Note: This is a reference cited in *AP 42, Compilation of Air Pollutant Emission Factors, Volume I Stationary Point and Area Sources.* AP42 is located on the EPA web site at www.epa.gov/ttn/chief/ap42/

The file name refers to the reference number, the AP42 chapter and section. The file name "ref02_c01s02.pdf" would mean the reference is from AP42 chapter 1 section 2. The reference may be from a previous version of the section and no longer cited. The primary source should always be checked.

AP-42 Section 12.2
Reference
Report Sect. 4
Reference 60

Reviewed

1992

USS CLAIRTON WORKS

COMPLIANCE DEMONSTRATION
#1 BATTERY COMBUSTION STACK

Prepared for:

USS CLAIRTON WORKS
A DIVISION OF USX CORPORATION
CLAIRTON, PA

Prepared by:

KEYSTONE ENVIRONMENTAL RESOURCES, INC.
3000 TECH CENTER DRIVE
MONROEVILLE, PA 15146

PROJECT NUMBER: 605016-01

FEBRUARY 1992

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ABSTRACT

On November 26 and 27, 1991, a compliance test program was conducted for USS Clairton Works, Clairton, PA, on the #1 Battery Combustion Stack. The purpose of the testing was to determine the (1) concentration and mass emission rates of particulate matter, and (2) presence and extent of visible emissions from the stack as required by the Amended Mon Valley Consent Decree, Paragraph V. A. (6) and Appendix 4. A. Sampling was conducted during two different battery operating conditions, during push periods and non-push periods.

The allowable particulate matter concentration, as required by the Amended Mon Valley Consent Decree, is 0.030 gr/dscf. For push periods, the results of three test runs produced an average particulate matter concentration and emission rate of 0.0065 gr/dscf and 2.00 lb/hr, respectively. For non-push periods, the results of the one test run yielded a particulate matter concentration and emission rate of 0.0064 gr/dscf and 2.14 lb/hr, respectively. Thus, the particulate matter emissions from the stack are in compliance for both push and non-push situations. The Amended Mon Valley Consent Decree requires that visible emissions shall not equal or exceed 20 percent opacity for a period or periods aggregating in excess of 3 minutes in any 60-minute period and shall never equal or exceed 60 percent opacity. No visible emissions were observed from the stack during any of the four tests. Thus, the visible emissions are in compliance.

1.0 INTRODUCTION

On November 26 and 27, 1991, a compliance test program was conducted for USS Clairton Works, Clairton, PA, on the #1 Battery Combustion Stack. The purpose of the testing was to determine the (1) concentration and mass emission rate of particulate matter, and (2) presence and extent of visible emissions from the stack as required by the Amended Mon Valley Consent Decree, Paragraph V. A. (6) and Appendix 4. A.

Testing was performed by the Air Quality Engineering Division of Keystone Environmental Resources, Inc. (Keystone). The test crew was comprised of Keith Schmidt, Richard Casselberry, Thomas Morgan, Samuel Woodring, and David Beranek. Visible emissions determinations were performed by Ken Kuiros and Patricia Marcone of Environmental Technical Services (ETS). Keystone and ETS are sister companies of the Chester Environmental Group. All test procedures were witnessed by John Logan of the Allegheny County Health Department Bureau of Air Pollution Control (BAPC).

2.0 METHODOLOGIES

Particulate matter sampling was performed in accordance with EPA Stationary Source Sampling Methods 1 through 5. A total of four test runs were performed, three while ovens were being pushed and charged (push periods) and one while no ovens were pushed or charged (non-push periods). Prior to this test program, USS Clairton Works implemented a significant change in the pushing and charging schedules of Batteries #1 and #2. Previously, USS Clairton Works conducted the battery operations such that 3 to 4 ovens per hour were pushed and charged on each battery around-the-clock. With the new pushing and charging schedule in effect, approximately 5 to 6 ovens are pushed and charged on each battery over a 6.5 hour period, and then no ovens are pushed or charged for 3.5 hours. The pushing and charging schedules for Batteries #1 and #2 are not coincident. In response to this pushing and charging schedule modification, Allegheny County BAPC required that, as a part of the compliance demonstration, three EPA Method 5 tests be conducted only while the ovens are being pushed and charged (a letter from the BAPC can be found in Appendix A). At the request of USS Clairton Works an additional test was conducted while the ovens were not pushed and charged.

The process exhaust exited through a 114 inch diameter stack. A total of 24 traverse points (12 per diameter) were sampled. The traverse points were calculated in accordance with EPA Method 1. Sampling was conducted through four equally spaced ports. Six traverse points were sampled through each test port with each traverse point sampled for 5 minutes. A schematic diagram of the stack and traverse points is presented in Figure 2-1.

In accordance with EPA Method 2, gas velocities and volumetric flow rates were determined during each particulate matter test with the use of a calibrated S type pitot tube.

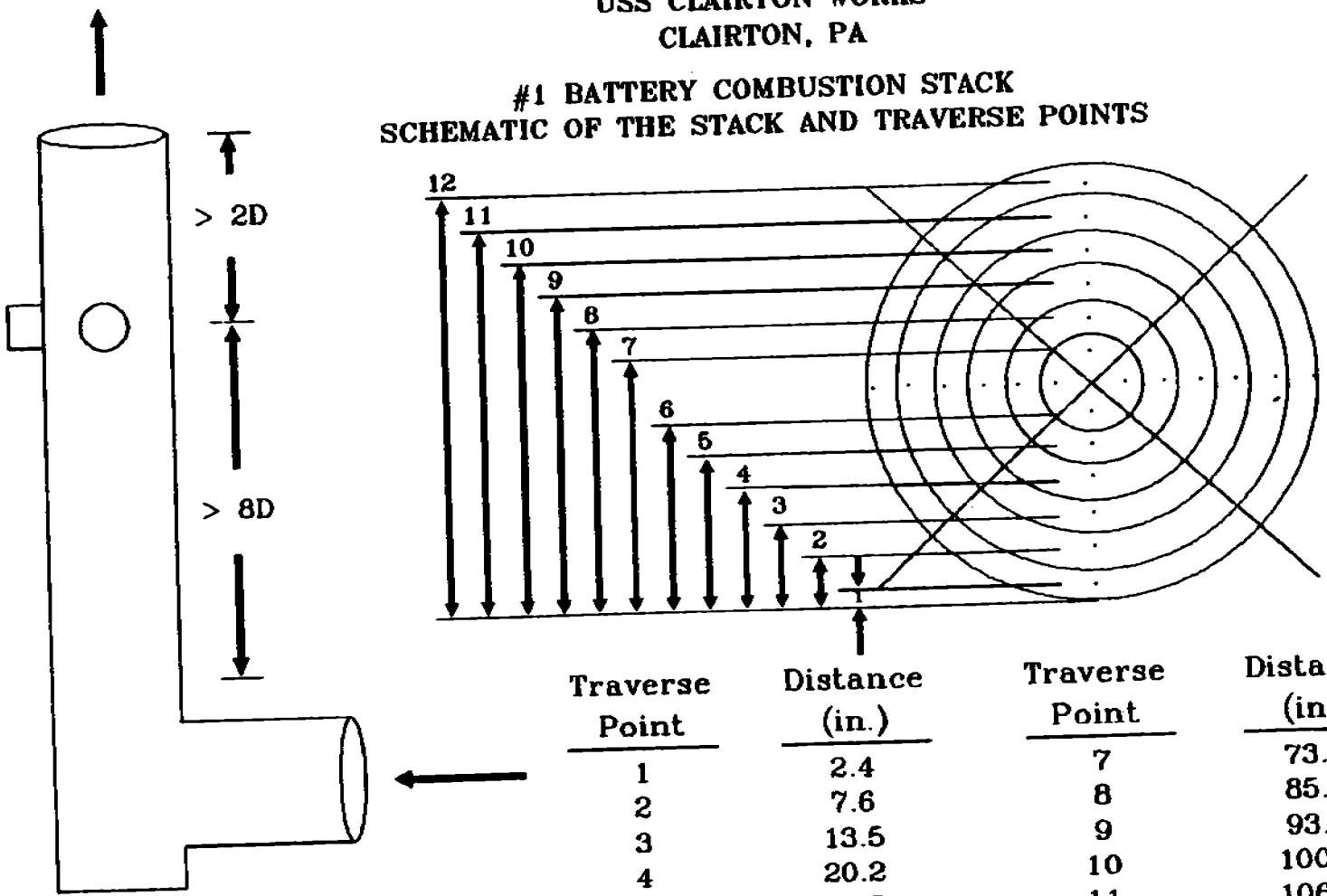
During each test, gas concentrations of CO_2, O_2, and N_2 (by difference) were measured with a Fyrite apparatus as specified by EPA Method 3. The gas concentrations were later used to calculate molecular weight of the gas on a dry basis.

EPA Method 4 was utilized to determine the percent moisture content, by volume, of the process exhaust gas by obtaining the weight gain of the sample train impingers.

FIGURE 2-1

USS CLAIRTON WORKS
CLAIRTON, PA

#1 BATTERY COMBUSTION STACK
SCHEMATIC OF THE STACK AND TRAVERSE POINTS



Traverse Point	Distance (in.)	Traverse Point	Distance (in.)
1	2.4	7	73.5
2	7.6	8	85.5
3	13.5	9	93.8
4	20.2	10	100.5
5	28.5	11	106.4
6	40.6	12	111.6

Stack Diameter (D) = 114 in.

KEYSTONE
ENVIRONMENTAL RESOURCES, INC.

Clean up of the sampling train in the field included an acetone rinse of the front-half components. The acetone rinses were dried, desiccated, and weighed to a constant weight. The sample train filters were desiccated, and the amount of particulate matter was determined gravimetrically. The front half rinse residue weight was added to the corresponding filter weight to determine the total particulate matter catch for each test run. These clean up and analytical procedures followed the methodology of EPA Method 5.

All visible emissions determinations were performed in accordance with EPA Stationary Source Sampling Method 9. Visible emissions were recorded during each particulate matter test.

3.0 RESULTS

All testing was performed during periods of normal plant operation. To validate this, copies of the operational data can be found in Appendix A.

All sampling equipment was calibrated and operated in accordance with EPA Stationary Source Sampling Methods 1 through 5. Copies of the pre-test calibration results, post-test calibration results, and the results of an audit conducted with a critical orifice provided by the Allegheny County Health Department BAPC can be found in Appendix B.

Copies of the field data sheets for the particulate matter sampling can be found in Appendix C. The emissions calculations for each test can be found in Appendix D. The test results have been summarized in Table 3-1 and Table 3-2. Sampling was conducted during two different battery operating conditions, during push periods and non-push periods. In Table 3-1, the results of the testing during push periods showed an average particulate matter concentration and emission rate of 0.0065 grains per dry standard cubic feet (gr/dscf) and 2.00 pounds per hour (lb/hr), respectively. In Table 3-2, the results of the one test run conducted during non-push periods yielded a particulate matter concentration and emission rate of 0.0064 gr/dscf and 2.14 lb/hr, respectively. As promulgated by the Amended Mon Valley Consent Decree, Paragraph V.A.(6), the allowable particulate matter concentration for #1 Battery Combustion Stack is 0.030 gr/dscf (a non-Lowest Achievable Emission Rate (LAER) standard). Thus, the particulate matter emissions from the stack are in compliance for both push and non-push situations.

Tables 3-1 and 3-2 also lists other pertinent stack and sampling parameters which include stack gas flow rate in units of actual cubic feet per minute (acfm) and standard cubic feet per minute (scfm), moisture content of the stack gas (percent by volume), stack gas temperature (°F), gas volume sampled for each test in units of dry standard cubic feet (dscf), and the isokinetics value for each test. The gas volume sampled for each 120 minute test was greater than 50 dry standard cubic feet. The isokinetics value is equal to the ratio of the average linear gas velocity sampled through the probe nozzle to the average stack gas velocity. An isokinetics value between 90 percent and 110 percent is considered acceptable. Isokinetic values for all four test runs ranged from 100.7 to 107.5 percent;

TABLE 3-1

USS CLAIRTON WORKS
CLAIRTON, PA

#1 BATTERY COMBUSTION STACK
PARTICULATE MATTER EMISSIONS DATA
FOR PUSH PERIODS

	Units	Run 1	Run 2	Run 3	Average
Test Date		11/27/91	11/27/91	11/27/91	
Test Number		CLR-BS1-2	CLR-BS1-3	CLR-BS1-4	
Emission Rates and Concentrations					
Particulate Matter	(lb/hr)	1.72	2.19	2.10	2.00
	(gr/DSCF)	0.0059	0.0068	0.0067	0.0065
Stack Conditions					
Average Flow Rate	(ACFM)	67649	74967	71798	71471
Standard Flow Rate	(SCFM)	38084	41908	40258	40083
Temperature	(°F)	462	469	466	466
Moisture Content	(%)	10.2	10.6	8.9	9.9
Sampling Conditions					
Test Times		9:40 to 10:10	12:07 to 12:37	15:00 to 15:30	
		10:12 to 10:42	12:40 to 13:10	15:33 to 16:03	
		10:46 to 11:16	13:13 to 13:43	16:07 to 16:37	
		11:20 to 11:50	13:46 to 14:16	16:39 to 17:09	
Sampling Time	(minutes)	120.0	120.0	120.0	
Sample Volume	(DSCF)	60.486	68.128	62.437	
Isokinetics	(%)	104.6	107.5	100.7	

TABLE 3-2

USS CLAIRTON WORKS
CLAIRTON, PA

#1 BATTERY COMBUSTION STACK
PARTICULATE MATTER EMISSIONS DATA
FOR NON-PUSH PERIODS

	Units	
Test Date		11/26/91
Test Number		CLR-BS1-1
Emission Rates and Concentrations		
Particulate Matter	(lb/hr)	2.14
	(gr/DSCF)	0.0064
Stack Conditions		
Average Flow Rate	(ACFM)	75005
Standard Flow Rate	(SCFM)	42827
Temperature	(°F)	452
Moisture Content	(%)	8.8
Sampling Conditions		
Test Times		10:20 to 10:50
		11:00 to 11:30
		11:47 to 12:17
		12:25 to 12:55
Sampling Time	(minutes)	120.0
Sample Volume	(DSCF)	68.115
Isokinetics	(%)	103.1

therefore, all values were within the acceptable range. Actual test sampling times have also been included in the Tables 3-1 and 3-2.

Copies of the field data sheets for the visible emissions readings can be found in Appendix E. No visible emissions were observed during any of the four tests. As promulgated by the Amended Mon Valley Consent Decree, Paragraph V. A. (6), the "visible emissions shall not equal or exceed 20 percent opacity for a period or periods aggregating in excess of 3 minutes in any 60-minute period and shall never equal or exceed 60 percent opacity." Thus, the visible emissions are in compliance.

COMPLIANCE DEMONSTRATION
#1 BATTERY COMBUSTION STACK

USS CLAIRTON WORKS
CLAIRTON, PA

APPENDIX A

OPERATIONAL DATA

Allegheny County Health Department

COUNTY COMMISSIONERS

TOM FOERSTER
chairman

PETE FLAHERTY

LAWRENCE W. DUNN

ALBERT H. BRUNWASSER, M.P.H., M.B.A.
director

Bureau of Air Pollution Control
301 39th Street
Pittsburgh, PA 15201
578-8143

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KATHERINE L. WISNER, M.D.,M.S.

October 28, 1991

Mr. John P. Shimshock
Air Quality Scientist
Keystone Environmental Resources, Inc.
3000 Tech Center Drive
Monroeville, PA 15146

Dear Mr. Shimshock:

We are in receipt of your letter proposal dated September 30, 1991, reference no. IND-80, regarding revision of the test protocol for the determination of particulate matter and visible emissions from combustion stacks #1 and #2 operating at USS Clairton Works.

The emission standards are generally applied to every process operating at its maximum capacity. In case of intermittant processes, sampling is carried out only during the time when the process in in operation.

Our legal and engineering departments have reviewed your proposal and have not accepted it as the standard applied to coke combustion emission is 0.03 grains/dscf. and has recommended that stack tests must be carried out only during the time when ovens are being pushed.

Therefore I suggest that you change your protocol for the test and resubmit for approval.

If you have any questions on this matter please write or call me at 578-8143.

Sincerely yours,

Harilal L. Patel

Harilal L. Patel
Air Pollution Control

HLP:cag

CC-10205 REV. 1181
03.001.0020

UNITED STATES STEEL CORPORATION
CLAIRTON COKE AND COAL CHEMICAL WORKS

PUSHING AND CHARGING REPORT

UNIT NO. 1

12 Hrs. Beginning 12:00 A M

Date 11-26-91

BATTERY NO. A-1

OVEN NO.	TIME PUSHED		TIME CHARGED		NOTES
1	2	42	2	58	
3	2	52	3	09	
5	3	04	3	20	
7	3	14	3	32	
9	3	24	3	44	
11	3	36	4	28	
13	3	48	4	34	
15	3	52	4	40	
17	4	36	4	50	
19	4	46	5	—	
21	4	54	5	10	
23	5	04	5	20	
25	5	14	5	32	
27	5	28	5	46	
29	5	56	6	12	
31	6	08	6	24	
2					
4					
6			16		
8					
10			16		
12					
14					
16					
18					
20					
22					
24					
26					
28					
30					
1					
2					

BATTERY NO. B-1

OVEN NO.	TIME PUSHED		TIME CHARGED		NOTES
1					
3					
5					
7					
9					
11			15		
13					
15			16		
17					
19					
21					
23					
25					
27					
29			4	30	
31					
2	6	20	6	36	
4	6	32	6	48	
6	6	44	6	58	
8	6	54	7	06	
10	7	04	7	20	
12	7	16	7	34	
14	7	26	8	08	
16	7	38	8	19	
18	7	50	8	33	
20	8	10	8	46	
22	8	21	8	58	
24	8	35	9	21	
26	8	48	9	35	
28	9	—	9	47	
30	9	23	9	57	
1					
2					

BATTERY NO. A-2

OVEN NO.	TIME PUSHED		TIME CHARGED		NOTES
1	9	49	10	20	
3	9	59	10	31	
5	10	10	10	41	
7	10	22	10	52	
9	10	33	11	04	
11	10	43	11	17	
13	10	54	11	33	KO-BO
15	11	06	11	43	
17	11	19	11	53	
19	11	35			
21	11	45			
23	11	55			
25					
27					
29		25			56P
31		25			57C
2			12	08	
4			12	14	
6			12	22	
8	12	16	12	32	
10	12	28	12	44	
12	12	40	12	56	
14	12	54	1	10	
16	1	08	1	24	
18	1	20	1	36	
20	1	32	1	48	
22	1	42	1	58	
24	1	54	2	10	
26	2	06	2	24	
28	2	16	2	32	
30	2	28	2	41	
B1	9	37	10	08	
2					

REMARKS:

Condition of Signals

Condition of Pusher

HOURLY REPORT OF OPERATION

TIME	OVENS PUSHED	OVENS CHARGED	OVENS SCHEDULED	TIME	OVENS PUSHED	OVENS CHARGED	OVENS SCHEDULED
12-1	4	6		6-7	5	5	
1-2	5	5		7-8	5	3	
2-3	5	5		8-9	4	5	
3-4	6	4		9-10	5	4	
4-5	2	5		10-11	5	5	
5-6	4	5		11-12	5	5	
	27	33			29	27	

Total Ovens Pushed 56

Total Ovens Charged 57

Pusherman

Battery Foreman

CC-10295 REV. 1181
09.001.0026

UNITED STATES STEEL CORPORATION
CLAIRTON COKE AND COAL CHEMICAL WORKS

PUSHING AND CHARGING REPORT

UNIT NO. 1
12 Hrs. Beginning 12:00 PM
Date 11-26-91

BATTERY NO. A-1						BATTERY NO. B-1						BATTERY NO. A 2					
OVEN NO.	TIME PUSHED		TIME CHARGED		NOTES	OVEN NO.	TIME PUSHED		TIME CHARGED		NOTES	OVEN NO.	TIME PUSHED		TIME CHARGED		NOTES
1	10	48	11	17		1	4	34	5	05		1					
3	10	58	11	28		3	4	44	5	18		3					
5	11	09	11	38		5	4	55	5	32		5					
7	11	19				7	5	07	5	44		7					
9	11	30				9	5	20	5	54		9					
11	11	40				11	5	34	6	06		11					
13						13	5	46	6	17		13					
15						15	5	56	6	30		15					
17						17	6	08	6	40		17					
19						19	6	19	6	53		19			12	05	
21						21	6	32	7	03		21			12	44	
23						23	6	42	7	20		23			12	55	
25						25	6	55	7	33		25	12	07	1	08	
27						27	7	05	7	45		27	12	46	1	19	
29						29						29	12	57	1	29	
31						31	7	22	7	55		31	1	09	1	43	
2	1	31	2	06		2						2	7	47	8	50	
4	1	44	2	17		4						4	7	57	9	01	
6	1	57	2	29		6						6	8	42	9	11	
8	2	08	2	38		8						8	8	52	9	25	
10	2	19	2	49		10						10	9	03	9	35	
12	2	30	3	—		12						12	9	13	9	46	
14	2	40	3	10		14						14	9	27	9	56	
16	2	51	3	20		16						16	9	37	10	06	
18	3	02	3	31		18						18	9	48	10	20	
20	3	12	3	42		20						20	9	58	10	30	
22	3	22	4	08		22						22	10	08	10	35	
24	3	33	4	20		24						24	10	22	10	40	
26	3	44	4	32		26						26	10	32	10	46	
28	4	10	4	42		28						28	10	37	10	56	
30	4	22	4	53		30						30	10	42	11	07	
1						C1	1	20	11	55		1					
2						C2	7	35	8	40		2					

REMARKS:

21/18 17/17 19/22

Condition of Signals | Condition of Pusher

HOURLY REPORT OF OPERATION

TIME	OVENS PUSHED	OVENS CHARGED	OVENS SCHEDULED	TIME	OVENS PUSHED	OVENS CHARGED	OVENS SCHEDULED	
12-1	3	3		6-7	5	5		
1-2	5	5		7-8	5	5		Total Ovens Pushed
2-3	5	5		8-9	2	2		Total Ovens Charged
3-4	5	5		9-10	6	6		
4-5	5	5		10-11	7	7		Pusherman
5-6	5	5		11-12	4	4		Battery Foreman

