locations in the stack, five (5) per traverse, in four (4) separate ports. The location of these points relative to the stack are given in Table 4.1.2.

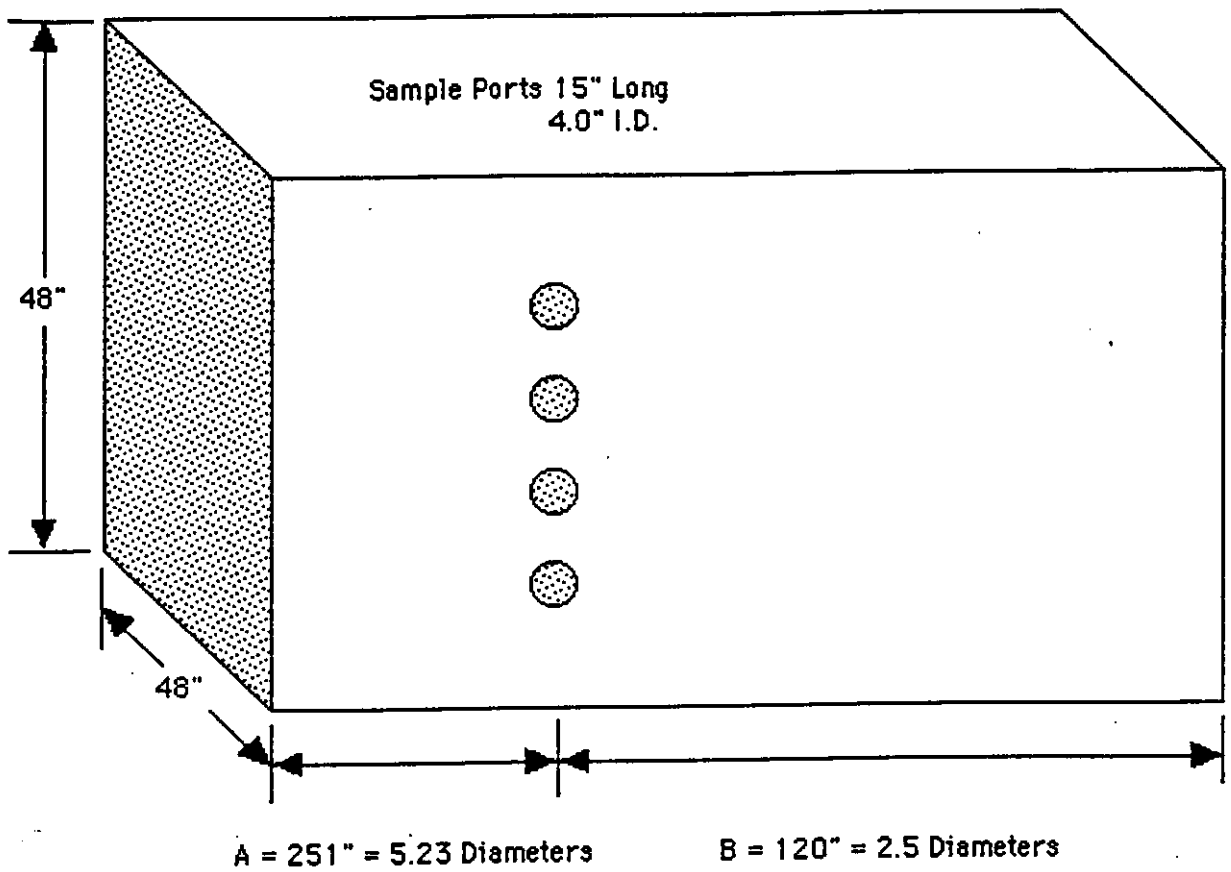
Figure 4.1.3 is a diagram of the Tunnel Kiln No. 4 Outlet Stack. This reference method requires the tester, due to stack geometry, to sample for particulate and velocity at twenty-five (25) separate locations in the stack, five (5) per traverse, in five (5) separate ports. The location of these points relative to the stack are given in Table 4.1.4.

Figure 4.1.5 is a diagram of the Primary Crusher Baghouse Stack. The reference methods require the tester, due to the stack geometry, to sample for particulate and velocity at twelve (12) separate locations in the stack, six (6) per traverse, on diameter lines 90° apart from one another. The location of these points relative to the stack are given in Table 4.1.6.

Figure 4.1.7 is a diagram of the Line 3 Baghouse Stack. The reference methods require the tester, due to the stack geometry, to sample for particulate and velocity at twelve (12) separate locations in the stack, six (6) per traverse, on diameter lines 90° apart from one another. The location of these points relative to the stack are given in Table 4.1.8.

Interstate Brick Company
No. 3 Kiln Inlet

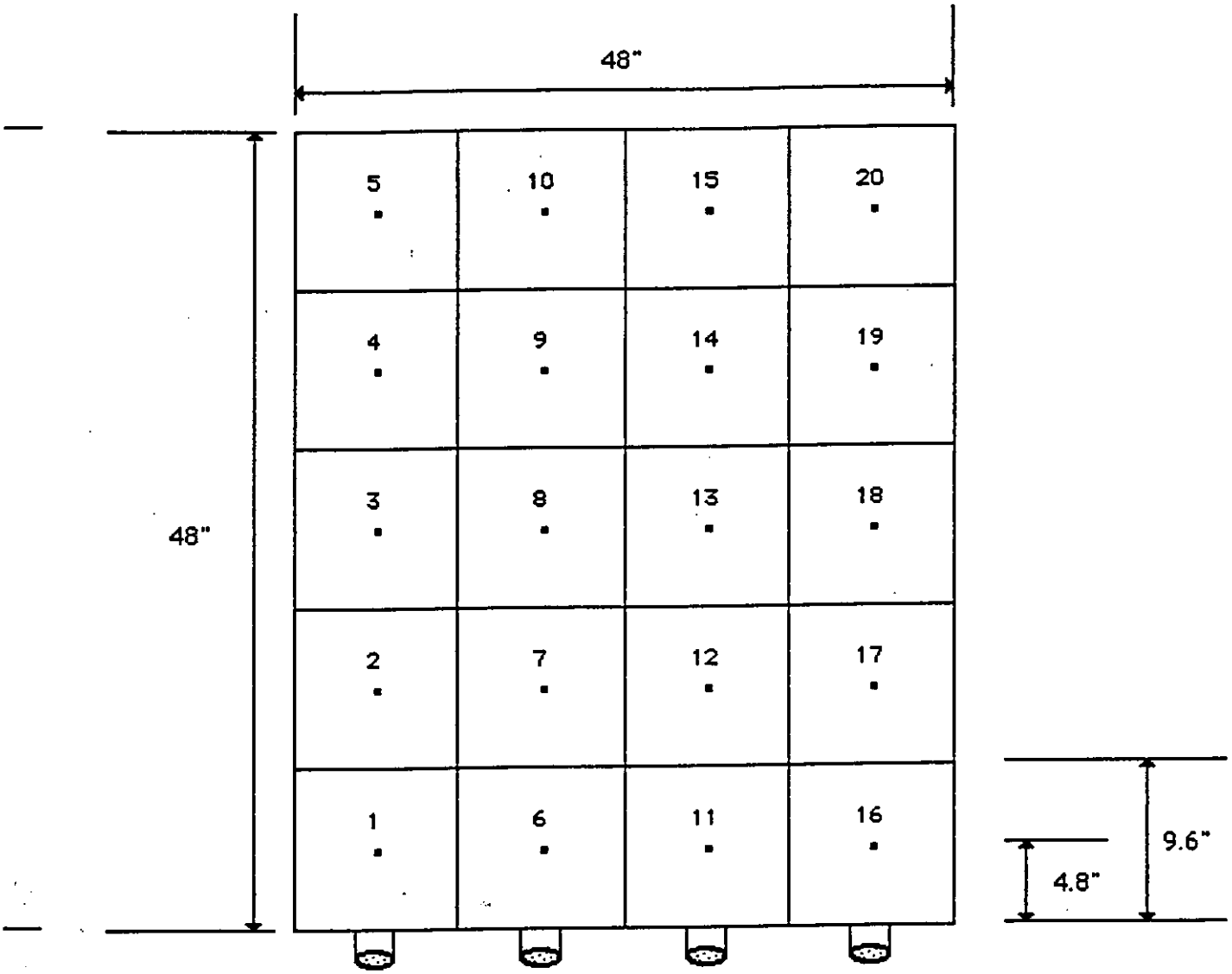
Figure 4.1.1



Interstate Brick Company

No. 3 Kiln Inlet

Table 4.1.2

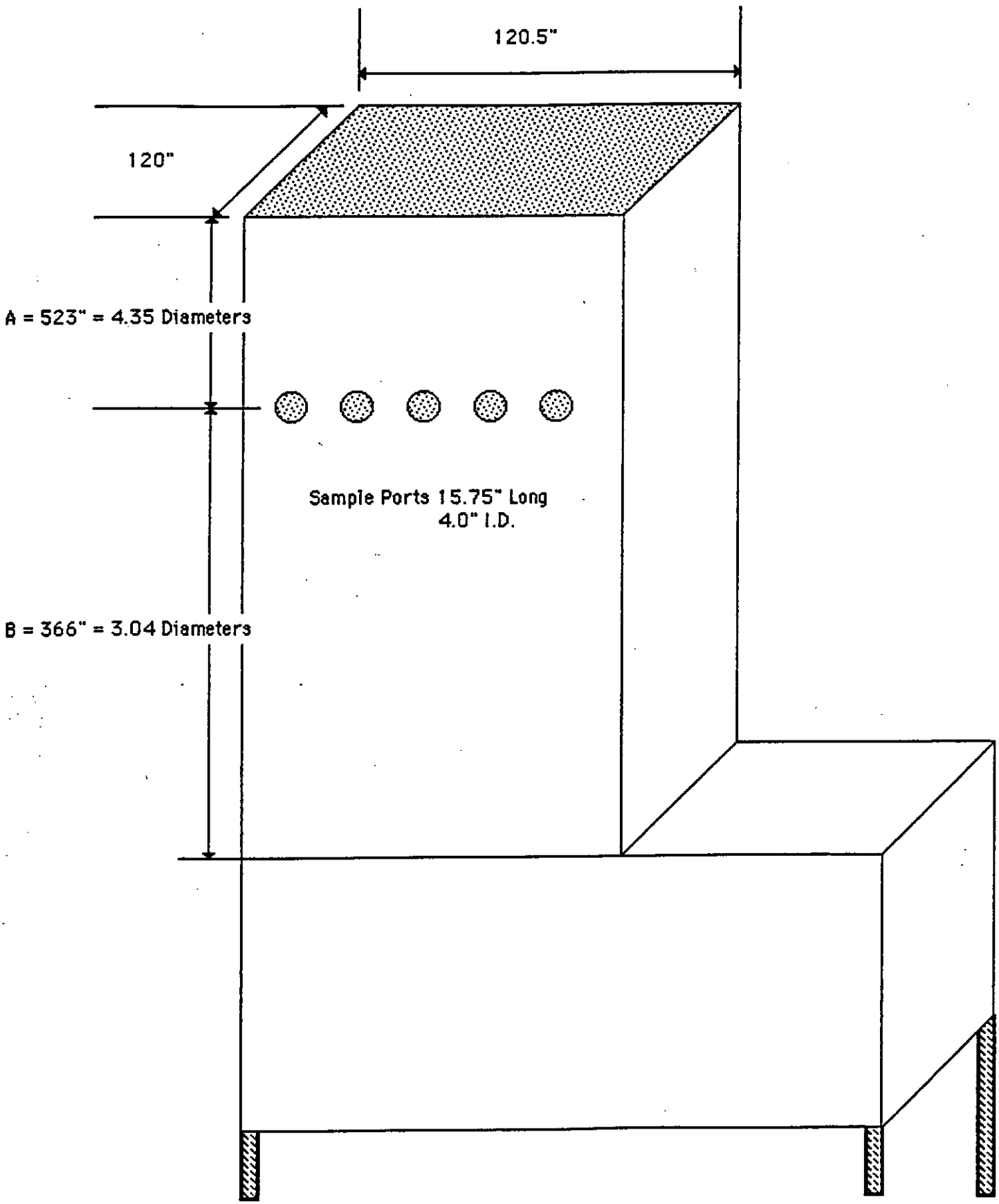


Sample Ports are 15" Long

Sample Point	Distance from outside of Port
1, 6, 11, 16	19.8" = 19 3/4"
2, 7, 12, 17	29.4" = 29 3/8"
3, 8, 13, 18	39.0" = 39"
4, 9, 14, 19	48.6" = 48 5/8"
5, 10, 15, 20	58.2" = 58 1/4"

Interstate Brick Company
No. 4 Kiln Outlet

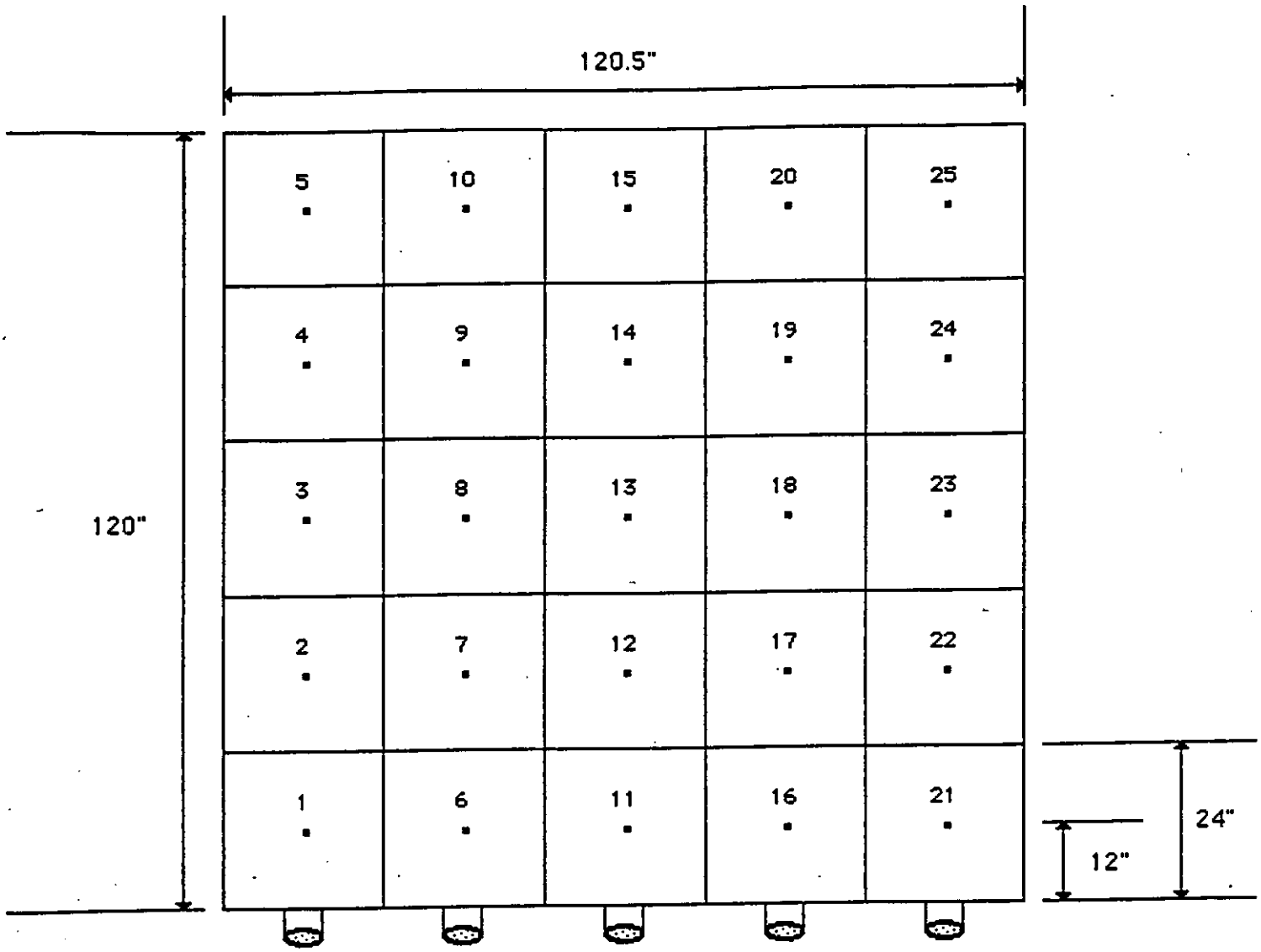
Figure 4.1.3



Interstate Brick Company

No. 4 Kiln Outlet

Table 4.1.4



Sample Ports are 15.75" Long

Sample Point	Distance from outside of Port
1, 6, 11, 16 & 21	27.75" = 27 3/4"
2, 7, 12, 17 & 22	51.75" = 51 3/4"
3, 8, 13, 18 & 23	75.75" = 75 3/4"
4, 9, 14, 19 & 24	99.75" = 99 3/4"
5, 10, 15, 20 & 25	123.75" = 123 3/4"

Interstate Brick Company
Primary Crusher Baghouse

Figure 4.1.5

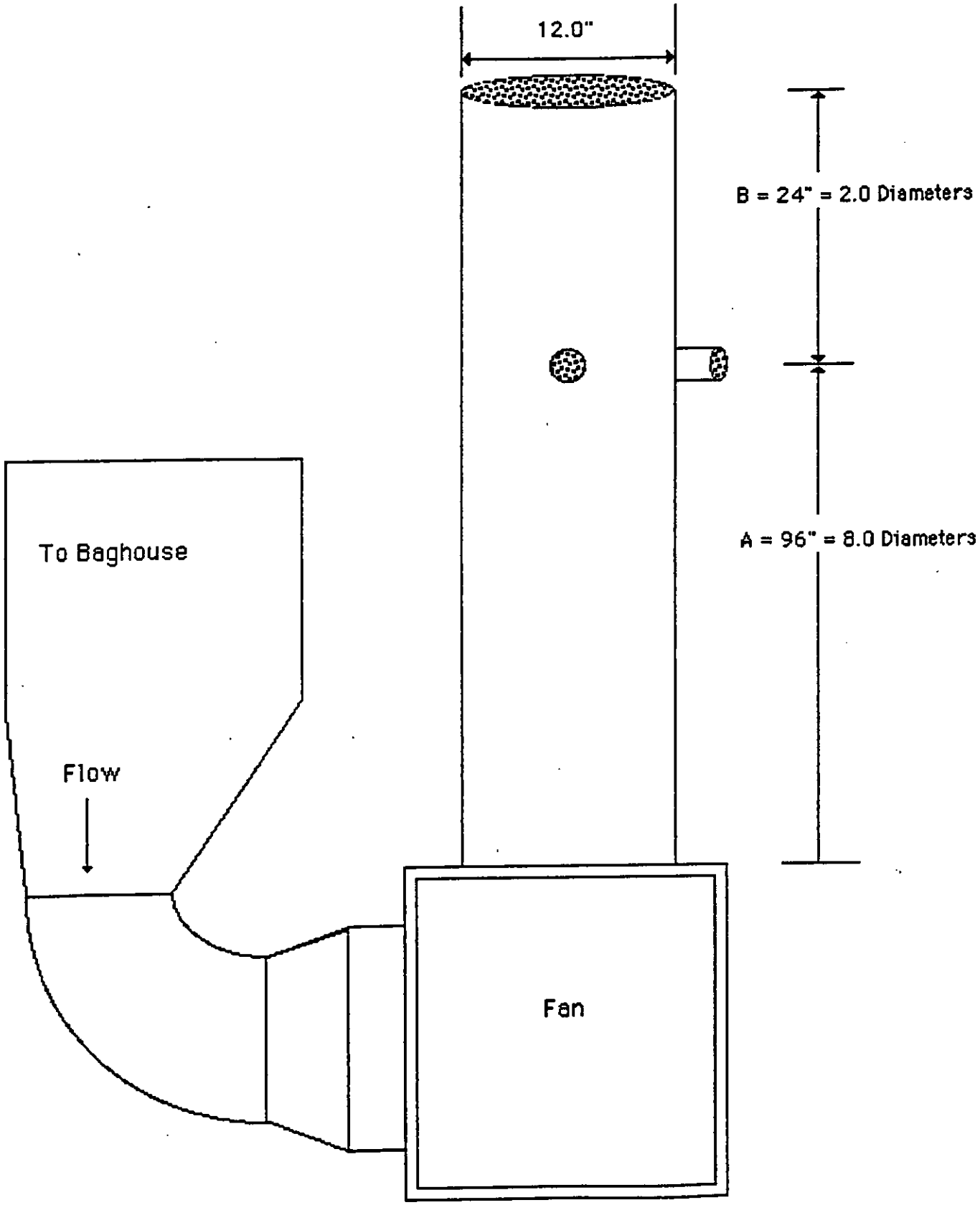


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Table 4.1.6

TRAVERSE POINT CALCULATIONS

Plant: Interstate Brick Company
Date: 12/6/94
Sampling Location: Primary Crusher Baghouse
Inside of far wall to outside of
port (distance, X) 15.75"
Inside of near wall to outside of
port (distance, Y) 3.75"
Stack I.D. 12.0" = 0.785 ft squared

Traverse Point Number	Percent of Stack I.D.	Stack I.D. inches	Product of col. 2 &3 (to 1/8 in)	Distance Y	Traverse Point Location from outside of ports (sum of columns 4 & 5)
1 & 7	4.4	12	0.528	3.75	4.278 = 4 1/4"
2 & 8	14.6	12	1.752	3.75	5.502 = 5 1/2"
3 & 9	29.6	12	3.552	3.75	7.302 = 7 1/4"
4 & 10	70.4	12	8.448	3.75	12.198 = 12 1/4"
5 & 11	85.4	12	10.248	3.75	13.990 = 14.0"
6 & 12	95.6	12	11.472	3.75	15.222 = 15 1/4"

Interstate Brick Company
Line 3 Baghouse

Figure 4.1.7

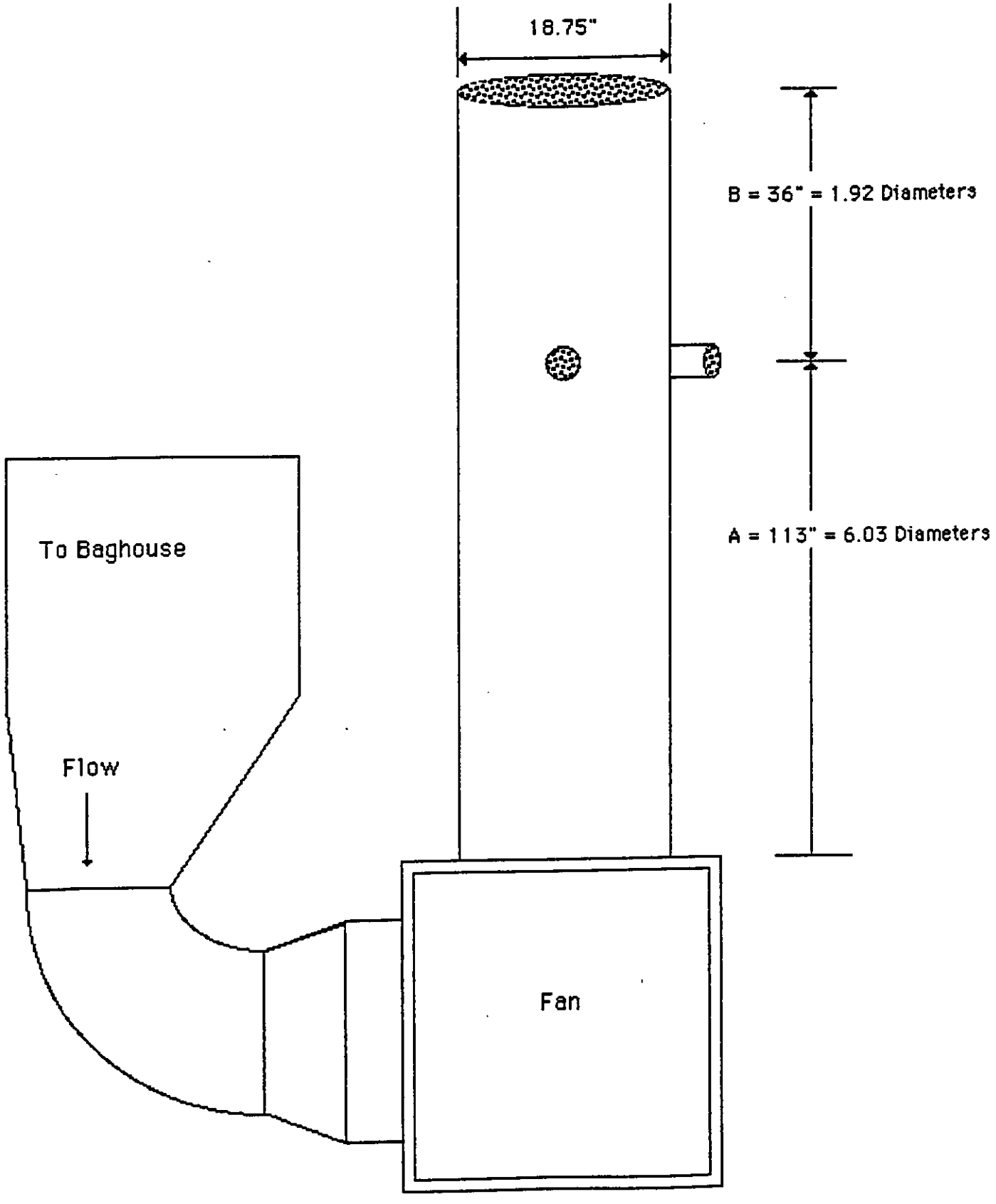

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Table 4.1.8

TRAVERSE POINT CALCULATIONS

Plant: Interstate Brick Company
Date: 12/5/94
Sampling Location: Line 3 Baghouse
Inside of far wall to outside of port (distance, X) 22.5"
Inside of near wall to outside of port (distance, Y) 3.75"
Stack I.D. 18.75" = 1.9174 ft squared

Traverse Point Number	Percent of Stack I.D.	Stack I.D. inches	Product of col. 2 &3 (to 1/8 in)	Distance Y	Traverse Point Location from outside of ports (sum of columns 4 & 5)
1 & 7	4.4	18.75	0.825	3.75	4.575 = 4 5/8"
2 & 8	14.6	18.75	2.7375	3.75	6.488 = 6 1/2"
3 & 9	29.6	18.75	5.55	3.75	9.3 = 9 1/4"
4 & 10	70.4	18.75	13.2	3.75	16.95 = 17"
5 & 11	85.4	18.75	16.0125	3.75	19.763 = 19 3/4"
6 & 12	95.6	18.75	17.925	3.75	21.675 = 21 5/8"

Figure 4.1.9 is a diagram of Line 4 Baghouse Stack. The reference methods require the tester, due to the stack geometry, to sample for particulate and velocity at twelve (12) separate locations in the stack, six (6) per traverse, on diameter lines 90° apart from one another. The location of these points relative to the stack are given in Table 4.1.10.

B. EPA Method 3; for gas analysis of carbon dioxide, oxygen, excess air, and dry molecular weight.

This reference method requires that a gas sample be extracted from the stack for analysis concurrently with each of the runs. The integrated gas sample is then analyzed via an orsat for carbon monoxide, carbon dioxide and oxygen. The nitrogen value is obtained by difference.

Results from these determinations are included in Appendix "D" with the field and laboratory data forms for each individual source.

C. EPA Method 2, 5, 201A & 202 Combined; for the determination of velocity, particulate matter, PM_{10} emissions/back-half condensibles and volumetric flow rate from stationary sources.

To evaluate compliance with the PM_{10} limitation specified in the "Approval Order", AET had to test using methodology consistent with the above referenced methods. Data from the three (3) separate runs, which constitute a single compliance test, are summarized in the following tables for each source:

Table 4.1.11 Tunnel Kiln No. 3 Inlet
Table 4.1.12 Tunnel Kiln No. 4 Inlet & Outlet
Table 4.1.13 Primary Crusher Baghouse
Table 4.1.14 Line 3 Baghouse
Table 4.1.15 Line 4 Baghouse

The original laboratory and field data accumulated at the test site are presented in Appendix "D". Orsat and laboratory weight forms are hand written on site as the data is generated.

Interstate Brick Company
Line 4 Baghouse

Figure 4.1.9

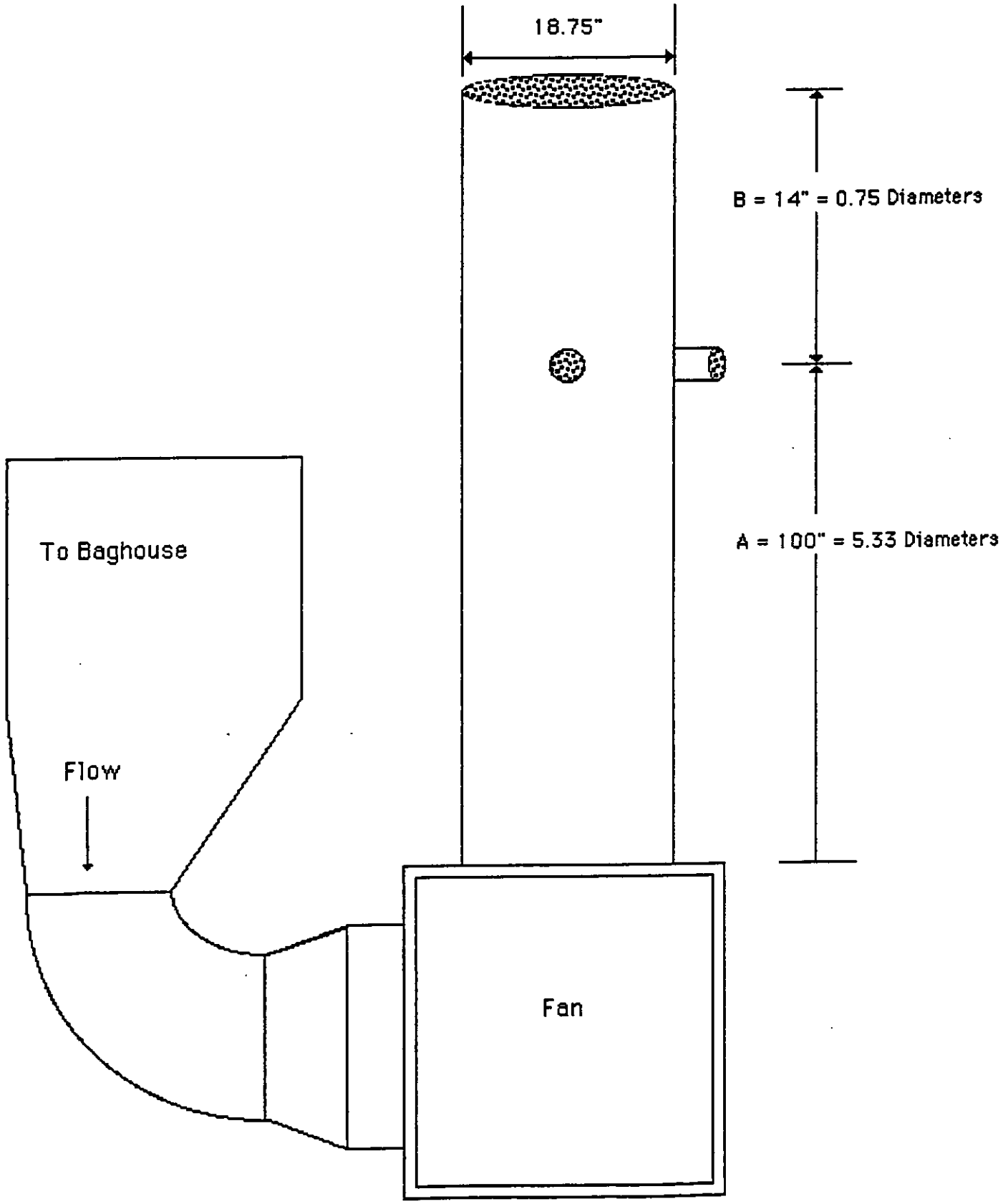

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Table 4.1.10

TRAVERSE POINT CALCULATIONS

Plant: Interstate Brick Company
Date: 12/4/94
Sampling Location: #4 Line Baghouse
Inside of far wall to outside of port (distance, X) 22.75"
Inside of near wall to outside of port (distance, Y) 4.0"
Stack I.D. 18.75" = 1.918 ft squared

Traverse Point Number	Percent of Stack I.D.	Stack I.D. inches	Product of col. 2 &3 (to 1/8 in)	Distance Y	Traverse Point Location from outside of ports (sum of columns 4 & 5)
1 & 7	4.4	18.75	0.825	4	4.825 = 4 7/8"
2 & 8	14.6	18.75	2.7375	4	6.738 = 6 3/4"
3 & 9	29.6	18.75	5.55	4	9.55 = 9 1/2"
4 & 10	70.4	18.75	13.2	4	17.20 = 17 1/4"
5 & 11	85.4	18.75	16.0125	4	20.013 = 20.0 "
6 & 12	95.6	18.75	17.925	4	21.925 = 21 7/8"

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TABLE 4.1.11
(FIELD AND LABORATORY DATA SUMMARY)

Plant: Interstate Brick Company
Source: Tunnel Kiln No. 3 Inlet
Type: EPA Method 4
Date: 12/7/94

Symbol	Description	Units	Test #1	Test #2	Test #3
Vm	Volume dry gas	Ft3	30.289	30.289	30.289
	sampled @ meter	Iso	27.775	27.775	27.775
	conditions				
Pb	Barometric Pre:	"Hg abs	25.42	25.42	25.42
ΔH	Average Pres	"H2O	1.2	1.2	1.2
	drop across the				
	orifice meter				
Tm	Average gas	°R	539.45	539.45	539.45
	meter temp	°F	79.45	79.45	79.45
Yi	Meter Coefficient		0.917	0.917	0.917
Vw	Total H2O	ml	49.1	49.1	49.1
	collected, impingers				
	& silica gel				
CO2		%	3.4	3.4	3.4
O2		%	14.8	14.8	14.8
N2 + CO		%	81.8	81.8	81.8
Rn	Nozzle Dia.	in.	0.502	0.502	0.502
Ts	Stack Temp	°R	881.5	882.5	884.5
		°F	421.5	422.5	424.5
Sqr rt ΔP	Velocity head	"H2O	1.8165	1.8369	1.8645
	of stack gas				
Cp	Pitot Tube		0.8429	0.8429	0.8429
	Coefficient				
Ps	Static Pres	"H2O	-0.18	-0.18	-0.18
Pabs	Absolute Pres	"Hg	25.41	25.41	25.41
As	Area stack	Ft2	15.999	15.999	15.999
	Stack in inches		54.16	54.16	54.16
Tt	Net time	min.	40	40	40
	of test				

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TABLE 4.1.12
(FIELD AND LABORATORY DATA SUMMARY)

Plant: Interstate Brick Company
Source: Tunnel Kiln No. 4 Inlet & Outlet
Type: EPA Method 5/202 & 13B
Date: 12/5/94

Symbol	Description	Units	Test #1	Test #2	Test #3
Vm	Volume dry gas	Ft3	48.187	52.536	54.383
	sampled @ meter	Iso	44.187	48.176	49.869
	conditions				
Pb	Barometric Pres	"Hg abs	25.3	25.2	25.22
ΔH	Average Pres	"H2O	0.9141	0.9844	1.0423
	drop across the				
	orifice meter				
Tm	Average gas	°R	540.48	543.2	550.3
	meter temp	°F	80.48	83.2	90.3
Yi	Meter Coefficient		0.917	0.917	0.917
Vw	Total H2O	ml	128.5	123.8	121.4
	collected, impingers				
	& silica gel				
CO2		%	2.23	2.47	2.47
O2		%	16.9	16.8	16.7
N2 + CO		%	80.87	80.73	80.83
Rn	Nozzle Dia.	in.	0.501	0.501	0.501
Ts	Stack Temp	°R	585.16	583.92	581.2
		°F	125.16	123.92	121.2
Sqr rt ΔP	Velocity head	"H2O	0.1441	0.1502	0.1534
	of stack gas				
Cp	Pitot Tube		0.8401	0.8401	0.8401
	Coefficient				
Ps	Static Pres	"H2O	0.01	0.01	0.01
Pabs	Absolute Pres	"Hg	25.30	25.20	25.22
As	Area stack	Ft2	100.420	100.420	100.420
	Stack in inches		135.69	135.69	135.69
Tt	Net time	min.	75	75	75
	of test				
Mgp	Particulate Mg Total		44.4	66	86.2
	HF Mg Total		18.1	14.2	15.2

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TABLE 4.1.13
(FIELD AND LABORATORY DATA SUMMARY)

Plant: Interstate Brick Company
Source: Primary Crusher Baghouse
Type: EPA Method 201A - PM10 Emissions
Date: 12/6/94

Symbol	Description	Units	Test #1	Test #2	Test #3
Vm	Volume dry gas	Ft3	28.79	28.65	28.98
	sampled @ meter conditions	lso	28.732	28.593	28.922
Pb	Barometric Pres	"Hg abs	25.23	25.23	25.23
ΔH	Average Pres drop across the orifice meter	"H2O	0.557	0.557	0.557
Tm	Average gas	°R	544.67	556.54	557.29
	meter temp	°F	84.67	96.54	97.29
Yi	Meter Coefficient		0.998	0.998	0.998
Vw	Total H2O collected, impingers & silica gel	ml	22	19.1	15.7
CO2		%	0.1	0.1	0.1
O2		%	20.8	20.8	20.8
N2 + CO		%	79.1	79.1	79.1
Rn	Nozzle Dia.	in.	0.135	0.135	0.135
Ts	Stack Temp	°R	505.08	509.83	511.33
		°F	45.08	49.83	51.33
Sqr rt ΔP	Velocity head of stack gas	"H2O	0.865	0.8622	0.8622
Cp	Pitot Tube Coefficient		0.8394	0.8394	0.8394
Ps	Static Pres	"H2O	-1.5	-1.5	-1.5
Pabs	Absolute Pres	"Hg	25.12	25.12	25.12
As	Area stack	Ft2	0.785	0.785	0.785
	Stack in inches		12	12	12
Tt	Net time of test	min.	60	59.25	60
Mgp	Mg Total		5	4.7	5.3

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TABLE 4.1.14
(FIELD AND LABORATORY DATA SUMMARY)

Plant: Interstate Brick Company
Source: Line 3 Baghouse
Type: EPA Method 201A - PM10 Emissions
Date: 12/5/94

Symbol	Description	Units	Test #1	Test #2	Test #3
Vm	Volume dry gas	Ft3	22.008	22.586	22.169
	sampled @ meter	Iso	23.879	24.506	24.053
	conditions				
Pb	Barometric Pre:	"Hg abs	25.32	25.3	25.26
ΔH	Average Pres	"H2O	0.5661	0.5615	0.5505
	drop across the				
	orifice meter				
Tm	Average gas	°R	519.54	525.92	522.04
	meter temp	°F	59.54	65.92	62.04
Yi	Meter Coefficient		1.085	1.085	1.085
Vw	Total H2O	ml	8.9	6.5	6.5
	collected, impingers				
	& silica gel				
CO2		%	0.2	0.2	0.2
O2		%	20.5	20.5	20.5
N2 + CO		%	79.3	79.3	79.3
Rn	Nozzle Dia.	in.	0.183	0.183	0.183
Ts	Stack Temp	°R	519.83	515.42	510.25
		°F	59.83	55.42	50.25
Sqr rt ΔP	Velocity head	"H2O	0.5497	0.5602	0.5359
	of stack gas				
Cp	Pitot Tube		0.8414	0.8414	0.8414
	Coefficient				
Ps	Static Pres	"H2O	-9	-9	-9
Pabs	Absolute Pres	"Hg	24.66	24.64	24.60
As	Area stack	Ft2	1.917	1.917	1.917
	Stack in inches		18.75	18.75	18.75
Tt	Net time	min.	54.75	56	53.5
	of test				
Mgp	Mg Total		5.2	3.5	2.7

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TABLE 4.1.15
(FIELD AND LABORATORY DATA SUMMARY)

Plant: Interstate Brick Company

Source: Line 4 Baghouse

Type: EPA Method 201A - PM10 Emissions

Date: 12/5/94

Symbol	Description	Units	Test #1	Test #2	Test #3
Vm	Volume dry gas	Ft3	28.25	26.81	27.36
	sampled @ meter	Iso	28.194	26.756	27.305
	conditions				
Pb	Barometric Pres	"Hg abs	25.31	25.31	25.31
ΔH	Average Pres	"H2O	0.56	0.56	0.56
	drop across the				
	orifice meter				
Tm	Average gas	°R	539.54	547.67	552.88
	meter temp	°F	79.54	87.67	92.88
Yi	Meter Coefficient		0.998	0.998	0.998
Vw	Total H2O	ml	30.5	15.8	23.4
	collected, impingers				
	& silica gel				
CO2		%	0.1	0.1	0.1
O2		%	20.8	20.8	20.8
N2 + CO		%	79.1	79.1	79.1
Rn	Nozzle Dia.	in.	0.216	0.216	0.216
Ts	Stack Temp	°R	503.5	502.5	501.92
		°F	43.5	42.5	41.92
Sqr rt ΔP	Velocity head	"H2O	0.2872	0.2626	0.2681
	of stack gas				
Cp	Pitot Tube		0.8394	0.8394	0.8394
	Coefficient				
Ps	Static Pres	"H2O	-0.03	-0.03	-0.03
Pabs	Absolute Pres	"Hg	25.31	25.31	25.31
As	Area stack	Ft2	1.917	1.917	1.917
	Stack in inches		18.75	18.75	18.75
Tt	Net time	min.	59.75	57.25	57.25
	of test				
Mgp	Mg Total		9	4.1	5.9

Particulate (PM_{10}) and velocity measurements, required in the applicable reference methods, are generated in the field by computer. These forms are also included in Appendix "D" for each of the three (3) runs that comprise a compliance test. Compliance criteria is calculated using computer and hand-written field forms and are summarized in the following tables for each source:

Table 4.1.16 Tunnel Kiln No. 3 Inlet
Table 4.1.17 Tunnel Kiln No. 4 Inlet & Outlet
Table 4.1.18 Primary Crusher Baghouse
Table 4.1.19 Line 3 Baghouse
Table 4.1.20 Line 4 Baghouse

A copy of the example calculations are attached as Appendix "E".

Figure 4.1.21 is a schematic of the sample train used to obtain the field data. A stainless steel probe liner was used for the testing. The glass fiber filters used in the train are 99.95% efficient on 0.3 micron particles and have no organic binders (Andersen P-3710). These filters are tared before use and after the test to determine particulate loading. Filter weights and particulate in the acetone washes of the glassware and probe ahead of the filter constitute the total particulate catch. The probe and filter are kept at 248°F ± 25° during sampling.

Moisture in the stack gases is collected by keeping the impingers in the sample train below 68°F with an ice bath. The "back-half" of the moisture sampling train contained the following impingers:

Impinger Number	Contents	Amount	Parameter Collected
1	Deionized Water	100 ml	Moisture
2	Deionized Water	100 ml	Moisture
3	Empty	-------	Moisture
4	Silica Gel	@200 g	Moisture

Prior to doing the EPA Method 5 and 201A/202 tests, AET ran a pretest cyclonic flow determination in the exhaust stacks per

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TABLE 4.1.16
(CALCULATED COMPLIANCE CRITERIA)

Plant: Interstate Brick
Source: Tunnel Kiln No. 3 Inlet
Type: EPA Method 4
Date: 12/7/94

SYMBOL	DESCRIPTION	UNITS	Test #1	Test #2	Test #3
Vm std	Volume dry gas	dscfm	0.5794	0.5794	0.5794
	sampled @ standard	dscf	23.177	23.177	23.177
	Conditions				
Vw gas	Volume water	scf	2.311	2.311	2.311
	vapor collected @				
	standard conditions				
Bws	Proportion by		0.091	0.091	0.091
	volume of water				
	vapor in gas stream				
	dimensionless				
Md	Dry molecular	lb/lb mole	29.136	29.136	29.136
	weight				
Ms	Wet molecular	lb/lb mole	28.126	28.126	28.126
	weight				
Vs	Stack gas	ft/sec	145.382	147.093	149.4789
	velocity				
Qs	Volumetric flow	ft3/hr	3.8727	3.9139	3.9684
	rate dry basis		x E +06	x E +06	x E +06
	standard conditions				

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TABLE 4.1.17
(CALCULATED COMPLIANCE CRITERIA)

Plant: Interstate Brick
Source: Tunnel Kiln No. 4 Inlet & Outlet
Type: EPA Method 5/202 & 13B
Date: 12/5/94

SYMBOL	DESCRIPTION	UNITS	Test #1	Test #2	Test #3
Vm std	Volume dry gas	dscfm	0.4867	0.5259	0.5378
	sampled @ standard	dscf	36.5016	39.4402	40.3321
	Conditions				
Vw gas	Volume water	scf	6.0485	5.8273	5.7143
	vapor collected @				
	standard conditions				
Bws	Proportion by		0.1421	0.1287	0.1241
	volume of water				
	vapor in gas stream				
	dimensionless				
Md	Dry *molecular*	*lb/lb mole*	29.0328	29.0672	29.0632
	weight				
Ms	Wet molecular	lb/lb mole	27.4645	27.6425	27.6903
	weight				
Vs	Stack gas	ft/sec	9.4985	9.8765	10.0498
	velocity				
Qs	Volumetric flow	ft3/hr	2.2476	2.3693	2.4369
	rate dry basis		x E +06	x E +06	x E +06
	standard conditions				
Iso	Isokinetic	%	95.527	97.9395	97.3883
	variation				

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TABLE 4.1.18
(CALCULATED COMPLIANCE CRITERIA)

Plant: Interstate Brick
Source: Primary Crusher Baghouse
Type: EPA Method 201A - PM10 Emissions
Date: 12/6/94

SYMBOL	DESCRIPTION	UNITS	Test #1	Test #2	Test #3
Vm std	Volume dry gas	dscfm	0.3913	0.3858	0.3850
	sampled @ standard Conditions	dscf	23.48	22.86	23.1
Vw gas	Volume water vapor collected @ standard conditions	scf	1.04	0.9	0.74
Bws	Proportion by volume of water vapor in gas stream dimensionless		0.04	0.04	0.03
Md	Dry molecular weight	lb/lb mole	28.848	28.848	28.848
Ms	Wet molecular weight	lb/lb mole	28.631	28.631	28.631
Vs	Stack gas velocity	ft/sec	52.24	52.27	52.28
Qs	Volumetric flow rate dry basis standard conditions	ft3/hr	1.2409 x E +05	1.2357 x E +05	1.2411 x E +05
Iso	Isokinetic variation	%	150.18	148.7	147.72
D50	Sampling cut rate		9.613	9.7539	9.8353

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TABLE 4.1.19
(CALCULATED COMPLIANCE CRITERIA)

Plant: Interstate Brick
Source: Line 3 Baghouse
Type: EPA Method 201A - PM10 Emissions
Date: 12/5/94

SYMBOL	DESCRIPTION	UNITS	Test #1	Test #2	Test #3
Vm std	Volume dry gas	dscfm	0.3750	0.3714	0.3837
	sampled @ standard	dscf	20.53	20.8	20.53
	Conditions				
Vw gas	Volume water	scf	0.42	0.31	0.31
	vapor collected @				
	standard conditions				
Bws	Proportion by		0.02	0.01	0.01
	volume of water				
	vapor in gas stream				
	dimensionless				
Md	Dry molecular	lb/lb mole	28.852	28.852	28.852
	weight				
Ms	Wet molecular	lb/lb mole	28.635	28.635	28.635
	weight				
Vs	Stack gas	ft/sec	33.92	34.41	32.78
	velocity				
Qs	Volumetric flow	ft3/hr	1.921	1.9745	1.8964
	rate dry basis		x E +05	x E +05	x E +05
	standard conditions				
Iso	Isokinetic	%	123.18	118.69	127.71
	variation				
D50	Sampling cut rate		10.0326	10.1464	9.8995

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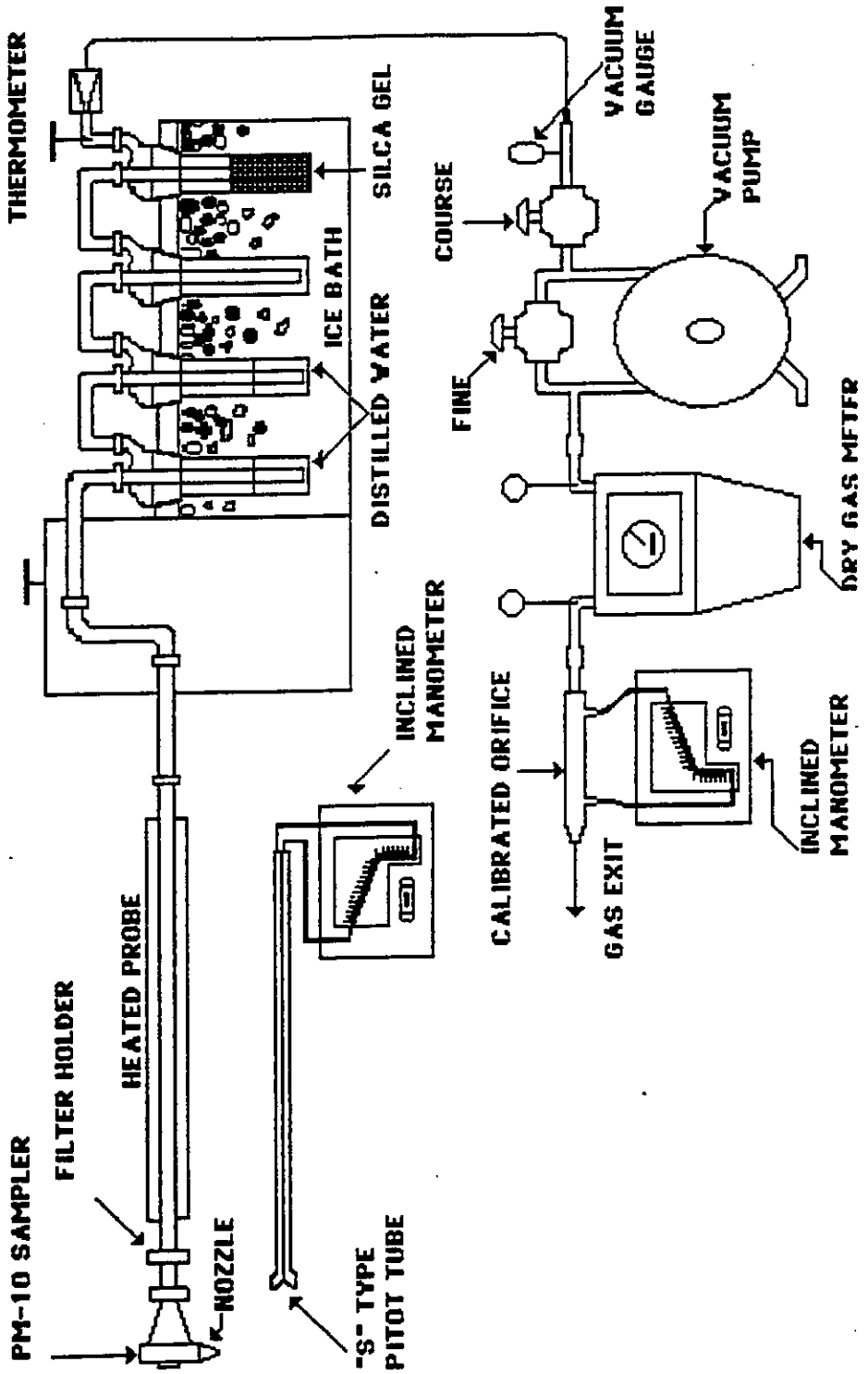
TABLE 4.1.20
(CALCULATED COMPLIANCE CRITERIA)

Plant: Interstate Brick
Source: Line 4 Baghouse
Type: EPA Method 201A - PM10 Emissions
Date: 12/5/94

SYMBOL	DESCRIPTION	UNITS	Test #1	Test #2	Test #3
Vm std	Volume dry gas	dscfm	0.3905	0.3810	0.3852
	sampled @ standard	dscf	23.33	21.81	22.05
	Conditions				
Vw gas	Volume water vapor collected @ standard conditions	scf	1.44	0.74	1.1
Bws	Proportion by volume of water vapor in gas stream dimensionless		0.06	0.03	0.05
Md	Dry molecular weight	lb/lb mole	28.848	28.848	28.848
Ms	Wet molecular weight	lb/lb mole	28.631	28.631	28.631
Vs	Stack gas velocity	ft/sec	17.31	15.73	16.09
Qs	Volumetric flow rate dry basis standard conditions	ft3/hr	9.9819 x E +04	9.3346 x E +04	9.4149 x E +04
Iso	Isokinetic variation	%	177.17	184.91	185.32
D50	Sampling cut rate		9.5171	9.9198	9.7058

Figure 4.1.21

EPA Method 201A Sample Train



Field VEO forms and the readers current certification cards are included as Appendix "I".

F. EPA Method 13B for the determination of hydrofluoric acid (HF) emissions from stationary sources as specified in Federal and State regulations.

Particulate and gaseous hydrofluoric acid are extracted from the stack isokinetically using a modified EPA Method 5 sample train. Total fluoride is determined on the filter, probe and prefilter glassware and in the back-half impinger water using a specific ion electrode.

5.0 Quality Control/Quality Assurance

5.1 Compliance Testing

Specific items used in the EPA approved sample trains require pretest and post-test calibrations. The frequency of the calibrations and guidelines for procedural items are delineated in the EPA's "Quality Assurance Handbook for Air Pollution Measurement Systems".

For EPA Methods 1-5, 6C, 7E, 13B 201A/202 inclusive the quality assurance guidelines are intended to insure that the PM_{10}, SO_2, NO_x and HF emissions are quantified in a manner consistent with the most stringent sampling criteria possible. AET testing personnel are thoroughly trained in all aspects of the EPA required QA/QC guidelines. The crew supervisor has certified at the front of this report that the test crew adhered to those guidelines in the regulations applicable to the compliance testing at Interstate Brick Company's West Jordan, Facility. There were no deviations from prescribed methodology reported by the supervisor.

Calibrations for the sample nozzle, pitot tube, thermocouples, orifice, filter balance and dry gas meter used to extract the sample at an isokinetic rate of 100% ± 10.0% or a D_{50} rate of 10.0 ± 1.0 are attached as Appendix "J".

The main quality criteria that AET is required to fulfill for the PM_{10} emissions testing is as follows:

Tunnel Kiln No. 4 Outlet

1. Isokinetic Sampling Rate = 100 ± 10.0%

AET Run Number	Sampling Rate
1	95.5270
2	97.9395
3	97.3883
Average =	96.9516

2. Sampling Volume = > 31.8 DSCF

AET Run Number	Sample Volume (DSCF)
1	36.5016
2	39.4402
3	40.3321
Average =	38.7580

All of the compliance test quality assurance criteria was achieved for this set of tests.

Primary Crusher Baghouse

1. D_{50} Cut Rate = 10.0 ± 1.0%

AET Run Number	Sampling Rate
1	9.6130
2	9.7539
3	9.8353
Average =	9.7341

2. Filter Temperature = 248 ± 25 (°F)

AET Run Number	Filter Temperature (°F)
1	245.75°
2	246.75°
3	248.83°
Average =	247.11° F

All of the compliance test quality assurance criteria was achieved for this set of tests.

Line 3 Baghouse

1. D_{50} Cut Rate = 10.0 ± 1.0%

AET Run Number	Sampling Rate
1	10.0326
2	10.1464
3	9.8995
Average =	10.0262

2. Filter Temperature = 248 ± 25 (°F)

AET Run Number	Filter Temperature (°F)
1	249.58°
2	251.00°
3	249.17°
Average =	249.92° F

All of the compliance test quality assurance criteria was achieved for this set of tests.

Line 4 Baghouse

1. D_{50} Cut Rate = 10.0 ± 1.0%

AET Run Number	Sampling Rate
1	9.5171
2	9.9198
3	9.7058
Average =	9.7142

2. Filter Temperature = 248 ± 25 (°F)

AET Run Number	Filter Temperature (°F)
1	265.25°
2	252.92°
3	247.92°
Average =	255.36° F

All of the compliance test quality assurance criteria was achieved for this set of tests.

The CEM sample train was also leak checked prior to testing the Enterprise Engines. The standards used for these tests conformed to EPA "Protocol 1" quality. Those certifications are included in Appendix "J".

The main quality assurance criteria for EPA Method 7E requires that the following items are met:

Tunnel Kiln No. 3 Inlet

1. EPA Protocol 1 gas standards consisting of nitrogen oxide in nitrogen in the following ranges for the span value of 0 to 300 ppm:

   a. Zero gas (< 0.1 ppm NOx).

      AET had a zero gas of purified N_2 that was < 0.1 ppm NOx.

   b. Mid-level calibration gas with a nitrogen oxide concentration equivalent to 40 to 60 percent of the span value.

      AET's mid-level calibration gas was 159.9 ppm, which was in the acceptable range.

   c. High-level calibration gas with a nitrogen oxide concentration equivalent to 80 to 100 percent of the span value.

      AET's high-level calibration gas was 259.6 which was in the acceptable range.

   The calibration gas certificates of analysis are included in Appendix "J".

2. Measurement System Performance Specifications

   During the NOx tests AET's measurement system is required to meet the following criteria:

   a. Zero drift ≤ to 3.0% of the span value.

      It was met for these tests.

   b. Calibration drift ≤ 3.0% of the span value.

      It was met for these tests.

   c. Calibration bias error has to be ≤ 5.0% of the calibration gas value.

AET met this condition for the tests. These results are included in Appendix "J".

Tunnel Kiln No. 4 Inlet

1. EPA Protocol 1 gas standards consisting of nitrogen oxide in nitrogen in the following ranges for the span value of 0 to 300 ppm:

   a. Zero gas (< 0.1 ppm NOx).

      AET had a zero gas of purified N_2 that was < 0.1 ppm NOx.

   b. Mid-level calibration gas with a nitrogen oxide concentration equivalent to 40 to 60 percent of the span value.

      AET's mid-level calibration gas was 159.9 ppm, which was in the acceptable range.

   c. High-level calibration gas with a nitrogen oxide concentration equivalent to 80 to 100 percent of the span value.

      AET's high-level calibration gas was 259.6 which was in the acceptable range.

   The calibration gas certificates of analysis are included in Appendix "J".

2. Measurement System Performance Specifications

   During the NOx tests AET's measurement system is required to meet the following criteria:

   a. Zero drift ≤ to 3.0% of the span value.

      It was met for these tests.

b. Calibration drift ≤ 3.0% of the span value.

It was met for these tests.

c. Calibration bias error has to be ≤ 5.0% of the calibration gas value.

AET met this condition for the tests. These results are included in Appendix "J".

Tunnel Kiln No. 4 Outlet

1. EPA Protocol 1 gas standards consisting of nitrogen oxide in nitrogen in the following ranges for the span value of 0 to 300 ppm:

   a. Zero gas (< 0.1 ppm NOx).

   AET had a zero gas of purified N_2 that was < 0.1 ppm NOx.

   b. Mid-level calibration gas with a nitrogen oxide concentration equivalent to 40 to 60 percent of the span value.

   AET's mid-level calibration gas was 159.9 ppm, which was in the acceptable range.

   c. High-level calibration gas with a nitrogen oxide concentration equivalent to 80 to 100 percent of the span value.

   AET's high-level calibration gas was 259.6 which was in the acceptable range.

   The calibration gas certificates of analysis are included in Appendix "J".

2. Measurement System Performance Specifications

   During the NOx tests AET's measurement system is required to meet the following criteria:

a. Zero drift ≤ to 3.0% of the span value.

   It was met for these tests.

b. Calibration drift ≤ 3.0% of the span value.

   It was met for these tests.

c. Calibration bias error has to be ≤ 5.0% of the calibration gas value.

   AET met this condition for the tests. These results are included in Appendix "J".

The main quality assurance criteria for EPA Method 6C requires that the following items are met:

Tunnel Kiln No. 3

1. EPA *Protocol* 1 gas standards consisting of sulfur dioxide in nitrogen in the following ranges for the span value of 0 to 1000 ppm:

   a. Zero gas (< 0.1 ppm SO2).