CC-10295 REV. 1161
QC:301.0020

UNITED STATES STEEL CORPORATION
CLAIRTON COKE AND COAL CHEMICAL WORKS

PUSHING AND CHARGING REPORT

UNIT NO. 1
12 Hrs. Beginning 12:00 A M
Date 11-27-91

BATTERY NO. A-1

OVEN NO.	TIME PUSHED		TIME CHARGED		NOTES
1					
3					
5					
7			12	02	
9			12	10	
11			12	16	
13	12	06	12	22	
15	12	19	12	34	
17	12	29	12	44	
19	12	39	12	54	
21	12	49	1	04	
23	12	59	1	14	
25	1	10	1	26	
27	1	20	1	36	
29	1	32	1	49	
31	1	42	1	59	
2	10	15	10	56	
4	10	35	11	07	
6	10	47	11	19	18
8	10	58	11	31	
10	11	09	11	41	
12	11	21	11	53	
14	11	33			
16	11	43			>
18	11	55			
20					
22					
24			19		
26			19		
28					
30					
1					
2					

BATTERY NO. B-1

OVEN NO.	TIME PUSHED		TIME CHARGED		NOTES
1					>
3					
5					
7					
9					
11					
13			16		
15					
17			16		
19					
21					
23					
25					
27					
29					
31					
2	1	54	2	08	
4	2	04	2	20	
6	2	14	2	30	
8	2	24	2	40	
10	2	36	2	50	
12	2	46	3	–	
14	2	56	3	10	
16	10	02	10	49	Sticker
18	3	18	3	34	P.B.
20	3	29	4	–	
22	3	40	4	36	
24	3	52	4	46	
26	4	04	4	55	
28	4	38	5	02	
30	4	48	5	06	
C1	9	51	10	45	
2					

BATTERY NO. A-2

OVEN NO.	TIME PUSHED		TIME CHARGED		NOTES
1	10	22			Sticke
3	6	34	6	48	
5	6	46	6	58	
7	6	56	7	00	
9	7	08	7	24	
11	7	19	7	31	
13	7	29	8	08	
15	7	50	8	38	K.O, P.B
17	8	10	8	50	
19	8	35	9	10	
21	8	40	9	20	
23	8	52	9	32	
25	9	12	9	40	
27	9	22	9	49	
29	9	34	10	13	
31	9	22	10	33	
2					
4					
6					
8					
10					
12			17		52
14			16		51
16					
18					
20					
22					
24					
26					
28					
30					
B1	4	58	5	06	
2					

REMARKS:

Condition of Signals

Condition of Pusher

HOURLY REPORT OF OPERATION

TIME	OVENS PUSHED	OVENS CHARGED	OVENS SCHEDULED	TIME	OVENS PUSHED	OVENS CHARGED	OVENS SCHEDULED
12-1	6	7		6-7	3	2	
1-2	5	6		7-8	4	3	
2-3	6	5		8-9	4	3	
3-4	4	3		9-10	5	5	
4-5	4	4		10-11	6	5	
5-6	0	3		11-12	5	5	
	25	28			27	23	

Total Ovens Pushed 52
Total Ovens Charged 51

Pusherman

Battery Foreman

CC-10295 REV. 1161
03:001.0020

UNITED STATES STEEL CORPORATION
CLAIRTON COKE AND COAL CHEMICAL WORKS

PUSHING AND CHARGING REPORT

UNIT NO. 1

12 Hrs. Beginning 12:00 PM

Date 11-27-91

BATTERY NO. A-1

OVEN NO.	TIME PUSHED		TIME CHARGED		NOTES
1	9	26	10	15	
3	9	52	10	26	
5	10	02	10	38	
7	10	17	10	50	
9	10	28	11	00	
11	10	40	11	13	
13	10	52	11	23	
15	11	02	11	33	
17	11	15	11	44	
19	11	25			
21	11	35			
23	11	46			
25					
27					
29					
31					
2					
4					
6					
8					
10					
12					
14			12	08	
16			12	53	
18			1	08	
20	12	10	1	25	
22	12	55	1	43	
24	1	10	2	08	
26	1	27	2	21	
28	1	45	2	33	
30	2	10	2	57	
1					
2					

BATTERY NO. B-1

OVEN NO.	TIME PUSHED		TIME CHARGED		NOTES
1	2	23	3	02	
3	2	35	3	19	
5	2	59	3	29	
7	3	09	3	40	
9	3	21	3	51	
11	3	31	4	10	
13	3	42	4	21	
15	3	53	4	31	
17	4	12	4	42	
19	4	23	4	53	
21	4	33	5	03	
23	4	44	5	13	
25	4	55	5	25	
27	5	05	5	39	
29	5	15	5	53	
31	5	27	6	06	
2					
4					
6					
8					
10					
12					
14					
16					
18					
20					
22					
24					
26					
28					
30					
C-1					
C-2	5	41	6	25	

BATTERY NO. A-2

OVEN NO.	TIME PUSHED		TIME CHARGED		NOTES
1			6	00	
3					
5					
7					
9					
11					
13					
15					
17					
19					
21					
23					
25					
27					
29					
31					
2					
4	5	55	6	35	
6	6	08	6	45	
8	6	27	7	10	
10	6	37	7	40	
12	6	47	7	52	
14	7	12	8	29	
16	7	42	8	41	
18	7	54	8	51	
20	8	31	9	04	
22	8	43	9	10	
24	8	53	9	19	
26	9	06	9	24	
28	9	12	9	50	
30	9	21	10	00	
C-1					
2					

REMARKS:

Condition of Signals

Condition of Pusher

HOURLY REPORT OF OPERATION

TIME	OVENS PUSHED	OVENS CHARGED	OVENS SCHEDULED	TIME	OVENS PUSHED	OVENS CHARGED	OVENS SCHEDULED
12-1	2	2		6-7	4	5	
1-2	3	3		7-8	3	3	
2-3	4	4		8-9	3	3	
3-4	5	5		9-10	5	5	
4-5	5	5		10-11	5	5	
5-6	5	5		11-12	5	5	

Total Ovens Pushed

Total Ovens Charged

Pushermen

Battery Foreman

80 OVENS

1-2-3 BATTERIES PUSHING SCHEDULE

DATE 11/26/91 TURN 12x8

A 1 /1		B18 /1		C 1 /1		B17 /1	
B 3 /2		A18 /3		B 2 /2		A17 /3	
A 3 /1		B20 /1		A 2 /1		B19 /1	
B 5 /2		A20 /3		B 4 /2		A19 /3	
A 5 /1		B22 /1		A 4 /1		B21 /1	
B 7 /2		A22 /3		B 6 /2		A21 /3	
A 7 /1		B24 /1	80	A 6 /1		B23 /1	
B 9 /2		A24 /3		B 8 /2		A23 /3	
A 9 /1		B26 /1		A 8 /1		B25 /1	
B11 /2		A26 /3		B10 /2		A25 /3	
A11 /1		B28 /1		A10 /1		B27 /1	
B13 /2		A28 /3		B12 /2		A27 /3	
A13 /1		B30 /1		A12 /1		B29 /1	
B15 /2		A30 /3		B14 /2		A29 /3	
A15 /1		B 1 /2		A14 /1		B31 /1	
B17 /2		B 1 /3		B16 /2		A31 /3	
A17 /1		A 1 /2		A16 /1		C 2 /1	
B19 /2		B 3 /3		B18 /2		B 2 /3	
A19 /1		A 3 /2		A18 /1		A 2 /2	
B21 /2		B 5 /3		B20 /2		B 4 /3	
A21 /1		A 5 /2		A20 /1		A 4 /2	
B23 /2		B 7 /3		B22 /2		B 6 /3	
A23 /1		A 7 /2		A22 /1		A 6 /2	
B25 /2		B 9 /3		B24 /2		B 8 /3	1
A25 /1		A 9 /2		A24 /1		A 8 /2	
B27 /2		B11 /3		B26 /2		B10 /3	
A27 /1		A11 /2		A26 /1		A10 /2	
B29 /2		B13 /3		B28 /2		B12 /3	
A29 /1		A13 /2		A28 /1		A12 /2	
B31 /2		B15 /3		B30 /2		B14 /3	
A31 /1		A15 /2		A30 /1		A14 /2	
C 2 /2		B17 /3		C 1 /2		B16 /3	
B 2 /1		A17 /2		B 1 /1		A16 /2	
A 2 /3		B19 /3		A 1 /3		B18 /3	
B 4 /1		A19 /2		B 3 /1		A18 /2	
A 4 /3		B21 /3		A 3 /3		B20 /3	
B 6 /1		A21 /2		B 5 /1		A20 /2	
A 6 /3		B23 /3		A 5 /3		B22 /3	
B 8 /1		A23 /2		B 7 /1		A22 /2	
A 8 /3		B25 /3		A 7 /3		B24 /3	
B10 /1		A25 /2		B 9 /1		A24 /2	
A10 /3		B27 /3		A 9 /3		B26 /3	
B12 /1		A27 /2		B11 /1		A26 /2	
A12 /3		B29 /3		A11 /3		B28 /3	
B14 /1		A29 /2		B13 /1		A28 /2	
A14 /3		B31 /3		A13 /3		B30 /3	
B16 /1		A31 /2		B15 /1		A30 /2	
A16 /3		C 2 /3		A15 /3		C 1 /3	

START B-8-3

FINISH B-24-1

PASS-UP

PICK-UP

78 OVENS

1-2-3 BATTERIES PUSHING SCHEDULE

DATE 11-26-91 TURN 8X4

A 1 /1		B18 /1		C 1 /1	47	B17 /1	
B 3 /2		A18 /3	1	B 2 /2	48	A17 /3	
A 3 /1		B20 /1	2	A 2 /1	49	B19 /1	
B 5 /2		A20 /3	3	B 4 /2	50	A19 /3	
A 5 /1		B22 /1	4	A 4 /1	51	B21 /1	
B 7 /2		A22 /3	5	B 6 /2	52	A21 /3	
A 7 /1		B24 /1	6	A 6 /1	53	B23 /1	
B 9 /2		A24 /3	7	B 8 /2	54	A23 /3	
A 9 /1		B26 /1	8	A 8 /1	55	B25 /1	
B11 /2		A26 /3	9	B10 /2	56	A25 /3	
A11 /1		B28 /1	10	A10 /1	57	B27 /1	
B13 /2		A28 /3	11	B12 /2	58	A27 /3	
A13 /1		B30 /1	12	A12 /1	59	B29 /1	
B15 /2		A30 /3	13	B14 /2	60	A29 /3	
A15 /1		B 1 /2	14	A14 /1	61	B31 /1	
B17 /2		B 1 /3	15	B16 /2	62	A31 /3	
A17 /1		A 1 /2	16	A16 /1	63	C 2 /1	
B19 /2		B 3 /3	Pass up	B18 /2	64	B 2 /3	
A19 /1		A 3 /2	17	A18 /1	65	A 2 /2	
B21 /2		B 5 /3	18	B20 /2	66	B 4 /3	
A21 /1		A 5 /2	19	A20 /1	67	A 4 /2	
B23 /2		B 7 /3	20	B22 /2	68	B 6 /3	
A23 /1		A 7 /2	21	A22 /1	69	A 6 /2	
B25 /2		B 9 /3	22	B24 /2	70	B 8 /3	
A25 /1		A 9 /2	23	A24 /1	71	A 8 /2	
B27 /2		B11 /3	24	B26 /2	72	B10 /3	
A27 /1		A11 /2	25	A26 /1	73	A10 /2	
B29 /2		B13 /3	26	B28 /2	74	B12 /3	
A29 /1		A13 /2	27	A28 /1	75	A12 /2	
B31 /2		B15 /3	28	B30 /2	76	B14 /3	
A31 /1		A15 /2	29	A30 /1	77	A14 /2	
C 2 /2		B17 /3	30	C 1 /2	78	B16 /3	
B 2 /1		A17 /2	31	B 1 /1		A16 /2	
A 2 /3		B19 /3	32	A 1 /3		B18 /3	
B 4 /1		A19 /2	33	B 3 /1		A18 /2	
A 4 /3		B21 /3	34	A 3 /3		B20 /3	
B 6 /1		A21 /2	35	B 5 /1		A20 /2	
A 6 /3		B23 /3	36	A 5 /3		B22 /3	
B 8 /1		A23 /2	37	B 7 /1		A22 /2	
A 8 /3		B25 /3	38	A 7 /3		B24 /3	
B10 /1		A25 /2	39	B 9 /1		A24 /2	
A10 /3		B27 /3	40	A 9 /3		B26 /3	
B12 /1		A27 /2	41	B11 /1		A26 /2	
A12 /3		B29 /3	42	A11 /3		B28 /3	
B14 /1		A29 /2	43	B13 /1		A28 /2	
A14 /3		B31 /3	44	A13 /3		B30 /3	
B16 /1		A31 /2	45	B15 /1		A30 /2	
A16 /3		C 2 /3	46	A15 /3		C 1 /3	

START A18/3

PASS-UP

FINISH C1/2

PICK-UP

80 OVENS

1-2-3 BATTERIES PUSHING SCHEDULE

DATE 4 X 12 TURN 11-26-91

A 1 /1		B18 /1		C 1 /1		B17 /1	
B 3 /2		A18 /3		B 2 /2		A17 /3	
A 3 /1		B20 /1		A 2 /1		B19 /1	
B 5 /2		A20 /3		B 4 /2		A19 /3	
A 5 /1		B22 /1		A 4 /1		B21 /1	
B 7 /2		A22 /3		B 6 /2		A21 /3	
A 7 /1		B24 /1		A 6 /1		B23 /1	
B 9 /2		A24 /3		B 8 /2		A23 /3	
A 9 /1		B26 /1		A 8 /1		B25 /1	
B11 /2		A26 /3		B10 /2		A25 /3	
A11 /1		B28 /1		A10 /1		B27 /1	
B13 /2		A28 /3		B12 /2		A27 /3	
A13 /1	80	B30 /1		A12 /1		~~B29 /1~~	
B15 /2		A30 /3		B14 /2		A29 /3	
A15 /1		B 1 /2		A14 /1		B31 /1	
B17 /2		B 1 /3		B16 /2		A31 /3	
A17 /1		A 1 /2		A16 /1		C 2 /1	
B19 /2		B 3 /3		B18 /2		B 2 /3	
A19 /1		A 3 /2		A18 /1		A 2 /2	
B21 /2		B 5 /3		B20 /2		B 4 /3	
A21 /1		A 5 /2		A20 /1		A 4 /2	
B23 /2		B 7 /3		B22 /2		B 6 /3	
A23 /1		A 7 /2		A22 /1		A 6 /2	
B25 /2		B 9 /3		B24 /2		B 8 /3	
A25 /1		A 9 /2		A24 /1		A 8 /2	
B27 /2		B11 /3		B26 /2		B10 /3	
A27 /1		A11 /2		A26 /1		A10 /2	
B29 /2		B13 /3		B28 /2		B12 /3	
A29 /1		A13 /2		A28 /1		A12 /2	
B31 /2		B15 /3		B30 /2		B14 /3	
A31 /1		A15 /2		A30 /1		A14 /2	
C 2 /2		B17 /3		C 1 /2		B16 /3	
B 2 /1		A17 /2		B 1 /1		A16 /2	
A 2 /3		B19 /3		A 1 /3		B18 /3	
B 4 /1		A19 /2		B 3 /1		A18 /2	
A 4 /3		B21 /3		A 3 /3		B20 /3	
B 6 /1		A21 /2		B 5 /1		A20 /2	
A 6 /3		B23 /3		A 5 /3		B22 /3	
B 8 /1		A23 /2		B 7 /1		A22 /2	
A 8 /3		B25 /3		A 7 /3		B24 /3	
B10 /1		A25 /2		B 9 /1		A24 /2	
A10 /3		B27 /3		A 9 /3		B26 /3	
B12 /1		A27 /2		B11 /1		A26 /2	
A12 /3		B29 /3		A11 /3		B28 /3	
B14 /1		A29 /2		B13 /1		A28 /2	
A14 /3		B31 /3		A13 /3		B30 /3	
B16 /1		A31 /2		B15 /1		A30 /2	
A16 /3		C 2 /3		A15 /3		C 1 /3	

START A-28-1

FINISH A-13-1

PASS-UP - B 39

PICK-UP

79 OVENS

1-2-3 BATTERIES PUSHING SCHEDULE

DATE 11/27/91 TURN 12-8

A 1 /1	B18 /1	C 1 /1	B17 /1
B 3 /2	A18 /3	B 2 /2	A17 /3
A 3 /1	B20 /1	A 2 /1	B19 /1
B 5 /2	A20 /3	B 4 /2	A19 /3
A 5 /1	B22 /1	A 4 /1	B21 /1
B 7 /2	A22 /3	B 6 /2	A21 /3
A 7 /1	B24 /1	A 6 /1	B23 /1
B 9 /2	A24 /3	B 8 /2	A23 /3
A 9 /1	B26 /1	A 8 /1	B25 /1
B11 /2	A26 /3	B10 /2	A25 /3
A11 /1	B28 /1	A10 /1	B27 /1
B13 /2	A28 /3	B12 /2	A27 /3
A13 /1	B30 /1	A12 /1	B29 /1
B15 /2	A30 /3	B14 /2	A29 /3
A15 /1	B 1 /2	A14 /1	B31 /1
B17 /2	B 1 /3	B16 /2	A31 /3
A17 /1	A 1 /2	A16 /1	C 2 /1
B19 /2	B 3 /3	B18 /2	B 2 /3
A19 /1	A 3 /2	A18 /1	A 2 /2
B21 /2	B 5 /3	B20 /2	B 4 /3
A21 /1	A 5 /2	A20 /1	A 4 /2
B23 /2	B 7 /3	B22 /2	B 6 /3
A23 /1	A 7 /2	A22 /1	A 6 /2
B25 /2	B 9 /3	B24 /2	B 8 /3
A25 /1	A 9 /2	A24 /1	A 8 /2
B27 /2	B11 /3	B26 /2	B10 /3
A27 /1	A11 /2	A26 /1	A10 /2
B29 /2	B13 /3	B28 /2	B12 /3
A29 /1	A13 /2	A28 /1	A12 /2
B31 /2	B15 /3	B30 /2	B14 /3
A31 /1	A15 /2	A30 /1	A14 /2
C 2 /2	B17 /3	C 1 /2	B16 /3
B 2 /1	A17 /2	B 1 /1	A16 /2
A 2 /3	B19 /3	A 1 /3	B18 /3
B 4 /1	A19 /2	B 3 /1	A18 /2
A 4 /3	B21 /3	A 3 /3	B20 /3
B 6 /1	A21 /2	B 5 /1	A20 /2
A 6 /3	B23 /3	A 5 /3	B22 /3
B 8 /1	A23 /2	B 7 /1	A22 /2
A 8 /3	B25 /3	A 7 /3	B24 /3
B10 /1	A25 /2	B 9 /1	A24 /2
A10 /3	B27 /3	A 9 /3	B26 /3
B12 /1	A27 /2	B11 /1	A26 /2
A12 /3	B29 /3	A11 /3	B28 /3
B14 /1	A29 /2	B13 /1	A28 /2
A14 /3	B31 /3	A13 /3	B30 /3
B16 /1	A31 /2	B15 /1	A30 /2
A16 /3	C 2 /3	A15 /3	C 1 /3

79

START A-13-1

FINISH A-27-2

PASS-UP

PICK-UP

78 OVENS

1-2-3 BATTERIES PUSHING SCHEDULE

DATE 11-27-91 TURN 8X4

A 1 /1		B18 /1		C 1 /1	18	B17 /1	66
B 3 /2		A18 /3		B 2 /2	19	A17 /3	67
A 3 /1		B20 /1		A 2 /1	20	B19 /1	68
B 5 /2		A20 /3		B 4 /2	21	A19 /3	69
A 5 /1		B22 /1		A 4 /1	22	B21 /1	70
B 7 /2		A22 /3		B 6 /2	23	A21 /3	71
A 7 /1		B24 /1		A 6 /1	24	B23 /1	72
B 9 /2		A24 /3		B 8 /2	25	A23 /3	73
A 9 /1		B26 /1		A 8 /1	26	B25 /1	74
B11 /2		A26 /3		B10 /2	27	A25 /3	75
A11 /1		B28 /1		A10 /1	28	B27 /1	76
B13 /2		A28 /3		B12 /2	29	A27 /3	77
A13 /1		B30 /1		A12 /1	30	B29 /1	78
B15 /2		A30 /3		B14 /2	31	A29 /3	
A15 /1		B 1 /2		A14 /1	32	B31 /1	
B17 /2		B 1 /3		B16 /2	33	A31 /3	
A17 /1		A 1 /2		A16 /1	34	C 2 /1	
B19 /2		B 3 /3		B18 /2	35	B 2 /3	
A19 /1		A 3 /2		A18 /1	36	A 2 /2	
B21 /2		B 5 /3		B20 /2	37	B 4 /3	
A21 /1		A 5 /2		A20 /1	38	A 4 /2	
B23 /2		B 7 /3		B22 /2	39	B 6 /3	
A23 /1		A 7 /2		A22 /1	40	A 6 /2	
B25 /2		B 9 /3		B24 /2	41	B 8 /3	
A25 /1		A 9 /2		A24 /1	42	A 8 /2	
B27 /2		B11 /3		B26 /2	43	B10 /3	
A27 /1		A11 /2		A26 /1	44	A10 /2	
B29 /2		B13 /3		B28 /2	45	B12 /3	
A29 /1		A13 /2		A28 /1	46	A12 /2	
B31 /2		B15 /3		B30 /2	47	B14 /3	
A31 /1		A15 /2		A30 /1	48	A14 /2	
C 2 /2		B17 /3	1	C 1 /2	49	B16 /3	
B 2 /1		A17 /2	2	B 1 /1	50	A16 /2	
A 2 /3		B19 /3	3	A 1 /3	51	B18 /3	
B 4 /1		A19 /2	4	B 3 /1	52	A18 /2	
A 4 /3		B21 /3	5	A 3 /3	53	B20 /3	
B 6 /1		A21 /2	6	B 5 /1	54	A20 /2	
A 6 /3		B23 /3	7	A 5 /3	55	B22 /3	
B 8 /1		A23 /2	8	B 7 /1	56	A22 /2	
A 8 /3		B25 /3	9	A 7 /3	57	B24 /3	
B10 /1		A25 /2	10	B 9 /1	58	A24 /2	
A10 /3		B27 /3	11	A 9 /3	59	B26 /3	
B12 /1		A27 /2	12	B11 /1	60	A26 /2	
A12 /3		B29 /3	13	A11 /3	61	B28 /3	
B14 /1		A29 /2	14	B13 /1	62	A28 /2	
A14 /3		B31 /3	15	A13 /3	63	B30 /3	
B16 /1		A31 /2	16	B15 /1	64	A30 /2	
A16 /3		C 2 /3	17	A15 /3	65	C 1 /3	

START B17/3

PASS-UP

FINISH B29/1

PICK-UP

78 OVENS

1-2-3 BATTERIES PUSHING SCHEDULE

DATE 11-27-91 TURN 4-12

A 1 /1	B18 /1	C 1 /1	B17 /1
B 3 /2	A18 /3	B 2 /2	A17 /3
A 3 /1	B20 /1	A 2 /1	B19 /1
B 5 /2	A20 /3	B 4 /2	A19 /3
A 5 /1	B22 /1	A 4 /1	B21 /1
B 7 /2	A22 /3	B 6 /2	A21 /3
A 7 /1	B24 /1	A 6 /1	B23 /1
B 9 /2	A24 /3	B 8 /2	A23 /3
A 9 /1	B26 /1	A 8 /1	B25 /1
B11 /2	A26 /3	B10 /2	A25 /3
A11 /1	B28 /1	A10 /1	B27 /1
B13 /2	A28 /3	B12 /2	A27 /3
A13 /1	B30 /1	A12 /1	B29 /1
B15 /2	A30 /3	B14 /2	A29 /3
A15 /1	B 1 /2	A14 /1	B31 /1
B17 /2	B 1 /3	B16 /2	A31 /3
A17 /1	A 1 /2	A16 /1	C 2 /1
B19 /2	B 3 /3	B18 /2	B 2 /3
A19 /1	A 3 /2	A18 /1	~~A 3 /2~~ BANKED
B21 /2	B 5 /3	B20 /2	B 4 /3
A21 /1	A 5 /2	A20 /1	A 4 /2
B23 /2	B 7 /3	B22 /2	B 6 /3
A23 /1	A 7 /2	A22 /1	A 6 /2
B25 /2	B 9 /3	B24 /2	B 8 /3
A25 /1	A 9 /2	A24 /1	A 8 /2
B27 /2	B11 /3	B26 /2	B10 /3
A27 /1	A11 /2	A26 /1	A10 /2
B29 /2	B13 /3	B28 /2	B12 /3
A29 /1	A13 /2	A28 /1	A12 /2
B31 /2	B15 /3	B30 /2	B14 /3
A31 /1	A15 /2	A30 /1	A14 /2
C 2 /2	B17 /3	C 1 /2	B16 /3
B 2 /1	A17 /2	B 1 /1	A16 /2
A 2 /3	B19 /3	A 1 /3	B18 /3
B 4 /1	A19 /2	B 3 /1	A18 /2
A 4 /3	B21 /3	A 3 /3	B20 /3
B 6 /1	A21 /2	B 5 /1	A20 /2
A 6 /3	B23 /3	A 5 /3	B22 /3
B 8 /1	A23 /2	B 7 /1	A22 /2
A 8 /3	B25 /3	A 7 /3	B24 /3
B10 /1	A25 /2	B 9 /1	A24 /2
A10 /3	B27 /3	A 9 /3	B26 /3
B12 /1	A27 /2	B11 /1	A26 /2
A12 /3	B29 /3	A11 /3	B28 /3
B14 /1	A29 /2	B13 /1	A28 /2
A14 /3	B31 /3	A13 /3	B30 /3
B16 /1	A31 /2	B15 /1	A30 /2
A16 /3	C 2 /3	A15 /3	C 1 /3

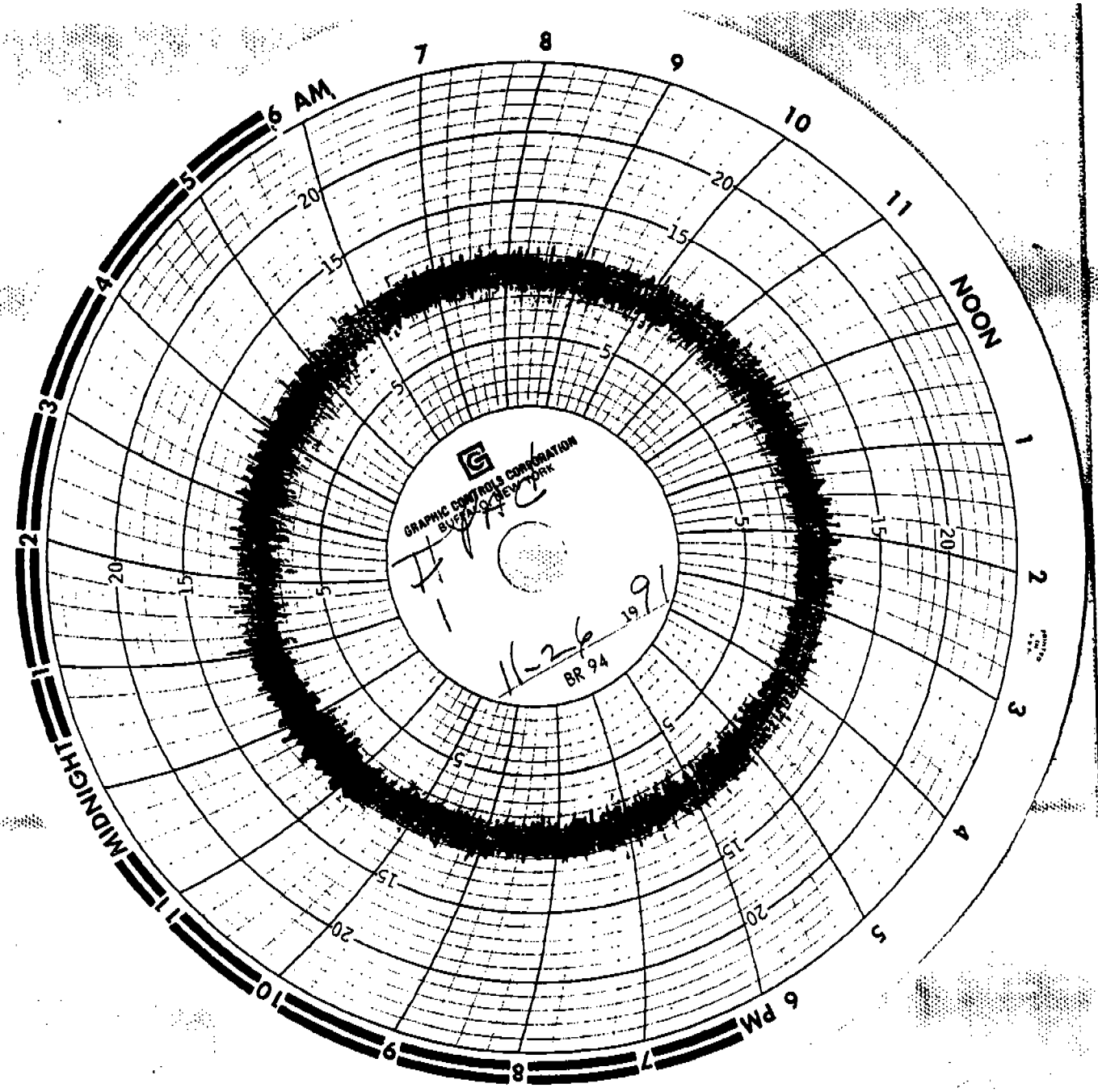
78

START A-15-3

FINISH B-31-2

PASS-UP - A 3/2 BANKED

PICK-UP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6 PM
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MIDNIGHT
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5
GRAPHIC CONTROLS CORPORATION
BUFFALO, NEW YORK
11-26 1991
BR 94

6 AM
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MIDNIGHT
BR 55005

6 AM
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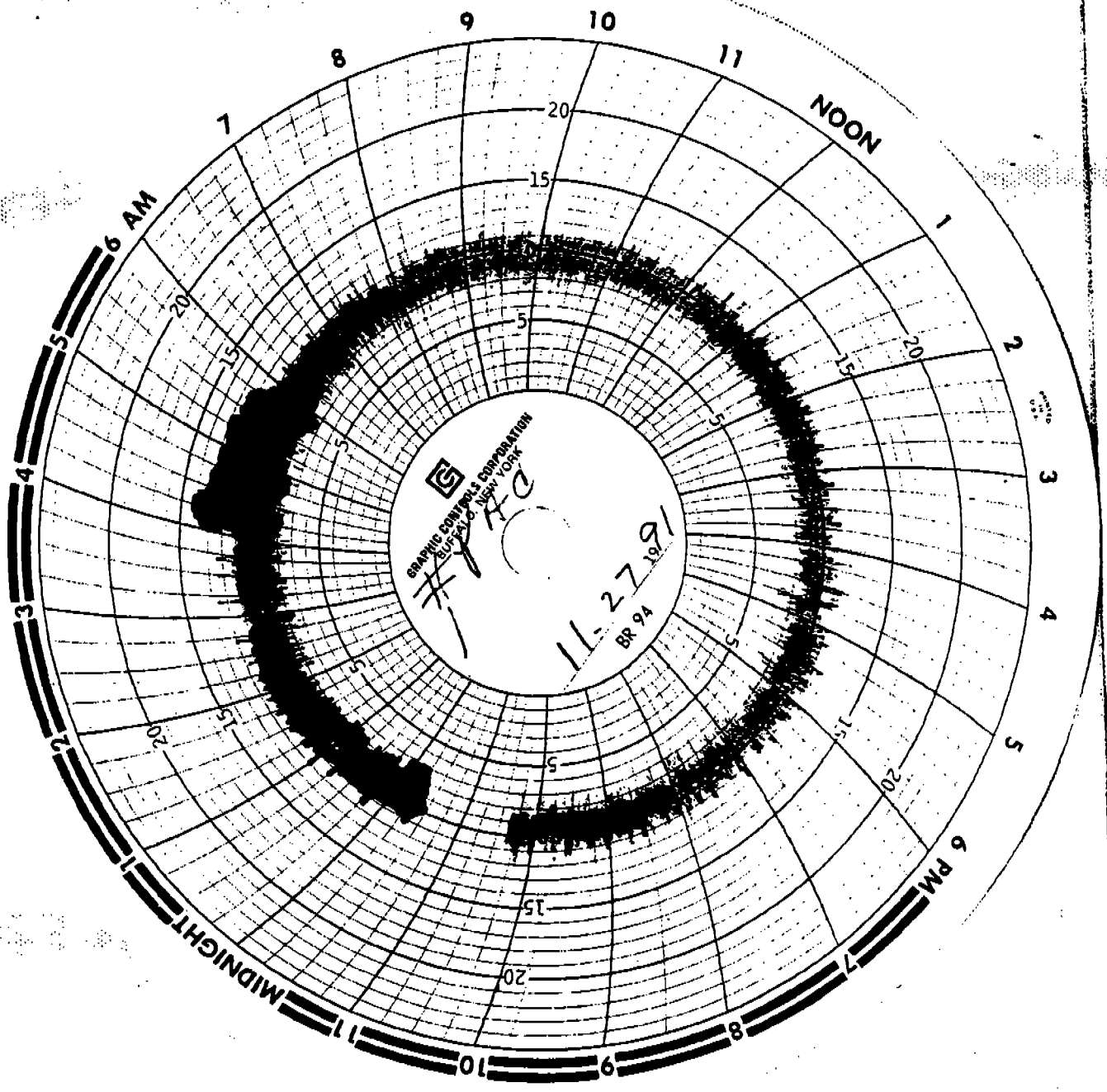
BR 55105

MIDNIGHT
6 AM
NOON
6 PM


NOON
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MIDNIGHT
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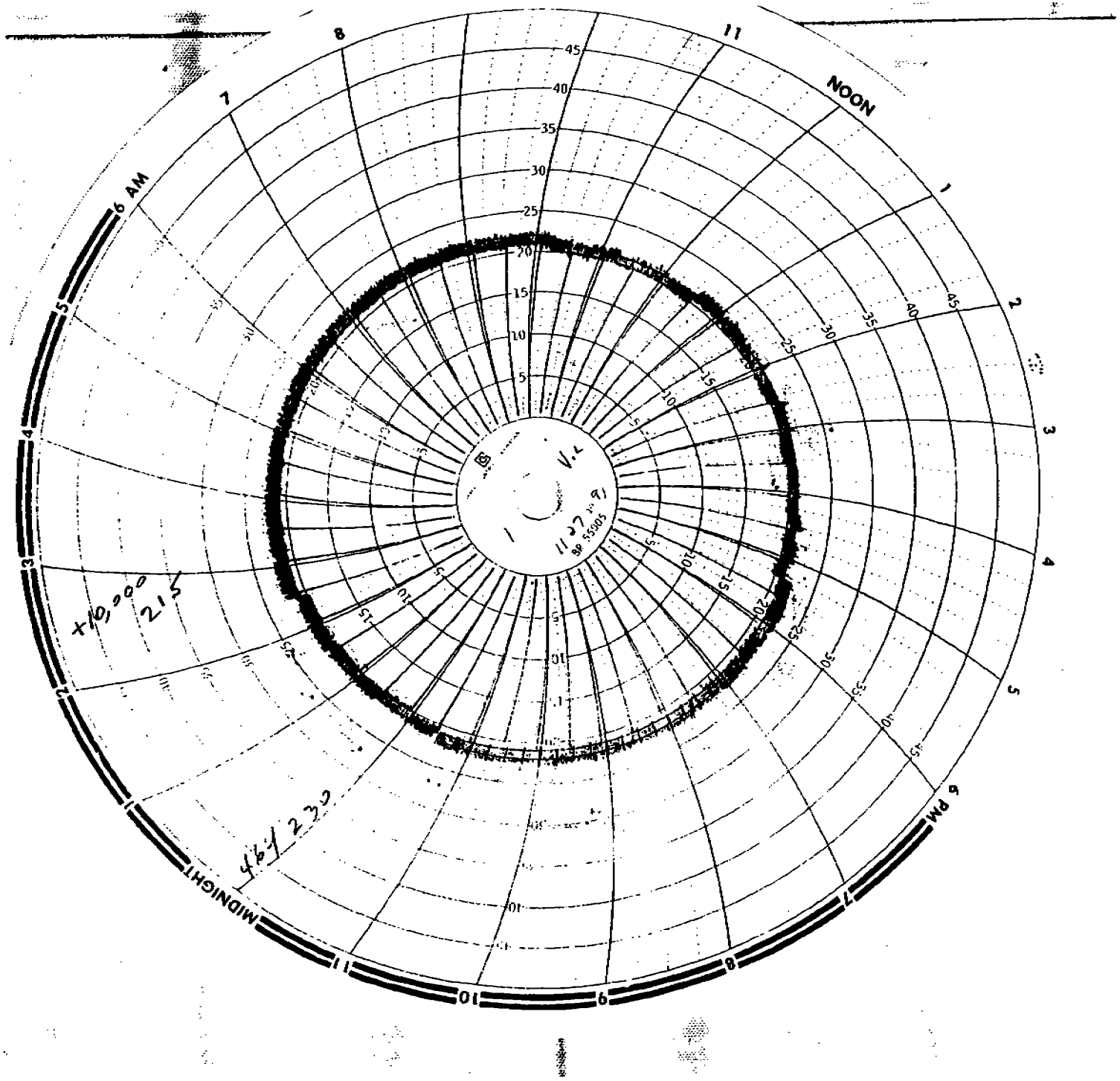
GRAPHIC CONTROLS CORPORATION
BUFFALO NEW YORK
BR 94
11-27-91


6 AM
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NOON
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MIDNIGHT
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+10,000
215
46/232

NOON
MIDNIGHT
6 AM
6 PM
BR 550005

MIDNIGHT
6 AM
NOON
6 PM

COMPLIANCE DEMONSTRATION
#1 BATTERY COMBUSTION STACK

USS CLAIRTON WORKS
CLAIRTON, PA

APPENDIX B

CALIBRATION RESULTS

CONTROL BOX CALIBRATION

THREE POINT CALIBRATION

BOX # 3 BP 28.9
DATE 10-31-91 OPERATOR RPC

	WET TEST METER				DRY TEST METER					METER	ORIFICE
	TIME (min)	TEMP TW	VOLUME VM	PRESSURE PW	TEMP IN TI	TEMP OUT TO	TEMP AVG TA	ORIFICE PD	VOLUME VD	CORRECT Y	COEFFICIENT ΔH@
START			0.000	28.90				0.50	609.950		
HALF		72.0			91.0	76.0	83.5				
STOP	12.33		5.000						615.245		
CALCULATION	12.33	532.0	5.013	28.90			543.5	28.94	5.295	0.9659	1.728
START			0.000	28.90				1.00	615.755		
HALF		72.0			101.0	82.0	91.5				
STOP	8.72		5.000						621.056		
CALCULATION	8.72	532.0	5.013	28.90			551.5	28.97	5.301	0.9777	1.704
START			0.000	28.90				2.00	622.100		
HALF		72.0			107.0	85.0	96.0				
STOP	6.20		5.000						627.394		
CALCULATION	6.20	532.0	5.013	28.90			556.0	29.05	5.294	0.9845	1.708
AVERAGE										0.9761	1.713

POST TEST

BOX # 3 BP 29.1
DATE 01-27-92 OPERATOR RPC

	WET TEST METER				DRY TEST METER					METER CORRECT Y	ORIFICE COEFFICIENT ΔH@
	TIME (min)	TEMP TW	VOLUME VM	PRESSURE PW	TEMP IN TI	TEMP OUT TO	TEMP AVG TA	ORIFICE PD	VOLUME VD		
START			0.000	29.10				1.00	128.900		
HALF		70.0			100.0	80.0	90.0				
STOP	8.82		5.000						134.280		
CALCULATION	8.82	530.0	5.013	29.10			550.0	29.17	5.380	0.9644	1.723
START			0.000	29.10				1.00	134.400		
HALF		70.0			102.0	82.0	92.0				
STOP	8.80		5.000						139.711		
CALCULATION	8.80	530.0	5.013	29.10			552.0	29.17	5.311	0.9805	1.709
START			0.000	29.10				1.00	139.900		
HALF		70.0			103.0	83.0	93.0				
STOP	8.83		5.000						145.282		
CALCULATION	8.83	530.0	5.013	29.10			553.0	29.17	5.382	0.9693	1.717
AVERAGE										0.9714	1.716
DIFFERENCE										0.48%	-0.16%

PRE-TEST MAGNEHELIC CALIBRATION

BOX# 3
DATE 10-25-91
OPERATOR RPC

0 to 10" H2O RANGE

MAGNEHELIC Δ P	MANOMETER
0.50	0.55
1.00	1.10
2.00	2.10
4.00	4.10
6.00	6.10
8.00	8.00

0 to 0.50" H2O RANGE

MAGNEHELIC Δ P	MANOMETER
0.50	0.48
0.40	0.38
0.30	0.29
0.20	0.20
0.10	0.10

0 to 5" H2O RANGE

MAGNEHELIC DELTA H	MANOMETER
4.00	4.00
3.00	3.00
2.00	2.00
1.00	1.00
0.50	0.49

PRE-TEST LEAK CHECK

DATE 10-31-91
OPERATOR RPC

	START CF	STOP CF	VOLUME CF	TIME (min)	LEAK RATE
DRY	608.975	609.114	0.139	10.000	-0.001
WET	0.000	0.129	0.129		

PYROMETER CALIBRATION

DATE 04-28-88
OPERATOR AGL

mV Input	TEMP F	TEMP READING F
0.18	40	40.0
0.40	50	50.0
0.84	70	70.0
1.29	90	90.0
1.74	110	110.0
2.66	150	150.0
3.82	200	200.0
6.09	300	301.0
8.31	400	400.0
10.57	500	500.0

PRE-TEST PYROMETER CHECK

DATE 10-25-91
OPERATOR RPC

mV Input	TEMP F	TEMP READING F
0.18	40	40.0
0.40	50	50.0
0.84	70	70.0
1.29	90	90.0
1.74	110	110.0
2.66	150	151.0
3.82	200	202.0
6.09	300	302.0
8.31	400	402.0
10.57	500	502.0

POST-TEST MAGNEHELIC CALIBRATION

BOX# 3
DATE 01-17-92
OPERATOR RPC

0 to 10" H2O RANGE

MAGNEHELIC DELTA P	MANOMETER
0.50	0.51
1.00	1.00
2.00	2.00
4.00	4.00
6.00	6.00
8.00	8.00

0 to 0.50" H2O RANGE

MAGNEHELIC DELTA P	MANOMETER
0.50	0.50
0.40	0.40
0.30	0.30
0.20	0.20
0.10	0.10

0 to 5" H2O RANGE

MAGNEHELIC DELTA H	MANOMETER
4.00	4.00
3.00	3.00
2.00	2.00
1.00	1.05
0.50	0.50

POST-TEST LEAK CHECK

DATE 01-27-92
OPERATOR RPC

	START CF	STOP CF	VOLUME CF	TIME (min)	LEAK RATE
DRY	128.000	128.210	0.210	10.000	-0.002
WET	0.000	0.191	0.191		

PYROMETER CALIBRATION
DATE 04-28-88
OPERATOR AGL

mV input	TEMP F	TEMP READING F
0.18	40	40.0
0.40	50	50.0
0.84	70	70.0
1.29	90	90.0
1.74	110	110.0
2.66	150	150.0
3.82	200	200.0
6.09	300	301.0
8.31	400	400.0
10.57	500	500.0

POST-TEST PYROMETER CHECK

DATE 01-17-92
OPERATOR RPC

mV input	TEMP F	TEMP READING F
0.18	40	40.0
0.40	50	50.0
0.84	70	69.0
1.29	90	89.0
1.74	110	109.0
2.66	150	150.0
3.82	200	201.0
6.09	300	302.0
8.31	400	401.0
10.57	500	501.0