      AET had a zero gas of purified N_2 that was < 0.1 ppm SO2.

   b. Mid-level calibration gas with a sulfur dioxide *concentration* equivalent to 40 to 60 percent of the span value.

      AET's mid-level calibration gas was 514.6 ppm, which was in the acceptable range.

   c. High-level calibration gas with a sulfur dioxide concentration *equivalent to 80 to 100 percent of the span* value.

      AET's high-level calibration gas was 901.6 which was in the acceptable range.

The calibration gas certificates of analysis are included in Appendix "J".

2. Measurement System Performance Specifications

During the SO2 tests AET's measurement system is required to meet the following criteria:

a. Zero drift ≤ to 3.0% of the span value.

It was met for these tests.

b. Calibration drift ≤ 3.0% of the span value.

It was met for these tests.

c. Calibration bias error has to be ≤ 5.0% of the calibration gas value.

AET met this condition for the tests. These results are included in Appendix "J".

Tunnel Kiln No. 4 Inlet

1. EPA Protocol 1 gas standards consisting of sulfur dioxide in nitrogen in the following ranges for the span value of 0 to 300 ppm:

a. Zero gas (< 0.1 ppm SO2).

AET had a zero gas of purified N_2 that was < 0.1 ppm SO2.

b. Mid-level calibration gas with a sulfur dioxide concentration equivalent to 40 to 60 percent of the span value.

AET's mid-level calibration gas was 163.5 ppm, which was in the acceptable range.

c. High-level calibration gas with a sulfur dioxide concentration equivalent to 80 to 100 percent of the span value.

AET's high-level calibration gas was 260.7 which was in the acceptable range.

The calibration gas certificates of analysis are included in Appendix "J".

2. Measurement System Performance Specifications

During the SO2 tests AET's measurement system is required to meet the following criteria:

a. Zero drift ≤ to 3.0% of the span value.

It was met for these tests.

b. Calibration drift ≤ 3.0% of the span value.

It was met for these tests.

c. Calibration bias error has to be ≤ 5.0% of the calibration gas value.

AET met this condition for the tests. These results are included in Appendix "J".

Tunnel Kiln No. 4 Outlet

1. EPA Protocol 1 gas standards consisting of sulfur dioxide in nitrogen in the following ranges for the span value of 0 to 300 ppm:

a. Zero gas (< 0.1 ppm SO2).

AET had a zero gas of purified N_2 that was < 0.1 ppm SO2.

b. Mid-level calibration gas with a sulfur dioxide concentration equivalent to 40 to 60 percent of the span value.

AET's mid-level calibration gas was 163.5 ppm, which was in the acceptable range.

c. High-level calibration gas with a sulfur dioxide concentration equivalent to 80 to 100 percent of the span value.

AET's high-level calibration gas was 260.7 which was in the acceptable range.

The calibration gas certificates of analysis are included in Appendix "J".

2. Measurement System Performance Specifications

During the SO2 tests AET's measurement system is required to meet the following criteria:

a. Zero drift ≤ to 3.0% of the span value.

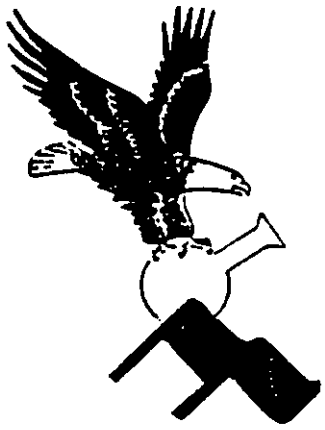
It was met for these tests.

b. Calibration drift ≤ 3.0% of the span value.

It was met for these tests.

c. Calibration bias error has to be ≤ 5.0% of the calibration gas value.

AET met this condition for the tests. These results are included in Appendix "J".



Appendix "A"
(Approval Order)

American Environmental Testing Company Inc.

Reno, Nevada
702-786-8553

Phoenix, Arizona
602-253-3354

Salt Lake City, Utah
801-266-7111

STATE OF UTAH

Department of Environmental Quality

Division of Air Quality

INTENT TO APPROVE TUNNEL KILN #4

Prepared By: Nando Meli, Engineer

INTENT TO APPROVE NUMBER

DAQE-947-94

Date: October 27, 1994

Source

INTERSTATE BRICK COMPANY

Russell A. Roberts
Executive Secretary
Utah Air Quality Board

Abstract

Interstate Brick is required by the PM_{10} SIP to reduce SO_2 emissions to meet Reasonable Available Control Technology (RACT). The Approval Order contains new emission limitations which have been determined to meet RACT. Interstate Brick has also proposed an increase in fluoride emissions for Kiln #4, the only kiln which had a fluoride emission limit. Modeling of overall fluoride emissions has been performed which demonstrates compliance with the threshold limit values set for fluoride. Corresponding emission limits for fluoride from each kiln are contained in the Approval Order. Previously unidentified emissions from existing baghouses, which have been determined to meet Best Available Control Technology (BACT) requirements, are contained in the Approval Order with associated emission/operating limitations.

The Notice of Intent for the above-referenced project has been evaluated and has been found to be consistent with the requirements of the Utah Air Conservation Rules (UACR) and the Utah Air Conservation Act. However, air pollution producing sources and/or their air control facilities may not be constructed, installed, established, or modified prior to the issuance of an Approval Order (AO) by the Executive Secretary of the Utah Air Quality Board.

The Division of Air Quality has determined that a public comment period is not required for your particular project referenced above. Unless you have comments which would require changes, the AO for this project will be based upon the following conditions:

General Conditions:

1. This AO applies to the following company:

   Interstate Brick
   9780 South 5200 West
   West Jordan, Utah 84084

   The equipment listed below in this AO shall be operated at the following location:

   PLANT LOCATION:

   Universal Transverse Mercator (UTM) Coordinate System: 4,491.5 km North, 413.5 km East

2. Definitions of terms, abbreviations, and references used in this AO conform to those used in the UACR, Utah Administrative Codes (UAC), and Series 40 of the Code of Federal Regulations (40 CFR). These definitions take precedence unless specifically defined otherwise herein.

3. Interstate Brick shall operate the brick manufacturing facility according to the information submitted in the Notices of Intent dated November 30, 1992, December 1993, June 7, 1994, and additional information dated September 22, 1994, and according to requirements listed in this AO.

4. Regardless of any inconsistency between conditions of this AO and Section IX.H.2.b.U and Section IX.H.2, this AO shall take precedence as provided by R307-1-3.2.4, UAC.

5. A copy of this AO shall be posted on site. The AO shall be available to the employees who operate the air emission producing equipment. These employees shall receive instruction as to their responsibilities in operating the equipment according to all of the relevant conditions listed below.

6. The approved installations shall consist of the following equipment:

   A. Tunnel Kiln #1

   B. Tunnel Kiln #3

   C. Tunnel Kiln #4

   D. Grizzly Hopper

   E. Primary Crusher

   F. Secondary Crusher/Grinding

   G. Screens

   H. Two Lime Silos

   I. Clay Storage Piles

   J. Miscellaneous Diesel Equipment

   K. Line 3 Baghouse - Micro Pulsaire*

   L. Line 4 Baghouse - Micro Pulsaire*

   * Or Equivalent

7. This AO shall replace the AO dated October 20, 1980.

8. Interstate Brick shall rebuild the scrubber or design a new scrubbing system for Kiln #3. If the scrubber is rebuilt, the scrubber shall be rebuilt as described in the Notice of Intent dated December 10, 1993. Should the scrubber require replacement, or modifications other than those described as "Alternative A" in the December 10, 1993, Notice of Intent, Interstate Brick shall submit complete design specifications including operating parameters and proposed emission limitations for approval prior to construction. In no case shall emissions of any pollutant from a newly designed scrubbing system exceed emission limitations listed in this AO as final limits.

Interstate Brick shall modify the scrubber for Kiln #4 as proposed in the Notice of Intent dated November 30, 1992. In addition, Interstate Brick shall operate the scrubber for Kiln #4 using soda ash in the scrubbing solution until modifications to the scrubber for Kiln #3 are complete and stack testing on the scrubber for Kiln #3 demonstrates that the scrubber is meeting the emission limits listed in this AO.

Limitations and Tests Procedures

9. Emissions to the atmosphere from the indicated emission point shall not exceed the following rates and concentrations:

A. Scrubber Emissions - Tunnel Kiln #1:

Pollutant	Transition Limits (to October 1, 1995)	Final Limits
PM_{10} (annual average)*	Shall not operate	1.9 lb/hr
SO_2 (1-hr average)		17.0 lb/hr
SO_x (annual average)		14.0 lb/hr
NO_x		1.8 lb/hr
HF (1-hr average)		4.5 lb/hr
HF (annual average)		1.5 lb/hr

B. Scrubber Emissions - Tunnel Kiln #3:

Pollutant	Transition Limits (to October 1, 1995)	Final Limits
PM_{10} (annual average)*	3.6 lb/hr	1.9 lb/hr
SO_2 (1-hr average)	105.0 lb/hr	17.0 lb/hr
SO_x (annual average)	36.8 lb/hr	14.0 lb/hr
NO_x	1.8 lb/hr	1.8 lb/hr
HF (1-hr average)	10.5 lb/hr	4.5 lb/hr
HF (annual average)	3.5 lb/hr	1.5 lb/hr

C. Scrubber Emissions - Tunnel Kiln #4

Pollutant	Transition Limits (to October 1, 1995)	Final Limits
PM_{10} (annual average)*	12.3 lb/hr	12.3 lb/hr
SO_2 (1-hr average)	51.0 lb/hr	77.0 lb/hr
SO_x (annual average)	18.0 lb/hr	27.0 lb/hr
NO_x	2.6 lb/hr	2.6 lb/hr
HF (1-hr average)	5.7 lb/hr	7.2 lb/hr
HF (annual average)	1.9 lb/hr	2.4 lb/hr

* PM_{10} emission rates expressed as annual averages above for the scrubbers for Kilns #1, #2, and #3 shall be demonstrated through an 8-hr stack test. Should PM_{10} emissions test at a higher rate than the limits expressed above, Interstate Brick shall provide documentation which demonstrates that the limits are being met, on an annual average basis, within 30 days of the date of the stack test. The method provided in the documentation shall be verifiable.

D. Primary Crusher Baghouse Vent

PM_{10}	0.49 lbs/hr	0.016 grains/dscf

E. Line 3 Baghouse

PM_{10}	0.37 lbs/hr	0.016 grains/dscf

F. Line 4 Baghouse

PM_{10}	0.67 lbs/hr	0.016 grains/dscf

10. Stack testing to show compliance with the emission limitations stated in the above condition (excluding annual average emission rates for SO_x and HF, but including annual average emission rates for PM_{10}) shall be performed as specified below:

Emission Point	Pollutant	Testing	Test Status	Frequency
Scrubber, Kiln #1		PM_{10}	***	@
		SO_2	***	%
		NO_x	***	@
		HF	***	%

Scrubber, Kiln #3	PM_{10}	**	@
	SO_2	**	%
	NO_x	**	@
	HF	**	%
Scrubber, Tunnel Kiln #4	PM_{10}	**	@
	SO_2	**	%
	NO_x	**	@
	HF	**	%
Primary Crusher Baghouse	PM_{10}	**	@
Line 3 Baghouse	PM_{10}	**	@
Line 4 Baghouse	PM_{10}	**	@

Testing Status (To be applied above)

** Initial compliance testing is required. The initial test shall be completed by December 1, 1994, to show compliance with emissions limits listed during the transition period.

An additional initial test shall be completed to show compliance with emission limits listed as final limits. Testing to show compliance with the final emission limits shall be completed by November 1, 1995

*** Initial compliance testing is required within 30 days of start-up of Tunnel Kiln #1.

@ Test if directed by the Executive Secretary. Tests may be required if the source is suspected to be in violation with other conditions of this AO.

Test every year

% Test every three years

A. Notification

The applicant shall provide a notification of the test date at least 30 days before the test. A pretest conference shall be held if directed by the Executive Secretary. It shall be held at least 15 days before the test between the owner/operator, the tester, and the Executive Secretary. The emission point shall be designed to conform to the requirements of 40 CFR 60, Appendix A, Method 1, and Occupational Safety and Health Administration (OSHA) or Mine Safety and Health Administration (MSHA) approvable access shall be provided to the test location.

B. PM_{10}

For stacks in which no liquid drops are present, the following methods shall be used: 40 CFR 51, Appendix M, Methods 201 or 201a. The back half condensibles shall also be tested using the method specified by the Executive Secretary. All particulate captured shall be considered PM_{10}.

For stacks in which liquid drops are present, methods to eliminate the liquid drops should be explored. If no reasonable method to eliminate the drops exists, then the following methods shall be used: 40 CFR 60, Appendix A, Method 5, 5a, 5d, or 5e as appropriate. The back half condensibles shall also be tested using the method specified by the Executive Secretary. The portion of the front half of the catch considered PM_{10} shall be based on information in AP-42, Appendix C or other data acceptable to the Executive Secretary.

The back half condensibles shall not be used for compliance demonstration but shall be used for inventory purposes.

Compliance testing of PM_{10} emissions for Kilns #1, #2, and #3 shall be conducted over an eight hour time period.

C. Sample Location

40 CFR 60. Appendix A, Method 1

D. Volumetric Flow Rate

40 CFR 60, Appendix A, Method 2

E. Sulfur Dioxide (SO_2)

40 CFR 60, Appendix A, Method 6, 6A, 6B or 6C

F. Nitrogen Oxides (NO_x)

40 CFR 60, Appendix A, Method 7, 7A, 7B, 7C, 7D or 7E

G. Hydroflouric Acid (HF)

The test method shall be submitted for approval or may be assigned by the Executive Secretary.

H. Calculations

To determine mass emission rates (lbs/hr, etc.), the pollutant concentration as determined by the appropriate methods above shall be multiplied by the volumetric flow rate and any necessary conversion factors determined by the Executive Secretary to give the results in the specified units of the emission limitation.

I. New Source Operation

For a new source/emission point (Line 4 and Line 5 baghouses), the production rate during all compliance testing shall be no less than 90% of the production rate listed in this AO. If the maximum AO allowable production rate has not been achieved at the time of the test, the following procedure shall be followed:

1) Testing shall be at no less than 90% of the production rate achieved to date.

2) If the test is passed, the new maximum allowable production rate shall be 110% of the tested achieved rate. This new allowable maximum production rate shall remain in affect until successfully tested at a higher rate.

3) The owner/operator shall request a higher production rate when necessary. Testing at no less than 90% of the higher rate shall be conducted. A new maximum production rate (110% of the new rate) will then be allowed if the test is successful. This process may be repeated until the maximum AO production rate is achieved.

J. Existing Source Operation

For an existing source/emission point, the production rate during all compliance testing shall be no less than 90% of the maximum production achieved in the previous three (3) years.

11. Compliance with annual average limitations listed in condition #9 shall be determined through a method of mass balance. Interstate Brick shall submit a mass balance method of determining annual emissions to the Executive Secretary for approval no later than December 1, 1994. The plan shall include:

A. Proposed test methods and test frequency for determining the weight of the elemental sulfur and fluorine contained in the clays used to manufacture brick

B. Proposed test methods and test frequency for determining the weight of the elemental sulfur and fluorine contained in the finished product

C. A method of determining scrubber efficiencies as an annual average

D. Calculation method of determining annual emissions of SO_2 and HF which will demonstrate compliance with the annual average emission rate(s) listed in condition #9 of this AO

12. The following limits shall not be exceed without prior approval in accordance with R307-1-3.1, UAC.

A. Production/Consumption limits

i) Raw Clay Consumption

120 tons/hr
1,051,200 tons/year

ii) 512,582 tons of brick produced per 12-month period, plantwide

B. Tunnel Kiln #1

Annual production limit of bricks included in 12.A.ii above

Note: Interstate Brick is not operating Tunnel Kiln #1 as of the date of this AO and it is not allowed to operate during the transition period (to 10/1/95). The scrubber for Kiln #1 requires rebuilding and modifications to meet the emission limits contained in condition #9. Interstate Brick shall submit a complete description of proposed modifications to the scrubber for Tunnel Kiln #1, and receive approval from the Executive Secretary, prior to construction.

C. Tunnel Kiln #3

Annual production limit of bricks included in 12.A.ii above

D. Tunnel Kiln #4

Annual production limit of bricks included in 12.A.ii above

E. Line 3 Baghouse

6,240 hours per year

F. Line 4 Baghouse

6,240 hours per year

Compliance with the annual limitations shall be determined on a rolling 12-month total. The owner/operator shall calculate a new 12-month total based on the first day of each month using data from the previous 12 months. Records of consumption/production shall be kept for all periods when the plant is in operation. Records of

consumption/production, including rolling 12-month totals shall be made available to the Executive Secretary or his representative upon request, and shall include a period of two years ending with the date of the request. The records shall be kept on a daily basis. Hours of operation shall be determined by supervisor monitoring and maintaining of an operations log.

13. Visible emissions from the following emission points shall not exceed the following values:

    A. All crushers - 15% opacity
    B. All screens - 10% opacity
    C. All conveyor transfer points - 10% opacity
    D. All baghouses - 10% opacity
    E. All other points - 20% opacity

    Opacity observations of emissions from stationary sources shall be conducted according to 40 CFR 60, Appendix A, Method 9. Visible emissions from mobile sources and intermittent sources shall use procedures similar to Method 9, but the requirement for observations to be made at 15-second intervals over a six-minute period shall not apply.

14. The moisture content of the clay shall be maintained at an average of no less than 4.0% by weight. The silt content of the clay shall be no greater than an average of 18.0% by weight. The moisture content and the silt content shall be tested if directed by the Executive Secretary using the appropriate ASTM method.

15. The storage piles shall be watered to minimize generation of fugitive dusts as dry conditions warrant or as determined necessary by the Executive Secretary.

Fuels

16. The owner/operator shall use only natural gas as a fuel and propane as a backup fuel in the kilns. If any other fuel is to be used, an AO shall be required in accordance with R307-1-3.1, UAC.

Modeling

17. This source has been modeled for fluoride emissions prior to issuance of this AO. Interstate Brick shall submit an analysis using parameters measured during the initial stack test for each scrubber. The analysis shall include parameters measured as compared with the parameters used in the modeling exercise completed. Critical parameters to be included in the analysis are as follows:

    A. Exhaust exit temperature

    B. Exhaust exit velocity/flow

    C. Fluoride emission rate

The results of the analysis shall be used to determine the applicability of the modeling completed. Additional modeling shall be performed if directed by the Executive Secretary.

Monitoring

18. Interstate Brick shall install, calibrate, maintain, and operate a monitoring device for the continuous measurement of the change in pressure of the gas stream through each scrubber. The monitoring device must be certified by the manufacturer. The monitoring device shall be accurate within plus or minus one inch of water gauge and must be calibrated on an annual basis according to the manufacturer's instructions. Continuous recording for the monitoring device is not required. However, daily records of readings shall be maintained and dates of calibrations shall be recorded.

    Interstate Brick shall measure and record the pressure drop during each compliance stack test of each scrubber. The pressure drop measured during the most recent compliance stack test shall be the minimum (-10%) of that required during all operating periods.

19. Interstate Brick shall install, calibrate, maintain, and operate a monitoring device for the continuous measurement of the scrubbing liquid flow rate to the scrubber. The monitoring device must be certified by the manufacturer. Accuracy shall be within plus or minus five percent of the design scrubbing liquid flow rate. Calibration shall be on an annual basis according to the manufacturer's instructions. Continuous recording for the monitoring device is not required. However, daily records of readings shall be maintained and dates of calibrations shall be recorded.

    Interstate Brick shall measure and record the scrubbing liquid flow rate during each compliance stack test on each scrubber. The scrubbing liquid flow rate measured during the most recent compliance stack test shall be the minimum (-10%) of that required during all operating periods.

20. Interstate Brick shall measure the pH of the scrubbing solution for each scrubber on a daily basis. The measuring device must be certified by the manufacturer as being accurate to plus or minus 5%. The measuring device shall be calibrated on a monthly basis.

    Interstate Brick shall measure and record the pH of the scrubbing liquid, and the type of neutralizer (hydrated lime, soda ash, etc.) during each compliance stack test of each scrubber. The pH measured during the latest compliance stack test shall be the minimum pH (-5%) of the scrubbing solution during all operating periods. The neutralizer used during the most recent compliance stack test shall be that required during all operating periods.

Records & Miscellaneous

21. All installations and facilities authorized by this AO shall be adequately and properly maintained. All pollution control vendor recommended equipment shall be installed,

maintained, and operated. Instructions from the vendor or established maintenance practices that maximize pollution control shall be used. All necessary equipment control and operating devices, such as pressure gauges, amp meters, volt meters, flow rate indicators, temperature gauges, continuous emission monitors (CEMs), etc., shall be installed and operated properly and easily accessible to compliance inspectors. A copy of all manufacturers' operating instruction for pollution control equipment and pollution emitting equipment shall be kept on site. These instructions shall be available to all employees who operate the equipment and shall be made available to compliance inspectors upon their request.

22. All records referenced in this AO or in applicable NSPS or NESHAP, which are required to be kept by the owner/operator, shall be made available to the Executive Secretary or his representative upon request. Examples of records to be kept at this source shall include the following as applicable:

    A. Production rate/operating hour limitations (Condition number 12)
    B. Scrubber operating parameters (Condition numbers 18, 19, and 20)
    C. Unavoidable Breakdown Reports (Condition number 24)
    D. Emergency episodes (Condition number 25)

23. The owner/operator shall comply with R307-1-3.5, UAC. This rule addresses emission inventory reporting requirements.

24. The owner/operator shall comply with R307-1-4.7, UAC. This rule addresses unavoidable breakdown reporting requirements. The owner/operator shall calculate/estimate the excess emissions whenever a breakdown occurs. The total of excess emissions shall be reported to the Executive Secretary as directed for each calendar year.

25. The owner/operator shall submit to the Executive Secretary an emergency episode plan within 60 days of the date of this AO. The plan shall identify what control/production measures the owner/operator shall implement when an emergency episode is declared by the Executive Director of the Department of Environmental Quality. Specific control/production measures shall be outlined for all three levels (Alert, Warning, Emergency). The values for the various levels are listed in R307-1-5, UAC. The emergency plan shall be approved by the Executive Secretary.

Any future modifications to the equipment approved by this order must also be approved in accordance with R307-1-3.1.1, UAC.

This AO in no way releases the owner or operator from any liability for compliance with all other applicable federal, state, and local regulations including the UACR.

Annual emissions for this source, the entire plant, are currently calculated at the following values:

Pollutant	Total Emissions tons/year
TSP	112.1
PM_{10}	88.8
SO_2	240.9
NO_x	65.7
CO	27.2
VOC	0.8
HF	23.7

These calculations are for the purposes of determining the applicability of Prevention of Significant Deterioration (PSD) and nonattainment area major source requirements of the UACR. They are not to be used for purposes of determining compliance.

In accordance with the requirements of Title V of the 1990 Clean Air Act, the following pollutants may be subject to an operating permit fee. Both the fee rate and the class of pollutants are subject to change by state, the federal agencies, or both.

Pollutant	Total Emissions Tons/Year
PM_{10}	88.8
SO_2	240.9
NO_x	65.7
VOC	0.8
HF	23.7

The Division of Air Quality is authorized to charge a fee for reimbursement of the actual costs incurred in the issuance of an AO. Unless you have comments which would require additional work, the fee for this AO will be $4,625.00. An invoice is attached. Your AO can be issued as soon as payment is received.

Sincerely,

Lynn R. Menlove, Manager
New Source Review Section

Interstate Brick Company
Tunnel Kiln #4
Salt Lake County - CDS A1 NA Toxics TitleVMajor

Filing Fee		$ 0.00
Review Engineer	64.00 hours @ $50.00/hr	$ 3,200.00
Modeler	28.50 hours @ $50.00/hr	$ 1,425.00
Computer Fee		$ 0.00
Notice To Paper		$ 0.00
Travel	0.0 miles @ $0.23/mile	$ 0.00
Total Charges		$ 4,625.00
Amount Paid to Date		$ 0.00
Balance Due		$ 4,625.00

Please remit a copy of this invoice with your payment.

Please send payment to:

Utah Division of Air Quality
1950 West North Temple
Salt Lake City, Utah 84114-8420
(801) 536-4000

Appendix "B"

(AET Pretest Protocol)

American Environmental Testing Company Inc.

Reno, Nevada
702-786-8553

Phoenix, Arizona
602-253-3354

Salt Lake City, Utah
801-266-7111

AMERICAN ENVIRONMENTAL TESTING COMPANY, INC.

565 South Birch Drive
Spanish Fork, Utah 84660
(801) 266-7111

Pre-test Information Form & Attachments

SOURCE INFORMATION November 21, 1994

Facility Name: Interstate Brick Company

Units to be Tested: 1. No. 3 Brick Kiln Scrubber Inlet
2. No. 4 Brick Kiln Scrubber Inlet
3. No. 4 Brick Kiln Scrubber Outlet

Mailing Address: 9780 South 5200 West, West Jordan, Utah 84088-5689

Plant Address: Same as above

Phone: (801) 280-5200

Plant Contact: Mr. James Keck, Plant Manager

Test Date: Week of December 5, 1994

CONTRACTOR OR TEST FIRM

Name: American Environmental Testing, Company, Inc.

Address: 565 South Birch Drive, Spanish Fork, Utah, 84660

Phone: (801) 266-7111

Contact: V. Brent Benson, Technical Director

SOURCE TEST SUMMARY

Methodology	Parameter Determined	Units to Tested
EPA Method 1	Location of Sample & Velocity Traverses from Stationary Sources	1, 2 & 3

EPA Method 2	Stack Gas Velocity and Flow Rate from Stationary Sources	1, 2 & 3
EPA Method 3	Gas Analysis for Carbon Dioxide Oxygen, Excess Air & Dry Molecular Weight of Stack Gases	1, 2 & 3
EPA Method 4	Moisture Content in Stack Gases	1 & 3
EPA Method 5	Particulate Emissions from Stationary Sources	1 & 3
EPA Method 6C	Sulfur Dioxide Emissions from Stationary Sources (Instrumental Analyzer Procedure)	1, 2 & 3
EPA Method 7E	Nitrogen Oxides Emissions from Stationary Sources (Instrumental Analyzer Procedure)	1, 2 & 3
EPA Method 13B	Total Fluoride Emissions from Stationary Sources (Specific Ion Electrode Method)	1 & 3

CEMS Gas Standards for Determination of Compliance

Calibration Gas Required	AET Protocol 1 Gas to be used
I. SO_2 (span 0-1000 ppm)	
a) Between 40-60% of span (400-600 ppm)	514.6 ppm
b) Between 80-100% of span (800-1000 ppm)	901.6 ppm
II. NOx (span 0-300 ppm)	
a) Between 40-60% of span (120-180 ppm)	159.4 ppm
b) Between 80-100% of span (240-300 ppm)	251.1 ppm

CALIBRATION DATA

The Federal EPA and individual air pollution control agencies require various calibrations for specific items included in the EPA Method 5 sample train. Current calibrations for all of these items are included in Appendix "A".

PROCESS DESCRIPTION AND POLLUTION CONTROL EQUIPMENT

The manufacture of brick and related products such as clay pipe, pottery and some types of refractory brick involves the mining, grinding, screening and blending of the raw materials, and the forming, cutting or shaping, drying or curing, and firing of the final product.

Surface clays and shales are mined in open pits. Most fine clays are found underground. After mining, the material is crushed to remove stones and is stirred before it passes onto screens for segregation by particle size.

To start the forming process, clay is mixed with water, usually in a pug mill. The three principal processes for forming brick are stiff mud, soft mud and dry press. In the stiff mud process, sufficient water is added to give the clay plasticity, and bricks are formed by forcing the clay through a die. Wire is used in separating bricks. All structural tile and most and most brick are formed by this process. The soft mud process is usually used with clay too wet for the stiff mud process. The clay is mixed with water to a moisture content of 20 to 30 percent, and the bricks are formed in molds. In the dry press process, clay is mixed with a small amount of water and formed in steel molds by applying pressure of 500 to 1500 pounds per square inch.

Wet clay units that have been formed are almost completely dried before firing, usually with waste heat from kilns. Many types of kilns are used for firing brick, but the most common are the downdraft periodic kiln and the tunnel kiln. The periodic kiln is a permanent brick structure with a number of fireholes where fuel enters the furnace. Hot gases from the fuel are drawn up over the bricks, down through then by underground flues, and out of the oven to the chimney. Although lower heat recovery makes this type less efficient than the tunnel kiln, the uniform temperature distribution leads to a good quality product.

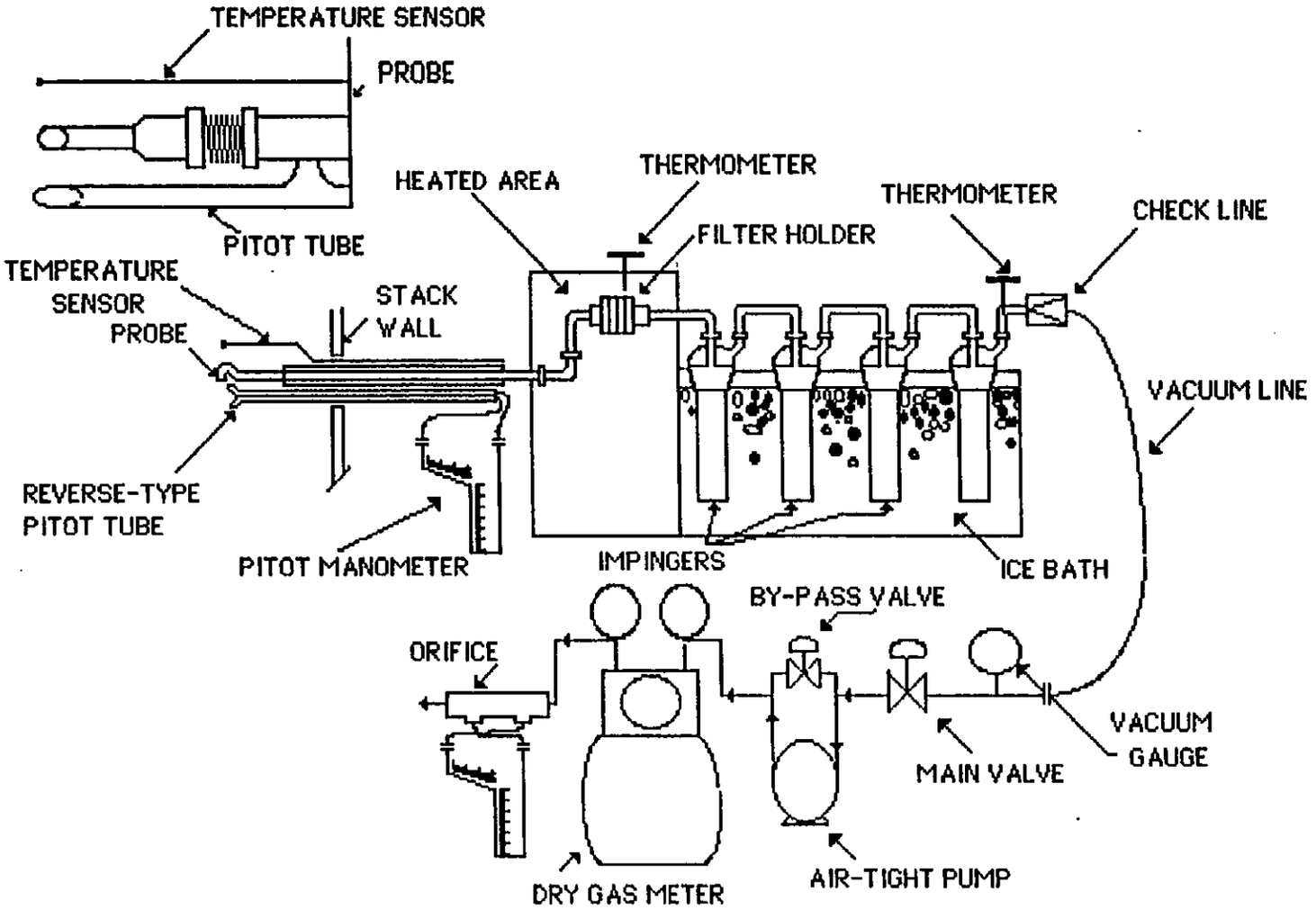
SAMPLE TRAIN AND ANALYSIS INFORMATION

Interstate Brick company is currently operating under the Utah Department of Environmental Quality (UDEQ) "Intent to Approve Number DAQE-947-94" which requires that particulate testing be accomplished using EPA Method 201A; unless liquid drops are present in the gas stream (which was found to be the case). EPA Method 5 will be used to substitute for EPA Method 201A for the No. 4 Kiln Outlet. The back half condensibles shall be tested using the method specified by the Executive Secretary (EPA Method 202).

An EPA Method 5 sample train will be employed to perform the moisture, velocity and particulate determinations on the above reference testing. A stainless steel or quartz probe liner will be used and maintained at a temperature of 248° ± 25° F for the duration of the test. The filter holder will also be kept at a temperature of 248° ± 25° F. The first two (2) impingers will contain 100 mls of distilled water, the third impinger will be left empty, and the fourth will contain a known amount of silica gel. All impingers will be weighed before and after each test to determine the moisture content of the gases. The impinger bath will be maintained at a temperature lower than 68° F to condense stack moisture. A minimum sample volume of 31 scf of a rate no less than 0.531 cfm is required. Pitot tubes and the meter system will be leak checked before and after sampling. Figure I is a schematic of the sample train to be used.

Figure I

EPA Method 5 Sample Train



EPA Methods 6C, 7E are instrumental methods. The sample train incorporates taking a sample line from the stack, conditioning the sample, and finally running it through the analyzers. Figure II is a schematic of the analyzer sample train, showing both sample line locations and calibration line locations. Variations to this schematic will be made according to each method. The mass emission calculations for SO_2 and NO_x will use the flow rate (DSCFH) derived from each of the EPA Method 5 tests respectfully.

An EPA Method 201A sample train will be employed to perform the above referenced PM_{10} testing. The sampling device used is a Cyclone I of the SRI/EPA five-stage series cyclone. This device provides a 10 micron size cut at a flow rate of approximately 0.5 dscfm; the precise flow rate depends on local stack conditions. A glass or teflon probe liner will be used and maintained at a temperature of 248° ± 25°F for the duration of the test. The filter holder will also be kept at a temperature of 248° ± 25°F. The first two (2) impingers will contain 100 mls of distilled water, the third impinger will be lift empty, and the fourth will contain a known amount of silica gel. All impingers will be weighed before and after each test to determine the moisture content of the gases. The impinger bath will be maintained at a temperature lower that 68°F to condense the moisture. The back-half impinger solutions will be evaporated and weighed or extracted with methylene chloride and evaporated and weighed as per EPA Method 202 depending on the pH of the solution. Pitot tubes and the meter system will be leak checked before and after sampling. Figure III is a schematic of the EPA Method 201A sample train to be used.

STACK SCHEMATIC AND TRAVERSE POINT LOCATIONS

The location of sampling and velocity traverse points are rigidly controlled in EPA Method 1 with respect to the stack diameter and the distance from the sampling ports to up-stream and down-stream interferences to laminar flow. A drawing of the exhaust duct and stack showing the sampling locations and their relationship to the interferences to flow are shown as follows:

1. Figure IV for the No. 3 Brick Kiln Scrubber Inlet
2. Figure V for the No. 4 Brick Kiln Scrubber Inlet
3. Figure VI for the No. 4 Brick Kiln Scrubber Outlet.

The exact location of each of the traverse points on each of the stack diameters (90° apart from one another at the sample port locations) are given in the following tables.

1. Table I for the No. 3 Brick Kiln Scrubber Inlet
2. Table II for the No. 4 Brick Kiln Scrubber Inlet
3. Table III for the No. 4 Brick Kiln Scrubber Outlet.

CEM Sample Train

Figure II

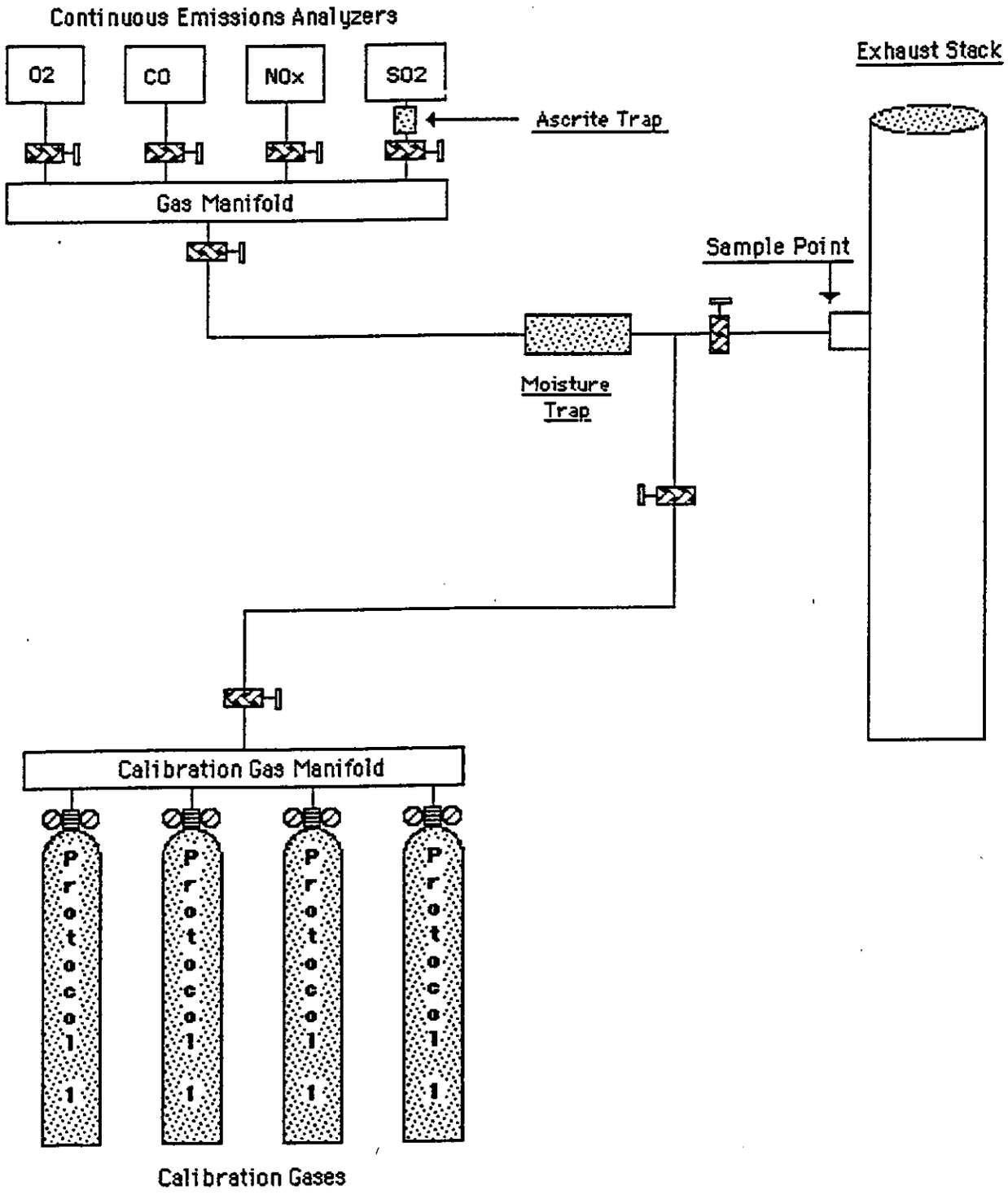
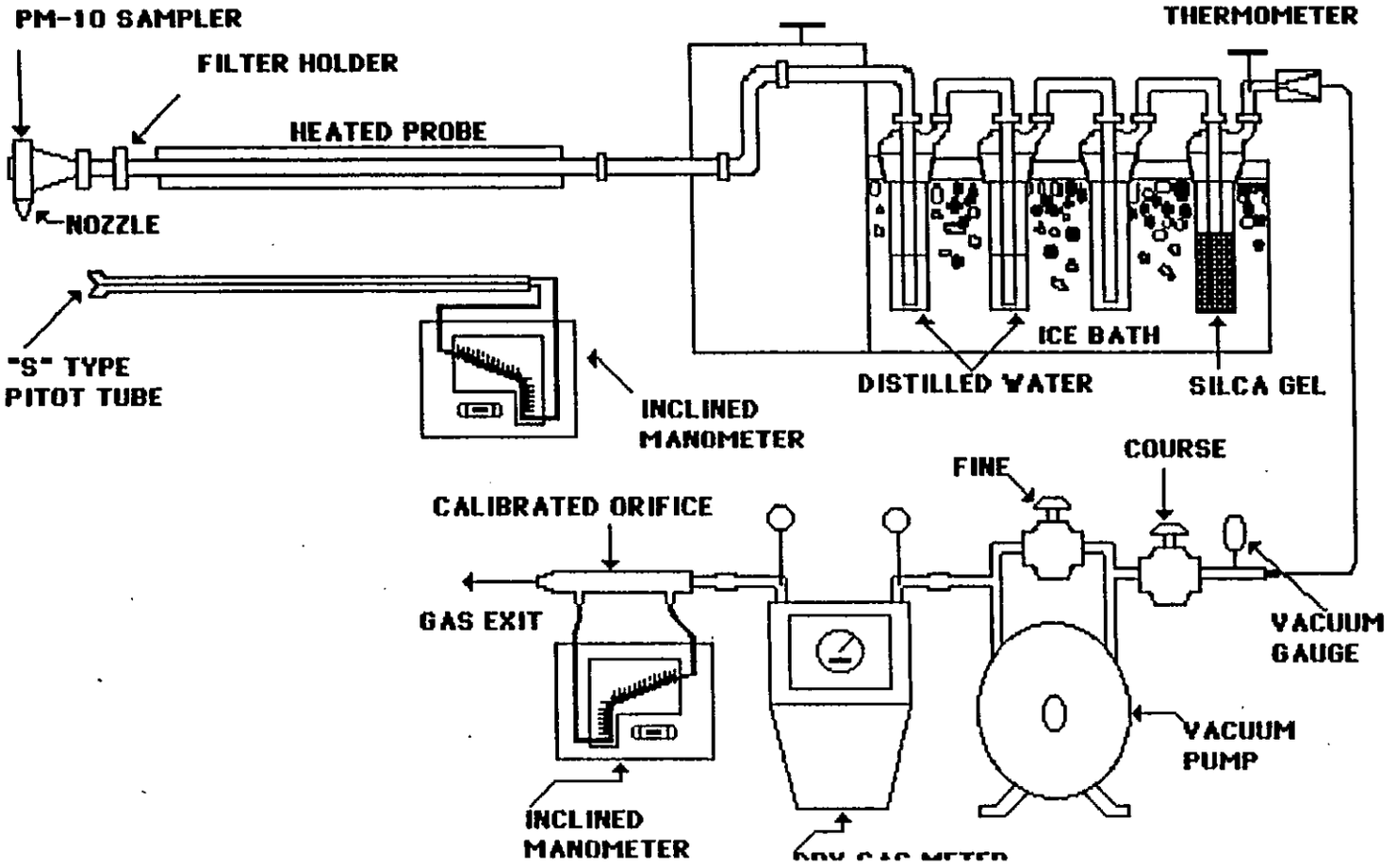


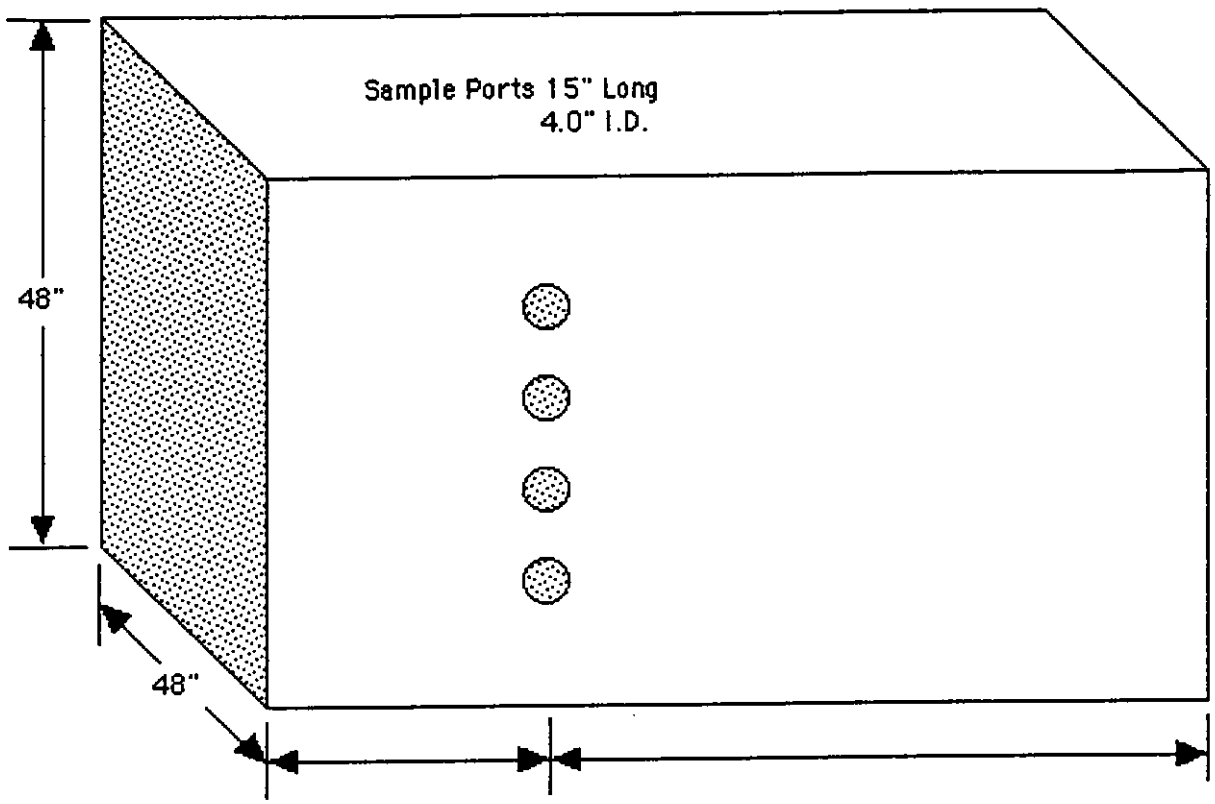
Figure III

EPA Method 201A Sample Train



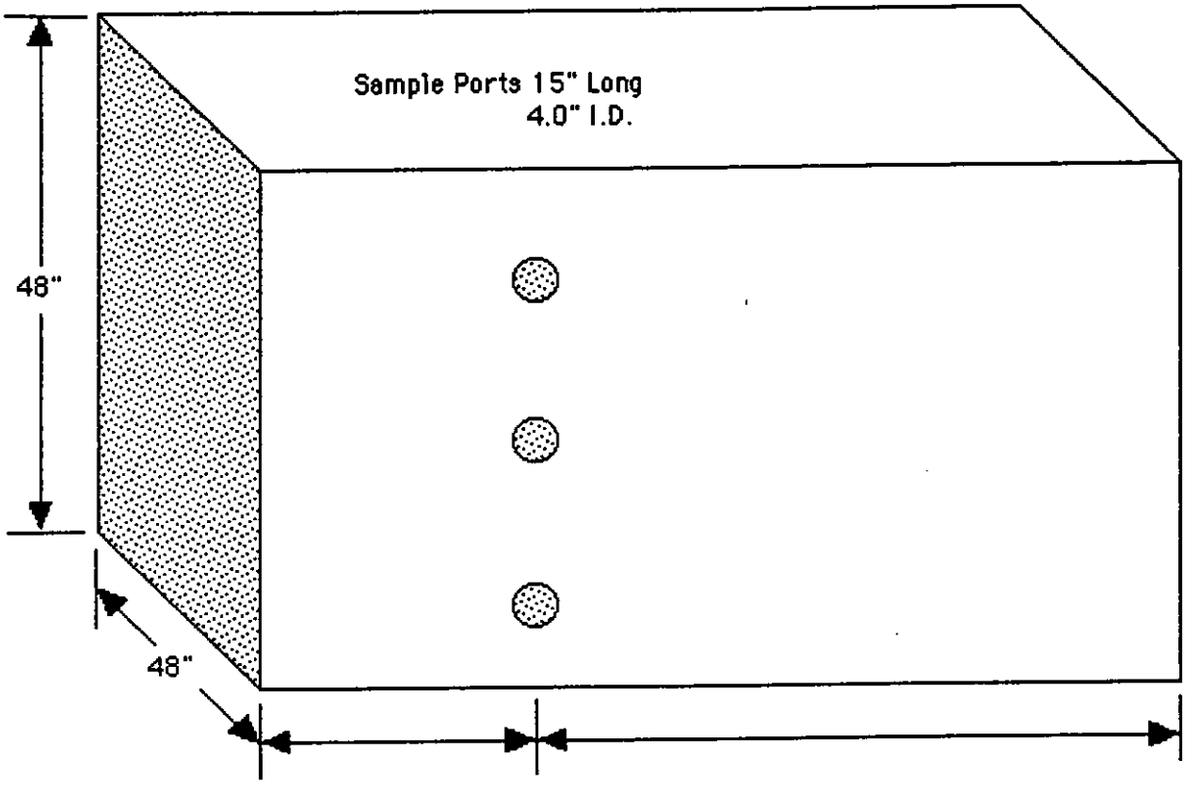
Interstate Brick Company
No. 3 Kiln Inlet

Figure IV



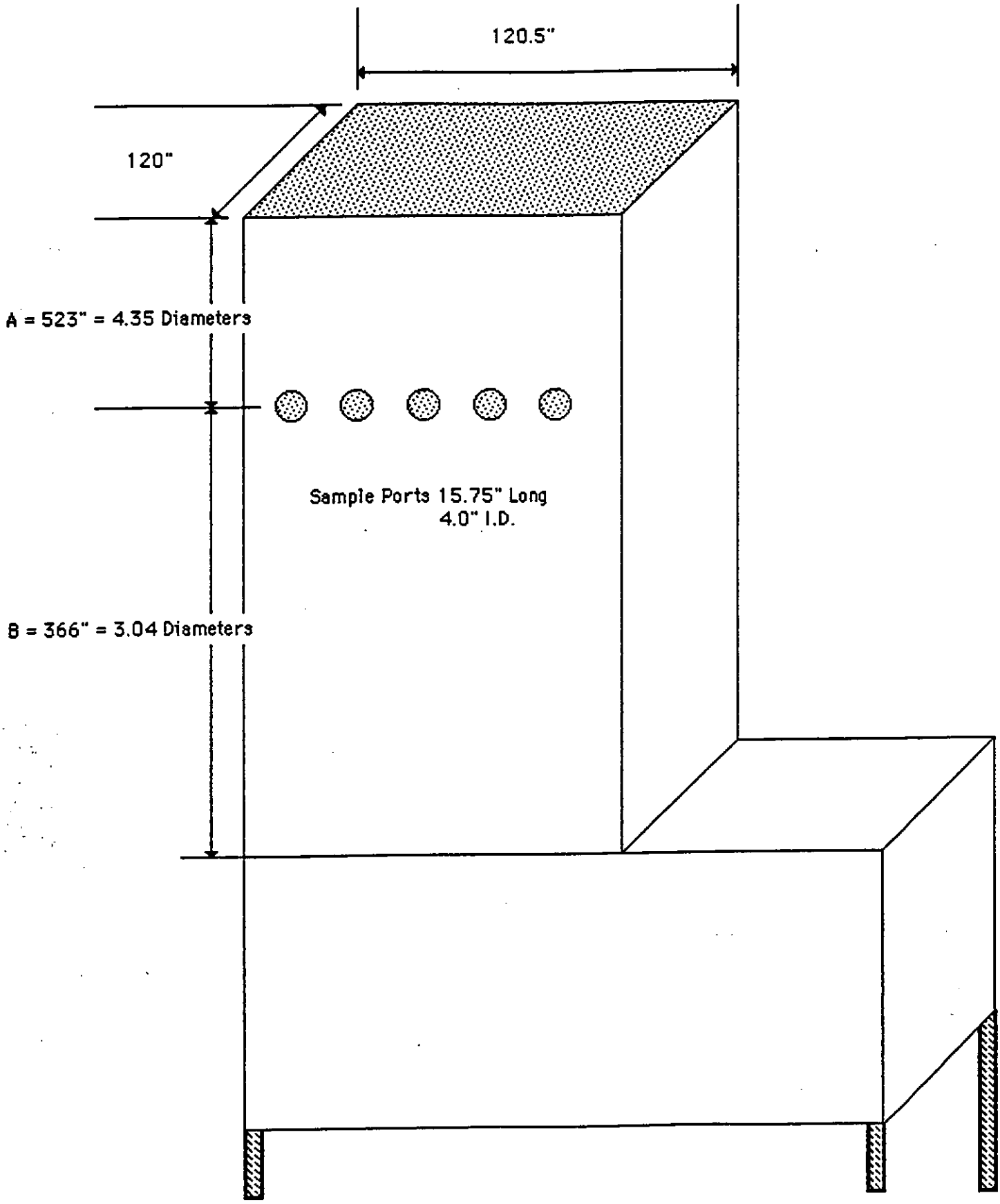
Interstate Brick Company
No. 4 Kiln Inlet

Figure V



Interstate Brick Company
No. 4 Kiln Outlet

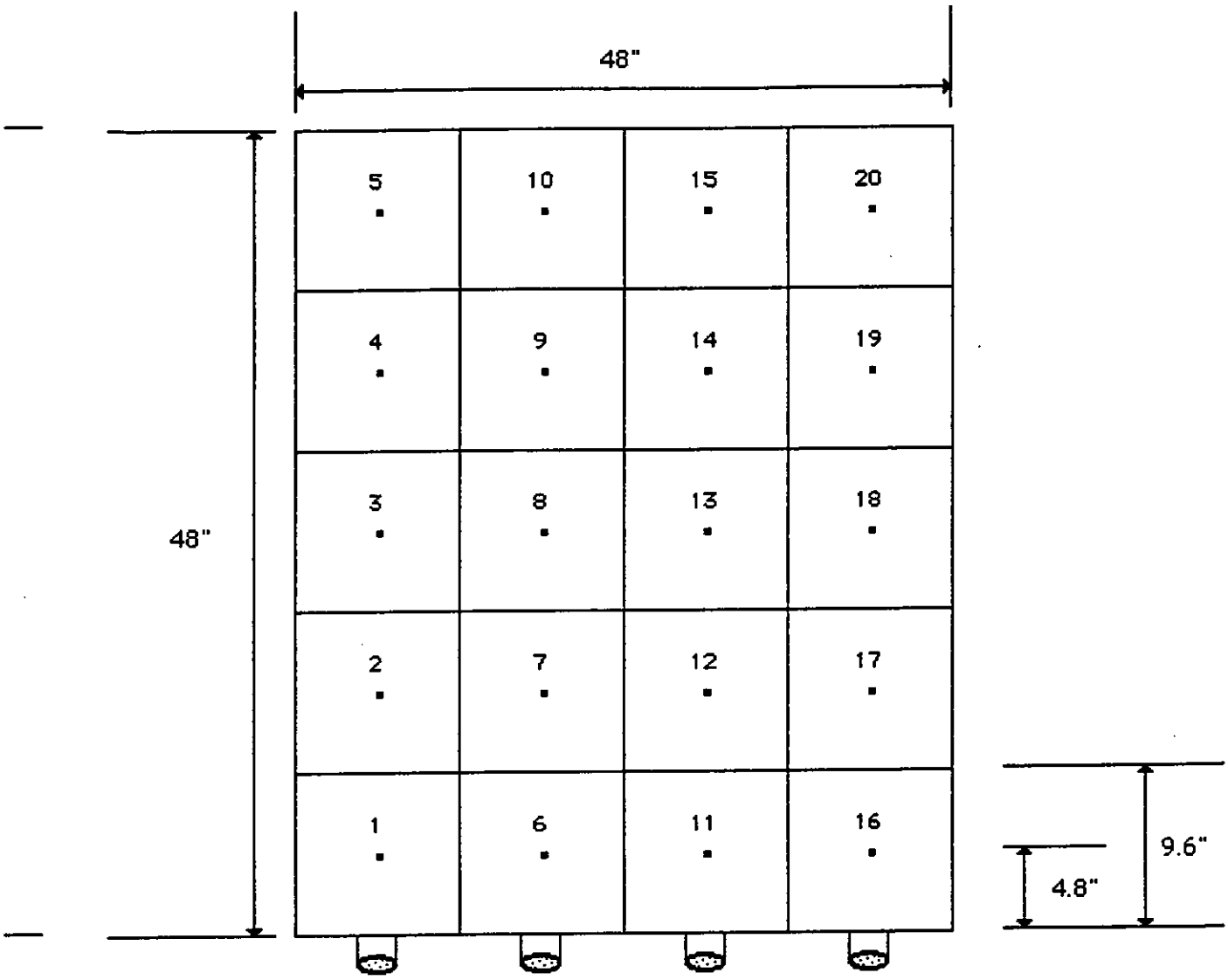
Figure VI



Interstate Brick Company

No.3 Kiln Inlet

Table I



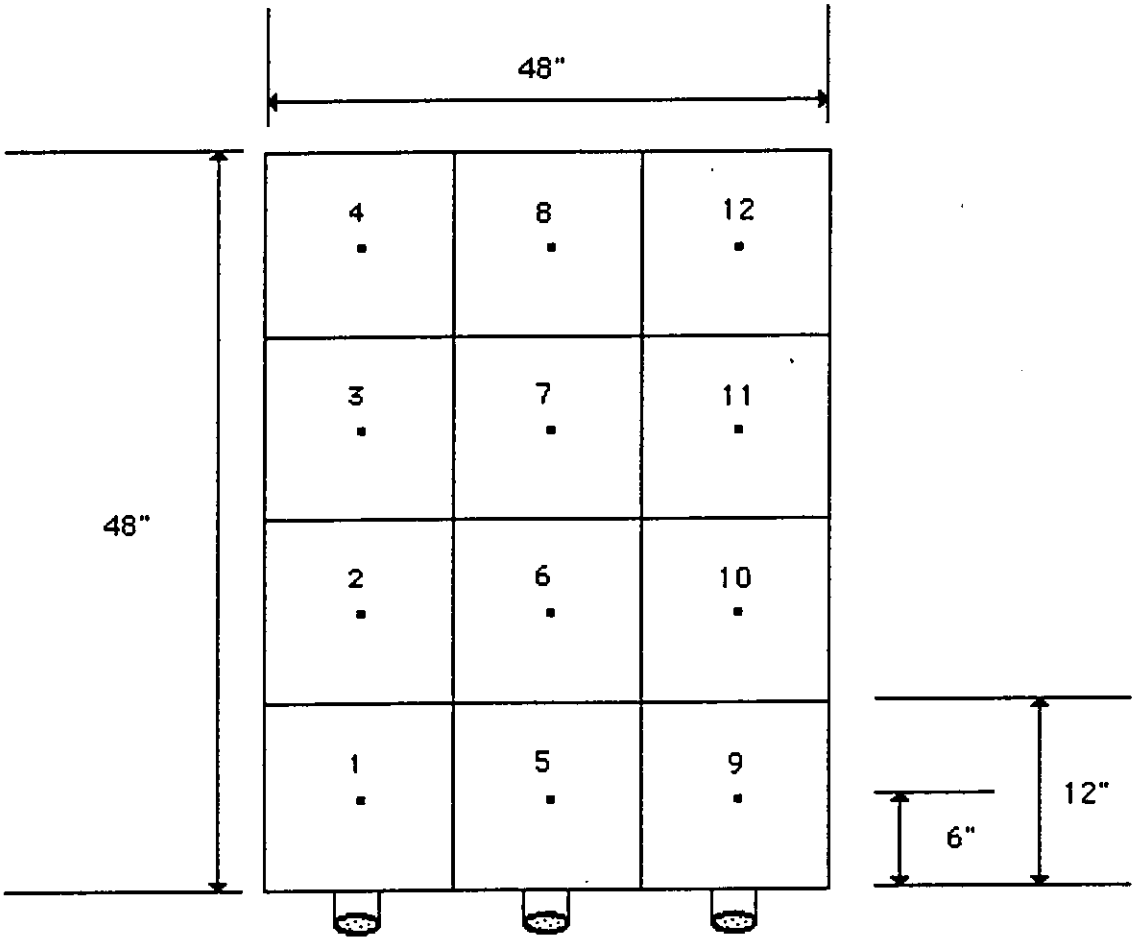
Sample Ports are 15" Long

Sample Point	Distance from outside of Port
1, 6, 11, 16	19.8" = 19 3/4"
2, 7, 12, 17	29.4" = 29 3/8"
3, 8, 13, 18	39.0" = 39"
4, 9, 14, 19	48.6" = 48 5/8"
5, 10, 15, 20	58.2" = 58 1/4"

Interstate Brick Company

No.4 Kiln Inlet

Table II



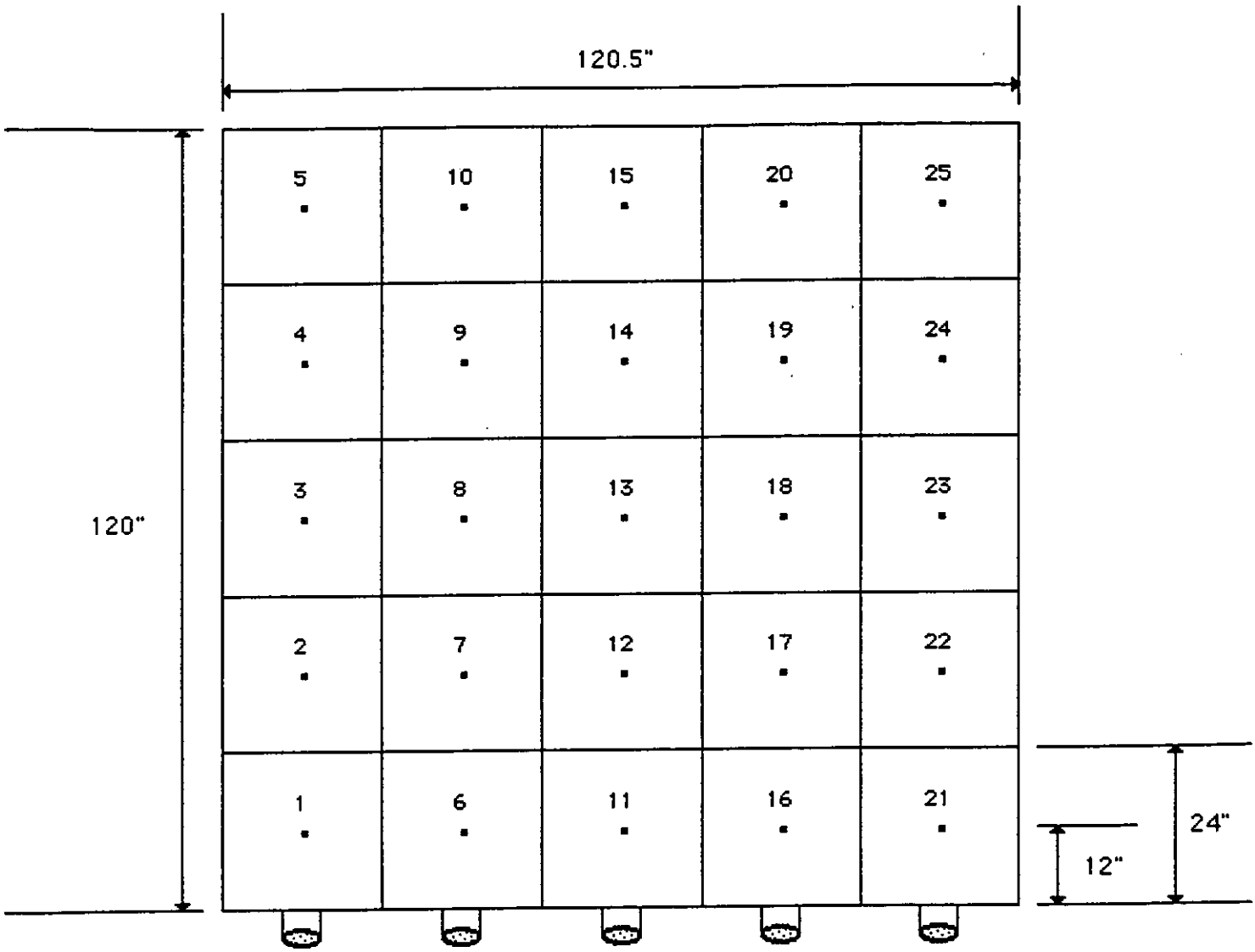
Sample Ports are 15" Long

Sample Point	Distance from outside of Port
1, 5, 9	21.0" = 21"
2, 6, 10	33.0" = 33"
3, 7, 11	45.0" = 45"
4, 8, 12	57.0" = 57"

Interstate Brick Company

No.4 Kiln Outlet

Table III



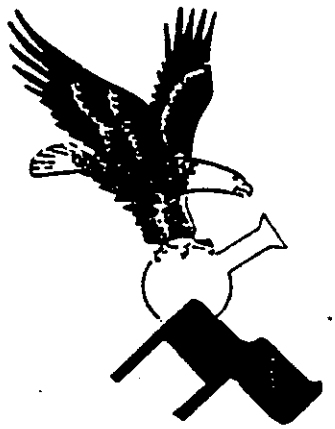
Sample Ports are 15.75" Long

Sample Point	Distance from outside of Port
1, 6, 11, 16 & 21	27.75" = 27 3/4"
2, 7, 12, 17 & 22	51.75" = 51 3/4"
3, 8, 13, 18 & 23	75.75" = 75 3/4"
4, 9, 14, 19 & 24	99.75" = 99 3/4"
5, 10, 15, 20 & 25	123.75" = 123 3/4"

SAFETY CONSIDERATIONS AND OTHER REQUIREMENTS

All testing stations will be accessible from OSHA approved scaffolding or platforms. AET will require 4 - 120V, 20 amp, 1Ø circuits to be provided by Interstate Brick Company in order to perform the emissions tests.