BOX #3

QA ORIFICE AUDIT

AGENCY BAPC

DATE 10-25-91

OPERATOR RPC

RUN	1		2		3	
INITIAL CF	504.400		511.700		519.050	
FINAL CF	511.681		519.000		526.352	
DIFFERENCE	7.281		7.300		7.302	
	IN (°F)	OUT (°F)	IN (°F)	OUT (°F)	IN (°F)	OUT (°F)
TEMP INITIAL	76	76	77	76	78	76
TEMP 5 MIN	77	76	79	76	80	77
TEMP 10 MIN	78	76	80	77	81	78
TEMP 15 MIN	78	76	80	76	81	78
	°F	TEMP R	°F	TEMP R	°F	TEMP R
TEMP AVG	76.625	536.625	77.625	537.625	78.625	538.625
TIME MINUTES	15		15		15	
	IN WATE	IN HG	IN WATER	IN HG	IN WATER	IN HG
ORIFICE	0.65	0.05	0.65	0.05	0.65	0.05
BARA PRESSURE	29.04	29.09	29.04	29.09	29.04	29.09
	°F	°C	°F	°C	°F	°C
AMBIENT TEMP.	75.0	23.9	75.0	23.9	75.0	23.9
VACUUM IN HG	19.5		19		19	
STD CF	6.991		6.996		6.985	
DGM CAL Y	0.9761		0.9761		0.9761	
STD CUBIC METERS	0.1933		0.1934		0.1931	

Box #3

QA ORIFICE AUDIT

AGENCY BAPC

DATE 01-17-92

OPERATOR RPC

RUN	1		2		3	
INITIAL CF	80.200		87.650		95.250	
FINAL CF	87.560		95.012		102.600	
DIFFERENCE	7.360		7.362		7.350	
	IN (°F)	OUT (°F)	IN (°F)	OUT (°F)	IN (°F)	OUT (°F)
TEMP INITIAL	95	82	85	81	84	81
TEMP 5 MIN	88	82	84	80	84	80
TEMP 10 MIN	86	81	84	81	84	80
TEMP 15 MIN	85	81	84	81	84	80
	°F	TEMP R	°F	TEMP R	°F	TEMP R
TEMP AVG	85	545	82.5	542.5	82.125	542.125
TIME MINUTES	15		15		15	
	IN WATE	IN HG	IN WATER	IN HG	IN WATER	IN HG
ORIFICE	0.65	0.05	0.65	0.05	0.65	0.05
BARA PRESSURE	28.60	28.65	28.60	28.65	28.60	28.65
	°F	°C	°F	°C	°F	°C
AMBIENT TEMP.	74.0	23.3	74.0	23.3	74.0	23.3
VACUUM IN HG	19		19		19	
STD CF	6.853		6.887		6.880	
DGM CAL Y	0.9722		0.9722		0.9722	
STD CUBIC METERS	0.1887		0.1896		0.1894	

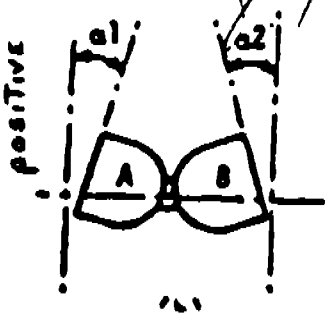
PROBE #: 7-1

DATE: 8-2-91

INITIALS: [illegible]

GEOMETRIC PITOT CALIBRATION

pre check



a1, a2 <10°

a1 = 3°

a2 = 5

a1, a2 = <10°

B1 = 0.5

B2 = 0

B1, B2 = <5°

A = 1.040

μ = 0.182 μ = ≤0.1250"

V = 0.182 V = ≤0.03125"

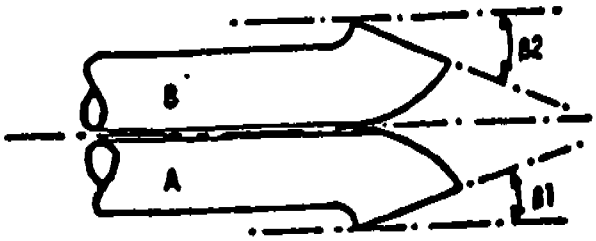
W = 0.161 W ≥ 0 (3/4" using 1/2" nozzle)

X = .756 X ≥ 0.750

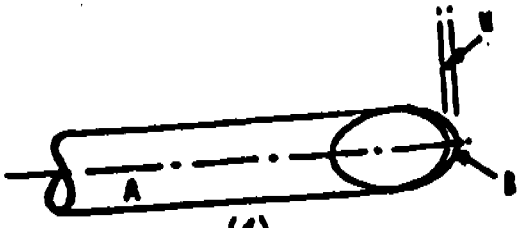
Y = 5.770 Y ≥ 3.0"

Z = 2.013 Z > 2.0"

D_t = 0.325 D_t > .1875 to .325 (3/16" to 3/8")



B1, B2 <5°



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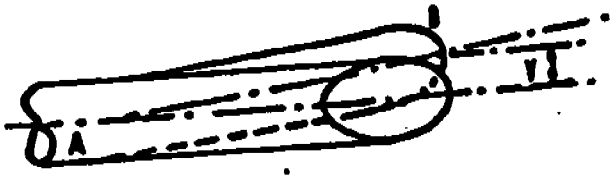
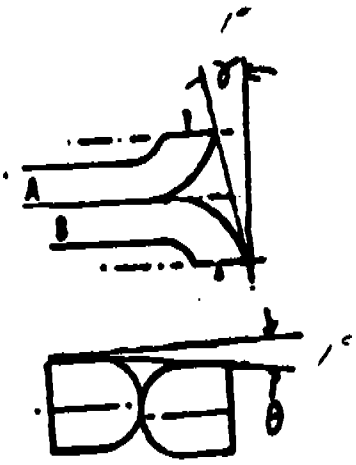
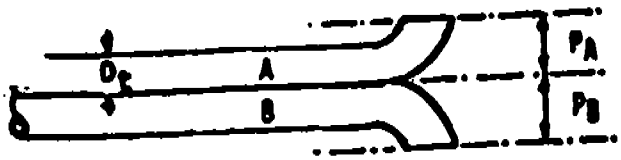




μ = A SIN γ

Y = A SIN θ

A-SIDE PLANE



B-SIDE PLANE

1.05 D_t < Φ < 1.50 D_t

P_A = P_B

2.10 D_t < A < 3.00 D_t

post-check

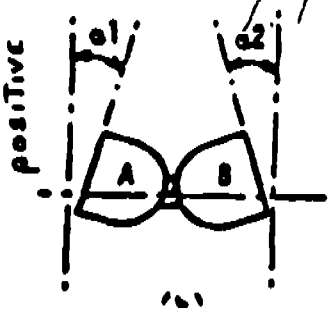
GEOMETRIC PITOT CALIBRATION

PROBE #: 7-1

DATE: 1-22-92

INITIALS: [illegible]

Caliper # XF368



a1, a2 <10°

a1 = 2°

a2 = 1°

a1, a2 = <10°

B1 = 1.5°

B2 = 1.5°

B1, B2 = <5°

A = 1.039

μ = 0.0091 μ = ≤0.1250"

V = 0.0091 V = ≤0.03125"

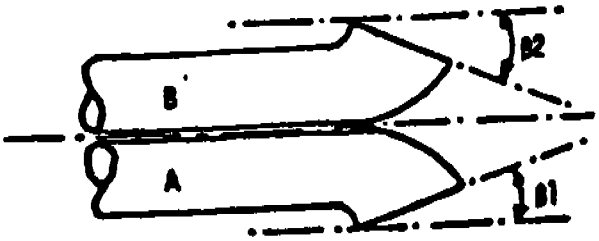
W = 0.227 W ≥ 0

X = 0.805 X ≥ 0.750 (3/4" using 1/2" nozzle)

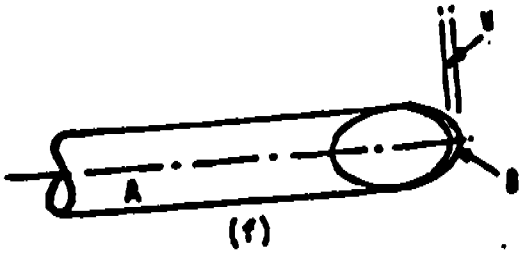
Y = 5.742" Y ≥ 3.0"

Z = 2.284 Z > 2.0"

Dt = 0.376 Dt > .1875 to .375 (3/16" to 3/8")



B1, B2 <5°



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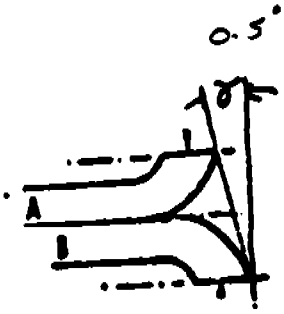
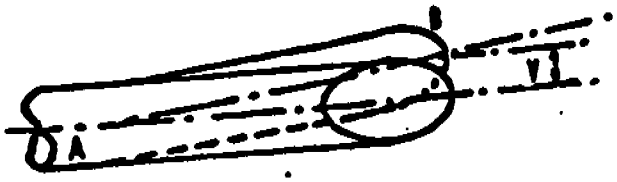
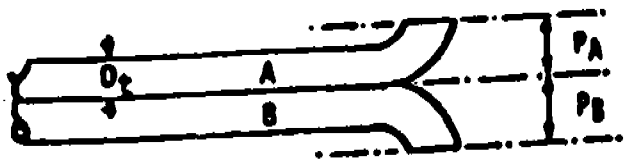


μ = A SIN γ

V = A SIN θ



A-SIDE PLANE



B-SIDE PLANE

1.05 D_t < φ < 1.50 D_t

$P_A = P_B$

2.10 D_t < A < 3.00 D_t

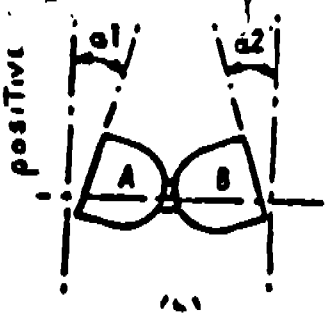
PROBE #: 7-2

DATE: 8-2-91

INITIALS: [illegible]

GEOMETRIC PITOT CALIBRATION

PRE-CHECK



a1, a2 <10°

a1 = 1°

a2 = 4°

a1, a2 = <10°

B1 = 2°

B2 = 1°

B1, B2 = <5°

A = 0.940

μ = 0.0491 μ = ≤0.1250"

V = 0.016 V = ≤0.03125"

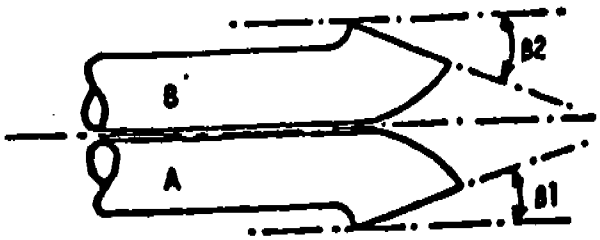
W = 0.560 W ≥ 0 (3/4" using 1/2" nozzle)

X = 0.935 X ≥ 0.750

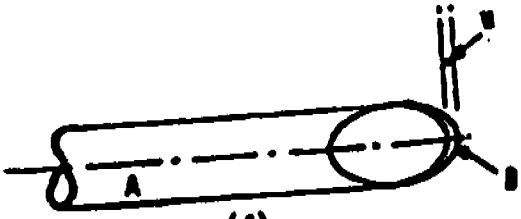
Y = 5.600 Y ≥ 3.0"

Z = 2.295 Z > 2.0"

D_t = 0.375 D_t > .1875 to .375 (3/16" to 3/8")



β1, β2 <5°



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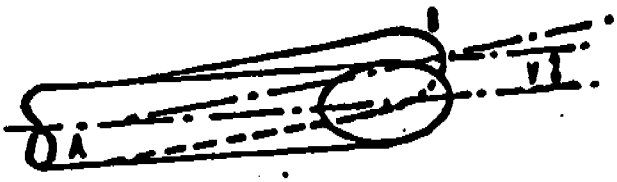
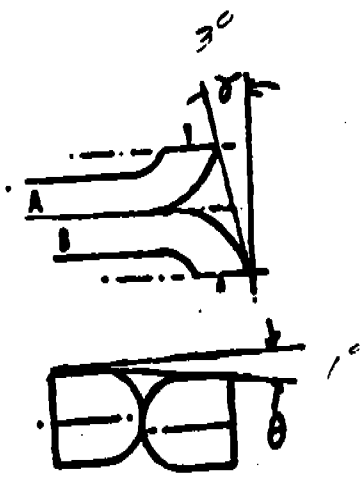
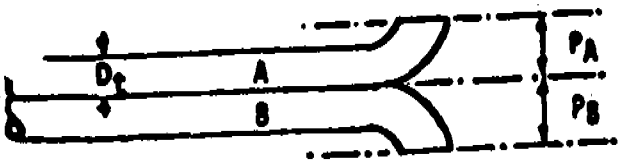




μ = A SIN γ 3°

V = A SIN θ 1°

A-SIDE PLANE



B-SIDE PLANE

1.05 D_t <P <1.50 D_t

$P_A = P_B$

2.10 D_t <A <3.00 D_t

PROBE #: 7-2

DATE: 1-22-92

INITIALS: [illegible]

GEOMETRIC PITOT CALIBRATION

post-check

calipers xFS68

a1 = 1°

a2 = 5°

a1, a2 = <10°

B1 = 1.5°

B2 = 1.5°

B1, B2 = <5°

A = 0.939

μ = 0.0409 μ = ≤0.1250"

V = 0.0246 V = ≤0.03125"

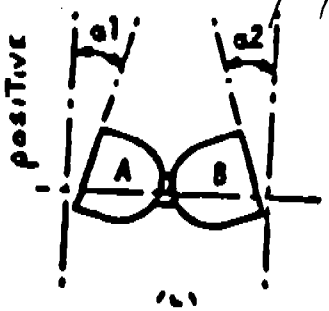
W = 0.510 W ≥ 0 (3/4" using 1/2" nozzle)

X = 0.876 X ≥ 0.750

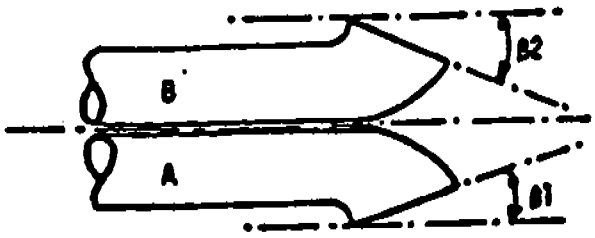
Y = 5.683 Y ≥ 3.0"

Z = 2.016 Z > 2.0"

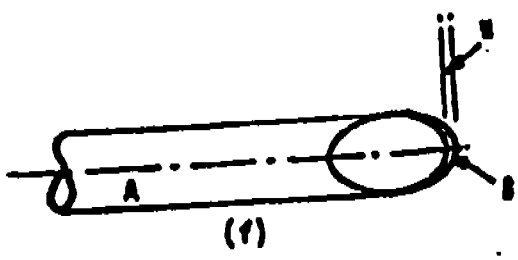
D_t = 0.377 D_t > .1875 to .375 (3/16" to 3/8")

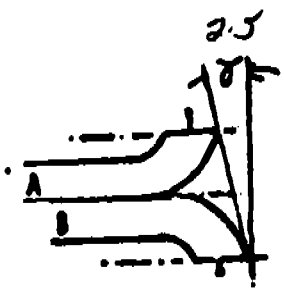


a1, a2 <10°



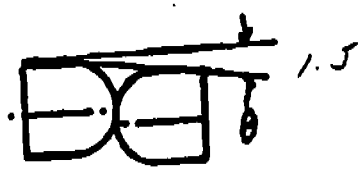
β1, β2 <5°

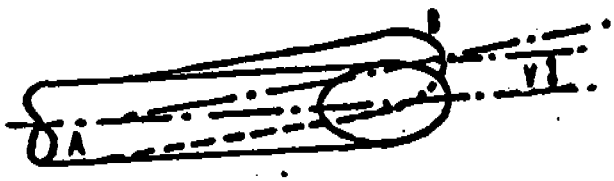




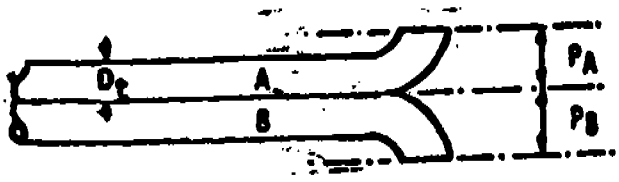
μ = A SIN γ

V = A SIN θ





A-SIDE PLANE



B-SIDE PLANE

$1.05\ D_t < P < 1.50\ D_t$

$P_A = P_B$

$2.10\ D_t < A < 3.00\ D_t$

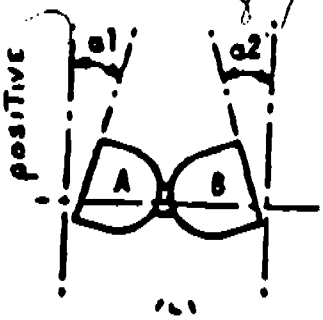
PROBE #: 7-3

DATE: 8-2-91

INITIALS: [illegible]

GEOMETRIC PITOT CALIBRATION

PRE-CHECK



a1, a2 <10°

a1 = 0°
a2 = 4°
a1, a2 = <10°

B1 = 2°
B2 = 3°
B1, B2 = <5°

A = 0.976

μ = 0 μ = ≤0.1250"

V = 0.0170 V = ≤0.03125"

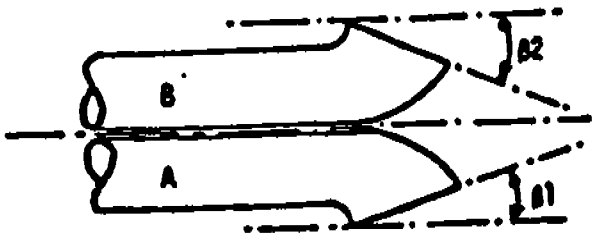
W = 2.027 W ≥ 0 (3/4" using 1/2" nozzle)

X = 1.029 X ≥ 0.750

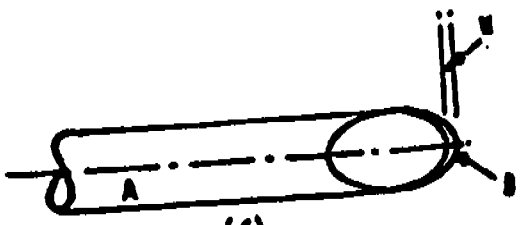
Y = 5.688 Y ≥ 3.0"

Z = 2.145 Z > 2.0"

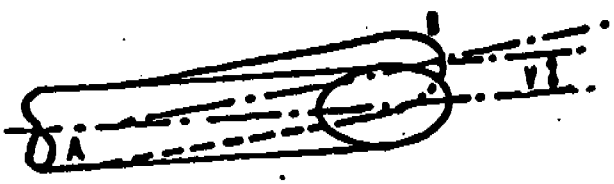
D_t = 0.375 D_t > .1875 to .375 (3/16" to 3/8")

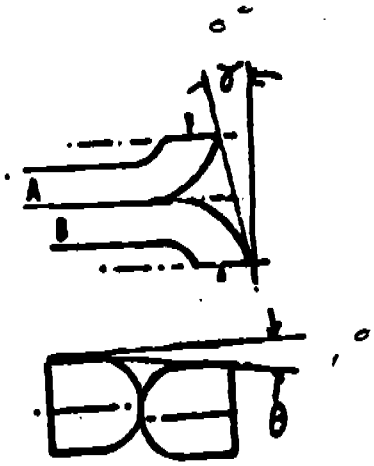


β1, β2 <5°



(f)

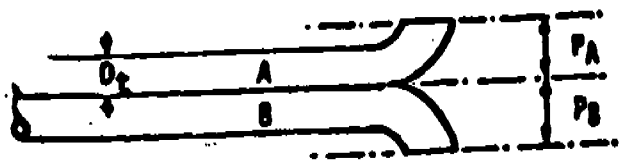




μ = A SIN γ 0°

V = A SIN θ 1°

A-SIDE PLANE



B-SIDE PLANE

1.05 D_t <P <1.50 D_t

$P_A = P_B$

2.10 D_t <A <3.00 D_t

PROBE #: 7-3

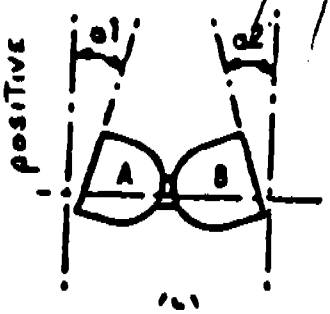
DATE: 1-22-72

INITIALS: [illegible]

GEOMETRIC PITOT CALIBRATION

post-check

CALIPERS XF568



a1, a2 <10°

a1 = 1°

a2 = 5°

a1, a2 = <10°

B1 = 2°

B2 = 1°

B1, B2 = <5°

A = 0.980

μ = 0 μ = ≤0.1250"

V = 0.0257 V = ≤0.03125"

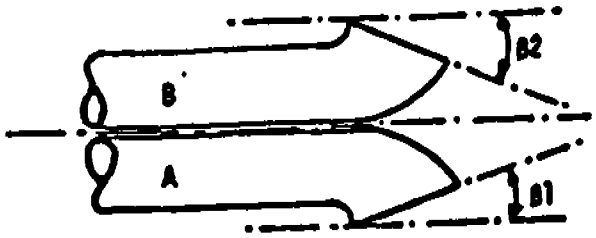
W = 0.319 W ≥ 0 (3/4" using 1/2" nozzle)

X = 0.930 X ≥ 0.750

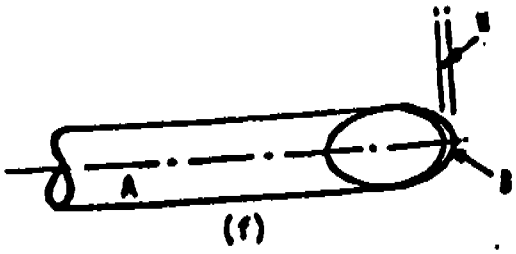
Y = 5.725 Y ≥ 3.0"

Z = 2.184 Z > 2.0"

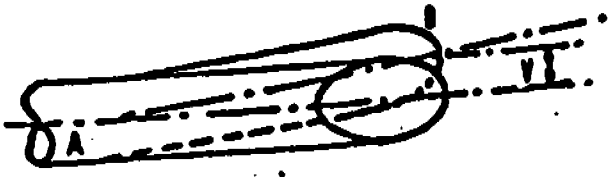
D_t = .376 D_t > .1875 to .375 (3/16" to 3/8")

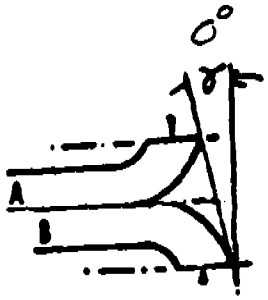


B1, B2 <5°



(f)





μ = A SIN γ

Y = A SIN θ

A-SIDE PLANE

B-SIDE PLANE

1.05 D_t < Φ < 1.50 D_t

P_A = P_B

2.10 D_t < A < 3.00 D_t

COMPLIANCE DEMONSTRATION
#1 BATTERY COMBUSTION STACK

USS CLAIRTON WORKS
CLAIRTON, PA

APPENDIX C

FIELD DATA SHEETS

Battery Inactive

#1 Battery Stack - Test #1

P. 1 of 2

D

STACK SAMPLING DATA SHEET

Clairton Works	DATE: 11-26-91	ΔH@: 1.713 (110(91)	HOT BOX NO.: 2
Clairton, PA	TEST NO.: CLR - BS1 - 1	METER CORRECTION: .9761	COLD BOX NO.: 2
#1 Battery Stack	NOZZLE: #50.488	PITOT CORRECTION: 0.84	PROBE NO.: 7-1
CONTROL BOX OPERTOR:	STATIC PRESSURE Ps: 1.2	CONTROL BOX NO.: 3	FILTER NO.: 711
PROBE HANDLER:	PORT DIRECTION: 1 & 2	NOMOGRAPH SET POINT: —	STACK DIA.: 114"
CLEAN UP:	BAROMETRIC PRESSURE: 29.60	LENGTHS OF UMBILICAL ____ x 25' ____ x 50'	

	Time	Meter Reading (dry) CF	Velocity HD in. H_2O	Orifice ΔH in. H_2O Reg.	Orifice ΔH in. H_2O Act.	Meter Temp °F In	Meter Temp °F Out	Vacuum in. Hg	Stack Temp °F	Probe Temp °F	Imp. Temp. °C/°F	Hot Box °F	Comments
[illegible]	1020	367.848	.07	1.07	1.07	47	47	2.5	430	260	<68°F	250	5 min/pt
[illegible]			.07	1.10	1.10	56	41	2.5	457	225	50	220	
[illegible]			.07	1.10	1.10	61	42	2.5	460	235	52	225	
[illegible]			.05	.78	.78	64	45	2.0	465	235	55	225	
7.6			.04	.63	.63	65	47	1.0	460	240	55	230	
8.4	10:00	384.676	.04	.63	.63	66	49	1.0	461	240	56	235	
40.6	11:00	384.676	.08	1.25	1.25	67	51	3.0	465	235	54	235	
28.5			.07	1.10	1.10	70	52	3.0	466	235	56	240	
20.2			.05	.78	.78	72	54	2.0	465	235	56	240	
13.5			.06	.94	.94	72	54	3.0	441	236	58	240	
7.6			.03	.47	.47	74	56	1.0	440	235	58	229	
2.4	11:30	401.006	.03	.47	.47	73	56	1.0	445	235	60	240	

LEAK CHECK

	in. Hg.	Rate
Before	5.0	.014 cfm
After	5.0	.016 cfm

	1	2
CO_2	3.0	3.0
O_2	16.5	17.0
CO		
N_2		

PITOT LEAK CHECK

POS.	NEG.
OK 15 sec	OK 15 sec
OK 15 sec	OK 15 sec

Impinger No.	Final	Initial	Difference
1	624.0	543.5	80.5
2	616.8	580.2	36.6
3	407.1	402.0	5.1
4	684.2	667.5	16.7
5			

Estimates:

Battery Inactive #1 Battery Stack - Test #1 P 2 of 2 D

KEYSTONE ENVIRONMENTAL RESOURCES, INC.

STACK SAMPLING DATA SHEET

PLANT: USS Clairton Works
LOCATION: Clairton, PA
ACTIVITY NO.: #1 Battery Stack
CONTROL BOX OPERTOR:
PROBE HANDLER:
CLEAN UP:

DATE: 11-26-91
TEST NO.: CLR-BS1-1
NOZZLE: #.428 #50
STATIC PRESSURE Ps: 1.2
PORT DIRECTION: 493
BAROMETRIC PRESSURE: 29.60

ΔH@: 1.713 (11-01-91)
METER CORRECTION: .9761
PITOT CORRECTION: 0.84
CONTROL BOX NO.: 3
NOMOGRAPH SET POINT:
LENGTHS OF UMBILICAL ____ x 25' ____ x 50'

HOT BOX NO.: 2
COLD BOX NO.: 2
PROBE NO.: 1
FILTER NO.: 711
STACK DIA.: 114"

Point	Time	Meter Reading (dry) CF	Velocity HD in. H_2O	Orifice ΔH in. H_2O Req.	Orifice ΔH in. H_2O Act.	Meter Temp °F In	Meter Temp °F Out	Vacuum in. Hg	Stack Temp °F	Probe Temp °F	Imp. Temp. °C/°F	Hot Box °F	Comments
40.6	11:47	401.006	.08	1.25	1.25	54	52	3.5	457	260	<68°F	250	5 min/pt
28.5			.07	1.10	1.10	68	53	3.0	471	235	55	225	
20.2			.07	1.10	1.10	70	53	3.0	458	235	49	230	
[illegible]			.07	1.10	1.10	71	52	3.0	436	225	45	230	
[illegible]			.03	.47	.47	69	52	1.0	425	230	46	225	
[illegible]	12:17	418.676	.02	.31	.31	67	52	1.0	425	230	45	230	
[illegible]	12:25	418.676	.08	1.25	1.25	57	50	3.5	457	230	46	220	
[illegible]			.09	1.41	1.41	65	50	4.0	456	235	45	225	
20.2			.07	1.10	1.10	69	50	2.5	459	235	50	225	
13.5			.05	.78	.78	70	50	1.0	457	236	50	230	
7.6			.05	.78	.78	70	57	1.0	461	235	50	220	
2.4	12:35	436.933	.03	.47	.47	70	55	1.0	457	236			

LEAK CHECK

	in. Hg.	Rate
Before		
After		

	1	2
CO_2		
O_2		
CO		
N_2		

PITOT LEAK CHECK

POS.	NEG.

Impinger No.	Final	Initial	Difference
1			
2			
3			
4			
5			

BATTERY STACK 1 TEST #3 Pg 1 of 2 D

KEYSTONE
ENVIRONMENTAL RESOURCES, INC.

STACK SAMPLING DATA SHEET

PLANT: USS Clairton Works
LOCATION: Comb. Stack #1
ACTIVITY NO.:
CONTROL BOX OPERTOR: DB
PROBE HANDLER: MM
CLEAN UP:

DATE: 11-27-91
TEST NO.: CLR-BS1-2
NOZZLE: 0.428 #50
STATIC PRESSURE Ps: -1.2
PORT DIRECTION: 1.4
BAROMETRIC PRESSURE: 29.50

ΔH@: 1.713 (11-1-91)
METER CORRECTION: 0.9761
PITOT CORRECTION: 0.84
CONTROL BOX NO.: 3
NOMOGRAPH SET POINT: ---
LENGTHS OF UMBILICAL ___ x 25' 1 x 50' cok #4

HOT BOX NO.: 4
COLD BOX NO.: 4
PROBE NO.: 7-2
FILTER NO.: 712
STACK DIA.: 114"

PORT	Point	Time	Meter Reading (dry) CF	Velocity HD in. H_2O	Orifice ΔH in. H_2O Reg.	Orifice ΔH in. H_2O Act.	Meter Temp °F In	Meter Temp °F Out	Vacuum in. Hg	Stack Temp °F	Probe Temp °F	Imp. Temp. °C/°F	Hot Box °F	Comments
#1	40.6	940	536.317	0.08	1.22	1.22	51	43	6.2	456	250	ICE BATH <66°F	230	5 min/pt
	28.5			0.07	1.07	1.07	66	47	5.2	474			230	
	20.2			0.065	0.99	0.99	67	48	5.0	480	250		235	
	13.5			0.055	0.84	0.84	68	49	5.0	460			240	Battery #1
	7.6			0.015	0.23	0.23	65	50	1.5	403	250		245	active
	2.4	1010	551.398	0.01	0.15	0.15	63	50	1.0	388			245	during test
#1	40.6	1012	551.398	0.085	1.29	1.29	67	50	5.0	409	250		235	
	28.5			0.08	1.22	1.22	71	51	7.0	457			238	
	20.2			0.07	1.07	1.07	71	51	6.5	461	250		240	
	13.5			0.055	0.85	0.85	72	52	6.2	468			237	
	7.6			0.02	0.31	0.31	68	52	2.0	471	251		233	
	2.4	1042	567.677	0.01	0.15	0.15	67	53	2.0	477	253		235	

LEAK CHECK

	in. Hg.	Rate
Before	5.0	<0.02 cfm
After	8.0	0.013 cfm

	1	2
CO_2	3.0	3.0
O_2	17.0	17.0
CO		
N		

PITOT LEAK CHECK

POS.	NEG.
15 sec OK	15 sec OK
15 sec OK	15 sec OK

Impinger No.	Final	Initial	Difference
1 H2O 100ml	562.0	465.5	96.5
2 H2O 100ml	603.4	570.0	33.4
3 Dry	440.6	436.8	3.8
4 Silica Gel	636.3	624.2	12.1
5			

MW = 27.7
% = 13%

KEYSTONE
ENVIRONMENTAL RESOURCES, INC.

STACK SAMPLING DATA SHEET

PLANT: USS Clairton Works
LOCATION: Comb. Stack #1
ACTIVITY NO.:
CONTROL BOX OPERTOR: DB
PROBE HANDLER: TM
CLEAN UP:

DATE: 11-27-91
TEST NO.: CLR-BS1-2
NOZZLE: 0.428 #50
STATIC PRESSURE Ps: -1.2
PORT DIRECTION: 3,2
BAROMETRIC PRESSURE: 29.50

ΔH@: 1.713 (11-1-91)
METER CORRECTION: 0.9761
PITOT CORRECTION: 0.84
CONTROL BOX NO.: 3
NOMOGRAPH SET POINT:
LENOTHS OF UMBILICAL ____ x 25' 1 x 50'

HOT BOX NO.: 4
COLD BOX NO.: 4
PROBE NO.: 7-2
FILTER NO.: 712
STACK DIA.: 114"

PORT	Point	Time	Meter Reading (dry) CF	Velocity HD in. H_2O	Orifice ΔH in. H_2O Reg.	Orifice ΔH in. H_2O Act.	Meter Temp °F In	Meter Temp °F Out	Vacuum in. Hg	Stack Temp °F	Probe Temp °F	Imp. Temp. °C/°F	Hot Box °F	Comments
3	40.6	1046	567.677	0.09	1.39	1.39	65	53	7.7	462	250	Turn Down	245	5 min/pt
	28.5			0.095	1.47	1.47	73	53	8.0	481	252	<68°F	240	Battery #1
	20.2			0.07	1.08	1.08	72	54	6.0	485	250		235	active during
	13.5		0.025	0.25	0.39	0.39	70	54	2.5	483	250		235	sampling
	7.6			0.01	0.15	0.15	68	55	1.0	479	250		245	
3	2.4	1116	582.903	0.01	0.15	0.15	67	55	1.0	475	250		240	
2	40.6	1120	582.903	0.07	1.08	1.08	69	55	6.0	458	250		230	Estimates
	28.6			0.065	1.01	1.01	75	56	5.5	472	255		225	MW=27.7
	20.2			0.06	0.93	0.93	77	57	5.5	471	250		225	%H2O = 13%
	13.5			0.06	0.93	0.93	77	58	5.5	475	250		230	
	7.6			0.015	0.23	0.23	74	59	1.5	470	250		230	
2	2.4	1150	598.161	0.01	0.15	0.15	73	62	1.2	472	250		235	

LEAK CHECK

	in. Hg.	Rate
Before		
After		

	1	2
CO_2		
O_2		
CO		
N		

PITOT LEAK CHECK

POS.	NEG.

Impinger No.	Final	Initial	Difference
1			
2			
3			
4			
5			

Pg 1 of 2

D

KEYSTONE
ENVIRONMENTAL RESOURCES, INC.

STACK SAMPLING DATA SHEET

PLANT: USS Clairton Works
DATE: 11-27-91
ΔH@: 1.713 (11-1-91)
HOT BOX NO.: 5
LOCATION: Comb. Stack #1
TEST NO.: CLR-BS1-3
METER CORRECTION: 0.9761
COLD BOX NO.: 5
ACTIVITY NO.:
NOZZLE: 0.428 #50
PITOT CORRECTION: 0.84
PROBE NO.: 7-3
CONTROL BOX OPERTOR: DR
STATIC PRESSURE Ps: -1.15
CONTROL BOX NO.: 3
FILTER NO.: 716
PROBE HANDLER: TM
PORT DIRECTION: 2,3
NOMOGRAPH SET POINT: —
STACK DIA.: 114"
CLEAN UP:
BAROMETRIC PRESSURE: 29.30
LENGTHS OF UMBILICAL ___ x 25' ___ x 50'

	Point	Time	Meter Reading (dry) CF	Velocity HD in. H_2O	Orifice ΔH in. H_2O Reg.	Orifice ΔH in. H_2O Act.	Meter Temp °F In	Meter Temp °F Out	Vacuum in. Hg	Stack Temp °F	Probe Temp °F	Imp. Temp. °C/°F	Hot Box °F	Comments
	40.6	1207	598.428	0.07	0.93	0.93	70	58	4.5	440	250	ZCED DOWN <68°F	230	5 min/pt
2	28.5	1212		0.065	1.01	1.01	75	58	5.0	450				
	20.2	1217		0.065	1.01	1.01	80	60	5.5	451	250		235	Battery #1
	13.5	1222		0.05	0.79	0.79	78	59	5.5	455				Active
	7.6	1227	615.714	0.01	0.15	0.15	77	60	25.0	450	250		230	
2	2.4	1237	~~615.714~~	0.01	0.15	0.15	75	61	1.0	452				% H_2O = 13
3	40.6	1240	615.714	0.09	1.43	1.43	79	60	7.5	466	250		220	MW = 27.7
	28.5			0.09	1.43	1.43	80	61	8.0	473				
	20.2			0.08	1.27	1.27	81	61	7.0	472	245		225	
	13.5			0.075	1.19	1.19	82	62	7.0	484				
	7.6			0.055	0.87	0.87	82	62	6.5	471	250		220	
3	2.4	1310	635.620	0.04	0.63	0.63	82	63	6.5	476				

635.620

LEAK CHECK

	in. Hg.	Rate
Before	5.0	<0.02 cfm
After	8.0	0.001 cfm

	1	2
CO_2	2.0	3.0
O_2	18.0	14.0
CO		
N		

PITOT LEAK CHECK

POS.	NEG.
OK 15 sec	OK 15 sec
OK 15 sec	OK 15 sec

Impinger No.		Final	Initial	Difference
1	H_2O 100ml	662.9	556.6	106.3
2	H_2O 100ml	530.5	488.8	41.7
3	Dry	451.6	447.2	4.4
4	Silica Gel	675.9	656.4	19.5
5				

Pg 2 of 2 D

KEYSTONE
ENVIRONMENTAL RESOURCES, INC.

STACK SAMPLING DATA SHEET

PLANT: USS Clairton Works
LOCATION: Comb. Stack #1
ACTIVITY NO.:
CONTROL BOX OPERTOR: DB
PROBE HANDLER: TM
CLEAN UP:

DATE: 11-27-91
TEST NO.: CLR-851-3
NOZZLE: 0.428 #50
STATIC PRESSURE Ps: -1.15
PORT DIRECTION: 4,1
BAROMETRIC PRESSURE: 29.50

ΔH@: 1.713 (11-1-91)
METER CORRECTION: 0.9761
PITOT CORRECTION: 0.84
CONTROL BOX NO.: 3
NOMOGRAPH SET POINT: —
LENGTHS OF UMBILICAL ____ x 25' 1 x 50'

HOT BOX NO.: #5
COLD BOX NO.: 5
PROBE NO.: 73
FILTER NO.: 716
STACK DIA.: 114"

	Point	Time	Meter Reading (dry) CF	Velocity HD in. H_2O	Orifice ΔH in. H_2O Reg.	Orifice ΔH in. H_2O Act.	Meter Temp °F In	Meter Temp °F Out	Vacuum in. Hg	Stack Temp °F	Probe Temp °F	Imp. Temp. °C/°F	Hot Box °F	Comments
4	40.6	1313	635.620	0.07	1.11	1.11	79	63	6.0	453	240		220	
	28.5			0.07	1.11	1.11	80	63	6.0	466				2 minute power failure
	20.2			0.075	1.19	1.19	82	64	6.5	472	245		225	
	13.0			0.05	0.79	0.79	83	64	6.5	481				
	7.6			0.06	0.95	0.95	83	64	5.0	480	250		230	Battery #1 Active
4	2.4	1343	653.565	0.01	0.15	0.15	83	64	5.0	479				
1	40.6	1346	653.565	0.075	1.19	1.19	80	64	6.5	459	245		225	
	28.5			0.07	1.11	1.11	82	64	4.5	485				
	20.2			0.065	1.03	1.03	84	64	7.0	489	250		220	
	13.5			0.05	0.79	0.79	84	65	6.2	487				
	7.6			0.015	0.24	0.24	80	65	1.5	480	250		230	
1	2.4	1416	669.445	0.01	0.15	0.15	78	65	1.5	475				

LEAK CHECK

	in. Hg.	Rate
Before		
After		

	1	2
CO_2		
O_2		
CO		
N		

PITOT LEAK CHECK

POS.	NEG.

Impinger No.	Final	Initial	Difference
1			
2			
3			
4			
5			

 D

KEYSTONE
ENVIRONMENTAL RESOURCES, INC.

STACK SAMPLING DATA SHEET

PLANT: USS Clairton Works
LOCATION: Comb. Stack #1
ACTIVITY NO.:
CONTROL BOX OPERTOR: DB
PROBE HANDLER: TM
CLEAN UP:

DATE: 11-27-91
TEST NO.: CLR-BS1-4
NOZZLE: 0.428 #50
STATIC PRESSURE Ps: -1.2
PORT DIRECTION: 1,4
BAROMETRIC PRESSURE: 29.50

ΔH@: 1.713 (11-1-91)
METER CORRECTION: 0.9761
PITOT CORRECTION: 0.84
CONTROL BOX NO.: 3
NOMOGRAPH SET POINT: —
LENGTHS OF UMBILICAL ____ x 25' ___1___ x 50'

HOT BOX NO.: 3
COLD BOX NO.: 3
PROBE NO.: 7-2
FILTER NO.: 709
STACK DIA.: 114"

	Point	Time	Meter Reading (dry) CF	Velocity HD in. H_2O	Orifice ΔH in. H_2O Reg.	Orifice ΔH in. H_2O Act.	Meter Temp °F In	Meter Temp °F Out	Vacuum in. Hg	Stack Temp °F	Probe Temp °F	Imp. Temp. °C/°F	Hot Box °F	Comments
1	40.6	1500	670.313	0.09	1.43	1.43	59	61	2.2	496	240	ICED DOWN <68°F	220	5 min/pt
	28.5			0.08	1.19	1.19	79	62	3.0	450			225	
	20.2			0.07	1.04	1.04	80	62	2.5	457	245		230	
	13.5			0.07	1.04	1.04	81	63	2.5	460	250		235	Battery #1 Active
	7.6			0.035	0.52	0.52	80	64	1.5	462				
1	2.4	1530	687.272	0.01	0.15	0.15	80	64	1.0	470				
4	40.6	1533	687.272	0.08	1.19	1.19	82	64	3.0	453	240		235	
	28.5			0.07	1.04	1.04	82	64	2.5	469				% H_2O = 13%
	20.2			0.075	1.12	1.12	84	65	2.7	471	245		240	MW = 27.7
	13.5			0.10	1.49	1.49	86	66	3.5	473	240		240	
	7.6			0.085	1.27	1.27	85	66	3.0	468				
4	2.4	1603	705.846	0.01	0.15	0.15	87	66	3.0	465	245		240	

LEAK CHECK

	in. Hg.	Rate
Before	5.0	0.009 CFM
After	5.0	0.011 CFM

	1	2
CO_2	3.0	2.5
O_2	16.0	17.0
CO		
N		

PITOT LEAK CHECK

POS.	NEG.
15 sec OK	15 sec OK
15 sec OK	15 sec OK

Impinger No.		Final	Initial	Difference
1	H_2O 100ml	646.9	568.4	78.5
2	H_2O 100ml	595.1	565.6	29.5
3	Dry	455.5	450.7	4.8
4	Silica	687.9	671.2	16.7
5				

KEYSTONE
ENVIRONMENTAL RESOURCES, INC.

STACK SAMPLING DATA SHEET

PLANT: USS Clairton Works
DATE: 11-27-91
ΔH@: 1.713 (11-1-91)
HOT BOX NO.: 3
LOCATION: Comb. Stack #1
TEST NO.: CLR-851-4
METER CORRECTION: 0.9761
COLD BOX NO.: 3
ACTIVITY NO.:
NOZZLE: 0.428 #50
PITOT CORRECTION: 0.84
PROBE NO.: 7-2
CONTROL BOX OPERTOR: DB
STATIC PRESSURE Ps: -1.2
CONTROL BOX NO.: 3
FILTER NO.: 709
PROBE HANDLER: TM
PORT DIRECTION: 3, 2
NOMOGRAPH SET POINT: —
STACK DIA.: 114"
CLEAN UP:
BAROMETRIC PRESSURE: 29.50
LENGTHS OF UMBILICAL ____ x 25' 1 x 50'

	Point	Time	Meter Reading (dry) CF	Velocity HD in. H_2O	Orifice ΔH in. H_2O Reg.	Orifice ΔH in. H_2O Act.	Meter Temp °F In	Meter Temp °F Out	Vacuum in. Hg	Stack Temp °F	Probe Temp °F	Imp. Temp. °C/°F	Hot Box °F	Comments
3	40.6	1607	705.846	0.06	0.90	0.90	83	66	2.5	444	240	ICED DOWN <68°F	250	5min/pt
	28.5			0.075	1.12	1.12	85	67	2.5	455	245		250	
	20.2			0.06	0.90	0.90	86	67	2.0	456	250		240	
	13.5			0.035	0.52	0.52	85	67	1.2	460	250		240	Battery #1
	7.6			0.01	0.15	0.15	80	67	1.0	463	255		245	Active
3	2.4	1637	720.268	0.01	0.15	0.15	78	66	1.0	468	250		240	
2	40.6	1639	720.268	0.08	1.19	1.19	79	67	1.5	464	255		230	
	[illegible]			0.075	1.12	1.12	85	66	2.5	480	250		230	
	20.2			0.07	1.04	1.04	85	66	2.5	477	245		220	
3.5	~~7.6~~			0.05	0.75	0.75	84	66	2.0	473	240		225	
	7.6			0.015	0.22	0.22	80	66	1.0	470	250		220	
2	2.4	1709	735.651	0.01	0.15	0.15	78	65	1.0	472	250		225	

LEAK CHECK

	in. Hg.	Rate
Before		
After		

	1	2
CO_2		
O_2		
CO		
N		

PITOT LEAK CHECK

POS.	NEG.