AET does not anticipate at this time that during these tests it will be necessary to deviate from any of the methodology specified in 40 CFR 60. A copy of Interstate Brick Company's Current Approval Order is contained in Appendix "B".



Appendix "C"

(Production Data)

American Environmental Testing Company Inc.

Reno, Nevada
702-786-8553

Phoenix, Arizona
602-253-3354

Salt Lake City, Utah
801-266-7111

INTERSTATE BRICK
9780 South 5200 West
West Jordan, Utah 84088-5629
(801) 565-5200
800/233-8654 (NAT'L)
800/233-1244 (UTAH)
(801) 565-5220 FAX

Fax Message

From: John Hewitt

To: Brett Lindsey fax no. 266-7111

Production during testing of line 3 & line 4 baghouses Line 3 & Line 4 kilns.

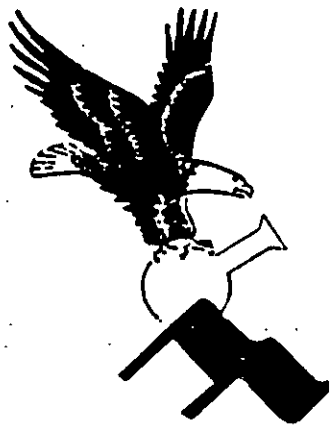
Line 4 baghouse 12/6/94 Day shift.
197 tons 41 mix over 9 hrs.

Line 3 baghouse (whichever day you tested)
- 12/6 175 tons 41 mix run over 8 hrs
- 12/7 184 tons 01 mix run over 8 hrs

Crusher baghouse 12/6/94 800 tons run over 8 hrs day shift
500 ton 41 mix
300 ton 80 mix
800 ton ~~total~~

Line 3 kiln: 12/7/94
327 ~~tons~~ 41 mix (Advantage Mondecello)
18 cars/day push rate
run over 24 hr period

Line 4 kiln
12/6/94 289 tons 41 mix (6x8x16 Atlas, 8x8x16 Atlas Park Rose)
15 cars/day push rate,
run over 24 hr. period



Appendix "D"

(Field & Laboratory Data)

American Environmental Testing Company Inc.

Reno, Nevada
702-786-8553

Phoenix, Arizona
602-253-3354

Salt Lake City, Utah
801-266-7111

AMERICAN ENVIRONMENTAL TESTING, INCORPORATED
565 So. Birch Drive 801-266-7111
Spanish Fork, Utah 84660

MOISTURE & FLOW RATE DATA FORMAT

1	Plant	Interstate Brick
2	City	West Jordan,Utah
3	Location	Kiln #3
4	Operator	Ryan Benson
5	Date	12/7/94
6	Test Number	EPA 4 - #1 Compliance
7	Stack Diameter (in)	54.16
8	Sample Box Number	RAC #2A
9	Meter Box Number	RAC #2824
10	Meter ^H@	1.613
11	Meter Calibration, Y	0.917
12	Pitot Tube, Cp	0.8429
13	Probe Length (ft)	6'-B
14	Probe Liner Material	Stainless Steel
15	Probe Heater Setting (°F)	248
16	Ambient Temperature (°F)	40
17	Barometeric Press., Pb (in Hg)	25.42
18	Static Pressure, Ps (in H2O)	-0.18
19	Absolute Pressure, Pabs (Hg)	25.407
20	C Factor	0
21	Reference ^P (in H2O)	0.48
22	Nozzle Identification Number	1/2"-#2
23	Nozzle Diameter (in)	0.502
24	Pretest Leak Rate (CFM)	0.002
25	Leak Check Vacuum (in H2O)	22.3
26	Stack Area in Square Feet	15.999
27	Gas Analysis	
28	CO (%)	0
29	CO2 (%)	3.4
30	O2 (%)	14.8
31	N2 (%)	81.8

Pretest and Post-test Velocities

PRE #1

Time: 1350

Stack Temp 423

Traverse Point #	Pretest ^P	Sq. Root ^P
1	1.5	1.2247
2	1.8	1.3416
3	2.9	1.7029
4	2.6	1.6125
5	2.7	1.6432
6	3.1	1.7607
7	4.2	2.0494
8	5.2	2.2804
9	5.6	2.3664
10	5.7	2.3875
11	2.1	1.4491
12	2.9	1.7029
13	3.1	1.7607
14	4.1	2.0248
15	3.7	1.9235
16	3.9	1.9748
Average =	3.444	1.8253

POST #1 - PRE #2

Time: 1450

Stack Temp : 420

Post-test ^P	Sq. Root ^P
1.3	1.1402
1.7	1.3038
2.8	1.6733
2.8	1.6733
2.5	1.5811
2.9	1.7029
4	2.0000
5.3	2.3022
5.7	2.3875
5.5	2.3452
2.2	1.4832
2.7	1.6432
3.3	1.8166
3.9	1.9748
3.5	1.8708
4.1	2.0248
Average = 3.388	1.8077

POST #2 - PRE #3

Time: 1545

Stack Temp 425

Traverse Point #	Pretest ^P	Sq. Root ^P
1	1.7	1.3038
2	2	1.4142
3	2.4	1.5492
4	2.5	1.5811
5	3.3	1.8166
6	4.4	2.0976
7	5.1	2.2583
8	5.4	2.3238
9	5.5	2.3452
10	5.4	2.3238
11	2.3	1.5166
12	2.7	1.6432
13	3.2	1.7889
14	4.3	2.0736
15	3.5	1.8708
16	3.8	1.9494
Average =	3.594	1.8660

POST #3

Time: 1630

Stack Temp : 424

Post-test ^P	Sq. Root ^P
1.4	1.1832
2.1	1.4491
2.5	1.5811
2.7	1.6432
3.2	1.7889
4.1	2.0248
5.3	2.3022
5.1	2.2583
5.6	2.3664
5.2	2.2804
2.4	1.5492
2.9	1.7029
3.4	1.8439
4.5	2.1213
3.3	1.8166
3.6	1.8974
Average = 3.581	1.8631

Sample Point	Meter Temperature Outlet (°F)	Meter Temperature Inlet (°F)	Stack Temperature Ts (°F)	Meter Gas Volume Vm (ft3)	Gas Volume difference (ft3)
Starting				226.342	
1	65	65	401	227.882	1.54
2	67	68	411	229.392	1.51
3	67	70	415	230.896	1.50
4	67	73	416	232.391	1.49
5	67	75	417	233.889	1.50
6	68	79	419	235.392	1.50
7	69	82	420	236.895	1.50
8	70	84	421	238.397	1.50
9	70	86	421	239.909	1.51
10	72	89	422	241.427	1.52
11	73	90	422	242.944	1.52
12	74	91	422	244.457	1.51
13	75	93	423	245.979	1.52
14	76	94	424	247.503	1.52
15	77	96	425	249.016	1.51
16	78	96	425	250.533	1.52
17	78	97	421	252.063	1.53
18	79	98	419	253.585	1.52
19	80	99	422	255.102	1.52
20	81	100	425	256.631	1.53
avg °F		79.45	419.55		
avg °R		539.45	879.55		
total =				30.289	30.29
average =	72.65	86.25	419.55		
	Meter Temperature Inlet (°F)	Meter Temperature Outlet (°F)	Stack Temp (°F) T	Gas Volume Vm	Gas Volume Vm

Pressure Difference ^H (in H2O)	Sampling Time (min)	Clock Time (24 hrs)	Vacuum (in Hg)	Probe Temperature Exit (°F)	Filter Temperature Exit (°F)	Impinger Temperature Outlet (°F)
		1300				
1.2	2	1302	5.1	245	254	38
1.2	2	1304	5	248	257	38
1.2	2	1306	5	245	254	39
1.2	2	1308	5	247	258	40
1.2	2	1310	5	249	260	40
1.2	2	1315	5	247	257	40
1.2	2	1317	5	249	261	40
1.2	2	1319	5	244	257	41
1.2	2	1321	5	248	261	40
1.2	2	1323	5	247	258	40
1.2	2	1330	5	250	255	40
1.2	2	1332	5	245	257	41
1.2	2	1334	5	249	260	40
1.2	2	1336	5	247	254	40
1.2	2	1338	5	249	259	40
1.2	2	1343	5	250	260	41
1.2	2	1345	5	247	258	42
1.2	2	1347	5	245	257	40
1.2	2	1349	5	249	260	40
1.2	2	1351	5	250	258	40

	40	40				
1.20	2	1326.50	5.01	247.50	257.75	40.00
Pressure Diff ^H	Sampling Time	Clock Time	Vacuum	Probe Exit Temperature (°F)	Filter Temperature (°F)	Outlet Impinger Temperature (°F)

POST TEST CALCULATIONS AND INFORMATION

Actual Meter Volume Vm :	30.289	Volume H2O Vlc (mils) =	49.1
Meter Volume Vm Std =	23.177	Volume H2O Vw (std) =	2.311
Mole Wt Dry Stack Gas =	29.136	Moisture Content Bws =	0.091
Mole Wt Wet Stack Gas =	28.126		

STACK VELOCITY FT/SECOND

Kp = 85.49
Vs #1 = 145.382
Vs #2 = 147.0930
Vs #3 = 149.4789

DRY STACK FLOW RATE FT3/HOUR

Q(std) #1 = 3.8727E+6
Q(std) #2 = 3.9139E+6
Q(std) #3 = 3.9684E+6

Average Meter Temperature

Degrees °F = 79.45
Degrees °R = 539.45

Average Delta ΔH

ΔH = 1.20

Average Sqrt ΔP and Stack Temp °F

#1 = 1.8165	421.50
#2 = 1.8369	422.50
#3 = 1.8645	424.50

Leak Check Information

Initial Leak Check Rate		Pitot Tubes
Finish	226.271	A = OK
Start	226.269	B = OK
Rate = 0.0020		
	Vac. = 22.3	

Final Leak Check Rate		Pitot Tubes
Finish	256.751	A = OK
Start	256.748	B = OK
Rate = 0.0030		
	Vac. = 20	

Length of Test Minutes = 40

Source Testing Summary and Comments

EMISSIONS SUMMARY SHEET NOx

Mass Emission

Run #1

NOx (ppm) =	31.3
NOx (ppm bias correction) =	31.90
NOx (lbs/hr) =	14.751

Run #2

NOx (ppm) =	32.44
NOx (ppm bias correction) =	32.87
NOx (lbs/hr) =	15.359

Run #3

NOx (ppm) =	39.84
NOx (ppm bias correction) =	40.26
NOx (lbs/hr) =	19.078

Calibration Bias Data

Run #1

Zero Gas Pre (ppm) =	-0.80
Zero Gas Post (ppm) =	-0.70
Cal Gas Actual (ppm) =	159.90
Cal Gas Pretest (ppm) =	159.40
Cal Gas Post test (ppm) =	160.40

Run #2

Zero Gas Pre (ppm) =	-0.70
Zero Gas Post (ppm) =	-0.40
Cal Gas Actual (ppm) =	159.90
Cal Gas Pretest (ppm) =	160.40
Cal Gas Post test (ppm) =	159.50

Run #3

Zero Gas Pre (ppm) =	-0.40
Zero Gas Post (ppm) =	-0.50
Cal Gas Actual (ppm) =	159.90
Cal Gas Pretest (ppm) =	159.50
Cal Gas Post test (ppm) =	159.60

EMISSIONS SUMMARY SHEET SO2

Mass Emission

Run #1

SO2 (ppm) =	600.39
SO2 (ppm bias correction) =	599.53
SO2 (lbs/hr) =	385.419

Run #2

SO2 (ppm) =	593
SO2 (ppm bias correction) =	592.09
SO2 (lbs/hr) =	276.692

Run #3

SO2 (ppm) =	547.71
SO2 (ppm bias correction) =	546.41
SO2 (lbs/hr) =	258.902

Calibration Bias Data

Run #1

Zero Gas Pre (ppm) =	-0.90
Zero Gas Post (ppm) =	-0.50
Cal Gas Actual (ppm) =	901.60
Cal Gas Pretest (ppm) =	904.20
Cal Gas Post test (ppm) =	902.30

Run #2

Zero Gas Pre (ppm) =	-0.50
Zero Gas Post (ppm) =	-0.70
Cal Gas Actual (ppm) =	901.60
Cal Gas Pretest (ppm) =	902.30
Cal Gas Post test (ppm) =	904.30

Run #3

Zero Gas Pre (ppm) =	-0.70
Zero Gas Post (ppm) =	-0.10
Cal Gas Actual (ppm) =	901.60
Cal Gas Pretest (ppm) =	904.30
Cal Gas Post test (ppm) =	903.70

American Environmental Testing Company, Inc.
565 South Birch Drive
Spanish Fork, Utah 84660
(801) 266-7111

LABORATORY DATA
EPA Method 5

Company: INTERSTATE BRICK Run Number: #1

Sampling Location: #3 KILN INLET Date: 12-7-94

Moisture Collected

	Initial Weight	Final Weight	Weight Gain
Impinger 1	598.6	619.6	21.0
Impinger 2	521.7	531.8	10.1
Impinger 3	507.9	511.3	3.4
Impinger 4	777.0	791.6	14.6

Total Gain = 49.1

Particulate Collected

Front - Half Analysis (Nozzle, Probe, Filter and Oven Glassware)

1. Filter Final Weight
2. Filter Tare Weight
3. Total Filter Weight
4. Particulate caught in nozzle, probe and glassware — NA
5. Total Front - Half Catch

Back - Half Analysis (Impingers, and Connecting Glassware)

1. Particulate caught in impingers evaporated down at less than 120° F. — NA

Total Particulate Catch (Sum of Front and Back - Half Catches) — NA

American Environmental Testing Company, Inc.
565 South Birch Drive
Spanish Fork, Utah 84660
(801) 266-7111

Company: INTERSTATE BRICK Date: 12-7-94

Source: #3 KILN INLET Run Number: #1

ORSAT ANALYSIS

(Average of 3 analyses each)

Test Number	Volume Percent - Dry			
	Nitrogen	Oxygen	Carbon Dixoide	Carbon Monoxide
1	81.9	14.7	3.4	<0.1
2	81.7	14.9	3.4	<0.1
3	81.8	14.8	3.4	<0.1
Average	81.8	14.8	3.4	<0.1

AMERICAN ENVIRONMENTAL TESTING, INCORPORATED
565 So. Birch Drive 801-266-7111
Spanish Fork, Utah 84660

PARTICULATE FIELD DATA FORMAT

1	Plant	Interstate Brick
2	City	West Jordan, Utah
3	Location	#4 Kiln
4	Operator	Greg Johnson
5	Date	Monday, 5 December 1994
6	Method and Run #	EPA 5 & 13B - #1 Compliance
7	Stack Diameter (in)	135.69
8	Sample Box Number	RAC #2
9	Meter Box Number	RAC #2824
10	Meter ^H@	1.613
11	Meter Calibration, Y	0.917
12	Pitot Tube, Cp	0.8401
13	Probe Length (ft)	11' - A
14	Probe Liner Material	Stainless
15	Probe Heater Setting (°F)	248
16	Ambient Temperature (°F)	40
17	Barometeric Press., Pb (in Hg)	25.3
18	Assumed Moisture (%)	15
19	Static Pressure, Ps (in H2O)	0.01
20	C Factor	0
21	Reference ^P (in H2O)	0.023
22	Nozzle Identification Number	1/2 - #12
23	Nozzle Diameter (in)	0.501
24	Thermometer Number	1-A
25	Pretest Leak Rate (CFM)	0.0070
26	Leak Check Vacuum (in H2O)	24
27	Filter Number	K - 4
28	Gas Analysis	
29	CO (%)	0
30	CO2 (%)	2.23
31	O2 (%)	16.90
32	N2 (%)	80.87

PRETEST CALCULATIONS

NOZZLE DIAMETER

Dn = 0.501

constant	0.0357
Qm	*0.75*
Pb(in HG)	25.3
Pgm(in H2O)	0.01
Pm	25.3007
Cp	0.8401
Tm(°F)	70
Tm(°R)	530
Bwm	0
Bws	0.15
Ts(°F)	125
Ts(°R)	585
Mds	29.0328
Ms	27.3779
Pb(in HG)	25.3
Pgs(in H2O)	0.01
Ps	25.3007
(^P)avg	0.023

Dn = 0.5028

PRETEST DATA

Cp	0.8401
Imp V(H2O)(ml)	*67.5000*
Gel H2O(g)	12.0000
V(H2O)(ml)	127.8000
Vm(acf)	49.2300
^h avg	0.2000
Vwc	6.0155
Vmc	38.0360

Bws = 0.1366

ISOKINETIC ^H

^H = 0.6033

constant	849.8000
^H@	1.0000
Mds	29.0328
Mm	29.0328
K	26.2287
^P	0.0230

^H = 0.6033

Sample Point	Meter Temperature Outlet (°F)	Meter Temperature Inlet (°F)	Stack Temp Ts (°F)	Gas Volume Vm (ft3)	Gas Volume difference (ft3)
starting				69.262	
1	59	60	130	70.613	1.35
2	65	66	128	72.001	1.39
3	65	69	126	73.392	1.39
4	66	72	125	74.801	1.41
5	66	75	127	76.31	1.51
6	67	78	128	78.112	1.80
7	68	82	125	80.207	2.10
8	70	86	125	82.281	2.07
9	72	88	122	84.392	2.11
10	73	90	125	86.389	2.00
11	75	92	125	88.502	2.11
12	76	93	125	90.456	1.95
13	77	95	124	92.561	2.11
14	78	96	123	94.642	2.08
15	79	97	124	96.694	2.05
16	80	99	125	98.756	2.06
17	82	83	125	100.864	2.11
18	82	85	125	102.978	2.11
19	83	86	124	105.052	2.07
20	83	87	124	107.093	2.04
21	83	88	125	109.134	2.04
22	84	90	125	111.206	2.07
23	84	92	125	113.285	2.08
24	84	94	125	115.336	2.05
25	84	96	124	117.449	2.11
avg °F		80.48	125.16		
avg °R		540.48	585.16		
total =				48.1870	48.19
average =	75.40	85.56	125.16		
Sample Point	Meter Temperature Inlet (°F)	Meter Temperature Outlet (°F)	Stack Temp (°F) T	Gas Volume Vm	Gas Volume Vm

Velocity Head ^Ps (in H2O)	Pressure Diff ^H (in H2O)	Sqrt ^Ps	Sampling Time (min)	Clock Time (24 hrs)	Vacuum (in Hg)
				1500	
0.01	0.41	0.1000	3	1503	2.2
0.011	0.46	0.1049	3	1506	2.6
0.011	0.46	0.1049	3	1509	2.8
0.012	0.51	0.1095	3	1512	3
0.015	0.63	0.1225	3	1515	3.5
0.022	0.93	0.1483	3	1522	4.1
0.025	1.07	0.1581	3	1525	4.4
0.024	1.03	0.1549	3	1528	4.3
0.025	1.08	0.1581	3	1531	4.5
0.022	0.95	0.1483	3	1534	4
0.025	1.08	0.1581	3	1540	4.5
0.02	0.87	0.1414	3	1543	4
0.025	1.09	0.1581	3	1546	4.5
0.024	1.05	0.1549	3	1549	4.4
0.023	1.01	0.1517	3	1552	4.2
0.023	1.01	0.1517	3	1600	4.2
0.025	1.08	0.1581	3	1603	4.5
0.025	1.08	0.1581	3	1606	4.5
0.024	1.04	0.1549	3	1609	4.4
0.022	0.96	0.1483	3	1612	4
0.022	0.96	0.1483	3	1620	4.1
0.023	1.00	0.1517	3	1623	4.3
0.023	1.01	0.1517	3	1626	4.3
0.022	0.96	0.1483	3	1629	4
0.025	1.10	0.1581	3	1632	4.5

			75	75	
0.0211	0.9141	0.1441	3	1560.58	3.99
Velocity Head ^Ps	Pressure Diff ^H	Sqrt ^Ps	Sampling Time	Clock Time	Vacuum

Probe Temperature Exit (°F)	Filter Temperature (°F)	Impinger Temperature Outlet (°F)	Vs	Point to Point Isokinetics
258	263	49	6.6179	100.13
255	258	48	6.9291	96.96
254	255	48	6.9173	96.77
254	256	48	7.2188	93.47
253	251	48	8.0846	89.50
255	254	47	9.7993	88.11
258	252	47	10.4194	95.50
255	253	47	10.2089	96.02
251	250	47	10.3926	95.22
250	249	46	9.7742	96.01
248	250	46	10.4194	95.03
250	253	47	9.3194	98.04
248	254	48	10.4105	94.21
249	255	48	10.1914	94.82
251	252	48	9.9854	95.43
250	250	48	9.9939	95.76
252	248	47	10.4194	94.95
253	250	47	10.4194	95.07
254	251	47	10.2001	94.95
251	252	47	9.7659	97.50
253	254	48	9.7742	97.51
252	255	48	9.9939	96.60
250	256	48	9.9939	96.77
251	254	47	9.7742	97.45
250	255	48	10.4105	93.99

252.20 Probe Exit Temperature (°F)	252.20 Filter Temperature (°F)	47.48 Outlet Impinger Temperature (°F)

POST TEST CALCULATION

VOLUME DRY GAS

Vm(std) = 36.5016

VOLUME H2O VAPOR

Vw(std) = 6.0485

MOISTURE CONTENT

Bws = 0.1421

Vm 48.1870 Vlc(mls) 128.5

Vm(std) = 36.5016 Vw(std) = 6.0485

MOL WT DRY STACK GASE

Mds = 29.0328

STACK VELOCITY

Vs = 9.4985

Kp 85.49

DRY STACK FLOW RATE

Q(std) = 2.2476E+6

MOL WT WET STACK GASE

Mws = 27.4645

Vs = 9.4985

ISOKINETIC CALCULATION

An = 1.3690E-3

% ISO = 95.5270

PARTICULATI CONCENTRATION

Cs = 1.2164E-3

Mn 44.4

Cs = 1.2164E-3

lbs/dscf = 2.6816E-6

grains/dscf = 0.0188

lbs/hr = 6.0273

FLUORIDE CONCENTRATION

Cs = 4.9587E-4

Initial Leak Check Rate

Finish 69.028 Pitot Tubes

Start 69.021 A = OK

Rate = 0.0070 B = OK

Vac. = 24

Mn 18.1

Cs = 4.9587E-4

lbs/dscf = 1.0932E-6

grains/dscf 0.0077

lbs/hr = 2.4571

Final Leak Check Rate Pitot Tubes

Finish 117.566 A = OK

Start 117.558 B = OK

Rate = 0.0080

Vac. = 21.1

INLET EMISSIONS SUMMARY

Mass Emissions

	Run #1
NOx (ppm) =	13.32
NOx (ppm bias correction) =	12.36
NOx (lbs/hr)	3.318

Calibration Bias Data

	Run #1
Zero Gas Pre (ppm) =	1.10
Zero Gas Post (ppm) =	0.90
Cal Gas Actual (ppm) =	159.90
Cal Gas Pretest (ppm) =	160.80
Cal Gas Post test (ppm) =	159.90

	Run #1
SO2 (ppm) =	211.33
SO2 (ppm bias correction) =	209.31
SO2 (lbs/hr)	78.096

	Run #1
Zero Gas Pre (ppm) =	0.00
Zero Gas Post (ppm) =	-0.30
Cal Gas Actual (ppm) =	260.70
Cal Gas Pretest (ppm) =	264.40
Cal Gas Post test (ppm) =	262.10

OUTLET EMISSIONS SUMMARY

Mass Emissions

	Run #1
NOx (ppm) =	12.07
NOx (ppm bias correction) =	11.43
NOx (lbs/hr)	3.069

Calibration Bias Data

	Run #1
Zero Gas Pre (ppm) =	0.90
Zero Gas Post (ppm) =	0.50
Cal Gas Actual (ppm) =	159.90
Cal Gas Pretest (ppm) =	159.50
Cal Gas Post test (ppm) =	159.90

	Run #1
SO2 (ppm) =	35.56
SO2 (ppm bias correction) =	35.26
SO2 (lbs/hr)	13.156

	Run #1
Zero Gas Pre (ppm) =	1.80
Zero Gas Post (ppm) =	-0.90
Cal Gas Actual (ppm) =	163.50
Cal Gas Pretest (ppm) =	163.70
Cal Gas Post test (ppm) =	162.80

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LABORATORY DATA

EPA Method 5

Stimetate Builds

Company: ~~#4 Kiln~~ Run Number: #1 EPA-5 + ISA

Sampling Location: #4 Kiln Stack Date: 12-5-91

Moisture Collected

	Initial Weight	Final Weight	Weight Gain
Impinger 1	595.9	695.2	99.3
Impinger 2	521.8	539.0	17.2
Impinger 3	506.8	508.7	1.9
Impinger 4	793.9	804.0	10.1

Total Gain = 128.5

Particulate Collected

Front - Half Analysis (Nozzle, Probe, Filter and Oven Glassware)

1. Filter Final Weight	0.7318
2. Filter Tare Weight	0.7057 K-4
3. Total Filter Weight	0.0261 = 26.1 mg
4. Particulate caught in nozzle, probe and glassware	16.2 mg
5. Total Front - Half Catch	42.3 mg

Back - Half Analysis (Impingers, and Connecting Glassware)

1. Particulate caught in impingers evaporated down at less than 120° F.	2.1 mg

Total Particulate Catch (Sum of Front and Back - Half Catches)

44.4 mg

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Company: Interstate Brick Date: 12-5-91

Source: #4 Kiln Run Number: #1 Cyclones

ORSAT ANALYSIS

(Average of 3 analyses each)

Test Number	Volume Percent - Dry			
EPA-5 & 13B	Nitrogen	Oxygen	Carbon Dixoide	Carbon Monoxide
1	80.9	16.8	2.3	<0.1
2	80.9	16.9	2.2	<0.1
3	80.9	17.0	2.2	<0.1
Average	80.87%	16.9%	2.23%	<0.1

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PARTICULATE FIELD DATA FORMAT

1	Plant	Interstate Brick
2	City	West Jordan, Utah
3	Location	#4 Kiln
4	Operator	David Hunt
5	Date	Tuesday, 6 December 1994
6	Method and Run #	EPA 5 & 13B - #2 Compliance
7	Stack Diameter (in)	135.69
8	Sample Box Number	RAC #2
9	Meter Box Number	RAC #2824
10	Meter ^H@	1.613
11	Meter Calibration, Y	0.917
12	Pitot Tube, Cp	0.8401
13	Probe Length (ft)	11' - A
14	Probe Liner Material	Stainless
15	Probe Heater Setting (°F)	248
16	Ambient Temperature (°F)	45
17	Barometeric Press., Pb (in Hg)	25.2
18	Assumed Moisture (%)	15
19	Static Pressure, Ps (in H2O)	0.01
20	C Factor	0
21	Reference ^P (in H2O)	0.023
22	Nozzle Identification Number	1/2 - #12
23	Nozzle Diameter (in)	0.501
24	Thermometer Number	1-A
25	Pretest Leak Rate (CFM)	0.0080
26	Leak Check Vacuum (in H2O)	23.6
27	Filter Number	K - 5
28	Gas Analysis	
29	CO (%)	0
30	CO2 (%)	2.47
31	O2 (%)	16.80
32	N2 (%)	80.73

PRETEST CALCULATIONS

NOZZLE DIAMETER

Dn = 0.501

constant	0.0357
Qm	0.75
Pb(in HG)	25.2
Pgm(in H2O)	0.01
Pm	25.2007
Cp	0.8401
Tm(°F)	70
Tm(°R)	530
Bwm	0
Bws	0.15
Ts(°F)	125
Ts(°R)	585
Mds	29.0672
Ms	27.4071
Pb(in HG)	25.2
Pgs(in H2O)	0.01
Ps	25.2007
(^P)avg	0.023

Dn = 0.5024

PRETEST DATA

Cp	0.8401
Imp V(H2O)(ml)	67.5000
Gel H2O(g)	12.0000
V(H2O)(ml)	127.8000
Vm(acf)	49.2300
^h avg	0.2000
Vwc	6.0155
Vmc	37.8857

Bws = 0.1370

ISOKINETIC ^H

^H = 0.6033

constant	849.8000
^H@	1.0000
Mds	29.0672
Mm	29.0672
K	26.2317
^P	0.0230

^H = 0.6033

Sample Point	Meter Temperature Outlet (°F)	Meter Temperature Inlet (°F)	Stack Temp Ts (°F)	Gas Volume Vm (ft3)	Gas Volume difference (ft3)
starting				118.037	
1	64	64	125	119.701	1.66
2	67	68	124	121.562	1.86
3	68	71	125	123.559	2.00
4	68	75	125	125.601	2.04
5	69	78	125	127.637	2.04
6	72	78	125	129.767	2.13
7	73	81	124	131.935	2.17
8	74	84	125	134.104	2.17
9	74	87	125	136.262	2.16
10	75	90	125	138.412	2.15
11	76	93	124	140.582	2.17
12	77	95	125	142.755	2.17
13	78	96	125	144.973	2.22
14	79	96	123	147.175	2.20
15	80	97	124	149.372	2.20
16	81	98	125	151.543	2.17
17	82	99	124	153.736	2.19
18	83	99	125	155.955	2.22
19	84	99	123	158.172	2.22
20	85	100	125	160.339	2.17
21	83	92	122	162.355	2.02
22	84	94	120	164.451	2.10
23	86	95	121	166.552	2.10
24	87	97	122	168.549	2.00
25	87	98	122	170.573	2.02
avg °F		83.20	123.92		
avg °R		543.20	583.92		
total =				52.5360	52.54
average =	77.44	88.96	123.92		
Sample Point	Meter Temperature Inlet (°F)	Meter Temperature Outlet (°F)	Stack Temp (°F) T	Gas Volume Vm	Gas Volume Vm

Velocity Head ^Ps (in H2O)	Pressure Diff ^H (in H2O)	Sqrt ^Ps	Sampling Time (min)	Clock Time (24 hrs)	Vacuum (in Hg)
				1000	
0.015	0.63	0.1225	3	1003	3.5
0.018	0.76	0.1342	3	1006	3.7
0.021	0.89	0.1449	3	1009	4
0.021	0.89	0.1449	3	1012	4
0.023	0.98	0.1517	3	1015	4.2
0.023	0.98	0.1517	3	1030	4.2
0.025	1.07	0.1581	3	1033	4.5
0.025	1.08	0.1581	3	1036	4.5
0.024	1.04	0.1549	3	1039	4.4
0.024	1.04	0.1549	3	1042	4.4
0.025	1.09	0.1581	3	1050	4.5
0.025	1.09	0.1581	3	1053	4.6
0.025	1.09	0.1581	3	1056	4.6
0.025	1.10	0.1581	3	1059	4.6
0.024	1.05	0.1549	3	1102	4.5
0.024	1.05	0.1549	3	1106	4.5
0.024	1.06	0.1549	3	1109	4.5
0.025	1.10	0.1581	3	1112	4.6
0.025	1.10	0.1581	3	1115	4.6
0.023	1.01	0.1517	3	1118	4.3
0.02	0.88	0.1414	3	1130	3.9
0.021	0.93	0.1449	3	1133	4
0.021	0.93	0.1449	3	1136	4.1
0.02	0.89	0.1414	3	1139	3.9
0.02	0.89	0.1414	3	1142	3.9

			75	75	
0.0226	0.9844	0.1502	3	1068.65	4.26
Velocity Head ^Ps	Pressure Diff ^H	Sqrt ^Ps	Sampling Time	Clock Time	Vacuum

Probe Temperature Exit (°F)	Filter Temperature (°F)	Impinger Temperature Outlet (°F)	Vs	Point to Point Isokinetics
237	238	47	8.0607	98.15
238	235	47	8.8225	99.57
240	237	47	9.5376	98.71
237	236	47	9.5376	100.60
238	237	47	9.9814	95.55
238	236	47	9.9814	99.72
236	235	46	10.3975	96.98
237	235	46	10.4064	96.79
238	236	46	10.1961	98.04
237	235	46	10.1961	97.36
235	236	46	10.3975	95.91
237	236	47	10.4064	95.89
236	235	47	10.4064	97.72
238	237	47	10.3886	96.77
237	236	48	10.1874	98.46
238	236	48	10.1961	97.23
237	236	48	10.1874	97.97
235	235	48	10.4064	97.15
235	236	48	10.3886	96.82
236	235	48	9.9814	98.66
233	240	48	9.2838	98.92
236	238	48	9.4967	99.97
238	235	48	9.5049	100.05
238	234	48	9.2838	97.29
237	233	48	9.2838	98.53

236.88 Probe Exit Temperature (°F)	236.88 Filter Temperature (°F)	47.24 Outlet Impinger Temperature (°F)

POST TEST CALCULATION

VOLUME DRY GAS
Vm(std) = 39.4402

VOLUME H2O VAPOR
Vw(std) = 5.8273

MOISTURE CONTENT
Bws = 0.1287

Vm 52.5360
Vm(std) = 39.4402

Vlc(mls) 123.8
Vw(std) = 5.8273

MOL WT DRY STACK GASE
Mds = 29.0672

STACK VELOCITY
Vs = 9.8765

Kp 85.49

DRY STACK FLOW RATE
Q(std) = 2.3693E+6

MOL WT WET STACK GASE
Mws = 27.6425

Vs = 9.8765

ISOKINETIC CALCULATION
An = 1.3690E-3

% ISO = 97.9395

PARTICULATI CONCENTRATION
Cs = 1.6734E-3

Mn 66
Cs = 1.6734E-3
lbs/dscf = 3.6892E-6
grains/dscf = 0.0258
lbs/hr = 8.7407

FLUORIDE CONCENTRATION
Cs = 3.6004E-4

Mn 14.2
Cs = 3.6004E-4
lbs/dscf = 7.9374E-7
grains/dscf 0.0056
lbs/hr = 1.8806

Initial Leak Check Rate
Finish 117.975
Start 117.967
Rate = 0.0080
Vac. = 23.6

Pitot Tubes
A = OK
B = OK

Final Leak Check Rate
Finish 170.86
Start 170.853
Rate = 0.0070
Vac. = 19.8

Pitot Tubes
A = OK
B = OK

INLET EMISSIONS SUMMARY

Mass Emissions

	Run #2
NOx (ppm) =	10.52
NOx (ppm bias correction) =	10.08
NOx (lbs/hr)	2.851

	Run #2
SO2 (ppm) =	137.62
SO2 (ppm bias correction) =	137.82
SO2 (lbs/hr)	54.205

Calibration Bias Data

	Run #2
Zero Gas Pre (ppm) =	0.90
Zero Gas Post (ppm) =	0.00
Cal Gas Actual (ppm) =	159.90
Cal Gas Pretest (ppm) =	159.90
Cal Gas Post test (ppm) =	160.50

	Run #2
Zero Gas Pre (ppm) =	-0.30
Zero Gas Post (ppm) =	0.00
Cal Gas Actual (ppm) =	260.70
Cal Gas Pretest (ppm) =	262.10
Cal Gas Post test (ppm) =	258.80

OUTLET EMISSIONS SUMMARY

Mass Emissions

Run #2	
NOx (ppm) =	10.91
NOx (ppm bias correction) =	10.40
NOx (lbs/hr)	2.943

Run #2	
SO2 (ppm) =	25.52
SO2 (ppm bias correction) =	26.16
SO2 (lbs/hr)	10.290

Calibration Bias Data

Run #2	
Zero Gas Pre (ppm) =	0.50
Zero Gas Post (ppm) =	0.50
Cal Gas Actual (ppm) =	159.90
Cal Gas Pretest (ppm) =	159.90
Cal Gas Post test (ppm) =	161.10

Run #2	
Zero Gas Pre (ppm) =	-0.90
Zero Gas Post (ppm) =	0.30
Cal Gas Actual (ppm) =	163.50
Cal Gas Pretest (ppm) =	162.80
Cal Gas Post test (ppm) =	159.30

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LABORATORY DATA

EPA Method 5 8-135

Company: Interstate Birch Run Number: #2 Comp.

Sampling Location: #4 Kiln Date: 12-6-94

Moisture Collected

	Initial Weight	Final Weight	Weight Gain
Impinger 1	597.2	701.6	104.4
Impinger 2	521.6	531.8	10.2
Impinger 3	506.7	707.7	1.0
Impinger 4	774.1	782.3	8.2

Total Gain = 123.8

Particulate Collected

Front - Half Analysis (Nozzle, Probe, Filter and Oven Glassware)

1. Filter Final Weight 0.7495 ~~0.7~~ OH
2. Filter Tare Weight 0.7075 5-5
3. Total Filter Weight 0.0420 = 42.0 mg
4. Particulate caught in nozzle, probe and glassware 21.6
5. Total Front - Half Catch 63.6 mg

Back - Half Analysis (Impingers, and Connecting Glassware)

1. Particulate caught in impingers evaporated down at less than 120° F. 2.4

Total Particulate Catch (Sum of Front and Back - Half Catches)

66.0 mg

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Company: Interstate Brick Date: 12-6-94

Source: #4 Kiln Run Number: #2 Coal Fines

ORSAT ANALYSIS

(Average of 3 analyses each)

Test Number	Volume Percent - Dry			
CFR 5 & 13A	Nitrogen	Oxygen	Carbon Dixoide	Carbon Monoxide
1	80.9	16.7	2.4	<0.1
2	80.5	16.9	2.6	<0.1
3	80.8	16.8	2.4	<0.1
Average	80.73%	16.8%	2.47%	<0.1

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PARTICULATE FIELD DATA FORMAT

1	Plant	Interstate Brick
2	City	West Jordan, Utah
3	Location	#4 Kiln
4	Operator	David Hunt
5	Date	Tuesday, 6 December 1994
6	Method and Run #	EPA 5 & 13B - #3 Compliance
7	Stack Diameter (in)	135.69
8	Sample Box Number	RAC #2
9	Meter Box Number	RAC #2824
10	Meter ^H@	1.613
11	Meter Calibration, Y	0.917
12	Pitot Tube, Cp	0.8401
13	Probe Length (ft)	11' - A
14	Probe Liner Material	Stainless
15	Probe Heater Setting (°F)	248
16	Ambient Temperature (°F)	43
17	Barometeric Press., Pb (in Hg)	25.22
18	Assumed Moisture (%)	15
19	Static Pressure, Ps (in H2O)	0.01
20	C Factor	0
21	Reference ^P (in H2O)	0.023
22	Nozzle Identification Number	1/2 - #12
23	Nozzle Diameter (in)	0.501
24	Thermometer Number	1-A
25	Pretest Leak Rate (CFM)	0.0090
26	Leak Check Vacuum (in H2O)	20.7
27	Filter Number	K - 6
28	Gas Analysis	
29	CO (%)	0
30	CO2 (%)	2.47
31	O2 (%)	16.70
32	N2 (%)	80.83

PRETEST CALCULATIONS

NOZZLE DIAMETER

Dn = 0.501

constant	0.0357
Qm	0.75
Pb(in HG)	25.22
Pgm(in H2O)	0.01
Pm	25.2207
Cp	0.8401
Tm(°F)	70
Tm(°R)	530
Bwm	0
Bws	0.15
Ts(°F)	125
Ts(°R)	585
Mds	29.0632
Ms	27.4037
Pb(in HG)	25.22
Pgs(in H2O)	0.01
Ps	25.2207
(^P)avg	0.023

Dn = 0.5025

PRETEST DATA

Cp	0.8401
Imp V(H2O)(ml)	67.5000
Gel H2O(g)	12.0000
V(H2O)(ml)	127.8000
Vm(acf)	49.2300
^h avg	0.2000
Vwc	6.0155
Vmc	37.9158

Bws = 0.1369

ISOKINETIC ^H

^H = 0.6033

constant	849.8000
^H@	1.0000
Mds	29.0632
Mm	29.0632
K	26.2314
^P	0.0230

^H = 0.6033

Sample Point	Meter Temperature Outlet (°F)	Meter Temperature Inlet (°F)	Stack Temp Ts (°F)	Gas Volume Vm (ft3)	Gas Volume difference (ft3)
starting				171.228	
1	76	77	122	173.178	1.95
2	76	77	121	175.184	2.01
3	77	79	122	177.223	2.04
4	77	82	121	179.314	2.09
5	78	85	122	181.475	2.16
6	78	85	121	183.673	2.20
7	79	87	122	185.876	2.20
8	79	89	122	188.082	2.21
9	80	92	121	190.262	2.18
10	81	95	122	192.421	2.16
11	83	97	122	194.624	2.20
12	84	99	121	196.846	2.22
13	85	101	121	199.075	2.23
14	87	103	122	201.289	2.21
15	88	103	122	203.496	2.21
16	89	105	121	205.774	2.28
17	91	107	118	207.992	2.22
18	91	107	120	210.262	2.27
19	92	107	121	212.484	2.22
20	87	104	122	214.701	2.22
21	87	105	121	216.913	2.21
22	88	105	121	219.195	2.28
23	89	107	121	221.358	2.16
24	90	107	120	223.496	2.14
25	91	107	121	225.611	2.11
avg °F		90.30	121.20		
avg °R		550.30	581.20		
total =				54.3830	54.38
average =	84.12	96.48	121.20		
Sample Point	Meter Temperature Inlet (°F)	Meter Temperature Outlet (°F)	Stack Temp (°F) T	Gas Volume Vm	Gas Volume Vm

Velocity Head ^Ps (in H2O)	Pressure Diff ^H (in H2O)	Sqrt ^Ps	Sampling Time (min)	Clock Time (24 hrs)	Vacuum (in Hg)
				1400	
0.019	0.82	0.1378	3	1403	3.8
0.02	0.86	0.1414	3	1406	4
0.021	0.91	0.1449	3	1409	4.1
0.022	0.95	0.1483	3	1412	4.2
0.024	1.04	0.1549	3	1415	4.4
0.025	1.09	0.1581	3	1430	4.5
0.025	1.09	0.1581	3	1433	4.5
0.025	1.09	0.1581	3	1436	4.5
0.024	1.05	0.1549	3	1439	4.4
0.024	1.06	0.1549	3	1442	4.4
0.025	1.10	0.1581	3	1450	4.5
0.025	1.11	0.1581	3	1453	4.5
0.025	1.11	0.1581	3	1456	4.6
0.024	1.07	0.1549	3	1459	4.6
0.024	1.07	0.1549	3	1502	4.6
0.025	1.12	0.1581	3	1508	4.6
0.024	1.08	0.1549	3	1511	4.5
0.025	1.13	0.1581	3	1514	4.6
0.024	1.08	0.1549	3	1517	4.5
0.024	1.07	0.1549	3	1520	4.5
0.024	1.07	0.1549	3	1530	4.5
0.025	1.12	0.1581	3	1533	4.6
0.023	1.03	0.1517	3	1536	4.4
0.022	0.99	0.1483	3	1539	4.3
0.021	0.94	0.1449	3	1542	4.2

			75	75	
0.0236	1.0423	0.1534	3	1469.04	4.41
Velocity Head ^Ps	Pressure Diff ^H	Sqrt ^Ps	Sampling Time	Clock Time	Vacuum

Probe Temperature Exit (°F)	Filter Temperature (°F)	Impinger Temperature Outlet (°F)	Vs	Point to Point Isokinetics
234	233	48	9.0374	99.35
235	234	48	9.2642	99.54
236	235	48	9.5011	98.59
235	236	48	9.7164	98.47
234	235	48	10.1571	97.22
235	234	47	10.3577	96.82
235	235	47	10.3666	96.88
234	235	47	10.3666	96.86
236	236	47	10.1484	97.29
236	236	47	10.1571	96.12
234	235	49	10.3666	95.81
236	235	50	10.3577	96.32
235	236	49	10.3577	96.39
236	237	49	10.1571	97.49
241	244	49	10.1571	97.10
243	246	50	10.3577	97.90
237	243	49	10.1222	96.72
237	238	48	10.3487	97.17
239	240	49	10.1484	97.07
238	237	49	10.1571	97.54
239	238	49	10.1484	97.16
237	237	49	10.3577	98.15
236	238	50	9.9347	96.74
238	239	50	9.7080	97.60
241	240	50	9.4930	98.82

236.68 Probe Exit Temperature (°F)	236.68 Filter Temperature (°F)	48.56 Outlet Impinger Temperature (°F)

POST TEST CALCULATION

VOLUME DRY GAS
Vm(std) = 40.3321

VOLUME H2O VAPOR
Vw(std) = 5.7143

MOISTURE CONTENT
Bws = 0.1241

Vm 54.3830
Vm(std) = 40.3321

Vlc(mls) 121.4
Vw(std) = 5.7143

MOL WT DRY STACK GASE
Mds = 29.0632

STACK VELOCITY
Vs = 10.0498

DRY STACK FLOW RATE
Q(std) = 2.4369E+6

Kp 85.49

MOL WT WET STACK GASE
Mws = 27.6903

Vs = 10.0498

ISOKINETIC CALCULATION
An = 1.3690E-3

% ISO = 97.3883

PARTICULATI CONCENTRATION
Cs = 2.1373E-3

Mn 86.2
Cs = 2.1373E-3
lbs/dscf = 4.7118E-6
grains/dscf = 0.0330
lbs/hr = 11.4822

FLUORIDE CONCENTRATION
Cs = 3.7687E-4

Initial Leak Check Rate
Finish 171.135
Start 171.126
Rate = 0.0090
Vac. = 20.7

Pitot Tubes
A = OK
B = OK

Mn 15.2
Cs = 3.7687E-4
lbs/dscf = 8.3085E-7
grains/dscf 0.0058
lbs/hr = 2.0247

Final Leak Check Rate
Finish 225.941
Start 225.932
Rate = 0.0090
Vac. = 18.6

Pitot Tubes
A = OK
B = OK

INLET EMISSIONS SUMMARY

Mass Emissions

Run #3	
NOx (ppm) =	8.58
NOx (ppm bias correction) =	8.59
NOx (lbs/hr)	2.498

Calibration Bias Data

Run #3	
Zero Gas Pre (ppm) =	0.00
Zero Gas Post (ppm) =	0.00
Cal Gas Actual (ppm) =	159.90
Cal Gas Pretest (ppm) =	160.50
Cal Gas Post test (ppm) =	159.10

Run #3	
SO2 (ppm) =	181.92
SO2 (ppm bias correction) =	182.29
SO2 (lbs/hr)	73.744

Run #3	
Zero Gas Pre (ppm) =	0.00
Zero Gas Post (ppm) =	0.30
Cal Gas Actual (ppm) =	260.70
Cal Gas Pretest (ppm) =	258.80
Cal Gas Post test (ppm) =	261.40

OUTLET EMISSIONS SUMMARY

Mass Emissions

Run #3	
NOx (ppm) =	8.45
NOx (ppm bias correction) =	8.25
NOx (lbs/hr)	2.402

Calibration Bias Data

Run #3	
Zero Gas Pre (ppm) =	0.50
Zero Gas Post (ppm) =	0.00
Cal Gas Actual (ppm) =	159.90
Cal Gas Pretest (ppm) =	161.10
Cal Gas Post test (ppm) =	157.10

Run #3	
SO2 (ppm) =	29.36
SO2 (ppm bias correction) =	29.71
SO2 (lbs/hr)	12.018

Run #3	
Zero Gas Pre (ppm) =	0.30
Zero Gas Post (ppm) =	-0.20
Cal Gas Actual (ppm) =	163.50
Cal Gas Pretest (ppm) =	159.30
Cal Gas Post test (ppm) =	163.40

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LABORATORY DATA
EPA Method 5

Company: INTERSTATE BRICK Run Number: #3 EPA 5 +1 3 3

Sampling Location: #4 KILN Date: 12-6-94

Moisture Collected

	Initial Weight	Final Weight	Weight Gain
Impinger 1	598.1	697.7	99.6
Impinger 2	521.2	530.9	9.7
Impinger 3	508.5	508.8	0.3
Impinger 4	782.3	794.1	11.8

Total Gain = 121.4

Particulate Collected

Front - Half Analysis (Nozzle, Probe, Filter and Oven Glassware)

1. Filter Final Weight 0.7669
2. Filter Tare Weight 0.7097 K.C
3. Total Filter Weight 0.0572 = 57 [illegible]
4. Particulate caught in nozzle, probe and glassware 26.2
5. Total Front - Half Catch 83.4 ~g

Back - Half Analysis (Impingers, and Connecting Glassware)

1. Particulate caught in impingers evaporated down at less than 120° F. 2.8 ~g

Total Particulate Catch (Sum of Front and Back - Half Catches)

86.2 ~g

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(801) 266-7111

Company: Interstate Brick Date: 12-6-94

Source: #4 Kiln Run Number: #3 Comp.

ORSAT ANALYSIS

(Average of 3 analyses each)

Test Number	Volume Percent - Dry			
EPA 5+13	Nitrogen	Oxygen	Carbon Dixoide	Carbon Monoxide
#1	80.8	16.7	2.5	<0.1
#2	80.8	16.7	2.5	<0.1
#3	80.9	16.7	2.4	<0.1
Average	80.83	16.7	2.47%	<0.1

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Spanish Fork, Utah 84660

POST TEST BACK HALF EVAPORATION

COMPANY: Interstate Brick
SOURCE: ~~Kiln~~ #4 Kiln
DATE: 12/5/94

ACETONE BLANK

Volume of Liquid	350 ml
Final Weight	106.8013
Tare Weight	106.8011
Residue	0.0002

RUN #1

Volume of Liquid	200 ml	
Color	Clear	
Final Weight	106.7819	
Tare Weight	106.7655	
Residue & Blank	0.0164	
- Blank	0.0002	
Residue	0.0162 =	16.2 mg

RUN #2

Volume of Liquid	200 ml	
Color	Clear	
Final Weight	99.7453	
Tare Weight	99.7235	
Residue & Blank	0.0218	
- Blank	0.0002	
Residue	0.0216 =	21.6 mg

RUN #3

Volume of Liquid		
Color		
Final Weight	102.8718	
Tare Weight	102.8454	
Residue & Blank	0.0264	
- Blank	0.0002	
Residue	0.0262	26.2 mg

AMERICAN ENVIRONMENTAL TESTING, INCORPORATED
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Spanish Fork, Utah 84660

POST TEST BACK HALF EVAPORATION

COMPANY: Interstate Brick
SOURCE: #4 Kiln
DATE: 12/5/94

CONTAINER #1 METHYLENE CHLORIDE			CONTAINER #2 DISTILLED WATER		
BLANK			**BLANK**		
Volume of Liqui	200 mls		Volume of Liqui	300 mls	
Final Weigh	102.8533		Final Weigh	99.7766	
Tare Weight	102.8532		Tare Weight	99.7764	
Residue	0.0001		Residue	0.0002	
RUN #1			**RUN #1**		
Volume of Liqui	200 mls		Volume of Liqui	200 mls	
Color	clear		Color	clear	
Final Weigh	102.8432		Final Weigh	99.7665	
Tare Weight	102.8422		Tare Weight	99.7651	
Residue & Blani	0.0010		Residue & Blani	0.0014	
- Blank	0.0001		- Blank	0.0002	
Residue	0.0009	0.9 mg	Residue	0.0012	1.2 mg
RUN #2			**RUN #2**		
Volume of Liqui	200 mls		Volume of Liqui	200 mls	
Color	clear		Color	clear	
Final Weigh	98.2162		Final Weigh	99.7915	
Tare Weight	98.2150		Tare Weight	99.7900	
Residue & Blani	0.0012		Residue & Blani	0.0015	
- Blank	0.0001		- Blank	0.0002	
Residue	0.0011	1.1 mg	Residue	0.0013	1.3 mg
RUN #3			**RUN #3**		
Volume of Liqui	200 mls		Volume of Liqui	200 mls	
Color	clear		Color	clear	
Final Weigh	98.2006		Final Weigh	102.8249	
Tare Weight	[redacted] 98.1991		Tare Weight	102.8233	
Residue & Blani	0.0015		Residue & Blani	0.0016	
- Blank	0.0001		- Blank	0.0002	
Residue	0.0014	1.4 mg	Residue	0.0014	1.4 mg

Analytical Report

Mountain States Analytical
The Quality Solution

American Environmental Testing
565 South Birch Dr.
Spanish Fork, UT 84660

Attn: Mr. Brett Lindsay
Project: Interstate Brick #4 Kiln

Sample ID: Run #1
Matrix: Waste Water

MSAI Sample: 27756
MSAI Group: 6751
Date Reported: 12/12/94
Discard Date: 01/11/95
Date Submitted: 12/07/94
Date Sampled: 12/05/94
Collected by:
Purchase Order:
Project No.:

Test	Analysis	Results as Received	Units	Limit of Quantitation
0263	Fluoride, Selective Ion Electrode Method: EPA 340.2	18.1	mg/l	0.2

Respectfully Submitted,
Reviewed and Approved by:

Mark W. Bostrom
Project Manager

1645 West 2200 South, Salt Lake City, Utah 84119 (801)973-0050 1-800-973-MSAI FAX (801)973-6278

Analytical Report

Mountain States Analytical
The Quality Solution

American Environmental Testing
565 South Birch Dr.
Spanish Fork, UT 84660

Attn: Mr. Brett Lindsay
Project: Interstate Brick #4 Kiln

Sample ID: Run #2
Matrix: Waste Water

MSAI Sample: 27757
MSAI Group: 6751
Date Reported: 12/12/94
Discard Date: 01/11/95
Date Submitted: 12/07/94
Date Sampled: 12/06/94
Collected by:
Purchase Order:
Project No.:

Test	Analysis	Results as Received	Units	Limit of Quantitation
0263	Fluoride, Selective Ion Electrode Method: EPA 340.2	14.2	mg/l	0.2

Respectfully Submitted,
Reviewed and Approved by:

Mark W. Bostrom
Project Manager

1645 West 2200 South, Salt Lake City, Utah 84119 (801)973-0050 1-800-973-MSAI FAX (801)973-6278

Analytical Report

Mountain States Analytical
The Quality Solution

American Environmental Testing
565 South Birch Dr.
Spanish Fork, UT 84660

Attn: Mr. Brett Lindsay
Project: Interstate Brick #4 Kiln

Sample ID: Run #3
Matrix: Waste Water

MSAI Sample: 27758
MSAI Group: 6751
Date Reported: 12/12/94
Discard Date: 01/11/95
Date Submitted: 12/07/94
Date Sampled: 12/06/94
Collected by:
Purchase Order:
Project No.:

Test	Analysis	Results as Received	Units	Limit of Quantitation
0263	Fluoride, Selective Ion Electrode Method: EPA 340.2	15.2	mg/l	0.2

Respectfully Submitted,
Reviewed and Approved by:

Mark W. Bostrom
Project Manager

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Analytical Report

Mountain States Analytical
The Quality Solution

American Environmental Testing
565 South Birch Dr.
Spanish Fork, UT 84660

Attn: Mr. Brett Lindsay
Project: Interstate Brick #4 Kiln

Sample ID: Blank
Matrix: Waste Water

MSAI Sample: 27759
MSAI Group: 6751
Date Reported: 12/12/94
Discard Date: 01/11/95
Date Submitted: 12/07/94
Date Sampled: 12/05/94
Collected by:
Purchase Order:
Project No.:

Test	Analysis	Results as Received	Units	Limit of Quantitation
0263	Fluoride, Selective Ion Electrode Method: EPA 340.2	ND	mg/l	0.2

ND - Not detected at the limit of quantitation

Respectfully Submitted,
Reviewed and Approved by:

Mark W. Bostrom
Project Manager

12/22/95

PRETEST DATA

PM10 METHOD 201A

TEST SITE: Interstate Brick Primary Crusher Baghouse DATE: 12/6/94

RUN #: #1 Compliance

Pbar	Pg	Ts	Tm	B(ws)	ΔH@ Meter
in Hg	in H2O	°F	°F	fraction	in H2O
25.23	-1.5	50	90	0.02	1.748

CO2	O2	N2 +CO	Tambient	Cp(2)	Cp(201A)
%	%	%	°F	dimensionless	dimensionless
0.1	20.8	79.1	40	0.8394	0.8394

total run time	# of points	ΔPavg	ΔP1	Yi	stack area
min		in H2O	in H2O	meter coef	ft2
60	12	2.36	2.3	0.998	0.785

Md	**Mw**	**Ps**	**μs**
lb/lb mole	lb/lb mole	in Hg	micropoise
28.848	28.631	25.120	174.831

Qs	**ΔH**	**ΔH(-50)**	**ΔH(+50)**
ft3/min	in H2O	in H2O	in H2O
0.4482	0.557	0.685	0.462

Pretest		Pitots	Posttest		Pitots
Finish	676.02	+ ok	Finish	704.977	+ ok
Start	676.018	- ok	Start	704.975	- ok
	0.002			0.002	
	Vacuum 18.6			Vacuum 19	

nozzle #	Dn	ΔPmn	ΔPmx
1	0.4724	0.0026	0.0232
2	0.4331	0.0037	0.0329
3	0.3937	0.0053	0.0481
4	0.3543	0.0082	0.0734
5	0.3150	0.0130	0.1174
6	0.2756	0.0223	0.1819
7	0.2362	0.0413	0.3013
8	0.2165	0.0797	0.4066
9	0.1969	0.1437	0.5695
10	0.1772	0.2515	0.8368
11	0.15	0.5540	1.5642
12	0.135	0.8844	2.3420
13		*Error*	*Error*
14		*Error*	*Error*
15		*Error*	*Error*

	Dn in	Vn ft/sec	Vmn ft/sec	Vmnc ft/sec	Vmx ft/sec
1	0.47	6.14	*Error*	3.07	12.58
2	0.43	7.30	*Error*	3.65	13.87
3	0.39	8.84	*Error*	4.42	15.56
4	0.35	10.91	*Error*	5.46	17.84
5	0.32	13.80	*Error*	6.90	21.04
6	0.28	18.03	*Error*	9.02	25.77
7	0.24	24.55	11.88	12.27	33.17
8	0.22	29.22	17.06	14.61	38.53
9	0.20	35.33	22.91	17.66	45.60
10	0.18	43.62	30.30	21.81	55.27
11	0.15	60.87	44.97	30.44	75.57
12	0.14	75.15	56.82	37.58	92.47
13	0.00	*Error*	*Error*	*Error*	*Error*
14	0.00	*Error*	*Error*	*Error*	*Error*
15	0.00	*Error*	*Error*	*Error*	*Error*

Vmxc	ΔPmn	ΔPmnc	ΔPmx	ΔPmxc	An
ft/sec	in H2O	in H2O	in H2O	in H2O	ft2
	choose largest		choose smallest		
9.21	*Error*	0.0026	0.04	0.0232	1.2172E-3
10.95	*Error*	0.0037	0.05	0.03	1.0231E-3
13.25	*Error*	0.0053	0.07	0.05	8.4539E-4
16.37	*Error*	0.0082	0.09	0.07	6.8465E-4
20.71	*Error*	0.0130	0.12	0.12	5.4119E-4
27.05	*Error*	0.0223	0.18	0.20	4.1427E-4
36.82	0.04	0.0413	0.30	0.37	3.0429E-4
43.83	0.08	0.0585	0.41	0.53	2.5565E-4
52.99	0.14	0.0855	0.57	0.77	2.1146E-4
65.43	0.25	0.1303	0.84	1.17	1.7126E-4
91.31	0.55	0.25	1.56	2.28	1.2272E-4
112.73	0.88	0.39	2.34	3.48	9.9402E-5
Error	*Error*	*Error*	*Error*	*Error*	
Error	*Error*	*Error*	*Error*	*Error*	
Error	*Error*	*Error*	*Error*	*Error*	

TEST DATA

PM10 METHOD 201A

TEST SITE: Interstate Brick Primary Crusher Baghouse Date: 12/6/94

RUN #: #1 Compliance

START: 1120

STOP: 1220

point #	ΔP(201A) in H2O	dwell min	act time decimal	Ts °F	Tmo °F
1	2.2	4.94	5	47	65
2	2.3	5.05	5	44	68
3	2.4	5.16	5.25	47	70
4	2.1	4.82	5	46	73
5	2.3	5.05	5	45	75
6	2.2	4.94	5	46	78
7	2	4.71	4.75	47	81
8	2.3	5.05	5	49	83
9	2.1	4.82	5	45	85
10	2.3	5.05	5	43	87
11	2.2	4.94	5	41	89
12	2.3	5.05	5	41	90
total		59.5			
avg	2.22		60.00	45.08	78.67
		Actual Time:	60.00		

Average Meter Temp: 84.67

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LABORATORY DATA
EPA Method 201A

Company: Interstate Brick Run Number: #1 Compliance

Sampling Location: Brick Crusher Grizzly Baghouse Date: 12-06-99

Moisture Collected

	Initial Weight	Final Weight	Weight Gain
Impinger 1	576.6	576.8	+ 0.2
Impinger 2	540.1	557.2	+ 17.1
Impinger 3	426.4	426.7	+ 0.3
Impinger 4	715.8	720.2	+ 4.4

Total Gain = 22.0 g total

Particulate Collected

PM - 10 Particulate

1. Filter Final Weight: 0.2012
2. Filter Tare Weight: 0.1995 B-1
3. Net Filter Weight: + 0.0017 = 1.7 mg
4. Acetone Wash Mg: 1.9 mg
5. Total PM-10 Mg: = 3.6 mg

Larger Than PM -10 Particulate

Acetone Wash Mg

/

Back Half Analysis

Particulate Caught in Impingers Mg.

1.4 mg

Total PM-10 Particulate Catch Mg

5.0 mg

Tmi	Tov	Vm	vacuum	ΔH	SqRt ΔP
°F	°F	ft3	in Hg	in H2O	
		676.075			
65	250	678.634	1.3	0.557	0.0000
70	250	680.992	1.3	0.557	0.0000
82	250	683.476	1.3	0.557	0.0000
86	248	685.823	1.4	0.557	0.0000
90	248	688.188	1.4	0.557	0.0000
93	247	690.573	1.4	0.557	1.4832
96	245	692.845	1.4	0.557	1.4142
98	243	695.235	1.4	0.557	1.5166
100	244	697.638	1.4	0.557	1.4491
101	241	700.045	1.4	0.557	1.5166
103	240	702.448	1.4	0.557	1.4832
104	243	704.869	1.4	0.557	1.5166
		28.79			
90.67	245.75		1.37	0.5570	0.8650

POSTTEST CALCULATIONS

Vw	Vwstd	bws	Pbar	Pg	
mls	ft3	fraction	in Hg	in H2O	
22	1.04	0.04	25.23	-1.50	
Ps	**μs**	**Vmds**	**Qs**	**Mw**	**D50**
in Hg	mp	ft3	ft3/min		μm
25.12	171.91	23.48	0.47	28.3898	9.6130

Average Dn	An	Vs	Iso	Qs
in	ft2	ft/sec	%	
0.135	9.9108E-5	52.24	150.18	1.2409E+5

Total Mg	Cs	Cs	Emr
mg	lb/dscf	gr/dscf	lbs/hr
5.0	4.6944E-7	0.0033	0.06

PRETEST DATA

PM10 METHOD 201A

TEST SITE: Interstate Brick Primary Crusher Baghouse DATE: 12/6/94

RUN #: #2 Compliance

Pbar	Pg	Ts	Tm	B(ws)	ΔH@ Meter
in Hg	in H2O	°F	°F	fraction	in H2O
25.23	-1.5	50	90	0.02	1.748

CO2	O2	N2 +CO	Tambient	Cp(2)	Cp(201A)
%	%	%	°F	dimensionless	dimensionless
0.1	20.8	79.1	40	0.8394	0.8394

total run time	# of points	ΔPavg	ΔP1	Yi	stack area
min		in H2O	in H2O	meter coef	ft2
60	12	2.36	2.3	0.998	0.785

Md	**Mw**	**Ps**	**μs**
lb/lb mole	lb/lb mole	in Hg	micropoise
28.848	28.631	25.120	174.831

Qs	**ΔH**	**ΔH(-50)**	**ΔH(+50)**
ft3/min	in H2O	in H2O	in H2O
0.4482	0.557	0.685	0.462

Pretest		Pitots
Finish	705.056	+ ok
Start	705.054	- ok
	0.002	
	Vacuum 18.6	

Posttest		Pitots
Finish	733.863	+ ok
Start	733.861	- ok
	0.002	
	Vacuum 19	

nozzle #	Dn	ΔPmn	ΔPmx
1	0.4724	0.0026	0.0232
2	0.4331	0.0037	0.0329
3	0.3937	0.0053	0.0481
4	0.3543	0.0082	0.0734
5	0.3150	0.0130	0.1174
6	0.2756	0.0223	0.1819
7	0.2362	0.0413	0.3013
8	0.2165	0.0797	0.4066
9	0.1969	0.1437	0.5695
10	0.1772	0.2515	0.8368
11	0.15	0.5540	1.5642
12	0.135	0.8844	2.3420
13		*Error*	*Error*
14		*Error*	*Error*
15		*Error*	*Error*

	Dn in	Vn ft/sec	Vmn ft/sec	Vmnc ft/sec	Vmx ft/sec
1	0.47	6.14	*Error*	3.07	12.58
2	0.43	7.30	*Error*	3.65	13.87
3	0.39	8.84	*Error*	4.42	15.56
4	0.35	10.91	*Error*	5.46	17.84
5	0.32	13.80	*Error*	6.90	21.04
6	0.28	18.03	*Error*	9.02	25.77
7	0.24	24.55	11.88	12.27	33.17
8	0.22	29.22	17.06	14.61	38.53
9	0.20	35.33	22.91	17.66	45.60
10	0.18	43.62	30.30	21.81	55.27
11	0.15	60.87	44.97	30.44	75.57
12	0.14	75.15	56.82	37.58	92.47
13	0.00	*Error*	*Error*	*Error*	*Error*
14	0.00	*Error*	*Error*	*Error*	*Error*
15	0.00	*Error*	*Error*	*Error*	*Error*

Vmxc	ΔPmn	ΔPmnc	ΔPmx	ΔPmxc	An
ft/sec	in H2O	in H2O	in H2O	in H2O	ft2
	choose largest		choose smallest		
9.21	*Error*	0.0026	0.04	0.0232	1.2172E-3
10.95	*Error*	0.0037	0.05	0.03	1.0231E-3
13.25	*Error*	0.0053	0.07	0.05	8.4539E-4
16.37	*Error*	0.0082	0.09	0.07	6.8465E-4
20.71	*Error*	0.0130	0.12	0.12	5.4119E-4
27.05	*Error*	0.0223	0.18	0.20	4.1427E-4
36.82	0.04	0.0413	0.30	0.37	3.0429E-4
43.83	0.08	0.0585	0.41	0.53	2.5565E-4
52.99	0.14	0.0855	0.57	0.77	2.1146E-4
65.43	0.25	0.1303	0.84	1.17	1.7126E-4
91.31	0.55	0.25	1.56	2.28	1.2272E-4
112.73	0.88	0.39	2.34	3.48	9.9402E-5
Error	*Error*	*Error*	*Error*	*Error*	
Error	*Error*	*Error*	*Error*	*Error*	
Error	*Error*	*Error*	*Error*	*Error*	

TEST DATA

PM10 METHOD 201A

TEST SITE: Interstate Brick Primary Crusher Baghouse Date: 12/6/94

RUN #: #2 Compliance

START: 1310

STOP: 1410

point #	ΔP(201A) in H2O	dwell min	act time decimal	Ts °F	Tmo °F
1	2.3	4.94	5	45	87
2	2.2	4.83	5	47	87
3	2.3	4.94	5	50	87
4	2	4.60	4.75	50	88
5	2.4	5.04	5	49	89
6	2.3	4.94	5	51	90
7	2.1	4.72	4.75	50	93
8	2.2	4.83	5	50	94
9	2	4.60	4.75	51	95
10	2.2	4.83	5	50	96
11	2.3	4.94	5	52	97
12	2.2	4.83	5	53	97
total		58.0			
avg	2.21		59.25	49.83	91.67
		Actual Time:	59.25		

Average Meter Temp: 96.54

Tmi °F	Tov °F	Vm ft3	vacuum in Hg	ΔH in H2O	SqRt ΔP
		705.136			
87	245	707.546	1.3	0.557	0.0000
90	248	709.933	1.3	0.557	0.0000
94	251	712.341	1.3	0.557	0.0000
98	250	714.614	1.3	0.557	0.0000
101	246	717.021	1.3	0.557	0.0000
103	248	719.458	1.3	0.557	1.5166
105	243	721.744	1.4	0.557	1.4491
107	250	724.174	1.4	0.557	1.4832
108	244	726.487	1.4	0.557	1.4142
108	244	728.922	1.4	0.557	1.4832
108	245	731.347	1.4	0.557	1.5166
108	247	733.785	1.4	0.557	1.4832
		28.65			
101.42	246.75		1.35	0.5570	0.8622

POSTTEST CALCULATIONS

Vw mls	Vwstd ft3	bws fraction	Pbar in Hg	Pg in H2O	
19.1	0.90	0.04	25.23	-1.50	
Ps in Hg	**μs** mp	**Vmds** ft3	**Qs** ft3/min	**Mw**	**D50** μm
25.12	173.47	22.86	0.46	28.4376	9.7539
Average Dn in	**An** ft2	**Vs** ft/sec	**Iso** %	**Qs**	
0.135	9.9108E-5	52.27	148.70	1.2357E+5	
Total Mg mg	**Cs** lb/dscf	**Cs** gr/dscf	**Emr** lbs/hr		
4.7	4.5318E-7	0.0032	0.06		

American Environmental Testing Company, Inc.
565 South Birch Drive
Spanish Fork, Utah 84660
(801) 266-7111

LABORATORY DATA
EPA Method 201A

Company: Interstate Brick, W.J. UTAH Run Number: #2 Compliance

Sampling Location: Brick Crusher Grizzly Date: 12-06-94

Moisture Collected

	Initial Weight	Final Weight	Weight Gain
Impinger 1	576.7	576.9	+0.2
Impinger 2	540.9	553.6	+12.7
Impinger 3	426.8	426.9	+0.1
Impinger 4	720.1	726.2	+6.1

Total Gain = +19.1

Particulate Collected

PM - 10 Particulate

1. Filter Final Weight: 0.1996
2. Filter Tare Weight: 0.1980 B-2
3. Net Filter Weight: 0.0016 = 1.6 mg
4. Acetone Wash Mg: 1.5 mg
5. Total PM-10 Mg: 3.1 mg

Larger Than PM -10 Particulate

Acetone Wash Mg

Back Half Analysis

Particulate Caught in Impingers Mg.

1.6 mg

Total PM-10 Particulate Catch Mg

4.7 mg

PRETEST DATA

PM10 METHOD 201A

TEST SITE: *Interstate Brick Primary Crusher Baghouse* DATE: 12/6/94

RUN #: #3 Compliance

Pbar	Pg	Ts	Tm	B(ws)	ΔH@ Meter
in Hg	in H2O	°F	°F	fraction	in H2O
25.23	-1.5	50	90	0.02	1.748

CO2	O2	N2 +CO	Tambient	Cp(2)	Cp(201A)
%	%	%	°F	dimensionless	dimensionless
0.1	20.8	79.1	40	0.8394	0.8394

total run time	# of points	ΔPavg	ΔP1	Yi	stack area
min		in H2O	in H2O	meter coef	ft2
60	12	2.36	2.3	0.998	0.785

Md	**Mw**	**Ps**	**μs**
lb/lb mole	lb/lb mole	in Hg	micropoise
28.848	28.631	25.120	174.831

Qs	**ΔH**	**ΔH(-50)**	**ΔH(+50)**
ft3/min	in H2O	in H2O	in H2O
0.4482	0.557	0.685	0.462

Pretest		Pitots	Posttest		Pitots
Finish	734.234	+ ok	Finish	763.425	+ ok
Start	734.232	- ok	Start	763.423	- ok
	0.002			0.002	
	Vacuum 18.2			Vacuum 19	

nozzle #	Dn	ΔPmn	ΔPmx
1	0.4724	0.0026	0.0232
2	0.4331	0.0037	0.0329
3	0.3937	0.0053	0.0481
4	0.3543	0.0082	0.0734
5	0.3150	0.0130	0.1174
6	0.2756	0.0223	0.1819
7	0.2362	0.0413	0.3013
8	0.2165	0.0797	0.4066
9	0.1969	0.1437	0.5695
10	0.1772	0.2515	0.8368
11	0.15	0.5540	1.5642
12	0.135	0.8844	2.3420
13		*Error*	*Error*
14		*Error*	*Error*
15		*Error*	*Error*

	Dn in	Vn ft/sec	Vmn ft/sec	Vmnc ft/sec	Vmx ft/sec
1	0.47	6.14	*Error*	3.07	12.58
2	0.43	7.30	*Error*	3.65	13.87
3	0.39	8.84	*Error*	4.42	15.56
4	0.35	10.91	*Error*	5.46	17.84
5	0.32	13.80	*Error*	6.90	21.04
6	0.28	18.03	*Error*	9.02	25.77
7	0.24	24.55	11.88	12.27	33.17
8	0.22	29.22	17.06	14.61	38.53
9	0.20	35.33	22.91	17.66	45.60
10	0.18	43.62	30.30	21.81	55.27
11	0.15	60.87	44.97	30.44	75.57
12	0.14	75.15	56.82	37.58	92.47
13	0.00	*Error*	*Error*	*Error*	*Error*
14	0.00	*Error*	*Error*	*Error*	*Error*
15	0.00	*Error*	*Error*	*Error*	*Error*

Vmxc	ΔPmn	ΔPmnc	ΔPmx	ΔPmxc	An
ft/sec	in H2O	in H2O	in H2O	in H2O	ft2
	choose largest		choose smallest		
9.21	*Error*	0.0026	0.04	0.0232	1.2172E-3
10.95	*Error*	0.0037	0.05	0.03	1.0231E-3
13.25	*Error*	0.0053	0.07	0.05	8.4539E-4
16.37	*Error*	0.0082	0.09	0.07	6.8465E-4
20.71	*Error*	0.0130	0.12	0.12	5.4119E-4
27.05	*Error*	0.0223	0.18	0.20	4.1427E-4
36.82	0.04	0.0413	0.30	0.37	3.0429E-4
43.83	0.08	0.0585	0.41	0.53	2.5565E-4
52.99	0.14	0.0855	0.57	0.77	2.1146E-4
65.43	0.25	0.1303	0.84	1.17	1.7126E-4
91.31	0.55	0.25	1.56	2.28	1.2272E-4
112.73	0.88	0.39	2.34	3.48	9.9402E-5
Error	*Error*	*Error*	*Error*	*Error*	
Error	*Error*	*Error*	*Error*	*Error*	
Error	*Error*	*Error*	*Error*	*Error*	

TEST DATA

PM10 METHOD 201A

TEST SITE: Interstate Brick Primary Crusher Baghouse Date: 12/6/94

RUN #: #3 Compliance

START: 1500

STOP: 1016

point #	ΔP(201A) in H2O	dwell min	act time decimal	Ts °F	Tmo °F
1	2.2	4.94	5	50	89
2	2.3	5.05	5	51	89
3	2.4	5.16	5.25	52	89
4	2.1	4.82	5	52	90
5	2.3	5.05	5	52	90
6	2.2	4.94	5	52	92
7	2	4.71	4.75	52	93
8	2.3	5.05	5	50	94
9	2.2	4.94	5	51	95
10	2.1	4.82	5	52	96
11	2.2	4.94	5	51	97
12	2.3	5.05	5	51	98
total		59.4			
avg	2.22		60.00	51.33	92.67
		Actual Time:	60.00		

Average Meter Temp: 97.29

Tmi	Tov	Vm	vacuum	ΔH	SqRt ΔP
°F	°F	ft3	in Hg	in H2O	
		734.314			
89	244	736.732	1.3	0.557	0.0000
91	251	739.126	1.3	0.557	0.0000
96	251	741.664	1.3	0.557	0.0000
99	247	743.947	1.3	0.557	0.0000
98	249	746.483	1.3	0.557	0.0000
104	248	748.891	1.3	0.557	1.4832
105	250	751.187	1.4	0.557	1.4142
106	249	753.609	1.4	0.557	1.5166
108	248	756.029	1.4	0.557	1.4832
108	248	758.442	1.4	0.557	1.4491
109	251	760.867	1.4	0.557	1.4832
110	250	763.297	1.4	0.557	1.5166
		28.98			
101.92	248.83		1.35	0.5570	0.8622

POSTTEST CALCULATIONS

Vw	**Vwstd**	**bws**	**Pbar**	**Pg**	
mls	ft3	fraction	in Hg	in H2O	
15.7	0.74	0.03	25.23	-1.50	
Ps	**μs**	**Vmds**	**Qs**	**Mw**	**D50**
in Hg	mp	ft3	ft3/min		μm
25.12	174.36	23.10	0.46	28.5117	9.8353
Average Dn	**An**	**Vs**	**Iso**	**Qs**	
in	ft2	ft/sec	%	dscfh	
0.135	9.9108E-5	52.28	147.72	1.2411E+5	
Total Mg	**Cs**	**Cs**	**Emr**		
mg	lb/dscf	gr/dscf	lbs/hr		
5.3	5.0582E-7	0.0035	0.06		

American Environmental Testing Company, Inc.
565 South Birch Drive
Spanish Fork, Utah 84660
(801) 266-7111

LABORATORY DATA
EPA Method 201A

Company: Interstate Brick Run Number: #3 Compliance

Sampling Location: Brick Crusher Grizzly Baghouse Date: 12-06-94

Moisture Collected

	Initial Weight	Final Weight	Weight Gain
Impinger 1	572.6	577.4	-0.2
Impinger 2	540.3	540.5	+0.2
Impinger 3	426.6	426.9	+0.3
Impinger 4	726.2	741.6	+15.4

Total Gain = +15.7

Particulate Collected

PM - 10 Particulate

1. Filter Final Weight: 0.2086
2. Filter Tare Weight: 0.2064 B-3
3. Net Filter Weight: 0.0022 = 2.2 mg
4. Acetone Wash Mg: 1.7 mg
5. Total PM-10 Mg: 3.9 mg

Larger Than PM -10 Particulate

Acetone Wash Mg /

Back Half Analysis

Particulate Caught in Impingers Mg.

1.4 mg

Total PM-10 Particulate Catch Mg

5.3 mg

American Environmental Testing Company, Inc.

565 South Birch Drive

Spanish Fork, Utah 84660

(801) 266-7111

Company: Interstate Brick Co. Date: 12-6-94

Source: Grizzly Bag House Run Number: #1-2+3
Ambient air

ORSAT ANALYSIS

(Average of 3 analyses each)

Test Number	Volume Percent - Dry			
	Nitrogen	Oxygen	Carbon Dixoide	Carbon Monoxide
1	79.1	20.8	0.1	<0.01
2	79.1	20.8	0.1	<0.01
3	79.1	20.8	0.1	<0.01
Average	79.1	20.8	0.1	<0.01

AMERICAN ENVIRONMENTAL TESTING, INCORPORATED

565 So. Birch Drive 801-266-7111

Spanish Fork, Utah 84660

POST TEST BACK HALF EVAPORATION

COMPANY: Interstate Brick

SOURCE: Primary Crusher Baghouse

DATE: 12/6/94

ACETONE BLANK

Volume of Liquid	350 mls
Final Weight	106.8012
Tare Weight	106.8014
Residue	0.0002

RUN #1

Volume of Liquid	200 mls	
Color	clear	
Final Weight	102.7820	
Tare Weight	102.7799	
Residue & Blank	0.0021	
- Blank	0.0002	
Residue	0.0019	1.9 mg

RUN #2

Volume of Liquid	200 mls	
Color	clear	
Final Weight	106.8164	
Tare Weight	106.8147	
Residue & Blank	0.0017	
- Blank	0.0002	
Residue	0.0015	1.5 mg

RUN #3

Volume of Liquid	200 mls	
Color	clear	
Final Weight	99.8017	
Tare Weight	99.8004	
Residue & Blank	0.0019	
- Blank	0.0002	
Residue	0.0017	1.7 mg

AMERICAN ENVIRONMENTAL TESTING, INCORPORATED
565 So. Birch Drive 801-266-7111
Spanish Fork, Utah 84660

POST TEST BACK HALF EVAPORATION

COMPANY: Interstate Brick
SOURCE: Primary Crusher Baghouse
DATE: 12/6/97

CONTAINER #1 METHYLENE CHLORIDE		CONTAINER #2 DISTILLED WATER	
BLANK		**BLANK**	
Volume of Liqui	300 mls	Volume of Liqui	300 mls
Final Weigh	102.8533	Final Weigh	99.7766
Tare Weight	102.8532	Tare Weight	99.7764
Residue	0.0001	Residue	0.0002
RUN #1		**RUN #1**	
Volume of Liqui	200 mls	Volume of Liqui	200 mls
Color	clear	Color	clear
Final Weigh	99.6985	Final Weigh	106.7731
Tare Weight	99.6978	Tare Weight	106.7721
Residue & Blank	0.0007	Residue & Blank	0.0010
- Blank	0.0001	- Blank	0.0002
Residue	0.0006	0.0 mg Residue	0.0008 0.8 mg
RUN #2		**RUN #2**	
Volume of Liqui	200 mls	Volume of Liqui	200 mls
Color	clear	Color	clear
Final Weigh	98.2034	Final Weigh	106.6771
Tare Weight	98.2026	Tare Weight	106.6766
Residue & Blank	0.0008	Residue & Blank	0.0011
- Blank	0.0001	- Blank	0.0002
Residue	0.0007	0.7 mg Residue	0.0009 0.9 mg
RUN #3		**RUN #3**	
Volume of Liqui	200 mls	Volume of Liqui	200 mls
Color	Clear	Color	clear
Final Weigh	98.1980	Final Weigh	99.8222
Tare Weight	98.1974	Tare Weight	99.8211
Residue & Blank	0.0006	Residue & Blank	0.0011
- Blank	0.0001	- Blank	0.0002
Residue	0.0005	0.5 mg Residue	0.0009 0.4 mg

PRETEST DATA

PM10 METHOD 201A

TEST SITE: Interstate Brick DC#3 Baghouse DATE: 12/5/94

RUN #: #1 Compliance

Pbar	Pg	Ts	Tm	B(ws)	ΔH@ Meter
in Hg	in H2O	°F	°F	*fraction*	in H2O
25.32	-9	52	85	0.02	1.849

CO2	O2	N2 +CO	Tambient	Cp(2)	Cp(201A)
%	%	%	°F	dimensionless	dimensionless
0.2	20.5	79.3	48	0.8414	0.8414

total run time	# of points	ΔPavg	ΔP1	Yi	stack area
min		in H2O	in H2O	meter coef	ft2
60	12	0.36	0.35	1.085	1.9174

Md	**Mw**	**Ps**	**μs**
lb/lb mole	lb/lb mole	in Hg	micropoise
28.852	28.63496	24.6582	175.1882

Qs	**ΔH**	**ΔH(-50)**	**ΔH(+50)**
ft3/min	*in H2O*	in H2O	in H2O
0.4521	0.5661	0.6953	0.4699

Pretest		Pitots
Finish	453.972	+ ok
Start	453.968	- ok
	0.004	
	Vacuum 19.5	

Posttest		Pitots
Finish	476.138	+ ok
Start	476.135	- ok
	0.003	
	Vacuum 18.9	

nozzle #	Dn	ΔPmn	ΔPmx
1	0.4724	0.0026	0.0230
2	0.4331	0.0036	0.0325
3	0.3937	0.0053	0.0477
4	0.3543	0.0081	0.0727
5	0.3150	0.0129	0.1163
6	0.2756	0.0220	0.1798
7	0.2362	0.0409	0.2979
8	0.2165	0.0795	0.4022
9	0.1969	0.1428	0.5635
10	0.1772	0.2495	0.8281
11	0.15	0.5492	1.5483
12	0.135	0.8765	2.3184
13		*Error*	*Error*
14		*Error*	*Error*
15		*Error*	*Error*

	Dn in	Vn ft/sec	Vmn ft/sec	Vmnc ft/sec	Vmx ft/sec
1	0.47	6.19	*Error*	3.10	12.66
2	0.43	7.37	*Error*	3.68	13.96
3	0.39	8.91	*Error*	4.46	15.67
4	0.35	11.01	*Error*	5.50	17.97
5	0.32	13.92	*Error*	6.96	21.20
6	0.28	18.19	*Error*	9.09	25.97
7	0.24	24.76	12.07	12.38	33.43
8	0.22	29.47	17.26	14.74	38.84
9	0.20	35.63	23.15	17.82	45.97
10	0.18	44.00	30.59	22.00	55.73
11	0.15	61.40	45.39	30.70	76.21
12	0.14	75.80	57.34	37.90	93.25
13	0.00	*Error*	*Error*	*Error*	*Error*
14	0.00	*Error*	*Error*	*Error*	*Error*
15	0.00	*Error*	*Error*	*Error*	*Error*

Vmxc	ΔPmn	ΔPmnc	ΔPmx	ΔPmxc	An
ft/sec	in H2O	in H2O	in H2O	in H2O	ft2
	choose largest		choose smallest		
9.29	*Error*	0.0026	0.04	0.0230	1.2172E-3
11.05	*Error*	0.0036	0.05	0.03	1.0231E-3
13.37	*Error*	0.0053	0.07	0.05	8.4539E-4
16.51	*Error*	0.0081	0.09	0.07	6.8465E-4
20.88	*Error*	0.0129	0.12	0.12	5.4119E-4
27.28	*Error*	0.0220	0.18	0.20	4.1427E-4
37.14	0.04	0.0409	0.30	0.37	3.0429E-4
44.21	0.08	0.0579	0.40	0.52	2.5565E-4
53.45	0.14	0.0846	0.56	0.76	2.1146E-4
66.00	0.25	0.1290	0.83	1.16	1.7126E-4
92.10	0.55	0.25	1.55	2.26	1.2272E-4
113.70	0.88	0.38	2.32	3.45	9.9402E-5
Error	*Error*	*Error*	*Error*	*Error*	
Error	*Error*	*Error*	*Error*	*Error*	
Error	*Error*	*Error*	*Error*	*Error*	

TEST DATA

PM10 METHOD 201A

TEST SITE: Interstate Brick DC#3 Baghouse Date: 12/5/94

RUN #: #1 Compliance

Start 1200

Stop 1315

point #	ΔP(201A) in H2O	dwell min	act time decimal	Ts °F	Tmo °F
1	0.35	4.93	500	53	57
2	0.55	6.18	615	56	57
3	0.53	6.07	600	56	58
4	0.13	3.00	300	58	59
5	0.11	2.76	245	57	59
6	0.1	2.64	245	57	60
7	0.95	8.12	800	62	62
8	0.66	6.77	645	63	62
9	0.68	6.87	645	63	63
10	0.11	2.76	245	64	63
11	0.09	2.50	230	64	63
12	0.08	2.36	215	65	64
total		55.0			
avg	0.36		5285.00	59.83	60.58
		Actual Time:	54.75		

Average Meter Temp: 59.54

Tmi	Tov	Vm	vacuum	ΔH	SqRt ΔP
°F	°F	ft3	in Hg	in H2O	
		454.052			
58	245		4.1	0.5661	0.5916
58	253		4.1	0.5661	0.7416
59	254		4.1	0.5661	0.7280
59	242		4.1	0.5661	0.3606
60	238		4.1	0.5661	0.3317
60	241	464.139	4.1	0.5661	0.3162
58	248		4.1	0.5661	0.9747
57	256		4.1	0.5661	0.8124
58	255		4.1	0.5661	0.8246
58	252		4.1	0.5661	0.3317
58	257		4.1	0.5661	0.3000
59	254	476.06	4.1	0.5661	0.2828
		22.008			
58.50	249.58		4.10	0.5661	0.5497

POSTTEST CALCULATIONS

Vw	Vwstd	bws	Pbar	Pg	
mls	ft3	fraction	in Hg	in H2O	
8.9	0.42	0.02	25.32	-9.00	
Ps	**μs**	**Vmds**	**Qs**	**Mw**	**D50**
in Hg	mp	ft3	ft3/min		μm
24.66	177.22	20.53	0.46	28.6350	10.0326
Average Dn	An	Vs	Iso	Qs	
in	ft2	ft/sec	%		
0.1830	1.8265E-4	33.92	123.18	1.9210E+5	
Total Mg	Cs	Cs	Emr		
mg	lb/dscf	gr/dscf	lbs/hr		
5.2	5.5844E-7	0.0039	0.11		

American Environmental Testing Company, Inc.
565 South Birch Drive
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LABORATORY DATA

EPA Method 201A

Company: Interstate Brick Run Number: #1 CR-Box

Sampling Location: DC #3 Baghouse Date: 12/5/94

Moisture Collected

	Initial Weight	Final Weight	Weight Gain
Impinger 1	523.0	524.2	1.2
Impinger 2	627.1	628.2	1.1
Impinger 3	437.7	438.2	0.5
Impinger 4	739.1	745.2	6.1

Total Gain = 8.9 mls

Particulate Collected

PM - 10 Particulate

1. Filter Final Weight: 0.1975
2. Filter Tare Weight: 0.1957 D-1
3. Net Filter Weight: 0.0018 = 1.8 mg
4. Acetone Wash Mg: 2.1 mg
5. Total PM-10 Mg: 3.9 mg

Larger Than PM -10 Particulate

Acetone Wash Mg

1

Back Half Analysis

Particulate Caught in Impingers Mg.

1.3 mg

Total PM-10 Particulate Catch Mg

5.2 mg

PRETEST DATA

PM10 METHOD 201A

TEST SITE: Interstate Brick DC #3 Baghouse DATE: 12/5/94

RUN #: #2 Compliance

Pbar	Pg	Ts	Tm	B(ws)	ΔH@ Meter
in Hg	in H2O	°F	°F	fraction	in H2O
25.3	-9	59	80	0.02	1.849

CO2	O2	N2 +CO	Tambient	Cp(2)	Cp(201A)
%	%	%	°F	dimensionless	dimensionless
0.2	20.5	79.3	50	0.8414	0.8414

total run time	# of points	ΔPavg	ΔP1	Yi	stack area
min		in H2O	in H2O	meter coef	ft2
60	12	0.36	0.35	1.085	1.9174

Md	**Mw**	**Ps**	**μs**
lb/lb mole	lb/lb mole	in Hg	micropoise
28.852	28.63496	24.6382	176.9997

Qs	**ΔH**	**ΔH(-50)**	**ΔH(+50)**
ft3/min	in H2O	in H2O	in H2O
0.4587	0.5615	0.6876	0.4672

Pretest		Pitots	Posttest		Pitots
Finish	476.349	+ ok	Finish	499.1	+ ok
Start	476.344	- ok	Start	499.098	- ok
	0.005			0.002	
	Vacuum 20			Vacuum 19.2	

nozzle #	Dn	ΔPmn	ΔPmx
1	0.4724	0.0026	0.0233
2	0.4331	0.0037	0.0330
3	0.3937	0.0054	0.0484
4	0.3543	0.0082	0.0737
5	0.3150	0.0131	0.1180
6	0.2756	0.0224	0.1822
7	0.2362	0.0415	0.3021
8	0.2165	0.0810	0.4079
9	0.1969	0.1453	0.5715
10	0.1772	0.2536	0.8399
11	0.15	0.5577	1.5707
12	0.135	0.8899	2.3522
13		*Error*	*Error*
14		*Error*	*Error*
15		*Error*	*Error*

	Dn in	Vn ft/sec	Vmn ft/sec	Vmnc ft/sec	Vmx ft/sec
1	0.47	6.28	*Error*	3.14	12.83
2	0.43	7.47	*Error*	3.74	14.15
3	0.39	9.04	*Error*	4.52	15.88
4	0.35	11.17	*Error*	5.58	18.21
5	0.32	14.13	*Error*	7.06	21.49
6	0.28	18.45	*Error*	9.23	26.33
7	0.24	25.12	12.30	12.56	33.90
8	0.22	29.91	17.55	14.95	39.40
9	0.20	36.16	23.51	18.08	46.63
10	0.18	44.64	31.06	22.32	56.54
11	0.15	62.30	46.07	31.15	77.31
12	0.14	76.91	58.19	38.46	94.61
13	0.00	*Error*	*Error*	*Error*	*Error*
14	0.00	*Error*	*Error*	*Error*	*Error*
15	0.00	*Error*	*Error*	*Error*	*Error*

Vmxc	ΔPmn	ΔPmnc	ΔPmx	ΔPmxc	An
ft/sec	in H2O	in H2O	in H2O	in H2O	ft2
	choose largest		choose smallest		
9.42	*Error*	0.0026	0.04	0.0233	1.2172E-3
11.21	*Error*	0.0037	0.05	0.03	1.0231E-3
13.57	*Error*	0.0054	0.07	0.05	8.4539E-4
16.75	*Error*	0.0082	0.09	0.07	6.8465E-4
21.19	*Error*	0.0131	0.12	0.12	5.4119E-4
27.68	*Error*	0.0224	0.18	0.20	4.1427E-4
37.69	0.04	0.0415	0.30	0.37	3.0429E-4
44.86	0.08	0.0588	0.41	0.53	2.5565E-4
54.23	0.15	0.0859	0.57	0.77	2.1146E-4
66.96	0.25	0.1309	0.84	1.18	1.7126E-4
93.45	0.56	0.25	1.57	2.29	1.2272E-4
115.37	0.89	0.39	2.35	3.50	9.9402E-5
Error	*Error*	*Error*	*Error*	*Error*	
Error	*Error*	*Error*	*Error*	*Error*	
Error	*Error*	*Error*	*Error*	*Error*	

TEST DATA

PM10 METHOD 201A

TEST SITE: Interstate Brick DC #3 Baghouse Date: 12/5/94

RUN #: #2 Compliance

Start 1410

Stop 1525

point #	ΔP(201A) in H2O	dwell min	act time decimal	Ts °F	Tmo °F
1	0.35	4.93	5	56	65
2	0.56	6.24	6.25	57	65
3	0.53	6.07	6	58	66
4	0.16	3.33	3.25	59	65
5	0.13	3.00	3	57	66
6	0.11	2.76	2.75	56	66
7	0.92	7.99	8	55	66
8	0.62	6.56	6.5	56	66
9	0.7	6.97	7	54	66
10	0.11	2.76	2.75	52	67
11	0.11	2.76	2.75	52	66
12	0.1	2.64	2.75	53	66
total		56.0			
avg	0.37		56.00	55.42	65.83
		Actual Time:	56.00		

Average Meter Temp: 65.92

Tmi	Tov	Vm	vacuum	ΔH	SqRt ΔP
°F	°F	ft3	in Hg	in H2O	
		476.432			
65	232		4.2	0.5615	0.5916
66	251		4.2	0.5615	0.7483
66	245		4.2	0.5615	0.7280
65	250		4.2	0.5615	0.4000
67	253		4.2	0.5615	0.3606
67	249	487.188	4.2	0.5615	0.3317
66	245		4.1	0.5615	0.9592
66	253		4.1	0.5615	0.7874
66	260		4.1	0.5615	0.8367
66	261		4.1	0.5615	0.3317
66	258		4.1	0.5615	0.3317
66	255	499.018	4.1	0.5615	0.3162
		22.586			
66.00	251.00		4.15	0.5615	0.5602

POSTTEST CALCULATIONS

Vw	**Vwstd**	**bws**	**Pbar**	**Pg**	
mls	ft3	fraction	in Hg	in H2O	
6.5	0.31	0.01	25.3	-9.00	
Ps	**μs**	**Vmds**	**Qs**	**Mw**	**D50**
in Hg	mp	ft3	ft3/min		μm
24.64	176.48	20.80	0.45	28.6947	10.1464

Average Dn	**An**	**Vs**	**Iso**	**Qs**
in	ft2	ft/sec	%	
0.1830	1.8265E-4	34.41	118.69	1.9745E+5

Total Mg	**Cs**	**Cs**	**Emr**
mg	lb/dscf	gr/dscf	lbs/hr
3.5	3.7104E-7	0.0026	0.07

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LABORATORY DATA
EPA Method 5

Company: Interstate Brick Run Number: #2 Comp

Sampling Location: DC #3 Baghouse Date: 12/5/94

Moisture Collected

	Initial Weight	Final Weight	Weight Gain
Impinger 1	524.2	524.8	0.6
Impinger 2	629.1	630.8	1.7
Impinger 3	439.0	439.2	0.2
Impinger 4	745.1	749.1	4.0

Total Gain = 6.5

Particulate Collected

Front - Half Analysis (Nozzle, Probe, Filter and Oven Glassware)

1. Filter Final Weight 0.1999
2. Filter Tare Weight 0.1995 DC-2
3. Total Filter Weight 0.0004 = 0.4 mg
4. Particulate caught in nozzle, probe and glassware 1.9 mg
5. Total Front - Half Catch 2.3 mg

Back - Half Analysis (Impingers, and Connecting Glassware)

1. Particulate caught in impingers evaporated down at less than 120° F. 1.2 mg

Total Particulate Catch (Sum of Front and Back - Half Catches)

3.5 mg

PRETEST DATA

PM10 METHOD 201A

TEST SITE: Interstate Brick DC #3 Baghouse DATE: 12/6/94

RUN #: #3 Compliance

Pbar	Pg	Ts	Tm	B(ws)	ΔH@ Meter
in Hg	in H2O	°F	°F	fraction	in H2O
25.26	-9	52	70	0.02	1.849

CO2	O2	N2 +CO	Tambient	Cp(2)	Cp(201A)
%	%	%	°F	dimensionless	dimensionless
0.2	20.5	79.3	40	0.8414	0.8414

total run time	# of points	ΔPavg	ΔP1	Yi	stack area
min		in H2O	in H2O	meter coef	ft2
60	12	0.36	0.35	1.085	1.9174

Md	**Mw**	**Ps**	**μs**
lb/lb mole	lb/lb mole	in Hg	micropoise
28.852	28.63496	24.5982	175.1882

Qs	**ΔH**	**ΔH(-50)**	**ΔH(+50)**
ft3/min	in H2O	in H2O	in H2O
0.4524	0.5500	0.6754	0.4565

Pretest		Pitots	Posttest		Pitots
Finish	499.309	+ ok	Finish	521.686	+ ok
Start	499.305	- ok	Start	521.684	- ok
	0.004			0.002	
	Vacuum 20.2			Vacuum 18	

nozzle #	Dn	ΔPmn	ΔPmx
1	0.4724	0.0026	0.0230
2	0.4331	0.0036	0.0325
3	0.3937	0.0053	0.0476
4	0.3543	0.0081	0.0726
5	0.3150	0.0129	0.1162
6	0.2756	0.0220	0.1795
7	0.2362	0.0408	0.2976
8	0.2165	0.0794	0.4018
9	0.1969	0.1428	0.5629
10	0.1772	0.2494	0.8272
11	0.15	0.5487	1.5466
12	0.135	0.8757	2.3160
13		*Error*	*Error*
14		*Error*	*Error*
15		*Error*	*Error*

	Dn	Vn	Vmn	Vmnc	Vmx
	in	ft/sec	ft/sec	ft/sec	ft/sec
1	0.47	6.20	*Error*	3.10	12.67
2	0.43	7.37	*Error*	3.69	13.97
3	0.39	8.92	*Error*	4.46	15.67
4	0.35	11.01	*Error*	5.51	17.98
5	0.32	13.93	*Error*	6.97	21.21
6	0.28	18.20	*Error*	9.10	25.98
7	0.24	24.78	12.09	12.39	33.45
8	0.22	29.50	17.28	14.75	38.87
9	0.20	35.66	23.17	17.83	46.00
10	0.18	44.03	30.62	22.01	55.77
11	0.15	61.44	45.42	30.72	76.26
12	0.14	75.86	57.38	37.93	93.32
13	0.00	*Error*	*Error*	*Error*	*Error*
14	0.00	*Error*	*Error*	*Error*	*Error*
15	0.00	*Error*	*Error*	*Error*	*Error*

Vmxc	ΔPmn	ΔPmnc	ΔPmx	ΔPmxc	An
ft/sec	in H2O	in H2O	in H2O	in H2O	ft2
	choose largest		choose smallest		
9.29	*Error*	0.0026	0.04	0.0230	1.2172E-3
11.06	*Error*	0.0036	0.05	0.03	1.0231E-3
13.38	*Error*	0.0053	0.07	0.05	8.4539E-4
16.52	*Error*	0.0081	0.09	0.07	6.8465E-4
20.90	*Error*	0.0129	0.12	0.12	5.4119E-4
27.30	*Error*	0.0220	0.18	0.20	4.1427E-4
37.17	0.04	0.0408	0.30	0.37	3.0429E-4
44.24	0.08	0.0578	0.40	0.52	2.5565E-4
53.49	0.14	0.0845	0.56	0.76	2.1146E-4
66.04	0.25	0.1289	0.83	1.16	1.7126E-4
92.17	0.55	0.25	1.55	2.26	1.2272E-4
113.79	0.88	0.38	2.32	3.44	9.9402E-5
Error	*Error*	*Error*	*Error*	*Error*	
Error	*Error*	*Error*	*Error*	*Error*	
Error	*Error*	*Error*	*Error*	*Error*	

TEST DATA

PM10 METHOD 201A

TEST SITE: Interstate Brick DC #3 Baghouse Date: 12/6/94

RUN #: #3 Compliance

Start 910

Stop 1028

point #	ΔP(201A) in H2O	dwell min	act time decimal	Ts °F	Tmo °F
1	0.35	4.93	5	42	58
2	0.57	6.29	6.25	45	59
3	0.54	6.12	6	49	59
4	0.2	3.73	3.75	52	60
5	0.13	3.00	3	53	61
6	0.12	2.89	3	54	61
7	0.95	8.12	8	51	63
8	0.68	6.87	6.75	50	63
9	0.15	3.23	3.25	52	64
10	0.1	2.64	2.75	52	64
11	0.11	2.76	2.75	51	64
12	0.13	3.00	3	52	65
total		53.6			
avg	0.34		53.50	50.25	61.75
		Actual Time:	53.50		

Average Meter Temp: 62.04

Tmi	Tov	Vm	vacuum	ΔH	SqRt ΔP
°F	°F	ft3	in Hg	in H2O	
		499.386			
57	245		3.8	0.5505	0.5916
59	256		3.8	0.5505	0.7550
60	244		3.8	0.5505	0.7348
61	245		4	0.5505	0.4472
62	244		4	0.5505	0.3606
62	248	510.243	3.9	0.5505	0.3464
63	253		3.8	0.5505	0.9747
64	249		3.8	0.5505	0.8246
64	251		3.8	0.5505	0.3873
65	249		3.9	0.5505	0.3162
65	252		3.8	0.5505	0.3317
66	254	521.555	3.8	0.5505	0.3606
		22.169			
62.33	249.17		3.85	0.5505	0.5359

POSTTEST CALCULATIONS

Vw	**Vwstd**	**bws**	**Pbar**	**Pg**	
mls	ft3	fraction	in Hg	in H2O	
6.5	0.31	0.01	25.26	-9.00	
Ps	**μs**	**Vmds**	**Qs**	**Mw**	***D50***
in Hg	mp	ft3	ft3/min		μm
24.60	175.13	20.53	0.46	28.6927	9.8995

Average Dn	**An**	**Vs**	**Iso**	**Qs**
in	ft2	ft/sec	%	
0.1830	1.8265E-4	32.78	127.71	1.8964E+5

Total Mg	**Cs**	**Cs**	**Emr**
mg	lb/dscf	gr/dscf	lbs/hr
2.7	2.8993E-7	0.0020	0.05

American Environmental Testing Company, Inc.
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LABORATORY DATA

EPA Method 5

Company: Interstate Brick Run Number: #3 CR-Box

Sampling Location: DC #3 Baghouse Date: 12-6-94

Moisture Collected

	Initial Weight	Final Weight	Weight Gain
Impinger 1	522.0	522.1	0.1
Impinger 2	629.9	629.8	-0.1
Impinger 3	438.2	438.8	0.6
Impinger 4	749.0	754.9	5.9

Total Gain = 6.5 ml

Particulate Collected

Front - Half Analysis (Nozzle, Probe, Filter and Oven Glassware)

1. Filter Final Weight 0.2006
2. Filter Tare Weight 0.2005 DC-3
3. Total Filter Weight 0.0001 = 0.1 mg
4. Particulate caught in nozzle, probe and glassware 1.1 mg
5. Total Front - Half Catch 1.2 mg

Back - Half Analysis (Impingers, and Connecting Glassware)

1. Particulate caught in Impingers evaporated down at less than 120° F. 1.5 mg

Total Particulate Catch (Sum of Front and Back - Half Catches)

2.7 mg

American Environmental Testing Company, Inc.

565 South Birch Drive

Spanish Fork, Utah 84660

(801) 266-7111

Company: Interstate Brick Date: 12-5-94

Source: DC #3 Baghouse Run Number: #1

DC-1

ORSAT ANALYSIS

(Average of 3 analyses each)

Test Number	Volume Percent - Dry			
	Nitrogen	Oxygen	Carbon Dixoide	Carbon Monoxide
	79.3	20.5	0.2	<0.1
	79.3	20.5	0.2	<0.1
	79.3	20.5	0.2	<0.1
Average	79.3	20.5	0.2	<0.1

AMERICAN ENVIRONMENTAL TESTING, INCORPORATED

565 So. Birch Drive 801-266-7111

Spanish Fork, Utah 84660

POST TEST ACETONE EVAPORATION

COMPANY: Intermountain Brick

SOURCE: DC#3 Baghouse

DATE: 12/5/94

CONTAINER #2
PARTICLES GREATER THAN PM-10

ACETONE BLANK

Volume of Liquic	350 mls
Final Weight	106.8013
Tare Weight	106.8011
Residue	0.0002

RUN #1

Volume of Liquic	
Color	
Final Weight	
Tare Weight	
Residue & Blank	
- Blank	
Residue	

RUN #2

Volume of Liquic	
Color	
Final Weight	
Tare Weight	
Residue & Blank	
- Blank	
Residue	

RUN #3

Volume of Liquic	
Color	
Final Weight	
Tare Weight	
Residue & Blank	
- Blank	
Residue	

CONTAINER #3
PARTICLES PM-10 OR SMALLER

RUN #1

Volume of Liquic	200 mls
Color	clear
Final Weight	102.9135
Tare Weight	102.9112
Residue & Blank	0.0023
- Blank	0.0002
Residue	0.0021

2.1 mg

RUN #2

Volume of Liquic	200 mls
Color	clear
Final Weight	98.2125
Tare Weight	98.2104
Residue & Blank	0.0021
- Blank	0.0002
Residue	0.0019

1.9 mg

RUN #3

Volume of Liquic	200 mls
Color	clear
Final Weight	106.7951
Tare Weight	106.7938
Residue & Blank	0.0013
- Blank	0.0002
Residue	0.0011

1.1 mg

AMERICAN ENVIRONMENTAL TESTING, INCORPORATED
565 So. Birch Drive 801-266-7111
Spanish Fork, Utah 84660

POST TEST BACK HALF EVAPORATION

COMPANY: Interstate Brick
SOURCE: DC #3 Baghouse
DATE: 12/5/94

CONTAINER #1 METHYLENE CHLORIDE			CONTAINER #2 DISTILLED WATER		
BLANK			BLANK		
Volume of Liquid	300 mls		Volume of Liquid	300 mls	
Final Weight	102.8533		Final Weight	99.7766	
Tare Weight	102.8532		Tare Weight	99.7764	
Residue	0.0001		Residue	0.0002	
RUN #1			RUN #1		
Volume of Liquid	200 mls		Volume of Liquid	200 mls	
Color	clear		Color	clear	
Final Weight	98.1928		Final Weight	102.8311	
Tare Weight	98.1922		Tare Weight	102.8301	
Residue & Blank	0.0006		Residue & Blank	0.0010	
- Blank	0.0001		- Blank	0.0002	
Residue	0.0005	0.5 mg	Residue	0.0008	0.8 mg
RUN #2			RUN #2		
Volume of Liquid	200 mls		Volume of Liquid	200 mls	
Color	clear		Color	clear	
Final Weight	98.1794		Final Weight	106.8237	
Tare Weight	98.1758		Tare Weight	106.8228	
Residue & Blank	0.0006		Residue & Blank	0.0009	
- Blank	0.0001		- Blank	0.0002	
Residue	0.0005	0.5 mg	Residue	0.0007	0.7 mg
RUN #3			RUN #3		
Volume of Liquid	200 mls		Volume of Liquid	200 mls	
Color	clear		Color	clear	
Final Weight	102.8177		Final Weight	99.7454	
Tare Weight	102.8169		Tare Weight	99.7444	
Residue & Blank	0.0008		Residue & Blank	0.0010	
- Blank	0.0001		- Blank	0.0002	
Residue	0.0007	0.7 mg	Residue	0.0008	0.8 mg

PRETEST DATA

PM10 METHOD 201A

TEST SITE: Interstate Brick DC#4 Baghouse DATE: 12/5/94

RUN #: #1 Compliance

Pbar	Pg	Ts	Tm	B(ws)	ΔH@ Meter
in Hg	in H2O	°F	°F	fraction	in H2O
25.31	-0.03	50	90	0.02	1.748

CO2	O2	N2 +CO	Tambient	Cp(2)	Cp(201A)
%	%	%	°F	dimensionless	dimensionless
0.1	20.8	79.1	40	0.8394	0.8394

total run time	# of points	ΔPavg	ΔP1	Yi	stack area
min		in H2O	in H2O	meter coef	ft2
60	12	0.22	0.09	0.998	1.9174

Md	**Mw**	**Ps**	**μs**
lb/lb mole	*lb/lb mole*	*in Hg*	*micropoise*
28.848	28.631	25.308	174.831

Qs	**ΔH**	**ΔH(-50)**	**ΔH(+50)**
ft3/min	in H2O	in H2O	in H2O
0.4472	0.561	0.690	0.466

Pretest		Pitots	Posttest		Pitots
Finish	589.036	+ ok	Finish	617.429	+ ok
Start	589.034	- ok	Start	617.426	- ok
	0.002			0.003	
	Vacuum 18.6			Vacuum 19	

nozzle #	Dn	ΔPmn	ΔPmx
1	0.4724	0.0026	0.0233
2	0.4331	0.0037	0.0330
3	0.3937	0.0054	0.0483
4	0.3543	0.0082	0.0736
5	0.3150	0.0131	0.1178
6	0.2756	0.0223	0.1825
7	0.2362	0.0414	0.3024
8	0.2165	0.0798	0.4080
9	0.1969	0.1440	0.5715
10	0.1772	0.2520	0.8396
11	0.15	0.5555	1.5692
12	0.135	0.8869	2.3495
13		*Error*	*Error*
14		*Error*	*Error*
15		*Error*	*Error*

	Dn in	Vn ft/sec	Vmn ft/sec	Vmnc ft/sec	Vmx ft/sec
1	0.47	6.12	*Error*	3.06	12.56
2	0.43	7.29	*Error*	3.64	13.85
3	0.39	8.82	*Error*	4.41	15.53
4	0.35	10.89	*Error*	5.44	17.81
5	0.32	13.77	*Error*	6.89	21.00
6	0.28	17.99	*Error*	9.00	25.72
7	0.24	24.50	11.83	12.25	33.10
8	0.22	29.16	17.01	14.58	38.45
9	0.20	35.25	22.84	17.63	45.51
10	0.18	43.52	30.22	21.76	55.16
11	0.15	60.74	44.86	30.37	75.41
12	0.14	74.99	56.69	37.49	92.27
13	0.00	*Error*	*Error*	*Error*	*Error*
14	0.00	*Error*	*Error*	*Error*	*Error*
15	0.00	*Error*	*Error*	*Error*	*Error*

Vmxc	ΔPmn	ΔPmnc	ΔPmx	ΔPmxc	An
ft/sec	in H2O	in H2O	in H2O	in H2O	ft2
	choose largest		choose smallest		
9.19	*Error*	0.0026	0.04	0.0233	1.2172E-3
10.93	*Error*	0.0037	0.05	0.03	1.0231E-3
13.23	*Error*	0.0054	0.07	0.05	8.4539E-4
16.33	*Error*	0.0082	0.09	0.07	6.8465E-4
20.66	*Error*	0.0131	0.12	0.12	5.4119E-4
26.99	*Error*	0.0223	0.18	0.20	4.1427E-4
36.74	0.04	0.0414	0.30	0.37	3.0429E-4
43.73	0.08	0.0587	0.41	0.53	2.5565E-4
52.88	0.14	0.0857	0.57	0.77	2.1146E-4
65.29	0.25	0.1307	0.84	1.18	1.7126E-4
91.11	0.56	0.25	1.57	2.29	1.2272E-4
112.48	0.89	0.39	2.35	3.49	9.9402E-5
Error	*Error*	*Error*	*Error*	*Error*	
Error	*Error*	*Error*	*Error*	*Error*	
Error	*Error*	*Error*	*Error*	*Error*	

TEST DATA

PM10 METHOD 201A

TEST SITE: Interstate Brick DC#4 Baghouse Date: 12/5/94

RUN #: #1 Compliance

START: 920

STOP: 1016

point #	ΔP(201A) in H2O	dwell min	act time decimal	Ts °F	Tmo °F
1	0.09	3.20	315	50	64
2	0.2	4.77	445	46	64
3	0.22	5.00	500	44	65
4	0.21	4.89	500	42	67
5	0.23	5.11	500	42	69
6	0.25	5.33	515	42	71
7	0.27	5.54	530	42	74
8	0.26	5.44	530	42	76
9	0.24	5.22	515	43	79
10	0.25	5.33	515	43	81
11	0.22	5.00	500	43	83
12	0.21	4.89	500	43	84
total		59.7			
avg	0.22		5865.00	43.50	73.08
		Actual Time:	59.75		

Average Meter Temp: 79.54

Tmi	Tov	Vm	vacuum	ΔH	SqRt ΔP
°F	°F	ft3	in Hg	in H2O	
		589.108			
64	265	590.665	1.2	0.56	0.0000
66	265	592.906	1.1	0.56	0.0000
73	266	595.271	1.2	0.56	0.0000
79	265	597.655	1.2	0.56	0.0000
84	266	600.013	1.2	0.56	0.0000
88	266	602.518	1.2	0.56	0.5000
91	265	605.152	1.2	0.56	0.5196
93	264	607.792	1.2	0.56	0.5099
96	264	610.304	1.2	0.56	0.4899
98	265	612.565	1.2	0.56	0.5000
99	267	614.946	1.2	0.56	0.4690
101	265	617.355	1.2	0.56	0.4583
		28.25			
86.00	265.25		1.19	0.5600	0.2872

POSTTEST CALCULATIONS

Vw	**Vwstd**	**bws**	**Pbar**	**Pg**	
mls	ft3	fraction	in Hg	in H2O	
30.5	1.44	0.06	25.31	-0.03	
Ps	**μs**	**Vmds**	**Qs**	**Mw**	**D50**
in Hg	mp	ft3	ft3/min		μm
25.31	170.34	23.33	0.47	28.2191	9.5171
Average Dn	**An**	**Vs**	**Iso**	**Qs**	
in	ft2	ft/sec	%		
0.216	2.5447E-4	17.31	177.17	9.9819E+4	
Total Mg	**Cs**	**Cs**	**Emr**		
mg	lb/dscf	gr/dscf	lbs/hr		
9.0	8.5055E-7	0.0060	0.08		

American Environmental Testing Company, Inc.
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LABORATORY DATA
EPA Method 201A

Company: Interstate Brick, W.J. UTAH Run Number: #1 Compliance

Sampling Location: Baghouse DC-04 Date: 12-5-94

Moisture Collected

	Initial Weight	Final Weight	Weight Gain
Impinger 1	574.9	585.6	+10.7
Impinger 2	536.4	549.6	+13.2
Impinger 3	426.2	432.3	+6.1
Impinger 4	684.6	685.1	+0.5

Total Gain = +30.5

Particulate Collected

PM - 10 Particulate

1. Filter Final Weight: 0.2039
2. Filter Tare Weight: 0.1988 I-1
3. Net Filter Weight: 0.0051 = 5.1 mg
4. Acetone Wash Mg: 2.1 mg
5. Total PM-10 Mg: 7.2 mg

Larger Than PM -10 Particulate

Acetone Wash Mg

2.6 mg

Back Half Analysis

Particulate Caught in Impingers Mg.