Impinger No.	Final	Initial	Difference
1			
2			
3			
4			
5			

COMPLIANCE DEMONSTRATION
#1 BATTERY COMBUSTION STACK

USS CLAIRTON WORKS
CLAIRTON, PA

APPENDIX D

EMISSIONS CALCULATIONS

KEYSTONE ENVIRONMENTAL RESOURCES, INC.
AIR QUALITY ENGINEERING

USS CLAIRTON WORKS
CLAIRTON, PA COMBUSTION STACK #1
CLR-BS1-4 11-27-91

PARAMETER	CYCLONE WT. (G)	MATL.ON FILTER(G)	INSOL.MATL. IN PROBE(G)	SOL.MATL. IN PROBE(G)
PARTICULATE	.00000	.01370	.00000	.01340

PARAMETER	INSOL.MATL. IN IMP.(G)	SOLUBLE MATL. IN IMP.(G)
PARTICULATE	.00000	.00000
PARTICULATE	.02710	
ALL MATLS.	.02710	

PARAMETER	GR/SCFD	LB/HR
PARTICULATE	.00668	2.10103

Emission rates are based on EPA Method 5.

Plant: USS Clairton Works

Test **Date:** 11/26,27/91

Date Analyzed: 12/3/91

Activity No. 605016-01 Battery Combustion Stack #1

PARTICULATE REPORTING FORM

Test Number	Component	Molecular Weight	Cyclone Weight	Filter Weight (g) (Particulate)	Insol. Part. in Front Half	Insol. Part. in Back Half	Soluble Part. in Back Half	Soluble Part. in Front Half (g) (Acetone)
LR-BS1-1	PM			0.0147				0.0136
LR-BS1-2*	PM			0.0088				0.0142
LR-BS1-3*	PM			0.0159				0.0143
LR-BS1-4*	PM			0.0137				0.0134
* = Battery #1 was active during sampling								

COMPLIANCE DEMONSTRATION
#1 BATTERY COMBUSTION STACK

USS CLAIRTON WORKS
CLAIRTON, PA

APPENDIX E

VISIBLE EMISSIONS DATA

VISIBLE EMISSIONS OBSERVATIONS FORM

#1 Stack Test

#1 Test

OBSERVER: Pat Marcone

DATE: 11-26-91

FACILITY: USS-Clairton

OBSERVATION: START TIME: 10:20

END TIME: 11:20

OBSERVATION POINT: Maple Ave lot

SOURCE: #1 Stack

DISTANCE: ~800 ft.

DIRECTION FROM: SW

HEIGHT: ~200 ft.

WIND:

SPEED: 7 mph

DIRECTION: West

TEMPERATURE: 19°

SKY CONDITION: Scattered Clouds

BACKGROUND: Sky

READING CONDITIONS: Fair

COLOR OF EMISSION: —

TOTAL No. OF READINGS: 240

No. READINGS >= 20% —

No. READINGS >= 60% —

GREATEST OPACITY: 0%

CREW: C FOREMAN: Harris

COMMENTS:

Start Test				
0	0	0	0	0
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	0	0	0	0
8	0	0	0	0
9	0	0	0	0
10	0	0	0	0
11	0	0	0	0
12	0	0	0	0
13	0	0	0	0
14	0	0	0	0
15	0	0	0	0
16	0	0	0	0
17	0	0	0	0
18	0	0	0	0
19	0	0	0	0
20	0	0	0	0
21	0	0	0	0
22	0	0	0	0
23	0	0	0	0
24	0	0	0	0
25	0	0	0	0
26	0	0	0	0
27	0	0	0	0
28	0	0	0	0
29	0	0	0	0

30	0	0	0	0
31	0	0	0	0
32	0	0	0	0
33	0	0	0	0
34	0	0	0	0
35	0	0	0	0
36	0	0	0	0
37	0	0	0	0
38	0	0	0	0
39	0	0	0	0
40	0	0	0	0
41	0	0	0	0
42	0	0	0	0
43	0	0	0	0
44	0	0	0	0
45	0	0	0	0
46	0	0	0	0
47	0	0	0	0
48	0	0	0	0
49	0	0	0	0
50	0	0	0	0
51	0	0	0	0
52	0	0	0	0
53	0	0	0	0
54	0	0	0	0
55	0	0	0	0
56	0	0	0	0
57	0	0	0	0
58	0	0	0	0
59	0	0	0	0

VISIBLE EMISSIONS OBSERVATIONS FORM

#1 STACK TEST

#1 TEST

OBSERVER: Pat Marcone

DATE: 11-26-91

FACILITY: USS-Clairton

OBSERVATION: START TIME: 11:20

END TIME: 12:20

OBSERVATION POINT: Maple Dr. Lot.

SOURCE: #1 Stack

DISTANCE: ~800 ft.

DIRECTION FROM: SW

HEIGHT: ~200 ft.

WIND:

SPEED: 14 mph

DIRECTION: West

TEMPERATURE: 26° (wc. +5)

SKY CONDITION: Scattered Clouds

BACKGROUND: Sky

READING CONDITIONS: Fair

COLOR OF EMISSION: —

TOTAL No. OF READINGS: 240

No. READINGS >= 20% —

No. READINGS >= 60% —

GREATEST OPACITY: 0%

CREW: C FOREMAN: Harris

COMMENTS:

0	0	0	0	0	30	0	0	0	0
1	0	0	0	0	31	0	0	0	0
2	0	0	0	0	32	0	0	0	0
3	0	0	0	0	33	0	0	0	0
4	0	0	0	0	34	0	0	0	0
5	0	0	0	0	35	0	0	0	0
6	0	0	0	0	36	0	0	0	0
7	0	0	0	0	37	0	0	0	0
8	0	0	0	0	38	0	0	0	0
9	0	0	0	0	39	0	0	0	0
10	0	0	0	0	40	0	0	0	0
11	0	0	0	0	41	0	0	0	0
12	0	0	0	0	42	0	0	0	0
13	0	0	0	0	43	0	0	0	0
14	0	0	0	0	44	0	0	0	0
15	0	0	0	0	45	0	0	0	0
16	0	0	0	0	46	0	0	0	0
17	0	0	0	0	47	0	0	0	0
18	0	0	0	0	48	0	0	0	0
19	0	0	0	0	49	0	0	0	0
20	0	0	0	0	50	0	0	0	0
21	0	0	0	0	51	0	0	0	0
22	0	0	0	0	52	0	0	0	0
23	0	0	0	0	53	0	0	0	0
24	0	0	0	0	54	0	0	0	0
25	0	0	0	0	55	0	0	0	0
26	0	0	0	0	56	0	0	0	0
27	0	0	0	0	57	0	0	0	0
28	0	0	0	0	58	0	0	0	0
29	0	0	0	0	59	0	0	0	0

VISIBLE EMISSIONS OBSERVATIONS FORM

#1 Stack Test

OBSERVER: Pat Mavera

DATE: 11-26-91

FACILITY: USS-Clairton

OBSERVATION: START TIME: 12:20

END TIME: 1:20

OBSERVATION POINT: Maple Ave. lot

SOURCE: #1 Stack

DISTANCE: ~800 ft.

DIRECTION FROM: SW

HEIGHT: ~200 ft

WIND:

SPEED: 10 mph

DIRECTION: West

TEMPERATURE: 28° (wc +13)

SKY CONDITION: Scattered Clouds

BACKGROUND: Sky

READING CONDITIONS: Good

COLOR OF EMISSION: —

TOTAL No. OF READINGS: 240

No. READINGS >= 20% —

No. READINGS >= 60% —

GREATEST OPACITY: 0%

CREW: C FOREMAN: Harris

COMMENTS:

0	0	0	0	0
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	0	0	0	0
8	0	0	0	0
9	0	0	0	0
10	0	0	0	0
11	0	0	0	0
12	0	0	0	0
13	0	0	0	0
14	0	0	0	0
15	0	0	0	0
16	0	0	0	0
17	0	0	0	0
18	0	0	0	0
19	0	0	0	0
20	0	0	0	0
21	0	0	0	0
22	0	0	0	0
23	0	0	0	0
24	0	0	0	0
25	0	0	0	0
26	0	0	0	0
27	0	0	0	0
28	0	0	0	0
29	0	0	0	0

#1 Test

30	0	0	0	0
31	0	0	0	0
32	0	0	0	0
33	0	0	0	0
34	0	0	0	0
35	0	0	0	0
36	0	0	0	0
37	0	0	0	0
38	0	0	0	0
39	0	0	0	0
40	0	0	0	0
41	0	0	0	0
42	0	0	0	0
43	0	0	0	0
44	0	0	0	0
45	0	0	0	0
46	0	0	0	0
47	0	0	0	0
48	0	0	0	0
49	0	0	0	0
50	0	0	0	0
51	0	0	0	0
52	0	0	0	0
53	0	0	0	0
54	0	0	0	0
55	0	0	0	0
56	0	0	0	0
57	0	0	0	0
58	0	0	0	0
59	0	0	0	0

End of Test

VISIBLE EMISSIONS OBSERVATIONS FORM

OBSERVER: Pat Marcum

DATE: 11-26-91

FACILITY: USS-Clairton

OBSERVATION: START TIME: 1:20

END TIME: 2:20

OBSERVATION POINT:

Maple Ave Lot

SOURCE: #1 Stack

DISTANCE: ~800 ft

DIRECTION FROM: SW

HEIGHT: ~200 ft.

WIND:

SPEED: 10 mph

DIRECTION: SW

TEMPERATURE: 30°

SKY CONDITION: Scattered Clouds

BACKGROUND: Sky

READING CONDITIONS: Fair

COLOR OF EMISSION: —

TOTAL No. OF READINGS: 240

No. READINGS >= 20% —

No. READINGS >= 60% —

GREATEST OPACITY: 0%

CREW: C FOREMAN: HARRIS

COMMENTS:

0	0	0	0	0
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	0	0	0	0
8	0	0	0	0
9	0	0	0	0
10	0	0	0	0
11	0	0	0	0
12	0	0	0	0
13	0	0	0	0
14	0	0	0	0
15	0	0	0	0
16	0	0	0	0
17	0	0	0	0
18	0	0	0	0
19	0	0	0	0
20	0	0	0	0
21	0	0	0	0
22	0	0	0	0
23	0	0	0	0
24	0	0	0	0
25	0	0	0	0
26	0	0	0	0
27	0	0	0	0
28	0	0	0	0
29	0	0	0	0

30	0	0	0	0
31	0	0	0	0
32	0	0	0	0
33	0	0	0	0
34	0	0	0	0
35	0	0	0	0
36	0	0	0	0
37	0	0	0	0
38	0	0	0	0
39	0	0	0	0
40	0	0	0	0
41	0	0	0	0
42	0	0	0	0
43	0	0	0	0
44	0	0	0	0
45	0	0	0	0
46	0	0	0	0
47	0	0	0	0
48	0	0	0	0
49	0	0	0	0
50	0	0	0	0
51	0	0	0	0
52	0	0	0	0
53	0	0	0	0
54	0	0	0	0
55	0	0	0	0
56	0	0	0	0
57	0	0	0	0
58	0	0	0	0
59	0	0	0	0

VISIBLE EMISSIONS OBSERVATIONS FORM

#1 STACK TEST

This test was VOIDED → #2 Test

OBSERVER: Pat Marcum

DATE: 11-26-91

FACILITY: USS-Clairton

OBSERVATION: START TIME: 2:20
END TIME: 5:20

OBSERVATION POINT: Maple Ave Lot

SOURCE: #1 STACK

DISTANCE: ~800 ft.
DIRECTION FROM: SW
HEIGHT: ~200 ft.

WIND:

SPEED: 10 mph
DIRECTION: SW
TEMPERATURE: 30°
SKY CONDITION: Scattered Clouds
BACKGROUND: Sky

READING CONDITIONS: Fair
COLOR OF EMISSION: —

TOTAL No. OF READINGS: 240
No. READINGS >= 20% —
No. READINGS >= 60% —
GREATEST OPACITY: 0%
CREW: C FOREMAN: Harris

COMMENTS:

0	0	0	0	0
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	0	0	0	0
8	0	0	0	0
9	0	0	0	0
25° 10 (Start Test)	0	0	0	0
11	0	0	0	0
12	0	0	0	0
13	0	0	0	0
14	0	0	0	0
15	0	0	0	0
16	0	0	0	0
17	0	0	0	0
18	0	0	0	0
19	0	0	0	0
20	0	0	0	0
21	0	0	0	0
22	0	0	0	0
23	0	0	0	0
24	0	0	0	0
25	0	0	0	0
26	0	0	0	0
27	0	0	0	0
28	0	0	0	0
29	0	0	0	0

30	0	0	0	0
31	0	0	0	0
32	0	0	0	0
33	0	0	0	0
34	0	0	0	0
35	0	0	0	0
36	0	0	0	0
37	0	0	0	0
38	0	0	0	0
39 (End #1 Port)	0	0	0	0
Pm 40	0	0	0	0
41	0	0	0	0
42	0	0	0	0
43	0	0	0	0
44 (→ Start #2 Port)	0	0	0	0
45	0	0	0	0
46	0	0	0	0
47	0	0	0	0
48	0	0	0	0
49	0	0	0	0
50	0	0	0	0
51	0	0	0	0
52	0	0	0	0
53	0	0	0	0
54	0	0	0	0
55	0	0	0	0
56	0	0	0	0
57	0	0	0	0
58	0	0	0	0
59	0	0	0	0

VISIBLE EMISSIONS OBSERVATIONS FORM

#1 STACK TEST

#2 TEST

OBSERVER: Pat Malone

DATE: 11-26-91

FACILITY: USS-Clairton

OBSERVATION: START TIME: 3:20

END TIME: 4:20

OBSERVATION POINT: Maple Quad Lot

SOURCE: #1 STACK

DISTANCE: ~800 ft.

DIRECTION FROM: SW

HEIGHT: ~200 ft.

WIND:

SPEED: 8 mph

DIRECTION: SW

TEMPERATURE: 31°

SKY CONDITION: Clear

BACKGROUND: Sky

READING CONDITIONS: Fair

COLOR OF EMISSION: Black

TOTAL No. OF READINGS: 240

No. READINGS >= 20% —

No. READINGS >= 60% —

GREATEST OPACITY: 15%

CREW: C FOREMAN: Harris

COMMENTS:

320 0	0	0	0	0
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	0	0	0	0
8	0	0	0	0
9	0	0	0	0
330 10	0	0	5	15
11	15	5	5	5
12	0	0	0	0
13	0	0	0	0
14	0	0	0	0
15	0	0	0	0
16	0	0	0	0
17	0	0	0	0
18	0	0	0	0
19	0	0	0	0
340 20	0	0	0	0
21	0	0	0	0
22	0	0	0	0
23	0	0	0	0
24	0	0	0	0
25	0	0	0	0
26	0	0	0	0
27	0	0	0	0
28	0	0	0	0
29	0	0	0	0

Start #3 Port →

End #2 Port ←

Start #3 Port ←

Start #4 Port →

350 30	0	0	0	0
31	0	0	0	0
32	0	0	0	0
33	0	0	0	0
34	0	0	0	0
35	0	0	0	0
36	0	0	0	0
37	0	0	0	0
38	0	0	0	0
39	0	0	0	0
400 40	0	0	0	0
41	0	0	0	0
42	0	0	0	0
43	0	0	0	0
44	0	0	0	0
45	0	0	0	0
46	0	0	0	0
47	0	0	0	0
48	0	0	0	0
49	0	0	0	0
410 50	0	0	0	0
51	0	0	0	0
52	0	0	0	0
53	0	0	0	0
54	0	0	0	0
55	0	0	0	0
56	0	0	0	0
57	0	0	0	0
58	0	0	0	0
59	0	0	0	0

End #3 Port ←

VISIBLE EMISSIONS OBSERVATIONS FORM

OBSERVER: Pat Malone

DATE: 11-26-91

FACILITY: USS-Clairton

OBSERVATION: START TIME: 4:20

END TIME: 5:20

OBSERVATION POINT: Maple Quad Lot

SOURCE: #1 Stack

DISTANCE: ~800 ft.

DIRECTION FROM: SW

HEIGHT: ~200 ft.

WIND:

SPEED: 8 mph

DIRECTION: SW

TEMPERATURE: 31°

SKY CONDITION: Clear

BACKGROUND: Sky

READING CONDITIONS: Fair

COLOR OF EMISSION: —

TOTAL No. OF READINGS: 240

No. READINGS ≥ 20% —

No. READINGS ≥ 60% —

GREATEST OPACITY: 0%

CREW: D FOREMAN: McCockle

COMMENTS:

#1 STACK TEST

450 0	0	0	0	0
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	0	0	0	0
8	0	0	0	0
9	0	0	0	0
530 10	0	0	0	0
11	0	0	0	0
12	0	0	0	0
13	0	0	0	0
14	0	0	0	0
15	0	0	0	0
16	0	0	0	0
17	0	0	0	0
18	0	0	0	0
19	0	0	0	0
600 20	0	0	0	0
21	0	0	0	0
22	0	0	0	0
23	0	0	0	0
24	0	0	0	0
25	0	0	0	0
26	0	0	0	0
27	0	0	0	0
28	0	0	0	0
29	0	0	0	0

#2 TEST

650 30	0	0	0	0
31				
32				
33				
34				
35				
36				
37				
38				
39				
730 40				
41				
42				
43				
44				
45				
46				
47				
48				
49				
50				
51				
52				
53				
54				
55				
56				
57				
58				
59				

End Test

VISIBLE EMISSIONS OBSERVATIONS FORM

#1 STACK TEST

OBSERVER: Pat Moreno

DATE: 11-27-91

FACILITY: USS-Clairton

OBSERVATION: START TIME: 9:37

END TIME: 10:37

OBSERVATION POINT: Maple Ave Lot

SOURCE: #1 Stack

DISTANCE: ~800 ft.

DIRECTION FROM: SW

HEIGHT: ~200 ft.

WIND:

SPEED: 7 mph

DIRECTION: SE

TEMPERATURE: 27°

SKY CONDITION: Lt. Clouds

BACKGROUND: Sky

READING CONDITIONS: Fair

COLOR OF EMISSION: —

TOTAL No. OF READINGS: 240

No. READINGS >= 20% —

No. READINGS >= 60% —

GREATEST OPACITY: 0%

CREW: C FOREMAN: Harris

COMMENTS:

0	0	0	0	0
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	0	0	0	0
8	0	0	0	0
9	0	0	0	0
10	0	0	0	0
11	0	0	0	0
12	0	0	0	0
13	0	0	0	0
14	0	0	0	0
15	0	0	0	0
16	0	0	0	0
17	0	0	0	0
18	0	0	0	0
19	0	0	0	0
20	0	0	0	0
21	0	0	0	0
22	0	0	0	0
23	0	0	0	0
24	0	0	0	0
25	0	0	0	0
26	0	0	0	0
27	0	0	0	0
28	0	0	0	0
29	0	0	0	0

#3 Test

30	0	0	0	0
31	0	0	0	0
32	0	0	0	0
33	0	0	0	0
34	0	0	0	0
35	0	0	0	0
36	0	0	0	0
37	0	0	0	0
38	0	0	0	0
39	0	0	0	0
40	0	0	0	0
41	0	0	0	0
42	0	0	0	0
43	0	0	0	0
44	0	0	0	0
45	0	0	0	0
46	0	0	0	0
47	0	0	0	0
48	0	0	0	0
49	0	0	0	0
50	0	0	0	0
51	0	0	0	0
52	0	0	0	0
53	0	0	0	0
54	0	0	0	0
55	0	0	0	0
56	0	0	0	0
57	0	0	0	0
58	0	0	0	0
59	0	0	0	0

VISIBLE EMISSIONS OBSERVATIONS FORM

#1 STACK TEST

#3 TEST

OBSERVER: Pat Maurer

DATE: 11-27-91

FACILITY: USS-Clairton

OBSERVATION: START TIME: 10:37

END TIME: 11:37

OBSERVATION POINT: Maple Ave. Lot

SOURCE: #1 STACK

DISTANCE: ~800 ft

DIRECTION FROM: SW

HEIGHT: ~200 ft.

WIND:

SPEED: 7 mph

DIRECTION: SE

TEMPERATURE: 27°

SKY CONDITION: Lt. Clouds

BACKGROUND: Sky

READING CONDITIONS: Fair

COLOR OF EMISSION: —

TOTAL No. OF READINGS: 240

No. READINGS >= 20% —

No. READINGS >= 60% —

GREATEST OPACITY: 0%

CREW: C FOREMAN: Harris

COMMENTS:

0	0	0	0	0
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	0	0	0	0
8	0	0	0	0
9	0	0	0	0
10	0	0	0	0
11	0	0	0	0
12	0	0	0	0
13	0	0	0	0
14	0	0	0	0
15	0	0	0	0
16	0	0	0	0
17	0	0	0	0
18	0	0	0	0
19	0	0	0	0
20	0	0	0	0
21	0	0	0	0
22	0	0	0	0
23	0	0	0	0
24	0	0	0	0
25	0	0	0	0
26	0	0	0	0
27	0	0	0	0
28	0	0	0	0
29	0	0	0	0

Start #3 Port

Start #2 Port

Start #4 Port

30	0	0	0	0
31	0	0	0	0
32	0	0	0	0
33	0	0	0	0
34	0	0	0	0
35	0	0	0	0
36	0	0	0	0
37	0	0	0	0
38	0	0	0	0
39	0	0	0	0
40	0	0	0	0
41	0	0	0	0
42	0	0	0	0
43	0	0	0	0
44	0	0	0	0
45	0	0	0	0
46	0	0	0	0
47	0	0	0	0
48	0	0	0	0
49	0	0	0	0
50	0	0	0	0
51	0	0	0	0
52	0	0	0	0
53	0	0	0	0
54	0	0	0	0
55	0	0	0	0
56	0	0	0	0
57	0	0	0	0
58	0	0	0	0
59	0	0	0	0

Start #3 Port

VISIBLE EMISSIONS OBSERVATIONS FORM

OBSERVER: Pat Maurer

DATE: 11-27-91

FACILITY: USS-Clairtop

OBSERVATION: START TIME: 11:37

END TIME: 12:57

OBSERVATION POINT: Maple Ave Lot

SOURCE: #1 Stack

DISTANCE: ~800 ft.