1.8 mg

Total PM-10 Particulate Catch Mg

9.0 mg

PRETEST DATA

PM10 METHOD 201A

TEST SITE: Interstate Brick DC#4 Baghouse DATE: 12/5/94

RUN #: #2 Compliance

Pbar	Pg	Ts	Tm	B(ws)	ΔH@ Meter
in Hg	in H2O	°F	°F	fraction	in H2O
25.31	-0.03	50	90	0.02	1.748

CO2	O2	N2 +CO	Tambient	Cp(2)	Cp(201A)
%	%	%	°F	dimensionless	dimensionless
0.1	20.8	79.1	40	0.8394	0.8394

total run time	# of points	ΔPavg	ΔP1	Yi	stack area
min		in H2O	in H2O	meter coef	ft2
60	12	0.22	0.09	0.998	1.9174

Md	**Mw**	**Ps**	**μs**
lb/lb mole	lb/lb mole	in Hg	micropoise
28.848	28.631	25.308	174.831

Qs	**ΔH**	**ΔH(-50)**	**ΔH(+50)**
ft3/min	in H2O	in H2O	in H2O
0.4472	0.561	0.690	0.466

Pretest		Pitots
Finish	617.664	+ ok
Start	617.662	- ok
	0.002	
	Vacuum 18	

Posttest		Pitots
Finish	644.632	+ ok
Start	644.63	- ok
	0.002	
	Vacuum 19	

nozzle #	Dn	ΔPmn	ΔPmx
1	0.4724	0.0026	0.0233
2	0.4331	0.0037	0.0330
3	0.3937	0.0054	0.0483
4	0.3543	0.0082	0.0736
5	0.3150	0.0131	0.1178
6	0.2756	0.0223	0.1825
7	0.2362	0.0414	0.3024
8	0.2165	0.0798	0.4080
9	0.1969	0.1440	0.5715
10	0.1772	0.2520	0.8396
11	0.15	0.5555	1.5692
12	0.135	0.8869	2.3495
13		*Error*	*Error*
14		*Error*	*Error*
15		*Error*	*Error*

	Dn in	Vn ft/sec	Vmn ft/sec	Vmnc ft/sec	Vmx ft/sec
1	0.47	6.12	*Error*	3.06	12.56
2	0.43	7.29	*Error*	3.64	13.85
3	0.39	8.82	*Error*	4.41	15.53
4	0.35	10.89	*Error*	5.44	17.81
5	0.32	13.77	*Error*	6.89	21.00
6	0.28	17.99	*Error*	9.00	25.72
7	0.24	24.50	11.83	12.25	33.10
8	0.22	29.16	17.01	14.58	38.45
9	0.20	35.25	22.84	17.63	45.51
10	0.18	43.52	30.22	21.76	55.16
11	0.15	60.74	44.86	30.37	75.41
12	0.14	74.99	56.69	37.49	92.27
13	0.00	*Error*	*Error*	*Error*	*Error*
14	0.00	*Error*	*Error*	*Error*	*Error*
15	0.00	*Error*	*Error*	*Error*	*Error*

Vmxc	ΔPmn	ΔPmnc	ΔPmx	ΔPmxc	An
ft/sec	in H2O	in H2O	in H2O	in H2O	ft2
	choose largest		choose smallest		
9.19	"Error"	0.0026	0.04	0.0233	1.2172E-3
10.93	"Error"	0.0037	0.05	0.03	1.0231E-3
13.23	"Error"	0.0054	0.07	0.05	8.4539E-4
16.33	"Error"	0.0082	0.09	0.07	6.8465E-4
20.66	"Error"	0.0131	0.12	0.12	5.4119E-4
26.99	"Error"	0.0223	0.18	0.20	4.1427E-4
36.74	0.04	0.0414	0.30	0.37	3.0429E-4
43.73	0.08	0.0587	0.41	0.53	2.5565E-4
52.88	0.14	0.0857	0.57	0.77	2.1146E-4
65.29	0.25	0.1307	0.84	1.18	1.7126E-4
91.11	0.56	0.25	1.57	2.29	1.2272E-4
112.48	0.89	0.39	2.35	3.49	9.9402E-5
"Error"	"Error"	"Error"	"Error"	"Error"	
"Error"	"Error"	"Error"	"Error"	"Error"	
"Error"	"Error"	"Error"	"Error"	"Error"	

TEST DATA

PM10 METHOD 201A

TEST SITE: Interstate Brick DC#4 Baghouse Date: 12/5/94

RUN #: #2 Compliance

START: 1115

STOP: 1219

point #	ΔP(201A) in H2O	dwell min	act time decimal	Ts °F	Tmo °F
1	0.09	3.20	315	43	79
2	0.21	4.89	500	42	78
3	0.19	4.65	445	42	78
4	0.24	5.22	515	45	78
5	0.22	5.00	500	44	80
6	0.2	4.77	445	43	81
7	0.21	4.89	500	42	84
8	0.19	4.65	445	42	84
9	0.22	5.00	500	42	85
10	0.2	4.77	445	42	85
11	0.19	4.65	445	42	88
12	0.21	4.89	500	41	89
total		56.5			
avg	0.20		5555.00	42.50	82.42
		Actual Time:	57.25		

Average Meter Temp: 87.67

Tmi	Tov	Vm	vacuum	ΔH	SqRt ΔP
°F	°F	ft3	in Hg	in H2O	
		617.728			
79	265	619.342	1.1	0.56	0.0000
80	268	621.716	1.1	0.56	0.0000
85	268	623.978	1.2	0.56	0.0000
90	268	626.462	1.2	0.56	0.0000
93	244	628.843	1.2	0.56	0.0000
96	242	630.791	1.2	0.56	0.4472
92	246	633.172	1.2	0.56	0.4583
95	247	635.461	1.2	0.56	0.4359
98	247	637.863	1.2	0.56	0.4690
101	247	639.868	1.2	0.56	0.4472
102	246	642.121	1.2	0.56	0.4359
104	247	644.54	1.2	0.56	0.4583
		26.81			
92.92	252.92		1.18	0.5600	0.2626

POSTTEST CALCULATIONS

Vw	**Vwstd**	**bws**	**Pbar**	**Pg**	
mls	ft3	fraction	in Hg	in H2O	
15.8	0.74	0.03	25.31	-0.03	
Ps	**μs**	**Vmds**	**Qs**	**Mw**	**D50**
in Hg	mp	ft3	ft3/min		μm
25.31	171.93	21.81	0.44	28.4904	9.9198

Average Dn	**An**	**Vs**	**Iso**	**Qs**
in	ft2	ft/sec	%	
0.216	2.5447E-4	15.73	184.91	9.3346E+4

Total Mg	**Cs**	**Cs**	**Emr**
mg	lb/dscf	gr/dscf	lbs/hr
4.1	4.1436E-7	0.0029	0.04

American Environmental Testing Company, Inc.
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LABORATORY DATA
EPA Method 201A

Company: Interstate Brick, W.J. UTAH Run Number: #2 Compliance

Sampling Location: Baghouse DC-04 Date: 12-5-96

Moisture Collected

	Initial Weight	Final Weight	Weight Gain
Impinger 1	576.5	578.4	+1.9
Impinger 2	540.0	538.5	-1.5
Impinger 3	426.6	436.8	+10.2
Impinger 4	706.9	712.1	+5.2

Total Gain = +15.8

Particulate Collected

PM - 10 Particulate

1. Filter Final Weight: 0.1997
2. Filter Tare Weight: 0.1983 I-2
3. Net Filter Weight: 0.0014 = 1.4 mg
4. Acetone Wash Mg: ~~[illegible]~~ 1.1 mg
5. Total PM-10 Mg: ~~[illegible]~~ 2.5 mg

Larger Than PM -10 Particulate

Acetone Wash Mg

~~[illegible]~~

Back Half Analysis

Particulate Caught in Impingers Mg.

~~[illegible]~~ 1.6 mg

Total PM-10 Particulate Catch Mg

4.1 mg

PRETEST DATA

PM10 METHOD 201A

TEST SITE: Interstate Brick DC#4 Baghouse DATE: 12/5/94

RUN #: #3 Compliance

Pbar	Pg	Ts	Tm	B(ws)	ΔH@ Meter
in Hg	in H2O	°F	°F	fraction	in H2O
25.31	-0.03	50	90	0.02	1.748

CO2	O2	N2 +CO	Tambient	Cp(2)	Cp(201A)
%	%	%	°F	dimensionless	dimensionless
0.1	20.8	79.1	40	0.8394	0.8394

total run time	# of points	ΔPavg	ΔP1	Yi	stack area
min		in H2O	in H2O	meter coef	ft2
60	12	0.22	0.09	0.998	1.9174

Md	**Mw**	**Ps**	μs
lb/lb mole	lb/lb mole	in Hg	micropoise
28.848	28.631	25.308	174.831

Qs	**ΔH**	**ΔH(-50)**	**ΔH(+50)**
ft3/min	in H2O	in H2O	in H2O
0.4472	0.561	0.690	0.466

Pretest		Pitots	Posttest		Pitots
Finish	645.316	+ ok	Finish	672.866	+ ok
Start	645.314	- ok	Start	672.863	- ok
	0.002			0.003	
	Vacuum 18			Vacuum 20	

nozzle #	Dn	ΔPmn	ΔPmx
1	0.4724	0.0026	0.0233
2	0.4331	0.0037	0.0330
3	0.3937	0.0054	0.0483
4	0.3543	0.0082	0.0736
5	0.3150	0.0131	0.1178
6	0.2756	0.0223	0.1825
7	0.2362	0.0414	0.3024
8	0.2165	0.0798	0.4080
9	0.1969	0.1440	0.5715
10	0.1772	0.2520	0.8396
11	0.15	0.5555	1.5692
12	0.135	0.8869	2.3495
13		"Error"	"Error"
14		"Error"	"Error"
15		"Error"	"Error"

	Dn in	Vn ft/sec	Vmn ft/sec	Vmnc ft/sec	Vmx ft/sec
1	0.47	6.12	"Error"	3.06	12.56
2	0.43	7.29	"Error"	3.64	13.85
3	0.39	8.82	"Error"	4.41	15.53
4	0.35	10.89	"Error"	5.44	17.81
5	0.32	13.77	"Error"	6.89	21.00
6	0.28	17.99	"Error"	9.00	25.72
7	0.24	24.50	11.83	12.25	33.10
8	0.22	29.16	17.01	14.58	38.45
9	0.20	35.25	22.84	17.63	45.51
10	0.18	43.52	30.22	21.76	55.16
11	0.15	60.74	44.86	30.37	75.41
12	0.14	74.99	56.69	37.49	92.27
13	0.00	"Error"	"Error"	"Error"	"Error"
14	0.00	"Error"	"Error"	"Error"	"Error"
15	0.00	"Error"	"Error"	"Error"	"Error"

Vmxc	ΔPmn	ΔPmnc	ΔPmx	ΔPmxc	An
ft/sec	in H2O	in H2O	in H2O	in H2O	ft2
	choose largest		choose smallest		
9.19	*Error*	0.0026	0.04	0.0233	1.2172E-3
10.93	*Error*	0.0037	0.05	0.03	1.0231E-3
13.23	*Error*	0.0054	0.07	0.05	8.4539E-4
16.33	*Error*	0.0082	0.09	0.07	6.8465E-4
20.66	*Error*	0.0131	0.12	0.12	5.4119E-4
26.99	*Error*	0.0223	0.18	0.20	4.1427E-4
36.74	0.04	0.0414	0.30	0.37	3.0429E-4
43.73	0.08	0.0587	0.41	0.53	2.5565E-4
52.88	0.14	0.0857	0.57	0.77	2.1146E-4
65.29	0.25	0.1307	0.84	1.18	1.7126E-4
91.11	0.56	0.25	1.57	2.29	1.2272E-4
112.48	0.89	0.39	2.35	3.49	9.9402E-5
Error	*Error*	*Error*	*Error*	*Error*	
Error	*Error*	*Error*	*Error*	*Error*	
Error	*Error*	*Error*	*Error*	*Error*	

TEST DATA

PM10 METHOD 201A

TEST SITE: Interstate Brick DC#4 Baghouse Date: 12/5/94

RUN #: #3 Compliance

START: 1255

STOP: 1219

point #	ΔP(201A) in H2O	dwell min	act time decimal	Ts °F	Tmo °F
1	0.09	3.20	315	43	85
2	0.19	4.65	445	42	85
3	0.21	4.89	500	41	85
4	0.23	5.11	500	41	86
5	0.22	5.00	500	42	87
6	0.23	5.11	500	41	88
7	0.19	4.65	445	42	89
8	0.2	4.77	445	43	90
9	0.22	5.00	500	42	90
10	0.23	5.11	500	42	91
11	0.21	4.89	500	42	92
12	0.2	4.77	445	42	93
total		57.1			
avg	0.20		5595.00	41.92	88.42
		Actual Time:	57.25		

Average Meter Temp: 92.88

Tmi	Tov	Vm	vacuum	ΔH	SqRt ΔP
°F	°F	ft3	in Hg	in H2O	
		645.377			
85	245	647.096	1.1	0.56	0.0000
89	249	649.384	1.1	0.56	0.0000
93	248	651.763	1.1	0.56	0.0000
96	247	654.158	1.2	0.56	0.0000
99	248	656.548	1.2	0.56	0.0000
100	248	658.968	1.2	0.56	0.4796
93	247	660.926	1.2	0.56	0.4359
99	249	663.227	1.2	0.56	0.4472
101	248	665.631	1.2	0.56	0.4690
103	248	668.044	1.2	0.56	0.4796
105	249	670.444	1.2	0.56	0.4583
105	249	672.738	1.2	0.56	0.4472
		27.36			
97.33	247.92		1.17	0.5600	0.2681

POSTTEST CALCULATIONS

Vw	**Vwstd**	**bws**	**Pbar**	**Pg**	
mls	ft3	fraction	in Hg	in H2O	
23.4	1.10	0.05	25.31	-0.03	
Ps	**μs**	**Vmds**	**Qs**	**Mw**	***D50***
in Hg	mp	ft3	ft3/min		μm
25.31	170.70	22.05	0.45	28.3319	9.7058

Average Dn	**An**	**Vs**	**Iso**	**Qs**
in	ft2	ft/sec	%	
0.216	2.5447E-4	16.09	185.32	9.4149E+4

Total Mg	**Cs**	**Cs**	**Emr**
mg	lb/dscf	gr/dscf	lbs/hr
5.9	5.8987E-7	0.0041	0.06

American Environmental Testing Company, Inc.
565 South Birch Drive
Spanish Fork, Utah 84660
(801) 266-7111

LABORATORY DATA
EPA Method 201A

Company: Interstate Brick, W.J. UTAH Run Number: #3 Compliance

Sampling Location: Baghouse DC-04 Date: 12-05-94

Moisture Collected

	Initial Weight	Final Weight	Weight Gain
Impinger 1	577.3	574.6	-2.7
Impinger 2	540.4	562.7	+22.3
Impinger 3	426.7	426.9	+0.2
Impinger 4	712.1	715.7	+3.6

Total Gain = +23.4

Particulate Collected

PM - 10 Particulate

1. Filter Final Weight: 0.2015
2. Filter Tare Weight: 0.1983 I-3
3. Net Filter Weight: 0.0032 = 3.2 mg
4. Acetone Wash Mg: ~~mg~~ 1.6 ms
5. Total PM-10 Mg: ~~mg~~ 4.8 —

Larger Than PM -10 Particulate

Acetone Wash Mg

~~mg~~

Back Half Analysis

Particulate Caught in Impingers Mg.

1.1 mg

Total PM-10 Particulate Catch Mg

5.9 mg

American Environmental Testing Company, Inc.

565 South Birch Drive

Spanish Fork, Utah 84660

(801) 266-7111

Company: Interstate Brick Co. Date: 12/5-95

Source: #4 Kiln - Baghouse inlet. Run Number: #1-2+3. ambient air

ORSAT ANALYSIS

(Average of 3 analyses each)

Test Number	Volume Percent - Dry			
	Nitrogen	Oxygen	Carbon Dixoide	Carbon Monoxide
1	79.1	20.8	0.1	<0.1
2	79.1	20.8	0.1	<0.1
3	79.1	20.8	0.1	<0.1
Average	79.1	20.8	0.1	<0.1

AMERICAN ENVIRONMENTAL TESTING, INCORPORATED
565 So. Birch Drive 801-266-7111
Spanish Fork, Utah 84660

POST TEST ACETONE EVAPORATION

COMPANY: Interstate Brick
SOURCE: DC #4 Baghouse
DATE: 12/5/97

CONTAINER #2
PARTICLES GREATER THAN PM-10

ACETONE BLANK

Volume of Liquic	350 ~l>
Final Weight	106.8013
Tare Weight	106.8011
Residue	0.0002

RUN #1

Volume of Liquic	~~~ml~~~
Color	
Final Weight	
Tare Weight	
Residue & Blank	
- Blank	
Residue	

RUN #2

Volume of Liquic	
Color	
Final Weight	
Tare Weight	
Residue & Blank	
- Blank	
Residue	

RUN #3

Volume of Liquic	
Color	
Final Weight	
Tare Weight	
Residue & Blank	
- Blank	
Residue	

CONTAINER #3
PARTICLES PM-10 OR SMALLER

RUN #1

Volume of Liquic	200 ~ l>
Color	clear
Final Weight	99.8027
Tare Weight	99.8004
Residue & Blank	0.0023
- Blank	0.0002
Residue	0.0021 = 2.1 ~>

RUN #2

Volume of Liquic	200 ~ l>
Color	clear
Final Weight	102.8904
Tare Weight	102.8891
Residue & Blank	0.0013
- Blank	0.0002
Residue	0.0011 = 1.1 ~>

RUN #3

Volume of Liquic	200 ~ l>
Color	clear
Final Weight	99.7609
Tare Weight	99.7591
Residue & Blank	0.0018
- Blank	0.0002
Residue	0.0016 = 1.6 ~>

AMERICAN ENVIRONMENTAL TESTING, INCORPORATED
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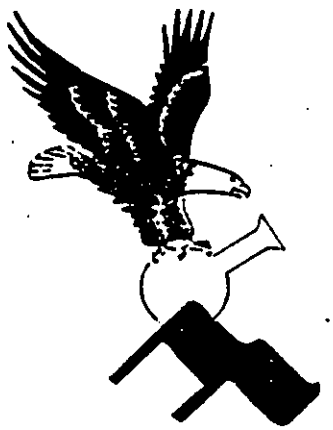
Spanish Fork, Utah 84660

POST TEST BACK HALF EVAPORATION

COMPANY: Interstate Brick
SOURCE: DC #4 Backhouse
DATE: 12/5/94

CONTAINER #1 METHYLENE CHLORIDE			CONTAINER #2 DISTILLED WATER		
BLANK	300 mls		BLANK		
Volume of Liquid	102.8537		Volume of Liquid	200 mls	
Final Weight	102.8532		Final Weight	99.7764	
Tare Weight			Tare Weight	99.7764	
Residue	0.0001		Residue	0.0002	
RUN #1			RUN #1		
Volume of Liquid	200 mls		Volume of Liquid	200 mls	
Color	clear		Color	clear	
Final Weight	98.1794		Final Weight	102.8607	
Tare Weight	98.1782		Tare Weight	102.8598	
Residue & Blank	0.0012		Residue & Blank	0.0009	
- Blank	0.0001		- Blank	0.0002	
Residue	0.0011	1.1	Residue	0.0007	0.7
RUN #2			RUN #2		
Volume of Liquid	200 mls		Volume of Liquid	200 mls	
Color	clear		Color	clear	
Final Weight	99.7132		Final Weight	106.8010	
Tare Weight	99.7122		Tare Weight	106.8001	
Residue & Blank	0.0010		Residue & Blank	0.0009	
- Blank	0.0001		- Blank	0.0002	
Residue	0.0009	0.9	Residue	0.0007	0.7
RUN #3			RUN #3		
Volume of Liquid	200 mls		Volume of Liquid	200 mls	
Color	clear		Color	clear	
Final Weight	106.8231		Final Weight	98.1440	
Tare Weight	106.8224		Tare Weight	98.1433	
Residue & Blank	0.0007		Residue & Blank	0.0007	
- Blank	0.0001		- Blank	0.0002	
Residue	0.0006	0.6	Residue	0.0005	0.5



Appendix "E"

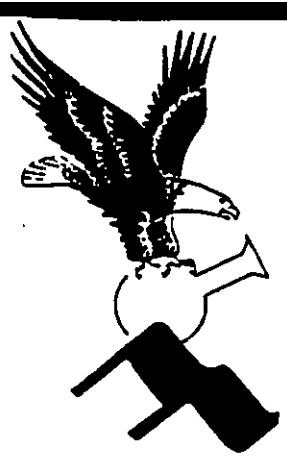
(Emissions Calculations)

American Environmental Testing Company Inc.

Reno, Nevada
702-786-8553

Phoenix, Arizona
602-253-3354

Salt Lake City, Utah
801-266-7111



American Environmental Testing Company, Inc.

565 South Birch Drive

Spanish Fork, Utah 84660

801-798-8553

Nomenclature for Particulate Calulations

Symbol	English Units	Metric Units	Description
A_s	in^2	m^2	Stack Area
C_{an}	gr/dscf*	g/dscm*	Particulate - probe, cyclone and filter
C_{ao}	gr/dscf*	g/dscm*	Particulate - total
C_{at}	gr/CF @ stack conditions	g/m^3	Particulate - probe, cylone and filter
C_{au}	gr/CF @ stack conditions	g/m^3	Particulate - total
C_{aw}	lbs/hr	kg/hr	Particulate - probe, cyclone and filter
C_{ax}	lbs/hr	kg/hr	Particulate - total
C_p			Pitot Tube Calibration Factor
D_n	in	m	Sampling Nozzle Diameter
%EA			Percent Excess Air at sampling point
g	32.2 ft/s^2	9.81 m/s^2	Acceleration of gravity
%I			Percent isokinetic
%M			Percent moisture in stack gas by Volume
M_d			Mole faction of dry gas

* 29.92 "Hg, 528°R (790 mm Hg, 20° C)

Reno, Nevada 702-786-8553

Phoenix, Arizona 602-253-3354

Salt Lake City, Utah 801-266-7111

Symbol	English Units	Metric Units	Description
M_f	mg	mg	Particulate - probe, cyclone and filter
M_{H2O}	18 lb/lb-mole		Molecular Weight of Water
m_t	mg	mg	Particulate - total
MW	lb/lb-mole	g/g-mole	Molecular Weight of wet stack gas
MW_{air}	28.95 lb/lb-mole		Molecular Weight of air
MW_d	lb/lb-mole	g/g-mole	Molecular Weight of dry stack gas
P_b	"Hg Absolute	mm Hg	Barometric Pressure
P_m	"H20	mm H2O	Orifice Pressure Drop
P_s	"Hg Absolute	mm Hg	Stack Pressure
ΔP	"H20	mm H2o	Velocity Head of stack gas
P_{std}	"29.92 "Hg	760 mm Hg	Standard Barometric Pressure
Q_a	ACFM	m3/hr	Stack Gas Volume at Actual Stack condition
Q_s	DSCFM*	dscm/hr*	Stack Gas Volume at 29.92 "Hg, 528°R,dry
R	21.83 "Hg-ft3/lb-mole°R		Universal Gas Consant
T_m	°F	°C	Average Gas Meter Temperature
T_t	min	min	Net Time of test
T_s	°F	°C	Stack Temperature
T_{std}	528°R	293 K	Standard Temperature
V_m	ft^3	m^3	Volume of dry gas sampled at meter condtions
V_{mstd}	dscf*	dscm*	Volume of dry gas sampled at standard conditions
V_s	fpm	m/sec	Stack velocity at stack conditions
V_w	ml	ml	Total water collected in impingers and silica gel

* 29.92 "Hg, 528°R (790 mm Hg, 20° C)

Symbol	English Units	Metric Units	Description
V_{wgas}	scf*	scm*	Volume of water vapor collected at standard conditions
ρ_{air}	0.0748 lbs/ft^3		Density ofAir
ρ_{H2O}	1 g/ml		Density of water
ρ_{man}	51.63 lbs/ft^3		Denisty of manometer oil

Standard Conditions: 29.92 "Hg, 68°F (760 mm Hg, 20° C)
* 29.92 "Hg, 528°R (760 mm Hg, 20° C)

Sample Calculations

NOx

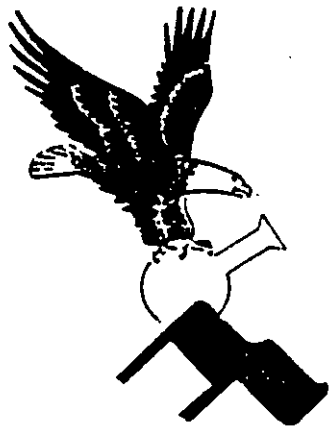
NOx = (ppmdv) x (1.194×10^{-7}) = pounds/dscf
(lbs/dscf) x (Q_s Flow Rate in dscf/hr) = pounds/hour

CO

CO = (ppmdv) x (1-%CO_2) x (0.728×10^{-7}) = pounds/dscf
(pounds/dscf) x (Q_s Flow Rate in dscf/hr) = pounds/hour

SO2

SO2 = (ppmdv) x (1.66×10^{-7}) = pounds/dscf
(pounds/dscf) x (Q_s Flow Rate in dscf/hr) = pounds/hour



Appendix "F"

(Cyclonic Flow Determinations)

American Environmental Testing Company Inc.

Reno, Nevada
702-786-8553

Phoenix, Arizona
602-253-3354

Salt Lake City, Utah
801-266-7111

Testing Company, Inc.
505 South Birch Drive
Spanish Fork Utah 84660
801-266-7711

METHOD 2
CYCLONIC FLOW DETERMINATION DATA FORM

Plant Intrastate Brick — Run No. Pretest

Location #3 Kiln — Operator TBB - RBB

Date 12/7/94 — Amb. Temp. °F 40

Bar. Press. ("Hg) 25.45 — Static Press. ("H_2O) -0.18

Pitot Tube (Cp) 0.8429 — Stack Dimensions 15.999 ft^2

Traverse point number	Velocity head (Δp_s), in. H_2O	Stack temp., °F	Cyclonic flow determination	
			Δp_s at 0° reference	Angle (α) which yields a null Δp
1	1.4	421	0.01	3
2	1.8		0.02	4
3	2.7		0.02	5
4	2.8		0.02	5
5	2.7		0.02	5
6	3.0		0.03	6
7	4.1		0.02	4
8	5.3		0.02	5
9	5.8		0.03	7
10	5.5		0.03	6
11	2.5		0.02	4
12	2.7		0.02	5
13	3.0		0.02	5
14	4.0		0.03	6
15	3.8		0.03	6
16	3.8		0.02	4
			Average angle (α)[a]	6.67°

[a] Average of α must be < 10 degrees to be acceptable

Testing Company, Inc.
305 South Birch Drive
Spanish Fork, Utah 84660
801-266-7111

METHOD 2
CYCLONIC FLOW DETERMINATION DATA FORM

Plant Intstate Brick — Run No. Pre ts +

Location #4 Kiln — Operator GET - DFH

Date 12/5/94 — Amb. Temp. °F 42

Bar. Press. ("Hg) 25.31 — Static Press. ("H_2O) 0.01

Pitot Tube (Cp) 0.840 1 — Stack Dimensions 100.42 ft^2

Traverse point number	Velocity head (Δp_s), in. H_2O	Stack temp., °F	Cyclonic flow determination	
			Δp_s at 0° reference	Angle (α) which yields a null Δp
1	0.01	126	0	0
2	0.01		0	0
3	0.01		0	0
4	0.01		0	0
5	0.02		0	0
6	0.02		0.01	2
7	0.02		0.01	1
8	0.02		0	0
9	0.02		0	0
10	0.02		0.01	2
11	0.02		0	0
12	0.02		0	0
13	0.03		0.01	2
14	0.02		0.01	1
15	0.02		0.01	2
16	0.03		0	0
17	0.02		0	0
18	0.02		0	0
19	0.02		0.01	2
20	0.02		0	0
21	0.03		0.01	1
22	0.02		0.01	1
23	0.02		0	0
24	0.02		0	0
25	0.02		0.01	2
		Average angle (α)[a]		0.64°

[a] Average of α must be < 10 degrees to be acceptable

American Environmental
Testing Company, Inc.
505 South Birch Drive
Spanish Fork, Utah 84660
801-266-7111

METHOD 2
CYCLONIC FLOW DETERMINATION DATA FORM

Plant Interstate Brick Run No. Pretest

Location Primary Crusher - Baghouse Operator GJ - DFH

Date 12/6/94 Amb. Temp. °F 41

Bar. Press. ("Hg) 25.25 Static Press. ("H_2O) -1.5

Pitot Tube (Cp) 0.8374 Stack Dimensions 0.785 ft²

Traverse point number	Velocity head (Δp_s), in. H_2O	Stack temp., °F	Cyclonic flow determination	
			Δp_s at 0° reference	Angle (α) which yields a null Δp
1	2.1	45	0.03	7
2	2.2		0.03	8
3	2.5		0.04	10
4	2.2		0.03	7
5	2.1		0.02	6
6	2.1		0.03	8
7	1.9		0.03	7
8	2.2		0.04	9
9	2.3		0.03	7
10	2.2		0.03	7
11	2.2		0.03	6
12	2.3		0.03	6

Average angle (α)[a] 7.33

[a] Average of α must be < 10 degrees to be acceptable

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801-266-7111

METHOD 2
CYCLONIC FLOW DETERMINATION DATA FORM

Plant Intermountain Brick — Run No. Pretest

Location IC #3 Baghouse — Operator JBB - RBB

Date 12/5/94 — Amb. Temp. °F 48

Bar. Press. ("Hg) 25.31 — Static Press. ("H_2O) -9.0

Pitot Tube (Cp) 0.8414 — Stack Dimensions 1.9174 ft^2

Traverse point number	Velocity head (Δp_s), in. H_2O	Stack temp., °F	Cyclonic flow determination	
			Δp_s at 0° reference	Angle (α) which yields a null Δp
1	0.33	162	0.03	8
2	0.53		0.02	6
3	0.52		0.02	5
4	0.12		0.01	3
5	0.1		0.01	2
6	0.1		0	0
7	0.99		0.05	12
8	0.21		0.04	9
9	0.7		0.04	8
10	0.13		0.03	7
11	0.1		0.01	3
12	0.1		0.01	2
			Average angle (α)[a]	5.42°

[a] Average of α must be < 10 degrees to be acceptable

Testing Company, Inc.
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801-266-7111

METHOD 2
CYCLONIC FLOW DETERMINATION DATA FORM

Plant Intermountain Brick — Run No. Pretest

Location Unit #4 Baghouse — Operator GET DFH

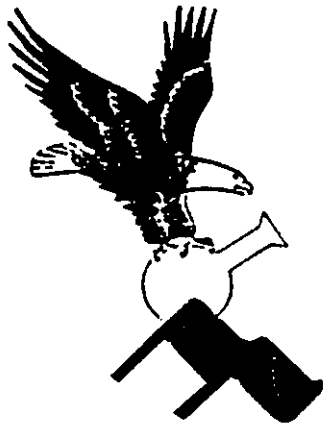
Date 12/5/94 — Amb. Temp. °F 41

Bar. Press. ("Hg) 25.31 — Static Press. ("H_2O) -0.03

Pitot Tube (Cp) 0.8394 — Stack Dimensions 1.9174 ft^2

Traverse point number	Velocity head (Δp_s), in. H_2O	Stack temp., °F	Cyclonic flow determination	
			Δp_s at 0° reference	Angle (α) which yields a null Δp
1	0.1	48	0.02	5
2	0.12		0.01	4
3	0.2		0.03	5
4	0.21		0.03	6
5	0.2		0.02	3
6	0.25		0.03	5
7	0.3		0.02	4
8	0.26		0.02	5
9	0.25		0.03	7
10	0.25		0.02	6
11	0.24		0.01	3
12	0.21		0.01	3
			Average angle (α)[a]	4.67°

[a] Average of α must be < 10 degrees to be acceptable



Appendix "G"

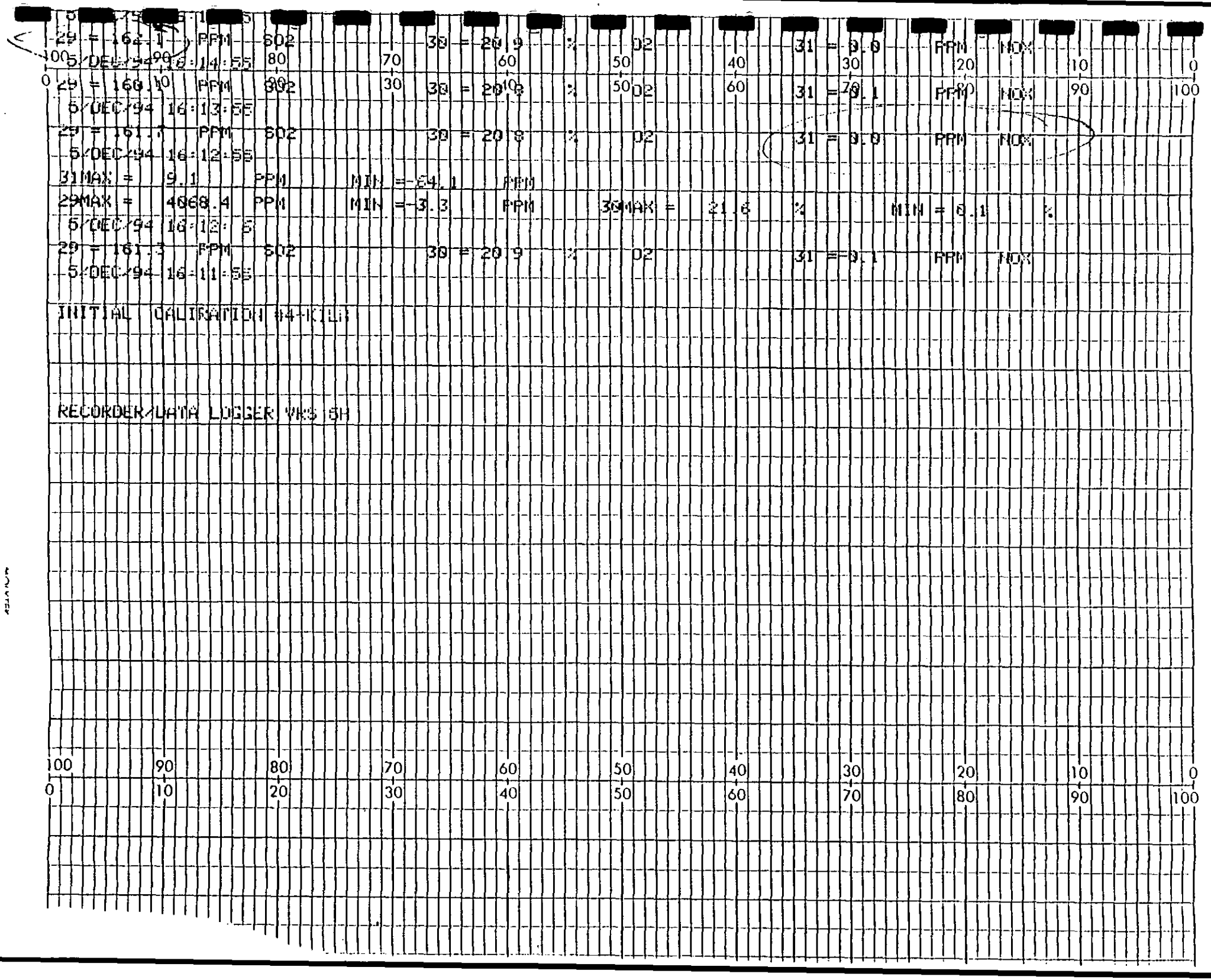
(Data-Logger Sheets)

American Environmental Testing Company Inc.

Reno, Nevada
702-786-8553

Phoenix, Arizona
602-253-3354

Salt Lake City, Utah
801-266-7111


29 = 164.1 PPM SO2
30 = 20.9 % O2
31 = 9.0 PPM NOX
5/DEC/94 16:14:55
29 = 160.1 PPM SO2
30 = 20.9 % O2
31 = 9.1 PPM NOX
5/DEC/94 16:13:55
29 = 161.7 PPM SO2
30 = 20.9 % O2
31 = 9.0 PPM NOX
5/DEC/94 16:12:55
31MAX = 9.1 PPM MIN =-64.1 PPM
29MAX = 4068.4 PPM MIN =-3.3 PPM 30MAX = 21.6 % MIN = 0.1 %
5/DEC/94 16:12: 5
29 = 161.3 PPM SO2
30 = 20.9 % O2
31 = 9.1 PPM NOX
5/DEC/94 16:11:55
INITIAL CALIBRATION 04-OCT-94
RECORDER/DATA LOGGER VKS 6H

29 = 9.7 PPM SO2 30 = 20.9 % O2 31 = 159.5 PPM NOX
5/DEC/94 16:34:55
29 = 9.9 PPM SO2 30 = 21.6 % O2 31 = 159.0 PPM NOX
5/DEC/94 16:33:55
29 = 1.5 PPM SO2 30 = 21.0 % O2 31 = 159.6 PPM NOX
5/DEC/94 16:32:55
29 = 2.5 PPM SO2 30 = 21.0 % O2 31 = 158.3 PPM NOX
5/DEC/94 16:31:55
29 = 6.5 PPM SO2 30 = 21.0 % O2 31 = 173.8 PPM NOX
5/DEC/94 16:30:55
29 = 112.3 PPM SO2 30 = 21.0 % O2 31 = 162.4 PPM NOX
5/DEC/94 16:29:55
29 = 261.0 PPM SO2 30 = 20.0 % O2 31 = 30.0 PPM NOX
5/DEC/94 16:28:55
29 = 262.1 PPM SO2 30 = 20.9 % O2 31 = 3.1 PPM NOX
5/DEC/94 16:27:55
29 = 261.2 PPM SO2 30 = 20.9 % O2 31 = 3.1 PPM NOX
5/DEC/94 16:26:55
29 = 258.0 PPM SO2 30 = 20.9 % O2 31 = 3.1 PPM NOX
5/DEC/94 16:25:55
29 = 260.7 PPM SO2 30 = 20.9 % O2 31 = 3.1 PPM NOX
5/DEC/94 16:24:55
29 = 257.0 PPM SO2 30 = 20.9 % O2 31 = 3.2 PPM NOX
5/DEC/94 16:23:55
29 = 242.3 PPM SO2 30 = 20.8 % O2 31 = 3.2 PPM NOX
5/DEC/94 16:22:55
29 = 23.6 PPM SO2 30 = 20.9 % O2 31 = 3.2 PPM NOX
5/DEC/94 16:21:55
29 = 9.8 PPM SO2 30 = 20.9 % O2 31 = 3.2 PPM NOX
5/DEC/94 16:20:55
29 = 149.8 PPM SO2 30 = 20.8 % O2 31 = 3.1 PPM NOX
5/DEC/94 16:19:55
29 = 161.5 PPM SO2 30 = 20.9 % O2 31 = 3.1 PPM NOX
5/DEC/94 16:18:55
29 = 160.4 PPM SO2 30 = 20.8 % O2 31 = 3.1 PPM NOX
5/DEC/94 16:17:55
29 = 162.3 PPM SO2 30 = 20.9 % O2 31 = 3.1 PPM NOX
5/DEC/94 16:16:55

CHART NO. 414446

5/DEC/94 9:33:32

31MAX = 262.9 PPM MIN =-1.3 PPM

29MAX = 10.6 PPM MIN =-5.3 PPM 30MAX = 21.3 % MIN = 6.0 %

5/DEC/94 9:33: 3

29 = 0.8 PPM SO2 30 = 12.8 % O2 31 = 1.6 PPM NOX

5/DEC/94 9:31:32

INITIAL BIAS

29 = 0.7 PPM SO2 30 = 21.0 % O2 31 = 161.5 PPM NOX

5/DEC/94 16:45:55

29 = 0.2 PPM SO2 30 = 21.0 % O2 31 = 163.2 PPM NOX

5/DEC/94 16:44:55

29 = 0.0 PPM SO2 30 = 21.0 % O2 31 = 263.8 PPM NOX

5/DEC/94 16:43:55

29 = 1.4 PPM SO2 30 = 21.0 % O2 31 = 259.3 PPM NOX

5/DEC/94 16:42:55

29MAX = 265.4 PPM MIN =-1.3 PPM 30MAX = 21.1 % MIN = 20.7 %

5/DEC/94 16:42: 0

29 = 1.4 PPM SO2 30 = 21.1 % O2 31 = 264.5 PPM NOX

5/DEC/94 16:41:55

29 = 0.6 PPM SO2 30 = 21.1 % O2 31 = 95.2 PPM NOX

5/DEC/94 16:40:55

29 =-0.5 PPM SO2 30 = 21.0 % O2 31 = 95.8 PPM NOX

5/DEC/94 16:39:55

29 = 0.1 PPM SO2 30 = 21.0 % O2 31 = 95.7 PPM NOX

5/DEC/94 16:38:55

29 = 0.4 PPM SO2 30 = 21.0 % O2 31 = 95.6 PPM NOX

5/DEC/94 16:37:55

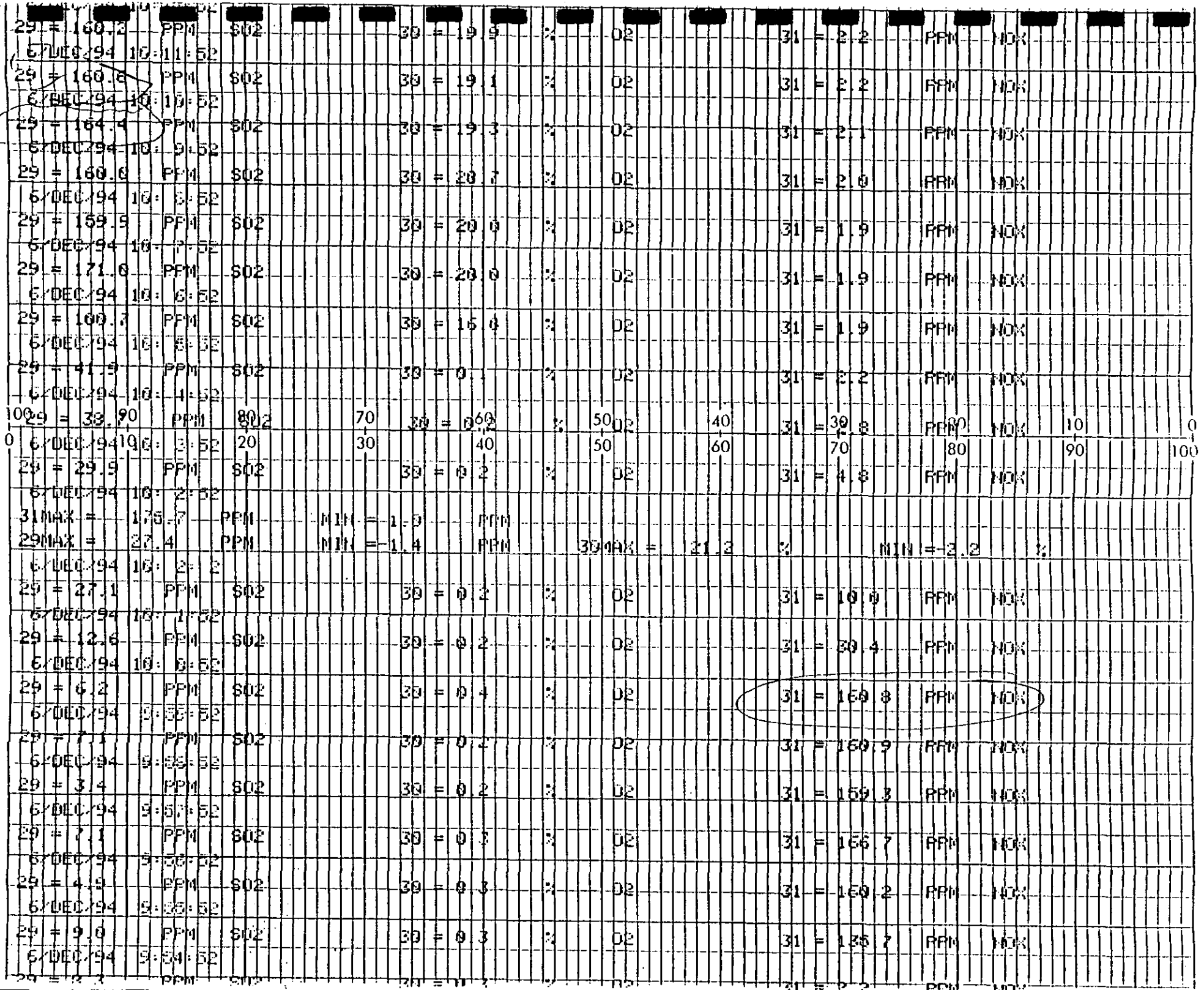
29 = 0.5 PPM SO2 30 = 21.1 % O2 31 = 95.6 PPM NOX

5/DEC/94 16:36:55

100 90 80 70 60 50 40 30 20 10 0

0 10 20 30 40 50 60 70 80 90 100

MONITEK


29 = 160.2 PPM S02
6/DEC/94 10:11:52
29 = 160.6 PPM S02
6/DEC/94 10:10:52
29 = 164.4 PPM S02
6/DEC/94 10: 9:52
29 = 160.8 PPM S02
6/DEC/94 10: 8:52
29 = 159.9 PPM S02
6/DEC/94 10: 7:52
29 = 171.6 PPM S02
6/DEC/94 10: 6:52
29 = 100.7 PPM S02
6/DEC/94 10: 5:52
29 = 41.9 PPM S02
6/DEC/94 10: 4:52
29 = 38.90 PPM S02
6/DEC/94 10: 3:52
29 = 29.9 PPM S02
6/DEC/94 10: 2:52
31MAX = 178.7 PPM MIN = 1.9 PPM
29MAX = 37.4 PPM MIN = 1.4 PPM
6/DEC/94 10: 2: 2
29 = 27.1 PPM S02
6/DEC/94 10: 1:52
29 = 12.6 PPM S02
6/DEC/94 10: 0:52
29 = 6.2 PPM S02
6/DEC/94 9:59:52
29 = 7.1 PPM S02
6/DEC/94 9:58:52
29 = 3.4 PPM S02
6/DEC/94 9:57:52
29 = 2.1 PPM S02
6/DEC/94 9:56:52
29 = 4.9 PPM S02
6/DEC/94 9:55:52
29 = 9.0 PPM S02
6/DEC/94 9:54:52
30 = 19.9 % O2
30 = 19.1 % O2
30 = 19.3 % O2
30 = 20.7 % O2
30 = 20.0 % O2
30 = 20.0 % O2
30 = 15.0 % O2
30 = 0.1 % O2
30 = 0.2 % O2
30MAX = 21.3 % MIN =-2.2 %
30 = 0.2 % O2
30 = 0.2 % O2
30 = 0.4 % O2
30 = 0.2 % O2
30 = 0.2 % O2
30 = 0.3 % O2
30 = 0.3 % O2
31 = 2.2 PPM NOX
31 = 2.2 PPM NOX
31 = 2.1 PPM NOX
31 = 2.0 PPM NOX
31 = 1.9 PPM NOX
31 = 1.9 PPM NOX
31 = 1.9 PPM NOX
31 = 2.2 PPM NOX
31 = 30.8 PPM NOX
31 = 4.8 PPM NOX
31 = 10.0 PPM NOX
31 = 30.4 PPM NOX
31 = 160.8 PPM NOX
31 = 160.9 PPM NOX
31 = 159.3 PPM NOX
31 = 166.7 PPM NOX
31 = 160.2 PPM NOX
31 = 155.7 PPM NOX
100 90 80 70 60 50 40 30 20 10 0
0 10 20 30 40 50 60 70 80 90 100
MOLYTEK

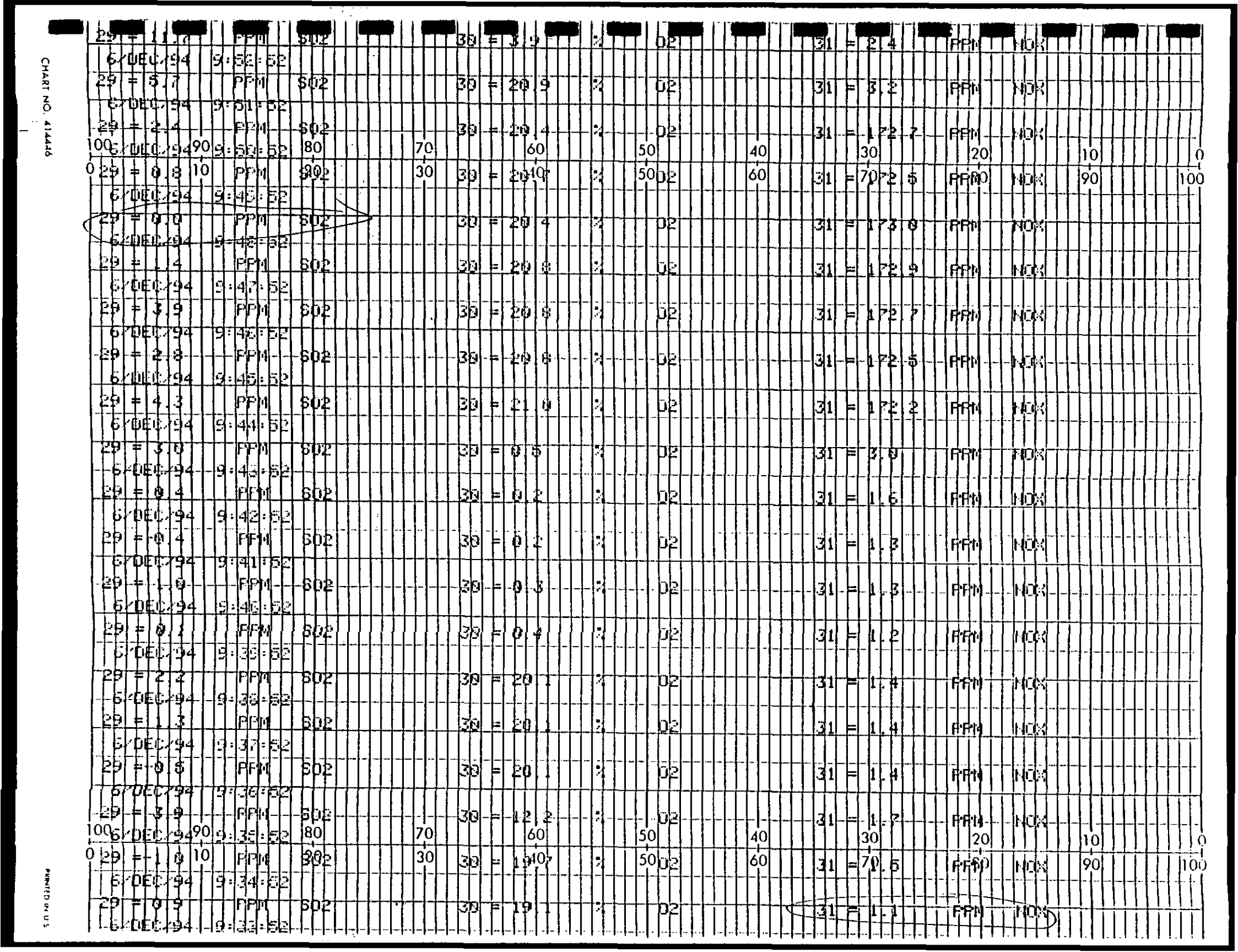


CHART NO. 414446

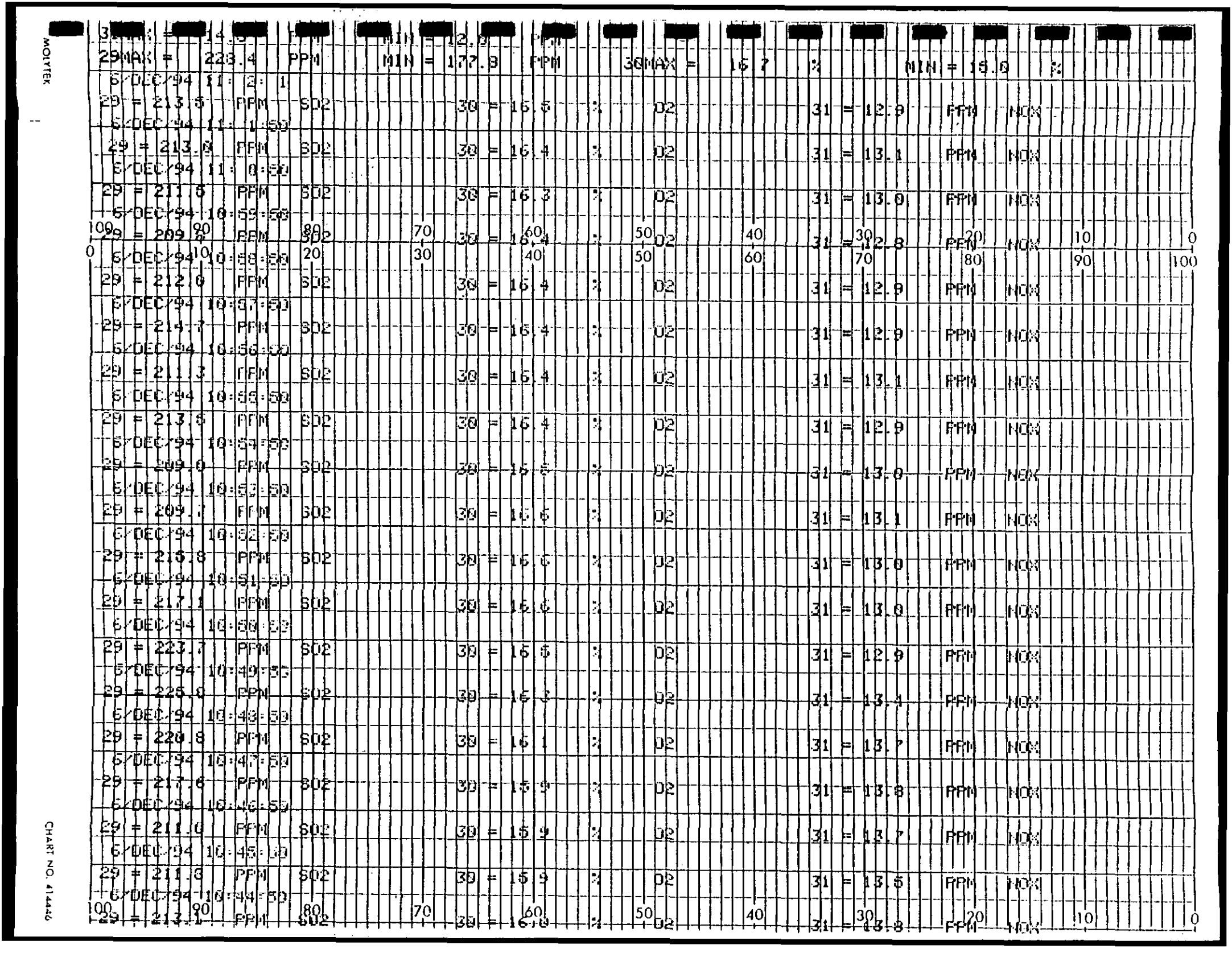
PRINTED IN U.S.

29 = 211.4 PPM SO2 30 = 16.1 % O2 31 = 14.1 PPM NOX
6/DEC/94 10:42:50
29 = 211.4 PPM SO2 30 = 16.1 % O2 31 = 14.0 PPM NOX
6/DEC/94 10:41:50
29 = 212.0 PPM SO2 30 = 16.0 % O2 31 = 13.8 PPM NOX
6/DEC/94 10:40:50
29 = 208.5 PPM SO2 30 = 16.0 % O2 31 = 13.9 PPM NOX
6/DEC/94 10:39:50
29 = 207.7 PPM SO2 30 = 16.0 % O2 31 = 13.9 PPM NOX
6/DEC/94 10:38:50
29 = 205.0 PPM SO2 30 = 15.9 % O2 31 = 13.6 PPM NOX
6/DEC/94 10:37:50
29 = 208.5 PPM SO2 30 = 15.9 % O2 31 = 13.6 PPM NOX
6/DEC/94 10:36:50
29 = 206.2 PPM SO2 30 = 15.8 % O2 31 = 13.8 PPM NOX
6/DEC/94 10:35:50
29 = 206.2 PPM SO2 30 = 15.8 % O2 31 = 13.3 PPM NOX
6/DEC/94 10:34:50
29 = 197.3 PPM SO2 30 = 15.7 % O2 31 = 12.9 PPM NOX
6/DEC/94 10:33:50
29 = 185.2 PPM SO2 30 = 15.8 % O2 31 = 12.3 PPM NOX
6/DEC/94 10:32:50
31MAX = 12.2 PPM MIN = 11.9 PPM
29MAX = 138.6 PPM MIN = 174.5 PPM 30MAX = 16.3 % MIN = 16.0 %
6/DEC/94 10:32: 1
29 = 178.1 PPM SO2 30 = 16.1 % O2 31 = 12.0 PPM NOX
6/DEC/94 10:31:50
29 = 170.60 PPM SO2 30 = 15.6 % O2 31 = 301.9 PPM NOX
6/DEC/94 10:31: 9

0 10 20 30 40 50 60 70 80 90 100

RUN#1=INLET KILN##

PRINTED IN U.S.A.


MOLYTEK
CHART NO. 41446
29MAX = 223.4 PPM
MIN = 177.3 PPM
30MAX = 16.7 %
MIN = 15.0 %
6/DEC/94 11: 2: 1
29 = 213.5 PPM SO2
30 = 16.5 % O2
31 = 12.9 PPM NOX
6/DEC/94 11: 1:59
29 = 213.9 PPM SO2
30 = 16.4 % O2
31 = 13.1 PPM NOX
6/DEC/94 11: 0:59
29 = 211.6 PPM SO2
30 = 16.3 % O2
31 = 13.0 PPM NOX
6/DEC/94 10:59:59
29 = 209.9 PPM SO2
30 = 16.4 % O2
31 = 12.8 PPM NOX
6/DEC/94 10:58:59
29 = 212.0 PPM SO2
30 = 16.4 % O2
31 = 12.9 PPM NOX
6/DEC/94 10:57:59
29 = 214.7 PPM SO2
30 = 16.4 % O2
31 = 12.9 PPM NOX
6/DEC/94 10:56:59
29 = 211.3 PPM SO2
30 = 16.4 % O2
31 = 13.1 PPM NOX
6/DEC/94 10:55:59
29 = 213.5 PPM SO2
30 = 16.4 % O2
31 = 12.9 PPM NOX
6/DEC/94 10:54:59
29 = 209.0 PPM SO2
30 = 16.5 % O2
31 = 13.0 PPM NOX
6/DEC/94 10:53:59
29 = 209.7 PPM SO2
30 = 16.5 % O2
31 = 13.1 PPM NOX
6/DEC/94 10:52:59
29 = 216.8 PPM SO2
30 = 16.6 % O2
31 = 13.0 PPM NOX
6/DEC/94 10:51:59
29 = 217.1 PPM SO2
30 = 16.6 % O2
31 = 13.0 PPM NOX
6/DEC/94 10:50:59
29 = 223.4 PPM SO2
30 = 16.5 % O2
31 = 12.9 PPM NOX
6/DEC/94 10:49:59
29 = 225.0 PPM SO2
30 = 16.3 % O2
31 = 13.1 PPM NOX
6/DEC/94 10:48:59
29 = 220.8 PPM SO2
30 = 16.1 % O2
31 = 13.2 PPM NOX
6/DEC/94 10:47:59
29 = 217.6 PPM SO2
30 = 15.9 % O2
31 = 13.8 PPM NOX
6/DEC/94 10:46:59
29 = 211.0 PPM SO2
30 = 15.9 % O2
31 = 13.2 PPM NOX
6/DEC/94 10:45:59
29 = 211.3 PPM SO2
30 = 15.9 % O2
31 = 13.5 PPM NOX
6/DEC/94 10:44:59
29 = 213.1 PPM SO2
30 = 16.0 % O2
31 = 13.8 PPM NOX
100 90 80 70 60 50 40 30 20 10 0
0 10 20 30 40 50 60 70 80 90 100

29 = 265.6 PPM SO2
6/DEC/94 11:28:15
29 = 268.1 PPM SO2
6/DEC/94 11:27:15
29 = 270.3 PPM SO2
6/DEC/94 11:26:15
29 = 274.0 PPM SO2
6/DEC/94 11:25:15
29 = 267.5 PPM SO2
6/DEC/94 11:24:15
29 = 266.2 PPM SO2
6/DEC/94 11:23:15
29 = 269.0 PPM SO2
6/DEC/94 11:22:15
29 = 242.8 PPM SO2
6/DEC/94 11:21:15
29 = 197.2 PPM SO2
6/DEC/94 11:20:15
29 = 81.3 PPM SO2
6/DEC/94 11:19:15
29 = 2.3 PPM SO2
6/DEC/94 11:18:15
29 = 2.6 PPM SO2
6/DEC/94 11:17:15
29 = -0.7 PPM SO2
6/DEC/94 11:16:15
29 = -0.3 PPM SO2
6/DEC/94 11:15:15
31MAX = 84.2 PPM
29MAX = 248.5 PPM
6/DEC/94 11:13:0
29 = -4.6 PPM SO2
6/DEC/94 11:14:15

30 = 0.1 % O2
30 = 0.1 % O2
30 = 0.1 % O2
30 = 0.1 % O2
30 = 0.1 % O2
30 = 0.1 % O2
30 = 0.1 % O2
30 = 0.2 % O2
30 = 0.3 % O2
30 = 23.8 % O2
30 = 20.8 % O2
30 = 20.6 % O2
30 = 19.8 % O2
MIN = 0.1 PPM
(MIN) = -0.2 PPM
30 = 16.2 % O2

31 = 1.2 PPM NOX
31 = 1.2 PPM NOX
31 = 1.4 PPM NOX
31 = 1.4 PPM NOX
31 = 1.2 PPM NOX
31 = 1.3 PPM NOX
31 = 1.2 PPM NOX
31 = 1.2 PPM NOX
31 = 1.3 PPM NOX
31 = 1.3 PPM NOX
31 = 0.9 PPM NOX
31 = 0.8 PPM NOX
31 = 0.9 PPM NOX
31 = 0.9 PPM NOX
30MAX = 29.7 %
MIN = 11.7 %
31 = 0.5 PPM NOX

100 90 80 70 60 50 40 30 20 10 0
0 10 20 30 40 50 60 70 80 90 100

BIAS #1+INLET MIN #H

PRINTED IN U.S.A.

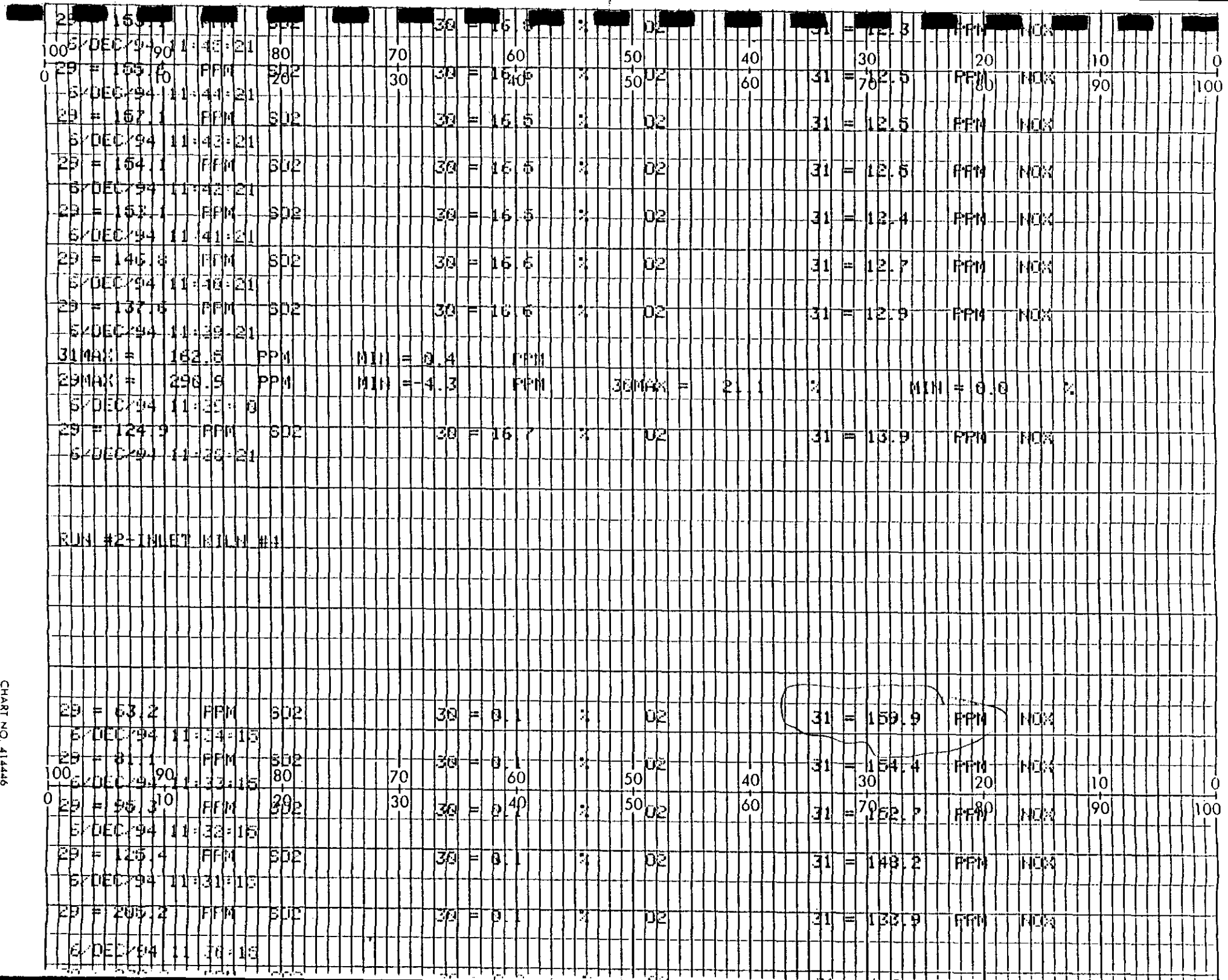


CHART NO. 414446

6/DEC/94 12: 4:21

29 = 120.2 PPM SO2 30 = 17.1 % O2 31 = 7.7 PPM NOX

6/DEC/94 12: 3:21

29 = 122.4 PPM SO2 30 = 17.2 % O2 31 = 8.0 PPM NOX

6/DEC/94 12: 2:21

29 = 127.2 PPM SO2 30 = 17.3 % O2 31 = 8.0 PPM NOX

6/DEC/94 12: 1:21

29 = 132.8 PPM SO2 30 = 17.3 % O2 31 = 8.4 PPM NOX

6/DEC/94 12: 0:21

29 = 129.8 PPM SO2 30 = 17.3 % O2 31 = 8.5 PPM NOX

6/DEC/94 11:59:21

29 = 124.8 PPM SO2 30 = 17.3 % O2 31 = 8.7 PPM NOX

100 90 80 70 60 50 40 30 20 10 0

0 10 20 30 40 50 60 70 80 90 100

29 = 129.8 PPM SO2 30 = 17.3 % O2 31 = 9.0 PPM NOX

6/DEC/94 11:58:21

29 = 128.8 PPM SO2 30 = 17.2 % O2 31 = 9.8 PPM NOX

6/DEC/94 11:57:21

29 = 132.3 PPM SO2 30 = 17.1 % O2 31 = 10.0 PPM NOX

6/DEC/94 11:56:21

29 = 136.7 PPM SO2 30 = 16.9 % O2 31 = 10.5 PPM NOX

6/DEC/94 11:55:21

29 = 139.7 PPM SO2 30 = 16.8 % O2 31 = 10.6 PPM NOX

6/DEC/94 11:54:21

29 = 140.5 PPM SO2 30 = 15.1 % O2 31 = 10.7 PPM NOX

6/DEC/94 11:53:21

29 = 142.2 PPM SO2 30 = 16.6 % O2 31 = 11.0 PPM NOX

6/DEC/94 11:52:21

29 = 144.8 PPM SO2 30 = 16.5 % O2 31 = 11.1 PPM NOX

6/DEC/94 11:51:21

29 = 141.7 PPM SO2 30 = 16.4 % O2 31 = 11.2 PPM NOX

6/DEC/94 11:50:21

29 = 142.1 PPM SO2 30 = 16.2 % O2 31 = 11.7 PPM NOX

6/DEC/94 11:49:21

29 = 142.7 PPM SO2 30 = 16.1 % O2 31 = 11.8 PPM NOX

6/DEC/94 11:48:21

29 = 142.0 PPM SO2 30 = 16.0 % O2 31 = 11.8 PPM NOX

6/DEC/94 11:47:21

29 = 142.2 PPM SO2 30 = 16.9 % O2 31 = 12.0 PPM NOX

6/DEC/94 11:46:21

29 = 147.9 PPM SO2 30 = 16.9 % O2 31 = 12.0 PPM NOX

[redacted]/DEC/[redacted] 12:[redacted]:32

29 = 243.9 PPM SO2 | 30 = 0.1 % O2 | 31 = 0.9 PPM NOX
6/DEC/94 12:23:32
29 = 223.3 PPM SO2 | 30 = 0.2 % O2 | 31 = 2.9 PPM NOX
6/DEC/94 12:22:32
29 = 178.6 PPM SO2 | 30 = 0.2 % O2 | 31 = 7.9 PPM NOX
6/DEC/94 12:21:32
29 = 63.1 PPM SO2 | 30 = 0.1 % O2 | 31 = 27.6 PPM NOX
6/DEC/94 12:20:32
29 = 28.6 PPM SO2 | 30 = 0.1 % O2 | 31 = 161.4 PPM NOX
6/DEC/94 12:19:32
29 = 33.4 PPM SO2 | 30 = 0.2 % O2 | 31 = 169.5 PPM NOX
6/DEC/94 12:18:32
29 = 41.0 PPM SO2 | 30 = 0.2 % O2 | 31 = 151.6 PPM NOX
6/DEC/94 12:17:32
29 = 51.3 PPM SO2 | 30 = 1.0 % O2 | 31 = 150.0 PPM NOX
6/DEC/94 12:16:32
29 = 62.3 PPM SO2 | 30 = 0.4 % O2 | 31 = 142.6 PPM NOX
6/DEC/94 12:15:32
29 = 91.8 PPM SO2 | 30 = 0.2 % O2 | 31 = 119.6 PPM NOX
6/DEC/94 12:14:32
31MAX = 9.3 PPM MIN = 1.2 PPM
29MAX = 130.9 PPM MIN = 33.6 PPM 30MAX = 16.0 % MIN = 0.2 %
6/DEC/94 12:14: 0
29 = 0.0 PPM SO2 | 30 = 0.0 % O2 | 31 = 30.1 PPM NOX
6/DEC/94 12:13:32

0 10 20 30 40 50 60 70 80 90 100

BIAS #2-INLET KILN #4

29 = 127.9 PPM SO2 | 30 = 15.9 % O2 | 31 = 8.9 PPM NOX
6/DEC/94 12: 2:21
31MAX = 13.1 PPM MIN = 7.7 PPM
29MAX = 167.8 PPM MIN = 115.6 PPM 30MAX = 17.4 % MIN = 5.1 %
6/DEC/94 12: 2: 0
29 = 121.9 PPM SO2 | 30 = 15.1 % O2 | 31 = 9.0 PPM NOX
6/DEC/94 12: 3:21
29 = 116.8 PPM SO2 | 30 = 15.4 % O2 | 31 = 8.4 PPM NOX
6/DEC/94 12: 4:21

CHART NO 41446

29 = 191.8 PPM $02
6/DEC/94 12:36:48
29 = 199.4 PPM $02
6/DEC/94 12:37:48
29 = 205.8 PPM $02
6/DEC/94 12:38:48
29 = 211.3 PPM $02
6/DEC/94 12:39:48
29 = 211.0 PPM $02
6/DEC/94 12:34:48
31MAX = 161.9 PPM MIN =-1.2 PPM
29MAX = 212.2 PPM MIN =-29.6 PPM
6/DEC/94 12:34: 0
29 = 215.3 PPM $02
6/DEC/94 12:33:48

30 = 16.7 % O2
30 = 10.7 % O2
30 = 12.1 % O2
30 = 13.5 % O2
30 = 16.4 % O2
30MAX = 16.7 % MIN =-6.6 %
30 = 16.4 % O2

31 = 9.5 PPM NOX
31 = 9.8 PPM NOX
31 = 9.6 PPM NOX
31 = 9.7 PPM NOX
31 = 9.8 PPM NOX
31 = 9.7 PPM NOX

RUN #3-INLET KILN #4

29 = 57.8 PPM $02
6/DEC/94 12:31:32
29 =-27.9 PPM $02
6/DEC/94 12:30:32
29 = 64.8 PPM $02
6/DEC/94 12:29:32
29 = 264.6 PPM $02
6/DEC/94 12:28:32
29 = 268.8 PPM $02
6/DEC/94 12:27:32
29 = 269.40 PPM $02
6/DEC/94 12:26:32
29 = 248.4 PPM $02
6/DEC/94 12:25:32

30 = 16.6 % O2
30 = 13.5 % O2
30 = 0.0 % O2
30 = 0.1 % O2
30 = 0.1 % O2
30 = 0.40 % O2
30 = 0.1 % O2

31 = 1.0 PPM NOX
31 =-1.1 PPM NOX
31 =-1.1 PPM NOX
31 =-0.4 PPM NOX
31 =-0.3 PPM NOX
31 =-0.2 PPM NOX
31 =-0.0 PPM NOX

30 = 16 % O2 31 = [illegible].5 PPM NOX

6/DEC/94 12:59:43

29 = 180.7 PPM SO2 30 = 15.9 % O2 31 = 8.2 PPM NOX

6/DEC/94 12:58:43

29 = 177.1 PPM SO2 30 = 16.1 % O2 31 = 7.9 PPM NOX

6/DEC/94 12:57:43

29 = 173.4 PPM SO2 30 = 16.1 % O2 31 = 7.7 PPM NOX

6/DEC/94 12:56:43

29 = 166.6 PPM SO2 30 = 16.2 % O2 31 = 7.6 PPM NOX

6/DEC/94 12:55:43

29 = 164.7 PPM SO2 30 = 16.6 % O2 31 = 7.0 PPM NOX

6/DEC/94 12:54:43

29 = 166.0 PPM SO2 30 = [illegible] % O2 31 = 6.7 PPM NOX

6/DEC/94 12:53:43

29 = 166.6 PPM SO2 30 = 17.5 % O2 31 = 7.0 PPM NOX

6/DEC/94 12:52:43

29 = 172.3 PPM SO2 30 = 17.5 % O2 31 = 7.1 PPM NOX

6/DEC/94 12:51:43

29 = 174.0 PPM SO2 30 = 17.4 % O2 31 = 7.3 PPM NOX

6/DEC/94 12:50:43

29 = 173.1 PPM SO2 30 = 17.3 % O2 31 = 7.7 PPM NOX

6/DEC/94 12:49:43

29 = 175.7 PPM SO2 30 = 17.1 % O2 31 = 8.0 PPM NOX

6/DEC/94 12:48:43

29 = 176.0 PPM SO2 30 = 17.0 % O2 31 = 8.5 PPM NOX

6/DEC/94 12:47:43

29 = 173.7 PPM SO2 30 = 16.8 % O2 31 = 8.6 PPM NOX

6/DEC/94 12:46:43

29 = 174.9 PPM SO2 30 = 16.8 % O2 31 = 8.9 PPM NOX

6/DEC/94 12:45:43

29 = 177.5 PPM SO2 30 = 16.8 % O2 31 = 9.1 PPM NOX

6/DEC/94 12:44:43

29 = 178.1 PPM SO2 30 = 16.9 % O2 31 = 9.0 PPM NOX

6/DEC/94 12:43:43

29 = 178.5 PPM SO2 30 = 16.9 % O2 31 = 9.3 PPM NOX

6/DEC/94 12:42:43

29 = 184.8 PPM SO2 30 = 16.8 % O2 31 = 9.5 PPM NOX

6/DEC/94 12:41:43

29 = 186.1 PPM SO2 30 = 16.8 % O2 31 = 9.3 PPM NOX

6/DEC/94 12:40:43

29 = 186.7 PPM SO2

CHART NO. 414446

29 = 122.1 PPM SO2 30 = 0.3 % O2 31 = 1.0 PPM NOX

6/DEC/94 13:20:18

29 = 43.1 PPM SO2 30 = 0.4 % O2 31 = 1.1 PPM NOX

6/DEC/94 13:19:18

29 = 54.5 PPM SO2 30 = 20.8 % O2 31 = 1.5 PPM NOX

6/DEC/94 13:18:18

29 = 0.3 PPM SO2 30 = 20.8 % O2 31 = 0.0 PPM NOX

6/DEC/94 13:17:18

29 = 0.4 PPM SO2 30 = 20.9 % O2 31 = 0.1 PPM NOX

6/DEC/94 13:16:18

31MAX = 10.5 PPM MIN = -21.1 PPM

29MAX = 184.8 PPM MIN = -8.5 PPM 30MAX = 21.1 % MIN = 14.4 %

6/DEC/94 13:16: 0

29 = -4.5 PPM SO2 30 = 20.9 % O2 31 = 0.0 PPM NOX

6/DEC/94 13:15:18

BIAS #3-INLET KILN #4

6/DEC/94 13: 5:43

29 = 180.4 PPM SO2 30 = 15.2 % O2 31 = 0.4 PPM NOX

6/DEC/94 13: 4:43

31MAX = 10.3 PPM MIN = 5.5 PPM

29MAX = 217.0 PPM MIN = 161.1 PPM 30MAX = 17.5 % MIN = 9.5 %

6/DEC/94 13: 4: 0

29 = 183.5 PPM SO2 30 = 16.0 % O2 31 = 0.6 PPM NOX

6/DEC/94 13: 3:42

29 = 187.1 PPM SO2 30 = 16.1 % O2 31 = 0.4 PPM NOX

6/DEC/94 13: 2:43

29 = 189.1 PPM SO2 30 = 16.3 % O2 31 = 0.1 PPM NOX

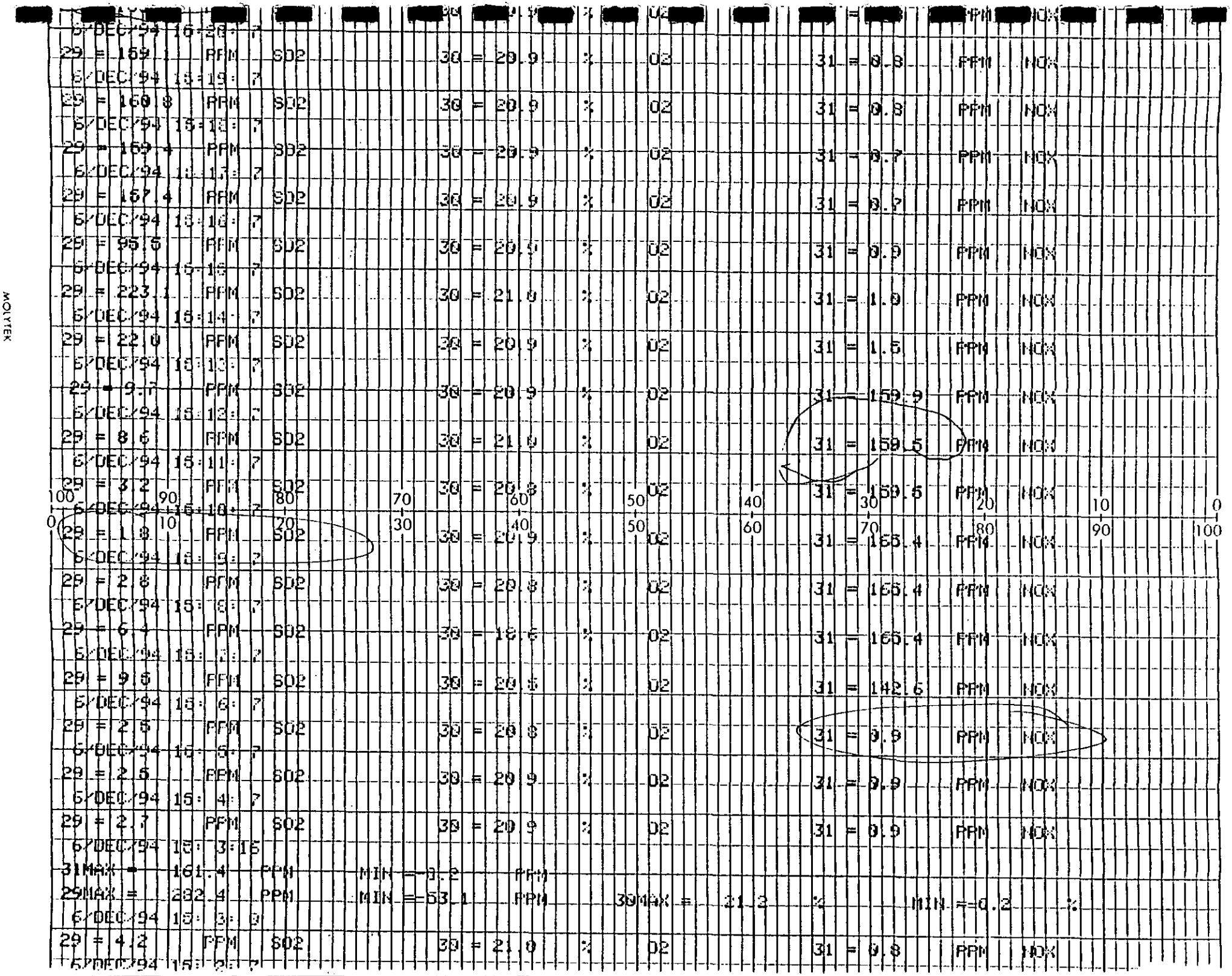
6/DEC/94 13: 1:43

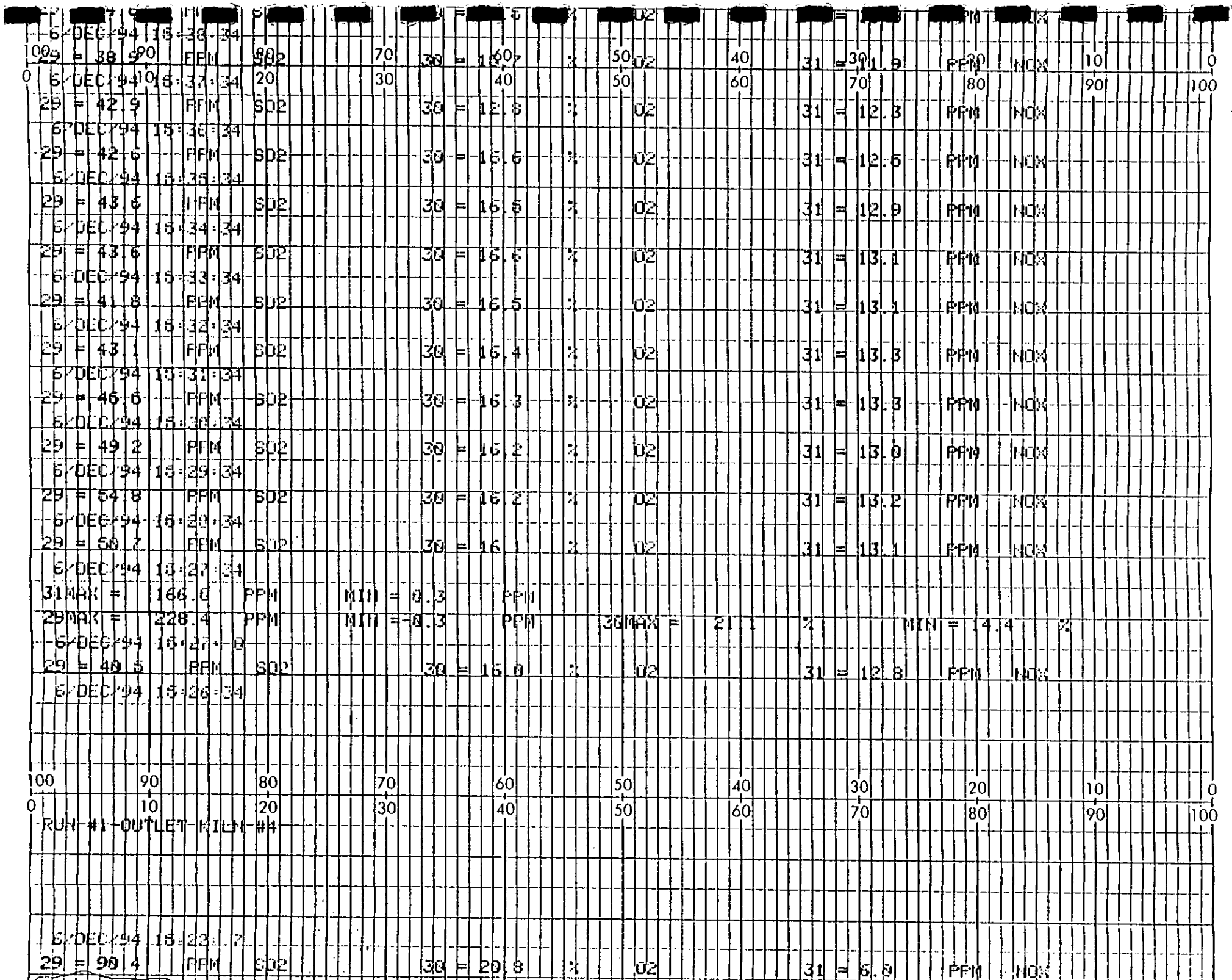
29 = 190.2 PPM SO2 30 = 16.1 % O2 31 = 0.9 PPM NOX

CHART NO. 414446

INITIAL CAL.-OUTLET KILN #4

29 = 29.2	PPM	SO2	30 = 0.2	%	O2	31 = 158.1	PPM	NOX			
6/DEC/94 13:34:18											
29 = 35.8	PPM	SO2	30 = 0.2	%	O2	31 = 157.6	PPM	NOX			
6/DEC/94 13:33:18											
29 = 62.6	PPM	SO2	30 = 0.2	%	O2	31 = 154.9	PPM	NOX			
6/DEC/94 13:32:18											
29 = 119.6	PPM	SO2	30 = 0.3	%	O2	31 = 146.9	PPM	NOX			
6/DEC/94 13:31:18											
29 = 251.4	PPM	SO2	30 = 0.6	%	O2	31 = 73.7	PPM	NOX			
6/DEC/94 13:30:18											
29 = 269.1	PPM	SO2	30 = 0.2	%	O2	31 = 9.8	PPM	NOX			
6/DEC/94 13:29:18											
29 = 264.2	PPM	SO2	30 = 0.2	%	O2	31 = 9.9	PPM	NOX			
6/DEC/94 13:28:18											
29 = 256.3	PPM	SO2	30 = 0.2	%	O2	31 = 9.8	PPM	NOX			
6/DEC/94 13:27:18											
29 = 268.8	PPM	SO2	30 = 0.2	%	O2	31 = 9.9	PPM	NOX			
6/DEC/94 13:26:18											
29 = 266.8	PPM	SO2	30 = 0.2	%	O2	31 = 9.9	PPM	NOX			
6/DEC/94 13:25:18											
29 = 254.6	PPM	SO2	30 = 0.2	%	O2	31 = 9.8	PPM	NOX			
6/DEC/94 13:24:18											
29 = 257.5	PPM	SO2	30 = 0.2	%	O2	31 = 9.8	PPM	NOX			
6/DEC/94 13:23:18											
29 = 265.3	PPM	SO2	30 = 0.2	%	O2	31 = 9.9	PPM	NOX			
6/DEC/94 13:22:18											
29 = 239.0	PPM	SO2									


6/DEC/94 16:28: 7
29 = 159.1 PPM SO2
30 = 20.9 % O2
31 = 0.8 PPM NOX
6/DEC/94 16:19: 7
29 = 160.8 PPM SO2
30 = 20.9 % O2
31 = 0.8 PPM NOX
6/DEC/94 16:18: 7
29 = 169.4 PPM SO2
30 = 20.9 % O2
31 = 0.7 PPM NOX
6/DEC/94 16:17: 7
29 = 167.4 PPM SO2
30 = 20.9 % O2
31 = 0.7 PPM NOX
6/DEC/94 16:16: 7
29 = 95.5 PPM SO2
30 = 20.9 % O2
31 = 0.9 PPM NOX
6/DEC/94 16:15: 7
29 = 223.1 PPM SO2
30 = 21.0 % O2
31 = 1.0 PPM NOX
6/DEC/94 16:14: 7
29 = 22.0 PPM SO2
30 = 20.9 % O2
31 = 1.5 PPM NOX
6/DEC/94 16:13: 7
29 = 9.7 PPM SO2
30 = 20.9 % O2
31 = 159.9 PPM NOX
6/DEC/94 16:12: 7
29 = 8.6 PPM SO2
30 = 21.0 % O2
31 = 160.5 PPM NOX
6/DEC/94 16:11: 7
29 = 3.2 PPM SO2
30 = 20.8 % O2
31 = 160.5 PPM NOX
6/DEC/94 16:10: 7
29 = 1.8 PPM SO2
30 = 20.9 % O2
31 = 165.4 PPM NOX
6/DEC/94 16: 9: 7
29 = 2.8 PPM SO2
30 = 20.8 % O2
31 = 165.4 PPM NOX
6/DEC/94 16: 8: 7
29 = 6.4 PPM SO2
30 = 18.6 % O2
31 = 165.4 PPM NOX
6/DEC/94 16: 7: 7
29 = 9.6 PPM SO2
30 = 20.8 % O2
31 = 142.6 PPM NOX
6/DEC/94 16: 6: 7
29 = 2.5 PPM SO2
30 = 20.8 % O2
31 = 0.9 PPM NOX
6/DEC/94 16: 5: 7
29 = 2.5 PPM SO2
30 = 20.9 % O2
31 = 0.9 PPM NOX
6/DEC/94 16: 4: 7
29 = 2.7 PPM SO2
30 = 20.9 % O2
31 = 0.9 PPM NOX
6/DEC/94 16: 3:16
31MAX = 161.4 PPM MIN = 0.2 PPM
29MAX = 282.4 PPM MIN = -53.1 PPM 30MAX = 21.2 % MIN = -0.2 %
6/DEC/94 16: 3: 0
29 = 4.2 PPM SO2
30 = 21.0 % O2
31 = 0.8 PPM NOX
6/DEC/94 16: 2: 7
100 90 80 70 60 50 40 30 20 10 0
0 10 20 30 40 50 60 70 80 90 100
MOLYTEK


6/DEC/94 16:38:34
29 = 38.9 PPM SO2
6/DEC/94 16:37:34
29 = 42.9 PPM SO2
30 = 12.8 % O2
31 = 12.3 PPM NOX
6/DEC/94 16:36:34
29 = 42.6 PPM SO2
30 = 16.6 % O2
31 = 12.6 PPM NOX
6/DEC/94 16:35:34
29 = 43.6 PPM SO2
30 = 16.5 % O2
31 = 12.9 PPM NOX
6/DEC/94 16:34:34
29 = 43.6 PPM SO2
30 = 16.6 % O2
31 = 13.1 PPM NOX
6/DEC/94 16:33:34
29 = 41.8 PPM SO2
30 = 16.5 % O2
31 = 13.1 PPM NOX
6/DEC/94 16:32:34
29 = 43.1 PPM SO2
30 = 16.4 % O2
31 = 13.3 PPM NOX
6/DEC/94 16:31:34
29 = 46.6 PPM SO2
30 = 16.3 % O2
31 = 13.3 PPM NOX
6/DEC/94 16:30:34
29 = 49.2 PPM SO2
30 = 16.2 % O2
31 = 13.0 PPM NOX
6/DEC/94 16:29:34
29 = 54.8 PPM SO2
30 = 16.2 % O2
31 = 13.2 PPM NOX
6/DEC/94 16:28:34
29 = 58.7 PPM SO2
30 = 16.1 % O2
31 = 13.1 PPM NOX
6/DEC/94 16:27:34
31MAX = 166.0 PPM MIN = 0.3 PPM
29MAX = 428.4 PPM MIN = -0.3 PPM 30MAX = 21.1 % MIN = 14.4 %
6/DEC/94 16:27:0
29 = 49.5 PPM SO2
30 = 16.0 % O2
31 = 12.8 PPM NOX
6/DEC/94 16:26:34
RUN #1-OUTLET KILN #4
6/DEC/94 16:22:7
29 = 98.4 PPM SO2
30 = 20.8 % O2
31 = 6.9 PPM NOX

[redacted] 26 [redacted] [redacted] [redacted] [redacted] [redacted] [redacted] 30 [redacted] 6 9 [redacted] 3 [redacted] 02 [redacted] [redacted] 31 = 11.5 PPM NOX [redacted]

6/DEC/94 15:57:34

31MAX = 13.4 PPM MIN = 11.2 PPM

29MAX = 55.7 PPM MIN = 26.5 PPM 30MAX = 16.9 % MIN = 10.2 %

6/DEC/94 15:57: 0

29 = 30.0 PPM SO2 30 = 16.9 % O2 31 = 11.7 PPM NOX

6/DEC/94 15:56:34

29 = 30.2 PPM SO2 30 = 16.9 % O2 31 = 11.8 PPM NOX

6/DEC/94 15:56:34

29 = 28.8 PPM SO2 30 = 16.8 % O2 31 = 11.5 PPM NOX

6/DEC/94 15:54:34

29 = 28.5 PPM SO2 30 = 16.8 % O2 31 = 11.6 PPM NOX

6/DEC/94 15:53:34

100 90 80 70 60 50 40 30 20 10 0

29 = 27.6 PPM SO2 30 = 16.7 % O2 31 = 11.4 PPM NOX

0 10 20 30 40 50 60 70 80 90 100

6/DEC/94 15:52:34

29 = 29.1 PPM SO2 30 = 16.7 % O2 31 = 11.3 PPM NOX

6/DEC/94 15:51:34

29 = 28.6 PPM SO2 30 = 16.6 % O2 31 = 11.6 PPM NOX

6/DEC/94 15:50:34

29 = 29.6 PPM SO2 30 = 16.7 % O2 31 = 11.4 PPM NOX

6/DEC/94 15:49:34

29 = 29.2 PPM SO2 30 = 16.8 % O2 31 = 11.4 PPM NOX

6/DEC/94 15:48:34

29 = 27.9 PPM SO2 30 = 16.7 % O2 31 = 11.4 PPM NOX

6/DEC/94 15:47:34

29 = 29.4 PPM SO2 30 = 16.8 % O2 31 = 11.4 PPM NOX

6/DEC/94 15:46:34

29 = 27.7 PPM SO2 30 = 16.8 % O2 31 = 11.5 PPM NOX

6/DEC/94 15:45:34

29 = 27.9 PPM SO2 30 = 16.8 % O2 31 = 11.5 PPM NOX

6/DEC/94 15:44:34

29 = 30.6 PPM SO2 30 = 16.1 % O2 31 = 11.6 PPM NOX

6/DEC/94 15:43:34

29 = 29.9 PPM SO2 30 = 16.4 % O2 31 = 11.7 PPM NOX

6/DEC/94 15:42:34

29 = 31.0 PPM SO2 30 = 14.4 % O2 31 = 11.8 PPM NOX

6/DEC/94 15:41:34

29 = 34.1 PPM SO2 30 = 16.6 % O2 31 = 12.0 PPM NOX

6/DEC/94 15:40:34

29 = 34.3 PPM SO2 30 = 16.1 % O2 31 = 12.1 PPM NOX

29 = 12.3	PPM	SO2	30 = 21.0	%	O2	31 = 161.6	PPM	NOX			
6/DEC/94	16:14:37										
29 = 162.2	PPM	SO2	30 = 21.0	%	O2	31 = 0.5	PPM	NOX			
6/DEC/94	16:13:37										
29 = 162.6	PPM	SO2	30 = 21.0	%	O2	31 = 0.6	PPM	NOX			
6/DEC/94	16:12:37										
29 = 162.6	PPM	SO2	30 = 20.9	%	O2	31 = 0.6	PPM	NOX			
6/DEC/94	16:11:37										
29 = 157.8	PPM	SO2	30 = 21.0	%	O2	31 = 0.7	PPM	NOX			
6/DEC/94	16:10:37										
29 = 157.6	PPM	SO2	30 = 20.9	%	O2	31 = 0.7	PPM	NOX			
6/DEC/94	16: 9:37										
29 = 159.3	PPM	SO2	30 = 20.9	%	O2	31 = 0.7	PPM	NOX			
6/DEC/94	16: 8:37										
29 = 155.8	PPM	SO2	30 = 20.9	%	O2	31 = 0.8	PPM	NOX			
6/DEC/94	16: 7:37										
29 = 149.4	PPM	SO2	30 = 20.9	%	O2	31 = 0.9	PPM	NOX			
6/DEC/94	16: 6:37										
29 = 3.1	PPM	SO2	30 = 20.8	%	O2	31 = 2.3	PPM	NOX			
6/DEC/94	16: 5:37										
29 = 1.6	PPM	SO2	30 = 21.1	%	O2	31 = 0.4	PPM	NOX			
6/DEC/94	16: 4:37										
29 = 0.9	PPM	SO2	30 = 19.4	%	O2	31 = 0.5	PPM	NOX			
6/DEC/94	16: 3:37										
29 = 0.4	PPM	SO2	30 = 20.3	%	O2	31 = 0.6	PPM	NOX			
6/DEC/94	16: 2:37										
31MAX = 11.8	PPM		MIN = 0.3	PPM							
29MAX = 28.6	PPM		MIN = 1.3	PPM		30MAX = 21.3	%		MIN = 16.8	%	
6/DEC/94	16: 2: 0										
29 = 0.8	PPM	SO2	30 = 21.1	%	O2	31 = 0.5	PPM	NOX			
6/DEC/94	16: 1:37										

100 90 80 70 60 50 40 30 20 10 0

0 10 20 30 40 50 60 70 80 90 100

BIAS #1=OUTLET KILN #4

PRINTED IN U.S.A.

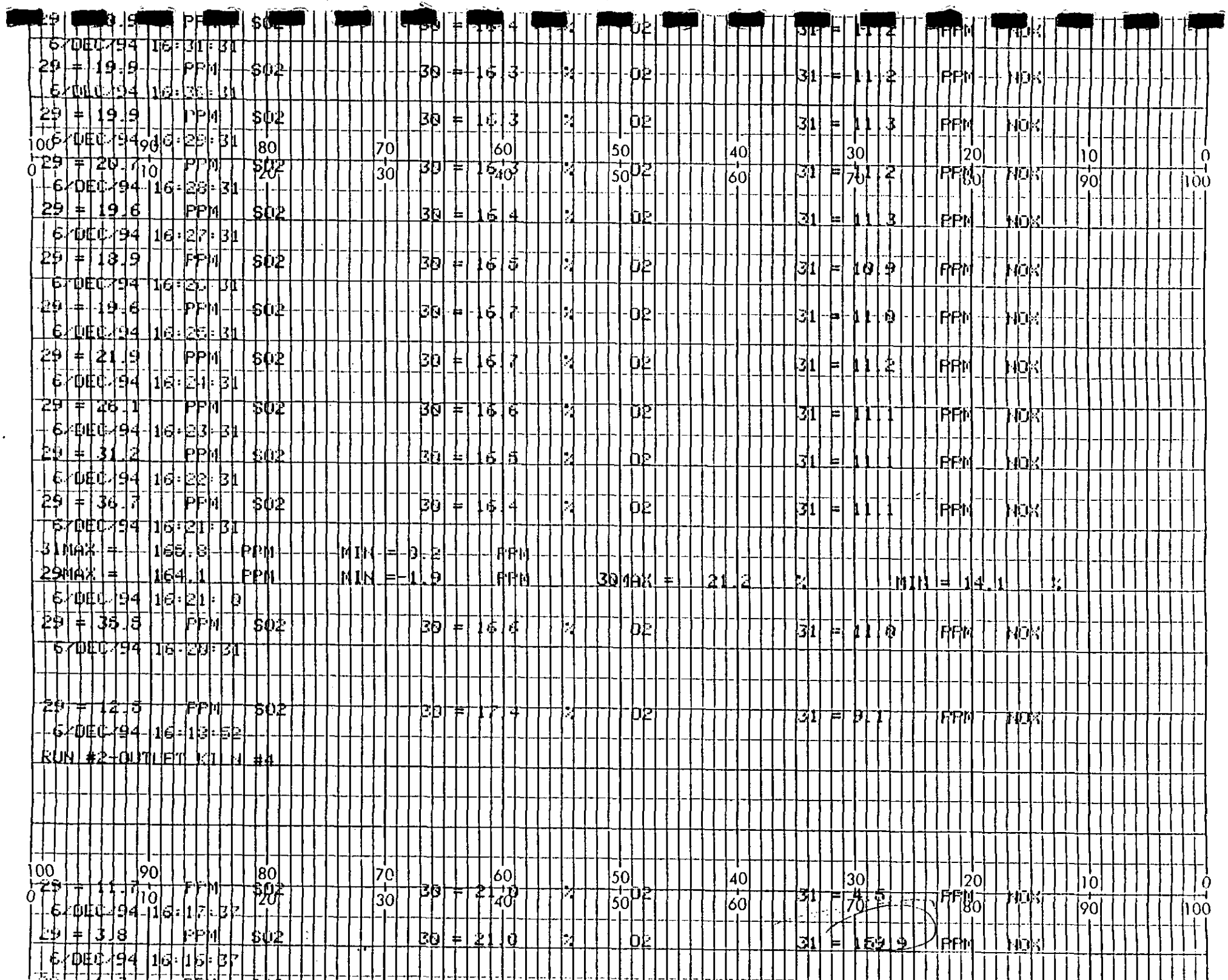
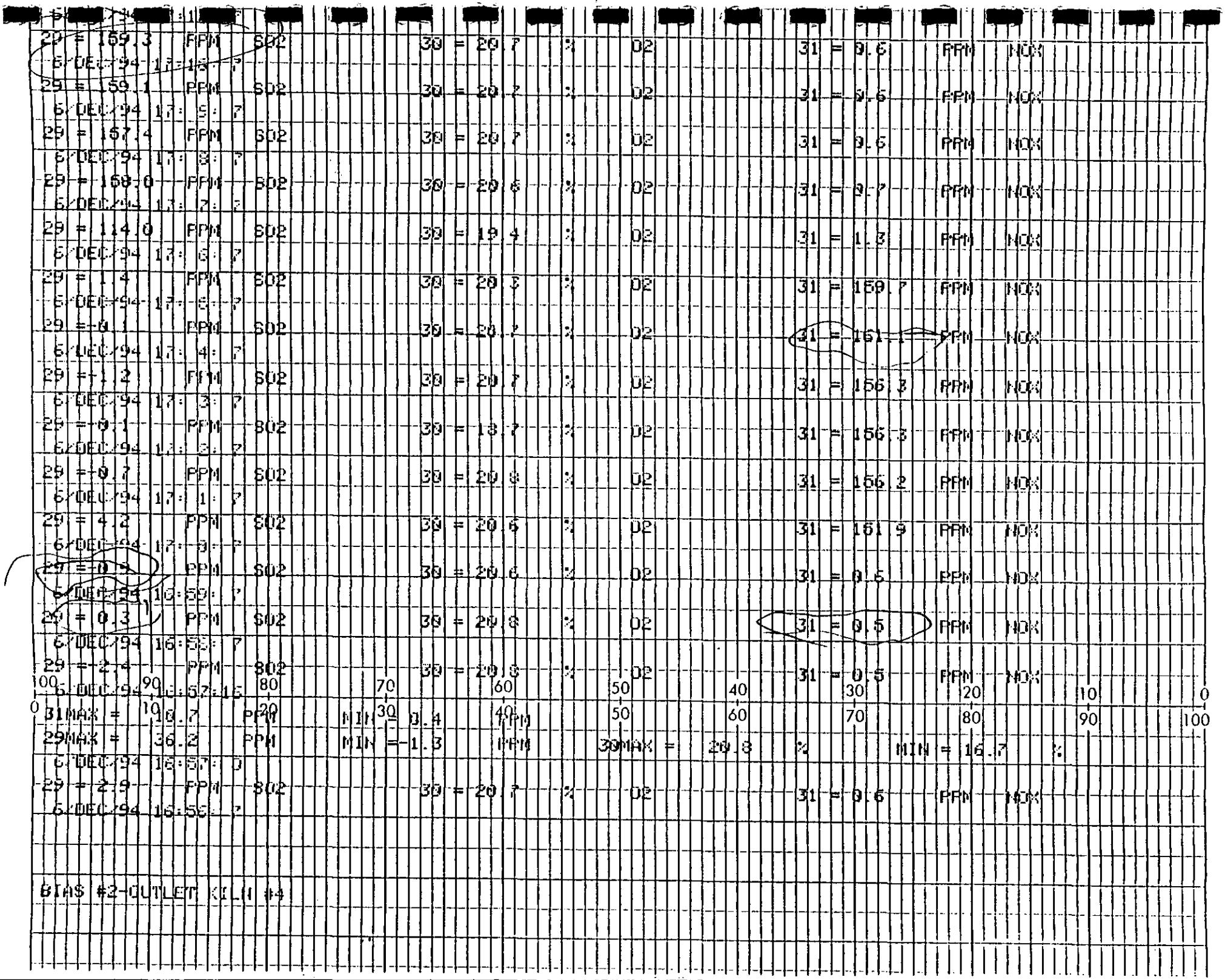


CHART NO. 414446

31 MAX = 21.4 PPM MIN = 19.4 PPM
29 MAX = 37.3 PPM MIN = 17.9 PPM 30 MAX = 16.8 % MIN = 16.7 %

6/DEC/94 16:51: 0
29 = 36.1 PPM $02 30 = 16.8 % 02 31 = 19.6 PPM NOK
6/DEC/94 16:50:31
29 = 36.4 PPM $02 30 = 16.7 % 02 31 = 19.6 PPM NOK
6/DEC/94 16:49:31
29 = 34.7 PPM $02 30 = 16.7 % 02 31 = 19.9 PPM NOK
6/DEC/94 16:48:31
29 = 29.8 PPM $02 30 = 16.7 % 02 31 = 19.6 PPM NOK
6/DEC/94 16:47:31
29 = 30.7 PPM $02 30 = 16.7 % 02 31 = 19.7 PPM NOK
6/DEC/94 16:46:31
29 = 29.6 PPM $02 30 = 16.7 % 02 31 = 19.7 PPM NOK
6/DEC/94 16:45:31
29 = 29.6 PPM $02 30 = 16.6 % 02 31 = 19.8 PPM NOK
6/DEC/94 16:44:31
29 = 23.7 PPM $02 30 = 16.6 % 02 31 = 19.8 PPM NOK
6/DEC/94 16:43:31
29 = 27.7 PPM $02 30 = 16.5 % 02 31 = 19.8 PPM NOK
6/DEC/94 16:42:31
29 = 27.2 PPM $02 30 = 16.6 % 02 31 = 19.9 PPM NOK
6/DEC/94 16:41:31
29 = 26.1 PPM $02 30 = 16.5 % 02 31 = 19.7 PPM NOK
6/DEC/94 16:40:31
29 = 24.7 PPM $02 30 = 16.5 % 02 31 = 19.8 PPM NOK
6/DEC/94 16:39:31
29 = 23.3 PPM $02 30 = 16.6 % 02 31 = 19.7 PPM NOK
6/DEC/94 16:38:31
29 = 22.6 PPM $02 30 = 16.6 % 02 31 = 19.9 PPM NOK
6/DEC/94 16:37:31
29 = 21.8 PPM $02 30 = 16.6 % 02 31 = 19.7 PPM NOK
6/DEC/94 16:36:31
29 = 20.8 PPM $02 30 = 16.6 % 02 31 = 19.7 PPM NOK
6/DEC/94 16:35:31
29 = 22.1 PPM $02 30 = 16.6 % 02 31 = 19.9 PPM NOK
6/DEC/94 16:34:31
29 = 21.4 PPM $02 30 = 16.5 % 02 31 = 19.9 PPM NOK
6/DEC/94 16:33:31
29 = 20.7 PPM $02 30 = 16.5 % 02 31 = 19.9 PPM NOK

100 90 80 70 60 50 40 30 20 10 0
0 10 20 30 40 50 60 70 80 90 100


29 = 159.3 PPM SO2
6/DEC/94 17:14:?
29 = 159.1 PPM SO2
6/DEC/94 17:9:?
29 = 157.4 PPM SO2
6/DEC/94 17:8:?
29 = 158.0 PPM SO2
6/DEC/94 17:7:?
29 = 114.0 PPM SO2
6/DEC/94 17:6:?
29 = 1.4 PPM SO2
6/DEC/94 17:5:?
29 = 0.1 PPM SO2
6/DEC/94 17:4:?
29 = 1.2 PPM SO2
6/DEC/94 17:3:?
29 = 0.1 PPM SO2
6/DEC/94 17:2:?
29 = 0.7 PPM SO2
6/DEC/94 17:1:?
29 = 4.2 PPM SO2
6/DEC/94 17:0:?
29 = 0.3 PPM SO2
6/DEC/94 16:59:?
29 = 0.3 PPM SO2
6/DEC/94 16:58:?
29 = 2.4 PPM SO2
6/DEC/94 16:57:16
29MAX = 16.7 PPM
29MAX = 36.2 PPM
6/DEC/94 16:57:0
29 = 2.9 PPM SO2
6/DEC/94 16:56:?
30 = 20.7 % O2
30 = 20.7 % O2
30 = 20.7 % O2
30 = 20.6 % O2
30 = 19.4 % O2
30 = 20.5 % O2
30 = 20.7 % O2
30 = 13.7 % O2
30 = 20.8 % O2
30 = 20.6 % O2
30 = 20.6 % O2
30 = 20.8 % O2
30 = 20.7 % O2
MIN = 0.4 PPM
MIN = -1.3 PPM
30MAX = 20.8 %
31 = 9.6 PPM NOX
31 = 9.6 PPM NOX
31 = 9.6 PPM NOX
31 = 9.7 PPM NOX
31 = 1.3 PPM NOX
31 = 159.7 PPM NOX
31 = 161.1 PPM NOX
31 = 156.3 PPM NOX
31 = 156.3 PPM NOX
31 = 156.2 PPM NOX
31 = 161.9 PPM NOX
31 = 0.5 PPM NOX
31 = 0.5 PPM NOX
31 = 0.5 PPM NOX
31 = 9.6 PPM NOX
MIN = 16.7 %
100 90 80 70 60 50 40 30 20 10 0
0 10 20 30 40 50 60 70 80 90 100
BIAS #2-OUTLET KILN #4

29 = 31.5 PPM SO2 30 = 17.3 % O2 31 = 7.9 PPM NOX
6/DEC/94 17:31: 0
29 = 29.7 PPM SO2 30 = 17.3 % O2 31 = 8.1 PPM NOX
6/DEC/94 17:30: 0
29 = 31.0 PPM SO2 30 = 17.2 % O2 31 = 8.1 PPM NOX
6/DEC/94 17:29: 0
29 = 28.4 PPM SO2 30 = 17.1 % O2 31 = 8.3 PPM NOX
6/DEC/94 17:28: 0
29 = 27.7 PPM SO2 30 = 17.0 % O2 31 = 8.5 PPM NOX
6/DEC/94 17:27: 0
29 = 27.0 PPM SO2 30 = 17.0 % O2 31 = 8.1 PPM NOX
6/DEC/94 17:26: 0
29 = 25.4 PPM SO2 30 = 16.9 % O2 31 = 8.4 PPM NOX
6/DEC/94 17:25: 0
29 = 23.4 PPM SO2 30 = 16.9 % O2 31 = 8.9 PPM NOX
6/DEC/94 17:24: 0
29 = 20.3 PPM SO2 30 = 16.9 % O2 31 = 10.2 PPM NOX
6/DEC/94 17:23: 0
29 = 20.8 PPM SO2 30 = 16.9 % O2 31 = 10.5 PPM NOX
6/DEC/94 17:22: 0
29 = 21.3 PPM SO2 30 = 16.9 % O2 31 = 10.4 PPM NOX
6/DEC/94 17:21: 0
29 = 20.6 PPM SO2 30 = 16.9 % O2 31 = 10.5 PPM NOX
6/DEC/94 17:20: 0
29 = 22.2 PPM SO2 30 = 16.9 % O2 31 = 10.6 PPM NOX
6/DEC/94 17:19: 0
29 = 24.9 PPM SO2 30 = 16.8 % O2 31 = 10.6 PPM NOX
6/DEC/94 17:18: 0
29 = 27.8 PPM SO2 30 = 16.7 % O2 31 = 10.6 PPM NOX
6/DEC/94 17:17: 0
31MAX = 162.0 PPM MIN = 0.3 PPM
29MAX = 163.2 PPM MIN = 2.9 PPM 30MAX = 20.9 % MIN = 8.7 %
6/DEC/94 17:16:11
29 = 32.7 PPM SO2 30 = 16.7 % O2 31 = 10.6 PPM NOX
6/DEC/94 17:16: 0

RUN #3-OUTLET MILL #4

100 90 80 70 60 50 40 30 20 10 0

BLR #3 OUTLET KILN #4

29 = 33.3 PPM SO2 30 = 16.8 % O2 31 = 9.2 PPM NOX
6/DEC/94 17:48: 0
29 = 33.6 PPM SO2 30 = 16.8 % O2 31 = 8.7 PPM NOX
6/DEC/94 17:47: 0
31MAX = 10.8 PPM MIN = 6.7 PPM
29MAX = 35.7 PPM MIN = 19.8 PPM 30MAX = 17.3 % MIN = 7.9 %
6/DEC/94 17:46:10
29 = 34.3 PPM SO2 30 = 16.3 % O2 31 = 8.1 PPM NOX
6/DEC/94 17:46: 0
29 = 33.7 PPM SO2 30 = 16.8 % O2 31 = 7.2 PPM NOX
6/DEC/94 17:45: 0
29 = 33.6 PPM SO2 30 = 17.1 % O2 31 = 6.7 PPM NOX
6/DEC/94 17:44: 0
29 = 34.4 PPM SO2 30 = 17.2 % O2 31 = 6.8 PPM NOX
6/DEC/94 17:43: 0
29 = 34.1 PPM SO2 30 = 17.2 % O2 31 = 7.1 PPM NOX
6/DEC/94 17:42: 0
29 = 33.1 PPM SO2 30 = 17.2 % O2 31 = 7.2 PPM NOX
6/DEC/94 17:41: 0
29 = 33.5 PPM SO2 30 = 17.2 % O2 31 = 7.2 PPM NOX
6/DEC/94 17:40: 0
29 = 32.8 PPM SO2 30 = 17.2 % O2 31 = 7.4 PPM NOX
6/DEC/94 17:39: 0
29 = 33.4 PPM SO2 30 = 17.2 % O2 31 = 7.3 PPM NOX
6/DEC/94 17:38: 0
29 = 32.1 PPM SO2 30 = 17.2 % O2 31 = 7.5 PPM NOX
6/DEC/94 17:37: 0
29 = 31.0 PPM SO2 30 = 17.2 % O2 31 = 7.5 PPM NOX
6/DEC/94 17:36: 0
29 = 33.3 PPM SO2 30 = 17.2 % O2 31 = 7.5 PPM NOX
6/DEC/94 17:35: 0
29 = 33.3 PPM SO2 30 = 17.2 % O2 31 = 7.6 PPM NOX
6/DEC/94 17:34: 0
29 = 31.5 PPM SO2 30 = 17.3 % O2 31 = 7.7 PPM NOX
6/DEC/94 17:33: 0

100 90 80 70 60 50 40 30 20 10 0
0 10 20 30 40 50 60 70 80 90 100

CHART NO. 414446

RECORDER/DATA LOGGER VRS 5H

RECORDER/DATA LOGGER VRS 5H

29 = 4.4	PPM	SO2	30 = 21.0	%	O2	31 = 157.1	PPM	NOX			
6/DEC/94 18: 4:29											
29 = 3.8	PPM	SO2	30 = 20.9	%	O2	31 = 156.1	PPM	NOX			
6/DEC/94 18: 3:29											
29 = -2.1	PPM	SO2	30 = 20.9	%	O2	31 = 156.6	PPM	NOX			
6/DEC/94 18: 2:29											
29 = -1.6	PPM	SO2	30 = 20.9	%	O2	31 = 156.3	PPM	NOX			
6/DEC/94 18: 1:29											
29 = 2.2	PPM	SO2	30 = 20.4	%	O2	31 = 156.2	PPM	NOX			
6/DEC/94 18: 0:29											
29 = 125.6	PPM	SO2	30 = 20.0	%	O2	31 = 71.7	PPM	NOX			
6/DEC/94 17:59:29											
29 = 163.4	PPM	SO2	30 = 20.3	%	O2	31 = -0.3	PPM	NOX			
6/DEC/94 17:58:29											
29 = 161.4	PPM	SO2	30 = 20.9	%	O2	31 = -0.2	PPM	NOX			
6/DEC/94 17:57:29											
29 = 158.0	PPM	SO2	30 = 20.2	%	O2	31 = -0.2	PPM	NOX			
6/DEC/94 17:56:29											
29 = 156.6	PPM	SO2	30 = 18.5	%	O2	31 = 0.2	PPM	NOX			
6/DEC/94 17:55:29											
29 = 149.9	PPM	SO2	30 = 21.1	%	O2	31 = -0.1	PPM	NOX			
6/DEC/94 17:54:29											
29 = 31.3	PPM	SO2	30 = 21.0	%	O2	31 = 0.3	PPM	NOX			
6/DEC/94 17:53:29											
29 = -0.2	PPM	SO2	30 = 20.5	%	O2	31 = 30.0	PPM	NOX			
6/DEC/94 17:52:29											
29 = 1.8	PPM	SO2	30 = 20.5	%	O2	31 = -0.8	PPM	NOX			
6/DEC/94 17:51:29											
29 = -6.7	PPM	SO2	30 = 20.4	%	O2	31 = -0.3	PPM	NOX			
6/DEC/94 17:50:29											
29 = 3.7	PPM	SO2	30 = 20.4	%	O2	31 = -0.3	PPM	NOX			