DIRECTION FROM: SW

HEIGHT: ~200 ft.

WIND:

SPEED: 8 mph

DIRECTION: SE

TEMPERATURE: 32°

SKY CONDITION: Lt. Clouds

BACKGROUND: Sky

READING CONDITIONS: Fair

COLOR OF EMISSION: —

TOTAL No. OF READINGS: 240

No. READINGS >= 20% —

No. READINGS >= 60% —

GREATEST OPACITY: 0%

CREW: C FOREMAN: Harris

COMMENTS:

#1 STACK TEST

0	0	0	0	0
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	0	0	0	0
8	0	0	0	0
9	0	0	0	0
10	0	0	0	0
11	0	0	0	0
12	0	0	0	0
13	0	0	0	0
14	0	0	0	0
15	0	0	0	0
16	0	0	0	0
17	0	0	0	0
18	0	0	0	0
19	0	0	0	0
20	0	0	0	0
21	0	0	0	0
22	0	0	0	0
23	0	0	0	0
24	0	0	0	0
25	0	0	0	0
26	0	0	0	0
27	0	0	0	0
28	0	0	0	0
29	0	0	0	0

End of Test #3

Start Test #4

30	0	0	0	0
31	0	0	0	0
32	0	0	0	0
33	0	0	0	0
34	0	0	0	0
35	0	0	0	0
36	0	0	0	0
37	0	0	0	0
38	0	0	0	0
39	0	0	0	0
40	0	0	0	0
41	0	0	0	0
42	0	0	0	0
43	0	0	0	0
44	0	0	0	0
45	0	0	0	0
46	0	0	0	0
47	0	0	0	0
48	0	0	0	0
49	0	0	0	0
50	0	0	0	0
51	0	0	0	0
52	0	0	0	0
53	0	0	0	0
54	0	0	0	0
55	0	0	0	0
56	0	0	0	0
57	0	0	0	0
58	0	0	0	0
59	0	0	0	0

#3 TEST = + #4 TEST

End # 2 Port

VISIBLE EMISSIONS OBSERVATIONS FORM

OBSERVER: Pat Marcone

DATE: 11-27-91

FACILITY: USS-Clairton

OBSERVATION: START TIME: 12:37

END TIME: 1:37

OBSERVATION POINT: Maple Ave Lot

SOURCE: #1 Stack

DISTANCE: ~800 ft.

DIRECTION FROM: SW

HEIGHT: ~200 ft.

WIND:

SPEED: 12 mph

DIRECTION: South

TEMPERATURE: 41°

SKY CONDITION: Overcast

BACKGROUND: Sky

READING CONDITIONS: Fair

COLOR OF EMISSION: —

TOTAL No. OF READINGS: 240

No. READINGS >= 20% —

No. READINGS >= 60% —

GREATEST OPACITY: 0%

CREW: C FOREMAN: Harris

COMMENTS:

#1 STACK TEST

1257 0	0	0	0	0
1	0	0	0	0
2	0	0	0	0
1240 3	0	0	0	0
4	0	0	0	0
5	0	0	0	0
6	0	0	0	0
7	0	0	0	0
1215 8	0	0	0	0
9	0	0	0	0
10	0	0	0	0
11	0	0	0	0
12	0	0	0	0
1200 13	0	0	0	0
14	0	0	0	0
15	0	0	0	0
16	0	0	0	0
17	0	0	0	0
1255 18	0	0	0	0
19	0	0	0	0
20	0	0	0	0
21	0	0	0	0
22	0	0	0	0
1230 23	0	0	0	0
24	0	0	0	0
25	0	0	0	0
26	0	0	0	0
27	0	0	0	0
1205 28	0	0	0	0
29	0	0	0	0

Start #2 Port

#4 TEST

1107 30	0	0	0	0
31	0	0	0	0
32	0	0	0	0
1110 33	0	0	0	0
34	0	0	0	0
35	0	0	0	0
36	0	0	0	0
37	0	0	0	0
1115 38	0	0	0	0
39	0	0	0	0
40	0	0	0	0
41	0	0	0	0
42	0	0	0	0
1120 43	0	0	0	0
44	0	0	0	0
45	0	0	0	0
46	0	0	0	0
47	0	0	0	0
1125 48	0	0	0	0
49	0	0	0	0
50	0	0	0	0
51	0	0	0	0
52	0	0	0	0
1130 53	0	0	0	0
54	0	0	0	0
55	0	0	0	0
56	0	0	0	0
57	0	0	0	0
1135 58	0	0	0	0
59	0	0	0	0

Start #4 Port

End #3 Port

VISIBLE EMISSIONS OBSERVATIONS FORM

#1 STACK TEST

#4 TEST

OBSERVER: Pat Macarone

DATE: 11-27-91

FACILITY: USS-Clairton

OBSERVATION: START TIME: 1:37

END TIME: 2:37

OBSERVATION POINT: Maple Ave Lot

SOURCE: #1 Stack

DISTANCE: ~800 ft

DIRECTION FROM: SW

HEIGHT: ~200 ft

WIND:

SPEED: 12 mph

DIRECTION: South

TEMPERATURE: 41°

SKY CONDITION: Overcast

BACKGROUND: Sky

READING CONDITIONS: Fair

COLOR OF EMISSION: —

TOTAL No. OF READINGS: 240

No. READINGS >= 20% —

No. READINGS >= 60% —

GREATEST OPACITY: 0%

CREW: C FOREMAN: Harris

COMMENTS:

0	0	0	0	0
1	0	0	0	0
2	0	0	0	0
1:40 3	0	0	0	0
4	0	0	0	0
1:42 5	0	0	0	0
1:43 6	0	0	0	0
1:44 7	0	0	0	0
1:45 8	0	0	0	0
9	0	0	0	0
10	0	0	0	0
11	0	0	0	0
12	0	0	0	0
1:50 13	0	0	0	0
14	0	0	0	0
15	0	0	0	0
16	0	0	0	0
17	0	0	0	0
1:55 18	0	0	0	0
19	0	0	0	0
20	0	0	0	0
21	0	0	0	0
22	0	0	0	0
2:00 23	0	0	0	0
24	0	0	0	0
25	0	0	0	0
26	0	0	0	0
27	0	0	0	0
2:05 28	0	0	0	0
29	0	0	0	0

Start #1 → Port

Stop #4 ← Port

2:07 30	0	0	0	0
31	0	0	0	0
32	0	0	0	0
2:10 33	0	0	0	0
34	0	0	0	0
35	0	0	0	0
36	0	0	0	0
37	0	0	0	0
2:15 38	0	0	0	0
39	0	0	0	0
40	0	0	0	0
41	0	0	0	0
42	0	0	0	0
2:20 43	0	0	0	0
44	0	0	0	0
45	0	0	0	0
46	0	0	0	0
47	0	0	0	0
2:25 48	0	0	0	0
49	0	0	0	0
50	0	0	0	0
51	0	0	0	0
52	0	0	0	0
2:30 53	0	0	0	0
54	0	0	0	0
55	0	0	0	0
56	0	0	0	0
57	0	0	0	0
2:35 58	0	0	0	0
59	0	0	0	0

← End #1 Port

VISIBLE EMISSIONS OBSERVATIONS FORM

#1 STACK TEST

#5 TEST

OBSERVER: Pat Marcus

DATE: 11-27-91

FACILITY: USS - Clairton

OBSERVATION: START TIME: 2:37

END TIME: 3:37

OBSERVATION POINT: Maple Ave Lot

SOURCE: #1 Stack

DISTANCE: ~800 ft.

DIRECTION FROM: SW

HEIGHT: ~200 ft.

WIND:

SPEED: 12 mph

DIRECTION: South

TEMPERATURE: 41°

SKY CONDITION: Overcast

BACKGROUND: Sky

READING CONDITIONS: Fair

COLOR OF EMISSION: —

TOTAL No. OF READINGS: 240

No. READINGS >= 20% —

No. READINGS >= 60% —

GREATEST OPACITY: 0%

CREW: C FOREMAN: Harris

COMMENTS:

0	0	0	0	0
1	0	0	0	0
2	0	0	0	0
240 3	0	0	0	0
4	0	0	0	0
5	0	0	0	0
6	0	0	0	0
7	0	0	0	0
245 8	0	0	0	0
9	0	0	0	0
10	0	0	0	0
11	0	0	0	0
12	0	0	0	0
250 13	0	0	0	0
14	0	0	0	0
15	0	0	0	0
16	0	0	0	0
17	0	0	0	0
255 18	0	0	0	0
19	0	0	0	0
20	0	0	0	0
21	0	0	0	0
22	0	0	0	0
Start Test → 300 23	0	0	0	0
24	0	0	0	0
25	0	0	0	0
26	0	0	0	0
27	0	0	0	0
305 28	0	0	0	0
29	0	0	0	0

307 30	0	0	0	0
31	0	0	0	0
32	0	0	0	0
310 33	0	0	0	0
34	0	0	0	0
35	0	0	0	0
36	0	0	0	0
37	0	0	0	0
315 38	0	0	0	0
39	0	0	0	0
40	0	0	0	0
41	0	0	0	0
42	0	0	0	0
320 43	0	0	0	0
44	0	0	0	0
45	0	0	0	0
46	0	0	0	0
47	0	0	0	0
325 48	0	0	0	0
49	0	0	0	0
50	0	0	0	0
51	0	0	0	0
52	0	0	0	0 ← End #1 Port
330 53	0	0	0	0
54	0	0	0	0
55	0	0	0	0
Start #5 Port 56	0	0	0	0
57	0	0	0	0
335 58	0	0	0	0
59	0	0	0	0

VISIBLE EMISSIONS OBSERVATIONS FORM

#1 STACK TEST

OBSERVER: Pat Maurer

DATE: 11-27-91

FACILITY: USS-Clairton

OBSERVATION: START TIME: 3:37

END TIME: 4:37

OBSERVATION POINT: Maple Quay Lot

SOURCE: #1 Stack

DISTANCE: ~800 ft.

DIRECTION FROM: SW

HEIGHT: ~200 ft.

WIND:

SPEED: 18 mph

DIRECTION: SW

TEMPERATURE: 43°

SKY CONDITION: Overcast

BACKGROUND: Sky

READING CONDITIONS: Fair

COLOR OF EMISSION: —

TOTAL No. OF READINGS: 240

No. READINGS >= 20% —

No. READINGS >= 60% —

GREATEST OPACITY: 0%

CREW: C FOREMAN: Harris

COMMENTS:

0	0	0	0	0
1	0	0	0	0
2	0	0	0	0
300 3	0	0	0	0
4	0	0	0	0
5	0	0	0	0
6	0	0	0	0
7	0	0	0	0
8	0	0	0	0
9	0	0	0	0
10	0	0	0	0
11	0	0	0	0
12	0	0	0	0
350 13	0	0	0	0
14	0	0	0	0
15	0	0	0	0
16	0	0	0	0
17	0	0	0	0
18	0	0	0	0
19	0	0	0	0
20	0	0	0	0
21	0	0	0	0
22	0	0	0	0
400 23	0	0	0	0
24	0	0	0	0
25	0	0	0	0
26	0	0	0	0
27	0	0	0	0
28	0	0	0	0
29	0	0	0	0

Start #3 Port

End #4 Port

#5 TEST

450 30	0	0	0	0
31	0	0	0	0
32	0	0	0	0
500 33	0	0	0	0
34	0	0	0	0
35	0	0	0	0
36	0	0	0	0
37	0	0	0	0
38	0	0	0	0
39	0	0	0	0
40	0	0	0	0
41	0	0	0	0
42	0	0	0	0
550 43	0	0	0	0
44	0	0	0	0
45	0	0	0	0
46	0	0	0	0
47	0	0	0	0
48	0	0	0	0
49	0	0	0	0
50	0	0	0	0
51	0	0	0	0
52	0	0	0	0
600 53	0	0	0	0
54	0	0	0	0
55	0	0	0	0
56	0	0	0	0
57	0	0	0	0
58	0	0	0	0
59	0	0	0	0

End #3 Port

VISIBLE EMISSIONS OBSERVATIONS FORM

#1 STACK TEST

OBSERVER: Pat Marcone

DATE: 11-27-91

FACILITY: USS-Clairton

OBSERVATION: START TIME: 4:37

END TIME: 5:37

OBSERVATION POINT: Maple Ave Lot

SOURCE: #1 Stack

DISTANCE: ~800 ft.

DIRECTION FROM: SW

HEIGHT: ~200 ft.

WIND:

SPEED: 18 mph

DIRECTION: SW

TEMPERATURE: 43°

SKY CONDITION: Overcast

BACKGROUND: Sky

READING CONDITIONS: Fair

COLOR OF EMISSION: —

TOTAL No. OF READINGS: 240

No. READINGS ≥ 20% —

No. READINGS ≥ 60% —

GREATEST OPACITY: 0%

CREW: D FOREMAN: McCardle

COMMENTS:

0	0	0	0	0
1	0	0	0	0
2	0	0	0	0
440 3	0	0	0	0
4	0	0	0	0
5	0	0	0	0
6	0	0	0	0
7	0	0	0	0
445 8	0	0	0	0
9	0	0	0	0
10	0	0	0	0
11	0	0	0	0
12	0	0	0	0
450 13	0	0	0	0
14	0	0	0	0
15	0	0	0	0
16	0	0	0	0
17	0	0	0	0
455 18	0	0	0	0
19	0	0	0	0
20	0	0	0	0
21	0	0	0	0
22	0	0	0	0
500 23	0	0	0	0
24	0	0	0	0
25	0	0	0	0
26	0	0	0	0
27	0	0	0	0
505 28	0	0	0	0
29	0	0	0	0

Start #1 Port

#5 TEST

507 30	0	0	0	0
31	0	0	0	0
32				
510 33				
34				
35				
36				
37				
515 38				
39				
40				
41				
42				
520 43				
44				
45				
46				
47				
48				
49				
50				
51				
52				
53				
54				
55				
56				
57				
58				
59				

End #2 Port

KEYSTONE ENVIRONMENTAL RESOURCES
AIR QUALITY ENGINEERING

USS CLAIRTON WORKS
CLAIRTON, PA
COMBUSTION STACK #1 BATTERY ACTIVE

DATE: 11-27-91
CHARGE #: ...150-605016
TEST #: CLR-BS1-2

1. EMISSION RESULTS

PARAMETER	GR/SCFD	LB/HR
PARTICULATE	.00586	1.71649

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2. STACK CONDITIONS

FLOW (ACFM)	67649.
(SCFM)	38084.
MOISTURE CONTENT (%)	10.21
STACK TEMPERATURE (F)	462.0

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3. SAMPLING CONDITIONS

SAMPLE TIME (MIN.)	120.0
SCFD GAS SAMPLED	60.486
PERCENT ISOKINETIC	104.57

KEYSTONE ENVIRONMENTAL RESOURCES, INC.
AIR QUALITY ENGINEERING

USS CLAIRTON WORKS
CLAIRTON, PA — COMBUSTION STACK #1
CLR-BS1-2 — 11-27-91

FIELD DATA AND VELOCITY CALCULATIONS

POINT	TIME	METER READING (DRY) CF	DELTA P IN.H2O	ORIFICE DELTA H REQ	ORIFICE DELTA H ACT	METER TEMP DEG F IN	METER TEMP DEG F OUT	VACUUM IN.HG.	STACK TEMP DEG F	CORRECTED VELOCITY FFT/SEC
40.61	940.0	536.317	.080	1.22	1.22	51.	43.	5.2	456.	21.4
28.5			.070	1.07	1.07	66.	47.	5.2	474.	20.2
20.2			.065	.99	.99	67.	48.	5.0	480.	19.5
13.5			.055	.84	.84	68.	49.	5.0	460.	17.7
7.6			.015	.23	.23	65.	50.	1.5	403.	9.0
2.41	1010.0	551.398	.010	.15	.15	63.	50.	1.0	388.	7.3
40.64	1012.0	551.398	.085	1.29	1.29	67.	50.	5.0	409.	21.4
28.5			.080	1.22	1.22	71.	51.	7.0	457.	21.4
20.2			.070	1.07	1.07	71.	51.	6.5	461.	20.0
13.5			.055	.85	.85	72.	52.	6.2	468.	17.8
7.6			.020	.31	.31	68.	52.	2.0	471.	10.8
2.44	1042.0	567.677	.010	.15	.15	67.	53.	2.0	477.	7.6
40.63	1046.0	567.677	.090	1.39	1.39	65.	53.	7.7	462.	22.7
28.5			.095	1.47	1.47	73.	53.	8.0	481.	23.6
20.2			.070	1.08	1.08	72.	54.	6.0	485.	20.3
13.5			.025	.39	.39	70.	54.	2.5	483.	12.1
7.6			.010	.15	.15	68.	55.	1.0	479.	7.6
2.43	1116.0	582.903	.010	.15	.15	67.	55.	1.0	475.	7.6
40.62	1120.0	582.903	.070	1.08	1.08	69.	55.	6.0	458.	20.0
28.5			.065	1.01	1.01	75.	56.	5.5	472.	19.4
20.2			.060	.93	.93	77.	57.	5.5	471.	18.6
13.5			.060	.93	.93	77.	58.	5.5	475.	18.7
7.6			.015	.23	.23	74.	59.	1.5	470.	9.3
2.42	1150.0	598.161	.010	.15	.15	73.	62.	1.2	472.	7.6

O R S A T	
CO2	3.0
O2	17.0
CO	.0
N	80.0

IMPINGER NO.	1	96.5
	2	33.4
	3	3.8
	4	.0
ABSORBED H2O		12.1

CONTROL BOX CALIBRATIONS

	FACTOR	DATE
ORIFICE	1.713	11-1-91
METER	0.9761	11-1-91
PITOT	0.84	8-2-91

LEAK CHECK

	RATE	IN.HG
INITIAL	LT 0.02CFM	5.0
FINAL	0.013CFM	8.0

CONTROL BOX NO. 3 — PROBE NO. 7-2 — NOZZLE NO. 50

KEYSTONE ENVIRONMENTAL RESOURCES, INC.
AIR QUALITY ENGINEERING

USS CLAIRTON WORKS
CLAIRTON, PA COMBUSTION STACK #1
CLR-BS1-2 11-27-91

STACK SAMPLING CALCULATIONS

A.	BAROMETRIC PRESSURE IN. HG.....	29.50
B.	AVG. DELTA H (IN H2O).....	.76
C.	METER PRESSURE (IN. HG.).....	29.56
D.	STATIC PRESSURE (IN. H2O).....	-1.20
E.	STATIC PRESSURE (IN. HG.).....	-.088
F.	STACK PRESSURE (IN. HG.) (A+E).....	29.41
G.	STACK DIAMETER (IN.).....	114.00
H.	STACK AREA (SQ. FT.).....	70.88
	NOZZLE DIAMETER.....	.4280
I.	NOZZLE AREA (SQ. FT.).....	.000999
J.	AVG. STACK TEMP (DEG. R.).....	922.0
K.	AVG. METER TEMP (DEG. R.).....	520.9
L.	CONDENSATE VOL. (ML).....	133.7
M.	ABSORBED H2O (ML).....	12.1
N.	TOTAL H2O (ML).....	145.8
O.	METERED GAS (CF).....	61.844
P.	GAS METER CORRECTION.....	.9761
Q.	CORRECTED METERED GAS (CF).....	60.366
R.	H2O GAS VOLUME (CF) (0.00267N(K/C).....	6.861
S.	TOTAL SAMPLED VOLUME (CF) (Q+R).....	67.227
T.	PERCENT H2O (100R/S).....	10.21
	THEORETICAL MAXIMUM.....	100.00
	PERCENT WATER USED.....	10.21
U.	SCFD GAS SAMPLED (528*Q*C/(29.9*K)).....	60.486

V. MOLECULAR WEIGHT OF STACK GAS

COMPONENT	ORSAT-DRY VOL.PCT./100	X	MOISTURE CORRECTION (1-T/100)	X	MOLECULAR WEIGHT	=	WEIGHT PER MOLE
CO2	.030	X	.8979	X	44.0	=	1.19
CO	.000	X	.8979	X	28.0	=	.00
O2	.170	X	.8979	X	32.0	=	4.88
N2	.800	X	.8979	X	28.2	=	20.26
H2O		X	T/100= .1021	X	18.0	=	1.84
					MOLECULAR WEIGHT OF STACK GAS	=	28.16

W.	PITOT CORRECTION.....	.840
X.	AVERAGE CORRECTED VELOCITY (FPS)..... [85.49*W*SQRT{(J*DELTA P)/(V*F)}]	15.91
Y.	AVG. FLOW RATE (CFM) (X*H*60).....	67649.
Z.	STACK FLOW RATE (SCFM) (528*Y/J*F/29.92).....	38084.
	STACK FLOW RATE (DRY).....	34197.
AA.	SAMPLE TIME (SEC).....	7200.
BB.	PERCENT ISOKINETIC..... (J*100*U*29.92)/(528*X*AA*I*F*(1-T/100))	104.57

KEYSTONE ENVIRONMENTAL RESOURCES, INC.
AIR QUALITY ENGINEERING

USS CLAIRTON WORKS
CLAIRTON, PA — COMBUSTION STACK #1
CLR-BS1-2 — 11-27-91

PARAMETER	CYCLONE WT. (G)	MATL.ON FILTER(G)	INSOL.MATL. IN PROBE(G)	SOL.MATL. IN PROBE(G)
PARTICULATE	.00000	.00880	.00000	.01420

PARAMETER	INSOL.MATL. IN IMP.(G)	SOLUBLE MATL. IN IMP.(G)
PARTICULATE	.00000	.00000
PARTICULATE	.02300	
ALL MATLS.	.02300	

PARAMETER	GR/SCFD	LB/HR
PARTICULATE	.00586	1.71649

Emission rates are based on EPA Method 5.