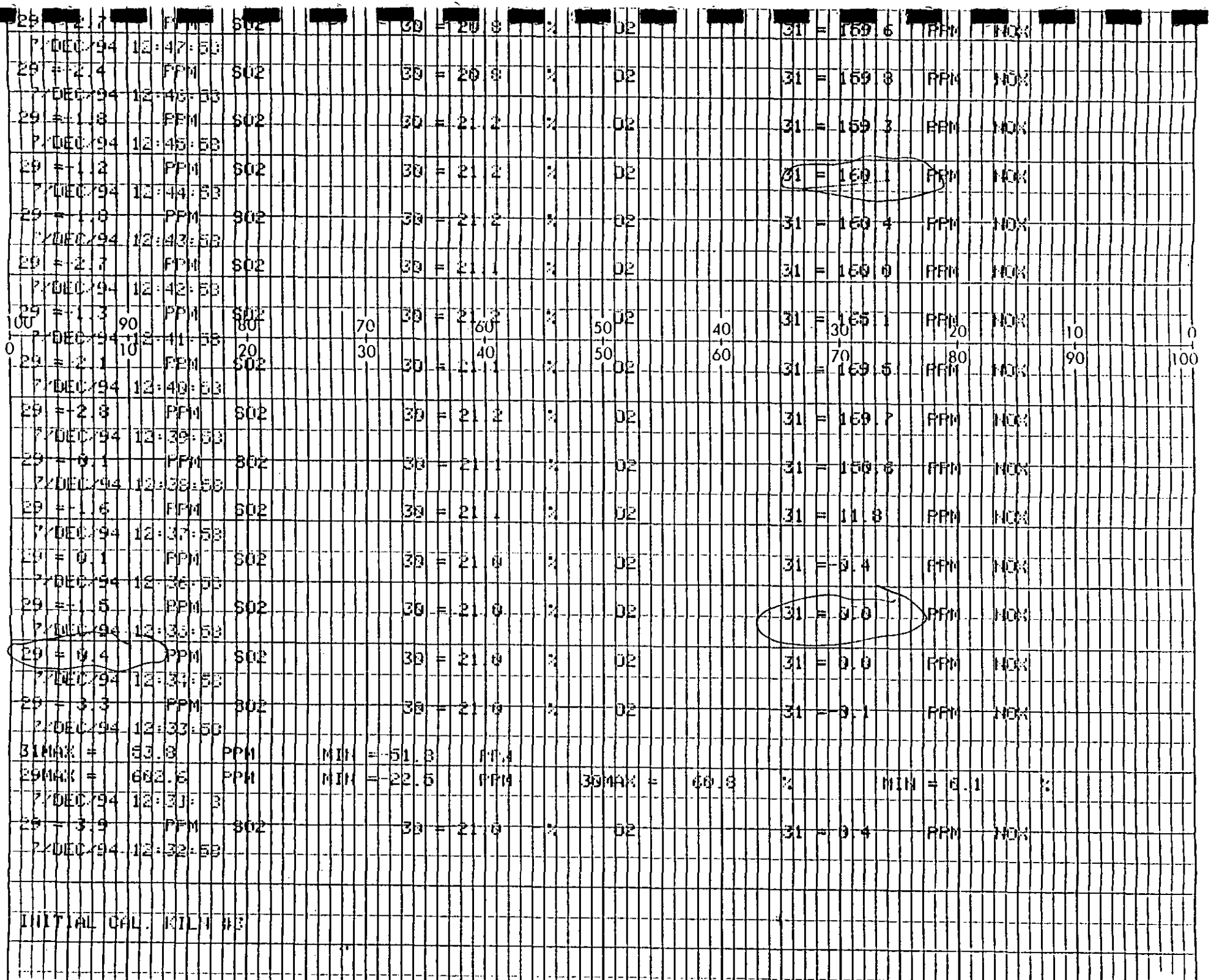


CHART NO. 41446

29 = 518.4 PPM SO2 30 = 20.8 % O2 31 = -0.6 PPM NOX

7/DEC/94 13:36:27

29 = 513.4 PPM SO2 30 = 20.8 % O2 31 = -0.9 PPM NOX

7/DEC/94 13:35:27

29 = 518.4 PPM SO2 30 = 21.8 % O2 31 = -0.8 PPM NOX

7/DEC/94 13:34:27

29 = 515.1 PPM SO2 30 = 20.8 % O2 31 = -0.8 PPM NOX

7/DEC/94 13:33:27

29 = 514.2 PPM SO2 30 = 20.8 % O2 31 = -0.8 PPM NOX

7/DEC/94 13:32:27

29 = 510.3 PPM SO2 30 = 20.8 % O2 31 = -1.6 PPM NOX

7/DEC/94 13:31:27

29 = 490.8 PPM SO2 30 = 20.8 % O2 31 = -1.6 PPM NOX

7/DEC/94 13:30:27

29MAX = 2067.6 PPM MIN = -2.3 PPM

29MAX = 1159.9 PPM MIN = -17.6 PPM 30MAX = 21.2 % MIN = 19.4 %

7/DEC/94 13:30:

29 = 690.9 PPM SO2 30 = 20.8 % O2 31 = -1.1 PPM NOX

7/DEC/94 13:29:27

29 = +12.7 PPM SO2 30 = 20.8 % O2 31 = 35.7 PPM NOX

7/DEC/94 12:59:57

29 = +14.7 PPM SO2 30 = 20.8 % O2 31 = 26.7 PPM NOX

7/DEC/94 12:57:30

29 = +12.490 PPM SO2 30 = 20.8 % O2 31 = 30.9 PPM NOX

7/DEC/94 12:56:27

29 = +9.1 PPM SO2 30 = 20.8 % O2 31 = 269.1 PPM NOX

7/DEC/94 12:55:27

29 = +8.3 PPM SO2 30 = 20.8 % O2 31 = 266.3 PPM NOX

7/DEC/94 12:54:58

29 = +6.1 PPM SO2 30 = 20.8 % O2 31 = 265.8 PPM NOX

7/DEC/94 12:53:58

29 = +6.7 PPM SO2 30 = 20.8 % O2 31 = 265.2 PPM NOX

7/DEC/94 12:52:58

29 = +4.6 PPM SO2 30 = 20.8 % O2 31 = 265.5 PPM NOX

7/DEC/94 12:51:58

29 = +0.6 PPM SO2 30 = 20.8 % O2 31 = 263.5 PPM NOX

7/DEC/94 12:50:58

29 = +0.3 PPM SO2 30 = 20.8 % O2 31 = 263.7 PPM NOX

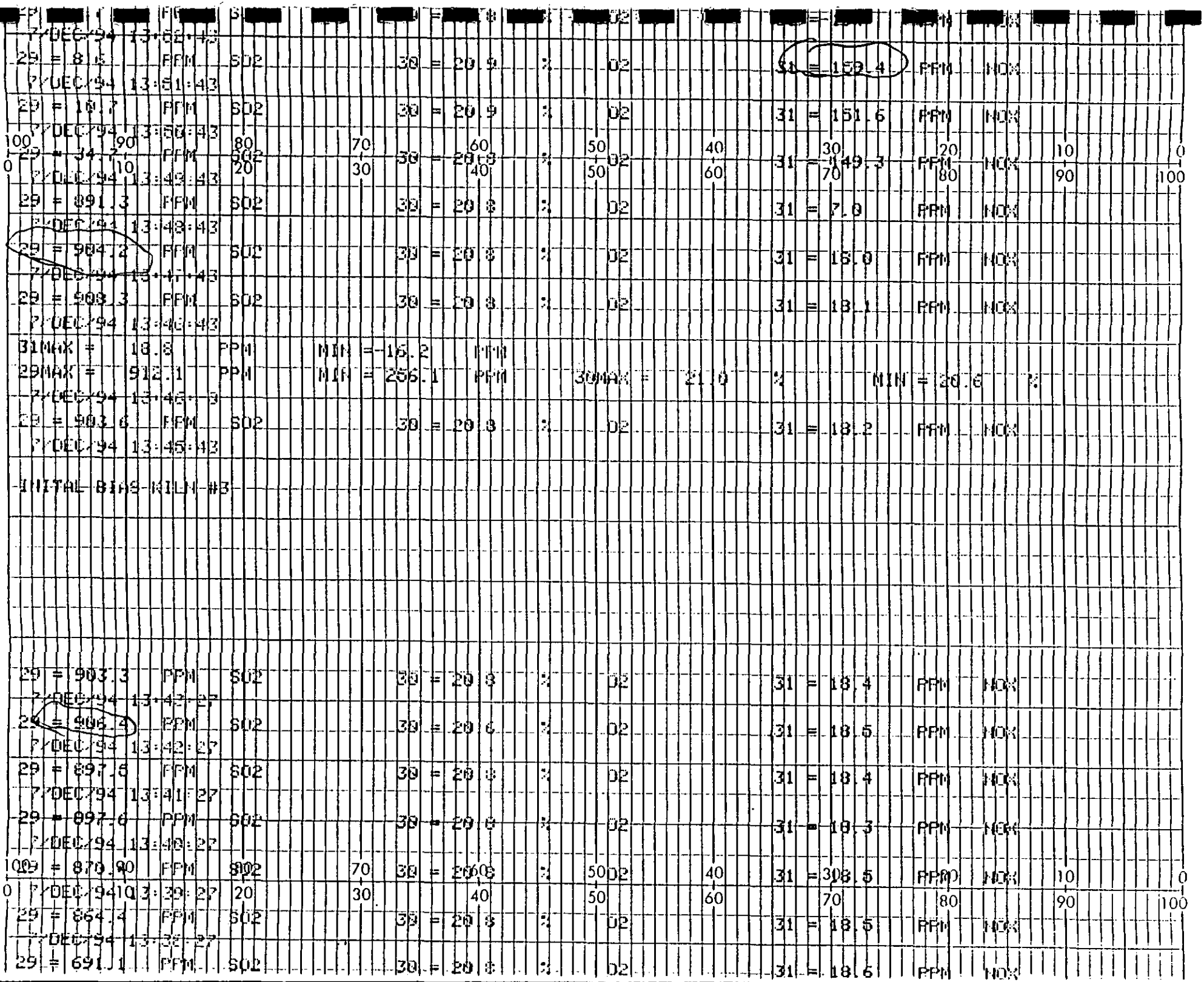
7/DEC/94 12:49:58

29 = +2.9 PPM SO2 30 = 20.8 % O2 31 = -0.8 PPM NOX

100 70 60 50 40 30 20 10 0

0 10 20 30 40 50 60 70 80 90 100

MOLYTEK


7/DEC/94 13:52:43
29 = 8.5 PPM SO2
30 = 20.9 % O2
31 = 150.4 PPM NOX
7/DEC/94 13:51:43
29 = 16.7 PPM SO2
30 = 20.9 % O2
31 = 151.6 PPM NOX
7/DEC/94 13:50:43
29 = 34.7 PPM SO2
30 = 20.8 % O2
31 = 149.3 PPM NOX
7/DEC/94 13:49:43
29 = 891.3 PPM SO2
30 = 20.8 % O2
31 = 7.0 PPM NOX
7/DEC/94 13:48:43
29 = 904.2 PPM SO2
30 = 20.8 % O2
31 = 16.0 PPM NOX
7/DEC/94 13:47:43
29 = 908.3 PPM SO2
30 = 20.8 % O2
31 = 18.1 PPM NOX
7/DEC/94 13:46:43
31MAX = 18.8 PPM MIN = -16.2 PPM
29MAX = 912.1 PPM MIN = 256.1 PPM 30MAX = 21.0 % MIN = 20.6 %
7/DEC/94 13:46:3
29 = 903.6 PPM SO2
30 = 20.8 % O2
31 = 18.2 PPM NOX
7/DEC/94 13:45:43
INITAL BIAS HIGH #3
29 = 903.3 PPM SO2
30 = 20.8 % O2
31 = 18.4 PPM NOX
7/DEC/94 13:42:27
29 = 906.4 PPM SO2
30 = 20.8 % O2
31 = 18.5 PPM NOX
7/DEC/94 13:42:27
29 = 897.6 PPM SO2
30 = 20.8 % O2
31 = 18.4 PPM NOX
7/DEC/94 13:41:27
29 = 897.6 PPM SO2
30 = 20.8 % O2
31 = 18.3 PPM NOX
7/DEC/94 13:40:27
29 = 870.90 PPM SO2
30 = 20.8 % O2
31 = 308.5 PPM NOX
7/DEC/94 13:39:27
29 = 864.4 PPM SO2
30 = 20.8 % O2
31 = 18.5 PPM NOX
7/DEC/94 13:38:27
29 = 691.1 PPM SO2
30 = 20.8 % O2
31 = 18.6 PPM NOX

29 = 695.5 PPM SO2 30 = 14.2 % O2 31 = 35.4 PPM NOX

7/DEC/94 14: 5:36

29 = 701.9 PPM SO2 30 = 14.2 % O2 31 = 34.7 PPM NOX

7/DEC/94 14: 8:36

29 = 746.9 PPM SO2 30 = 14.5 % O2 31 = 33.0 PPM NOX

7/DEC/94 14: 7:33

29 = 838.6 PPM SO2 30 = 14.5 % O2 31 = 27.6 PPM NOX

7/DEC/94 14: 6:36

29 = 536.0 PPM SO2 30 = 13.8 % O2 31 = 13.8 PPM NOX

7/DEC/94 14: 5:36

29 = 420.9 PPM SO2 30 = 17.4 % O2 31 = 15.1 PPM NOX

7/DEC/94 14: 4:36

29 = 634.1 PPM SO2 30 = 17.6 % O2 31 = 19.2 PPM NOX

7/DEC/94 14: 3:36

29 = 651.6 PPM SO2 30 = 15.2 % O2 31 = 32.0 PPM NOX

7/DEC/94 14: 2:36

29 = 683.0 PPM SO2 30 = 15.2 % O2 31 = 31.7 PPM NOX

7/DEC/94 14: 1:36

29 = 654.1 PPM SO2 30 = 14.2 % O2 31 = 34.7 PPM NOX

7/DEC/94 14: 0:36

31MAX = 159.9 PPM MIN = 87.7 PPM

29MAX = 908.9 PPM MIN = 2.6 PPM 30MAX = 21.0 % MIN = 14.4 %

7/DEC/94 14: 0: 0

29 = 685.7 PPM SO2 30 = 14.5 % O2 31 = 33.4 PPM NOX

7/DEC/94 13:59:36

RUN #1 INLET KILN #3

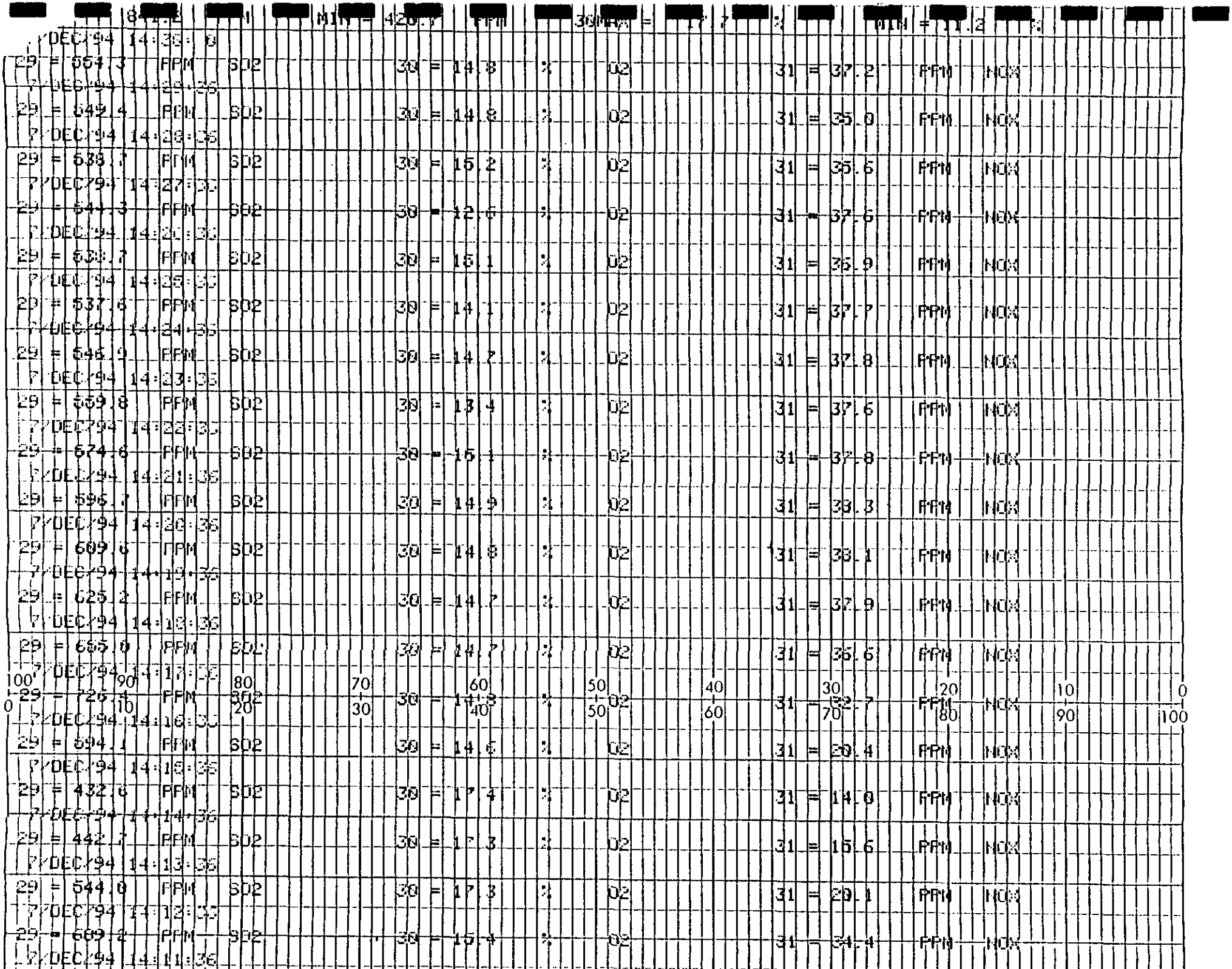
29 = -0.9 PPM SO2 30 = 20.9 % O2 31 = -1.2 PPM NOX

7/DEC/94 13:59:33

29 = 1.4 PPM SO2 30 = 20.9 % O2 31 = -0.8 PPM NOX

7/DEC/94 13:54:33

29 = 2.2 PPM SO2 30 = 20.9 % O2 31 = -1.9 PPM NOX



OLYTEK

CHART NO 41422A

7/DEC/94 15: 8: 0

29 = 641.6 PPM SO2 30 = 14.3 % O2 31 = 35.7 PPM NOX

7/DEC/94 13: 4: 0

29 = 650.4 PPM SO2 30 = 14.3 % O2 31 = 36.8 PPM NOX

7/DEC/94 18: 3: 0

29 = 648.6 PPM SO2 30 = 14.2 % O2 31 = 37.2 PPM NOX

7/DEC/94 10: 2: 0

29 = 665.1 PPM SO2 30 = 14.3 % O2 31 = 37.3 PPM NOX

7/DEC/94 15: 1: 0

29 = 659.8 PPM SO2 30 = 14.2 % O2 31 = 37.2 PPM NOX

7/DEC/94 16: 0: 0

29 = 656.3 PPM SO2 30 = 14.2 % O2 31 = 36.6 PPM NOX

7/DEC/94 14:59: 0

29 = 647.0 PPM SO2 30 = 14.2 % O2 31 = 36.1 PPM NOX

7/DEC/94 14:58: 0

29 = 601.3 PPM SO2 30 = 14.1 % O2 31 = 35.3 PPM NOX

7/DEC/94 14:57: 0

31MAX = 163.6 PPM MIN = -1.3 PPM

29MAX = 913.1 PPM MIN = -3.6 PPM 30MAX = 21.3 % MIN = 14.1 %

7/DEC/94 14:56:11

29 = 468.4 PPM SO2 30 = 14.2 % O2 31 = 34.0 PPM NOX

7/DEC/94 14:56: 0

RUN #2-INLET KILN #3

29 = 62.9 PPM SO2 30 = 21.0 % O2 31 = 9.9 PPM NOX

7/DEC/94 14:51: 0

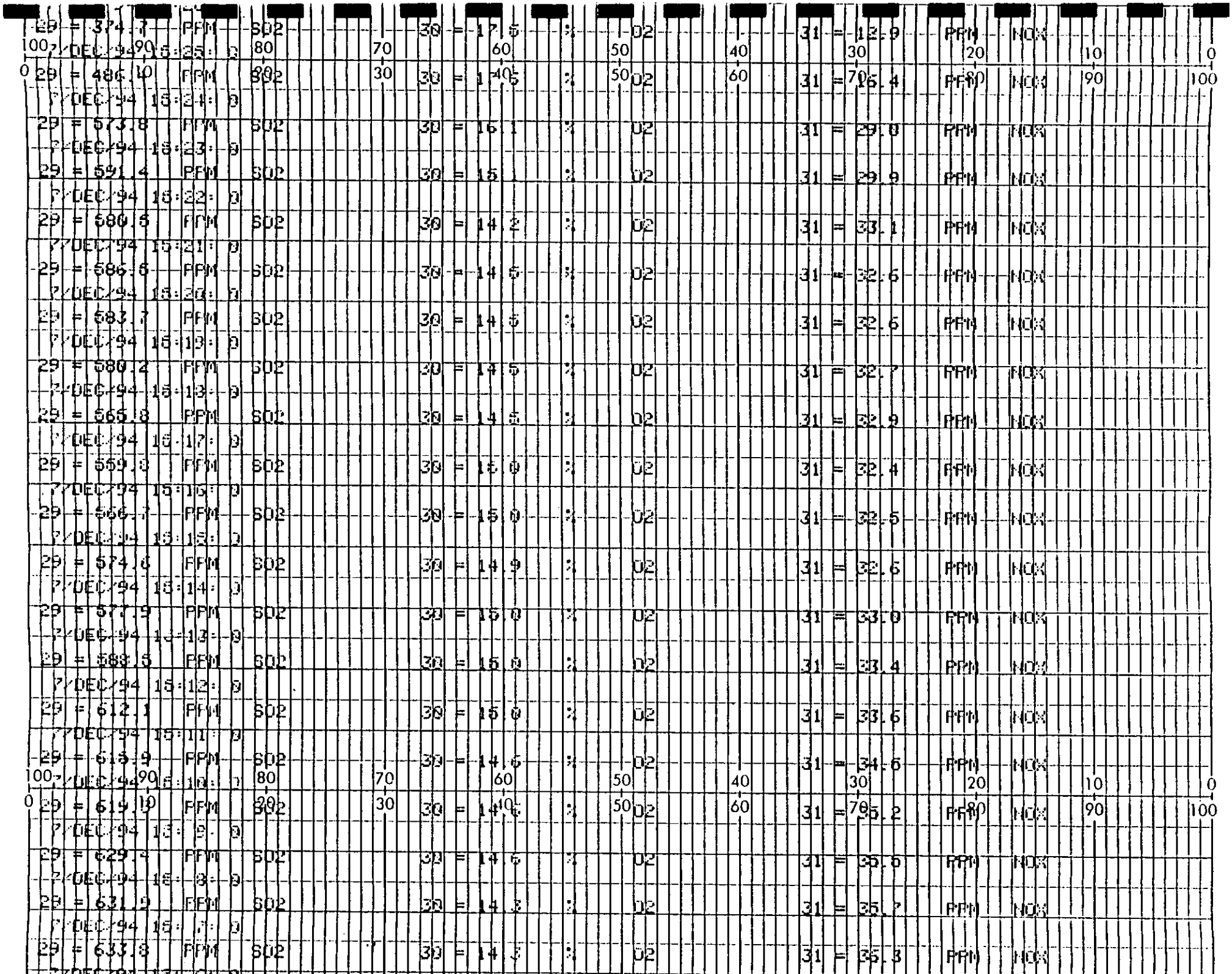
29 = 909.0 PPM SO2 30 = 21.1 % O2 31 = 20.2 PPM NOX

7/DEC/94 14:50: 0

29 = 902.3 PPM SO2 30 = 21.1 % O2 31 = 20.1 PPM NOX

7/DEC/94 14:49: 0

29 = 899.7 PPM SO2 30 = 21.1 % O2 31 = 20.2 PPM NOX


29 = 374.7 PPM SO2
30 = 17.5 % O2
31 = 12.9 PPM NOX
7/DEC/94 15:25: 0
29 = 486.10 PPM SO2
30 = 17.5 % O2
31 = 16.4 PPM NOX
7/DEC/94 15:24: 0
29 = 573.8 PPM SO2
30 = 16.1 % O2
31 = 20.0 PPM NOX
7/DEC/94 15:23: 0
29 = 591.4 PPM SO2
30 = 15.1 % O2
31 = 20.9 PPM NOX
7/DEC/94 15:22: 0
29 = 580.5 PPM SO2
30 = 14.2 % O2
31 = 33.1 PPM NOX
7/DEC/94 15:21: 0
29 = 586.6 PPM SO2
30 = 14.6 % O2
31 = 32.6 PPM NOX
7/DEC/94 15:20: 0
29 = 583.7 PPM SO2
30 = 14.6 % O2
31 = 32.6 PPM NOX
7/DEC/94 15:19: 0
29 = 580.2 PPM SO2
30 = 14.5 % O2
31 = 32.7 PPM NOX
7/DEC/94 15:18: 0
29 = 565.8 PPM SO2
30 = 14.5 % O2
31 = 32.9 PPM NOX
7/DEC/94 15:17: 0
29 = 559.8 PPM SO2
30 = 15.0 % O2
31 = 32.4 PPM NOX
7/DEC/94 15:16: 0
29 = 566.7 PPM SO2
30 = 15.0 % O2
31 = 32.5 PPM NOX
7/DEC/94 15:15: 0
29 = 574.6 PPM SO2
30 = 14.9 % O2
31 = 32.6 PPM NOX
7/DEC/94 15:14: 0
29 = 577.9 PPM SO2
30 = 15.0 % O2
31 = 33.0 PPM NOX
7/DEC/94 15:13: 0
29 = 588.5 PPM SO2
30 = 15.0 % O2
31 = 33.4 PPM NOX
7/DEC/94 15:12: 0
29 = 612.1 PPM SO2
30 = 15.0 % O2
31 = 33.6 PPM NOX
7/DEC/94 15:11: 0
29 = 615.9 PPM SO2
30 = 14.6 % O2
31 = 34.6 PPM NOX
7/DEC/94 15:10: 0
29 = 619.10 PPM SO2
30 = 14.6 % O2
31 = 35.2 PPM NOX
7/DEC/94 15: 9: 0
29 = 629.4 PPM SO2
30 = 14.6 % O2
31 = 35.6 PPM NOX
7/DEC/94 15: 8: 0
29 = 631.9 PPM SO2
30 = 14.3 % O2
31 = 35.7 PPM NOX
7/DEC/94 15: 7: 0
29 = 633.8 PPM SO2
30 = 14.3 % O2
31 = 35.3 PPM NOX
7/DEC/94 15: 6: 0

?/DEC/94 16:41:54
29 = 909.3 PPM SO2 30 = 29.9 % O2 31 = 20.1 PPM NOX
?/DEC/94 16:40:54
29 = 904.3 PPM SO2 30 = 29.9 % O2 31 = 20.1 PPM NOX
?/DEC/94 16:39:54
29 = 879.9 PPM SO2 30 = 29.9 % O2 31 = 20.2 PPM NOX
?/DEC/94 16:38:54
29 = 841.7 PPM SO2 30 = 29.9 % O2 31 = 20.4 PPM NOX
?/DEC/94 16:37:54
29 = 3.2 PPM SO2 30 = 29.9 % O2 31 = 10.8 PPM NOX
?/DEC/94 16:36:54
29 = -0.7 PPM SO2 30 = 29.8 % O2 31 = 0.4 PPM NOX
?/DEC/94 16:35:54
29 = 2.9 PPM SO2 30 = 29.8 % O2 31 = 79.5 PPM NOX
?/DEC/94 16:34:54
29 = 6.8 PPM SO2 30 = 29.9 % O2 31 = -0.4 PPM NOX
?/DEC/94 16:33:54
29 = 5.2 PPM SO2 30 = 21.3 % O2 31 = -0.5 PPM NOX
?/DEC/94 16:32:54
29 = 8.3 PPM SO2 30 = 21.3 % O2 31 = -1.3 PPM NOX
?/DEC/94 16:31:54
29 = 12.6 PPM SO2 30 = 21.3 % O2 31 = -1.4 PPM NOX
?/DEC/94 16:30:54
29 = 24.3 PPM SO2 30 = 21.3 % O2 31 = -1.1 PPM NOX
?/DEC/94 16:29:54
29 = 49.6 PPM SO2 30 = 29.9 % O2 31 = -0.6 PPM NOX
?/DEC/94 16:28:54
29 = 164.3 PPM SO2 30 = 21.0 % O2 31 = 1.2 PPM NOX
?/DEC/94 16:27:54
BIAS #2+INLET KILN #3

29 = 718.3 PPM SO2 30 = 29.4 % O2 31 = 21.9 PPM NOX
?/DEC/94 16:27: 0
31MAX = 37.6 PPM MIN = 12.5 PPM
29MAX = 883.0 PPM MIN = 365.9 PPM 30MAX = 17.7 % MIN = 11.6 %
?/DEC/94 16:26:11

29 = 531.8 PPM SO2 30 = 15.0 % O2 31 = 41.0 PPM NOX
7/DEC/94 16: 2:22

29 = 537.6 PPM SO2 30 = 15.1 % O2 31 = 41.0 PPM NOX
7/DEC/94 16: 1:22

29 = 547.0 PPM SO2 30 = 15.1 % O2 31 = 41.0 PPM NOX
7/DEC/94 16: 0:22

29 = 554.8 PPM SO2 30 = 15.0 % O2 31 = 41.1 PPM NOX
7/DEC/94 15:59:22

29 = 569.8 PPM SO2 30 = 15.0 % O2 31 = 40.8 PPM NOX
7/DEC/94 15:58:22

29 = 569.6 PPM SO2 30 = 14.6 % O2 31 = 41.6 PPM NOX
7/DEC/94 15:57:22

29 = 570.0 PPM SO2 30 = 14.6 % O2 31 = 41.3 PPM NOX
7/DEC/94 15:56:22

29 = 567.3 PPM SO2 30 = 14.5 % O2 31 = 41.2 PPM NOX
7/DEC/94 15:55:22

29 = 562.7 PPM SO2 30 = 14.5 % O2 31 = 41.2 PPM NOX
7/DEC/94 15:54:22

29 = 561.6 PPM SO2 30 = 14.6 % O2 31 = 41.2 PPM NOX
7/DEC/94 15:53:22

29 = 547.9 PPM SO2 30 = 14.8 % O2 31 = 40.6 PPM NOX
7/DEC/94 15:52:22

29 = 558.7 PPM SO2 30 = 15.1 % O2 31 = 39.6 PPM NOX
7/DEC/94 15:51:22

100 90 80 70 60 50 40 30 20 10 0

31MAX = 1060.8 PPM MIN = -11.3 PPM

0 10 20 30 40 50 60 70 80 90 100

29MAX = 914.0 PPM MIN = -3.0 PPM 30MAX = 21.3 % MIN = 13.8 %

7/DEC/94 15:51: 0

29 = 560.7 PPM SO2 30 = 15.1 % O2 31 = 37.8 PPM NOX
7/DEC/94 15:50:22

RUN #3-INLET KILN #3

29 = 4.3 PPM SO2 30 = 20.9 % O2 31 = 159.5 PPM NOX

29 = 581.9 PPM SO2 30 = 14.1 % O2 31 = 38.8 PPM NOX

7/DEC/94 16:21:22

31MAX = 41.7 PPM MIN = 34.1 PPM

29MAX = 588.8 PPM MIN = 504.1 PPM 30MAX = 16.4 % MIN = 11.7 %

7/DEC/94 16:21:0

29 = 584.6 PPM SO2 30 = 13.9 % O2 31 = 38.7 PPM NOX

7/DEC/94 16:20:22

29 = 579.8 PPM SO2 30 = 13.8 % O2 31 = 37.9 PPM NOX

7/DEC/94 16:19:22

29 = 559.1 PPM SO2 30 = 13.8 % O2 31 = 37.4 PPM NOX

7/DEC/94 16:18:22

29 = 547.1 PPM SO2 30 = 14.1 % O2 31 = 37.9 PPM NOX

7/DEC/94 16:17:22

29 = 523.9 PPM SO2 30 = 14.3 % O2 31 = 36.4 PPM NOX

7/DEC/94 16:16:22

29 = 518.5 PPM SO2 30 = 14.6 % O2 31 = 36.4 PPM NOX

7/DEC/94 16:15:22

29 = 518.8 PPM SO2 30 = 15.3 % O2 31 = 36.2 PPM NOX

7/DEC/94 16:14:22

29 = 516.0 PPM SO2 30 = 14.8 % O2 31 = 38.8 PPM NOX

7/DEC/94 16:13:22

29 = 521.0 PPM SO2 30 = 15.4 % O2 31 = 38.8 PPM NOX

7/DEC/94 16:12:22

29 = 527.6 PPM SO2 30 = 15.1 % O2 31 = 39.4 PPM NOX

7/DEC/94 16:11:22

29 = 538.4 PPM SO2 30 = 15.0 % O2 31 = 40.2 PPM NOX

7/DEC/94 16:10:22

29 = 551.1 PPM SO2 30 = 15.0 % O2 31 = 40.6 PPM NOX

7/DEC/94 16: 9:22

29 = 554.6 PPM SO2 30 = 14.6 % O2 31 = 41.0 PPM NOX

7/DEC/94 16: 8:22

29 = 555.6 PPM SO2 30 = 14.5 % O2 31 = 41.1 PPM NOX

7/DEC/94 16: 7:22

29 = 554.0 PPM SO2 30 = 14.6 % O2 31 = 41.3 PPM NOX

7/DEC/94 16: 6:22

29 = 546.0 PPM SO2 30 = 14.5 % O2 31 = 41.3 PPM NOX

7/DEC/94 16: 5:22

29 = 533.4 PPM SO2 30 = 14.5 % O2 31 = 41.3 PPM NOX

7/DEC/94 16: 4:22

29 = 903.7 PPM SO2 30 = 20.7 % O2 31 = 20.7 PPM NOX
7/DEC/94 16:41:38
29 = 912.0 PPM SO2 30 = 20.8 % O2 31 = 20.7 PPM NOX
7/DEC/94 16:40:38
29 = 914.0 PPM SO2 30 = 20.8 % O2 31 = 20.9 PPM NOX
7/DEC/94 16:39:38
29 = 912.3 PPM SO2 30 = 20.8 % O2 31 = 20.8 PPM NOX
7/DEC/94 16:38:38
29 = 864.3 PPM SO2 30 = 20.0 % O2 31 = 20.7 PPM NOX
7/DEC/94 16:37:38
29 = 917.2 PPM SO2 30 = 20.8 % O2 31 = 20.9 PPM NOX
7/DEC/94 16:36:38
29 = 787.2 PPM SO2 30 = 20.8 % O2 31 = 21.1 PPM NOX
7/DEC/94 16:35:38
29 = -2.5 PPM SO2 30 = 20.9 % O2 31 = 160.6 PPM NOX
7/DEC/94 16:34:38
29 = -1.6 PPM SO2 30 = 20.[illegible] % O2 31 = 159.6 PPM NOX
7/DEC/94 16:33:38
29 = 1.1 PPM SO2 30 = 20.9 % O2 31 = 157.0 PPM NOX
7/DEC/94 16:32:38
29 = 0.1 PPM SO2 30 = 20.9 % O2 31 = 9.6 PPM NOX
7/DEC/94 16:31:38
29 = -3.6 PPM SO2 30 = 21.0 % O2 31 = -0.6 PPM NOX
7/DEC/94 16:30:38
31MAX = 39.2 PPM MIN = -0.7 PPM
29MAX = 887.2 PPM MIN = -2.1 PPM 30MAX = 21.0 % MIN = 9.3 %
7/DEC/94 16:30:38
29 = -1.2 PPM SO2 30 = 20.9 % O2 31 = -0.7 PPM NOX
7/DEC/94 16:29:38

BIAS #3-INLET KILN #3

29 = 577.8 PPM SO2 30 = 14.1 % O2 31 = 33.8 PPM NOX
7/DEC/94 16:23:22

12/8//94

SO2 Averages for the #3 Kiln Inlet

	Run #1	Run # 2	Run #3
1	654.1	460.5	558.7
2	683	374.7	547.9
3	651.5	486.14	551.6
4	534.1	573.8	552.7
5	420.9	591.4	567.3
6	536	580.5	570
7	838.6	586.5	569.6
8	746.9	583.7	569.5
9	701.9	580.2	564.5
10	695.5	565.8	547
11	689.5	559.8	537.6
12	689.2	566.7	531.8
13	544	574.6	533.1
14	442.7	577.9	533.4
15	432.6	588.5	546.6
16	594.1	612.1	554
17	726.4	615.9	555.6
18	655	619.3	554.6
19	625.2	629.4	551.1
20	609.6	631.9	538.4
21	596.7	633.8	527.6
22	574.6	636.4	521
23	559.8	641.6	516
24	546.9	650.4	518.8
25	537.6	648.6	518.5
26	538.7	655.1	523.9
27	544.3	659.8	547.1
28	538.7	656.3	559.1
29	549.4	647	579.8
30	554.3	601.7	584.6
Averages =	600.39	593.00	547.71

29 = 903.7 PPM SO2 30 = 20.7 % O2 31 = 20.7 PPM NOX

7/DEC/94 16:41:38

29 = 912.0 PPM SO2 30 = 20.8 % O2 31 = 20.7 PPM NOX

7/DEC/94 16:40:38

29 = 914.0 PPM SO2 30 = 20.8 % O2 31 = 20.9 PPM NOX

7/DEC/94 16:39:38

29 = 912.3 PPM SO2 30 = 20.8 % O2 31 = 20.8 PPM NOX

7/DEC/94 16:38:38

29 = 864.3 PPM SO2 30 = 20.8 % O2 31 = 20.7 PPM NOX

7/DEC/94 16:37:38

29 = 917.2 PPM SO2 30 = 20.8 % O2 31 = 20.9 PPM NOX

7/DEC/94 16:36:38

29 = 787.2 PPM SO2 30 = 20.8 % O2 31 = 21.1 PPM NOX

7/DEC/94 16:35:38

29 = -2.5 PPM SO2 30 = 20.9 % O2 31 = 160.5 PPM NOX

7/DEC/94 16:34:38

29 = -1.6 PPM SO2 30 = 20.9 % O2 31 = 159.6 PPM NOX

7/DEC/94 16:33:38

29 = 1.1 PPM SO2 30 = 20.9 % O2 31 = 157.0 PPM NOX

7/DEC/94 16:32:38

29 = 0.1 PPM SO2 30 = 20.5 % O2 31 = 9.5 PPM NOX

7/DEC/94 16:31:38

29 = -3.6 PPM SO2 30 = 21.0 % O2 31 = 0.6 PPM NOX

7/DEC/94 16:30:38

31MAX = 39.2 PPM MIN = -6.7 PPM

29MAX = 587.2 PPM MIN = -2.1 PPM 30MAX = 21.0 % MIN = 9.2 %

7/DEC/94 16:30: 0

29 = -1.2 PPM SO2 30 = 20.9 % O2 31 = 0.7 PPM NOX

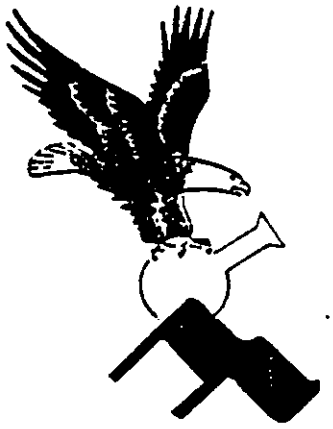
7/DEC/94 16:29:38

BIAS #3-INLET KILN #3

29 = 577.5 PPM SO2 30 = 14.1 % O2 31 = 38.8 PPM NOX

7/DEC/94 16:27:38

29 = 578.9 PPM SO2 30 = 14.1 % O2 31 = 38.6 PPM NOX



Appendix "H"

(CEM Readings)

American Environmental Testing Company Inc.

Reno, Nevada
702-786-8553

Phoenix, Arizona
602-253-3354

Salt Lake City, Utah
801-266-7111

12/7//94 **Nox Averages for the #3 Kiln Inlet**

	Run #1	Run # 2	Run #3
1	34.7	35.3	39.6
2	31.7	36.1	40.6
3	32	36.6	41.2
4	19.2	37.2	41.2
5	15.1	37.3	41.2
6	18.8	37.2	41.3
7	27.6	36.8	41.5
8	33	36.7	40.8
9	34.7	36.4	41.1
10	35.4	36.3	41
11	35.6	35.7	41
12	34.4	35.5	41
13	20.1	35.2	40.9
14	15.6	34.6	41.3
15	14	33.6	41.3
16	20.4	33.4	41.3
17	32.7	33	41.1
18	36.6	32.6	41
19	37.9	32.5	40.6
20	38.1	32.4	40.2
21	38.3	32.9	39.4
22	37.8	32.7	38.8
23	37.6	32.6	38.8
24	37.8	32.6	36.2
25	37.7	33.1	35.4
26	36.9	29	36.4
27	37.6	29	37
28	35.6	16.4	37.4
29	35	12.9	37.9
30	37.2	17.5	38.7
Averages =	31.303333333	32.44	39.84

12/6//94 **Nox Averages for the #4 Kiln Inlet**

	Run #1	Run # 2	Run #3
1	12.3	12.9	9.8
2	12.9	12.7	9.7
3	13.3	12.4	9.6
4	13.8	12.5	9.8
5	13.6	12.5	9.5
6	13.6	12.5	9.2
7	13.8	12.3	9.3
8	13.9	12	9.5
9	13.8	12	9.3
10	14	11.8	9
11	14.1	11.8	9.1
12	13.8	11.7	8.9
13	13.5	11.2	8.6
14	13.7	11.1	8.5
15	13.8	11	8
16	13.7	10.7	7.7
17	13.4	10.6	7.3
18	12.9	10.6	7.1
19	13	10	7
20	13	9.8	6.7
21	13.1	9	7
22	13	8.7	7.6
23	12.9	8.5	7.7
24	13.1	8.4	7.9
25	12.9	8	8.2
26	12.9	8	8.5
27	12.8	7.7	8.9
28	13	7.9	9.1
29	13.1	8.4	9.4
30	12.9	9	9.6
Averages =	13.32	10.52	8.58

12/6//94 **SO2 Averages for the #4 Kiln Inlet**

	Run #1	Run # 2	Run #3
1	185.2	137.6	211
2	197.3	146.8	211.3
3	206.2	153.1	205.2
4	206.2	154.1	199.4
5	208.5	157.1	191.7
6	205	155.6	186.7
7	207.7	153.1	186.1
8	208.9	147.9	184.8
9	212	142.2	178.5
10	211.4	142.8	178.1
11	217.6	142.7	177.9
12	213.1	142.1	174.9
13	211.8	141.7	173.7
14	211	144.5	176
15	217.6	142.2	175.7
16	220.8	140.5	173.1
17	225.8	139.7	174
18	223.7	136.7	172.3
19	217.1	132.3	166
20	215.8	128.8	165
21	209.7	129.6	164.7
22	209	124.8	166.5
23	213.6	129.5	173.4
24	211.3	132.6	177.1
25	214.7	127.2	180.7
26	212	122.4	183.9
27	209	120.2	190.2
28	211.5	122.2	189.1
29	213	116.8	187.1
30	213.5	121.9	183.5
Averages =	211.33	137.62	181.92

12/6//94

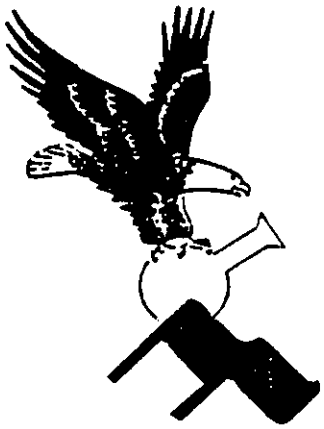
Nox Averages for the #4 Kiln Outlet

	Run #1	Run # 2	Run #3
1	13.1	11.1	10.6
2	13.2	11.1	10.6
3	13	11.1	10.5
4	13.3	11.2	10.5
5	13.3	11	10.4
6	13.1	10.9	10.5
7	13.1	11.3	10.2
8	12.9	11.2	9.9
9	12.5	11.3	9.4
10	12.3	11.2	9.1
11	11.9	11.2	8.5
12	11.8	10.9	8.3
13	12.1	10.9	8.1
14	12	10.9	8.1
15	11.8	10.7	7.9
16	11.7	10.7	7.8
17	11.6	10.9	7.7
18	11.5	10.7	7.6
19	11.5	10.8	7.6
20	11.4	10.7	7.6
21	11.4	10.9	7.5
22	11.4	11	7.3
23	11.4	10.8	7.4
24	11.6	10.8	7.2
25	11.3	10.7	7.2
26	11.4	10.7	7.1
27	11.6	10.6	6.9
28	11.5	10.9	6.7
29	11.8	10.6	7.2
30	11.7	10.6	8.1
Averages =	12.073333333	10.91	8.45

12/6//94

SO2 Averages for the #4 Kiln Outlet

	Run #1	Run # 2	Run #3
1	50.7	36.7	27.8
2	54.8	31.2	24.9
3	49.2	26.1	22.2
4	46.6	21.9	20.6
5	43.1	19.6	21.3
6	41.8	18.9	20.8
7	43.6	19.6	20.3
8	43.6	20.7	23.4
9	42.6	19.9	25.4
10	42.9	19.9	27
11	38.9	20.9	27.7
12	34.6	20.7	28.4
13	34.3	21.4	31
14	34.1	22.1	29.7
15	31	20.8	31.5
16	29.9	21.5	31.7
17	30.6	22.6	31.5
18	27.9	23.3	33.3
19	27.7	24.7	33.3
20	29.4	25.1	31
21	27.9	27.2	32.1
22	29.2	27.7	33.4
23	29.6	28.7	32.8
24	28.6	29.5	33.5
25	29.1	29.6	36.1
26	27.5	30.7	34.1
27	28.5	29.5	34.4
28	28.8	34.7	33.6
29	30.2	35.4	33.7
30	30	35.1	34.3
Averages =	35.56	25.52	29.36



Appendix "I"

(VEO Readings & Certification Cards)

American Environmental Testing Company Inc.

Reno, Nevada
702-786-8553

Phoenix, Arizona
602-253-3354

Salt Lake City, Utah
801-266-7111

Testing Company, Inc.

Spanish Fork Utah 84660
801-266-7111

Visible Emission Field Documentation

SOURCE NAME	Dust Collector #3
LOCATION	Interstate Brick
MAILING ADDRESS / CITY / STATE & ZIP	UT
PHONE # / SOURCE CONTACT	
OBSERVATION DATE / START TIME / STOP TIME	12-5-94 / 1440 / 1446
PROCESS EQUIPMENT / FUEL TYPE / OPERATING MODE	Dust Collector / — / full
CONTROL EQUIPMENT / OPERATING MODE	Baghouse / full
DESCRIBE EMISSION POINT	Baghouse Stack
HEIGHT ABOVE GROUND LEVEL / HEIGHT RELATIVE TO OBSERVER	9' / 9'
DISTANCE FROM OBSERVER / DIRECTION FROM OBSERVER	30' / North West
DESCRIBE EMISSIONS	clear
EMISSION COLOR / PLUME TYPE: CONTINUOUS ☐ FUGITIVE ☐ INTERMITTENT ☐	NA
WATER DROPLETS PRESENT: NO ☐ YES ☐ / IF WATER DROPLET PLUME: ATTACHED ☐ DETACHED ☐	
Point in the Plume at Which Opacity was Determined	10" down stack
DESCRIBE BACKGROUND (Color, etc.)	green building
SKY CONDITIONS AND COLOR / WIND DIRECTION / WIND SPEED	cloudy / SW / 5 mph
AMBIENT TEMPERATURE / WET BULB TEMP. / RH. percent	40' / — / —

SEC / MIN	0	15	30	45
1	0	0	0	0
2	0	0	0	0
3	0	0	0	0
4	0	0	0	0
5	0	0	0	0
6	0	0	0	0
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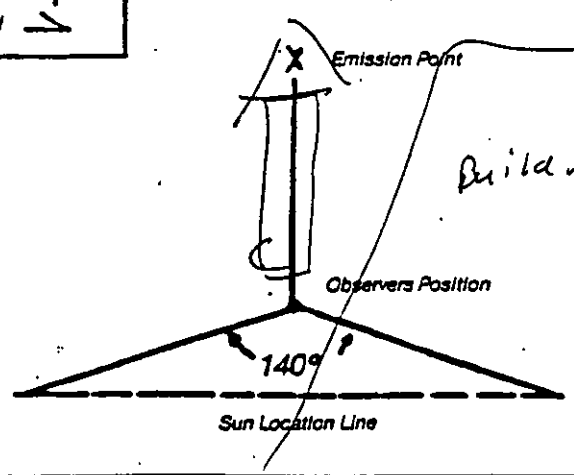
29				
30				

0/24 = 0

AVERAGE OPACITY FOR HIGHEST PERIOD

Stack with Plume
Sun
Wind

SOURCE LAYOUT SKETCH — Draw North Arrow



COMMENTS (Describe Observation Point)

run with E.P.A-201A

#1

DC#3

OBSERVER'S NAME (Print)	OD Schiller
OBSERVER'S SIGNATURE / DATE	OD Schiller / 12-5-94
ORGANIZATION	A.E.T
CERTIFIED BY / DATE	U.D.E.Q /

Testing Company, Inc.

Spanish Fork Utah 84660

801-266-7111

Visible Emission Field Documentation

SOURCE NAME	Dust Collector #3
LOCATION	Interstate Brick
MAILING ADDRESS / CITY / STATE & ZIP	UT
PHONE # / SOURCE CONTACT	
OBSERVATION DATE / START TIME / STOP TIME	12-5-94 / 12:30 / 12:36
PROCESS EQUIPMENT / FUEL TYPE / OPERATING MODE	dust collector / — / full
CONTROL EQUIPMENT / OPERATING MODE	Baghouse / full
DESCRIBE EMISSION POINT	square stack
HEIGHT ABOVE GROUND LEVEL / HEIGHT RELATIVE TO OBSERVER	9' / 9'
DISTANCE FROM OBSERVER / DIRECTION FROM OBSERVER	30' / North west
DESCRIBE EMISSIONS	clear
EMISSION COLOR / PLUME TYPE: CONTINUOUS ☐	AMA / FUGITIVE ☐ INTERMITTENT ☐
WATER DROPLETS PRESENT: NO ☐ YES ☐ / IF WATER DROPLET PLUME: ATTACHED ☐ DETACHED ☐	
Point in the Plume at Which Opacity was Determined	10" above stack
DESCRIBE BACKGROUND (Color, etc.)	green building
SKY CONDITIONS AND COLOR / WIND DIRECTION / WIND SPEED	clouds / SW / 5 mph
AMBIENT TEMPERATURE / WET BULB TEMP. / RH. percent	40 / — / —

SEC / MIN	0	15	30	45
1	0	0	0	0
2	0	0	0	0
3	0	0	0	0
4	0	0	0	0
5	0	0	0	0
6	0	0	0	0
7				
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28				
29				
30				

0/24 = 0

AVERAGE OPACITY FOR HIGHEST PERIOD

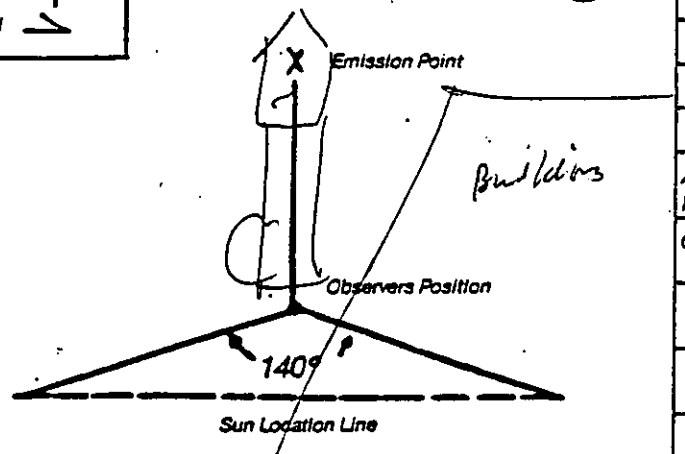
Stack with Plume

Sun

Wind

SOURCE LAYOUT SKETCH

Draw North Arrow



COMMENTS (Describe Observation Point)

run with EPA 201A

#2

DC-#3

OBSERVER'S NAME (Print)	JD Schiller
OBSERVER'S SIGNATURE / DATE	JD Schiller / 12-5-94
ORGANIZATION	A.E.T.
CERTIFIED BY / DATE	U.O.E.C

Testing Company, Inc.

Spanish Fork Utah 84660
801-266-7111

Visible Emission Field Documentation

SOURCE NAME	Dust Collector #3
LOCATION	Interstate Brick
MAILING ADDRESS / CITY / STATE & ZIP	/ / Ut
PHONE # / SOURCE CONTACT	
OBSERVATION DATE / START TIME / STOP TIME	12-6-94 / 10:05 / 10:11
PROCESS EQUIPMENT / FUEL TYPE / OPERATING MODE	Baghouse ambient Dust Collector / — / full
CONTROL EQUIPMENT / OPERATING MODE	Baghouse / full
DESCRIBE EMISSION POINT	Square stack
HEIGHT ABOVE GROUND LEVEL / HEIGHT RELATIVE TO OBSERVER	9' / 9'
DISTANCE FROM OBSERVER / DIRECTION FROM OBSERVER	30' / North West
DESCRIBE EMISSIONS	Clear
EMISSION COLOR / PLUME TYPE: CONTINUOUS ☐ FUGITIVE ☐ INTERMITTENT ☐	N/A
WATER DROPLETS PRESENT: NO ☐ YES ☐ / IF WATER DROPLET PLUME: ATTACHED ☐ DETACHED ☐	
Point in the Plume at Which Opacity was Determined	10" above stack
DESCRIBE BACKGROUND (Color, etc.)	green building
SKY CONDITIONS AND COLOR / WIND DIRECTION / WIND SPEED	Clouds / SW → / 5 mph
AMBIENT TEMPERATURE / WET BULB TEMP. / RH. percent	40° / — / —

SEC MIN	0	15	30	45
1	0	0	0	0
2	0	0	0	0
3	0	0	0	0
4	0	0	0	0
5	0	0	0	0
6	0	0	0	0
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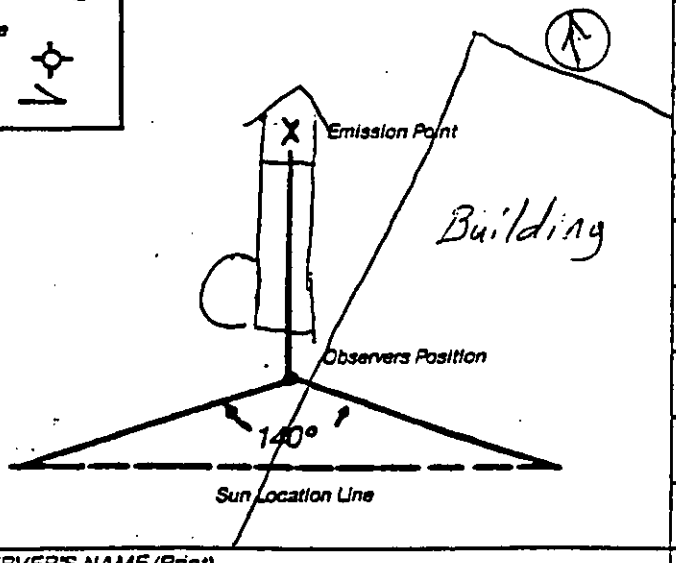
30				

AVERAGE OPACITY FOR HIGHEST PERIOD

0/24 = 0

Stack with Plume
Sun
Wind

SOURCE LAYOUT SKETCH — Draw North Arrow



COMMENTS (Describe Observation Point)

run with E.P.A-201A
#3
DC-#3

OBSERVER'S NAME (Print): JD Schiller

OBSERVER'S SIGNATURE: JD Schiller — DATE: 12-6-94

ORGANIZATION: A.E.T.

CERTIFIED BY: U.D.E.Q — DATE:

Testing Company, Inc.

Spanish Fork, Utah 84660
801-266-7111

Visible Emission Field Documentation

SOURCE NAME: Interstate Brick Run #1	
LOCATION: West Jordan, UTAH	
MAILING ADDRESS	CITY: — STATE & ZIP: UT
PHONE #	SOURCE CONTACT: Jim Keck
OBSERVATION DATE: 12-05-94	START TIME: 9:30 STOP TIME: 9:36
PROCESS EQUIPMENT: #4 Brick Production	FUEL TYPE: Electric OPERATING MODE: Full
CONTROL EQUIPMENT: Baghouse DC-04 Line #4	OPERATING MODE: Full
DESCRIBE EMISSION POINT: Exit From Fan Housing	
HEIGHT ABOVE GROUND LEVEL: 4 Feet	HEIGHT RELATIVE TO OBSERVER: 4 Feet
DISTANCE FROM OBSERVER: 20 Feet	DIRECTION FROM OBSERVER: North West
DESCRIBE EMISSIONS: White / barely visible if at all.	
EMISSION COLOR: White / tan	PLUME TYPE: CONTINUOUS ☒ FUGITIVE ☐ INTERMITTENT ☐
WATER DROPLETS PRESENT: NO ☒ YES ☐	IF WATER DROPLET PLUME: ATTACHED ☐ DETACHED ☐
Point in the Plume at Which Opacity was Determined: 1 stack Diameter away from Fan exit.	
DESCRIBE BACKGROUND (Color, etc.): Green / side of Building	
SKY CONDITIONS AND COLOR: Cloudy / Gray	WIND DIRECTION: W. By N. W. WIND SPEED: 10-15 MPH
AMBIENT TEMPERATURE: 39°F	WET BULB TEMP. — RH. percent —

SEC / MIN	0	15	30	45	
1	0	0	0	0	
2	0	0	0	0	
3	0	0	0	0	
4	0	0	0	0	
5	0	0	0	0	
6	0	0	0	0	
7				Total	0
8				Avg.	0
9					
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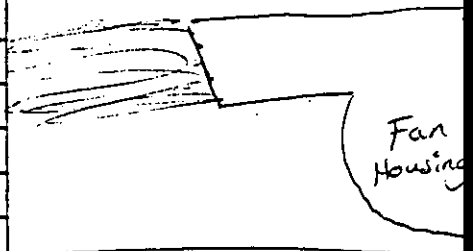
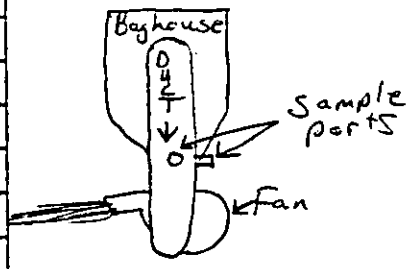
AVERAGE OPACITY FOR HIGHEST PERIOD

Emission point



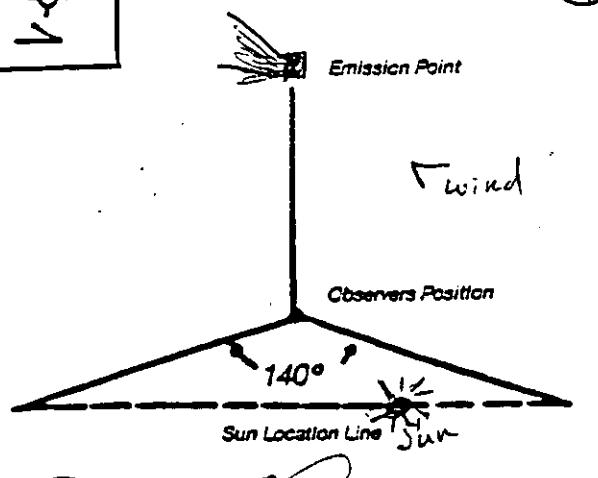
overview of Test site



Stack with Plume
Sun
Wind

SOURCE LAYOUT SKETCH

Draw North Arrow



COMMENTS (Describe Observation Point)

The exit of the Fan Housing. Green / rusty duct about 4 Feet above the ground. I used the building (green) as a background.

OBSERVER'S NAME (Print): Todd B. Benson

OBSERVER'S SIGNATURE: [signature] DATE: 12-05-94

ORGANIZATION: A.E.I.

CERTIFIED BY: UDEQ DATE: 10-94

Testing Company, Inc.

801-266-7111

Visible Emission Field Documentation

SOURCE NAME: Interstate Brick Run #2		
LOCATION: West Jordan, UTAH		
MAILING ADDRESS	CITY	STATE & ZIP: UTAH
PHONE #	SOURCE CONTACT: Jim Keck	
OBSERVATION DATE: 12-05-94	START TIME: 11:20	STOP TIME: 11:26
PROCESS EQUIPMENT: #4 Brick Production	FUEL TYPE: Electric	OPERATING MODE: Full
CONTROL EQUIPMENT: Baghouse DC-04 Line #4		OPERATING MODE: Full
DESCRIBE EMISSION POINT: Exit from Fan Housing		
HEIGHT ABOVE GROUND LEVEL: 4 Feet	HEIGHT RELATIVE TO OBSERVER: 4 Feet	
DISTANCE FROM OBSERVER: 20 Feet	DIRECTION FROM OBSERVER: North West	
DESCRIBE EMISSIONS: white / barely visible if at all		
EMISSION COLOR: white / tan	PLUME TYPE: CONTINUOUS ☒ FUGITIVE ☐ INTERMITTENT ☐	
WATER DROPLETS PRESENT: NO ☒ YES ☐	IF WATER DROPLET PLUME: ATTACHED ☐ DETACHED ☐	
Point in the Plume at Which Opacity was Determined: 1 Stack Diameter away from Fan exit		
DESCRIBE BACKGROUND (Color, etc.): Green / side of Building		
SKY CONDITIONS AND COLOR: Cloudy / Gray	WIND DIRECTION: West	WIND SPEED: 10-15 mph
AMBIENT TEMPERATURE: 41°F	WET BULB TEMP.	RH. percent

SEC / MIN	0	15	30	45	
1	0	0	0	0	
2	0	0	0	0	
3	0	0	0	0	
4	0	0	0	0	
5	0	0	0	0	
6	0	0	0	0	
7				Total	0
8				Avg	0
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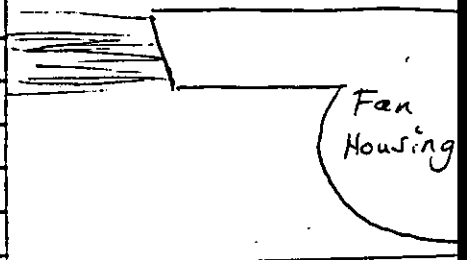
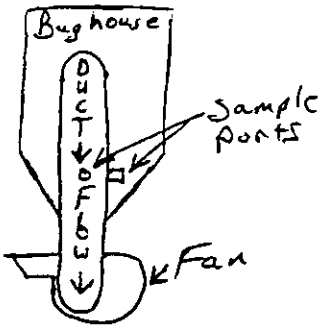
AVERAGE OPACITY FOR HIGHEST PERIOD

Emission Point



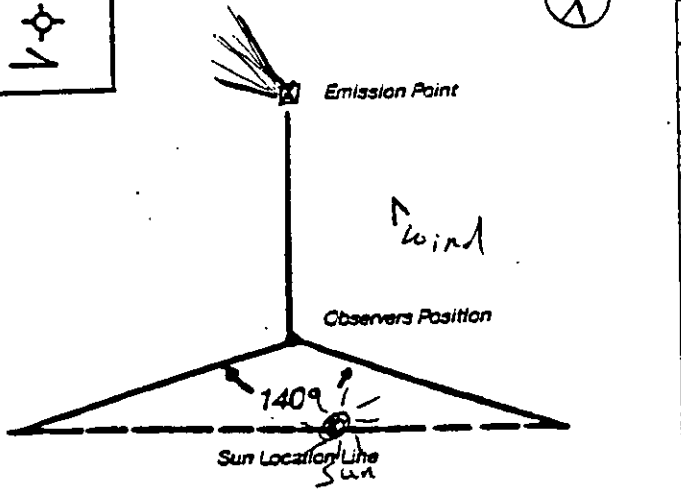
overview of Test site



Stack with Plume
Sun
Wind

SOURCE LAYOUT SKETCH

Draw North Arrow



COMMENTS (Describe Observation Point)

The exit of the Fan Housing Green / rusty duct about 4 Feet above the ground. I used the building (green) as a background

OBSERVER'S NAME (Print): Todd B. Benson			
OBSERVER'S SIGNATURE	DATE: 12-05-94		
ORGANIZATION: A.E.T.	CERTIFIED BY: UOEG	DATE: 12-94	

Testing Company, Inc.

Spanish Fork Utah 84660 801-266-7111

Visible Emission Field Documentation

SOURCE NAME	Interstate Brick Run # 3
LOCATION	West Jordan, UTAH
MAILING ADDRESS / CITY / STATE & ZIP	UTAH
PHONE # / SOURCE CONTACT	Jim Keck
OBSERVATION DATE / START TIME / STOP TIME	12-05-94 / 1:00 pm / 1:06 pm
PROCESS EQUIPMENT / FUEL TYPE / OPERATING MODE	#4 Brick Production / Electric / Full
CONTROL EQUIPMENT / OPERATING MODE	Baghouse DC-04 Line #4 / Full
DESCRIBE EMISSION POINT	Exit from fan Housing
HEIGHT ABOVE GROUND LEVEL / HEIGHT RELATIVE TO OBSERVER	4 Feet / 4 Feet
DISTANCE FROM OBSERVER / DIRECTION FROM OBSERVER	20 Feet / North
DESCRIBE EMISSIONS	White / Barely visible if at all
EMISSION COLOR / PLUME TYPE: CONTINUOUS ☒	white / tan
FUGITIVE ☐ INTERMITTENT ☐	
WATER DROPLETS PRESENT: NO ☒ YES ☐ / IF WATER DROPLET PLUME: ATTACHED ☐ DETACHED ☐	
Point in the Plume at Which Opacity was Determined	1 stack Diameter away from fan exit
DESCRIBE BACKGROUND (Color, etc.)	Green / Side of building
SKY CONDITIONS AND COLOR / WIND DIRECTION / WIND SPEED	Cloudy / Dark Gray / North West / 10-15 mph
AMBIENT TEMPERATURE / WET BULB TEMP. / RH. percent	41 °F

SEC / MIN	0	15	30	45	
1	0	0	0	0	
2	0	0	0	0	
3	0	0	0	0	
4	0	0	0	0	
5	0	0	0	0	
6	0	0	0	0	
7				Total	0
8				Avg	0
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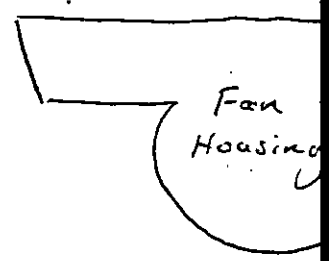
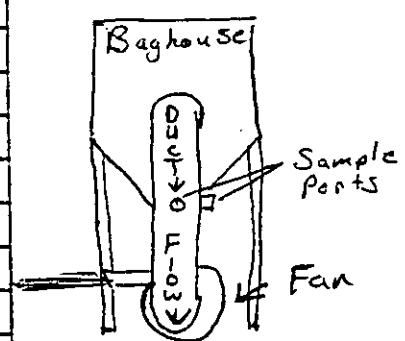
AVERAGE OPACITY FOR HIGHEST PERIOD

Emission Point



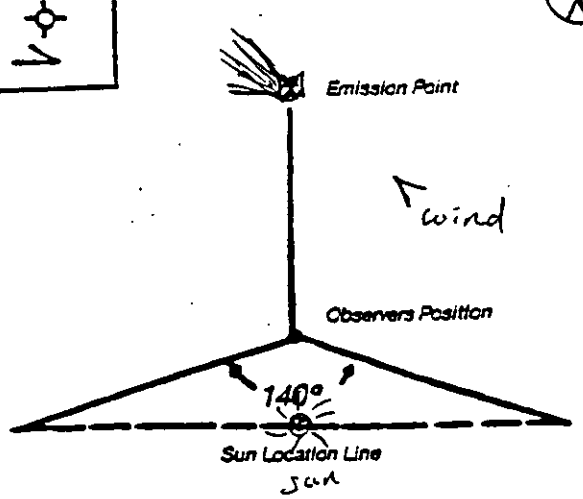
overview of Test Site



Stack with Plume
Sun
Wind

SOURCE LAYOUT SKETCH

Draw North Arrow



COMMENTS (Describe Observation Point)

The exit of the fan Housing, Green / rusty duct about 4 Feet above the ground, I used the building (green) as a background.

OBSERVER'S NAME (Print): Todd B. Benson

OBSERVER'S SIGNATURE: [signature] DATE: 12-05-94

ORGANIZATION: A.E.T.

CERTIFIED BY: UDEQ DATE: 10-94

Testing Company, Inc.

Spanish Fork Utah 84660

801-266-7111

Visible Emission Field Documentation

SOURCE NAME	Interstate Brick Run #1
LOCATION	Brick Crusher Grizzly
MAILING ADDRESS	
CITY	
STATE & ZIP	UTAH
PHONE #	
SOURCE CONTACT	Jim Keck
OBSERVATION DATE	12-06-94
START TIME	11:30
STOP TIME	11:36
PROCESS EQUIPMENT	Grizzly Brick Crusher
FUEL TYPE	Electric
OPERATING MODE	Full
CONTROL EQUIPMENT	Baghouse
OPERATING MODE	Full
DESCRIBE EMISSION POINT	Round Gray Duct going toward the Ground
HEIGHT ABOVE GROUND LEVEL	4 Feet
HEIGHT RELATIVE TO OBSERVER	5 Feet
DISTANCE FROM OBSERVER	25 Feet
DIRECTION FROM OBSERVER	North
DESCRIBE EMISSIONS	Light / very few if any at all
EMISSION COLOR	Tan
PLUME TYPE: CONTINUOUS ☒	FUGITIVE ☐ INTERMITTENT ☐
WATER DROPLETS PRESENT: NO ☒ YES ☐	IF WATER DROPLET PLUME: ATTACHED ☐ DETACHED ☐
Point in the Plume at Which Opacity was Determined	1 diameter away from end of Duct.
DESCRIBE BACKGROUND (Color, etc.)	A mound of Bricks, Gray / Brown
SKY CONDITIONS AND COLOR	Cloudy
WIND DIRECTION	N.E.
WIND SPEED	10-15 MPH
AMBIENT TEMPERATURE	38°F
WET BULB TEMP.	
RH. percent	

SEC / MIN	0	15	30	45	
1	0	0	0	0	
2	0	0	0	0	
3	0	0	0	0	
4	0	0	0	0	
5	0	0	0	0	
6	0	0	0	0	
7				Total:	0
8				Avg.	0
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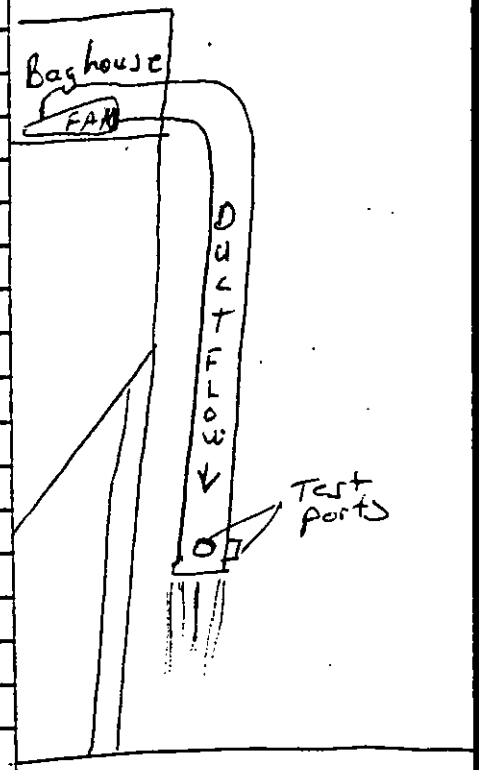
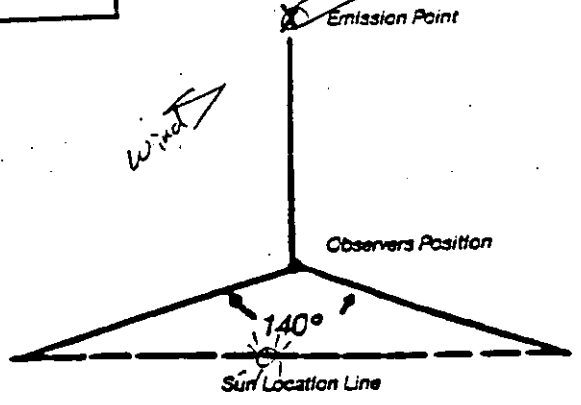
AVERAGE OPACITY FOR HIGHEST PERIOD



Stack with Plume
Sun
Wind

SOURCE LAYOUT SKETCH

Draw North Arrow



COMMENTS (Describe Observation Point)

Very Little visible output.
Probably because of the moisture in the aggregate (bricks).

OBSERVER'S NAME (Print): Todd B. Benson

OBSERVER'S SIGNATURE: Todd B. Benson

DATE: 12-06-94

ORGANIZATION: A.E.T.

CERTIFIED BY: UDEQ

DATE: 10-94

Testing Company, Inc.

Spanish Fork Utah 84660
801-266-7111

Visible Emission Field Documentation

SOURCE NAME	Interstate Brick Run#2
LOCATION	Brick Crusher Grizzly
MAILING ADDRESS / CITY / STATE & ZIP	UTAH
PHONE # / SOURCE CONTACT	Jim Keele
OBSERVATION DATE / START TIME / STOP TIME	12-06-94 / 1:40 PM / 1:46 PM
PROCESS EQUIPMENT / FUEL TYPE / OPERATING MODE	Grizzly Brick Crusher / Electric / Full
CONTROL EQUIPMENT / OPERATING MODE	Baghouse / Full
DESCRIBE EMISSION POINT	Round Gray Duct Going to the Ground
HEIGHT ABOVE GROUND LEVEL / HEIGHT RELATIVE TO OBSERVER	4 Feet / 5 Feet
DISTANCE FROM OBSERVER / DIRECTION FROM OBSERVER	20 Feet / N. E.
DESCRIBE EMISSIONS	Light / very few at all
EMISSION COLOR / PLUME TYPE: CONTINUOUS ☒ FUGITIVE ☐ INTERMITTENT ☐	Tan /
WATER DROPLETS PRESENT: NO ☒ YES ☐ / IF WATER DROPLET PLUME: ATTACHED ☐ DETACHED ☐	
Point in the Plume at Which Opacity was Determined	1 diameter away from stack exit
DESCRIBE BACKGROUND (Color, etc.)	A pile of Bricks / Brown
SKY CONDITIONS AND COLOR / WIND DIRECTION / WIND SPEED	Cloudy Gray / N.E. / 15-20 mph
AMBIENT TEMPERATURE / WET BULB TEMP. / RH. percent	42°F / — / —

SEC MIN	0	15	30	45	
1	0	0	0	0	
2	0	0	0	0	
3	0	0	0	0	
4	0	0	0	0	
5	0	0	0	0	
6	0	0	0	0	
7				Total	0
8				Avg	0
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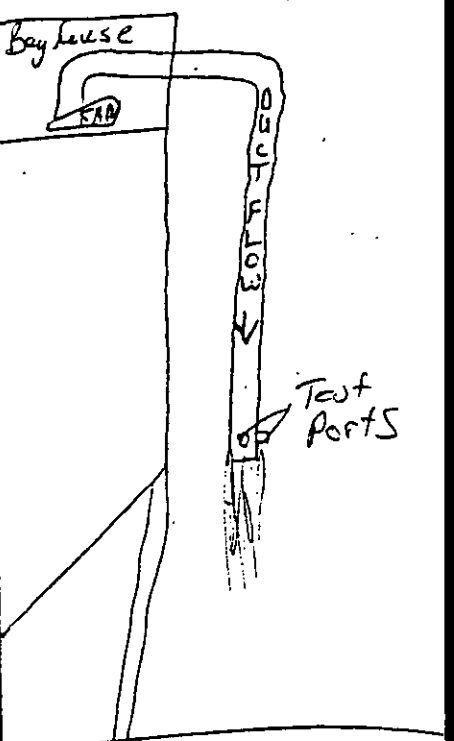
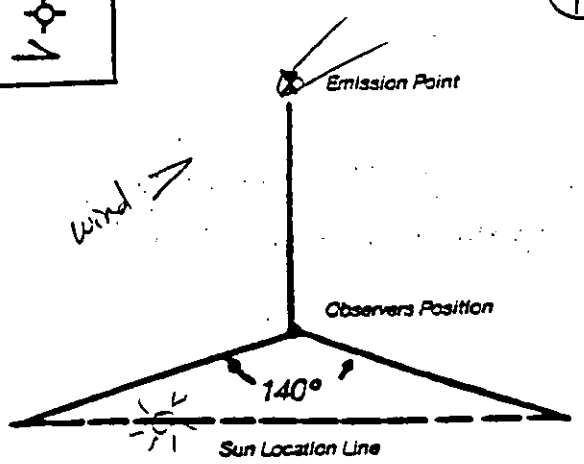
AVERAGE OPACITY FOR HIGHEST PERIOD



Stack with Plume
Sun
Wind

SOURCE LAYCUT SKETCH

Draw North Arrow



COMMENTS (Describe Observation Point)

Very little if any visible output from Duct.

Probably from excess moisture in bricks.

OBSERVER'S NAME (Print)	Todd B Benson
OBSERVER'S SIGNATURE / DATE	12-06-94
ORGANIZATION	A. E. I.
CERTIFIED BY / DATE	UDEQ / 10-94

Testing Company, Inc.

Spanish Fork Utah 84660
801-266-7111

Visible Emission Field Documentation

SOURCE NAME: Interstate Brick Run #3		
LOCATION		
MAILING ADDRESS	CITY	STATE & ZIP: UTAH
PHONE #	SOURCE CONTACT: Jim Keck	
OBSERVATION DATE: 12-06-94	START TIME: 3:10 PM	STOP TIME: 3:16 PM
PROCESS EQUIPMENT: Brick Crusher Grizzly	FUEL TYPE: Electric	OPERATING MODE: Full
CONTROL EQUIPMENT: Baghouse		OPERATING MODE: Full
DESCRIBE EMISSION POINT: Round Gray Duct Going toward the Ground		
HEIGHT ABOVE GROUND LEVEL: 4 Feet	HEIGHT RELATIVE TO OBSERVER: 6 Feet	
DISTANCE FROM OBSERVER: 20 Feet	DIRECTION FROM OBSERVER: N.E.	
DESCRIBE EMISSIONS: Light / very little if any at all		
EMISSION COLOR: Tan	PLUME TYPE: CONTINUOUS ☒ FUGITIVE ☐ INTERMITTENT ☐	
WATER DROPLETS PRESENT: NO ☒ YES ☐	IF WATER DROPLET PLUME: ATTACHED ☐ DETACHED ☐	
Point in the Plume at Which Opacity was Determined: 1 diameter away from exit of Duct		
DESCRIBE BACKGROUND (Color, etc.): Brown / Top of Building in the distance		
SKY CONDITIONS AND COLOR: Partly Cloudy	WIND DIRECTION: N.E.	WIND SPEED: 10-15 mph
AMBIENT TEMPERATURE: 42° F	WET BULB TEMP. ———	RH. percent ———

SEC / MIN	0	15	30	45
1	0	0	0	0
2	0	0	0	0
3	0	0	0	0
4	0	0	0	0
5	0	0	0	0
6	0	0	0	0
7				Total: 0
8				Avg. 0
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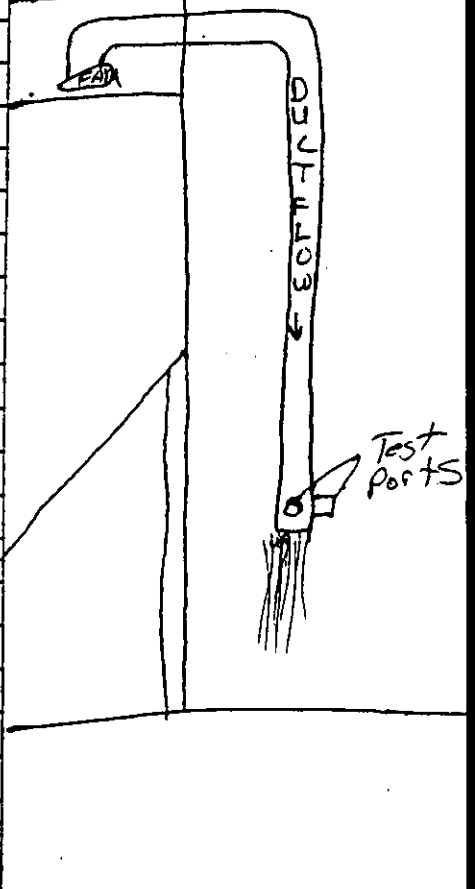
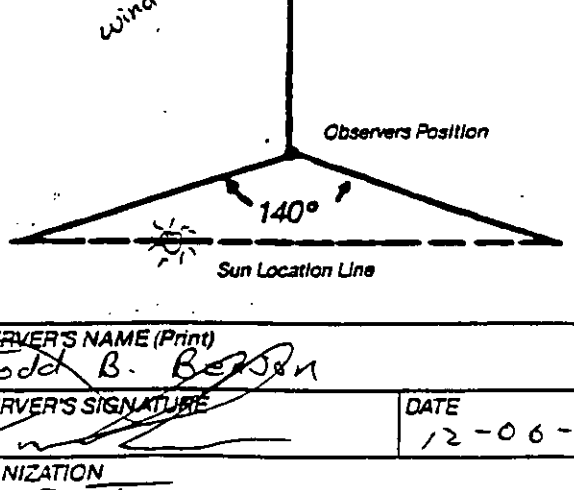
AVERAGE OPACITY FOR HIGHEST PERIOD



Stack with Plume
Sun
Wind

SOURCE LAYOUT SKETCH

Draw North Arrow



COMMENTS (Describe Observation Point)

Barely any visible emissions at all.

Aggregate was high in moisture.

OBSERVER'S NAME (Print): Todd B. Benson

OBSERVER'S SIGNATURE

DATE: 12-06-94

ORGANIZATION: A.E.T.

CERTIFIED BY: UDEQ

DATE: 10-94

Testing Company, Inc.

Spanish Fork Utah 84660

801-266-7111

Visible Emission Field Documentation

SOURCE NAME	Manistee Brick
LOCATION	#4 Kiln Outlet
MAILING ADDRESS	
CITY	West Jordan
STATE & ZIP	UT 84088
PHONE #	
SOURCE CONTACT	Mr. John Hewitt
OBSERVATION DATE	12-5-94
START TIME	1430
STOP TIME	1836
PROCESS EQUIPMENT	Brick Kiln
FUEL TYPE	NG
OPERATING MODE	Normal
CONTROL EQUIPMENT	Wet Scrubber
OPERATING MODE	Normal
DESCRIBE EMISSION POINT	Source Brick Stack
HEIGHT ABOVE GROUND LEVEL	75'
HEIGHT RELATIVE TO OBSERVER	40'
DISTANCE FROM OBSERVER	350'
DIRECTION FROM OBSERVER	East
DESCRIBE EMISSIONS	Exhaust from Brick Kiln
EMISSION COLOR	White
PLUME TYPE: CONTINUOUS ☒	FUGITIVE ☐ INTERMITTENT ☐
WATER DROPLETS PRESENT:	NO ☒ YES ☐
IF WATER DROPLET PLUME:	ATTACHED ☒ DETACHED ☐
Point in the Plume at Which Opacity was Determined	After steam dissipates
DESCRIBE BACKGROUND (Color, etc.)	Mountain
SKY CONDITIONS AND COLOR	Partly Cloudy / Blue
WIND DIRECTION	Northeast
WIND SPEED	10-
AMBIENT TEMPERATURE	45°
WET BULB TEMP.	—
RH, percent	—

SEC / MIN	0	15	30	45
1	5	5	0	5
2	0	0	5	5
3	5	10	5	5
4	10	5	5	5
5	0	5	10	5
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110/24

4.58%

AVERAGE OPACITY FOR HIGHEST PERIOD

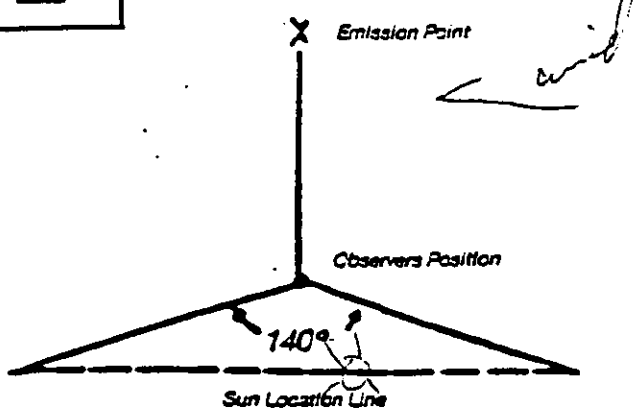
Stack with Plume

Sun

Wind

SOURCE LAYOUT SKETCH

Draw North Arrow



COMMENTS (Describe Observation Point)

W/EPA-5 & 13B #1 Cyclone

OBSERVER'S NAME (Print) Craig Johnson

OBSERVER'S SIGNATURE Craig Johnson

DATE 12-5-94

ORGANIZATION HET

CERTIFIED BY Ron Koontz

DATE 4-95

Testing Company, Inc. 801-266-7111

Visible Emission Field Documentation

SOURCE NAME	Interstate Brick
LOCATION	#4 Brick Kiln
MAILING ADDRESS	
CITY	West Jordan
STATE & ZIP	UT 84084
PHONE #	
SOURCE CONTACT	Mr. John Jewett
OBSERVATION DATE	12-6-94
START TIME	1130
STOP TIME	1136
PROCESS EQUIPMENT	Brick Kiln
FUEL TYPE	NG
OPERATING MODE	Normal
CONTROL EQUIPMENT	Wet Scrubber
OPERATING MODE	Normal
DESCRIBE EMISSION POINT	Main Brick Stack
HEIGHT ABOVE GROUND LEVEL	75'
HEIGHT RELATIVE TO OBSERVER	45
DISTANCE FROM OBSERVER	300'
DIRECTION FROM OBSERVER	West
DESCRIBE EMISSIONS	Exhaust gas plume
EMISSION COLOR	White
PLUME TYPE: CONTINUOUS ☑	FUGITIVE ☐ INTERMITTENT ☐
WATER DROPLETS PRESENT: NO ☐ YES ☑	IF WATER DROPLET PLUME: ATTACHED ☑ DETACHED ☐
Point in the Plume at Which Opacity was Determined	After steam fades
DESCRIBE BACKGROUND (Color, etc.)	Blue & Dark Clouds
SKY CONDITIONS AND COLOR	PC / Blue
WIND DIRECTION	N
WIND SPEED	10-20
AMBIENT TEMPERATURE	45°
WET BULB TEMP.	—
RH. percent	—

SEC MIN	0	15	30	45
1	5	5	10	10
2	5	5	5	5
3	10	10	5	5
4	5	10	10	5
5	5	5	0	0
6	5	5	0	5
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140/24

5.83%

AVERAGE OPACITY FOR HIGHEST PERIOD

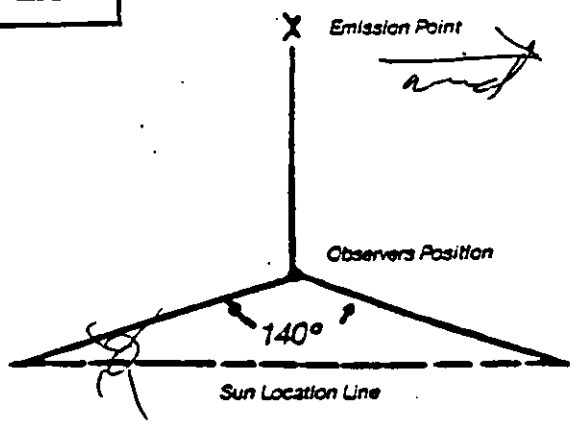
Stack with Plume

Sun

Wind

SOURCE LAYOUT SKETCH

Draw North Arrow



COMMENTS (Describe Observation Point)

W/SW- S & 130 #2 Louvers

OBSERVER'S NAME (Print) GREG JOHNSON

OBSERVER'S SIGNATURE Greg Johnson

DATE 12-6-94

ORGANIZATION AET

CERTIFIED BY Ron Gaudy Utah

DATE 4-95

nerican Environmental
sting Company, Inc.
Spanish Fork, Utah 84660
801-266-7111

Visible Emission Field Documentation

SOURCE NAME	Industrial Birch
LOCATION	#4 Kiln
MAILING ADDRESS	CITY: West Haven; STATE & ZIP: UT 84088
PHONE #	SOURCE CONTACT: Mr. Allen Hewitt
OBSERVATION DATE	12-6-94
START TIME	1500
STOP TIME	1506
PROCESS EQUIPMENT	Birch Kiln; FUEL TYPE: NG; OPERATING MODE: Normal
CONTROL EQUIPMENT	Wet Scrubber; OPERATING MODE: Normal
DESCRIBE EMISSION POINT	Square stack
HEIGHT ABOVE GROUND LEVEL	75'
HEIGHT RELATIVE TO OBSERVER	35
DISTANCE FROM OBSERVER	350'
DIRECTION FROM OBSERVER	East
DESCRIBE EMISSIONS	Exhaust gases from birch Kiln
EMISSION COLOR	White
PLUME TYPE: CONTINUOUS ☒ FUGITIVE ☐ INTERMITTENT ☐	
WATER DROPLETS PRESENT: NO ☐ YES ☒	IF WATER DROPLET PLUME: ATTACHED ☒ DETACHED ☐
Point in the Plume at Which Opacity was Determined	after steam leaves stack
DESCRIBE BACKGROUND (Color, etc.)	Dark cloudy skies
SKY CONDITIONS AND COLOR	Clouds - dark
WIND DIRECTION	North
WIND SPEED	20 - 30
AMBIENT TEMPERATURE	45°
WET BULB TEMP.	—
RH. percent	—

SEC / MIN	0	15	30	45
1	0	0	5	0
2	5	0	0	5
3	5	5	0	0
4	0	5	5	0
5	5	0	0	5
6	0	5	0	5
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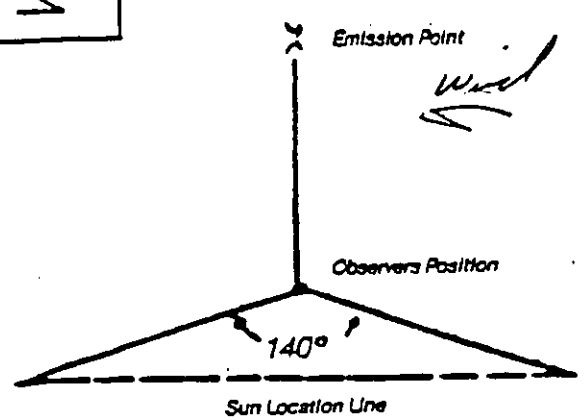
45/24

1.88%

AVERAGE OPACITY FOR HIGHEST PERIOD

Stack with Plume — Sun — Wind

SOURCE LAYOUT SKETCH — Draw North Arrow



COMMENTS (Describe Observation Point)

w/EPA-5 & 36 #3 Complaint

OBSERVER'S NAME (Print): Gregg Johnson

OBSERVER'S SIGNATURE: Greg Johnson — DATE: 12-6-94

ORGANIZATION: AET

CERTIFIED BY: Ron Kenney — Visible — DATE: 4-95

STATE OF UTAH
DIVISION OF AIR QUALITY

This certifies that RYAN BENSON

has successfully completed the Visible Emissions Evaluation Course conducted by the Division of Air Quality and has met the minimum requirements necessary to evaluate visible emissions, according to EPA Method 9.

Director, Division of Air Quality

Valid until APR 19 1995

STATE OF UTAH
DIVISION OF AIR QUALITY

This certifies that RICK HAWKINS

has successfully completed the Visible Emissions Evaluation Course conducted by the Division of Air Quality and has met the minimum requirements necessary to evaluate visible emissions, according to EPA Method 9.

Director, Division of Air Quality

Valid until APR 20 1995

STATE OF UTAH
DIVISION OF AIR QUALITY

This certifies that TODD BENSON

has successfully completed the Visible Emissions Evaluation Course conducted by the Division of Air Quality and has met the minimum requirements necessary to evaluate visible emissions, according to EPA Method 9.

Director, Division of Air Quality

Valid until APR 20 1995

STATE OF UTAH
DIVISION OF AIR QUALITY

This certifies that DAVID HUNT

has successfully completed the Visible Emissions Evaluation Course conducted by the Division of Air Quality and has met the minimum requirements necessary to evaluate visible emissions, according to EPA Method 9.

Director, Division of Air Quality

Valid until APR 19 1995

STATE OF UTAH
DIVISION OF AIR QUALITY

This certifies that JD SCHILLER

has successfully completed the Visible Emissions Evaluation Course conducted by the Division of Air Quality and has met the minimum requirements necessary to evaluate visible emissions, according to EPA Method 9.

Director, Division of Air Quality

Valid until APR 20 1995

CARL KOONTZ ASSOCIATES
of Nashville, Tennessee
This is to acknowledge that
GREG E. JOHNSON
successfully participated in Visible Emissions training on Nov 4, 1994
and is qualified to evaluate Visible Emissions for a period of six (6) months from the date of certification.
Carl Koontz
Instructor

CARL KOONTZ ASSOCIATES
of Nashville, Tennessee
This is to acknowledge that
J. PAUL BENSON
successfully participated in Visible Emissions training on Nov 4, 1994
and is qualified to evaluate Visible Emissions for a period of six (6) months from the date of certification.
Carl Koontz
Instructor

CARL KOONTZ ASSOCIATES
of Nashville, Tennessee
This is to acknowledge that
V. BRENT BENSON
successfully participated in Visible Emissions training on Nov 4, 1994
and is qualified to evaluate Visible Emissions for a period of six (6) months from the date of certification.
Carl Koontz
Instructor

Appendix "J"
(Calibration Data)

American Environmental Testing Company Inc.

Reno, Nevada
702-786-8553

Phoenix, Arizona
602-253-3354

Salt Lake City, Utah
801-266-7111

American Environmental Testing Company, Inc.

565 South Birch Drive
Spanish Fork, Utah 84660
(801) 266-7111

Company: Intermountain Birch Date: 12-5-94

Source: #4 Kiln Calibrated By: JJ

NOZZLE CALIBRATION

Nozzle Identification Number	D_1 (In.)	D_2 (In.)	D_3 (In.)	ΔD (In.)	D average
#12-1/2"	0.501	0.501	0.501	0.000	0.501
12-644 #12-1/2"	0.501	0.501	0.501	0.000	0.501
#12-1/2"	0.502	0.501	0.500	0.002	0.501

Where:

$D_{1,2,3}$ = Nozzle diameter measured on a different diameter, (In.).
Tolerance = measure within 0.001 inches (0.25 mm).

ΔD = Maximum difference in any two measurements, (In.).
Tolerance =0.004 inches (0.1 mm).

D average = Average of D_1, D_2, D_3.

American Environmental Testing Company, Inc.

565 South Birch Drive

Spanish Fork, Utah 84660

(801) 266-7111

Company: Interstate Brick Date: 12-16-94

Source: Grizzly Bag House Calibrated By: J.BB

NOZZLE CALIBRATION

Nozzle Identification Number	D_1 (in.)	D_2 (in.)	D_3 (in.)	ΔD (in.)	D average
# 12 Run #1	0.135	0.134	0.135	0.001	0.1348
#12 Run #2	0.135	0.134	0.135	0.006	0.1348
#12 Run #3	0.135	0.134	0.135	0.001	0.1348

Where:

$D_{1,2,3}$ = Nozzle diameter measured on a different diameter, (in.).
Tolerance = measure within 0.001 inches (0.25 mm).

ΔD = Maximum difference in any two measurements, (in.).
Tolerance =0.004 inches (0.1 mm).

D average = Average of D_1, D_2, D_3.

American Environmental Testing Company, Inc.

565 South Birch Drive

Spanish Fork, Utah 84660

(801) 266-7111

Company: Interstate Brick Date: 12-5-94

Source: DC #3 Baghouse Calibrated By: R.H.

NOZZLE CALIBRATION

Nozzle Identification Number	D_1 (in.)	D_2 (in.)	D_3 (in.)	ΔD (in.)	D average
#1 #8 0.215	0.215	0.215	0.215	0.000	0.215
#11 0.15	0.15	0.15	0.15	0.000	0.15
#2 #8 0.215	0.215	0.214	0.215	0.001	0.2146
#11 0.15	0.150	0.151	0.151	0.001	0.1506
#3 #8 0.215	0.215	0.215	0.215	0.000	0.215
6-94 #11 0.15	0.15	0.15	0.15	0.000	0.15

Where:

$D_{1,2,3}$ = Nozzle diameter measured on a different diameter, (in.).
Tolerance = measure within 0.001 inches (0.25 mm).

ΔD = Maximum difference in any two measurements, (in.).
Tolerance =0.004 inches (0.1 mm).

D average = Average of D_1, D_2, D_3.

American Environmental Testing Company, Inc.

565 South Birch Drive

Spanish Fork, Utah 84660

(801) 266-7111

Company: Interstate Brick Date: 12-5-94

Source: #4 OC Baghouse Calibrated By: BH

NOZZLE CALIBRATION

Nozzle Identification Number	D_1 (in.)	D_2 (in.)	D_3 (in.)	ΔD (in.)	D average
#8 Run #1	0.216	0.216	0.216	0.000	0.216
#8 Run #2	0.216	0.216	0.216	0.000	0.216
#8 Run #3	0.216	0.216	0.216	0.000	0.216

Where:

$D_{1,2,3}$ = Nozzle diameter measured on a different diameter, (in.).
Tolerance = measure within 0.001 inches (0.25 mm).

ΔD = Maximum difference in any two measurements, (in.).
Tolerance =0.004 inches (0.1 mm).

D average = Average of D_1, D_2, D_3.

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Meter Box Calibration Data Form
(English Units)

Date	Barometric Pressure	Meter Box Number
9/19/94	25.55	RAC #2824

Average Yi	Average ΔH	Calibrated By	Std. Meter Yi
0.917	1.613	BAL - GEJ	0.99497

Orifice Manometer Setting ΔH	Standard Meter (Vw) Ft3	Dry Gas Meter (Vd) Ft3	Wet Test Meter (Tw) °F	ΔH/13.6	Wet Test Meter Average Temp.
0.50	4.53	5	70 68	0.03676	69
1.00	4.62	5	70 69	0.07353	69.5
1.50	9.101	10	70 69	0.11029	69.5
2.00	8.942	10	68 69	0.14706	68.5
3.00	8.794	10	69 69	0.22059	69
4.00	8.794	10	69 69	0.29412	69

Inlet (Td i) °F	Dry Gas Meter Outlet (Td o) °F	Average (Td) °F	Time Ø Minutes	Yi	ΔH
69 73	73 83	74.50	9.95	0.9095	1.5669
74 77	84 90	81.25	7.117	0.9371	1.5251
75 79	87 93	83.50	11.914	0.9255	1.6452
77 81	91 98	86.75	10.067	0.9152	1.6067
82 85	99 102	92.00	8.275	0.9052	1.6708
86 88	102 104	95.00	7.167	0.9075	1.6621
				Average Yi 0.917	Average ΔH 1.613

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Meter Box Calibration Data Form
(English Units)

Date	Barometric Pressure	Meter Box Number
9/29/94	25.62	RAC #145-569

Average Yi	Average ΔH	Calibrated By	Std. Meter Yi
0.998	1.748	BAL - GEJ	0.99497

Orifice Manometer Setting ΔH	Standard Meter (Vw) Ft3	Dry Gas Meter (Vd) Ft3	Wet Test Meter (Tw) °F	ΔH/13.6	Wet Test Meter Average Temp.
0.50	4.853	5	67 67	0.03676	67
1.00	4.802	5	67 67	0.07353	67
1.50	9.667	10	66 67	0.11029	66.5
2.00	9.637	10	66 67	0.14706	66.5
3.00	9.594	10	67 67	0.22059	67
4.00	9.605	10	67 67	0.29412	67

Dry Gas Meter Inlet (Td i) °F	Dry Gas Meter Outlet (Td o) °F	Dry Gas Meter Average (Td) °F	Time Ø Minutes	Yi	ΔH
71	92	82.00	11.183	0.9918	1.6833
74	91				
76	93	85.50	8.05	0.9863	1.7703
78	95				
79	95	89.50	12.894	0.9996	1.6657
82	102				
82	100	93.25	11.517	1.0018	1.7708
85	106				
86	107	97.75	9.417	1.0016	1.7808
89	109				
89	110	100.25	8.267	1.0044	1.8175
91	111				
				Average Yi	Average ΔH
				0.998	1.748

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Meter Box Calibration Data Form
(English Units)

Date	Barometric Pressure	Meter Box Number
9/19/94	25.71	CR #(097)

Average Yi	Average ΔH	Calibrated By	Std. Meter Yi
1.085	1.849	BAL - GEJ	0.99497

Orfice Manometer Setting ΔH	Standard Meter (Vw) Ft3	Dry Gas Meter (Vd) Ft3	Wet Test Meter (Tw) °F	ΔH/13.6	Wet Test Meter Average Temp.
0.50	5.4	5	66 66	0.03676	66
1.00	5.54	5	66 67	0.07353	66.5
1.50	10.85	10	67 67	0.11029	67
2.00	10.84	10	67.5 68	0.14706	67.75
3.00	10.99	10	68.5 68.5	0.22059	68.5
4.00	11.03	10	68.5 68.5	0.29412	68.5

Dry Gas Meter Inlet (Td i) °F	Dry Gas Meter Outlet (Td o) °F	Dry Gas Meter Average (Td) °F	Time Ø Minutes	Yi	ΔH
68	67	67.50	12.81	1.0761	1.8196
68	67				
69	67	68.25	9.29	1.1029	1.8194
69	68				
69	68	68.75	14.91	1.0785	1.8345
70	68				
70	68	69.25	13.001	1.0755	1.8667
70	69				
70	71	70.50	10.78	1.0883	1.8738
70	71				
71	72	71.50	9.4	1.0912	1.8824
71	72				
				Average Yi	Average ΔH
				1.085	1.849

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Pitot Tube Calibration Form

Pitot Tube Identification Number: 6" - A Date: 9/6/94

Calibrated By: RBB - JDS

"A" Side Calibration

Run Number	P std cm H20 (inches H20)	P s cm H20 (inches H20)	Cp (S)	Deviation
1	0.4	0.565	0.8414	0.00208
2	0.38	0.54	0.8389	-0.00046
3	0.4	0.57	0.8377	-0.00162
		Average:	0.8393	

"B" Side Calibration

Run Number	P std cm H20 (inches H20)	P s cm H20 (inches H20)	Cp (S)	Deviation
1	0.36	0.51	0.8402	-0.00332
2	0.35	0.49	0.8452	0.00166
3	0.35	0.49	0.8452	0.00166
		Average:	0.8435	

A & B Average = 0.8414

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Pitot Tube Calibration Form

Pitot Tube Identification Number: 6" - B

Date: 9/6/94

Calibrated By: VBB - JDS

"A" Side Calibration

Run Number	P std cm H20 (Inches H20)	P s cm H20 (Inches H20)	Cp (S)	Deviation
1	0.35	0.5	0.8367	-0.00283
2	0.35	0.49	0.8452	0.00566
3	0.35	0.5	0.8367	-0.00283
		Average:	0.8395	

"B" Side Calibration

Run Number	P std cm H20 (Inches H20)	P s cm H20 (Inches H20)	Cp (S)	Deviation
1	0.34	0.48	0.8416	-0.00476
2	0.34	0.47	0.8505	0.00415
3	0.33	0.46	0.8470	0.00061
		Average:	0.8464	

A & B Average = 0.8429

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Pitot Tube Calibration Form

Pitot Tube Identification Number: 8' - C

Date: 9/6/94

Calibrated By: BBB - JDS

"A" Side Calibration

Run Number	P std cm H20 (Inches H20)	P s cm H20 (Inches H20)	Cp (S)	Deviation
1	0.25	0.355	0.8392	0.00034
2	0.25	0.36	0.8333	-0.00550
3	0.26	0.365	0.8440	0.00516
		Average:	**0.8388**	

"B" Side Calibration

Run Number	P std cm H20 (Inches H20)	P s cm H20 (Inches H20)	Cp (S)	Deviation
1	0.25	0.355	0.8392	-0.00081
2	0.25	0.355	0.8392	-0.00081
3	0.255	0.36	0.8416	0.00163
		Average:	**0.8400**	

A & B Average = 0.8394

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Pitot Tube Calibration Form

Pitot Tube Identification Number: 11' - A

Date: 9/6/94

Calibrated By: JDS - BAL

"A" Side Calibration

Run Number	P std cm H20 (inches H20)	P s cm H20 (inches H20)	Cp (S)	Deviation
1	0.36	0.51	0.8402	-0.00069
2	0.38	0.54	0.8389	-0.00198
3	0.37	0.52	0.8435	0.00267
		Average:	0.8409	

"B" Side Calibration

Run Number	P std cm H20 (inches H20)	P s cm H20 (inches H20)	Cp (S)	Deviation
1	0.4	0.57	0.8377	-0.00162
2	0.38	0.54	0.8389	-0.00046
3	0.4	0.565	0.8414	0.00208
		Average:	0.8393	

A & B Average = 0.8401

American Environmental Testing Company, Inc.
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Stack Temperature Sensor Calibration Form

Thermocouple Number: #1 Digital -# 2 Omega

Date: 9/6/94

Barometric Pressure: 25.73

Calibrated By: JDS - RPH

Reference: ERTCO - Mg - Glass

	Reference Point Number	Source a (specify)	Reference Thermometer Temperature °F	Thermocouple Potentiometer Temperature °F	Temperature Difference b %
	a)	Ice Water	43	44	-0.32
#1	b)	Hot H20	158	159	-0.23
Digital	c)	Boiling H20	211	212	-0.21
	d)	Warm Oil	230	227	0.60
	e)	Hot Oil	331	330	0.17
	f)	Boiling Oil	355	356	-0.16
	a)	Ice Water	44	45	-0.32
#2	b)	Hot H20	155	156	-0.23
Omega	c)	Boiling H20	209	221	-2.49
	d)	Warm Oil	238	238	0.00
	e)	Hot Oil	331	333	-0.33
	f)	Boiling Oil	378	379	-0.15

a Type of calibration system used.

b $\frac{\text{(reference temp. °C + 273) - (test thermometer temp. °C + 273)}}{\text{reference temperature °C + 273}} * 100 < 1.5\%$

American Environmental Testing Company, Inc.
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Balance Calibration Data Form

Balance Name: Ohaus GA - 200 S2 (Analytical) Number : 1292

Balance Name: Mettler - BB - 3000 (Top Loader) Number : K6888

Classification of Standard Weights: Type "S" W.B.S. Analyst: RPH - JDS

A 200 S Ohaus GA - 200 S2

Date	0.500 g	1.0000 g	10.0000 g	50.0000 g	100.0000 g
3/2/94	0.500	1.0001	10.0001	50.0002	100.0002
9/6/94	0.500	1.0000	10.0001	50.0001	100.0001

U 3600 Mettler - BB - 3000

Date	0.500 g	1.0000 g	10.0000 g	50.0000 g	100.0000 g
3/2/94	0.5	1.0	10.0	50.1	100.1
9/6/94	0.5010	1.0001	10.0000	50.0001	100.0000

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Sample Box Temperature Sensor Calibration Form

Sample Box Number: CR#1A - UT #1A - RAC #1A-RAC #2A

Date: 9/6/94

Barometric Pressure: 25.71

Calibrated By: RPH - RBB

Reference: ERTCO - 105 - SNBS

	Reference Point Number	Source a (specify)	Reference Thermometer Temperature °F	Thermocouple Potentiometer Temperature °F	Temperature Difference b %
	3	Oven On	255	257	-0.38
CR	4	Oven On	263	261	0.37
#1A	2	Oven On	150	150	0.00
	1	Cold H20	47	46	0.31
	8	Oven On	70	71	-0.29
	7	Oven On	73	73	0.00
	3	Oven On	247	249	-0.38
UTA	4	Oven On	252	253	-0.19
#1A	2	Oven On	148	149	-0.24
	1	Cold H20	46	47	-0.31
	8	Oven On	80	81	-0.28
	7	Oven On	79	79	0.00
	3	Oven On	266	264	0.37
RAC	4	Oven On	247	247	0.00
#1A	2	Oven On	145	146	-0.24
	1	Cold H20	49	50	-0.31
	8	Oven On	83	83	0.00
	7	Oven On	81	82	-0.28
	3	Oven On	236	238	-0.39
RAC	4	Oven On	248	250	-0.38
#2A	2	Oven On	162	160	0.46
	1	Cold H20	45	46	-0.31
	8	Oven On	80	82	-0.57
	7	Oven On	81	80	0.28

a Type of calibration system used.

b $\frac{(\text{reference temp. °C} + 273) - (\text{test thermometer temp. °C} + 273)}{\text{reference temperature °C} + 273} * 100 < 1.5\%$

American Environmental Testing Company, Inc.
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Balance Calibration Data Form

Balance Name: Satorius - A 200 S (Analytical) Number : 35120053

Balance Name: Satorius - U3600 (Top Loader) Number : 35120087

Classification of Standard Weights: Type "S" W.B.S. Analyst: BAL - DFH

A 200 S

Date	0.500 g	1.0000 g	10.0000 g	50.0000 g	100.0000 g
3/2/94	0.500	0.9999	10.0001	50.0001	100.0001
9/6/94	0.5000	1.0000	10.0000	50.0001	100.0000

U 3600

Date	0.500 g	1.0000 g	10.0000 g	50.0000 g	100.0000 g
3/2/94	0.5000	1.0000	10.0000	50.0001	100.1000
9/6/94	0.501	1.0010	10.0000	50.0001	100.0001

American Environmental Testing Company, Inc.
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POSTTEST DRY GAS METER CALIBRATION DATA FORM
(English Units)

Date	Barometric Pressure	Meter Box Number	Plant
12/9/94	25.51	CR(097)	ISB West Jordan, Utah

Calibrated By	Pretest Yi	Average Yi	Low Span	High Span
VBB - DFH	1.085	1.075	1.031	1.139

Orfice Manometer Setting ΔH	Standard Meter (Vw) Ft3	Dry Gas Meter (Vd) Ft3	Wet Test Meter (Tw) °F	ΔH/13.6	Wet Test Meter Average Temp.
2.00	10.839	10.005	67 67	0.14706	67
2.00	10.841	10.07	68 68	0.14706	68
2.00	10.85	10.012	69 69	0.14706	69

Inlet (Td i) °F	Dry Gas Meter Outlet (Td o) °F	Average (Td) °F	Time Ø Minutes	Yi
67 67	68 68	67.50	11.518	1.078
67 68	69 69	68.25	11.509	1.071
68 68	69 69	68.50	11.511	1.076
				Average Yi
				1.075

Post Test Temperature Check

Date: 12/9/94 Reference: ERTCO Hg Thermometer

Meter Box: CR #1(097) Sample Box: CR #1A

	Meter Box	Reference		Sample Box	Reference
Meter In:	69	69	Impinger In:	204	200
Meter Out:	69	81	Impinger Out:	48	49
			Oven:	245	246

American Environmental Testing Company, Inc.
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POSTTEST DRY GAS METER CALIBRATION DATA FORM
(English Units)

Date	Barometric Pressure	Meter Box Number	Plant
12/9/94	25.51	RAC #145-569	ISB West Jordan, Utah

Calibrated By	Pretest Yi	Average Yi	Low Span	High Span
VBB - DFH	0.998	1.011	0.948	1.048

Orifice Manometer Setting ΔH	Wet Test Meter (Vw) Ft3	Dry Gas Meter (Vd) Ft3	Wet Test Meter (Tw) °F	ΔH/13.6	Wet Test Meter Average Temp.
2.00	10.06	9.963	67 67	0.14706	67
2.00	10.12	10.017	68 68	0.14706	68
2.00	10.11	9.986	69 69	0.14706	69

Dry Gas Meter Inlet (Td i) °F	Dry Gas Meter Outlet (Td o) °F	Dry Gas Meter Average (Td) °F	Time Ø Minutes	Yi
67	68	68.25	11.511	1.006
69	69			
71	70	71.25	11.506	1.011
73	71			
75	72	74.25	11.522	1.017
77	73			
				Average Yi
				1.011

Post Test Temperature Check

Date: 12/9/94 Reference: ERTCO Hg Thermometer

Meter Box: RAC #145-569 Sample Box: RAC #1A

	Meter Box	Reference		Sample Box	Reference
Meter In:	77	79	Impinger In:	201	191
Meter Out:	72	74	Impinger Out:	47	47
			Oven:	237	241

American Environmental Testing Company, Inc.
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POSTTEST DRY GAS METER CALIBRATION DATA FORM
(English Units)

Date	Barometric Pressure	Meter Box Number	Plant
12/9/94	25.51	RAC #2824	ISB West Jordan, Utah

Calibrated By	Pretest Yi	Average Yi	Low Span	High Span
VBB - DFH	0.998	1.010	0.948	1.048

Orfice Manometer Setting ΔH	Wet Test Meter (Vw) Ft3	Dry Gas Meter (Vd) Ft3	Wet Test Meter (Tw) °F	ΔH/13.6	Wet Test Meter Average Temp.
2.00	10.08	9.98	67 67	0.14706	67
2.00	10.01	10.011	68 68	0.14706	68
2.00	10.1	9.973	69 69	0.14706	69

Dry Gas Meter Inlet (Td i) °F	Dry Gas Meter Outlet (Td o) °F	Average (Td) °F	Time Ø Minutes	Yi
68	68	69.00	10.052	1.008
71	69			
74	70	72.75	10.069	1.003
76	71			
79	72	76.00	10.077	1.020
81	72			
				Average Yi
				1.010

Post Test Temperature Check

Date: 12/9/94 Reference: ERTCO Hg Thermometer

Meter Box: RAC #2824 Sample Box: RAC #2A

	Meter Box	Reference		Sample Box	Reference
Meter In:	78	80	Impinger In:	205	197
Meter Out:	73	73	Impinger Out:	49	49
			Oven:	240	245

SO-CAL Airgas

SPECIALTY GAS DIVISION
11711 S. Alameda Street
Los Angeles, CA 90059
(213) 564-5711

ANALYTICAL REPORT - PRODUCT CERTIFICATION

TO: Mountain Airgas

DATE: 31 Jan 1994

P.O. NO: 005422

EPA Protocol Procedure G-1

CYLINDER NO.	CONSTITUENTS CONCENTRATION:	NOMINAL	ACTUAL
CC104484	Sulfur Dioxide	500 PPM	514.6 PPM
	Nitrogen	Balance	Balance

CERTIFICATION PERIOD (months): 36
EXPIRATION DATE: January 31, 1997
Cylinder Pressure: 2000 psig
Do not use below 150 psig

William L. Vernon
ANALYST
William L. Vernon

SO-CAL Airgas

SPECIALTY GAS DIVISION
11711 S. Alameda Street
Los Angeles, CA 90059
(213) 564-5711

ANALYTICAL REPORT - PRODUCT CERTIFICATION

TO: Mountain Airgas

DATE: 31 Jan 1994

P.O. NO: 005422

EPA Protocol Procedure G-1

CYLINDER NO.	CONSTITUENTS CONCENTRATION:	NOMINAL	ACTUAL
CC10514	Sulfur Dioxide	850 PPM	901.6 PPM
	Nitrogen	Balance	Balance

CERTIFICATION PERIOD (months): 36
EXPIRATION DATE: January 31, 1997
Cylinder Pressure: 2000 psig
Do not use below 150 psig

ANALYST

William L. Vernon

SO-CAL Airgas

SPECIALTY GAS DIVISION
11711 S. Alameda Street
Los Angeles, CA 90059
(213) 564-5711

ANALYTICAL REPORT - PRODUCT CERTIFICATION

TO: Mountain Airgas

DATE: 31 Jan 1994

P.O. NO: 005422

EPA Protocol Procedure G-1

CYLINDER NO.	CONSTITUENTS CONCENTRATION:	NOMINAL	ACTUAL
CC3775	Sulfur Dioxide	150 PPM	163.5 PPM
	Nitrogen	Balance	Balance

CERTIFICATION PERIOD (months): 24
EXPIRATION DATE: January 31, 1996
Cylinder Pressure: 2000 psig
Do not use below 150 psig

ANALYST

William L. Vernon

SO-CAL Airgas

SPECIALTY GAS DIVISION
11711 S. Alameda Street
Los Angeles, CA 90059
(213) 564-5711

ANALYTICAL REPORT - PRODUCT CERTIFICATION

TO: Mountain Airgas

DATE: 31 Jan 1994

P.O. NO: 7005422

EPA Protocol Procedure G-1

CYLINDER NO.	CONSTITUENTS CONCENTRATION:	NOMINAL	ACTUAL
150-810	Sulfur Dioxide	250 PPM	260.7 PPM
	Nitrogen	Balance	Balance

CERTIFICATION PERIOD (months): 24
EXPIRATION DATE: January 31, 1996
Cylinder Pressure: 2000 psig
Do not use below 150 psig

William L. Vernon
ANALYST

William L. Vernon

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SO-CAL Airgas

SPECIALTY GAS DIVISION
11711 S. Alameda Street
Los Angeles, CA 90059
(213) 564-5711

ANALYTICAL REPORT - PRODUCT CERTIFICATION

TO: Mountain Airgas

DATE: 31 Jan 1994

P.O. NO: 005422

EPA Protocol Procedure G-1

CYLINDER NO.	CONSTITUENTS CONCENTRATION:	NOMINAL	ACTUAL
CC3766	Nitric Oxide	250 PPM	251.1 PPM
	NOX		259.6 PPM
	Nitrogen	Balance	Balance

CERTIFICATION PERIOD (months): 24
EXPIRATION DATE: January 31, 1996
Cylinder Pressure: 2000 psig
Do not use below 150 psig

William L. Vernon
ANALYST

William L. Vernon

SO-CAL Airgas

SPECIALTY GAS DIVISION
5571 S. Alameda Street
Los Angeles, CA 90059
(213) 564-5711

ANALYTICAL REPORT - PRODUCT CERTIFICATION

TO: Mountain Airgas

DATE: 31 Jan 1994

P.O. NO: 065422

EPA Protocol Procedure G-1

CYLINDER NO.	CONSTITUENTS CONCENTRATION:	NOMINAL	ACTUAL
CC10512	Nitric Oxide	150 PPM	159.4 PPM
	NOX		159.9 PPM
	Nitrogen	Balance	Balance

CERTIFICATION PERIOD (months): 24
EXPIRATION DATE: January 31, 1996
Cylinder Pressure: 2000 psig
Do not use below 150 psig

William L. Vernon
ANALYST

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