KEYSTONE ENVIRONMENTAL RESOURCES
AIR QUALITY ENGINEERING

USS CLAIRTON WORKS
CLAIRTON, PA
COMBUSTION STACK #1 BATTERY ACTIVE

DATE: 11-27-91
CHARGE #: ...150-605016
TEST #: CLR-BS1-3

1. EMISSION RESULTS

PARAMETER	GR/SCFD	LB/HR
PARTICULATE	.00683	2.19148

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2. STACK CONDITIONS

FLOW (ACFM)	74967.
(SCFM)	41908.
MOISTURE CONTENT (%)	10.63
STACK TEMPERATURE (F)	468.6

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3. SAMPLING CONDITIONS

SAMPLE TIME (MIN.)	120.0
SCFD GAS SAMPLED	68.128
PERCENT ISOKINETIC	107.54

KEYSTONE ENVIRONMENTAL RESOURCES, INC.
AIR QUALITY ENGINEERING

USS CLAIRTON WORKS
CLAIRTON, PA — COMBUSTION STACK #1
CLR-BS1-3 — 11-27-91

FIELD DATA AND VELOCITY CALCULATIONS

POINT	TIME	METER READING (DRY) CF	DELTA P IN.H2O	ORIFICE DELTA H REQ	ORIFICE DELTA H ACT	METER TEMP DEG F IN	METER TEMP DEG F OUT	VACUUM IN.HG.	STACK TEMP DEG F	CORRECTED VELOCITY FT/SEC
40.62	1207.0	598.428	.070	.93	.93	70.	58.	4.5	440.	19.9
28.5			.165	1.01	1.01	75.	58.	5.0	450.	30.7
20.2			.065	1.01	1.01	80.	60.	5.5	451.	19.2
13.5			.050	.79	.79	78.	59.	5.5	455.	16.9
7.6			.010	.15	.15	77.	60.	2.0	450.	7.5
2.42	1237.0	615.714	.010	.15	.15	75.	61.	1.0	452.	7.6
40.63	1240.0	615.714	.090	1.43	1.43	79.	60.	7.5	466.	22.8
28.5			.090	1.43	1.43	80.	61.	8.0	473.	22.9
20.2			.080	1.27	1.27	81.	61.	7.0	472.	21.6
13.5			.075	1.19	1.19	82.	62.	7.0	484.	21.0
7.6			.055	.87	.87	82.	62.	6.5	471.	17.9
2.43	1310.0	635.620	.040	.63	.63	82.	63.	6.5	476.	15.3
40.64	1313.0	635.620	.070	1.11	1.11	79.	63.	6.0	453.	20.0
28.5			.070	1.11	1.11	80.	63.	6.0	466.	20.1
20.2			.075	1.19	1.19	82.	64.	6.5	472.	20.9
13.5			.050	.79	.79	83.	64.	6.5	481.	17.2
7.6			.060	.95	.95	83.	64.	5.0	480.	18.8
2.44	1343.0	653.565	.010	.15	.15	83.	64.	5.0	479.	7.7
40.61	1346.0	653.565	.075	1.19	1.19	80.	64.	6.5	459.	20.8
28.5			.070	1.11	1.11	85.	64.	4.5	485.	20.3
20.2			.065	1.03	1.03	84.	64.	7.0	489.	19.6
13.5			.050	.79	.79	84.	65.	6.2	487.	17.2
7.6			.015	.24	.24	81.	65.	1.5	480.	9.4
2.41	1416.0	669.445	.010	.15	.15	78.	65.	1.5	475.	7.6

O R S A T

CO2	2.5
O2	16.0
CO	.0
N	81.5

IMPINGER NO.	1	106.3
	2	41.7
	3	4.4
	4	.0
ABSORBED H2O		19.5

CONTROL BOX CALIBRATIONS

	FACTOR	DATE
ORIFICE	1.713	11-1-91
METER	0.9761	11-1-91
PITOT	0.84	8-2-91

LEAK CHECK

	RATE	IN.HG
INITIAL	LT 0.02CFM	5.0
FINAL	0.001CFM	8.0

CONTROL BOX NO. 3 — PROBE NO. 7-3 — NOZZLE NO. 50

KEYSTONE ENVIRONMENTAL RESOURCES, INC.
AIR QUALITY ENGINEERING

USS CLAIRTON WORKS
CLAIRTON, PA — COMBUSTION STACK #1
CLR-BS1-3 — 11-27-91

STACK SAMPLING CALCULATIONS

A.	BAROMETRIC PRESSURE IN. HG	29.50
B.	AVG. DELTA H (IN H2O)	.86
C.	METER PRESSURE (IN. HG.)	29.56
D.	STATIC PRESSURE (IN. H2O)	-1.15
E.	STATIC PRESSURE (IN. HG.)	-.085
F.	STACK PRESSURE (IN. HG.) (A+E)	29.42
G.	STACK DIAMETER (IN.)	114.00
H.	STACK AREA (SQ. FT.)	70.88
	NOZZLE DIAMETER	.4280
I.	NOZZLE AREA (SQ. FT.)	.000999
J.	AVG. STACK TEMP (DEG. R.)	928.6
K.	AVG. METER TEMP (DEG. R.)	531.2
L.	CONDENSATE VOL. (ML)	152.4
M.	ABSORBED H2O (ML)	19.5
N.	TOTAL H2O (ML)	171.9
O.	METERED GAS (CF)	71.017
P.	GAS METER CORRECTION	.9761
Q.	CORRECTED METERED GAS (CF)	69.320
R.	H2O GAS VOLUME (CF) (0.00267N(K/C)	8.247
S.	TOTAL SAMPLED VOLUME (CF) (Q+R)	77.566
T.	PERCENT H2O (100R/S)	10.63
	THEORETICAL MAXIMUM	100.00
	PERCENT WATER USED	10.63
U.	SCFD GAS SAMPLED (528*Q*C/(29.9*K))	68.128

V. MOLECULAR WEIGHT OF STACK GAS

COMPONENT	ORSAT-DRY VOL.PCT./100	X	MOISTURE CORRECTION (1-T/100)	X	MOLECULAR WEIGHT	=	WEIGHT PER MOLE
CO2	.025	X	.8937	X	44.0	=	.98
CO	.000	X	.8937	X	28.0	=	.00
O2	.160	X	.8937	X	32.0	=	4.58
N2	.815	X	.8937	X	28.2	=	20.54
H2O		X	T/100= .1063	X	18.0	=	1.91
					MOLECULAR WEIGHT OF STACK GAS	=	28.01

W.	PITOT CORRECTION	.840
X.	AVERAGE CORRECTED VELOCITY (FPS) [85.49*W*SQRT((J*DELTA P)/(V*F))]	17.63
Y.	AVG. FLOW RATE (CFM) (X*H*60)	74967.
Z.	STACK FLOW RATE (SCFM) (528*Y/J*F/29.92)	41908.
	STACK FLOW RATE (DRY)	37453.
AA.	SAMPLE TIME (SEC)	7200.
BB.	PERCENT ISOKINETIC (J*100*U*29.92)/(528*X*AA*I*F*(1-T/100))	107.54

KEYSTONE ENVIRONMENTAL RESOURCES, INC.
AIR QUALITY ENGINEERING

USS CLAIRTON WORKS
CLAIRTON, PA — COMBUSTION STACK #1
CLR-BS1-3 — 11-27-91

PARAMETER	CYCLONE WT. (G)	MATL.ON FILTER(G)	INSOL.MATL. IN PROBE(G)	SOL.MATL. IN PROBE(G)
PARTICULATE	.00000	.01590	.00000	.01430

PARAMETER	INSOL.MATL. IN IMP.(G)	SOLUBLE MATL. IN IMP.(G)
PARTICULATE	.00000	.00000
PARTICULATE	.03020	
ALL MATLS.	.03020	

PARAMETER	GR/SCFD	LB/HR
PARTICULATE	.00683	2.19148

Emission rates are based on EPA Method 5.

KEYSTONE ENVIRONMENTAL RESOURCES
AIR QUALITY ENGINEERING

USS CLAIRTON WORKS
CLAIRTON, PA
COMBUSTION STACK #1 BATTERY ACTIVE

DATE: 11-27-91
CHARGE #: ...150-605016
TEST #: CLR-BS1-4

1. EMISSION RESULTS

PARAMETER	GR/SCFD	LB/HR
PARTICULATE	.00668	2.10103

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2. STACK CONDITIONS

FLOW (ACFM)	71798.
(SCFM)	40258.
MOISTURE CONTENT (%)	8.91
STACK TEMPERATURE (F)	465.7

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3. SAMPLING CONDITIONS

SAMPLE TIME (MIN.)	120.0
SCFD GAS SAMPLED	62.437
PERCENT ISOKINETIC	100.66

KEYSTONE ENVIRONMENTAL RESOURCES, INC.
AIR QUALITY ENGINEERING

USS CLAIRTON WORKS
CLAIRTON, PA — COMBUSTION STACK #1
CLR-BS1-4 — 11-27-91

FIELD DATA AND VELOCITY CALCULATIONS

POINT	TIME	METER READING (DRY)CF	DELTA P IN.H2O	ORIFICE DELTA H REQ	ORIFICE DELTA H ACT	METER TEMP DEG F IN	METER TEMP DEG F OUT	VACUUM IN.HG.	STACK TEMP DEG F	CORRECTED VELOCITY FT/SEC
40.61	1500.0	670.313	.090	1.43	1.43	59.	61.	2.2	496.	23.1
28.5			.080	1.19	1.19	79.	62.	3.0	450.	21.3
20.2			.070	1.04	1.04	80.	62.	2.5	457.	20.0
13.5			.070	1.04	1.04	81.	63.	2.5	460.	20.0
7.6			.035	.52	.52	80.	64.	1.5	462.	14.2
2.41	1530.0	687.272	.010	.15	.15	80.	64.	1.0	470.	7.6
40.64	1533.0	687.272	.080	1.19	1.19	82.	64.	3.0	453.	21.3
28.5			.070	1.04	1.04	82.	64.	2.5	469.	20.1
20.2			.075	1.12	1.12	84.	65.	2.7	471.	20.8
13.5			.100	1.49	1.49	85.	65.	3.5	473.	24.1
7.6			.085	1.27	1.27	85.	66.	3.0	468.	22.1
2.44	1603.0	705.846	.010	.15	.15	87.	66.	3.0	465.	7.6
40.63	1607.0	705.846	.060	.90	.90	83.	66.	2.5	444.	18.3
28.5			.075	1.12	1.12	85.	67.	2.5	455.	20.6
20.2			.060	.90	.90	86.	67.	2.0	456.	18.5
13.5			.035	.52	.52	85.	67.	1.2	460.	14.1
7.6			.010	.15	.15	80.	67.	1.0	463.	7.6
2.43	1637.0	720.268	.010	.15	.15	78.	66.	1.0	468.	7.6
40.62	1639.0	720.268	.080	1.19	1.19	79.	67.	1.5	464.	21.4
28.5			.075	1.12	1.12	85.	66.	2.5	480.	20.9
20.2			.070	1.04	1.04	85.	66.	2.5	477.	20.2
13.5			.050	.75	.75	84.	66.	2.0	473.	17.0
7.6			.015	.22	.22	80.	66.	1.0	470.	9.3
2.42	1709.0	735.651	.010	.15	.15	78.	65.	1.0	472.	7.6

O R S A T

CO2	2.7
O2	16.5
CO	.0
N	80.8

IMPINGER NO.	1	78.5
	2	29.5
	3	4.8
	4	.0
ABSORBED H2O		16.7

CONTROL BOX CALIBRATIONS

	FACTOR	DATE
ORIFICE	1.713	11-1-91
METER	0.9761	11-1-91
PITOT	0.84	8-2-91

LEAK CHECK

	RATE	IN.HG
INITIAL	0.009CFM	5.0
FINAL	0.011CFM	5.0

CONTROL BOX NO. 3 — PROBE NO. 7-2 — NOZZLE NO. 50

KEYSTONE ENVIRONMENTAL RESOURCES, INC.
AIR QUALITY ENGINEERING

USS CLAIRTON WORKS
CLAIRTON, PA COMBUSTION STACK #1
CLR-BS1-4 11-27-91

STACK SAMPLING CALCULATIONS

A.	BAROMETRIC PRESSURE IN. HG.....	29.50
B.	AVG. DELTA H (IN H2O).....	.83
C.	METER PRESSURE (IN. HG.).....	29.56
D.	STATIC PRESSURE (IN. H2O).....	-1.20
E.	STATIC PRESSURE (IN. HG.).....	-.088
F.	STACK PRESSURE (IN. HG.) (A+E).....	29.41
G.	STACK DIAMETER (IN.).....	114.00
H.	STACK AREA (SQ. FT.).....	70.88
	NOZZLE DIAMETER.....	.4280
I.	NOZZLE AREA (SQ. FT.).....	.000999
J.	AVG. STACK TEMP (DEG. R.).....	925.7
K.	AVG. METER TEMP (DEG. R.).....	533.2
L.	CONDENSATE VOL. (ML).....	112.8
M.	ABSORBED H2O (ML).....	16.7
N.	TOTAL H2O (ML).....	129.5
O.	METERED GAS (CF).....	65.338
P.	GAS METER CORRECTION.....	.9761
Q.	CORRECTED METERED GAS (CF).....	63.776
R.	H2O GAS VOLUME (CF) (0.00267N(K/C).....	6.237
S.	TOTAL SAMPLED VOLUME (CF) (Q+R).....	70.013
T.	PERCENT H2O (100R/S).....	8.91
	THEORETICAL MAXIMUM.....	100.00
	PERCENT WATER USED.....	8.91
U.	SCFD GAS SAMPLED (528*Q*C/(29.9*K)).....	62.437

V. MOLECULAR WEIGHT OF STACK GAS

COMPONENT	ORSAT-DRY VOL.PCT./100	X	MOISTURE CORRECTION (1-T/100)	X	MOLECULAR WEIGHT	=	WEIGHT PER MOLE
CO2	.027	X	.9109	X	44.0	=	1.08
CO	.000	X	.9109	X	28.0	=	.00
O2	.165	X	.9109	X	32.0	=	4.81
N2	.808	X	.9109	X	28.2	=	20.76
H2O		X	T/100= .0891	X	18.0	=	1.60
					MOLECULAR WEIGHT OF STACK GAS	=	28.25

W.	PITOT CORRECTION.....	.840
X.	AVERAGE CORRECTED VELOCITY (FPS)..... [85.49*W*SQRT((J*DELTA P)/(V*F))]	16.88
Y.	AVG. FLOW RATE (CFM) (X*H*60).....	71798.
Z.	STACK FLOW RATE (SCFM) (528*Y/J*F/29.92).....	40258.
	STACK FLOW RATE (DRY).....	36672.
AA.	SAMPLE TIME (SEC).....	7200.
BB.	PERCENT ISOKINETIC..... (J*100*U*29.92)/(528*X*AA*I*F*(1-T/100))	100.66

KEYSTONE ENVIRONMENTAL RESOURCES
AIR QUALITY ENGINEERING

USS CLAIRTON WORKS
CLAIRTON, PA
COMBUSTION STACK #1 BATTERY IDLE

DATE: 11-26-91
CHARGE #: ...150-605016
TEST #: CLR-BS1-1

1. EMISSION RESULTS

PARAMETER	GR/SCFD	LB/HR
PARTICULATE	.00640	2.14275

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2. STACK CONDITIONS

FLOW (ACFM)	75005.
(SCFM)	42827.
MOISTURE CONTENT (%)	8.77
STACK TEMPERATURE (F)	452.1

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3. SAMPLING CONDITIONS

SAMPLE TIME (MIN.)	120.0
SCFD GAS SAMPLED	68.115
PERCENT ISOKINETIC	103.07

KEYSTONE ENVIRONMENTAL RESOURCES, INC.
AIR QUALITY ENGINEERING

USS CLAIRTON WORKS
CLAIRTON, PA — COMBUSTION STACK #1
CLR-BS1-1 — 11-26-91

FIELD DATA AND VELOCITY CALCULATIONS

POINT	TIME	METER READING (DRY)CF	DELTA P IN.H2O	ORIFICE DELTA H REQ	ORIFICE DELTA H ACT	METER TEMP DEG F IN	METER TEMP DEG F OUT	VACUUM IN.HG.	STACK TEMP DEG F	CORRECTED VELOCITY FFT/SEC
40.61	1020.0	367.848	.070	1.07	1.07	47.	47.	2.5	430.	19.6
28.5			.070	1.10	1.10	56.	41.	2.5	457.	19.9
20.2			.070	1.10	1.10	61.	42.	2.5	460.	19.9
13.5			.050	.78	.78	64.	45.	2.0	465.	16.9
7.6			.040	.63	.63	65.	47.	1.0	460.	15.1
2.41	1050.0	384.676	.040	.63	.63	66.	49.	1.0	461.	15.1
40.62	1100.0	384.676	.080	1.25	1.25	67.	51.	3.0	465.	21.4
28.5			.070	1.10	1.10	70.	52.	3.0	466.	20.0
20.2			.050	.78	.78	72.	59.	2.0	465.	16.9
13.5			.060	.94	.94	72.	54.	3.0	441.	18.3
7.6			.030	.47	.47	74.	56.	1.0	440.	12.9
2.42	1130.0	401.006	.030	.47	.47	73.	56.	1.0	445.	12.9
40.64	1147.0	401.006	.080	1.25	1.25	54.	52.	3.5	451.	21.2
28.5			.070	1.10	1.10	68.	53.	3.0	471.	20.1
20.2			.070	1.10	1.10	70.	53.	3.0	458.	19.9
13.5			.070	1.10	1.10	71.	52.	3.0	436.	19.7
7.6			.030	.47	.47	69.	52.	1.0	425.	12.8
2.44	1217.0	418.676	.020	.31	.31	67.	52.	1.0	425.	10.5
40.63	1225.0	418.676	.080	1.25	1.25	59.	50.	3.5	451.	21.2
28.5			.090	1.41	1.41	65.	50.	4.0	456.	22.6
20.2			.070	1.10	1.10	69.	50.	2.5	459.	19.9
13.5			.050	.78	.78	70.	50.	1.0	451.	16.8
7.6			.050	.78	.78	70.	57.	1.0	461.	16.9
2.43	1255.0	436.933	.030	.47	.47	70.	55.	1.0	451.	13.0

O R S A T	
CO2	3.0
O2	16.5
CO	.0
N	80.5

IMPINGER NO.	
1	80.5
2	36.6
3	5.1
4	.0
ABSORBED H2O	16.7

CONTROL BOX CALIBRATIONS

	FACTOR	DATE
ORIFICE	1.713	11-01-91
METER	0.9761	11-1-91
PITOT	0.84	8-2-91

LEAK CHECK

	RATE	IN.HG
INITIAL	0.014CFM	5.0
FINAL	0.016CFM	5.0

CONTROL BOX NO. 3 — PROBE NO. 7-1 — NOZZLE NO. 50

KEYSTONE ENVIRONMENTAL RESOURCES, INC.
AIR QUALITY ENGINEERING

USS CLAIRTON WORKS
CLAIRTON, PA — COMBUSTION STACK #1
CLR-BS1-1 — 11-26-91

STACK SAMPLING CALCULATIONS

A.	BAROMETRIC PRESSURE IN. HG	29.60
B.	AVG. DELTA H (IN H2O)	.89
C.	METER PRESSURE (IN. HG.)	29.67
D.	STATIC PRESSURE (IN. H2O)	-1.20
E.	STATIC PRESSURE (IN. HG.)	-.088
F.	STACK PRESSURE (IN. HG.) (A+E)	29.51
G.	STACK DIAMETER (IN.)	114.00
H.	STACK AREA (SQ. FT.)	70.88
	NOZZLE DIAMETER	.4280
I.	NOZZLE AREA (SQ. FT.)	.000999
J.	AVG. STACK TEMP (DEG. R.)	912.1
K.	AVG. METER TEMP (DEG. R.)	518.6
L.	CONDENSATE VOL. (ML)	122.2
M.	ABSORBED H2O (ML)	16.7
N.	TOTAL H2O (ML)	138.9
O.	METERED GAS (CF)	69.085
P.	GAS METER CORRECTION	.9761
Q.	CORRECTED METERED GAS (CF)	67.434
R.	H2O GAS VOLUME (CF) (0.00267N(K/C)	6.484
S.	TOTAL SAMPLED VOLUME (CF) (Q+R)	73.917
T.	PERCENT H2O (100R/S)	8.77
	THEORETICAL MAXIMUM	100.00
	PERCENT WATER USED	8.77
U.	SCFD GAS SAMPLED (528*Q*C/(29.9*K))	68.115

V. MOLECULAR WEIGHT OF STACK GAS

COMPONENT	ORSAT-DRY VOL.PCT./100	X	MOISTURE CORRECTION (1-T/100)	X	MOLECULAR WEIGHT	=	WEIGHT PER MOLE
CO2	.030	X	.9123	X	44.0	=	1.20
CO	.000	X	.9123	X	28.0	=	.00
O2	.165	X	.9123	X	32.0	=	4.82
N2	.805	X	.9123	X	28.2	=	20.71
H2O		X	T/100= .0877	X	18.0	=	1.58
					MOLECULAR WEIGHT OF STACK GAS	=	28.31

W.	PITOT CORRECTION	.840
X.	AVERAGE CORRECTED VELOCITY (FPS) [85.49*W*SQRT((J*DELTA P)/(V*F))]	17.64
Y.	AVG. FLOW RATE (CFM) (X*H*60)	75005.
Z.	STACK FLOW RATE (SCFM) (528*Y/J*F/29.92)	42827.
	STACK FLOW RATE (DRY)	39071.
AA.	SAMPLE TIME (SEC)	7200.
BB.	PERCENT ISOKINETIC (J*100*U*29.92)/(528*X*AA*I*F*(1-T/100))	103.07

KEYSTONE ENVIRONMENTAL RESOURCES, INC.
AIR QUALITY ENGINEERING

USS CLAIRTON WORKS
CLAIRTON, PA
CLR-BS1-1

COMBUSTION STACK #1
11-26-91

PARAMETER	CYCLONE WT. (G)	MATL.ON FILTER(G)	INSOL.MATL. IN PROBE(G)	SOL.MATL. IN PROBE(G)
PARTICULATE	.00000	.01470	.00000	.01360

PARAMETER	INSOL.MATL. IN IMP.(G)	SOLUBLE MATL. IN IMP.(G)
PARTICULATE	.00000	.00000

PARTICULATE	.02830
ALL MATLS.	.02830

PARAMETER	GR/SCFD	LB/HR
PARTICULATE	.00640	2.14275

Emission rates are based on EPA Method 5.